



TeSys

> Control > Protect > Power > Active

Catalog 2023

Innovative and connected solutions for motor starters



se.com/tesys

Life Is On

Schneider
Electric

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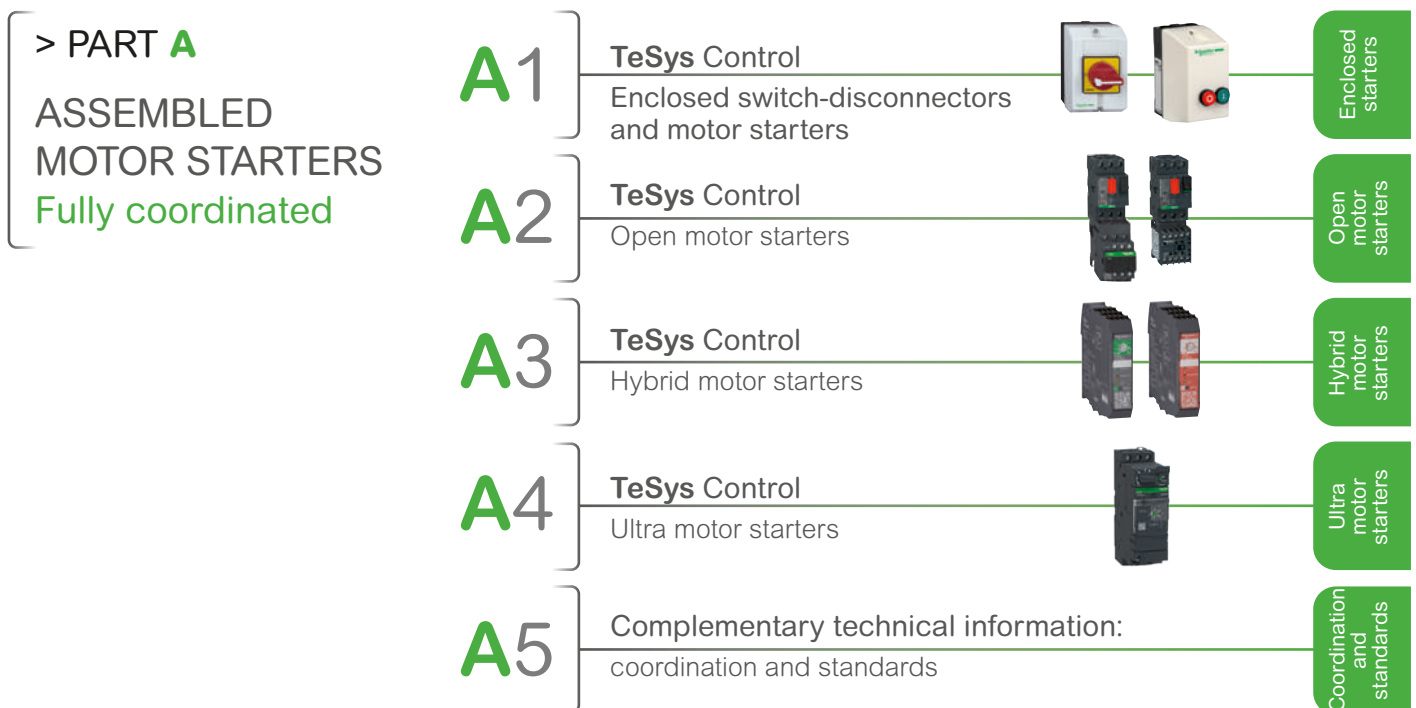
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TeSys is an innovative motor control and management solution from the global market leader. TeSys offers connected, efficient products and solutions for switching and protection of motors and electrical loads in compliance with all major global electrical standards.

> ARCHITECTURE of your TeSys catalogue



TeSys components are classified by function:

> TeSys Control

Components for controlling motors

> TeSys Protect

Components for protecting motors

> TeSys Power

Components for powering motors

> TeSys Active

Connected components for motor circuits

> PART B

COMPONENTS

for conventional solutions:

TeSys K series

(ex-TeSys K, LRK)

- 0 to 16 A (AC-3)

TeSys Deca series

(ex-TeSys GV2, GV3, GV4,

TeSys D, LRD, LR9D)

- 9 to 150 A (AC-3)

TeSys Giga series

(ex-TeSys GV5, GV6,

TeSys LRG)

- 185 to 800 A (AC-3)

> PART C

COMPONENTS

for advanced solutions:

TeSys Ultra series

(ex-TeSys U)

- 0 to 38 A (AC-3)

TeSys T series

(ex-TeSys T)

- 0 to 800 A (AC-3)

TeSys island series

(ex-TeSys island)

- 0 to 80 A (AC-3)

B1

Linergy BZ, HK Busbar systems



Power busbar systems

B2

GV, LAD, U

Wiring systems for motor starters



Wiring systems

B3

TeSys Control

Switch-disconnectors



Switch-disconnectors

B4

TeSys Power

Fuse carriers



Fuse carriers

B5

TeSys Power

Switch-disconnector fuses



Switch-disconnector fuses

B6

TeSys Power

Deca, Giga and Modular Motor circuit breakers



Motor circuit breakers

B7

TeSys Control

SK, K, Deca Control relays



Control relays

B8

TeSys Control

SK, K, SKGC, Deca, Modular and other Contactors



Contactors

B9

TeSys Control

Giga High power contactors



High power contactors

B10

TeSys Control

F High power contactors



High power contactors

B11

TeSys Protect

LRK, Deca, Giga Overload relays



Overload relays

C1

TeSys Active

T motor management system

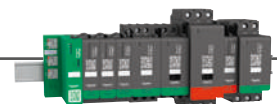


Motor management devices

C2

TeSys Active

Island motor starters



Control and monitoring island



Start smart. Run smart. With TeSys motor controls.

Stay smart with the world's best-selling motor control solutions from the inventor of the world's first contactor - Schneider Electric™.

For almost a century, TeSys motor controls have driven the industry with innovations in motor protection, monitoring, and control.

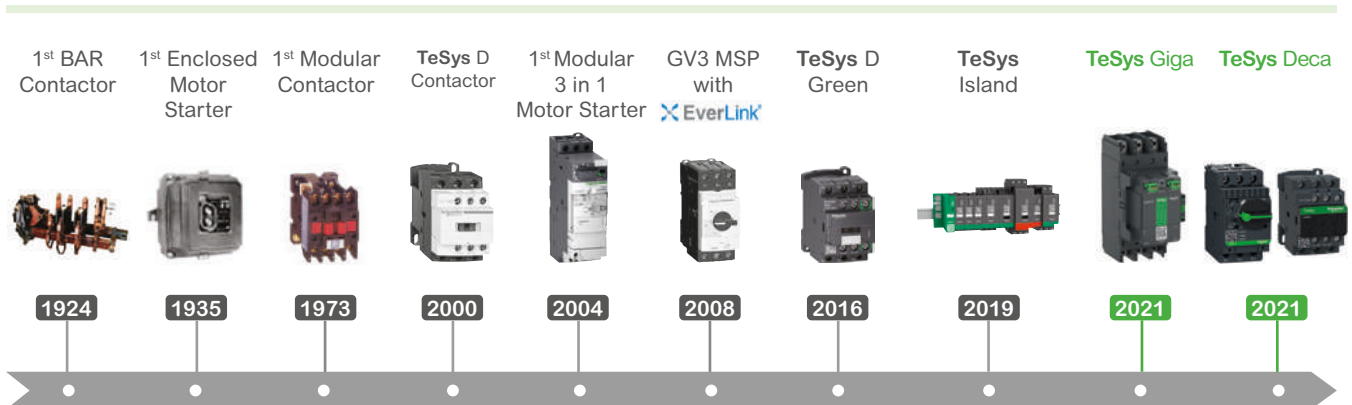
It started with the introduction of the industry's first BAR contactor in 1924, and today, the legacy of innovation is built into every TeSys motor control device.

Best-in-class safety and reliability, plug-and-play architecture, and flexible functionality mean TeSys motor control solutions can meet your requirements across a wide range of applications, from the most common to the most advanced.

Wherever you are and anywhere your projects come together, you can trust Schneider Electric and TeSys contactors, circuit breakers, relays, and switches for unmatched reliability, complete compatibility with international standards, and the robust support of the Schneider Electric global supply network.

Start smart, run smart and stay smart with TeSys motor controls.

A Century OF INNOVATION AND LEADERSHIP



Superior safety for all industries

TeSys motor controls come with all of the isolation, protection and emergency handling you need to comply with international codes. High-contrast covers identify safety-critical devices to prevent inadvertent manual operation. Every TeSys contactor is both mechanically linked and equipped with mirror contacts for safety applications and wherever auxiliary contact state reliability is critical.



HVAC

Ensure 24/7 availability of your HVAC system with reliable products that can reach high ambient temperatures without derating.



Conveying

Decentralize the control cabinet of your conveyor line and benefit from up to 80% space reduction.



Genset

Make certain your generator starts even in the harshest conditions with robust TeSys solutions.



Pumping

Optimize single or multi-drive boosters for industry or infrastructure with energy and cost-effective solutions.



Packaging

Keep pace with the most demanding, high-end packing applications with solutions that can perform 30 million AC53a electrical cycles, like TeSys H.



Oil and Gas

Keep your employees and assets safe and improve uptime in onshore and offshore applications: pipeline operations: LNG and natural gas processing: and refining and petrochemical applications.



Water and Wastewater

Optimize the treatment and delivery of safer water by reducing energy usage and lowering operating costs.



Food and Beverage

Serve your customers with environmentally friendly products to improve sustainability, efficiency, and flexibility, allowing you to adapt to changing customer habits.

Online selection tool

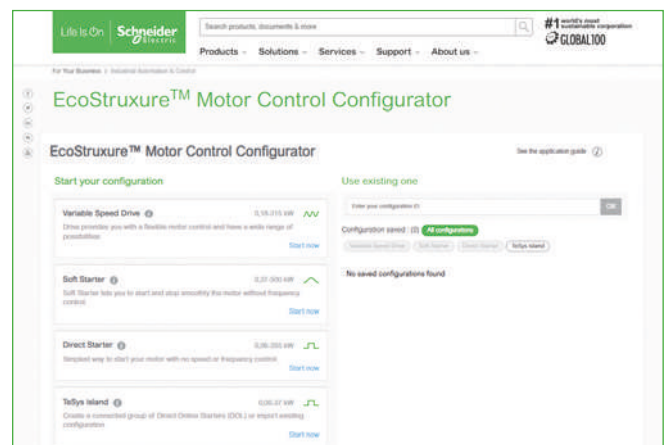
EcoStruxure™ Motor Control Configurator

For Direct-On-Line and Star-Delta starters, motor circuit breakers with advanced protection, motor management relays, configurations for total coordination, drives, and soft starters.

No matter what kind of starting method you need, our online **EcoStruxure™ Motor Control Starter Configurator** will help you to quickly and easily select the optimal combination of components to ensure maximized motor safety, protection, and uptime.



Scan or click on the QR code



EDITO

Welcome to your NEW TeSys catalog!
Your catalog continues to evolve, as it does year after year.

- The first evolution concerns the products, it will bring a **Premium design** to your control panels thanks to the main TeSys components that now present the **same visual homogeneity**.
- The **structuring of the components naming** is the second point of evolution, it answers the need to classify the products by function and by range in the selection tools, the catalog and the Schneider Electric website (www.se.com).
- The last new feature is the presence of a **product reference table at the end of the commercial part of each chapter** (before the information for designers). It allows you to quickly check the availability of a product variant and access its technical data sheet online.

NEW

VISUAL ASPECT

The design of the TeSys core offer is evolving. Circuit breakers, contactors and several other components are now sharing a modern look giving the control panel a new and qualitative visual aspect.

Schneider Electric's identity is fully revealed by the green parts.



NEW

TESYS FUNCTION NAMES

TeSys components are grouped by function name, for easier identification. These functions are related to motor, power, control and protection.

> TeSys Power:

Components for powering motors



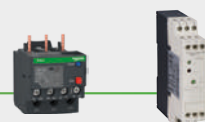
> TeSys Control:

Components for controlling motors



> TeSys Protect:

Components for protecting motors



TeSys Active gathers the devices providing built-in communication with motor monitoring and control functions.

> TeSys Active:

Connected components for motor circuits



NEW TESYS COMPONENT SERIES NAMES

- Series names group conventional components (circuit breakers, contactors, relays, overcurrent relays) by current rating ranges.
 - 0 to 16 A > **TeSys K** Series
 - 9 to 150 A > **TeSys 'Deca'** Series
 - 115 to 800 A > **TeSys 'Giga'** Series.
- TeSys advanced components have a specific classification.
 - 0 to 38 A All-in-one starters > **TeSys 'Ultra'** Series
 - 0 to 80 A Motor Control/Protection/Monitoring system > **TeSys 'island'** Series.
- Other TeSys component names remain unchanged (TeSys F, TeSys B, TeSys T).

NEW TESYS COMPONENTS FULL NAMES AT A GLANCE

Old names	> NEW names: TeSys Function - Component Series	Complementary indications
TeSys Vario, mini Vario	TeSys Control – Switch-disconnectors	
TeSys DF TeSys LS	TeSys Power – Fuse carriers	DF type LS type
TeSys GS	TeSys Power – Switch-disconnector fuses	
TeSys GV2 TeSys GV3 TeSys GV4	TeSys Power – Deca circuit breakers	Frame 2 Frame 3 Frame 4
TeSys GV5 TeSys GV6	TeSys Power – Giga circuit breakers	Frame 5 Frame 6
TeSys D	TeSys Control – Deca control relays TeSys Control – Deca contactors	
TeSys LRD, LR9D	TeSys Protect – Deca overload relays	
TeSys H	TeSys Control – Hybrid motor starters	
TeSys U	TeSys Control – Ultra motor starters	
TeSys island	TeSys Active – island motor starter	

Part A

ASSEMBLED MOTOR STARTERS

FULLY
COORDINATED

TeSys Control

Enclosed switch-disconnectors
and motor starters

From 0.25 to 40 kW



A1/1

Enclosed
starters

TeSys Control

Open motor starters

From 0.06 to 315 kW



A2/1

Open
motor
starters

TeSys Control

Hybrid motor starters

Up to 3 kW

From 9 A to 32 A



A3/1

Hybrid
motor
starters

TeSys Control

Ultra motor starters

From 0.09 to 18.5 kW



A4/1









Ultra
motor
starters

Complementary technical
information:

coordination and standards

A5/1

Coordination
and
standards

Enclosed switch-disconnectors		
Content		Page
Product selector		A1/2
Enclosed switch-disconnectors		A1/3
Enclosed standard starters		
Product selector		A1/6
Direct-on-line starters Accessories		A1/7
Reverser starters		A1/13
Star-delta starters		A1/15
Enclosed safety starters		
Product selector		A1/17
Safety direct-on-line starters Accessories		A1/18
Safety reverser starters		A1/21
Enclosures and components for customer assemblies		
Enclosures (with buttons)		A1/26
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Technical Data for Designers A1/37

Enclosed Motor Starter Solution Guide

The software to help you to select intuitively your enclosed motor starter solution.

The Enclosed Motor Starter Solution Guide software is available for both PC and iPad.



TeSys Control

Enclosed switch-disconnectors

Introduction & selection table

Enclosed starters



Range of pre-assembled casings with handle and their rotary switch

They can be fixed on a wall, a panel, or on the chassis of a machine. For simple isolation and/or control of an electrical circuit. Red/yellow handle provides a clear indication of the device safety function ⁽¹⁾, while black handle is usually dedicated to ON/OFF control.

⁽¹⁾ Conforming to IEC 60947-3 and IEC 60204.

With numerous advantages to meet OEM's most common needs

- IEC or UL
- Multiple ratings and sizes
- IP65
- Additional poles
- Replaceable switch bodies

Selection in 2 steps

1 Identify your need (1 line one or more) in the **Selection criteria** area (example.: Load 5 kW– Emergency Stop - IEC)

2 Choose your enclosed switch-disconnector in the **Solutions** area, note the radical of the product references

Selection criteria							
Ithe (A)	Load power (kW)	Circuit isolation	Emergency stop	IP55	IP65	IEC	UL & CSA
10...140	4...45 (400 V)	●			●	●	
10...140	4...45 (400 V)	●	●		●	●	
10...32	4...15 (400 V)	●	●	●		●	
32...175 (Ithe IEC) 20...115 (Ith UL)	10...50 HP (480 V)	●	●		●	●	●

Solutions			
VBF	VCF	VCFN	VC•GUN

See page

A1/3

A1/3

A1/3

A1/4

TeSys Control

Enclosed switch-disconnectors / Ready-to-use

Product references



VCF0GE



VCF3GE



VCF5GEN



VCFN12GE



VBF0GE



VBF6GEN

Control + Disconnection (IEC)

Enclosed switch-disconnectors, ready to be fixed on workshop wall or directly on the machine and wired to main supply circuit and to load.

Functions / Range / Specificities:

- Direct Control: ON/OFF of 3-phase motor (black handle) or ON/Emergency Stop (red handle)
- 23 IEC motor starters, for 3P motors from 4 to 45 kW (10 to 140 A)
- 6 UL motor starters for 3P motors from 5 to 30 HP (240 V)
- Padlockable handle (1 to 3 padlocks – not included)
- Sealable, lockable cover when handle in position 1 (up to 63 A rating).

Included:

- rotary switch-disconnector body
- handle.

Enclosures for ON / Emergency Stop – IP65 – conforming IEC 60947-3, IEC 60204 (1)

Operator Handle	Front plate Dim.	Ithe	Power AC-23 at 400 V	Incorporated switch body	Possible attachments (2)	With ground plate	Reference (3)	Weight	Overall dimensions (4)
	mm	A	kW					kg	mm
Red, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank)	Yellow 60 x 60	10	4	V02	2	No	VCF02GE	0.500	90x146x131
						Yes	VCF02GEGP	0.560	90x146x131
		16	5.5	V01	2	No	VCF01GE	0.500	90x146x131
						Yes	VCF01GEGP	0.560	90x146x131
		20	7.5	V0	2	No	VCF0GE	0.500	90x146x131
						Yes	VCF0GEGP	0.560	90x146x131
Red, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shanks)	Yellow 90 x 90	25	11	V1	2	No	VCF1GE	0.500	90x146x131
						Yes	VCF1GEGP	0.560	90x146x131
		32	15	V2	2	No	VCF2GE	0.500	90x146x131
		50	22	V3	3	No	VCF3GE	0.930	157x180x152
		63	30	V4	3	No	VCF4GE	0.930	157x180x152
		100	37	V5	1	No	VCF5GEN	2.190	241x291x190.5
140	45	V6	1	No	VCF6GEN	2.190	241x291x190.5		

Protection of sensitive equipment: ground plate available for VCF02GE...VCF1GE – see page A1/5.

Enclosures for ON / Emergency Stop – IP65 - conforming IEC 60947-3 (1)

Operator Handle	Front plate Dim.	Ithe	Power AC-23 at 400 V	Incorporated switch body	Possible attachments (2)	Reference (3)	Weight	Overall dimensions (4)
	mm	A	kW				kg	mm
Red padlockable, either by 1 (Ø 8 shank) or by 3 padlocks (Ø 6 shank)	Yellow 60 x 60	10	4	VN12	2	VCFN12GE	0.422	82.5x131x106
		16	5.5	VN20	2	VCFN20GE	0.422	82.5x131x106
		20	7.5	V0	0	VCFN25GE	0.512	82.5x131x106
		25	11	V1	0	VCFN32GE	0.512	82.5x131x106
		32	15	V2	0	VCFN40GE	0.512	82.5x131x106

Enclosures for ON/OFF F– IP65 – conforming IEC 60947-3, IEC 60204 (1)

Operator Handle	Front plate Dim.	Ithe	Power AC-23 at 400 V	Incorporated switch body	Possible attachments (2)	Reference (3)	Weight	Overall dimensions (4)
	mm	A	kW				kg	mm
Black, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank)	Black 60 x 60	10	4	V02	2	VBF02GE	0.500	90x146x131
		16	5.5	V01	2	VBF01GE	0.500	90x146x131
		20	7.5	V0	2	VBF0GE	0.500	90x146x131
		25	11	V1	2	VBF1GE	0.500	90x146x131
		32	15	V2	2	VBF2GE	0.500	90x146x131
		50	22	V3	3	VBF3GE	0.930	157x180x152
Black, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank)	Black 90 x 90	63	30	V4	3	VBF4GE	0.930	157x180x152
		100	37	V5	1	VBF5GEN	2.190	241x291x190.5
		140	45	V6	1	VBF6GEN	2.190	241x291x190.5

(1) For characteristics of switch-disconnectors, please consult your Regional Sales Office.

(2) Number of add-on modules that can be attached.

(3) Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

(4) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

Note: For VCF and VBF enclosures from 02GE to 2GE, only one auxiliary contact block VZ7 or VZ20 can be mounted.

Dimensions:
page A1/38

Schemes:
page A1/39



TeSys Control

Enclosed switches (UL) / Ready-to-use - Additional modules

Product references

Enclosed starters



PB107201.eps

VC1GUN



PB107202.eps

VC3GUN



PB121472.eps

VC5GUN

Control + Disconnection (UL)

ON / Emergency Stop – IP65
Conforming UL508 CSA22.2 n° 14, IEC 60947-3, IEC 60204 (1)

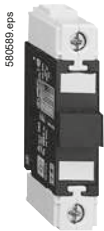
Operator Handle	Front plate Dim.	Rating		Standard power ratings of UL motors			Incorporated switch body	Possible attachments	Reference (2)	Weight	Overall dimensions (1)
		IEC (lth)	UL	600 V	240 V	480 V					
	mm	A	A	HP	HP	HP				kg	mm
Red, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8)	Yellow 60 x 60	32	20	5	10	10	V1	2	VC1GUN	0.500	121x164x132.1
		40	25	5	10	15	V2	2	VC2GUN	0.500	121x164x132.1
		63	45	10	20	30	V3	2	VC3GUN	0.930	164x193x132.1
		80	63	15	30	40	V4	2	VC4GUN	0.930	164x193x132.1
Red, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8)	Yellow 90 x 90	125	100	25	50	50	V5	1	VC5GUN	2.190	241x291x190.5
		175	115	30	50	60	V6	1	VC6GUN	2.190	241x291x190.5

Additional modules for VZ switch bodies

Enclosed switches include a VZ switch body. Additional modules can be plugged on 1 or 2 sides of the switch body to provide additional contacts or extra connectivity.

Common modules for enclosed switch disconnectors – with exceptions (3)

Description	Rating	Reference
	A	
Main pole module (mounted in enclosure)	10	VZ02 (not for VCxGUN starters)
	16	VZ01 (not for VCxGUN starters)
	20	VZ0 (not for VCxGUN starters)
	25	VZ1
	32	VZ2
	50	VZ3
	63	VZ4
Neutral pole modules with early make and late break contacts	10 to 32	VZ11
	50 and 63	VZ12
	100 and 140	VZ13
Earthing modules	10 to 32	VZ14
	50 and 63	VZ15
	100 and 140	VZ16
Description	Type of contacts	Reference
Auxiliary contact block modules with 2 auxiliary contacts	N/O + N/C (4)	VZ7
	N/O + N/O	VZ20



580589.eps

VZ0
Main pole



580594.eps

VZ11
Neutral pole



580585.eps

VZ15
Earthing terminal



580596.eps

VZ20
Auxiliary contacts

(1) For characteristics of switch-disconnectors, please consult your Regional Sales Office.

(2) Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

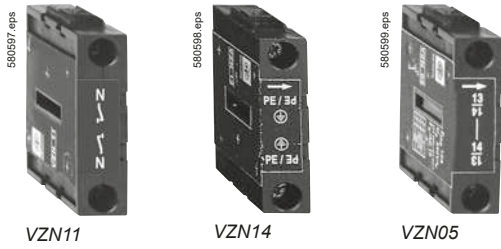
(3) Not compatible with V●F5GEN, V●F6GEN, VC5GUN, VC6GUN, VCFN12GE, VCFN20GE.

(4) Late make N/O, early break N/C contacts.

TeSys Control

Enclosed switch-disconnectors / Ready-to-use - Additional modules - Accessories

Product references



VZN11

VZN14

VZN05

Additional modules for switch bodies

Specific modules for VCFN12GE and VCFN20GE

Description	Rating	Reference
	A	
Main pole modules	10	VZN12
	16	VZN20
Neutral pole module with early make and late break contacts	10 and 16	VZN11
Earthing module	10 and 16	VZN14

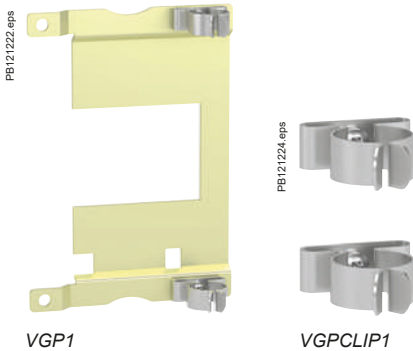
Description	Type of contacts	Reference
Auxiliary contact block modules	1 N/O late make contact	VZN05
	1 N/C early break contact	VZN06

Accessories for enclosed switch-disconnectors

Ground plate and accessories for VCF02GE, VCF01GE, VCF0GE, VCF1GE

Metallic ground plate, for shielded cables connection. To be installed between back of enclosed switch-disconnectors, 2 fixing screws. Cable shield grounding ensured by 2 clamps, clamping from Ø11 to 14 mm

For switch body	Reference
Ground plate + 2 clamps + 2 screws	VGP1
2 clamps + 2 screws	VGPClip1



VGP1

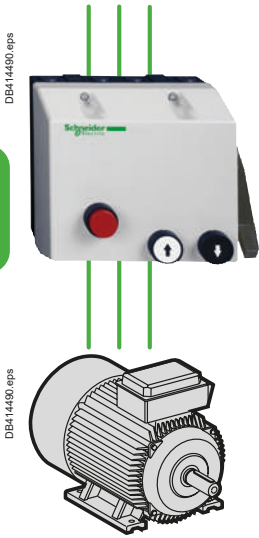
VGPClip1

TeSys Control

Enclosed standard starters

Introduction & selection table

Enclosed starters



Range of pre-assembled motor starters, with pushbuttons, selectors, protection and control components in a robust casing

They can be fixed on a wall, on a panel, or on the chassis of a machine. They provide an operator with an easy access with visual simplicity

Numerous advantages to meet OEM's most common needs

- IEC
- Multiple ratings and sizes
- IP55, IP65
- IK08, IK09
- Totally or partially pre-wired

Standard starters

They are used to isolate a circuit, to protect and/or to control a motor

Customized protection

Enclosed starter offer is available in fully pre-equipped and pre-wired enclosures, also in partially pre-equipped enclosures to be completed with protective components of the required rating

Accessories

Additional accessories provide reinforced sealing, padlock locking, additional contacts...

Selection in 2 steps

1 Identify your need (1 line one or more) in the **Selection criteria** area (example: Load 5 kW – ON/OFF control with overload protection)

2 Choose your starter in the **Solutions** area by adding column contents, note the radical of the product references (example: LE1D + LRD)

Selection criteria

Load Power (kW) / 400V	Circuit isolation	Direct starter - ON/OFF	Reverser ON/REVERSE/OFF	Short circuit protection	Overload protection	Star - delta
0.25..7.5		●			●	
4 ... 30		●			●	
0.02... 30		●		●		
0.02... 30						
0.06... 11		●		●	●	
2.2 ... 15						
2.2 ... 30			●		●	
2.2 ... 15			●	●	●	
7.5...30		●			●	●
7.5...18.5		●	●	●	●	●

Solutions

Protection device to be added by customer <i>(of appropriate rating)</i>				See page
LE1M35				A1/7
		LE1D	LRD	A1/8
	GV2PC GV3PC		GV2L	A1/9 + A1/10
	GV2PC GV3PC		GV2P	A1/9 + A1/10
	GV2MC GV3MP		GV2ME	A1/11
		LE4K LE4D	LR2K LRD	A1/12
		LE2K LE2D	LR2K LRD	A1/13
		LE8K LE8D	LR2K LRD	A1/14
		LE3D	LRD	A1/15
		LE6D	LRD	A1/16

TeSys Control

Enclosed standard starters / DOL / Ready-to-use

Product references



LE1M35●●●●

Control + Protection against Overloads

- Direct Control: ON/OFF of 3-phase motor
- Motor protection: motor OFF in case of overload – manual reset with the red pushbutton.
- Indication: yellow light activated with the contactor coil.
- The LE1M35 starter, combined with short-circuit protection components, provides type 1 or type 2 coordination, depending on the type of devices used.

Range:

- 10 IEC motor starters, for 3P motors from 0.25 to 7.5 kW (400V AC)
- Configurable pushbuttons: impulse or latched
- Conforming to IEC 60947-4-1 standard
- Degree of protection IP65, according IEC 60529
- Ambient air temperature in operation -5 to +40°C
- Operating position: same as K series contactors
- Material: self extinguishing ABS.

Included (standard version):

- 1 contactor LC1K●●⁽¹⁾
- 1 thermal overload relay LR2K⁽²⁾
- 1 green Start button "I",
- 1 red Stop/Reset button "O/R",
- 1 yellow operating indicator
- earth + neutral terminals at bottom of enclosure.

For supply voltages between 380 and 440 V (codes Q7, V7, N7 or R7) the control circuit is pre-wired between phases. For other supply voltages, the control circuit must be wired by the customer.

Direct-on-line starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3					Setting range of thermal overload relay LR2K	Basic reference, to be completed by adding the voltage code ^{(3) (4)}	Overall dimensions ⁽⁵⁾ WxHxD
220 V	240 V	380 V	415 V	400 V			
kW	kW	kW	kW	A		mm	
0.12	0.12	0.25	0.25	0.54...0.8	LE1M35●●05	78x160x108	
0.18	0.18	0.37	0.37	0.8...1.2	LE1M35●●06	78x160x108	
0.25	0.25	0.55	0.55	1.2...1.8	LE1M35●●07	78x160x108	
0.37	0.37	1.1	0.75	1.8...2.6	LE1M35●●08	78x160x108	
0.55	0.55	1.5	1.5	2.6...3.7	LE1M35●●10	78x160x108	
1.1	0.75	2.2	2.2	3.7...5.5	LE1M35●●12	78x160x108	
1.5	1.1	3	3	5.5...8	LE1M35●●14	78x160x108	
2.2	2.2	4	4	8...11.5	LE1M35●●16	78x160x108	
3	3	5.5	5.5	10...14	LE1M35●●21	78x160x108	
3.7	4	7.5	7.5	12...16	LE1M35●●22	78x160x108	
Replacement contactor					LC1K●●A80	-	

Coil voltage codes

Volts ~ 50/60 Hz	24	110	220	230	240	380	400	415	440
Code	B7	F7	M7	P7	U7	Q7	V7	N7	R7

(1) K contactor characteristic: refer to chapter B8.

(2) LR2K overload relay characteristics: refer to chapter B11.

(3) Remove the 2 last numbers if the thermal overload relay is not required.
Example: LE1M35P7 instead of LE1M35P714.

(4) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

(5) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

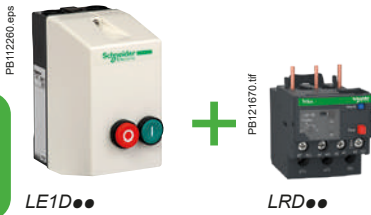


TeSys Control

Enclosed standard starters / DOL / to be completed with Deca ⁽¹⁾ overload relay

Product references

Enclosed starters



Control + Protection against Overloads

- ON/OFF motor starters: 1-way rotation control of 3-phase motor, by green & red pushbuttons
- Motor protection against overload: manual reset with the red pushbutton or remotely.

Range:

- 8 direct-on-line starters for 3P motors from 4 to 30 kW (9 to 65 A AC-3)
- Choice of up to 12 AC coil voltages for control supply circuit (depending on starter rating).

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529:
 - IP65,
 - IK07 for LED09...D35,
 - IK09 for LE1D40A...D65A
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: LE1D09... D35 polycarbonate ⁽²⁾
- LE●D40A... D65A steel sheet.

Included:

- 1 pre-wired LC1D contactor
- 2 Harmony XB5 pushbuttons.

An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Direct on-line starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3						Max. current lth up to	Basic reference, to be completed by adding the voltage code ⁽³⁾	Weight kg	Overall dimensions ⁽⁴⁾ WxHxD mm
220 V	380 V	415 V	440 V	500 V	660 V				
kW	kW	kW	kW	kW	kW	A			
2.2	4	4	4	5.5	5.5	9	LE1D09●●	0.920	88x166x128.5
3	5.5	5.5	5.5	7.5	7.5	12	LE1D12●●	0.920	88x166x128.5
4	7.5	7.5	7.5	9	10	17	LE1D18●●	1.015	101x201x153.5
5.5	11	11	11	15	15	22	LE1D25●●	1.015	101x201x153.5
7.5	15	15	15	18.5	18.5	26.5	LE1D35●●	4.320	101x201x153.5
11	18.5	22	22	22	30	40	LE1D40A●●	4.820	200x300x158.5
15	22	25	30	30	33	50	LE1D50A●●	4.850	200x300x158.5
18.5	30	37	37	37	37	65	LE1D65A●●	4.850	200x300x158.5

Variants (pre-assembled)

Description	Available variants for starter	Suffix to be added to the starter reference ⁽³⁾
No pushbuttons on cover	LE1D09...D65A●●	A04
1 blue Reset button "R"	LE1D09...D65A●●	A05
1 3-position stay put selector switch ("I"- "O"- "II") ("I": Automatic Start; "O": Stop; "II": Manual Start) 1 blue Reset button "R"	LE1D09...D25●●	A09
1 2-position stay put selector switch "O"- "I" ("O": Stop; "I": Manual Start) 1 blue Reset button "R"	LE1D09...D25●●	A13
Mounting of an LC1D09 contactor in an enclosure identical to LE1D18	LE1D09P7 LE1D09P7A13	T

Coil voltage codes ⁽³⁾

Volts ~ 50/60 Hz	24	48	110	115	120	220	230	240	380	400	415	440
LE1D09 to D35	B7	E7	F7	FE7	G7	M7	P7	U7	Q7	V7	N7	R7
LE1D40A to D65A	-	-	-	FE7	-	-	P7	-	Q7	-	-	-

⁽¹⁾ LRD overload relay selection: product reference page A1/33, more details in chapter B11.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents ketones, alcohol, aromatic hydrocarbons).

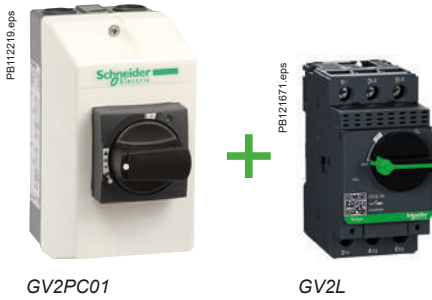
⁽³⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

⁽⁴⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

TeSys Control

Enclosed standard starters / DOL / to be completed with Deca ⁽¹⁾ magnetic circuit breaker

Product references



GV2PC01

GV2L



GV3PC02

GV3L

Control + Isolation + Protection against Short circuits

2 solutions according to the required current rating.

GV2PC + GV2L > up to 23 A (Ithe)

GV3PC + GV3L > up to 55 A (Ithe)

The GV2L or GV3L circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Padlocking:
 - in ON or OFF position (PGV2PC01, GV3PC01),
 - in OFF position (GV2PC02, GV3PC02).

Suitable circuit breakers:

- GV2L - 12 ratings (3P motors from 0.09 to 11 kW - 400/415 V AC)
- GV3L - 3 ratings (3P motors from 18.5 to 30 kW - 400/415 V AC).

Enclosures characteristics:

- Conforming to IEC 60947-2
- Degree of protection according IEC 60529:
 - IP65, IK08 (for GV2PC),
 - IK09 (for GV3PC)
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue): 690V
- Material: GV2PC polycarbonate ⁽²⁾, GV3PC steel sheet.

Included:

- GV rotary handle.

Enclosures fitted with padlockable rotary handle

Composition	Type	Reference	Overall dimensions ⁽³⁾ WxHxD mm
<ul style="list-style-type: none"> ■ Insulating enclosure ■ Black handle, padlockable in ON/OFF position 	Surface mounting For GV2L	GV2PC01	88x166x163
<ul style="list-style-type: none"> ■ Insulating enclosure ■ Red handle on yellow background, padlockable in OFF position 	Surface mounting For GV2L	GV2PC02	88x166x163
<ul style="list-style-type: none"> ■ Metal enclosure ■ Black handle, padlocking in ON/OFF position ■ Circuit breaker/handle adapter 	Surface mounting For GV3L	GV3PC01	200x300x200
<ul style="list-style-type: none"> ■ Metal enclosure ■ Red handle, padlocking in OFF position ■ Circuit breaker/handle adapter 	Surface mounting For GV3L	GV3PC02	200x300x200

GV2L, GV3L product references: add code to product reference ⁽⁴⁾

Ithe (A)	0.4	0.63	1	1.6	2.5	4	6.3	9	13	17	21	23
GV2L codes	03	04	05	06	07	08	10	14	16	20	21	22
Ithe (A)	35	41	55									
GV3L codes	40	50	65									

⁽¹⁾ GV2, GV3 circuit breaker not included - characteristics: refer to chapter B6.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽³⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

⁽⁴⁾ Example: for Ithe 17 A, magnetic circuit breaker is GV2L20.

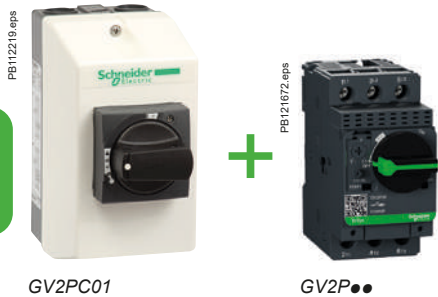


TeSys Control

Enclosed standard starters / DOL / to be completed with Deca ⁽¹⁾ thermal-magnetic circuit breaker

Product references

Enclosed starters



Control + Isolation + Protection against Short circuits and Overloads

For OEM, 2 solutions according to the required current rating.
 GV2PC + GV2P > up to 23 A (Ithe)
 GV3PC + GV3P > up to 55 A (Ithe)
 The enclosure includes a rotary handle.
 The GV2P or GV3P circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Padlocking:
 - in ON or OFF position (GV2PC01, GV3PC01),
 - in OFF position (GV2PC02, GV3PC02).

Suitable circuit breakers:

- GV2P - 14 ratings (3P motors from 0.06 to 11 kW - 400/415 V AC)
- GV3P - 2 ratings (3P motors from 18.5 to 30 kW - 400/415 V AC).

Enclosures characteristics:

- Conforming to IEC 60947-2
- Degree of protection according IEC 60529: IP65, IK08 (for GV2PC), IK09 (for GV3PC)
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690V
- Material: GV2PC polycarbonate ⁽²⁾, GV3PC steel sheet.

Included:

- GV rotary handle.

Enclosures fitted with padlockable rotary handle

Composition	Type	Reference	Overall dimensions ⁽³⁾ WxHxD mm
<ul style="list-style-type: none"> ■ Insulating enclosure ■ Black handle, padlockable in ON/OFF position 	Surface mounting For GV2L	GV2PC01	88x166x163
<ul style="list-style-type: none"> ■ Insulating enclosure ■ Red handle on yellow background, padlockable in OFF position 	Surface mounting For GV2L	GV2PC02	88x166x163
<ul style="list-style-type: none"> ■ Metal enclosure ■ Black handle, padlocking in ON/OFF position ■ Circuit breaker/handle adapter 	Surface mounting For GV3L	GV3PC01	200x300x200
<ul style="list-style-type: none"> ■ Metal enclosure ■ Red handle, padlocking in OFF position ■ Circuit breaker/handle adapter 	Surface mounting For GV3L	GV3PC02	200x300x200

GV2P, GV3P product references: add code to product reference ⁽⁴⁾

Ithe (A)	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6.3	9	13	17	21	23
GV2P codes	01	02	03	04	05	06	07	08	10	14	16	20	21	22
Ithe (A)	35	41	55											
GV3P codes	40	50	65											

⁽¹⁾ GV2, GV3 circuit breaker not included - characteristics: refer to chapter B6.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

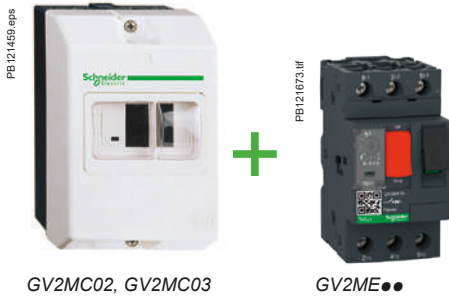
⁽³⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

⁽⁴⁾ Example: for Ithe 17 A, magnetic circuit breaker is GV2P20.

TeSys Control

Enclosed standard starters / DOL / to be completed with Deca ⁽¹⁾ thermal-magnetic circuit breaker (ref. GV2ME)

Product references



GV2MC02, GV2MC03

GV2ME●●



GV2MP01, GV2MP02

GV2ME●●

Control + Isolation + Protection against Short circuits and Overloads

For OEM, 2 solutions, according to the enclosure installation mode:
 GV2MC surface mounting enclosure for GV2ME circuit breaker
 GV2MP flush mounting enclosure for GV2ME circuit breaker.
 The GV2ME circuit breaker of the required rating must be ordered separately.

- Circuit isolation
- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Short-circuit and adjustable overload protection
- Padlocking in OFF position.

Suitable circuit breakers:

- GV2ME - 14 ratings (3P motors from 0.06 to 11 kW - 400/415 V AC).

Enclosures characteristics:

- Conforming to IEC 60947-2; IEC 60947-4-1
- Degree of protection according IEC 60529: refer to selection chart
- Operational voltage (Ue) 690 V
- Material: polycarbonate ⁽²⁾.

Included:

- GV2E01 or GV2E02 sealing kit (fixed on the front plate).

Enclosures for thermal-magnetic circuit breakers GV2ME

Type	Degree of protection	Possible no. of side mounting auxiliary contact blocks on GV2ME		Reference	Weight kg	Overall dimensions ⁽³⁾ WxHxD mm
		LH side	RH side			
Surface mounting, double insulated with protective conductor. Sealable cover	IP41	1	1	GV2MC01	0.290	93x147x84
	IP55	1	1	GV2MC02	0.300	93x147x84
				or GV2MCK04 ⁽⁴⁾	0.420	93x147x145.5
	IP55 for temperature < +5 °C	1	1	GV2MC03	0.300	93x147x84
Flush mounting, with protective conductor	IP41 (front face)	1	1	GV2MP01	0.115	106.5x140x83
	IP41 (front face – reduced flush mounting)	–	1	GV2MP03	0.115	106.5x140x98
	IP55 (front face)	1	1	GV2MP02	0.130	106.5x140x83
	IP55 (front face – reduced flush mounting)	–	1	GV2MP04	0.130	106.5x140x98

GV2ME product references: add code to product reference ⁽⁵⁾

lthe (A)	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6.3	9	13	17	21	23
GV2ME codes	01	02	03	04	05	06	07	08	10	14	16	20	21	22

GV2MC, GV2MP enclosures with complementary circuit breaker and mushroom head pushbutton allow the construction of safety direct-on-line starters conforming INRS and VDE0113.

Surface and flush mounting enclosures, mushroom heads, circuit breakers and undervoltage release cover a large number of applications.

⁽¹⁾ Characteristics of GV2ME circuit breakers and additives: refer to page A1/32.

⁽²⁾ Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽³⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light

⁽⁴⁾ Enclosure GV2MCK04 is fitted with a GV2K04 mushroom head Emergency stop pushbutton as standard.

⁽⁵⁾ Example: for lthe 17 A, magnetic circuit breaker is GV2ME20.

TeSys Control

Enclosed standard starters / DOL / to be completed with LR2K, Deca ⁽¹⁾ overload relays

Product references

Enclosed starters



Control + Isolation + Protection against Short circuits and Overloads

- ON/OFF motor starters: 1-way rotation control of 3-phase motor, by green & red pushbuttons
 - Option: no pushbutton on cover
 - Circuit disconnection by side black handle
 - Protection against short circuits by NFC fuses type aM (to be ordered separately)
 - Motor protection against overload – manual reset with the red pushbutton or remotely. Option: cover with just a “Reset” blue pushbutton.
- An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor ⁽¹⁾.

Ranges:

- 8 partially pre-equipped enclosures to build-up 3P motor starters from 2.2 to 15 kW (6 to 35 AAC-3)
- Choice of 5 coils for LE4K●●, 12 coils for LE4D●●, for control with different AC voltages.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529:
 - IP65, IK09 for LE4KIP65,
 - IK07 for LE4D,
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: LE4K and LE4D polycarbonate ⁽²⁾.

Included:

- 1 fuse carrier with external side handle
- 1 pre-wired LC1K or LC1D contactor
- 2 Harmony XB5 pushbuttons.



Direct-on-line starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3						Max. current lth up to	Fuses to be fitted by the customer		Basic reference, to be completed by adding the voltage code ^{(3) (4)}	Weight kg	Overall dimensions ⁽⁵⁾ WxHxD mm
220 V	380 V	415 V	440 V	500 V	660 V		Size	Type aM			
230 V	400 V				690 V	A	A				
kW	kW	kW	kW	kW	kW	A	A		kg	mm	
1.5	2.2	2.2	3	–	–	6	10 x 38	10	LE4K065●●	1.450	206x165x146
2.2	4	4	4	–	–	9	10 x 38	12	LE4K095●●	1.450	206x165x146
									or LE4D09●● ⁽⁶⁾	1.960	217x348x175.5
2.2	4	4	4	5.5	–	9	10 x 38	12	LE4D09●●	1.960	217x348x175.5
3	5.5	5.5	5.5	7.5	–	12	10 x 38	16	LE4D12●●	1.960	217x348x175.5
4	7.5	9	9	10	–	18	10 x 38	20	LE4D18●●	2.200	217x348x175.5
5.5	11	11	11	15	–	25	10 x 38	25	LE4D25●●	2.200	217x348x175.5
7.5	15	15	15	18.5	18.5	26.5	14 x 51	32	LE4D35●●	5.190	217x348x175.5

Voltages code ⁽⁴⁾

Volts	24	48	110	115	120	220	230	240	380	400	415	440
~ 50/60 Hz												
LE4D	B7	E7	F7	FE7	G7	M7	P7	U7	Q7	V7	N7	R7
LE4K	–	–	–	–	–	M7	P7	U7	Q7	V7	–	–

Supply voltages between 380 and 440 V (codes Q7, V7, N7 or R7): pre-wired control circuit between phases.

Other supply voltages: control circuit must be wired by the customer.

⁽¹⁾ LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽³⁾ LE4D●●● (with P7 and V7 coil) with no pushbutton on cover: add “A04” to product reference (example: LE4D25V7A04).

LE4D●●● (with P7 and V7 coil) with overload “Reset” blue pushbutton only on cover: > add “A05” to full product reference.

⁽⁴⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

⁽⁵⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

⁽⁶⁾ Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.

TeSys Control

Enclosed standard starters / Reverser / to be completed with LR2K, Deca ⁽¹⁾ overload relays

Product references



LE2K09●●●



LR2K●●



LE2D12●●●



LRD●●

Reverse Control + Isolation + Protection against Overloads

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
 - by black I-II position spring return selector, red STOP/RESET pushbuttons for LE2K●● starters
 - by black ON ↑ , ON ↓ pushbuttons, red STOP/RESET pushbutton for LE2D●● starters
 - Motor protection against overload: manual reset with the red pushbutton or remotely.
- An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Ranges:

- for 3P motors from 4 to 30 kW (9 to 65 A AC-3), in 11 ranges of reverser starters
- Choice of up to 7 AC coils voltages (depending on starter) for control supply circuit.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529: IP65, IK07 for LE2D09●●●D35, IK09 for LE2K and LE●D40A●●●D65A,
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: LE2K and LE●D09●●●D35 polycarbonate ⁽²⁾
- LE●D40A●●● D65A steel sheet.

Included:

- 2 pre-wired LC1K or LC1D contactor
- 3 Harmony XB5 pushbuttons - or -1 Harmony XB5 pushbutton + 1 Harmony XB5 switch.

Reversing starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Maximum current lth up to	Basic reference, to be completed by adding the voltage code ⁽³⁾	Weight	Overall dimensions ⁽⁴⁾ WxHxD
220 V	380 V	415 V	440 V	500 V	660 V	690 V				
kW	kW	kW	kW	kW	kW	kW	A		kg	
1.5	2.2	2.2	3	-	-	-	6	LE2K065●●	1.080	175x165x146
2.2	4	4	4	-	-	-	9	LE2K095●●	1.080	175x165x146
-	-	-	-	5.5	5.5	-	9	LE2D09●● ⁽⁵⁾	2.100	101x201x153.5
-	-	-	-	5.5	5.5	-	9	LE2D09●●	2.100	101x201x153.5
3	5.5	5.5	5.5	7.5	7.5	-	12	LE2D12●●	2.100	101x201x153.5
4	7.5	7.5	7.5	9	10	-	17	LE2D18●●	2.410	101x201x153.5
5.5	11	11	11	15	15	-	22	LE2D25●●	2.570	101x201x153.5
7.5	15	15	15	18.5	18.5	-	26.5	LE2D35●●	4.100	101x201x153.5
11	18.5	22	22	22	30	-	40	LE2D40A●●	5.270	200x300x174
15	22	25	30	30	33	-	50	LE2D50A●●	5.470	200x300x174
18.5	30	37	37	37	37	-	65	LE2D65A●●	5.470	200x300x174

Coil voltage codes ⁽³⁾

Volts ~ 50/60 Hz	24	48	110	115	120	220	230	240	380	400	415	440
LE2D40A to D65A	-	-	-	FE7	-	-	P7	-	Q7	-	-	-
LE2D09 to D35	B7	-	-	-	-	M7	P7	U7	Q7	V7	N7	-
LE2K	-	-	-	-	-	M7	P7	U7	Q7	V7	-	-

⁽¹⁾ LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽³⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

⁽⁴⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

⁽⁵⁾ Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.



TeSys Control

Enclosed standard starters / DOL / to be completed with LR2K, Deca ⁽¹⁾ overload relays

Product references

Enclosed starters



Reverse Control + Isolation + Protection against Short circuits and Overloads

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
 - LE8K●●starters, by white ↑, black ↓, red Stop/Reset pushbuttons
 - LE8D●● starters, by black I-II position spring return selector, red Stop/Reset pushbutton
 - Option: no pushbutton on cover
 - Circuit disconnection by side black handle
 - Protection against short circuits by NFC fuses type aM (to be ordered separately)
 - Motor protection against overload: manual reset with the red pushbutton or remotely. LE8D option: cover with just a "Reset" blue pushbutton.
- An LR2K or LRD overload relay of the required rating must be ordered separately and wired at bottom of a the contactor.

Ranges:

- 8 partially pre-equipped enclosures to build-up 3P motor reversers from 2.2 to 15 kW (6 to 35 A AC-3)
- Choice of 3 coils for control with different AC voltages.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529: IP65, IK09 for LE8KIP65, IK07 for LE8D
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: LE8K and LE8D09●●●D35 polycarbonate ⁽²⁾.

Included:

- 1 fuse carrier with external side handle
- 2 pre-wired LC1K or LC1D contactors
- 3 Harmony XB5 pushbuttons - or -1 Harmony XB5 pushbutton + 1 Harmony XB5 switch.



Reversing starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Maximum current I _{th} up to	Fuses to be fitted by the customer		Basic reference, to be completed by adding the voltage code ^{(3) (4)}	Weight kg	Overall dimensions ⁽⁵⁾ WxHxD
220 V	380 V	415 V	440 V	500 V	660 V 690 V	Size		Type aM				
kW	kW	kW	kW	kW	kW	A		A				
1.5	2.2	2.2	3	-	-	6	10 x 38	10	LE8K065●●	1.600	206x165x146	
2.2	4	4	4	-	-	9	10 x 38	12	LE8D09●● ⁽⁶⁾	3.550	217x348x182	
-	-	-	-	5.5	-	9	10 x 38	12	LE8D09●●	3.550	217x348x182	
3	5.5	5.5	5.5	7.5	-	12	10 x 38	16	LE8D12●●	3.550	217x348x182	
4	7.5	9	9	10	-	17	10 x 38	20	LE8D18●●	3.700	217x348x182	
5.5	11	-	-	-	-	22	10 x 38	25	LE8D25●●	4.670	217x348x182	
7.5	15	15	15	18.5	18.5	26.5	14 x 51	32	LE8D35●●	5.800	217x348x182	

Voltage codes ⁽⁴⁾

Volts ~ 50/60 Hz	24	48	110	115	120	220	230	240	380	400	415	440
LE8 K, LE8 D	-	-	-	-	-	-	P7	-	Q7	V7	-	-

⁽¹⁾ LR2K, LRD overload relay selection: product references page A1/33, more details in chapter B11.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽³⁾ LE8K●●●●●, LE8D●●●●● (with P7 and V7 coil) with no pushbutton on cover: add "A04" to product reference (example: LE8K065P7A04, LE8D25V7A04) LE4D●●●● (with P7 and V7 coil) with only one pushbutton on cover: overload "Reset" blue pushbutton > add "A05" to full product reference.

⁽⁴⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

⁽⁵⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

⁽⁶⁾ Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.

TeSys Control

Enclosed standard starters / Star-delta / to be completed with Deca ⁽¹⁾ overload relays

Product references



Star-delta Control + Protection against Overload

- Star-delta starting of 3-phase motor: ON by green pushbutton, OFF by red pushbutton. Option: no pushbutton on cover
- Maximum operating rate: 30 starts/hour.
- Maximum starting time: 30 seconds.
- Delay of 40 ms ±15 ms at changeover by LAD S2 timer on delta contactor to provide sufficient time for star contactor to break.
- Motor protection against overload: manual reset with the red pushbutton or remotely.

An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Range:

- 4 partially pre-equipped enclosures to build-up 3P motor starters from 7.5 to 30 kW.
- Choice of 7 coils for control with different AC voltages.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529: IP65, IK07
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: polycarbonate ⁽²⁾.

Included:

- 3 pre-wired LC1D contactors
- 2 Harmony XB5 pushbuttons.

Star-delta starters

Standard power ratings of squirrel cage motors Mains voltage - delta connection				Basic reference, to be completed by adding the voltage code ⁽³⁾ ⁽⁴⁾	Weight	Overall dimensions ⁽⁵⁾ WxHxD
220 V	380/400 V	415 V	440 V			
kW	kW	kW	kW		kg	
4	7.5	7.5	7.5	LE3D09●●	3.650	186x348x175.5
5.5	11	11	11	LE3D12●●	3.650	186x348x175.5
11	18.5	22	22	LE3D18●●	3.750	186x348x175.5
11	22	26	26	LE3D35●●	5.160	186x348x175.5

Voltage codes ⁽⁴⁾

Volts ~ 50/60 Hz	24	220	230	240	380	400	415
LE3 D	B7	M7	P7	U7	Q7	V7	N7

⁽¹⁾ LRD overload relay selection: product references page A1/33, more details in chapter B11 - Select appropriate overload relay for setting at 0.58 of the full load rated motor current.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽³⁾ LE3D●●●● (with P7 and V7 coil) with no pushbutton on cover: add "A04" to product reference (example: LE3D18P7A04).

⁽⁴⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

⁽⁵⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.



TeSys Control

Enclosed standard starters / Star-delta / to be completed with Deca ⁽¹⁾ overload relays

Product references

Enclosed starters



LE6D●●●●



LRD●●

Star-delta Control + Disconnection + Protection against Short circuits and Overloads

- Star-delta starting of 3-phase motor: ON by green pushbutton, OFF by red pushbutton. Options: no pushbutton, "Reset" pushbutton only
- Maximum operating rate: 30 starts/hour.
- Maximum starting time: 30 seconds.
- Delay of 40 ms ±15 ms at changeover by LAD S2 timer on delta contactor to provide sufficient time for star contactor to break.
- Circuit disconnection by side black handle
- Protection against short circuits by NFC fuses type aM (to be ordered separately)
- Motor protection against overload: manual reset with the red pushbutton or remotely.

An LRD overload relay of the required rating must be ordered separately and wired at bottom of the contactor.

Range:

- 4 partially pre-equipped enclosures to build-up 3P motor starters from 7.5 to 30 kW choice of 7 coils for control with different AC voltages.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection according IEC 60529: IP65, IK07
- Ambient air temperature in operation -5 to +40°C
- Operating position: same that as contactors
- Material: polycarbonate ⁽²⁾.

Included:

- 1 fuse carrier with external side handle
- 3 pre-wired LC1D contactors
- 2 Harmony XB5 pushbuttons.



Star-delta starters								
Standard power ratings of squirrel cage motors				Fuses to be fitted by the customer		Basic reference, to be completed by adding the voltage code ⁽³⁾	Weight	Overall dimensions ⁽⁴⁾ WxHxD
Mains voltage - delta connection				Size	Type			
220 V	380/400 V	415 V	440 V		aM		kg	
kW	kW	kW	kW					
4	7.5	7.5	7.5	10 x 38	20	LE6D09●●	3.900	217x348x175.5
5.5	11	11	11	10 x 38	25	LE6D12●●	3.900	217x348x175.5
11	18.5	22	22	14 x 51	40	LE6D18●●	4.850	217x348x175.5

Voltage codes			
Volts	24	230	400
~ 50/60 Hz			
LE6 D	B7	P7	V7

⁽¹⁾ LRD overload relay selection: product references page A1/33, more details in chapter B11 - Select appropriate overload relay for setting at 0.58 of the full load rated motor current.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

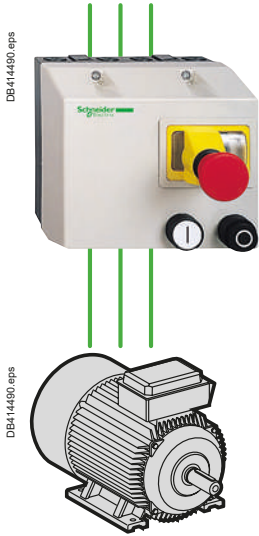
⁽³⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

⁽⁴⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

TeSys Control

Enclosed safety starters

Introduction & selection table



Range of pre-assembled safety motor starters, with mushroom pushbuttons, protection and control components in a robust casing

They can be fixed on a wall, on a panel, or on the chassis of a machine. They provide the operator with safety machine controls complying with IEC 60204-1.

With numerous advantages to meet OEM's most common needs

- IEC
- Multiple ratings and sizes
- IP55
- IK07
- Pre-wired

Safety starters

They provide similar functions as standard starters but also include emergency stops to comply with IEC 60204-1 machine safety standards.

Enclosed starters

Selection in 2 steps

1 Identify your need (on a single line) in the **Selection criteria** area (example: Load 5 kW – Visible circuit isolation, ON/OFF control with short circuit / overload protection)

2 Choose your **Solutions** by adding column contents, note the radical of the product references (example: LG1D)

Selection criteria						
Load Power (kW) / 400 V supply	Direct starter ON/OFF	Reverser ON/REVERSE/OFF	Short circuit / overload protection	Power circuit isolation	Visible isolation by rotary switch	Isolated control circuit by transfo
0.06...4	●		●	●		
4 ... 9						
0.06... 4	●		●	●	●	
4... 9						
0.06... 4	●		●	●		●
0.06... 5.5		●	●	●		
0.06 ... 4		●	●	●		●
0.06 ... 15	●		●	●		

Solutions						See page	
LG7K							A1/18
LG7D							A1/18
	LG1K						A1/19
	LG1D						A1/19
		LJ7K					A1/20
			LG8K				A1/21
				LJ8K			A1/22
					GV2MCK04 GV2ME GV2AX		A1/23

TeSys Control

Enclosed safety starters / DOL / Ready-to-use

Product references

Enclosed starters



LG7K06



LG7K09, LG7D

For Control + Isolation + Short circuit / Overload Protection

Enclosed safety motor starters complying with IEC 60204-1 "Safety of machinery" standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Emergency stop
- Electrical circuit isolation, lockable (from LG7K09) with up to 3 padlocks
- Short circuit protection
- Overload protection
- Undervoltage protection (LG7K06: with additional undervoltage release module). Switching back on power supply after tripping must be a deliberate action.

Range:

- 12 pre-equipped enclosed safety starters from 0.06 to 9 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate (1).

Included:

- 1 GV2ME thermal magnetic circuit breaker (with mushroom emergency stop with LG7K06) (2)
- 1 LC1K or LC1D pre-wired contactor
- 1 Harmony emergency stop pushbutton (from LG7K09)
- 2 Harmony XB5 pushbuttons.
- 1 GVAX undervoltage release module (from LG7K09).

Additional GVAX●● undervoltage release module for LG7K06 – to be ordered separately.

Additional GV2SN●● Indicator light – to be ordered separately.

Non-reversing starters (with pushbutton control of isolation)

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker Setting range of thermal trips	Dust & damp protected starter Basic reference, to be completed by adding the voltage code (3)	Weight	Overall dimensions (4) WxHxD
220/230 V	400/415 V	440 V	A		kg	
–	0.06	0.06	0.16...0.25	LG7K06●●02	1.300	175x165x177
0.06	0.09	0.12	0.25...0.40	LG7K06●●03	1.300	175x165x177
–	0.18	0.18	0.40...0.63	LG7K06●●04	1.300	175x165x177
0.12	0.25	0.37	0.63...1	LG7K06●●05	1.300	175x165x177
0.25	0.55	0.55	1...1.6	LG7K06●●06	1.300	175x165x177
0.37	0.75	1.1	1.6...2.5	LG7K06●●07	1.300	175x165x177
0.75	1.5	1.5	2.5...4	LG7K06●●08	1.300	175x165x177
1.1	2.2	3	4...6.3	LG7K06●●10	1.300	175x165x177
1.5	4	4	6...10	LG7K09●●14	1.450	175x165x177
3	5.5	5.5	9...14	LG7D12●●16	1.600	175x165x177
4	7.5	9	13...18	LG7D18●●20	1.630	175x165x177
4	9	9	17...23	LG7D18●●21	1.630	175x165x177

Voltage codes (3)

Volts ~ 50/60 Hz	24	220/230	230	380/400	400	400/415 for LG7K)
LG7K, LG7D	B7	M7	P7	Q7	V7	N7

(1) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

(2) **LG7K09, D12, D18**: the Emergency Stop function is performed by an undervoltage trip module acting on the circuit breaker. This circuit breaker is always pre-wired for use on 380/400/415 V 50 Hz supply.

For a 60 Hz supply, please consult your Regional Sales Office.

(3) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

(4) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.



LG1K065

For Control + Visible Isolation + Short circuit / Overload Protection

Enclosed safety motor starters complying with IEC 60204-1 "Safety of machinery" standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
- Emergency stop
- Electrical circuit isolation, lockable with up to 3 padlocks
- Short circuit protection
- Overload protection
- Undervoltage protection (with additional undervoltage release module). Switching back on power supply after tripping must be a deliberate action.

Range:

- 12 pre-equipped enclosed safety starters from 0.06 to 9 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529 : IP55, IK07
- Ambient air temperature in operation -5 to + 40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate ⁽¹⁾
- Enclosure cannot be opened when energized in position "I".

Included:

- 1 GV2ME thermal magnetic circuit breaker
- 1 LC1K (LG1K starters) or LC1D (LG1D starters) pre-wired contactor
- Switch with rotary red/yellow handle for isolation and emergency
- 2 Harmony XB5 pushbuttons.

Additional GVAX●● undervoltage release module – to be ordered separately.
Additional GV2SN●● indicator light – to be ordered separately.

Non-reversing starters (with rotary operator for control of isolation) Enclosure cannot be opened when energised in position "I".

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker Setting range of thermal trips	Dust & damp protected starter Basic reference, to be completed by adding the voltage code ⁽²⁾	Weight	Overall dimensions ⁽³⁾ WxHxD
220/230 V	400/415 V	440 V	A		kg	
–	0.06	0.06	0.16...0.25	LG1K065●●02	0.970	175x165x165
0.06	0.09	0.12	0.25...0.40	LG1K065●●03	0.970	175x165x165
–	0.18	0.18	0.40...0.63	LG1K065●●04	0.970	175x165x165
0.12	0.25	0.25	0.63...1	LG1K065●●05	0.970	175x165x165
0.25	0.55	0.55	1...1.6	LG1K065●●06	0.970	175x165x165
0.37	0.75	1.1	1.6...2.5	LG1K065●●07	0.970	175x165x165
0.75	1.5	1.5	2.5...4	LG1K065●●08	0.970	175x165x165
1.1	2.2	3	4...6.3	LG1K065●●10	0.970	175x165x165
1.5	4	4	6...10	LG1K095●●14	1.120	175x165x165
3	5.5	5.5	9...14	LG1D122●●16	1.270	175x165x165
4	7.5	9	13...18	LG1D182●●20	1.290	175x165x165
4	9	9	17...23	LG1D182●●21	1.290	175x165x165

Voltage codes ⁽²⁾

Volts ~ 50/60 Hz	220/230	230	380/400	400	400/415 (for LG1K)
LG1K, LG1D	M7	P7	Q7	V7	N7

⁽¹⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽²⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

⁽³⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.



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LJ7K06

Enclosed starters

For Control + Isolation + Short circuit / Overload Protection, with isolated 24 V control circuit

Enclosed safety motor starters complying with IEC 60204-1 "Safety of machinery" standards.

- ON/OFF motor starters: 1-way rotation control of 3-phase motor
 - Emergency stop ⁽¹⁾
 - Electrical circuit isolation, lockable on LJ7K09 with up to 3 padlocks
 - Short circuit protection
 - Overload protection
 - Protection against voltage drops for LJ7K09. For LJ7K06, a GVAX●● undervoltage trip may be added
 - Possible signaling with GV2SN●● indicator (to be ordered separately).
- Switching back on power supply after tripping must be a deliberate action.

Range:

- 9 pre-equipped enclosed safety starters from 0.06 to 4 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (U_e) 690 V
- Operating position: same that as contactors
- Material: polycarbonate ⁽²⁾.

Included:

- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn),
- 1 LC1K pre-wired contactor
- 2 Harmony XB5 pushbuttons
- 1 Integral transformer: 400/24 V, 25 VA
- 1 GVAX undervoltage release module (with LJ7K09).

Additional GVAX●● undervoltage release module for LJ7K06 - to be ordered separately.

Additional GV2SN●● indicator light – to be ordered separately.

- Terminal allowing the connection of a volt-free contact, if required, in the control circuit.

Non-reversing motor starters with integral transformer, pre-wired for operation on a 3-phase 380 to 400 V 50 Hz supply (with pushbutton control of isolator function)

Standard power ratings of 3-phase motors 50 Hz in category AC-3	Circuit breaker	Dust and damp protected starter	Weight	Overall dimensions ⁽⁵⁾ WxHxD
380/400 V	Setting range of thermal trips	Reference ^{(3) (4)}	kg	
kW	A			
0.06	0.16...0.25	LJ7K06Q702	2.270	175x165x177
0.09	0.25...0.40	LJ7K06Q703	2.270	175x165x177
0.25	0.63...1	LJ7K06Q705	2.270	175x165x177
0.55	1...1.6	LJ7K06Q706	2.270	175x165x177
0.75	1.6...2.5	LJ7K06Q707	2.270	175x165x177
1.5	2.5...4	LJ7K06Q708	2.270	175x165x177
2.2	4...6.3	LJ7K06Q710	2.270	175x165x177
4	6...10	LJ7K09Q714	2.270	175x165x146

Variants (pre-assembled) ⁽⁴⁾

Description	Variants available for starter	Suffix to be added to the starter reference ⁽⁶⁾
With Emergency Stop No control pushbuttons	LJ7K06Q705...K09Q714	A04
With padlocking facility (fitted as standard on LJ7 K09)	LJ7K06Q705...K06Q710	A29
Without circuit breaker ⁽⁸⁾ (or undervoltage release voltage)	LJ7	⁽⁷⁾
Without circuit breaker ⁽⁸⁾ With Emergency Stop No control pushbuttons	LJ7K09Q7	A04
Without circuit breaker ⁽⁸⁾ Without Emergency Stop (if the emergency stop is on the machine)	LJ7K09Q7	A39
Without circuit breaker ⁽⁸⁾ Without Emergency Stop No control pushbuttons	LJ7K09Q7	A04A39

⁽¹⁾ LJ7K06: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.

LJ7K09: the Emergency Stop function is performed by an undervoltage trip GVAX385, acting on the circuit breaker. This circuit breaker is always supplied pre-wired for use on 380/400 V 50 Hz.

⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽³⁾ In the reference, the voltage code Q7 (380/400 V) indicates the power supply voltage to which the starter will be connected, it being assumed that the contactor has a ~ 24 V coil (see control circuit scheme).

⁽⁴⁾ Some combinations of variants / control voltage may not be available. Please consult us.

⁽⁵⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

⁽⁶⁾ Example: LJ7K06Q705A04.

⁽⁷⁾ Delete the last 2 digits of the selected starter reference. Example: LJ7K06Q705 becomes LJ7K06Q7.

⁽⁸⁾ Circuit breaker to be ordered separately. References GV2ME: see chapter B6 "Circuit breakers".

TeSys Control

Enclosed safety starters / Reverser / Ready-to-use

Product references



LG8K06



LG8K09

For Control + Isolation + Short circuit / Overload Protection

For OEM, the enclosed safety motor reverser starters comply with IEC 60204-1 "Safety of machinery" standards.

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
- Emergency stop ⁽¹⁾
- Electrical circuit isolation, lockable on LG8K09 and LG8K12 with up to 3 padlocks
- Short circuit protection (switching back on power supply after tripping must be a deliberate action)
- Overload protection
- Protection against voltage drops for LG8K09, LG8K12. For LG8K06, a GVAX●● undervoltage trip may be added.
- Possible signaling with GV2SN●● indicator (to be ordered separately).

Range:

- 10 pre-equipped enclosed safety inverter starters from 0.06 to 5.5 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1 ⁽¹⁾
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate ⁽²⁾.

Included:

- 2 LC1K prewired contactors
- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn)
- 1 "Stop" black pushbutton + 1 2-position spring return selector switch "I – II"
- 1 GVAX undervoltage release module with LG8K09, LG8K12 (to be ordered separately for LG8K06).

Reversing starters (with pushbutton control of isolation)

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker Setting range of thermal trips	Dust & damp protected starter Basic reference, to be completed by adding the voltage code ⁽³⁾	Weight	Overall dimensions ⁽⁴⁾ WxHxD
220/230 V	400/415 V	440 V	A		kg	
–	0.06	0.06	0.16...0.25	LG8K06●●02	1.640	175x165x177
0.06	0.09	0.12	0.25...0.40	LG8K06●●03	1.640	175x165x177
–	0.18	0.18	0.40...0.63	LG8K06●●04	1.640	175x165x177
0.12	0.25	0.25	0.63...1	LG8K06●●05	1.640	175x165x177
0.25	0.55	0.55	1...1.6	LG8K06●●06	1.640	175x165x177
0.37	0.75	1.1	1.6...2.5	LG8K06●●07	1.640	175x165x177
0.75	1.5	1.5	2.5...4	LG8K06●●08	1.640	175x165x177
1.1	2.2	3	4...6.3	LG8K06●●10	1.640	175x165x177
1.5	4	4	6...10	LG8K09●●14	1.640	175x165x177
3	5.5	5.5	9...14	LG8K12●●16	1.640	175x165x177

Voltage codes ⁽³⁾

Volts ~ 50/60 Hz	220/230	380/400	400/415
	M7	Q7	N7

⁽¹⁾ **LG8K06**: the mushroom head type Emergency Stop acts mechanically on the circuit breaker. **LG8K09, LG8K12**: the Emergency Stop function is performed by an undervoltage trip, acting on the circuit breaker.

This circuit breaker is always supplied pre-wired for use on 380/400/415 V 50 Hz. For a 60 Hz supply, please consult your Regional Sales Office.

⁽²⁾ Avoid allowing the material to come into contact with strong bases (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽³⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

⁽⁴⁾ Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.



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LJ8K06

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LJ8K09



For Control + Isolation + Short circuit /Overload Protection, with isolated 24 V control circuit

For OEM, the enclosed safety motor reverser starters comply with IEC 60204-1 "Safety of machinery" standards.

- ON/REVERSE/OFF motor starters: 2-way rotation control of 3-phase motor
- Emergency stop ⁽¹⁾
- Electrical circuit isolation, lockable on LJ8K09 with up to 3 padlocks
- Short circuit protection (switching back on power supply after tripping must be a deliberate action)
- Overload protection
- Protection against voltage drops for LJ8K09. For LJ8K06, a GVAX●● undervoltage trip may be added
- Possible signaling with GV2SN●● indicator (to be ordered separately).

Range:

- 9 pre-equipped enclosed safety inverter starters from 0.06 to 4 kW.

Enclosures characteristics:

- Conforming to IEC 60947-1, IEC 60204-1
- Degree of protection according IEC 60529: IP55, IK07
- Ambient air temperature in operation -5 to +40°C
- Operational voltage (Ue) 690 V
- Operating position: same that as contactors
- Material: polycarbonate ⁽²⁾.

Included:

- 2 LC1K prewired contactors
- 1 GV2ME thermal magnetic circuit breaker with mushroom emergency stop (release on ¼ turn)
- 1 Integral transformer: 400/24 V, 25 VA
- 1 "Stop" black pushbutton + 1 2-position spring return selector switch "I – II"
- 1 GVAX undervoltage release module with LJ8K09 (to be ordered separately for LJ8K06).
- Terminal allowing the connection of a volt-free contact, if required, in the control circuit.

Reversing motor starters with integral transformer, pre-wired for operation on a 3-phase 380 to 400 V 50 Hz supply (with pushbutton control of isolator function)

Standard power ratings of 3-phase motors 50 Hz in category AC-3 380/400 V	Circuit breaker	Dust and damp protected starter	Weight	Overall dimensions ⁽⁵⁾ WxHxD
	Setting range of thermal trips	Reference ^{(3) (4)}		
kW	A		kg	
0.06	0.16...0.25	LJ8K06Q702	2.650	175x165x177
0.18	0.40...0.63	LJ8K06Q704	2.650	175x165x177
0.25	0.63...1	LJ8K06Q705	2.650	175x165x177
0.55	1...1.6	LJ8K06Q706	2.650	175x165x177
0.75	1.6...2.5	LJ8K06Q707	2.650	175x165x177
1.5	2.5...4	LJ8K06Q708	2.650	175x165x177
2.2	4...6.3	LJ8K06Q710	2.650	175x165x177
4	6...10	LJ8K09Q714	2.650	175x165x146

Variants (pre-assembled) ⁽⁴⁾

Description	Variants available for starter	Suffix to be added to the starter reference
Without circuit breaker ⁽⁷⁾ (or undervoltage release voltage)	LJ8	⁽⁶⁾

(1) LJ8K06: the mushroom head type Emergency Stop acts mechanically on the circuit breaker. LJ8K09: the Emergency Stop function is performed by an undervoltage trip GVAX385, acting on the circuit breaker. This circuit breaker is always supplied pre-wired for use on 380/400 V 50 Hz.

(2) Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

(3) In the reference, the voltage code Q7 (380/400 V) indicates the power supply voltage to which the starter will be connected, it being assumed that the contactor has a ~ 24 V coil (see control circuit scheme).

(4) Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.

(5) Dimensions of standard versions, comprising (if any) handle, pushbutton, indicator light.

(6) Delete the last 2 digits of the selected starter reference. Example: LJ8K09Q714 becomes LJ8K09Q7.

(7) Circuit breaker to be ordered separately. References GV2ME: see chapter B6 "Circuit breakers".

TeSys Control

Enclosure for safety starters / DOL / to be completed with ref. GV2ME, GVAX

Product references



GV2MCK04



GV2ME●●



GVAX●●●

GV2MCK04 enclosure is fitted with a mushroom pushbutton. It allows, with addition of a circuit breaker and undervoltage trip, the construction of a safety direct-on-line starter conforming INRS and VDE0113.

Enclosures characteristics:

- Conforming to IEC 60947-2; IEC 60947-4-1
- Degree of protection according IEC 60529: refer to selection chart
- Operational voltage (Ue) 690 V
- Material : polycarbonate ⁽¹⁾.

Enclosure

Enclosure for thermal-magnetic circuit breakers GV2ME

Type	Degree of protection	Possible no. of side mounting auxiliary contact blocks on GV2ME		Reference	Weight kg	Overall dimensions WxHxD
		LH side	RH side			
Surface mounting, double insulated with protective conductor. Sealable cover	IP55	1	1	GV2MCK04	0.420	93x147x145.5

GV2ME circuit breaker, GVAX undervoltage trip

Product references: page A1/32.

⁽¹⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).



Enclosed
starters

TeSys Control

Enclosures, components,
for customer assemblies
Spare parts



TeSys Control

Enclosures / To be completed with switch bodies

Product references

Enclosed starters



VCFXGE4



VBFXGE2



V0



V4

Empty enclosures with rotary handle

IP65 enclosure with red padlockable handle operator and yellow front plate (for mounting a main or Emergency Stop switch-disconnector)

lthe	For switch body	Nb. of possible add. module attachments	Reference ⁽¹⁾	Weight
A				
kg				
10...32	VN12, VN20 V02...V2	2	VCFXGE1	0.340
10...32	V02...V2	4	VCFXGE4	0.660
50...63	V3 - V4	3	VCFXGE2	0.660
100.... 140	V5 - V6	1	VCFXGE6	1.04

IP65 enclosure with black padlockable handle and black front plate (for mounting a main switch-disconnector)

10...32	VN12, VN20 V02...V2	2	VBFXGE1	0.340
10...32	V02...V2	4	VBFXGE4	0.660
50...63	V3-V4	3	VBFXGE2	0.660
100.... 140	V5 - V6	1	VBFXGE6	1.04

Switch bodies to fit VCFX, VBFX enclosures ⁽²⁾

Standard applications

Description	Rating	Reference	Weight
A			
kg			
3-pole switch-disconnectors	10	VN12	0.110
	16	VN20	0.110

High performance applications

Description	Rating	Reference	Weight
A			
kg			
3-pole switch-disconnectors	10	V02	0.200
	16	V01	0.200
	20	V0	0.200
	25	V1	0.200
	32	V2	0.200
	50	V3	0.500
	80	V4	0.500
	125	V5	0.900
175	V6	0.900	

⁽¹⁾ Enclosure not suitable in atmosphere contaminated with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽²⁾ For characteristics of switch-disconnectors, please consult your Regional Sales Office.

TeSys Control

Enclosures for DOL starters / To be completed

with ref. GV2ME, LC1K

Product references



LE1GVMEK, LE1GVMEKA59

Empty enclosures with sealing device

Composition	Reference
Insulating enclosure with GV2E01 sealing device	LE1GVMEK
Insulating enclosure with GV2E01 sealing device, neutral terminal	LE1GVMEKA59

Direct-on-line starters characteristics

(based on LE1GVMEK enclosure + GV2ME circuit breaker + LC1K contactor assemblies)

Functions / range / specificities:

- Circuit Isolation
- Protection against short circuit
- Motor protection: motor OFF in case of overload – manual reset with the black pushbutton.
- ON/OFF motor control
- Functions can be completed with optional components: remote control, signaling.

Enclosures characteristics:

- Conforming to IEC 60947-4-1 standard
- Degree of protection IP55 , according IEC 60529
- Ambient air temperature in operation -5 to +40°C
- Operating position: same as K series contactors
- Material: polycarbonate ⁽¹⁾.

■ 6 ratings of direct-on-line starters from 0.37 to 5.5 kW (400 V AC) can be realized, based the combinations of circuit breaker + contactor to be ordered separately:

- GV2ME thermal magnetic circuit breaker, of the required rating (see below)
- LC1K contactor, of the required rating (see below)
- optional accessories (indicating light, On pushbutton, sealing kit...).

Circuit breakers + contactors - Type 1 coordination ⁽²⁾

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic current 13 Irth	For customer assembly	
400/415 V	440 V	500 V			Motor circuit breaker Reference	Contactor Reference to be completed with the coil voltage code ⁽³⁾
kW	kW	kW	A	A		
0.37	0.37	0.37	1...1.6	22.5	GV2ME06	LC1K0610●●
0.55	0.55	0.55	-	-	-	-
-	-	0.75	-	-	-	-
0.75	0.75	-	1.6...2.5	33.5	GV2ME07	LC1K0610●●
-	1.1	1.1	-	-	-	-
1.1	-	1.5	2.5...4	51	GV2ME08	LC1K0610●●
1.5	1.5	2.2	-	-	-	-
2.2	2.2	-	4...6.3	78	GV2ME10	LC1K0610●●
-	3	3	-	-	-	-
3	-	4	6...10	138	GV2ME14	LC1K0910●●
4	4	5.5	-	-	-	-
5.5	5.5	7.5	9...14	170	GV2ME16	LC1K1210●●

Coil voltage codes

Volts	24	110	220/230	230	230/240	380/400
~ 50/60 Hz	B7	F7	M7	P7	U7	Q7
---	BW3	-	-	-	-	-

BW3 coil: low consumption (1.5 W), wide range (0.7...1.3 Uc) with integral suppression device as standard.

⁽¹⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽²⁾ Extract from Coordination tables see chapter A6.

⁽³⁾ Please check the availability of your variant in the index page A1/34. The SEARCH function of your viewer can be used.



GV2ME●●



LC1K0610●●



TeSys Control

Empty enclosures for standard starters

Product references

Enclosed starters

PB112264.eps



DE1DS1A04

PB112269.eps



DE1DS1A05

PB112269.eps



DE1DS1

PB112276.eps



DE1DS1A13

Empty enclosures for starters without isolating device

Head(s) mounted on cover	Designed for use with	Reference
Without	LE1D09 and D12	DE1DS1A04
	LE1D18...D35	DE1DS2A04
	LE2D09...D35	DE1DS2A04
1 flush blue head "R"	LE1D09 and D12	DE1DS1A05
	LE1D18...D35	DE1DS2A05
	LE2D09...D35	DE1DS2A05
1 flush green head "I" 1 projecting red head "O"	LE1D09 and D12	DE1DS1
	LE1D18...D35	DE1DS2
1 flush blue head "R" 1 switch with 2 fixed positions	LE1D09 and D12	DE1DS1A13
	LE1D18...D35	DE1DS2A13

TeSys Control

Empty enclosures for safety starters

Product references

PB11091 eps



DE1KS217A06

PB11086 eps



DE1KS217A06A37

Empty enclosures for security starters

Designed for use with	Head(s) mounted on cover	Add-on blocks	Reference
LG7	Without		DE1KS217A04

1 flush white head "I"
1 projecting black head "O"

DE1KS217A06

1 flush white head "I"
1 projecting black head "O"
1 head emergency stop

Padlocking devices

DE1KS217A06A37

Enclosed starters



TeSys Control

TeSys Control accessories for standard and safety starters

Product references

Enclosed starters



GV2V01



GV2K011



GV2K021



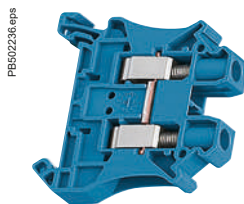
GV2K031



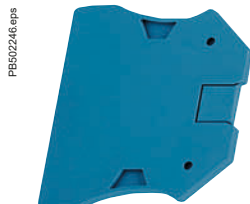
GV2K04



GV2E01 - GV2E02



NSYTRV62BL



NSYTRAC22BL



GV2CP21

Accessories					
Description		Sold in lots of	Unit reference	Weight kg	
Padlocking device ⁽⁶⁾ for GV2ME operator (padlocking is only possible in the "O" position)	1 to 3 padlocks Ø 4 to 8 mm	1	GV2V01	0.075	
Mushroom head Spring return ⁽²⁾ pushbutton Ø 40 mm, red, IP55		1	GV2K011	0.052	
Emergency stop Latching ⁽²⁾	Key release, key n° 455	1	GV2K021	0.160	
	Turn to release	1	GV2K031	0.115	
	Turn to release, padlockable	1	GV2K04 ⁽¹⁾	0.120	
Sealing kit	For enclosures and front plate	IP 55 for temperature between +5 °C and +40 °C	10	GV2E01	0.012
		IP 55 for temperature between -20 °C and +40 °C	10	GV2E02	0.012
Linery passthrough neutral terminal block – 6 mm ² 41 A single-level 1x1 screw		50	NSYTRV62BL	0.015	
End cover for Linery screw single-level terminal block		50	NSYTRAC22BL	0.003	

⁽¹⁾ Circuit breaker to be ordered separately. Commercial references of GV2ME01 to M22: see chapter B6 "Circuit breakers".

⁽²⁾ Supplied with IP55 GV2E01 sealing kit. To be fitted with enclosure GV2M●01.

⁽³⁾ Padlockable in "O" position using Ø 4 to 8 mm shank padlocks.

Separate front plate for GV2ME

Provides a sealing cover to GV2ME circuit breaker, on any kind of front panel.

Front plate			
Description		Reference	Weight kg
For direct control, through a panel, of a chassis mounted GV2ME	IP55	GV2CP21	0.800

TeSys Control

TeSys Control accessories for standard and safety starters

Product references

Enclosed starters



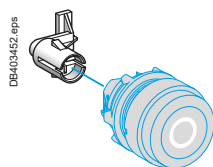
ZB5AA331



ZB5AL432



LAD9091



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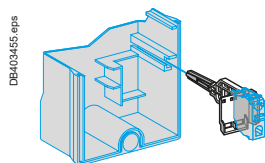
ZB5AD●



ZENL1111



LAD90909



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Heads for Start and Stop/Reset pushbuttons

Description	For use on	Unit reference
Flush, green "I" ⁽¹⁾	LE1, LE3, LE4, LE6 D09...D35	ZB5AA331
Projecting, red "O" ⁽¹⁾	LE●D09...D35	ZB5AL432
Adaptation kit for head ZB5AL432	LE1D09 and D12	LAD9091
	LE1D18...D35, LE2D09...D35	LAD91810
	LE3, LE4, LE6 and LE8 D09...D35	LAD9T4

Heads for Reset pushbuttons

Flush, blue "R" ⁽²⁾	LE●D09...D35	ZB5AA0
		+ ZBA639 ⁽³⁾
Adaptation kit for head ZB5AA0 + ZBA639	LE1D09 and D12	LAD9092
	LE1D18...D35, LE2D09...D35	LAD91810
	LE3, LE6, LE4 and LE8D09...D35	LAD9T4

Heads for selector switches

3-position stay put	LE1D09...D35●●A09	ZB5AD3
2-position stay put	LE1D09...D35●●A13	ZB5AD2
3-position spring return to centre	LE2D09...D35 LE8D09...D35	ZB5AD5

Contact blocks

1 N/O spring return	LE●D09...D35	ZENL1111
1 N/C spring return	LE●D09...D35	ZENL1121
Mounting for contact block	LE1D09 and D12	LAD90909
	LE1D18...D35, LE2, LE3, LE4, LE6 and LE8D09...D35	LAD91809

⁽¹⁾ Remember to order adaptation kit LAD9091 or LAD91810 or LAD9T4, depending on size.

⁽²⁾ Remember to order adaptation kit LAD9092 or LAD91810 or LAD9T4, depending on size.

⁽³⁾ Sold in lots of 10.

TeSys Control

Deca circuit breakers ref. GV2ME, undervoltage trips

Product references

Enclosed starters

PB121673.tif



GV2ME●●

Thermal magnetic circuit breakers, with screw clamp terminals

GV2ME with pushbutton control

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Setting range of thermal trips (2)	Magnetic tripping current I _d ± 20 %	Reference
400/415 V			500 V			690 V					
P	I _{cu}	I _{cs} (1)	P	I _{cu}	I _{cs} (1)	P	I _{cu}	I _{cs} (1)			
kW	kA	%	kW	kA	%	kW	kA	%	A	A	
–	–	–	–	–	–	–	–	–	0.1...0.16	1.5	GV2ME01
0.06	★	★	–	–	–	–	–	–	0.16...0.25	2.4	GV2ME02
0.09	★	★	–	–	–	–	–	–	0.25...0.40	5	GV2ME03
0.12	★	★	–	–	–	0.37	★	★	0.40...0.63	8	GV2ME04
0.18	★	★	–	–	–	–	–	–			
0.25	★	★	–	–	–	0.55	★	★	0.63...1	13	GV2ME05
0.37	★	★	0.37	★	★	–	–	–	1...1.6	22.5	GV2ME06
0.55	★	★	0.55	★	★	0.75	★	★			
–	–	–	0.75	★	★	1.1	★	★			
0.75	★	★	1.1	★	★	1.5	3	75	1.6...2.5	33.5	GV2ME07
1.1	★	★	1.5	★	★	2.2	3	75	2.5...4	51	GV2ME08
1.5	★	★	2.2	★	★	3	3	75			
2.2	★	★	3	50	100	4	3	75	4...6.3	78	GV2ME10
3	★	★	4	10	100	5.5	3	75	6...10	138	GV2ME14
4	★	★	5.5	10	100	7.5	3	75			
5.5	15	50	7.5	6	75	9	3	75	9...14	170	GV2ME16
–	–	–	–	–	–	11	3	75			
7.5	15	50	9	6	75	15	3	75	13...18	223	GV2ME20
9	15	40	11	4	75	18.5	3	75	17...23	327	GV2ME21
11	15	40	15	4	75	–	–	–	20...25	327	GV2ME22 (3)

GV2ME technical characteristics: see in chapter B6.

Undervoltage trip, INRS (can only be mounted on GV2ME)

Safety device for dangerous machines conforming to INRS and VDE0113

Side (1 block on RH side of circuit breaker GV2 ME)	Voltage	Frequency	Reference
110...115 V	50 Hz		GVAX115
	60 Hz		GVAX116
	127 V	60 Hz	GVAX115
220...240 V	50 Hz		GVAX225
	60 Hz		GVAX226
380...400 V	50 Hz		GVAX385
	60 Hz		GVAX386
415...440 V	50 Hz		GVAX415
	60 Hz		GVAX385

GVAX technical characteristics: see in chapter B6.

(1) As % of I_{cu}.

(2) The thermal trip setting must be within the range marked on the graduated knob.

(3) Maximum rating which can be mounted in enclosures GV2MC or MP, please consult your Regional Sales Office.

★ > 100 kA.

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GVAX●●●

TeSys Control

LR2K, Deca thermal overload relays

Product references



LR2K●●

Thermal overload relays - selection table

LR2K thermal overload relays can be mounted on all 3P LC1K contactors with screw clamp connectors.

Class 10 A (the standard specifies a tripping time of between 2 and 10 seconds at 7.2 In)

Relay setting range	Fuses to be used with selected relay Maximum rating Type			Reference
	aM	gG	BS88	
A	A	A	A	
0.11...0.16	0.25	0.5	–	LR2K0301
0.16...0.23	0.25	0.5	–	LR2K0302
0.23...0.36	0.5	1	–	LR2K0303
0.36...0.54	1	1.6	–	LR2K0304
0.54...0.8	1	2	–	LR2K0305
0.8...1.2	2	4	6	LR2K0306
1.2...1.8	2	6	6	LR2K0307
1.8...2.6	4	8	10	LR2K0308
2.6...3.7	4	10	16	LR2K0310
3.7...5.5	6	16	16	LR2K0312
5.5...8	8	20	20	LR2K0314
8...11.5	10	25	20	LR2K0316
10...14	16	32	25	LR2K0321
12...16	20	40	32	LR2K0322


LRD thermal overload relays can only be mounted on LC1D contactors of same size ratio and with screw clamp connectors.

Relay setting range (A)	Fuses to be used with selected relay			For use with contactor LC1	Reference
	aM (A)	gG (A)	BS88 (A)		
Class 10 A⁽¹⁾ for connection by screw clamp terminals or connectors					
0.10...0.16	0.25	2	–	D09...D38	LRD01
0.16...0.25	0.5	2	–	D09...D38	LRD02
0.25...0.40	1	2	–	D09...D38	LRD03
0.40...0.63	1	2	–	D09...D38	LRD04
0.63...1	2	4	–	D09...D38	LRD05
1...1.6	2	4	6	D09...D38	LRD06
1.6...2.5	4	6	10	D09...D38	LRD07
2.5...4	6	10	16	D09...D38	LRD08
4...6	8	16	16	D09...D38	LRD10
5.5...8	12	20	20	D09...D38	LRD12
7...10	12	20	20	D09...D38	LRD14
9...13	16	25	25	D12...D38	LRD16
12...18	20	35	32	D18...D38	LRD21
16...24	25	50	50	D25...D38	LRD22
23...32	40	63	63	D25...D38	LRD32
30...38	40	80	80	D32 and D38	LRD35



LRD●●

DE1DS1	KZ16	LE1D18N7A04	LE1M35N705
DE1DS1A04	KZ18	LE1D18P7	LE1M35N706
DE1DS1A05	KZ20	LE1D18P7A04	LE1M35N707
DE1DS1A13	KZ21	LE1D18P7A05	LE1M35N708
DE1DS2	KZ27	LE1D18P7A13	LE1M35N710
DE1DS2A04	KZ28	LE1D18Q7	LE1M35N712
DE1DS2A05	KZ30	LE1D18Q7A09	LE1M35N714
DE1DS2A13	KZ50	LE1D18R7	LE1M35N716
DE1KS217A04	KZ52	LE1D18U7	LE1M35N721
DE1KS217A06	KZ62	LE1D18V7	LE1M35N722
DE1KS217A06A29	KZ65	LE1D18V7A04	LE1M35P7
DE1KS217A06A37	KZ66	LE1D18V7A05	LE1M35P705
DE1KS217A29	KZ67	LE1D18V7A13	LE1M35P706
DE1KS217A29A37	KZ77	LE1D25B7	LE1M35P707
DE1KS217A37	KZ93	LE1D25F7	LE1M35P708
DE2DS2	LAD90909	LE1D25M7	LE1M35P710
DK1FB005	LAD9091	LE1D25M7A09	LE1M35P712
GC2530M5D	LAD9092	LE1D25N7	LE1M35P714
GV2CP21	LAD91809	LE1D25P7	LE1M35P716
GV2E01	LAD91810	LE1D25P7A04	LE1M35P721
GV2E02	LAD9T4	LE1D25P7A05	LE1M35P722
GV2E03	LC1KV7A80	LE1D25P7A13	LE1M35Q7
GV2K011	LE1D09B7	LE1D25Q7	LE1M35Q705
GV2K021	LE1D09E7	LE1D25Q7A09	LE1M35Q706
GV2K031	LE1D09F7	LE1D25R7	LE1M35Q707
GV2K04	LE1D09M7	LE1D25U7	LE1M35Q708
GV2MC01	LE1D09M7A04	LE1D25V7	LE1M35Q710
GV2MC02	LE1D09M7A13	LE1D25V7A04	LE1M35Q712
GV2MC03	LE1D09N7	LE1D25V7A13	LE1M35Q714
GV2MCK04	LE1D09N7A04	LE1D35B7	LE1M35Q716
GV2ME01	LE1D09P7	LE1D35E7	LE1M35Q721
GV2ME02	LE1D09P7A04	LE1D35F7	LE1M35Q722
GV2ME03	LE1D09P7A05	LE1D35M7	LE1M35R705
GV2ME04	LE1D09P7A09	LE1D35N7	LE1M35R706
GV2ME05	LE1D09P7A13	LE1D35P7	LE1M35R708
GV2ME06	LE1D09P7A13T	LE1D35P7A04	LE1M35R710
GV2ME07	LE1D09P7A95	LE1D35P7A05	LE1M35R714
GV2ME08	LE1D09P7T	LE1D35Q7	LE1M35R716
GV2ME10	LE1D09Q7	LE1D35R7	LE1M35R721
GV2ME14	LE1D09Q7A04	LE1D35U7	LE1M35R722
GV2ME16	LE1D09Q7A05	LE1D35V7	LE1M35U706
GV2ME20	LE1D09Q7A13	LE1D40AFE7	LE1M35U707
GV2ME21	LE1D09R7	LE1D40AP7	LE1M35U708
GV2ME22	LE1D09U7	LE1D40AQ7	LE1M35U710
GV2MP01	LE1D09U7A13	LE1D50AFE7	LE1M35U712
GV2MP02	LE1D09V7	LE1D50AP7	LE1M35U714
GV2MP03	LE1D09V7A04	LE1D50AP7A04	LE1M35U716
GV2MP04	LE1D09V7A09	LE1D50AQ7	LE1M35U721
GV2PC01	LE1D09V7A13	LE1D65AP7	LE1M35U722
GV2PC02	LE1D12E7	LE1D65AP7A04	LE1M35V7
GV2SN23	LE1D12F7	LE1D65AQ7	LE1M35V706
GV2SN24	LE1D12M7	LE1GVMEK	LE1M35V707
GV2SN33	LE1D12M7A04	LE1GVMEKA59	LE1M35V708
GV2SN34	LE1D12M7A09	LE1M35B705	LE1M35V710
GV2V01	LE1D12N7	LE1M35B706	LE1M35V712
GV3PC01	LE1D12P7	LE1M35B707	LE1M35V714
GV3PC02	LE1D12P7A04	LE1M35B710	LE1M35V716
GVAX115	LE1D12P7A05	LE1M35B712	LE1M35V721
GVAX116	LE1D12P7A13	LE1M35B714	LE1M35V722
GVAX225	LE1D12Q7	LE1M35B716	LE2D09M7
GVAX226	LE1D12R7	LE1M35F710	LE2D09N7
GVAX385	LE1D12U7	LE1M35M7	LE2D09P7
GVAX386	LE1D12U7A09	LE1M35M705	LE2D09Q7
GVAX415	LE1D12V7	LE1M35M706	LE2D09U7
KAD1PZ	LE1D12V7A04	LE1M35M707	LE2D09V7
KCC1Y	LE1D12V7A05	LE1M35M708	LE2D12B7
KZ101	LE1D12V7A09	LE1M35M710	LE2D12N7
KZ103	LE1D12V7A13	LE1M35M712	LE2D12Q7
KZ106	LE1D18E7	LE1M35M714	LE2D12U7
KZ13	LE1D18F7	LE1M35M716	LE2D12V7
KZ14	LE1D18M7	LE1M35M721	LE2D18M7
KZ15	LE1D18N7	LE1M35M722	LE2D18N7

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LE2D18P7	LE4D12V7A05	LG1K065Q703	LG7K06P708
LE2D18V7	LE4D18B7	LG1K065Q704	LG7K06P710
LE2D25M7	LE4D18F7	LG1K065Q705	LG7K06Q7
LE2D25N7	LE4D18M7	LG1K065Q706	LG7K06Q702
LE2D25P7	LE4D18N7	LG1K065Q706A37	LG7K06Q704
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LE2K065V7	LE4D25Q7	LG1K095M714	LG7K06V710
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LE3D12N7	LE6D12P7	LG7D12Q716	LG8K06M705
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LE4D09R7	LG1K065M707	LG7K06M707	LJ7K06Q705
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LE4D12P7A04	LG1K065P707	LG7K06N705	LJ7K06Q708A29
LE4D12P7A05	LG1K065P708	LG7K06N706	LJ7K06Q710
LE4D12Q7	LG1K065P710	LG7K06N707	LJ7K06Q710A04
LE4D12V7	LG1K065Q7	LG7K06N710	LJ7K09Q7
LE4D12V7A04	LG1K065Q702	LG7K06P704	LJ7K09Q714

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TeSys Control

Enclosed switch-disconnectors and motor starters

Product references

Enclosed
starters

LJ7K09Q714A04	V6	VCD0	VVE4
LJ7K09Q7A04A39	VBD0	VCD01	VZ0
LJ8K06Q702	VBD01	VCD02	VZ01
LJ8K06Q704	VBD02	VCD1	VZ02
LJ8K06Q705	VBD1	VCD2	VZ1
LJ8K06Q706	VBD2	VCDN12	VZ10
LJ8K06Q707	VBDN12	VCDN20	VZ11
LJ8K06Q707A04	VBDN20	VCF0	VZ12
LJ8K06Q708	VBF0	VCF01	VZ13
LJ8K06Q710	VBF01	VCF01GE	VZ14
LJ8K09Q7	VBF01GE	VCF01GEGP	VZ15
LJ8K09Q714	VBF02	VCF02	VZ16
LR2K0301	VBF02GE	VCF02GE	VZ17
LR2K0302	VBF0GE	VCF02GEGP	VZ17L127
LR2K0303	VBF1	VCF0GE	VZ17L69
LR2K0304	VBF1GE	VCF0GEGP	VZ18
LR2K0305	VBF2	VCF1	VZ2
LR2K0306	VBF2GE	VCF1GE	VZ20
LR2K0307	VBF3	VCF1GEGP	VZ26
LR2K0308	VBF3GE	VCF1YZ	VZ27
LR2K0310	VBF4	VCF2	VZ28
LR2K0312	VBF4GE	VCF2GE	VZ29
LR2K0314	VBF5	VCF3	VZ3
LR2K0316	VBF5GEN	VCF3GE	VZ30
LR2K0321	VBF6	VCF4	VZ31
LR2K0322	VBF6GEN	VCF4GE	VZ4
LRD01	VBFXGE1	VCF5	VZ45
LRD02	VBFXGE2	VCF5GEN	VZ7
LRD03	VBFXGE4	VCF6	VZ8
LRD04	VBFXGE6	VCF6GEN	VZ9
LRD05	VC1GUN	VCFN12GE	VZN05
LRD06	VC2GUN	VCFN20GE	VZN06
LRD07	VC3GUN	VCFN25GE	VZN08
LRD08	VC4GUN	VCFN32GE	VZN11
LRD10	VC5GUN	VCFN40GE	VZN12
LRD12	VC6GUN	VCFXGE1	VZN14
LRD14	VCCD0	VCFXGE2	VZN17
LRD16	VCCD01	VCFXGE4	VZN19
LRD21	VCCD02	VCFXGE6	VZN20
LRD22	VCCD1	VGP1	VZN26
LRD32	VCCD2	VGPCLIP1	VZN30
LRD35	VCCDN12	VN12	Z01
NSYTRAC22BL	VCCDN20	VN20	ZB5AA331
NSYTRV62BL	VCCF0	VVD0	ZB5AD2
V0	VCCF01	VVD1	ZB5AD3
V01	VCCF02	VVD2	ZB5AD5
V02	VCCF1	VVD3	ZB5AL432
V1	VCCF2	VVD4	ZENL1111
V2	VCCF3	VVE0	ZENL1121
V3	VCCF4	VVE1	
V4	VCCF5	VVE2	
V5	VCCF6	VVE3	

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Technical Data for Designers

Contents

Switch-disconnectors	A1/38 to A1/40
Direct-on-line starters	A1/41, A1/43 to A1/49
.....and A1/51	
Star-delta starters	A1/42 and A1/50
Starters for safety applications	A1/52 to A1/55

TeSys Control

Enclosed switch-disconnectors

Dimensions

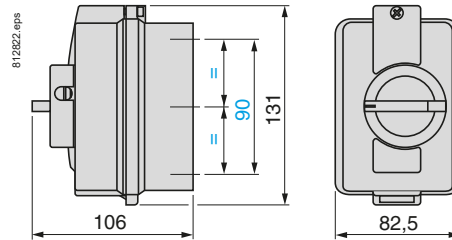
Enclosed starters

Ref.



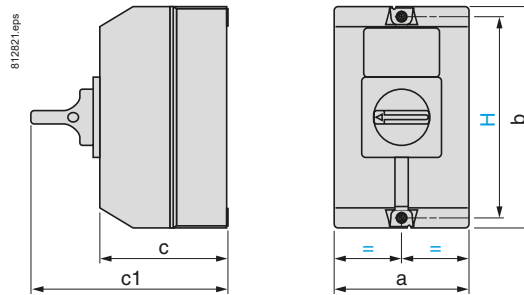
Dimensions

VCFN12GE to VCFN40GE



Cable glands: 2x ISO 20 top and bottom, 2x ISO 16 rear.

VCF or VBF02GE to 4GE, VCF●●GEGP and VCF●GEGP, VCFX or VBFXGE1 to GE4

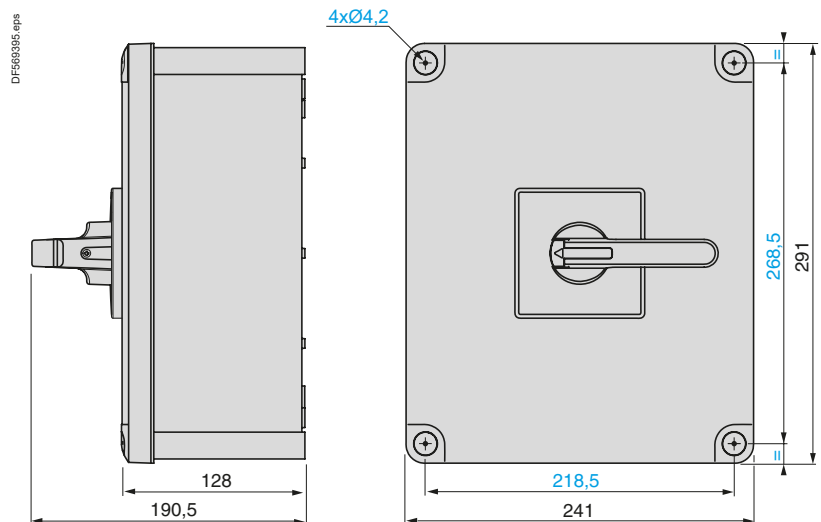


	a	b	c	c1	H
V●F02GE to V●F2GE, V●FXGE1 VCF●●GEGP and VCF●GEGP ⁽¹⁾	90	146	85	131	130
V●F3GE and V●F4GE ⁽²⁾	157	180	107	152	164
V●FXGE2 and V●FXGE4 ⁽²⁾	157	180	107	152	164

⁽¹⁾ Cable glands: 2x ISO 16 rear, 4x ISO 20/25 top and bottom.

⁽²⁾ Cable glands: 4x ISO 25/32 rear, 4x ISO 25/32 top and bottom.

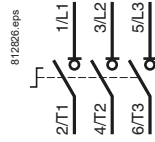
VCF or VBF5GEN and 6GEN



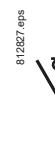
Schemes

Switch-disconnectors

Enclosed or switch bodies



Main pole module



Neutral pole module



Auxiliary contact blocks

VZ7



VZ20



VZN05



VZN06



TeSys Control

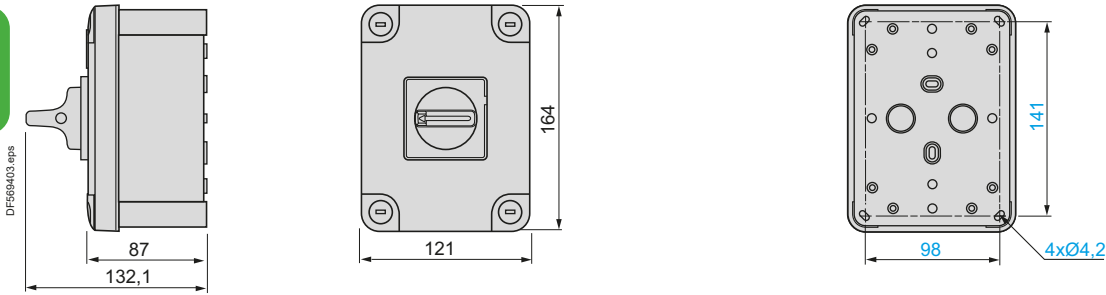
Enclosed switch-disconnectors / UL - CSA

Dimensions, schemes

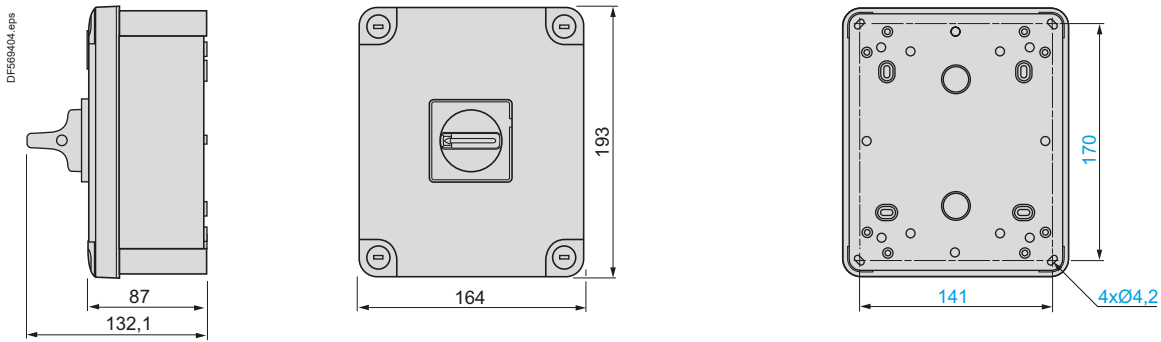
Enclosed starters

Dimensions

VC1GUN and VC2GUN

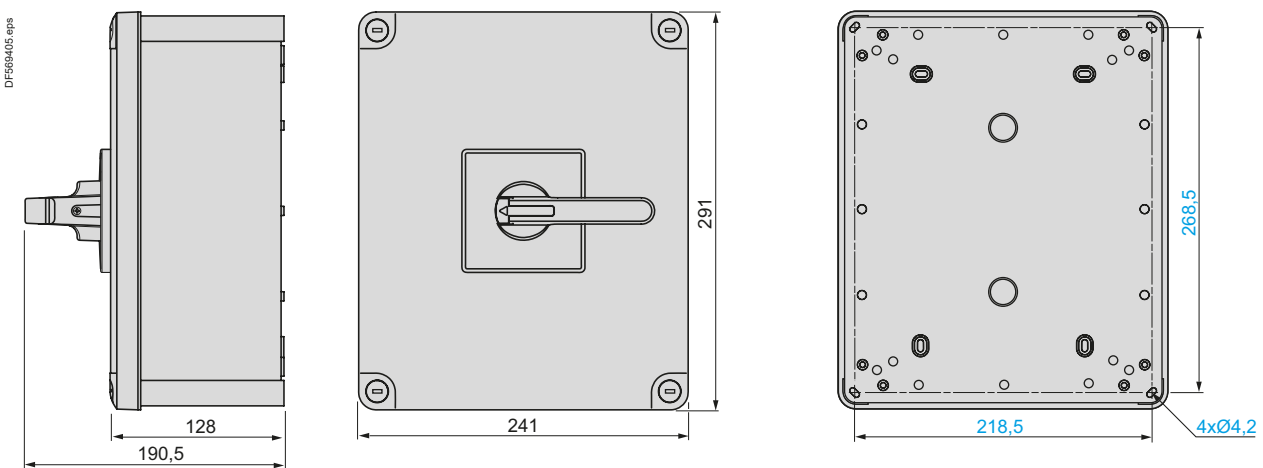


VC3GUN and VC4GUN



Ref.

VC5GUN and VC6GUN



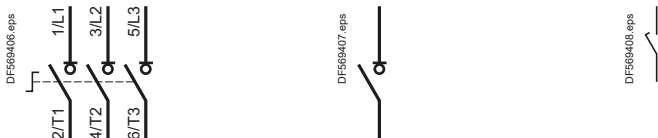
Schemes

Switch-disconnectors

Enclosed switch-disconnectors or switch bodies

Main pole module

Neutral pole module



Auxiliary contact block modules

VZ7

VZ20



References:
page A1/4

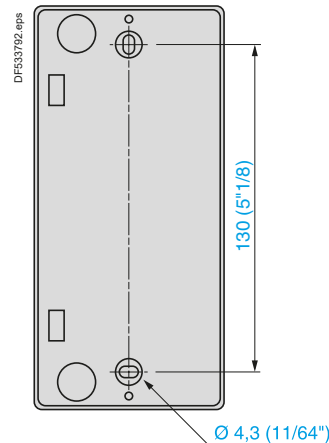
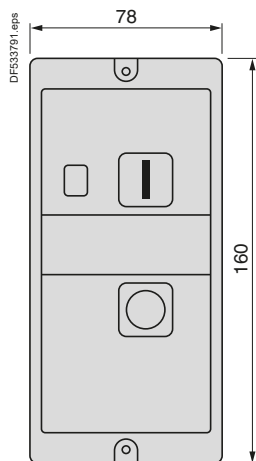
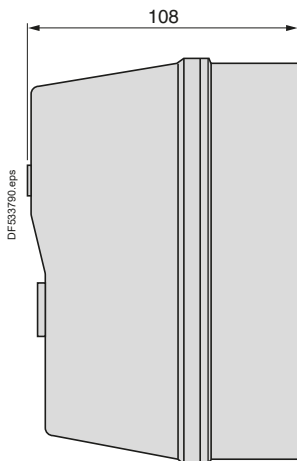
TeSys Control

Enclosed standard starters / DOL

Dimensions, schemes

Dimensions

LE1M35 ⁽¹⁾



Knock-outs or blanking plugs for cable glands

Enclosure type	At top		At bottom	
	PG	ISO	PG	ISO
LE1 M	2 x 13 to 2 x 21	2 x 20 or 2 x 25	2 x 13 to 2 x 21	2 x 20 or 2 x 25

(1) Can be mounted on machine panel or frame. Knock-outs for 4 x 13 P cable glands.

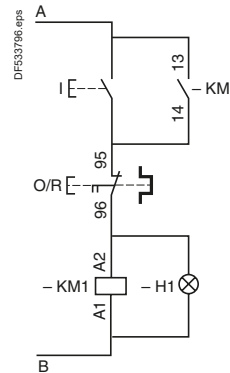
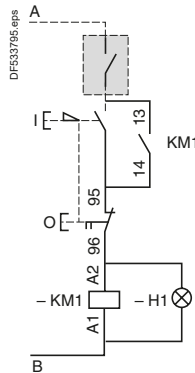
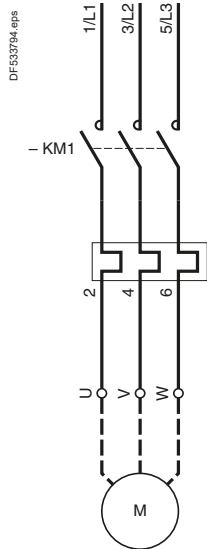
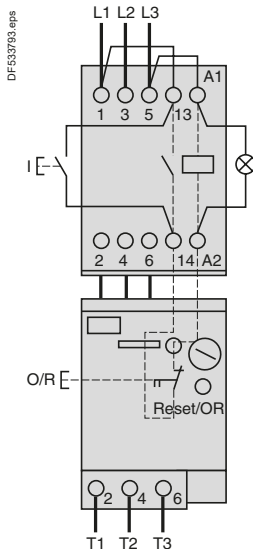
Schemes

LE1M35

Choice of type of control built into the product

Control by latching pushbuttons

Control by spring return pushbuttons



Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	For customer assembly	
Other voltages	All voltages (440 V max)	For customer assembly	

References:
page A1/7

TeSys Control

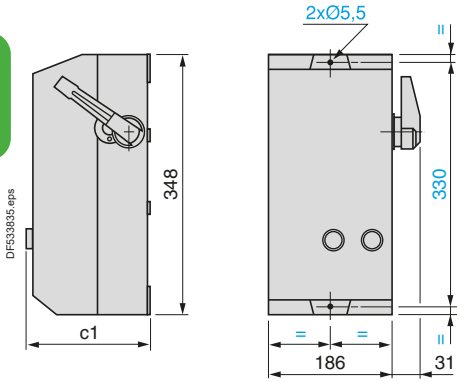
Enclosed standard starters / Star-delta

Dimensions, schemes

Enclosed starters

Dimensions

LE6D09...D18



	c1
Standard version	175.5
Variant A04	167
Variant A05	175.5

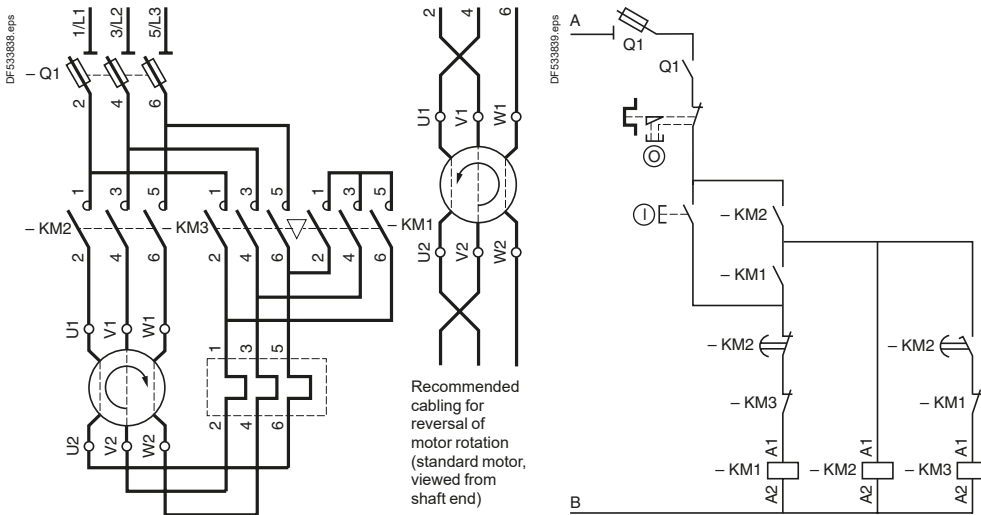
Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE6D09...D18	-	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40	-	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40

Ref.

Schemes

LE6D09...D18



Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral terminal
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	Terminal 1	Terminal 2
Other voltages	All voltages (600 V max)	For customer assembly	

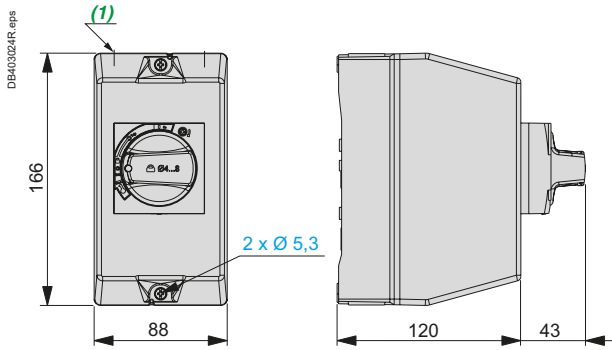
TeSys Control

Enclosed standard starters / DOL

Dimensions, schemes

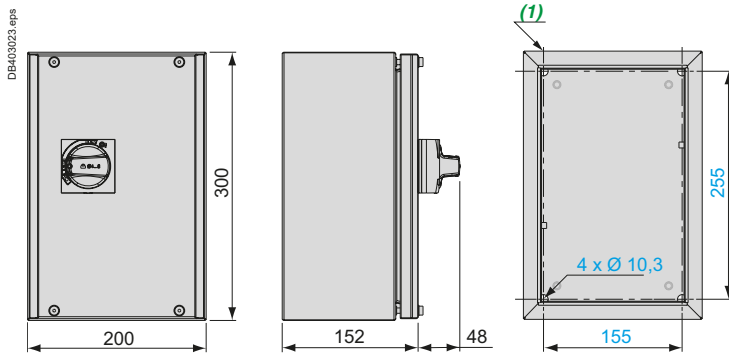
Dimensions

GV2PC●●



(1) Top face: 2 knock-outs for ISO20 cable glands.
Bottom face: 2 knock-outs for ISO20 cable glands.

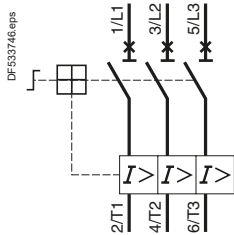
GV3PC●●



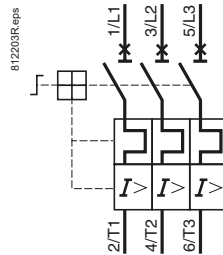
(1) Top face: 1 blanking plug for ISO32 cable gland.
Bottom face: 2 blanking plugs for ISO32 cable gland + 1 blanking plug for ISO20 cable gland.

Schemes

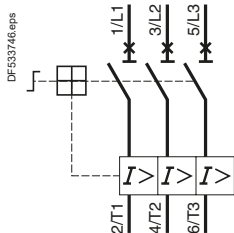
GV2L



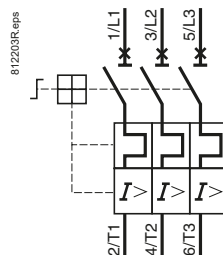
GV2P



GV3L



GV3P



TeSys Control

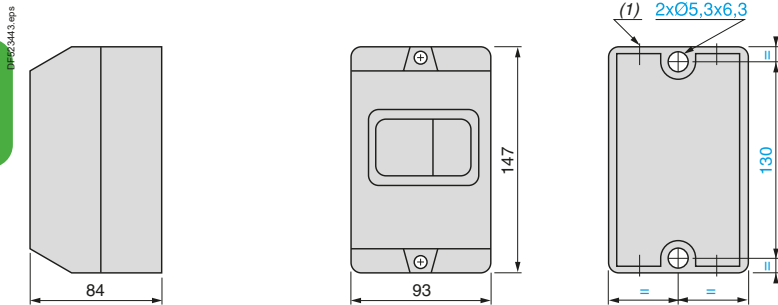
Enclosed standard starters / DOL

Dimensions, mounting

Enclosed starters

Dimensions

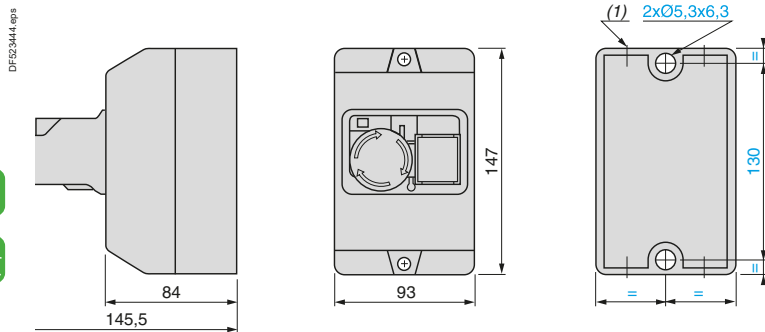
Surface mounting enclosure GV2MC0●



(1) Top face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.
Bottom face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.

Surface mounting enclosure GV2MCK04

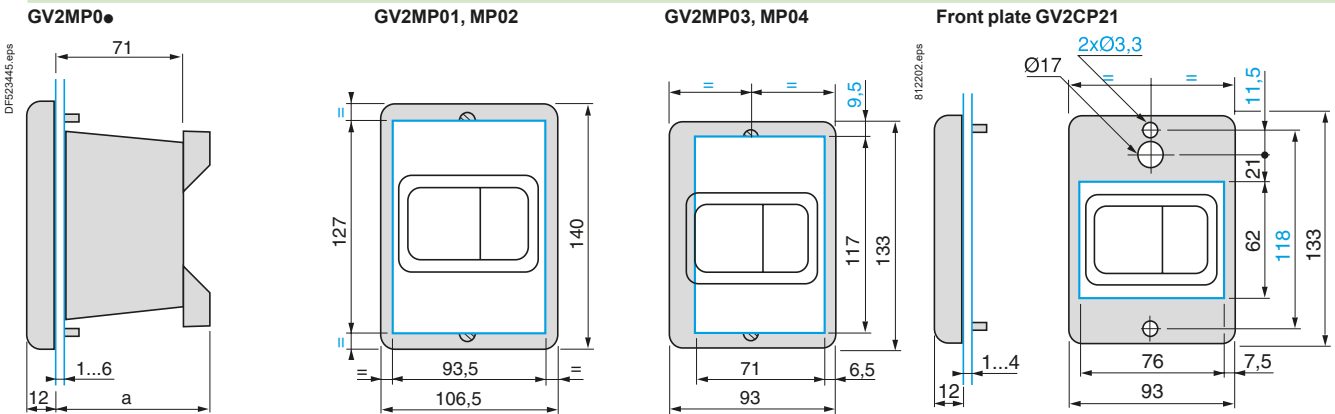
Ref.



(1) Top face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.
Bottom face: 2 knock-outs for ISO20/25 cable glands or Pg16 or 16mm conduits.

Mounting

Flush mounting enclosures GV2MP0● (panel cut-out)



GV2	a
MP01, MP02	—
MP03, MP04	86

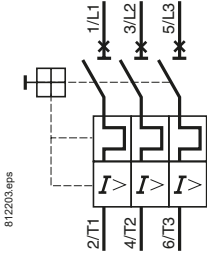
TeSys Control

Circuit breaker and auxiliaries / accessories

Schemes

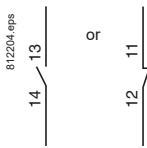
Schemes

GV2ME●●

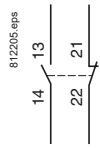


Instantaneous auxiliary contacts

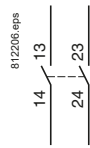
GVAE1



GVAE11

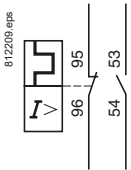


GVAE20

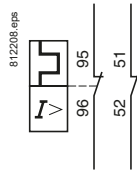


Instantaneous auxiliary contacts and fault signalling contacts

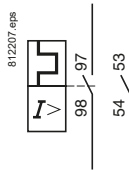
GVAD0110



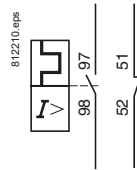
GVAD0101



GVAD1010

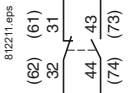


GVAD1001



Instantaneous auxiliary contacts

GVAN11



GVAN20



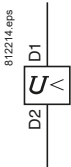
Short-circuit signalling contacts

GVAM11

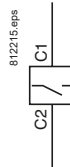


Undervoltage trips

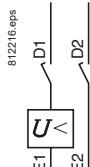
GVAU●●●



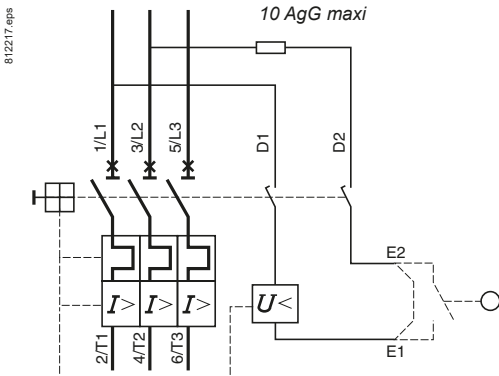
GVAS●●●



GVAX●●●



Wiring diagram for undervoltage trip used on potentially dangerous machines, conforming to INRS



TeSys Control

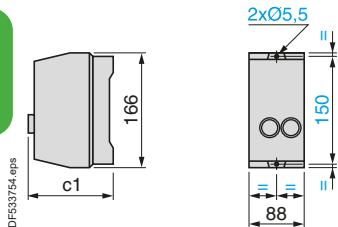
Enclosed standard starters / DOL, Reverser

Dimensions

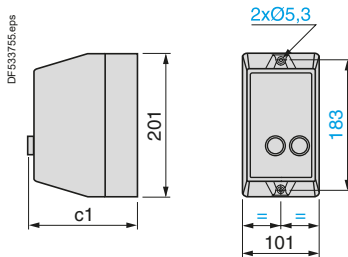
Enclosed starters

Dimensions

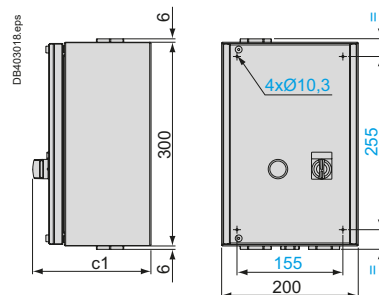
LE1D09 and D12



LE1D09●●T LE1D18...D35 and LE2D09...D35



LE1D40A...D65A LE2D40A...D65A

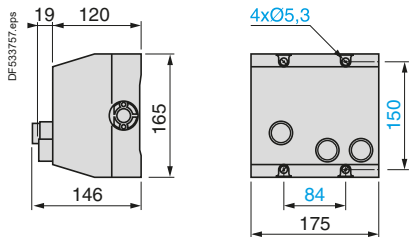


	c1
Standard version	128.5
Variant A04	120
Variant A05	128.5
Variant A09	120
Variant A13	120

	c1	
	LE1D	LE2D
Standard version	153.5	160
Variant A04	145	145
Variant A05	153.5	153.5
Variant A09	160	–
Variant A13	160	–

	c1	
	LE1D	LE2D
Standard version	158.5	174
Variant A04	150	150
Variant A05	158.5	158.5

LE2K06 and K09



Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE1D09 and D12	–	2 x 20	–	2 x 20
LE1D18...D35 and LE2D09...D35	–	2 x 20 or 2 x 25	–	2 x 20 or 2 x 25
LE1 and LE2D40A...D65A	–	1 x 32	–	1 x 20 and 2 x 32
LE2K06 and K09	2 x 13 and 2 x 16	4 x 20	2 x 13 and 2 x 16	4 x 20

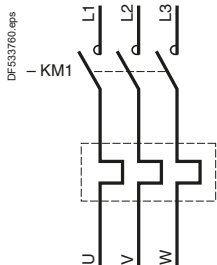
TeSys Control

Enclosed standard starters / DOL, Reverser

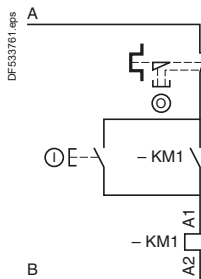
Schemes

Schemes

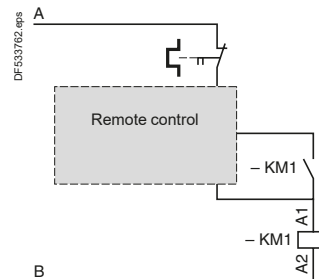
LE1D09...D65A



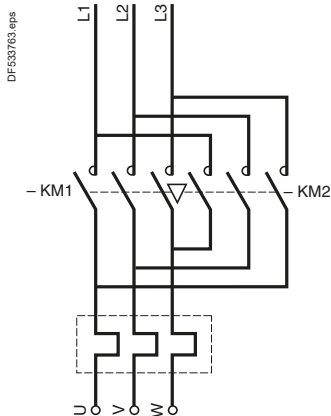
LE1D09...D65A



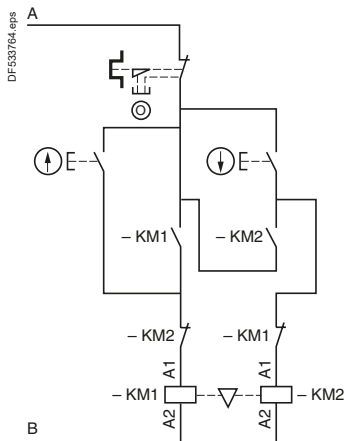
LE1D09...D65A with variant A04 or A05



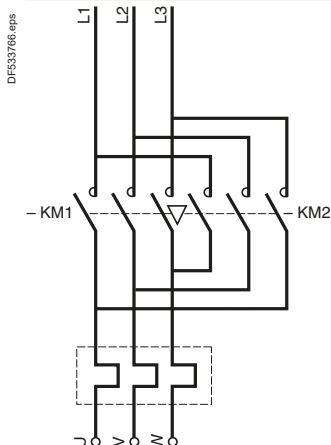
LE2K06, K09



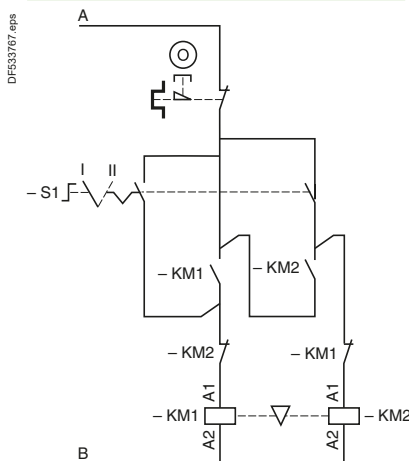
LE2K06, K09



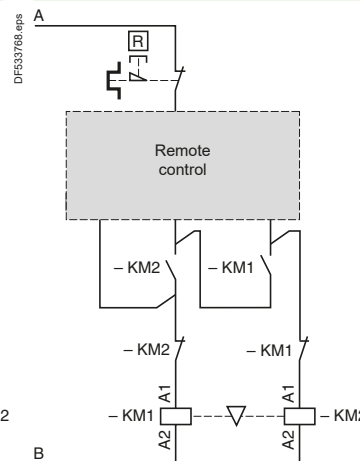
LE2D09...D65A



LE2D09...D65A



LE2D40A...D65A with variants A04 or A05



LE1D09...D65A, LE2D09...D65A Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral terminal
	380 V, 400 V, 415 V, 440 V	L3	L1
Other voltages	Other voltages	Terminal 1	Terminal 2
Other voltages	Other voltages (600 V max)	For customer assembly	

LE2K06, K09 Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V	L3	L1
Other voltages	Other voltages (440 V max)	For customer assembly	

References:
pages A1/8 and A1/13

Dimensions:
page A1/46

Enclosed starters

Ref.



TeSys Control

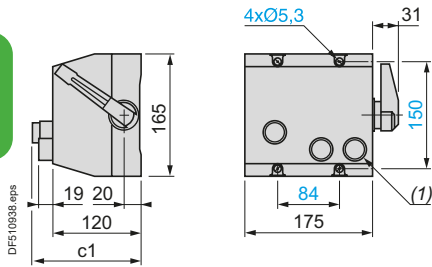
Enclosed standard starters / DOL, reverser

Dimensions

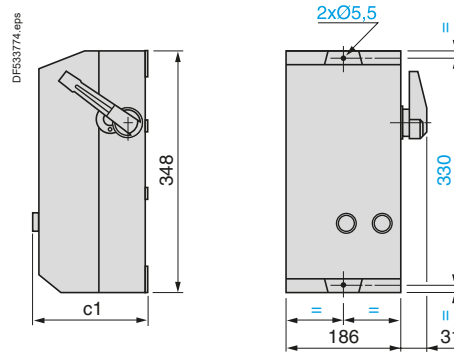
Enclosed starters

Dimensions

LE4K06 and K09, LE8K06 and K09



LE4D09...D35, LE8D09...D35



	c1	
	LE4K	LE8K
Standard version	146	146
Variant A05	–	139

(1) For LE8 only.

	c1	
	LE4D	LE8D
Standard version	175.5	182
Variant A04	167	167
Variant A05	175.5	175.5

Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE4 and LE8D09...D35	–	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40	–	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40
LE4 and LE8K06 and K09	2 x 13 and 2 x 16	4 x 20	2 x 13 and 2 x 16	4 x 20

Ref.



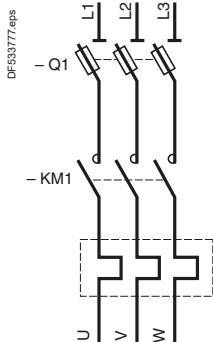
TeSys Control

Enclosed standard starters / DOL, Reverser

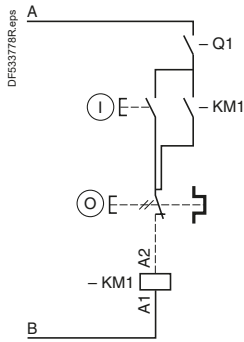
Schemes

Schemes

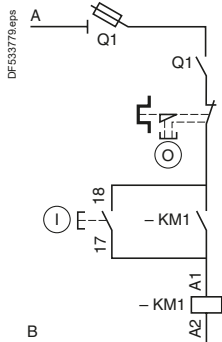
LE4K06, K09 LE4D09...D35



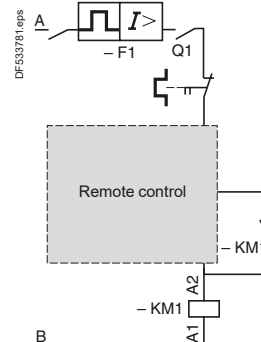
LE4K06, K09



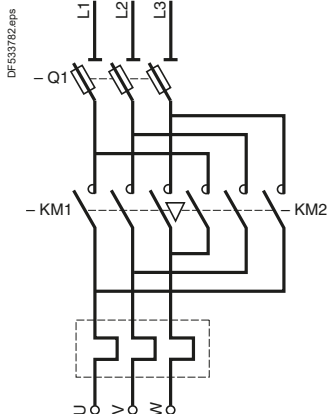
LE4D09...D35



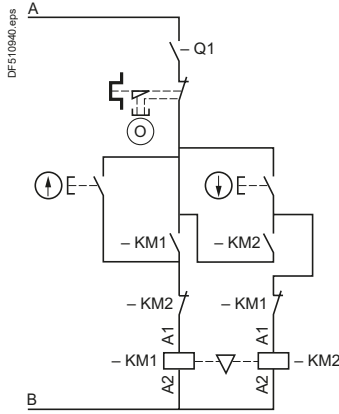
LE4D09...D35 with variant A04 or A05



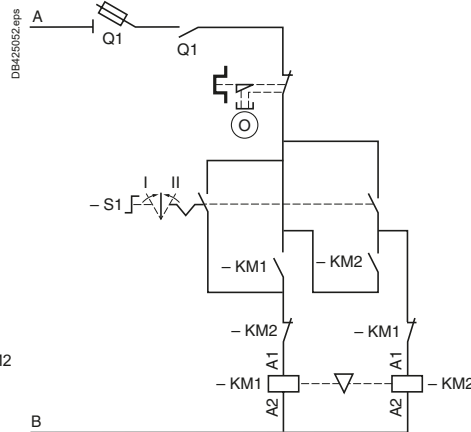
LE8K06, K09 LE8D09...D35



LE8K06, K09



LE8D09...D35



LE4D09 and D12, LE8D09 and D12 Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	Terminal 1	Terminal 2
Other voltages	Other voltages (600 V max)	For customer assembly	

LE4D18...D35, LE8D18...D35 Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral terminal
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	Terminal 1	Terminal 2
Other voltages	Other voltages (600 V max)	For customer assembly	

LE4K06, K09, LE8K06, K09 Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V	L3	L1
Other voltages	Other voltages (440 V max)	For customer assembly	

TeSys Control

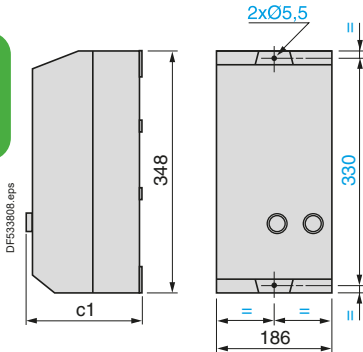
Enclosed standard starters / Star-delta

Dimensions, schemes

Enclosed starters

Dimensions

LE3D09...D35



	c1
Standard version	175.5
Variant A04	167
Variant A05	175.5

Knock-outs or blanking plugs for cable glands

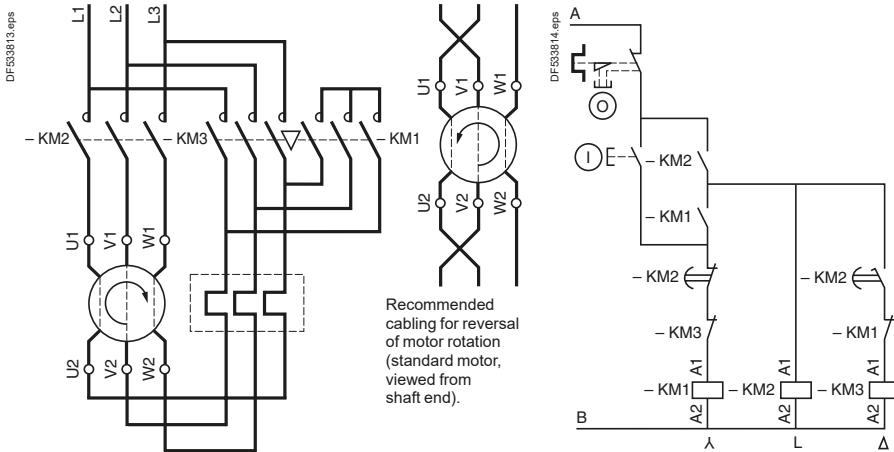
Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE3D09...D35	-	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40	-	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40

Ref.

Schemes

LE3D09...D35

LE3D09...D35



Note: in accordance with current installation regulations, short-circuit protection must be provided by fuses or a circuit breaker.

Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral terminal
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	Terminal 1	Terminal 2
Other voltages	All voltages (600 V max)	For customer assembly	

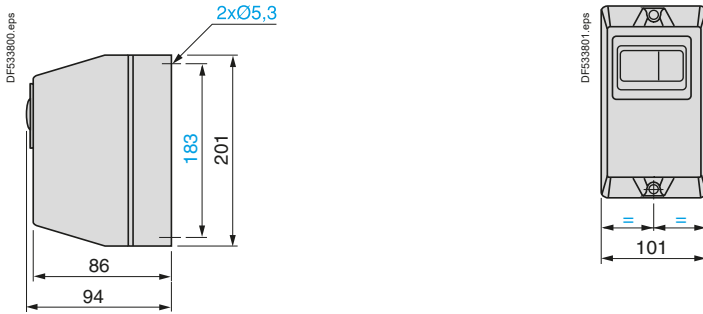
TeSys Control

Enclosures for DOL starters

Dimensions, schemes

Dimensions

LE1GVMEK

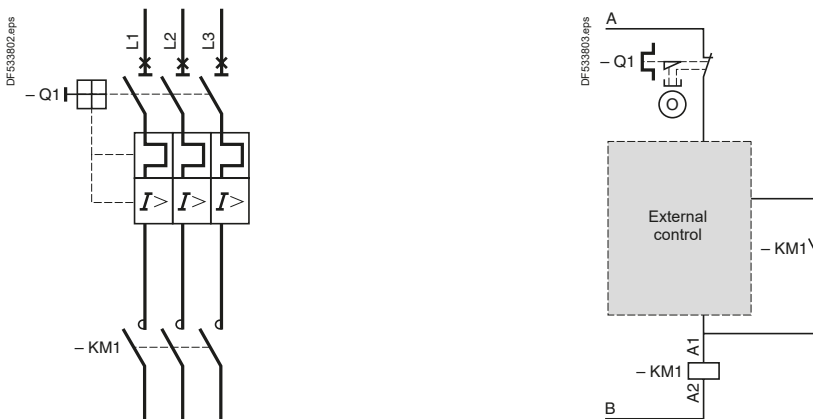


Knock-outs or blanking plugs for cable glands

Enclosure type	At top	At bottom
LE1GV	ISO 2 x 20 or 2 x 25	ISO 2 x 20 or 2 x 25

Schemes

LE1GVMEK



Connections

Power voltage	Control circuit voltage	A	B
380 V, 400 V, 415 V, 440 V	220 V, 230 V, 240 V	L3	Neutral
	380 V, 400 V, 415 V, 440 V	L3	L1
	Other voltages	For customer assembly	
Other voltages	All voltages (440 V max)	For customer assembly	

TeSys Control

Enclosed safety starters / DOL

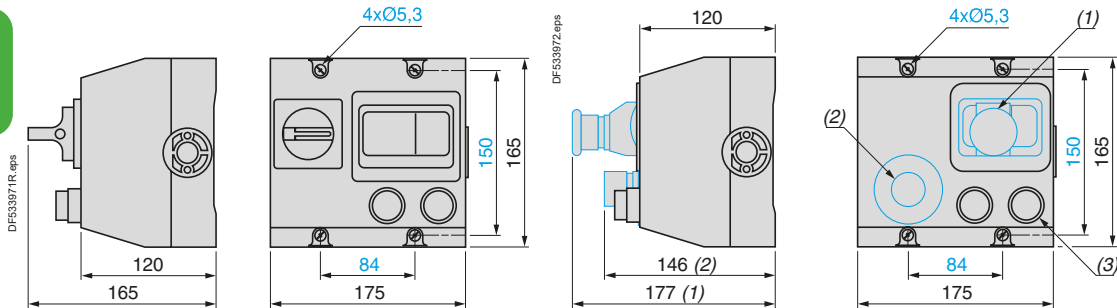
Dimensions

Enclosed starters

Dimensions

LG1K06, K09
LG1D12, D18

LG7K06, K09, LG7D12, D18
LG8K06, K09, K12



- (1) Emergency Stop for starters LG●K06.
- (2) Emergency Stop for starters LG●K09, K12, D12 et D18.
- (3) Only for LG7.

Knock-outs or blanking plugs for cable glands

Type of enclosure	At top	At bottom
LG1K and LG1D	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P
LG7K and LG7D	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P
LG8K	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P

Ref.

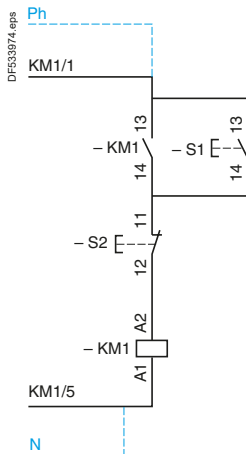
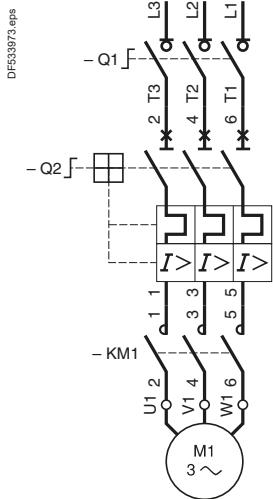


Schemes

LG1K06, K09, D12, D18

LG1K06, K09, D12, D18

380/400 V, code Q7 or 400/415 V, code N7
220/230 V, code M7

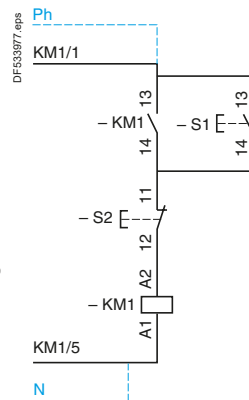
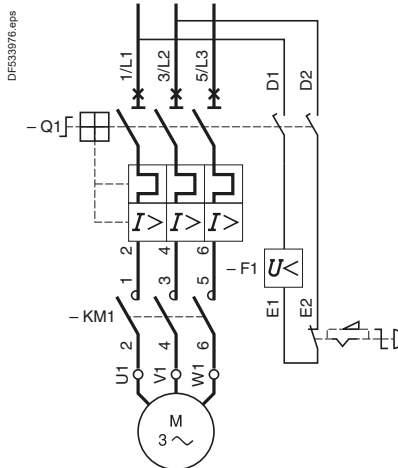
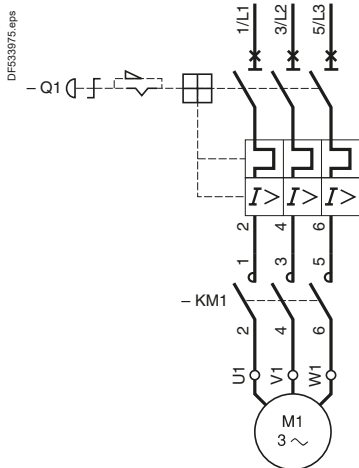


LG7K06

LG7K09, D12, D18

LG7K06, K09, D12, D18

380/400 V, code Q7 or
400/415 V, code N7
220/230 V, code M7

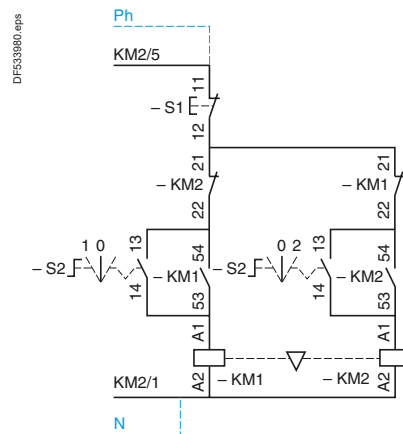
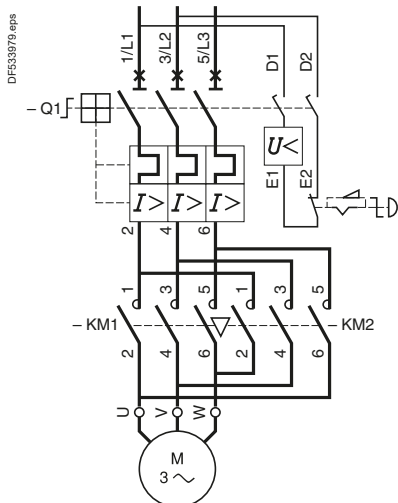
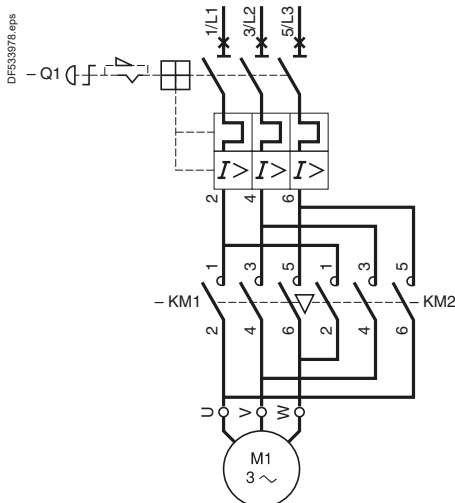


LG8K06

LG8K09, K12

LG8K06, K09, K12

380/400 V, code Q7 or
400/415 V, code N7
220/230 V, code M7



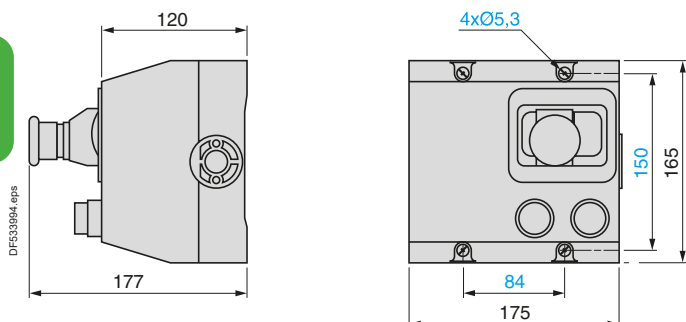
TeSys Control

Enclosed safety starters / DOL, Reverser

Dimensions

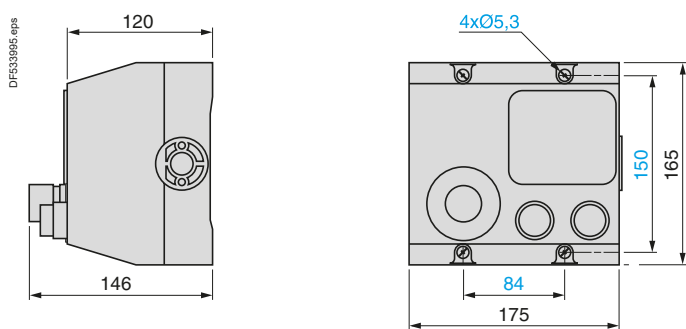
Dimensions

LJ7K06, LJ8K06



Enclosed
starters

LJ7K09, LJ8K09



Ref.



Cut-outs or blanking plugs for cable glands at the top and at the bottom 2 x 13 P and 2 x 16 P.

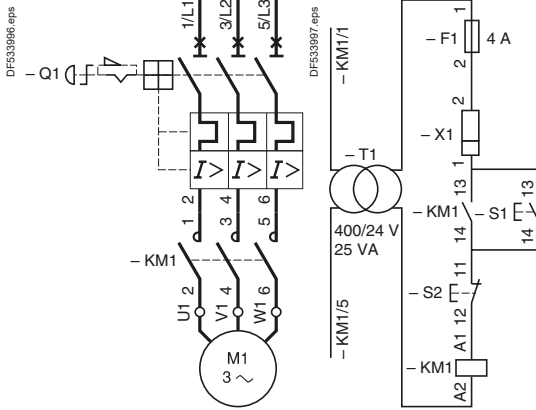
TeSys Control

Enclosed safety starters / DOL, Reverser

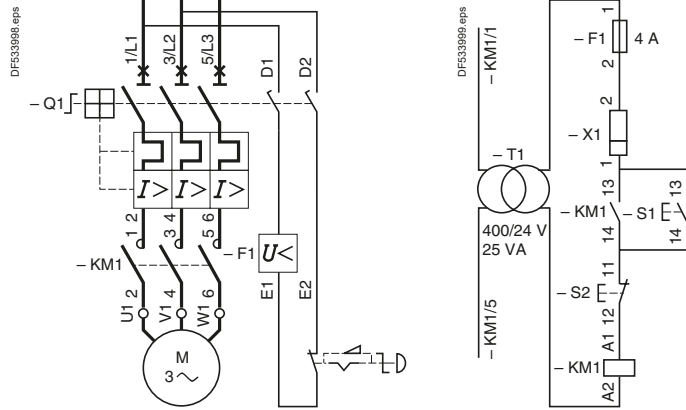
Schemes

Schemes

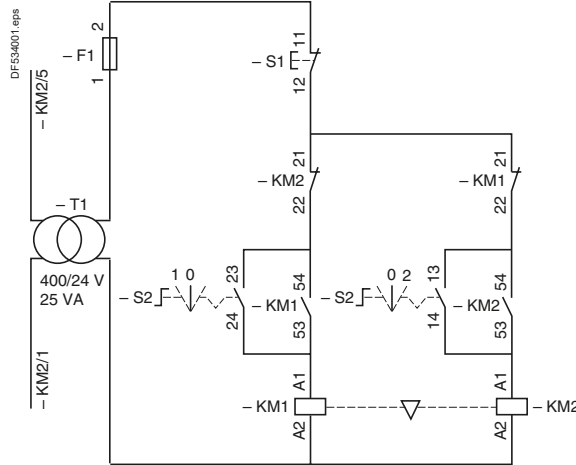
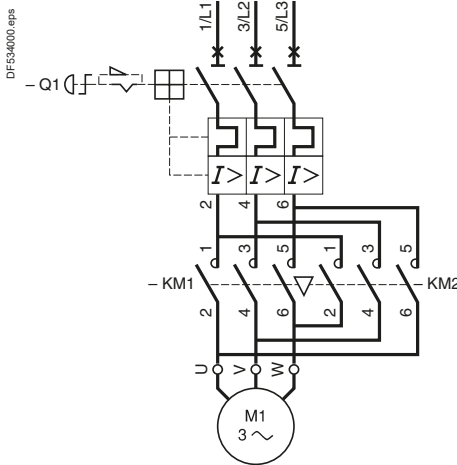
LJ7K06



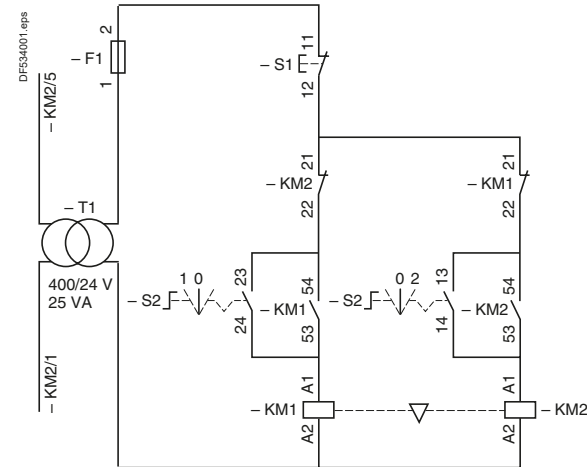
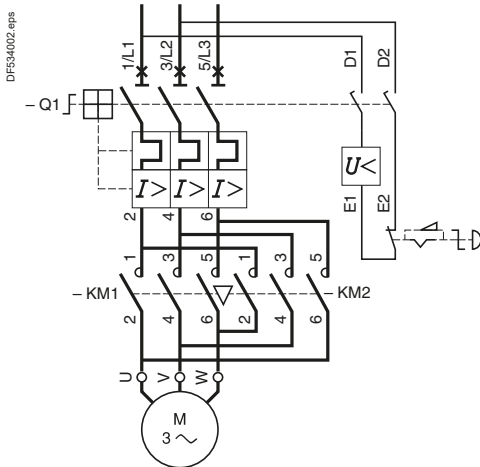
LJ7K09



LJ8K06



LJ8K09



Direct-on-line and reversing starters			
Composition	Range		Page
Motor circuit breaker + contactor (direct-on-line) Coordination type 1	Up to 4 kW		A2/2
Motor circuit breaker + 2 contactors (reversing) Coordination type 1	Up to 5.5 kW		A2/3
Motor circuit breaker + contactor (direct-on-line) Coordination type 1	Up to 15 kW		A2/4
Motor circuit breaker + 2 contactors (reversing) Coordination type 1	Up to 15 kW		A2/5
Motor circuit breaker + contactor (direct-on-line) Coordination type 2 to be assembled by customer	Up to 30 kW		A2/6
Motor circuit breaker + 2 contactors (reversing) Coordination type 2 to be assembled by customer	Up to 30 kW		A2/7
Star-delta starters			
3 contactors + 1 time delay aux. block	Up to 132 kW		A2/8
Star-delta starters for customer assembly			
Separated components and mounting kits for suggested motor starter components combinations - on plate or mounting rail	Up to 132 kW		A2/10
Separated components for suggested motor starter combinations - on chassis	Up to 315 kW		A2/14

TeSys Control

Direct-on-line starters - with overload protection - up to 5.5 kW

Product references

D.O.L. starters, non-reversing, from 0.37 to 4 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:

- 1 motor circuit breaker GV2ME,
- 1 3-pole contactor LC1K,
- 1 combination block GV2AF01.

Open motor starters

Characteristics

Starter type		GV2	ME06K1	ME07K1	ME08K1	ME10K1	ME14K1
Breaking capacity (I _q) ⁽¹⁾	Conforming to IEC 60947-4-1	400/415 V	kA	50	50	50	50
		440 V	kA	50	50	50	15
		500 V	kA	50	50	50	10 (4 kW) 6 (5.5 kW)

References



GV2ME08K1●●

D.O.L. starters, non-reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Pre-assembled	Weight
400/415 V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed ⁽²⁾		
0.37	0.37	0.37	1...1.6	22.5	GV2ME06	LC1K06	GV2ME06K1●●	0.460
0.55	0.55	0.55						
–	–	0.75						
0.75	0.75	–	1.6...2.5	33.5	GV2ME07	LC1K06	GV2ME07K1●●	0.460
–	1.1	1.1						
1.1	–	1.5	2.5...4	51	GV2ME08	LC1K06	GV2ME08K1●●	0.460
1.5	1.5	2.2						
2.2	2.2	–	4...6.3	78	GV2ME10	LC1K06	GV2ME10K1●●	0.460
–	3	3						
3	–	4	6...10	138	GV2ME14	LC1K09	GV2ME14K1●●	0.460
4	4	5.5						

Add-on blocks

Description	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	10	GV2AF01

⁽¹⁾ The breaking performance of circuit breakers GV2ME can be increased by adding a current limiter GV1L3, see page B6/21.

⁽²⁾ Please consult your Regional Sales Office.

⁽³⁾ Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

Volts	24	110	220/230	230	230/240	380/400
~ 50/60 Hz	B7	F7	M7	P7	U7	Q7
☰ ⁽⁴⁾	BW3	–	–	–	–	–

⁽⁴⁾ Coil: low consumption (1.5 W), wide range (0.7...1.3 Uc) with integral suppression device as standard.

D.O.L. starters, reversing, from 0.37 to 4 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:

- 1 motor circuit breaker GV2ME,
- 1 3-pole reversing contactor LC2K,
- 1 combination block GV2AF01.

Characteristics

Starter type	GV2	ME06K2	ME07K2	ME08K2	ME10K2	ME14K2
Breaking capacity (I _q) ⁽¹⁾ Conforming to IEC 60947-4-1	400/415 V	kA	50	50	50	50
	440 V	kA	50	50	50	15
	500 V	kA	50	50	50	10 (4 kW) 6 (5.5 kW)

References



GV2ME06K2●●

D.O.L. starters, reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Pre-assembled	Weight
400/415 V	440 V	500 V			Motor circuit-breaker Reference	Contactors Reference to be completed ⁽²⁾		
0.37	0.37	0.37	1...1.6	22.5	GV2ME06	LC2K06	GV2ME06K2●●	0.460
0.55	0.55	0.55	1.6...2.5	33.5	GV2ME07	LC2K06	GV2ME07K2●●	0.460
-	-	0.75						
0.75	0.75	-	2.5...4	51	GV2ME08	LC2K06	GV2ME08K2●●	0.460
1.5	1.5	2.2	4...6.3	78	GV2ME10	LC2K06	GV2ME10K2●●	0.460
-	3	3						
3	-	4	6...10	138	GV2ME14	LC2K09	GV2ME14K2●●	0.460
4	4	5.5						

Add-on blocks

Description	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	10	GV2AF01

(1) The breaking performance of circuit breakers GV2ME can be increased by adding a current limiter GV1L3, see page B6/21.

(2) Please consult your Regional Sales Office.

(3) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

Volts	24	110	220/230	230	230/240	380/400
~ 50/60 Hz	B7	F7	M7	P7	U7	Q7
--- ⁽⁴⁾	BW3	-	-	-	-	-

(4) Coil: low consumption (1.5 W), wide range (0.7...1.3 U_c) with integral suppression device as standard.

Note: The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).



TeSys Control

Direct-on-line starters - with overload protection - up to 15 kW

Product references

D.O.L. starters, non-reversing, from 0.06 to 15 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:

- 1 motor circuit breaker GV2ME,
- 1 3-pole contactor LC1D,
- 1 combination block GV2AF3.

Characteristics

Starter type	GV2	DM102 to DM110	DM114	DM116	DM132		
Breaking capacity (I _q) ⁽¹⁾	Conforming to IEC 60947-4-1	400/415 V	kA	50	50	15	10
		440 V	kA	50	15	8	6
		500 V	kA	50	6	6	4

References

D.O.L. starters, non-reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Pre-assembled	Weight
400/415 V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed ⁽²⁾		
kW	kW	kW	A	A				kg
0.06	0.06	–	0.16...0.25	2.4	GV2ME02	LC1D09●●	GV2DM102●● ⁽⁴⁾	0.596
0.75	0.75	–	1.6...2.5	33.5	GV2ME07	LC1D09●●	GV2DM107●● ⁽⁴⁾	0.596
–	1.1	1.1						
1.1	–	1.5	2.5...4	51	GV2ME08	LC1D09●●	GV2DM108●● ⁽⁴⁾	0.596
1.5	1.5	2.2						
2.2	2.2	–	4...6.3	78	GV2ME10	LC1D09●●	GV2DM110●● ⁽⁴⁾	0.596
–	3	3						
3	–	4	6...10	138	GV2ME14	LC1D09●●	GV2DM114●● ⁽⁴⁾	0.596
4	4	5.5						
5.5	5.5	7.5	9...14	170	GV2ME16	LC1D12●●	GV2DM116●●	0.601
15	15	18.5	24...32	416	GV2ME32	LC1D32●●	GV2DM132●●	0.651

Add-on blocks

Description	Mounting of GV2	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	┌ rail	10	GV2AF3
	Mounting plate LAD 311	10	GV2AF4

⁽¹⁾ The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**, see page B6/21.

⁽²⁾ Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts	24	220	230
~ 50/60 Hz	B7	M7	P7
--- ⁽⁵⁾	BD	–	–

⁽³⁾ Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

⁽⁴⁾ Type 2 coordination also possible, see page A5/11.

⁽⁵⁾ Only available for **GV2DM**. Coil with integral suppression device as standard.

Note: The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).

Open motor starters



GV2DM102●●

D.O.L. starters, reversing, from 0.12 to 15 kW at 400/415 V, type 1 coordination

This pre-assembled combination comprises:

- 1 motor circuit breaker GV2 ME,
- 1 3-pole reversing contactor LC2 D,
- 1 combination block GV2AF3.

Characteristics

Starter type	GV2	DM202 to DM210	DM214	DM216	DM220	DM221	DM222	DM232	
Breaking capacity (I _q) ⁽¹⁾	Conforming to IEC 60947-4-1	400/415 V	kA	50	50	15	15	15	10
		440 V	kA	50	15	8	8	6	6
		500 V	kA	50	10	6	6	4	4

References

D.O.L. starters, reversing⁽²⁾

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Pre-assembled	Weight
400/415V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed ⁽³⁾		
kW	kW	kW	A	A				kg
0.12	–	–	0.40...0.63	8	GV2ME04	LC2D09●●	GV2DM204●●	0.963
0.18	0.18	–	–	–	–	–	–	–
0.25	0.25	–	0.63...1	13	GV2ME05	LC2D09●●	GV2DM205●●	0.963
0.37	0.37	–	–	–	–	–	–	–
–	–	0.37	1...1.6	22.5	GV2ME06	LC2D09●●	GV2DM206●●	0.963
0.55	0.55	0.55	–	–	–	–	–	–
–	–	0.75	–	–	–	–	–	–
1.1	–	1.5	2.5...4	51	GV2ME08	LC2D09●●	GV2DM208●●	0.963
1.5	1.5	2.2	–	–	–	–	–	–
9	11	11	17...23	327	GV2ME21	LC2D25●●	GV2DM221●●	1.063
15	15	18.5	24...32	416	GV2ME32	LC2D32●●	GV2DM232●●	1.073

Add-on blocks

Description	Mounting of GV2	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	┌ rail	10	GV2AF3
	Mounting plate LAD 311	10	GV2AF4

(1) The breaking performance of circuit breakers GV2ME can be increased by adding a current limiter GV1L3, see page B6/21.

(2) Type 2 coordination also possible, see page B6/21.

(3) See page B8/22.

(4) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts	24	220	230
~ 50/60 Hz	B7	M7	P7
--- ⁽⁶⁾	BD	–	–

(5) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

(6) Coil with integral suppression device as standard.

Note: The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).



GV2DM202●●

Open motor starters



TeSys Control

Direct-on-line starters - with overload protection - up to 30 kW

Product references

D.O.L. starters, non-reversing, from 0.06 to 30 kW at 400/415 V, type 2 coordination

To be assembled by customer, using:

- 1 motor circuit breaker GV2P,
- 1 3-pole contactor LC1D,
- 1 combination block GV2AF3.

Characteristics

Starter type	GV2	P02 to P110	P14	P16	P20	P21	P22	P32	
Breaking capacity (I _q) ⁽¹⁾	Conforming to IEC 60947-4-1	400/415 V	kA	130	130	130	50	50	50
		440 V	kA	130	130	50	20	20	20
		500 V	kA	130	50	42	10	10	10

References

D.O.L. starters, non-reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Weight
400/ 415 V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed ⁽²⁾	
kW	kW	kW	A	A			kg
0.06	0.06	–	0.16...0.25	2.4	GV2P02	LC1D09●●	0.686
–	0.09	–	0.25...0.40	5	GV2P03	LC1D09●●	0.686
0.09	0.12	–	–	–	–	–	–
0.12	–	–	0.40...0.63	8	GV2P04	LC1D09●●	0.686
0.18	0.18	–	–	–	–	–	–
0.25	0.25	–	0.63...1	13	GV2P05	LC1D09●●	0.686
0.37	0.37	–	–	–	–	–	–
–	–	0.37	1...1.6	22.5	GV2P06	LC1D09●●	0.686
0.55	0.55	0.55	–	–	–	–	–
–	–	0.75	–	–	–	–	–
0.75	0.75	–	1.6...2.5	33.5	GV2P07	LC1D09●●	0.686
–	1.1	1.1	–	–	–	–	–
1.1	–	1.5	2.5...4	51	GV2P08	LC1D09●●	0.696
1.5	1.5	2.2	–	–	–	–	–
2.2	2.2	–	4...6.3	78	GV2P10	LC1D09●●	0.736
–	3	3	–	–	–	–	–
3	–	4	6...10	138	GV2P14	LC1D09●●	0.736
4	4	5.5	–	–	–	–	–
5.5	5.5	7.5	9...14	170	GV2P16	LC1D25●●	0.741
–	7.5	9	–	–	–	–	–
7.5	9	–	13...18	223	GV2P20	LC1D25●●	0.736
9	11	11	17...23	327	GV2P21	LC1D25●●	0.741
11	–	15	20...25	327	GV2P22	LC1D25●●	0.741
15	15	18.5	24...32	416	GV2P32	LC1D32●●	0.741
18.5	–	–	30...40	560	GV3P401 ⁽⁵⁾	LC1D50A●●	1.725
–	18.5	22	30...40	560	GV3P401 ⁽⁵⁾	LC1D65A●●	1.730
22	–	–	37...50	700	GV3P501 ⁽⁵⁾	LC1D50A●●	1.725
–	22	30	37...50	700	GV3P501 ⁽⁵⁾	LC1D65A●●	1.730
30	37	–	48...65	910	GV3P651 ⁽⁵⁾	LC1D65A●●	1.730

Add-on blocks

Description	Mounting of GV2	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	┌ rail	10	GV2AF3

- (1) The breaking performance of circuit breakers GV2P can be increased by adding a current limiter GV1L3, see page B6/11.
 (2) See page B8/22.
 (3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):
- | Volts | 24 | 220 | 230 |
|--------------------|----|-----|-----|
| ~ 50/60 Hz | B7 | M7 | P7 |
| --- ⁽⁶⁾ | BD | – | – |
- (4) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.
 (5) Circuit breaker supplied without downstream EverLink® power terminal block, which is required for vertical mounting. For side by side mounting, use a GV3P circuit breaker with terminal blocks and the GV3S set of S-shape busbars (see page B8/42).
 (6) Coil with integral suppression device as standard.

Note: The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).

Dimensions: pages A2/18 and A2/19

Schemes: page A2/21

A2/6

Life Is On

Schneider Electric

Open motor starters

PB121702.tif



GV2P●● + LC1D09 + GV2AF3

PB121675.eps



PB121684.eps



GV3P651 + LC1D65A●●

TeSys Control

Reversing starters - with overload protection - up to 30 kW

Product references

D.O.L. starters, reversing, from 0.06 to 30 kW at 400/415 V, type 2 coordination

To be assembled by customer, using:

- 1 motor circuit breaker GV2P,
- 1 3-pole reversing contactor LC2D,
- 1 combination block GV2AF3.

Characteristics

Starter type	GV2	P02 to P10	P14	P16	P20	P21	P22	P32	
Breaking capacity (Iq) ⁽¹⁾	Conforming to IEC 60947-4-1	400/415 V	kA	130	130	130	50	50	50
		440 V	kA	130	130	50	20	20	20
		500 V	kA	130	50	42	10	10	10

References

D.O.L. starters, reversing

Standard power ratings of 3-phase motors 50/60 Hz in AC-3			Setting range of thermal trips	Fixed magnetic tripping current 13 Irth	For customer assembly		Weight
400/ 415 V	440 V	500 V			Motor circuit-breaker Reference	Contactor Reference to be completed ⁽²⁾	
kW	kW	kW	A	A			kg
0.06	0.06	–	0.16...0.25	2.4	GV2P02	LC2D09●●	1.053
–	0.09	–	0.25...0.40	5	GV2P03	LC2D09●●	1.053
0.09	0.12	–	0.40...0.63	8	GV2P04	LC2D09●●	1.053
0.12	–	–	0.63...1	13	GV2P05	LC2D09●●	1.053
0.18	0.18	–	–	–	–	–	–
0.25	0.25	–	–	–	–	–	–
0.37	0.37	–	–	–	–	–	–
–	–	0.37	1...1.6	22.5	GV2P06	LC2D09●●	1.053
0.55	0.55	0.55	–	–	–	–	–
–	–	0.75	–	–	–	–	–
0.75	0.75	–	1.6...2.5	33.5	GV2P07	LC2D09●●	1.053
–	1.1	1.1	–	–	–	–	–
1.1	–	1.5	2.5...4	51	GV2P08	LC2D09●●	1.073
1.5	1.5	2.2	–	–	–	–	–
2.2	2.2	–	4...6.3	78	GV2P10	LC2D09●●	1.153
–	3	3	–	–	–	–	–
3	–	4	6...10	138	GV2P14	LC2D09●●	1.153
4	4	5.5	–	–	–	–	–
5.5	5.5	7.5	9...14	170	GV2P16	LC2D25●●	1.163
–	7.5	9	–	–	–	–	–
7.5	9	–	13...18	223	GV2P20	LC2D25●●	1.153
9	11	11	17...23	327	GV2P21	LC2D25●●	1.163
11	–	15	20...25	327	GV2P22	LC2D25●●	1.163
15	15	18.5	24...32	416	GV2P32	LC2D32●●	1.163
18.5	–	–	30...40	560	GV3P401 ⁽⁵⁾	LC2D50A●●	2.750
–	18.5	22	30...40	560	GV3P401 ⁽⁵⁾	LC2D65A●●	2.760
22	–	–	37...50	700	GV3P501 ⁽⁵⁾	LC2D50A●●	2.750
–	22	30	37...50	700	GV3P501 ⁽⁵⁾	LC2D65A●●	2.760
30	37	–	48...65	910	GV3P651 ⁽⁵⁾	LC2D65A●●	2.760

Add-on blocks

Description	Mounting of GV2	Sold in lots of	Unit reference
Combination block between circuit breaker and contactor	└ rail	10	GV2AF3

(1) The breaking performance of circuit breakers GV2P can be increased by adding a current limiter GV1L3, see page B6/11.

(2) See page B8/22.

(3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts	24	220	230
~ 50/60 Hz	B7	M7	P7
--- ⁽⁶⁾	BD	–	–

(4) Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

(5) Circuit breaker supplied without downstream EverLink® power terminal block, which is required for vertical mounting. For side by side mounting, use a GV3P circuit breaker with terminal blocks and the GV3S set of S-shape busbars (see page B8/42).

(6) Coil with integral suppression device as standard.

Note: The combinations are valid for IE2 motors and IE3 with maximum starting current = 7.5 x motor rating current (see pages A5/4 and A5/5).



GV2P●● + LC1D09 + GV2AF3



GV3P651 + LC2D65A●●



TeSys Control

Star-delta starters - up to 132 kW ⁽¹⁾

Product references

Open motor starters

FB123608.eps



LC3D32A●●

Plate mounted starters without isolating device

Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds.

Standard power ratings of squirrel cage motors				Auxiliary contacts available on each contactor						Star delta mechanical interlock	Basic reference, to be completed by adding the voltage code ^{(2) (3)}	Weight
Mains voltage - delta connection				line	delta		star					
220/230 V	380/400 V	415 V	440 V	KM2	KM3	KM1						
kW	kW	kW	kW								kg	
4	7.5	7.5	7.5	-	-	-	- ⁽⁴⁾	-	1	With	LC3D09A●●	1.530
5.5	11	11	11	-	-	-	- ⁽⁴⁾	-	1	With	LC3D12A●●	1.530
11	18.5	22	22	-	-	-	- ⁽⁴⁾	-	1	With	LC3D18A●●	1.730
15	25	30	30	-	-	-	- ⁽⁴⁾	-	1	With	LC3D32A●●	2.030
37	75	75	75	-	1	1	- ⁽⁴⁾	-	- ⁽⁴⁾	Without	LC3D80●●	5.200
										With	LC3D80●●A64	5.400
63	110	110	110	-	1	1	- ⁽⁴⁾	-	- ⁽⁴⁾	Without	LC3D115●● ⁽⁵⁾	11.800
										With	LC3D115●●A64 ⁽⁵⁾	12.100
75	132	132	147	-	1	1	- ⁽⁴⁾	-	1 ⁽⁴⁾	Without	LC3D150●● ⁽⁵⁾	12.100
										With	LC3D150●●A64 ⁽⁵⁾	12.100

Rail mounted starters (35 mm rail) without isolating device

Maximum operating rate: 12 starts/hour. Maximum starting time: 30 seconds.

Standard power ratings of squirrel cage motors				Auxiliary contacts available on each contactor						Star delta mechanical interlock	Basic reference, to be completed by adding the voltage code ^{(2) (3)}	Weight
Mains voltage - delta connection				line	delta		star					
220/230 V	380/400 V	415 V	440 V	KM2	KM3	KM1						
kW	kW	kW	kW								kg	
4	7.5	7.5	7.5	-	-	-	-	-	1	With	LC3K09●●	0.740
4	7.5	7.5	7.5	-	-	-	- ⁽⁴⁾	-	1	With	LC3D090A●●	1.530
5.5	11	11	11	-	-	-	- ⁽⁴⁾	-	1	With	LC3D120A●●	1.530
11	18.5	22	22	-	-	-	- ⁽⁴⁾	-	1	With	LC3D180A●●	1.730
15	25	30	30	-	-	-	- ⁽⁴⁾	-	1	With	LC3D320A●●	2.030

⁽¹⁾ Protection must be provided by the addition of a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current (see pages B11/4 and B11/5).

⁽²⁾ Standard control circuit voltages:

Volts ~ 50/60 Hz 24 36 42 48 110 220 230 240 380 400 415 440

Star-delta starters LC3K09

Code B7 C7 D7 E7 F7 M7 P7 U7 - - - -

Star-delta starters LC3D09A...D150, LC3D090A...D320A

Code B7 - D7 E7 F7 M7 P7 U7 Q7 V7 N7 R7

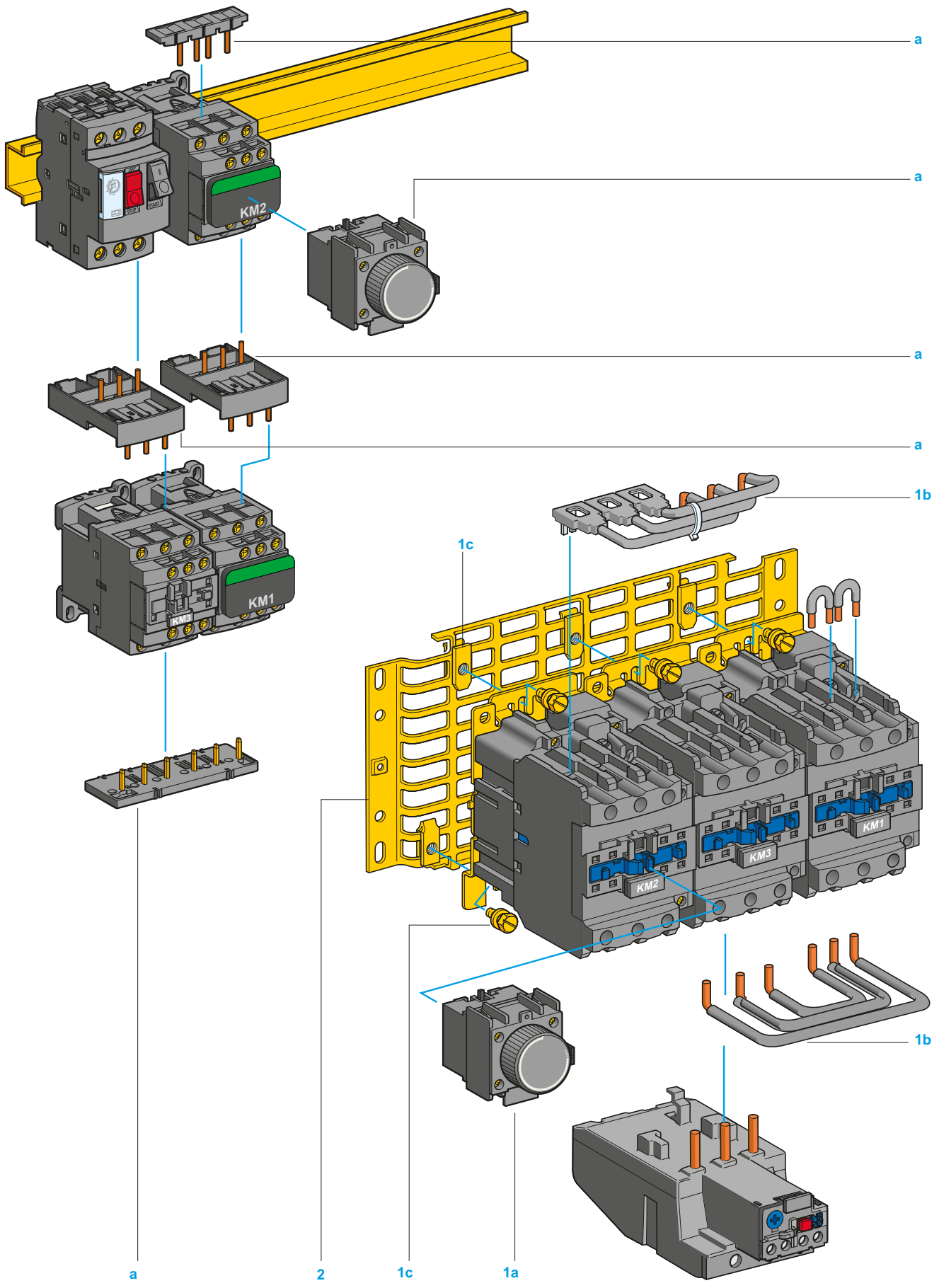
For other voltages, please consult your Regional Sales Office.

⁽³⁾ Please check the availability of your variant in the index page A2/16. The SEARCH function of your viewer can be used.

⁽⁴⁾ One auxiliary contact block type LADN can also be fitted, see page B8/36.

⁽⁵⁾ These starters consist of contactors LC1D115 or D150 without connectors.

Open motor starters



Star-delta starters without mechanical interlock, for customer assembly on plate or on mounting rail ⁽²⁾

Starters for direct combination with a circuit breaker

Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds

Standard power ratings of squirrel cage motors ⁽³⁾	Thermal-magnetic motor circuit breaker <i>References in italics are available in CEE zone only</i>	Contactors (basic references, to be completed by adding the voltage code) ⁽⁴⁾		
		line	delta	star
Mains voltage-delta connection				
400/ 415 V	440 V			
kW	kW	KM2	KM3	KM1
7.5	7.5	GV2ME20 or <i>GV2ME20AP</i>	LC1D09●●	LC1D09●●
–	9	GV2ME21 or <i>GV2ME21AP</i>	LC1D12●●	LC1D09●●
9	11	GV2ME22 or <i>GV2ME22AP</i>	LC1D12●●	LC1D09●●
11	–	GV2ME32 or <i>GV2ME32AP</i>	LC1D12●●	LC1D09●●
15	15	GV2ME33 or <i>GV2ME33AP</i>	LC1D18●●	LC1D09●●

Separate component

Description	Illustration item no.	Reference
Mounting kit comprising: power circuit connections and 1 time delay contact block LADS2	a	LAD912GV

Starters for mounting separately from upstream protection

Maximum operating rate: 30 starts/hour. Maximum starting time: 30 seconds.

Standard power ratings of squirrel cage motors ⁽³⁾				Contactors (basic references, to be completed by adding the voltage code) ⁽⁴⁾			Separate components (see below)
Mains voltage - delta connection				line	delta	star	
220/ 230 V	380/ 400 V	415 V	440 V	line	delta	star	Component types
kW	kW	kW	kW	KM2	KM3	KM1	
4	7.5	7.5	7.5	LC1D09●●	LC1D09●●	LC1D09●●	D09
5.5	11	11	11	LC1D18●● ⁽⁶⁾	LC1D12●●	LC1D09●●	D12
11	18.5	22	22	LC1D25●● ⁽⁷⁾	LC1D25●● ⁽⁷⁾	LC1D09●●	D18
15	25	30	30	LC1D32●●	LC1D32●●	LC1D18●●	D32
18.5	37	37	37	LC1D40A●●	LC1D40A●●	LC1D40A●●	D40
30	55	59	59	LC1D50A●●	LC1D50A●●	LC1D40A●●	D50
37	75	75	75	LC1D80●●	LC1D80●●	LC1D50A●●	D80
63	110	110	110	LC1D115●●	LC1D115●●	LC1D80●●	D115 ⁽⁵⁾
75	132	132	147	LC1D150●●	LC1D150●●	LC1D115●●	D150 ⁽⁵⁾

Separate components

Description	Illustration item no.	For components type ⁽⁵⁾	Reference	Without timer LADS2
Mounting kit comprising: - 1 time delay contact block LADS2 (D09...D80) ⁽³⁾ , - power circuit connections (D09...D80), - screws and clamps for fixing contactors to the plate (D40...D80).	1 a	LC1D09 to D38 ⁽⁸⁾	LAD91217	LAD91218
	1 b	LC1D09 to D38 ⁽⁹⁾	LAD93217	LAD93218
	1 c	D40 and D50	LA9D5017	–
		D80	LA9D8017	–
Equipment mounting plates	2	LC1D09 to D38	LA9D12974	
		D80	LA9D80973	

⁽¹⁾ Protection must be provided by the addition of a thermal overload relay, to be ordered separately.

Select appropriate overload relay for setting at 0.58 of the full load rated motor current, see pages B11/4 and B11/5.

⁽²⁾ For mounting, assembly and cabling: please refer to installation instructions supplied with the equipment.

⁽³⁾ See comments on page A2/22.

⁽⁴⁾ See page B8/22.

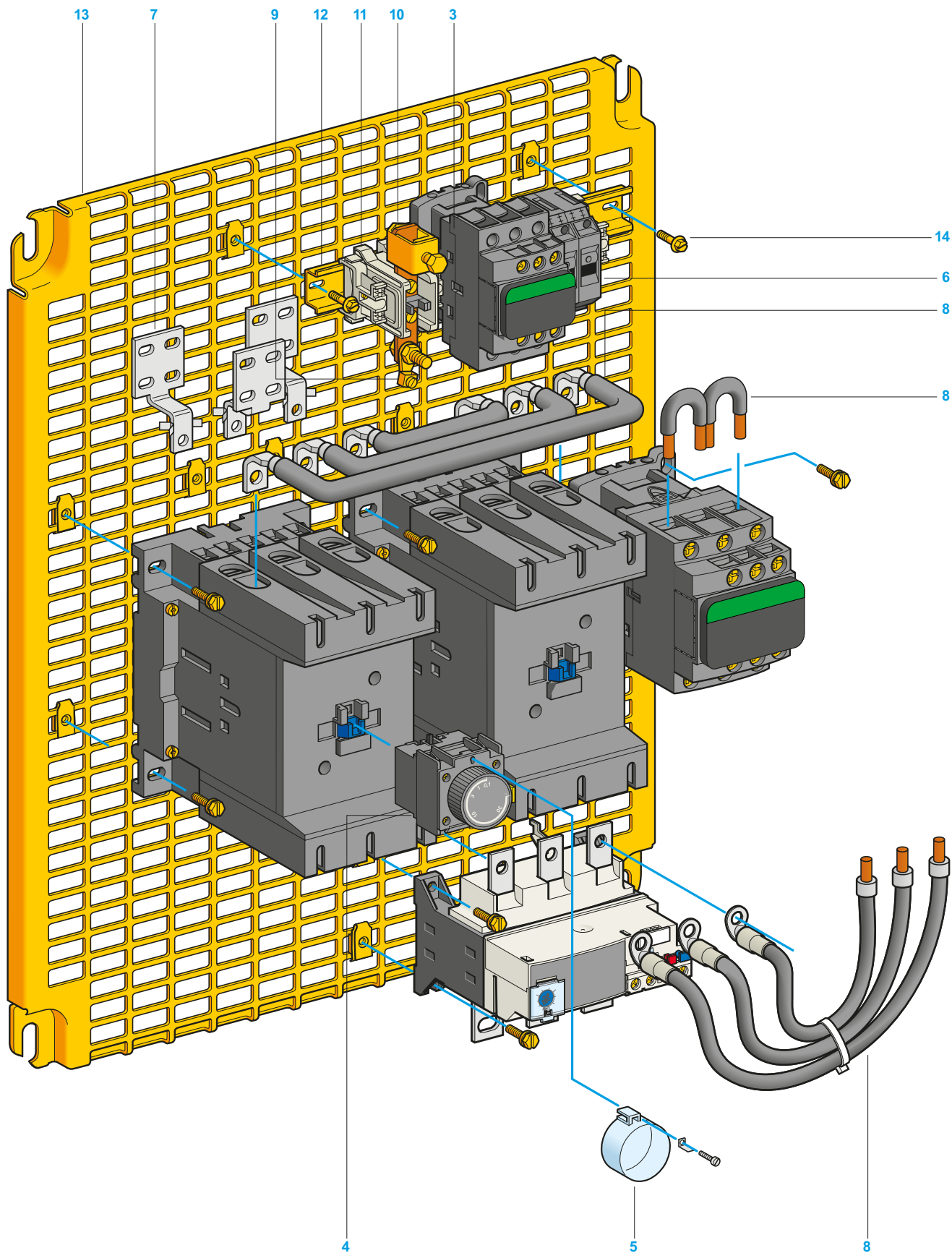
⁽⁵⁾ For D115 and D150 components, see illustration and separate parts on pages A2/12 and A2/13.

⁽⁶⁾ A D12 component is adequate for the application, but use of a D18 is recommended. (connection capacity, correct use of power connection kit and connections).

⁽⁷⁾ A D18 component is adequate for the application, but use of a D25 is recommended. (connection capacity, correct use of power connection kit and connections).

⁽⁸⁾ For assembly of 3 contactors of the same physical size (depth).

⁽⁹⁾ For assembly of 3 contactors with star contactor physically smaller (depth).



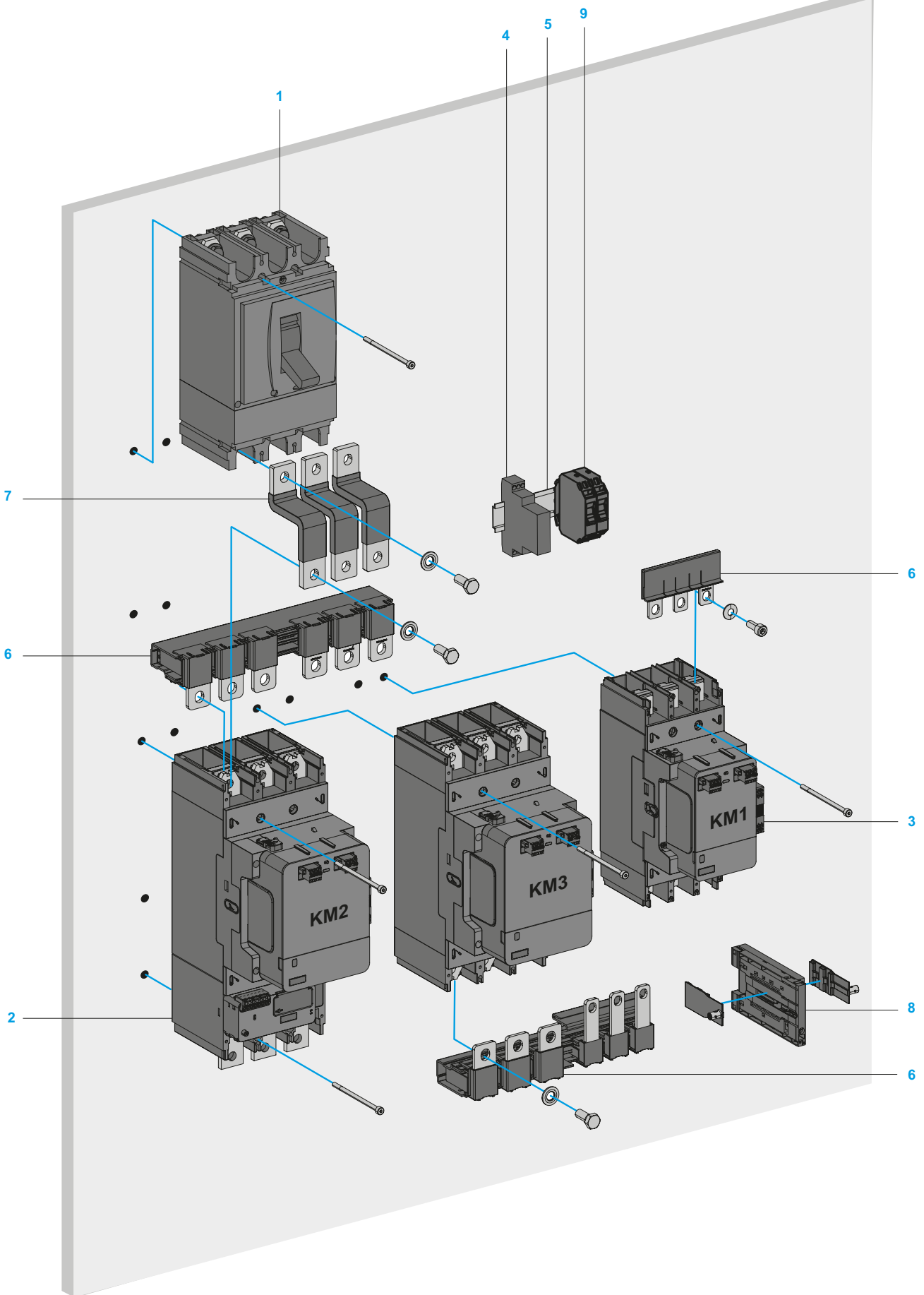
Starters for mounting separately from upstream protection

Separate components (continued)

Description	Illustration item no.	For use on	No.	Sold in lots of	Unit reference	Weight kg
Instantaneous auxiliary contact blocks 1 N/O	1	D115 (star)	1	1	LADN10	0.020
Control relay	3	D115, D150	1	1	CAD32	0.320
Time delay auxiliary contact blocks	4	D115, D150	1	1	LADT2	0.060
Lead sealing kit for time delay auxiliary contact blocks	5	D115, D150	1	1	LA9D901	0.005
Thermal magnetic circuit breaker for control circuit (200...415 V)	6	D115, D150	2	6	GB2CB05	0.060
Set of 3 connectors for wider terminations (optional)	7	D115, D150	1	1	LA9FG980	0.200
Set of power connections with fixing accessories	8	D115	1	1	LA9D11517	0.800
		D150	1	1	LA9D15017	1.050
Spare volt free terminals	9	D115, D150	1	10	DZ3HA3	0.007
			2	10	DZ3GA3	0.006
Lug-connector terminal block	10	D115, D150	1	10	AB1BC9535	0.236
End stop	11	D115, D150	3	100	AB1AB8M35	0.005
Mounting rail ┌ 35 mm	12	D115, D150	1	10	NSYDPR25	0.210
Pre-slotted mounting plate	13	D115, D150	1	1	AM3PA65	1.950
Screw with captive washer	14	D115, D150	12	100	AF1VA618	0.006
			2	100	AF1VA410	0.002

⁽¹⁾ Protection must be provided by the addition of a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current, see pages B11/4 and B11/5.





Star-delta starters with mechanical interlock for customer assembly on back-panel

Maximum operating rate: 30 starts/hour.

Maximum starting time: 30 seconds.

For selection of TeSys Giga Contactors ⁽²⁾, overload relay ⁽³⁾ and circuit breaker ⁽³⁾ at different operating voltages, please refer to coordination tables pages A5/29, A5/38 and A5/39.

For Star-delta 'Power' and 'Control' circuit diagrams, please refer to page A2/26.

Separate components ⁽⁴⁾

Description	Illustration item no.	For use on	No.	Sold in lots of	Unit reference
Circuit breakers	1	G115...G500	1	1	GV5P220...GV6P500
			1	1	NSX250...NSX630
			1	1	NS800...NS1000
Electronic thermal overload relays	2	G115...G500	1	1	LR9G115... LR9G500 ⁽⁴⁾
Auxiliary contact blocks 1NO + 1NC	3	G115...G500	3	-	LAG8N113P (Supplied with the contactor)
Timer	4	G115...G500	1	1	RE17RMMWS
Mounting Rail	5	G115...G500	1	10	NSYSDR200
Sets of power connections	6	G115...G500 (LDY) ⁽⁵⁾	1	1	LA9GQQ330
		G115...G500 (LDY) ⁽⁵⁾	1	1	LA9GSS330
		G115...G500 (LDY) ⁽⁵⁾	1	1	LA9GTT330
		LD: G265...G500 ⁽⁵⁾ Y: G115...G225 ⁽⁵⁾	1	1	LA9GSQ331
Flexible terminal extensions for MCCB	7	G115...G225	1	1	LA9G3111
		G265...G500	1	1	LA9G3112
Mechanical interlock kit	8	G115...G500	1	1	LA9G970
		G265...G500 # G115...G225	1	1	LA9G971
Thermal magnetic circuit breaker for 5 A control circuit	9	G115...G500	2	6	GB2CB10

⁽¹⁾ Protection shall be provided by a thermal-magnetic circuit breaker or by a magnetic circuit breaker and an overload relay combination.

⁽²⁾ The contactors are supplied with wide band AC/DC coils with 1 NO + 1 NC auxiliary contact block. Please refer to pages B9/10 to B9/13 for the complete references of the contactors.

⁽³⁾ The protection device settings should be adjusted according to motor characteristics and conditions of use.

⁽⁴⁾ Please refer to pages B11/11 to B11/14 for details on **LR9G** electronic overload relays.

⁽⁵⁾ L- Line contactor/ D- Delta contactor/ Y- Star contactor.



TeSys Control

Open pre-cabled motor starters

Product references

Open
motor
starters

AB1AB8M35	GV2ME06K1BW3	LC3D09AB7
AB1AB8P35	GV2ME06K2BW3	LC3D09AP7
AB1BC15035	GV2ME06K2M7	LC3D115F7A64
AB1BC9535	GV2ME07K1BW3	LC3D115M7A64
ACMGV1084	GV2ME07K2BW3	LC3D115P7
ACMGV763	GV2ME08K1BW3	LC3D115P7A64
ACMGV973	GV2ME08K1P7	LC3D120AP7
AE3FX122	GV2ME10K1BW3	LC3D12AB7
AF1CD061	GV2ME14K1B7	LC3D12AP7
AF1CD081	GV2MP01	LC3D150M7A64
AF1VA410	GV2MP02	LC3D150P7
AF1VA618	GV2MP03	LC3D150P7A64
AF1VC820	GV2MP04	LC3D180AB7
AM3PA65	LA9D11517	LC3D180AP7
CAD32	LA9D115604	LC3D18AB7
GB2CB05	LA9D115692	LC3D18AF7
GB2CB10	LA9D11570	LC3D18AP7
GK2AX50	LA9D115704	LC3D18AU7
GV2AF01	LA9D12974	LC3D320AG7
GV2AF3	LA9D15017	LC3D320AP7
GV2AF4	LA9D5017	LC3D32AB7
GV2DM102BD	LA9D730	LC3D32AF7
GV2DM107BD	LA9D80973	LC3D32AP7
GV2DM107P7	LA9D901	LC3D80B7
GV2DM108B7	LA9GQQ330	LC3D80B7A64
GV2DM108BD	LA9GSS330	LC3D80E7A64
GV2DM108P7	LA9GTT330	LC3D80F7
GV2DM110BD	LA9GSQ331	LC3D80F7A64
GV2DM114B7	LA9G3111	LC3D80M7
GV2DM114BD	LA9G3112	LC3D80P7
GV2DM116BD	LA9G970	LC3D80P7A64
GV2DM132B7	LA9G971	LC3D80U7A64
GV2DM204B7	LAD31	LC3K09P7
GV2DM205BD	LAD91217	LC4D12AP7
GV2DM206BD	LAD91218	LC4D12AV7
GV2DM208BD	LAD93217	LC4D25AB7
GV2DM221M7	LAD93219	LC4D25AP7
GV2DM221P7	LADN10	NSYDPR25
GV2DM232P7	LADN22	NSYSNM6
GV2MC01	LADT2	NSYSNM8
GV2MC02	LAG8N113P	NSYSDR200
GV2MC03	LC3D090AB7	RE17RMMWS
GV2MCK04	LC3D090AP7	

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

Technical Data for Designers

Contents

Non-reversing / Reversing starters A2/18 to A2/21

Star-delta starters A2/22 to A2/26

TeSys Control

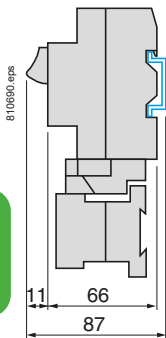
Open pre-cabled motor starters

Dimensions, mounting

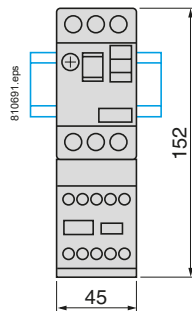
Open motor starters

GV2ME●●K●●

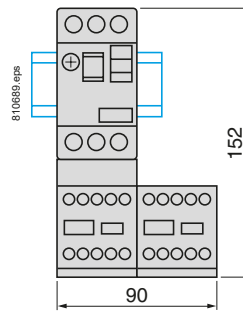
On mounting rail NSYSR200



GV2ME●●K1●●

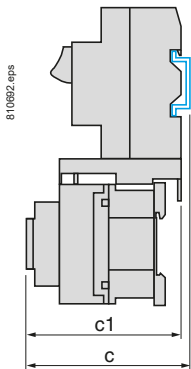


GV2ME●●K2●●

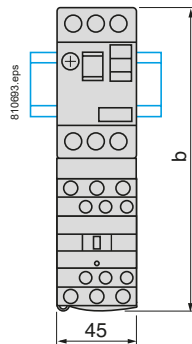


GV2DM●●●●

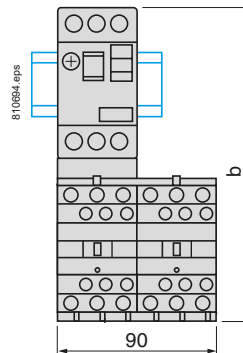
On mounting rail NSYSR200



GV2DM1●●●●



GV2DM2●●●●



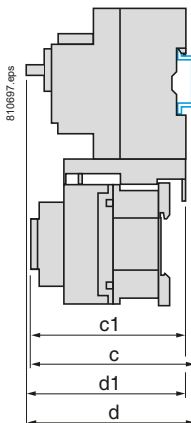
Ref.

GV2DM●●●● contactor with AC or DC coil on mounting rail NSYSR200

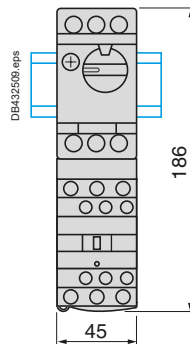
GV2	DM●02●● to DM●20●●	DM●21●● to DM●32●●
b	177	187
c	106	113
c1	96	103

GV2P●● + LC●D09 + GV2AF3

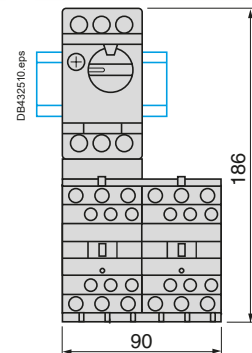
On mounting rail NSYSR200



GV2P●● + LC1D●● + GV2AF3



GV2P●● + LC2D●●●● + GV2AF3



LC1D, LC2D contactor with AC or DC coil on mounting rail

GV2	P02 to P08	P10 to P32
c	111	118
c1	101	108
d	107	107
d1	97	97

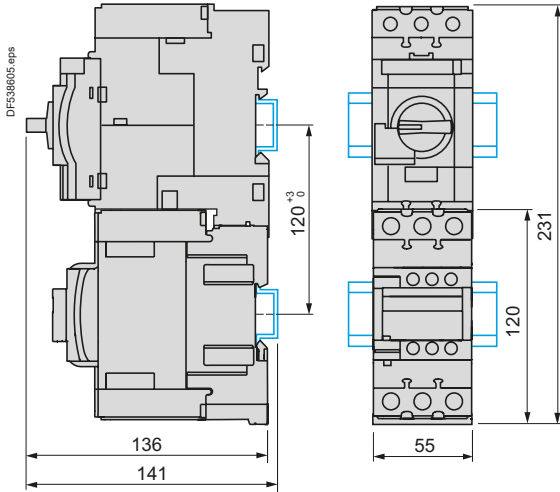
TeSys Control

Open pre-cabled motor starters

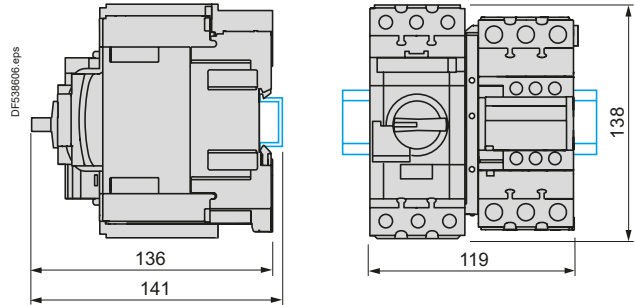
Dimensions, mounting

GV3P●●1 + LC1D40A...D65A (for customer assembly)

Vertical mounting ⁽¹⁾

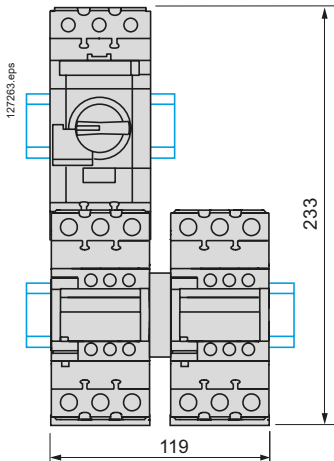


Side by side mounting with S-shape busbar system GV3 S ⁽²⁾

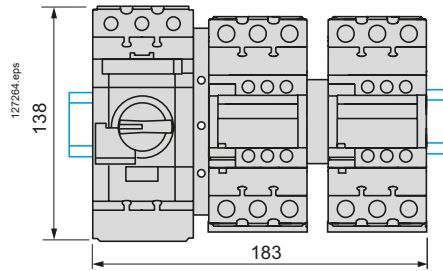


GV3P●●1 + LC2D40A...D65A (for customer assembly)

Vertical mounting ⁽¹⁾



Side by side mounting with S-shape busbar system GV3 S ⁽²⁾



- (1) For several side-by-side motor starters, the maximum current allowed is equal to the nominal current under 400 V.
Example: 55 A for a 30 kW motor under 400 V, for a GV3 P65 circuit breaker and a LC1 D65A contactor association.
- (2) The maximum current allowed is equal to 90 % of maximum current. Example: 45 A for a LC1 D50A contactor.

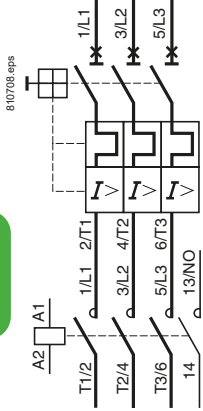
TeSys Control

Open pre-cabled motor starters

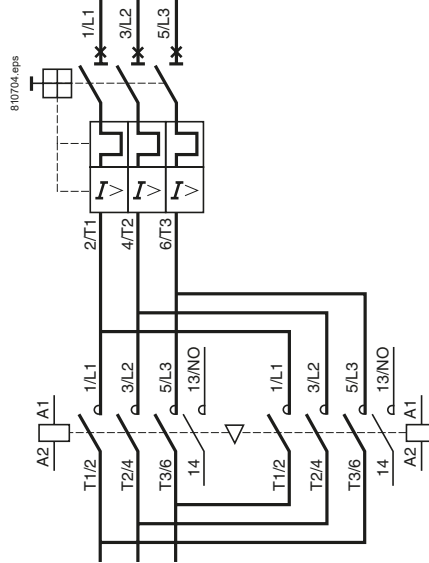
Schemes

Open motor starters

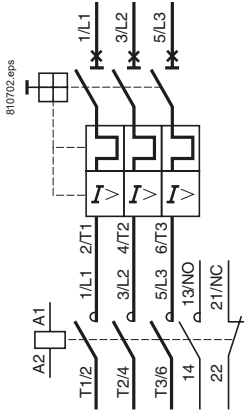
GV2ME●●K1●●



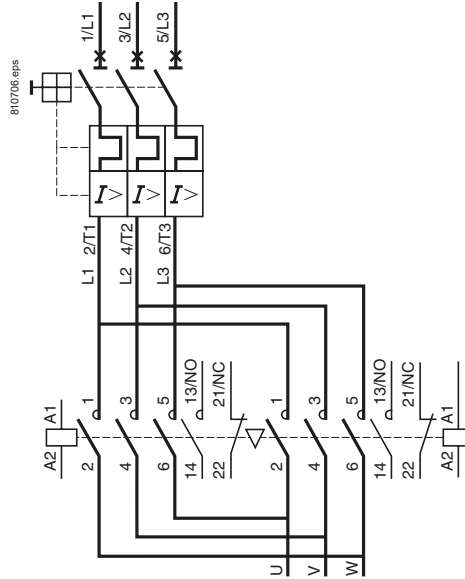
GV2ME●●K2●●



GV2DM1●●●●



GV2DM2●●●●



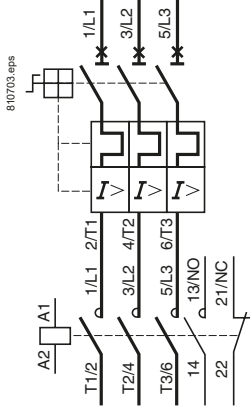
Ref.

TeSys Control

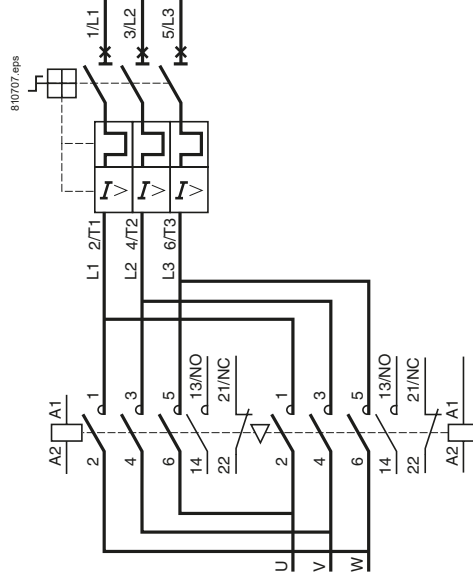
Open pre-cabled motor starters

Schemes

GV2P●● + LC1D●●●●

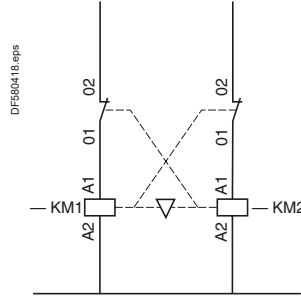
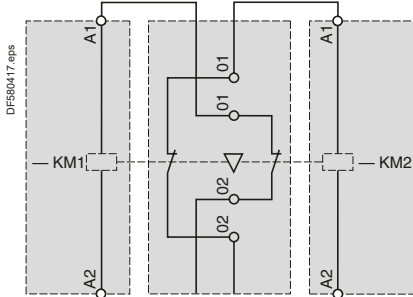


GV2P●● + LC2D●●●●

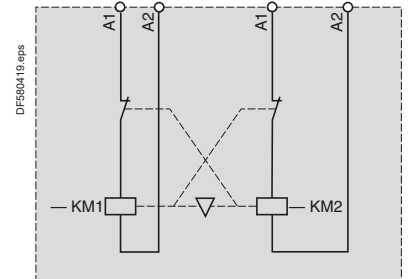


Mechanical interlock with integral electrical contacts

Control circuit ~



Control circuit ☐☐

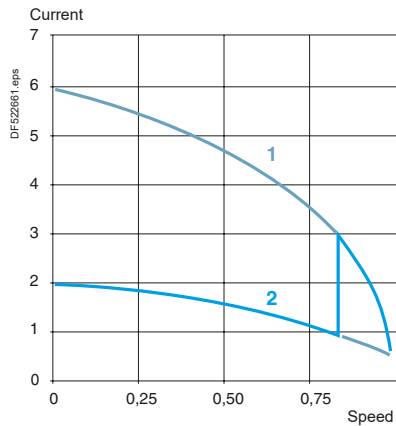


Open motor starters

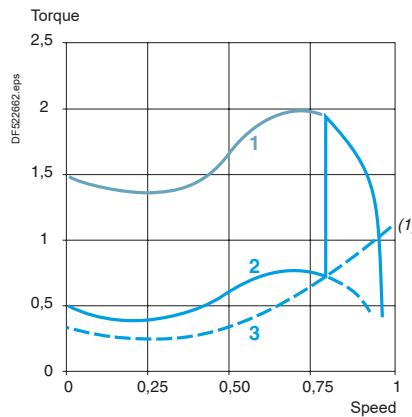
Ref.



Star-delta starting



- 1 Starting in direct delta connection
- 2 Starting in star connection



- 1 Starting in direct delta connection
- 2 Starting in star connection
- 3 Resistive torque of the machine

This method of starting is applicable to motors on which all 6 stator terminals are accessible and whose delta connection voltage corresponds to the mains voltage.

Star-delta starting should be used for motors starting on no-load or having a low load torque and gradual build-up:

- the starting torque in star connection is reduced to one third of the direct starting torque, i.e. about 50 % of the rated torque.
- the starting current in star connection is about 1.8 to 2.6 times the rated current.

The transition from star to delta connection must occur when the machine has run up to speed. A too rapid build-up in load torque would cause the stabilised run-up speed to be too low and would therefore eliminate any advantage in this method of starting: this is the case with certain machines whose load torque depends on the machine speed (a characteristic of centrifugal machines, for example).

All star-delta starters are supplied with a special LADS2 or LA2KT2 time delay relay which imposes a delay on the delta contactor during the transition period in order to allow the star contactor sufficient breaking time.

For ratings D115 and D150, this function is performed by a time delay auxiliary contact block LADT2 and a control relay.

(1) Motor manufacturers generally specify machine load torques.
Example: maximum resistive torque on completion of star-delta start (expressed as a proportion of the rated torque).

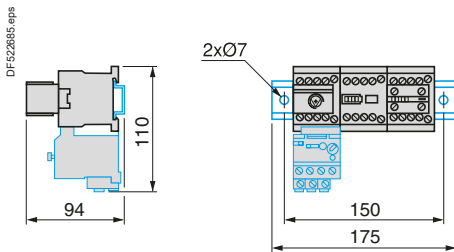
TeSys Control

Star-delta starters

Dimensions, mounting

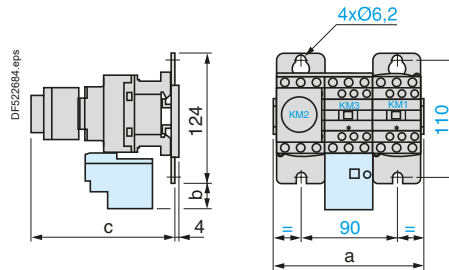
Dimensions

LC3K plate mounted, pre-assembled



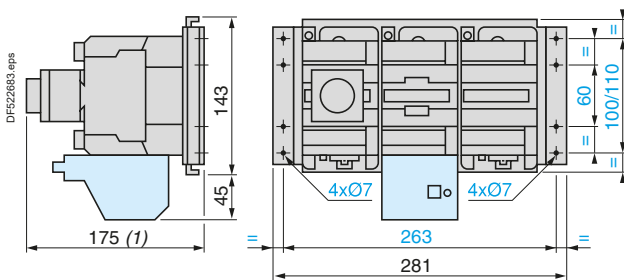
On starters LC3D09A to D18A, a connection block is mounted on the upper part of contactor KM2, increasing the overall height of the product by 6.5 mm.

LC3D09A...D32A pre-assembled or 3 x LC1D09A...D32A (customer assembly) + components



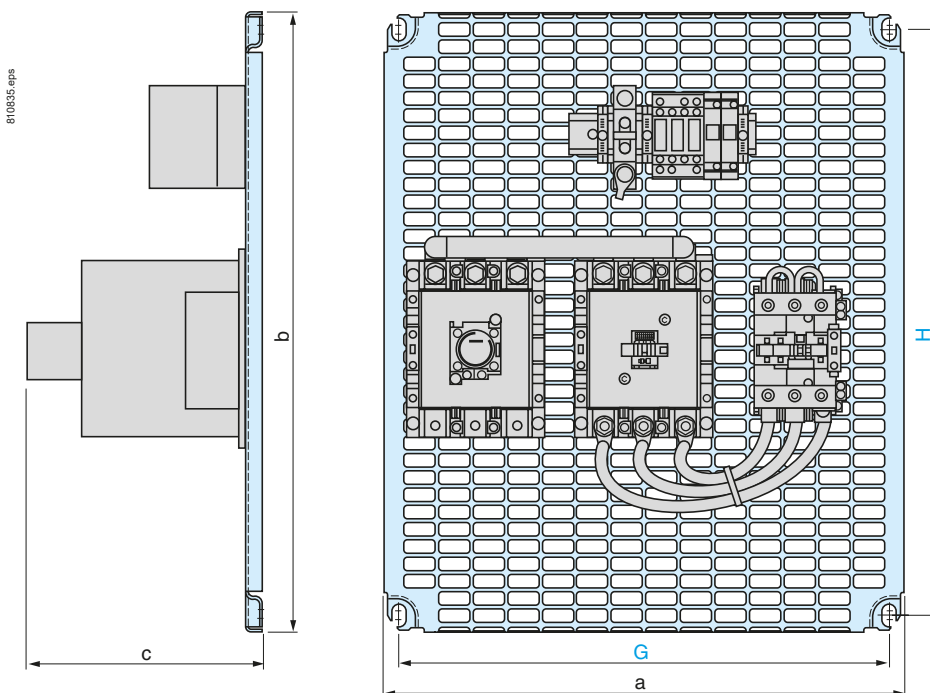
LC3	D09A	D12A	D18A	D32A
a	143	143	144	165
b	26.5	26.5	26.5	32.5
c	with LADS	139	139	145
	with LADS and sealing cover	143	143	149

LC3D80 pre-assembled or 3 x LC1D80 (customer assembly) + components



(1) +4 mm with sealing cover

LC3D115, D150 pre-assembled or 3 x LC1D115...D150 (customer assembly) + components



		a	b	c	G	H
LC3D115 or 3 x LC1D with components	D115	450	555	205	425	525
LC3D150 or 3 x LC1D with components	D150	450	555	205	425	525

References:
pages A2/8 to A2/13

Introduction:
page A2/22

Schemes:
page A2/24

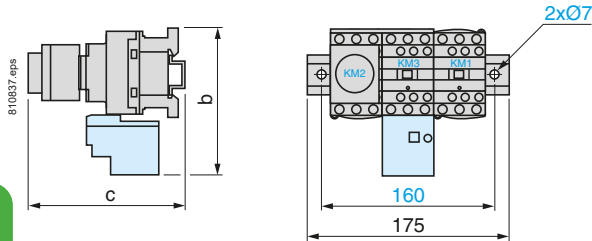
TeSys Control

Star-delta starters

Dimensions, mounting, schemes

Dimensions

LC3D090A à D320A on NSYS DR mounting rail, pre-assembled



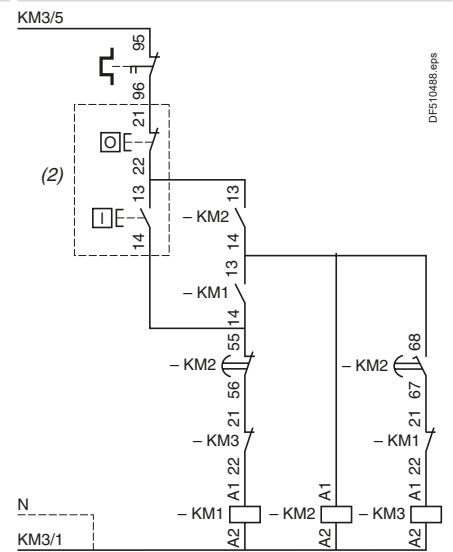
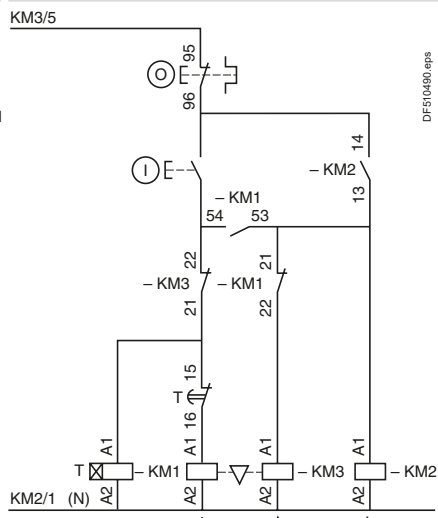
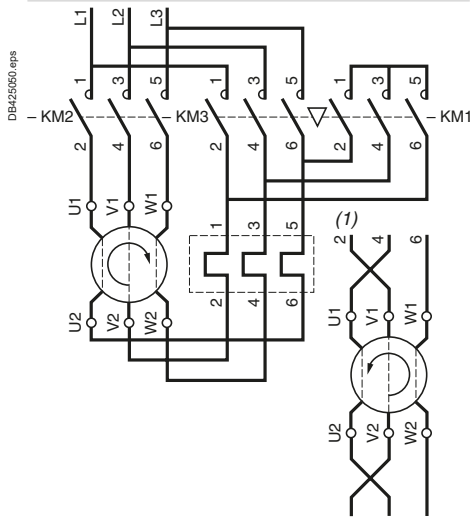
LC3	D090A à D180A	D320A
b	153	137
c	with LADS	145
	with LADS and sealing cover	149

Schemes

LC3K, LC3D09A to D80
LC3D090A to D320A

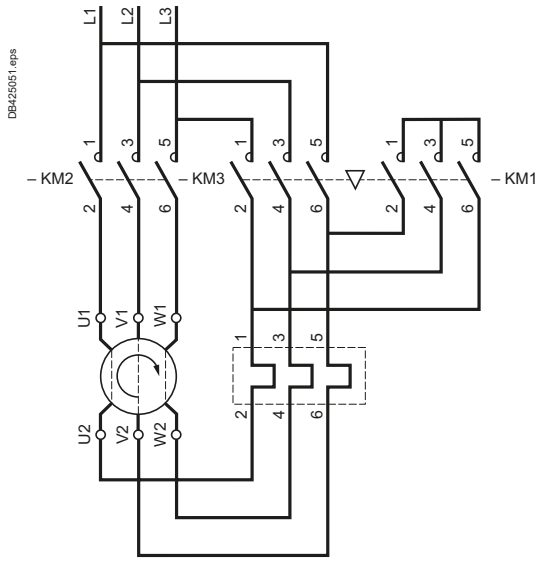
LC3K

LC3D

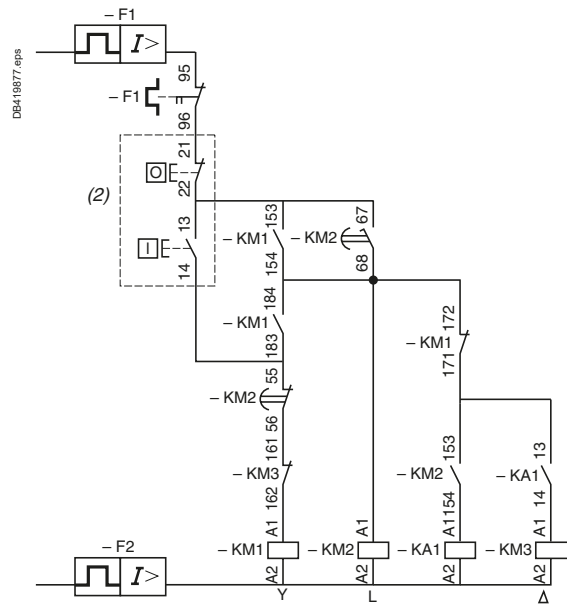


Note: LC3D09A to D18A: Mechanical interlock between KM3 and KM1.

LC3D115 and D150



Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).



(1) Recommended cabling for reversal of motor rotation (standard motor, viewed from shaft end).

(2) Remote control.

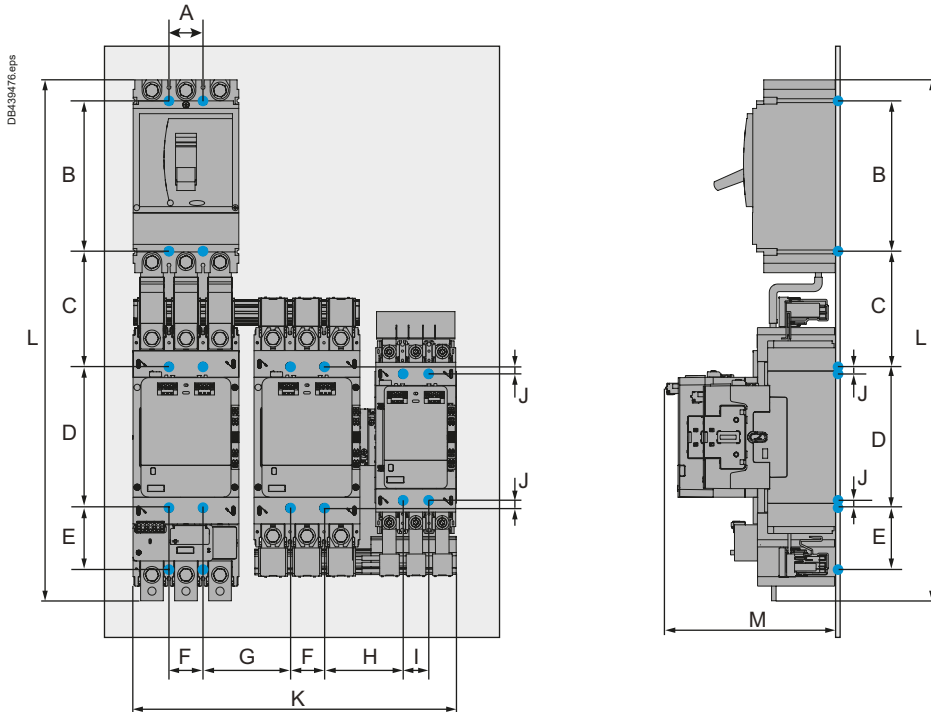
TeSys Control

Star-delta starters

Dimensions, mounting

Dimensions

TeSys Giga star-delta starters with mechanical interlock for customer assembly on back-panel



Circuit Breaker	Line & Delta Contactor	Star Contactor	Overload relay											Overall width	Overall height	Overall depth
				A	B	C	D	E	F	G	H	I	J			
NSX250	LC1G115 ...225	LC1G115 ...225	LR9G115/ LR9G225	35	125	87	166	79.15	35	92.7	92.7	35	0	364	523	193
NSX400/ NSX630	LC1G115 ...225	LC1G115 ...225	LR9G115/ LR9G225	45	200	118	166	79.15	35	92.7	92.7	35	0	364	565.5	193
NSX400/ NSX630	LC1G265 ...500	LC1G115 ...225	LR9G500	45	200	118	187	81.85	45	115	103.85	35	10.5	428	670	225
NSX400/ NSX630	LC1G265 ...500	LC1G265 ...500	LR9G500	45	200	118	187	81.85	45	115	115	45	0	463	670	225
NS800	LC1G265 ...500	LC1G115 ...225	LR9G500	199	200	217	187	81.85	45	115	103.85	35	10.5	428	804.6	225
NS800	LC1G265 ...500	LC1G265 ...500	LR9G500	199	200	217	187	81.85	45	115	115	45	0	463	804.6	225

Note: All dimensions are in mm.

TeSys Control

Star-delta starters

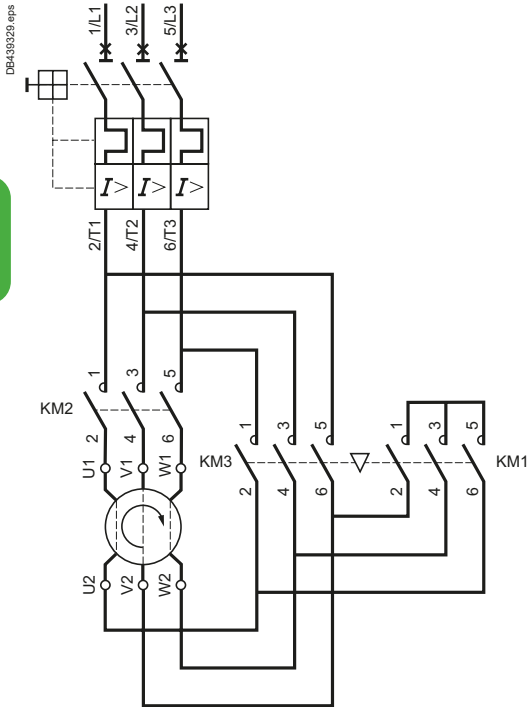
Schemes

Open motor starters

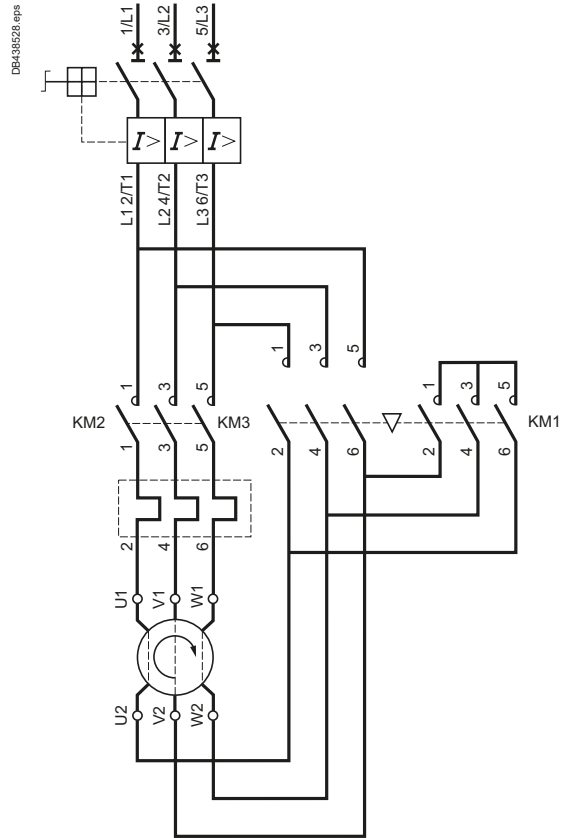
Ref.
i
↕

TeSys Giga star-delta motor 'Power' circuit diagram

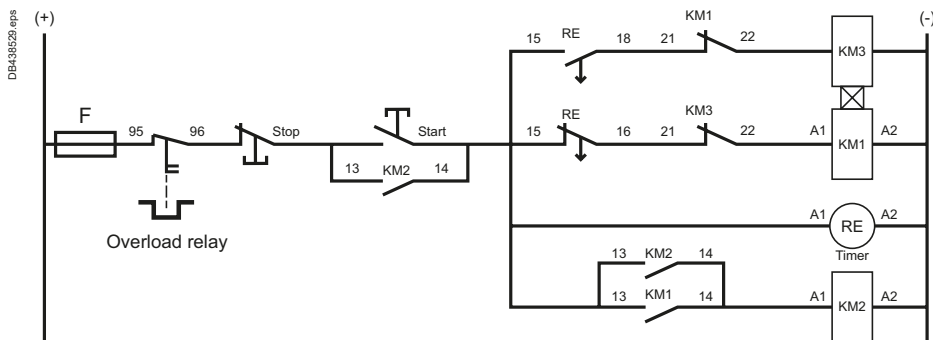
Thermal magnetic circuit breaker + contactors



Magnetic circuit breaker + contactors + overload relay



TeSys Giga star-delta motor 'Control' circuit diagram




Recommended timing relay (RE): Zelio Timer ref. **RE17RMMWS** (12...240 V AC/DC 50/60 Hz – 8 AAC/DC contacts)

Introduction

A3/2

TeSys Hybrid motor starters

Type of product	Range		Page
<p>Ultra-compact starters IEC ratings Standard starters, screw or spring terminals, direct-on-line or reverse</p> <p>Safety starters, screw or spring terminals, direct-on-line or reverse</p>	<p>Up to 3 kW AC53a Up to 9 A AC51</p>		A3/6
<p>Ultra-compact starters UL ratings Standard starters, screw or spring terminals, direct-on-line or reverse</p> <p>Safety starters, screw or spring terminals, direct-on-line or reverse</p>	<p>Up to 3 hp AC53a Up to 9 A AC51</p>		A3/7
<p>TeSys Deca Circuit breakers for a group of starters Selection of magnetic motor circuit breakers TeSys GV2L – rotary knob TeSys GV2LE – rocker lever</p>	<p>Up to 32 A</p>		A3/8

Hybrid
motor
starters

Technical Data for Designers

A3/11

The most compact 3 KW / 400 V starter in the world

Hybrid
motor
starters



Up to 75 % of space reduction

- Ultra-compact 22.5 mm starter
- Reversing starter in the same width
- Maximum space savings for group starter architecture

Long electrical durability

- Suitable for high demanding application
- 30 000 000 of AC53a electrical cycles

> With printed QR code, referring directly to the product data sheet.

Easy Design

- Wide range setting motor protection
- Automatic, manual or remote reset after thermal trip
- Wide range of control voltage

Easy to integrate

- Direct mounting installation on DIN rail
- Control terminals on the upper side
- Power terminal on the lower side

Standard version

- 2 ratings:
 - 2.4 A 400 V AC53a
 - 6.5 A 400 V AC53a
- 2 control voltages:
 - 24 V DC
 - 110 V / 230 V AC
- 2 terminal types:
 - Screw clamps
 - Spring
- Can provide up to 3 functions:
 - Forward running
 - Reverse running
 - Overload protection



Hybrid motor starters



Safety version

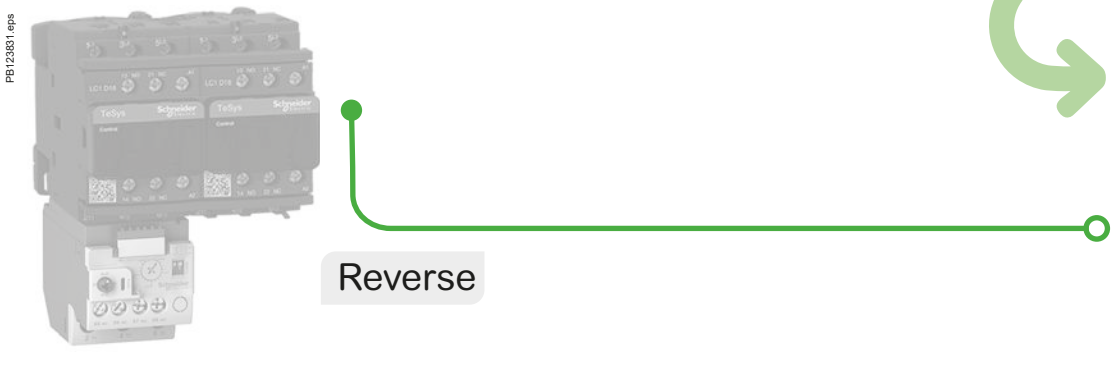
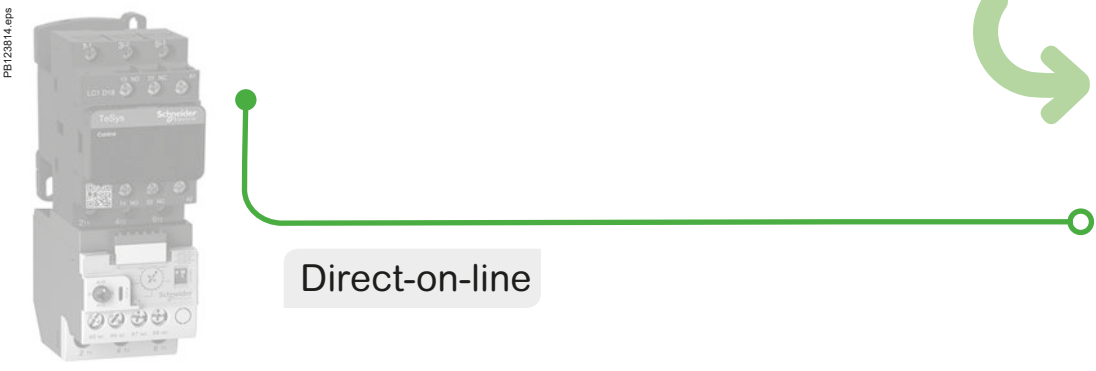
- Safe Torque Off embedded:
 - SIL3 according to IEC61508-1
 - PlE according to ISO13849-1
- ATEX:
 - As associated devices for motor protection

> Hybrid motor starters are a solution dedicated to low footprint applications, in industries as food and beverage, logistics, and durable goods.



Hybrid motor starters

Conventional OR Hybrid Standard starter

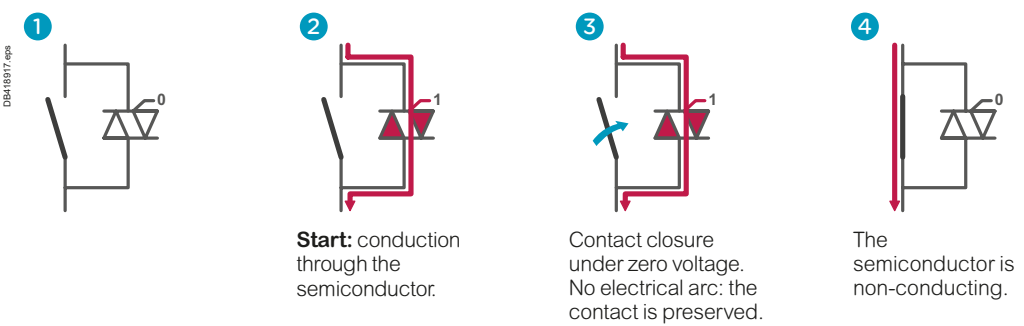


> How does the hybrid technology work ?

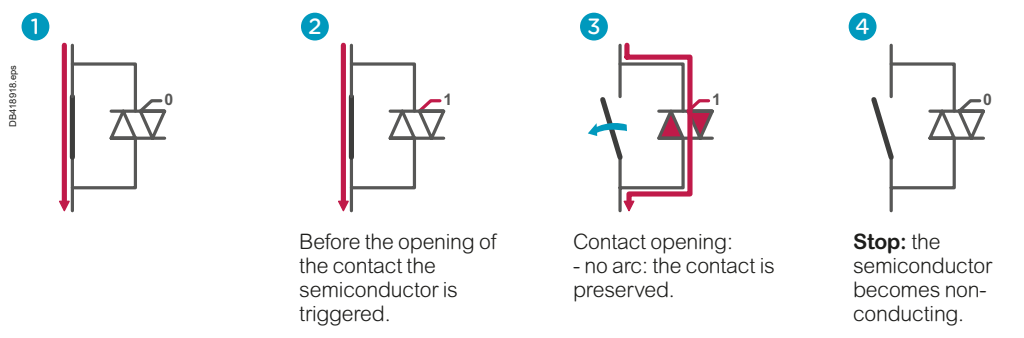
Hybrid technology:
Each contact is coupled with a power semiconductor for switching

> Higher number of on/off switches, extended durability.

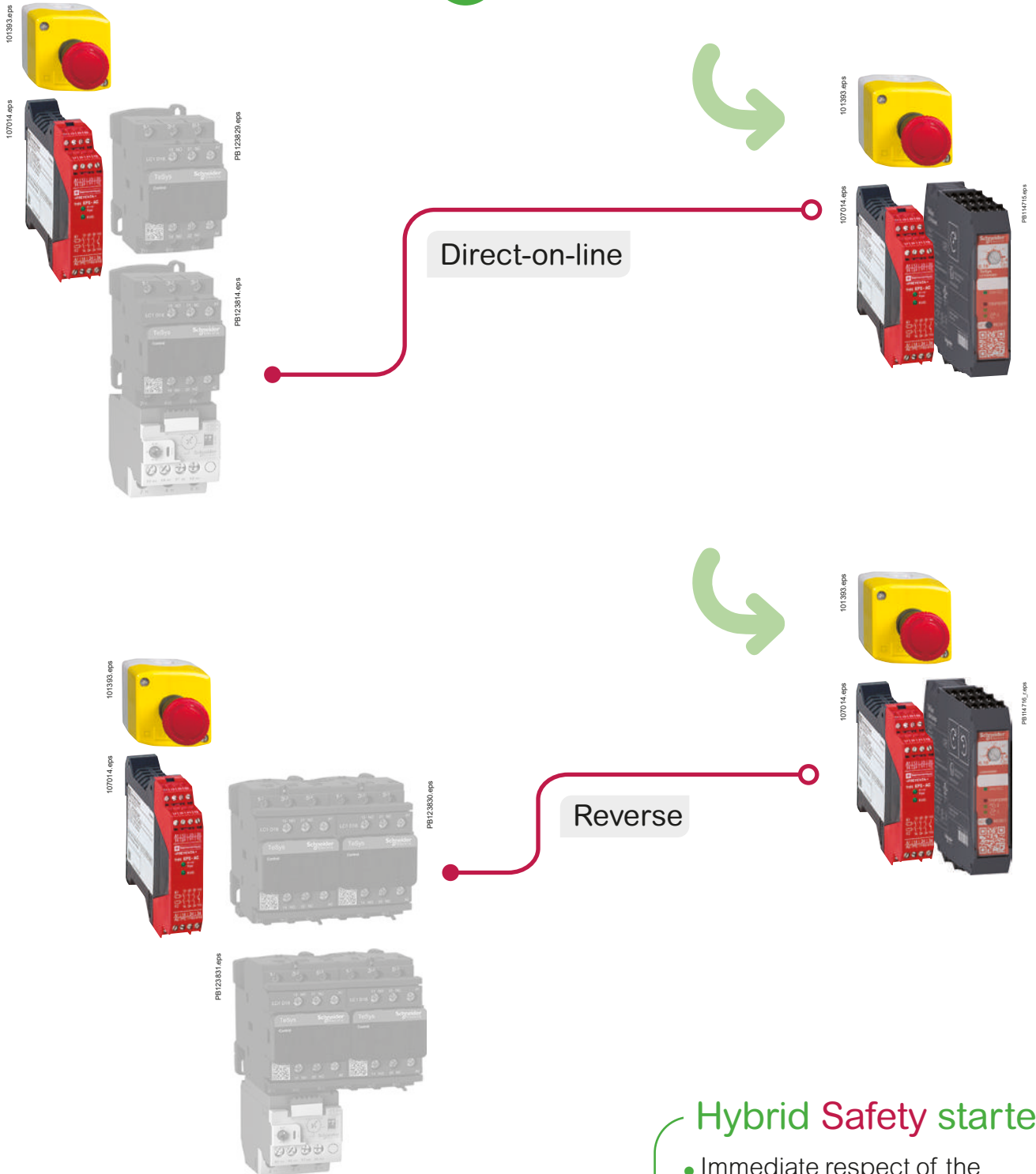
> Closing



> Opening



Conventional OR Hybrid Safety starter



Hybrid motor starters

- Hybrid Safety starter**
- Immediate respect of the highest safety standards
 - Simplified design of your safety electrical architecture
 - Quicker panel implementation

TeSys Control

DOL/Reverser, Standard/Safety Hybrid starters

Product references (per IEC ratings)

PB114711.eps



LZ1H2X4BD

Hybrid motor starters

Starters for asynchronous motors - AC53a utilization category:

Standard starters hybrid per IEC ratings

Starters	3- phases motor: max power (KW) for various voltage							Current range	Commercial references ⁽¹⁾
	220 V	230 V	380 V	400 V	415 V	440 V	500 V		
Direct-on-line									
Screw terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ1H2X4●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ1H6X5●●
Spring terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ1H2X43●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ1H6X53●●
Reverse									
Screw terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ2H2X4●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ2H6X5●●
Spring terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ2H2X43●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ2H6X53●●

(1) Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

PB114715.eps



LZ7H2X4BD



Safety starters hybrid per IEC ratings

Starters	3- phases motor: max power (KW) for different tensions							Current range	Commercial references ⁽¹⁾
	220 V	230 V	380 V	400 V	415 V	440 V	500 V		
Direct-on-line									
Screw terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ7H2X4●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ7H6X5●●
Spring terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ7H2X43●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ7H6X53●●
Reverse									
Screw terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ8H2X4●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ8H6X5●●
Spring terminals	0.37	0.37	0.75	0.75	0.75	0.75	1.1	0.18...2.4	LZ8H2X43●●
	1.5	1.5	2.2	3	3	3	3	1.5...6.5	LZ8H6X53●●

(1) Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

Starters for resistive load AC51 utilization category:

Starters	Resistive load current A	Application	Commercial references ⁽¹⁾
		Safety	LZ7H2X4●●
	9	Standard	LZ1H6X5●●
		Safety	LZ7H6X5●●
Spring terminals	2.4	Standard	LZ1H2X43●●
		Safety	LZ7H2X43●●
	9	Standard	LZ1H6X53●●
		Safety	LZ7H6X53●●

(1) Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

TeSys Control

DOL/Reverser, Standard/Safety Hybrid starters

Product references (per UL ratings)

PB114713.eps



LZ1H2X43BD

Starters for asynchronous motors - AC53a utilization category:

Standard starters hybrid per UL ratings

Starters	3-phases motor in HP			Current range A	Commercial references ⁽¹⁾
	208 V	220 V - 240 V	440 V - 480 V		
Direct-on-line					
Screw terminals	1/2	1/2	1	0.18...2.4	LZ1H2X4●●
	1	1.5	3	1.5...6.5	LZ1H6X5●●
Spring terminals	1/2	1/2	1	0.18...2.4	LZ1H2X43●●
	1	1.5	3	1.5...6.5	LZ1H6X53●●
Reverse					
Screw terminals	1/2	1/2	1	0.18...2.4	LZ2H2X4●●
	1	1.5	3	1.5...6.5	LZ2H6X5●●
Spring terminals	1/2	1/2	1	0.18...2.4	LZ2H2X43●●
	1	1.5	3	1.5...6.5	LZ2H6X53●●

⁽¹⁾ Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

Hybrid motor starters

PB114716.eps



LZ8H6X5BD

Safety starters hybrid per UL ratings

Starters	3-phases motor in HP			Current range A	Commercial references ⁽¹⁾
	208 V	220 V - 240 V	440 V - 480 V		
Direct-on-line					
Screw terminals	1/2	1/2	1	0.18...2.4	LZ7H2X4●●
	1	1.5	3	1.5...6.5	LZ7H6X5●●
Spring terminals	1/2	1/2	1	0.18...2.4	LZ7H2X43●●
	1	1.5	3	1.5...6.5	LZ7H6X53●●
Reverse					
Screw terminals	1/2	1/2	1	0.18...2.4	LZ8H2X4●●
	1	1.5	3	1.5...6.5	LZ8H6X5●●
Spring terminals	1/2	1/2	1	0.18...2.4	LZ8H2X43●●
	1	1.5	3	1.5...6.5	LZ8H6X53●●

⁽¹⁾ Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).



Starters for resistive load AC51 utilization category:

Starters	Resistive load current	Application	Commercial references ⁽¹⁾
	A		
Screw terminals	2.4	Standard	LZ1H2X4●●
		Safety	LZ7H2X4●●
	9	Standard	LZ1H6X5●●
		Safety	LZ7H6X5●●
Spring terminals	2.4	Standard	LZ1H2X43●●
		Safety	LZ7H2X43●●
	9	Standard	LZ1H6X53●●
		Safety	LZ7H6X53●●

⁽¹⁾ Replace the ●● in the reference by the bobine code: BD (24 V DC) or FU (110-230 V AC).

TeSys Control

Deca Magnetic circuit breakers for group protection

Selection table



- Magnetic motor circuit breakers:
- GV2L: rotary knob type - Ue = 500 V
 - GV2LE: rocker lever type - Ue = 415 V.

Selection of the circuit breaker Type 1 coordination according to IEC/EN 60947-4-2

Max A	Iq kA	Number of H		Reference Circuit breaker	
		2.4 A	6.5 A	Rotary	Rocker
0.4	50.0	1	–	GV2L03	GV2LE03
0.63	50.0	1	–	GV2L04	GV2LE04
1	50.0	1	1	GV2L05	GV2LE05
1.6	50.0	1	1	GV2L06	GV2LE06
2.5	35.0	1	1	GV2L07	GV2LE07
4	12.5	1	1	GV2L08	GV2LE08
6.3	8.0	2	1	GV2L10	GV2LE10
10	7.0	4	1	GV2L14	GV2LE14
14	5.0	5	2	GV2L16	GV2LE16
18	4.0	7	2	GV2L20	GV2LE20
25	4.0	10	3	GV2L22	GV2LE22
32	3.0	13	4	GV2L32	GV2LE32

Hybrid
motor
starters



GV2L + LZ2H2X4BD

TeSys Control


Hybrid motor starters

Product references

LZ1H2X43BD
LZ1H2X43FU
LZ1H2X4BD
LZ1H2X4FU
LZ1H6X53BD
LZ1H6X53FU
LZ1H6X5BD
LZ1H6X5FU
LZ2H2X43BD
LZ2H2X43FU
LZ2H2X4BD
LZ2H2X4FU
LZ2H6X53BD
LZ2H6X53FU
LZ2H6X5BD
LZ2H6X5FU

LZ7H2X43BD
LZ7H2X43FU
LZ7H2X4BD
LZ7H2X4FU
LZ7H6X53BD
LZ7H6X53FU
LZ7H6X5BD
LZ7H6X5FU
LZ8H2X43BD
LZ8H2X43FU
LZ8H2X4BD
LZ8H2X4FU
LZ8H6X53BD
LZ8H6X53FU
LZ8H6X5BD
LZ8H6X5FU

Hybrid
motor
starters

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

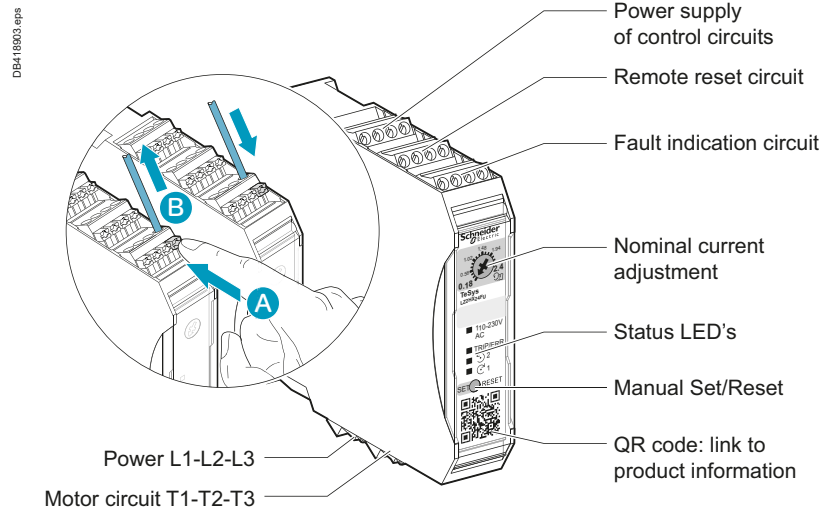
Technical Data for Designers

Contents

Description	A3/12 to A3/13
Characteristics.....	A3/14 to A3/15
Curves	A3/16 to A3/17
Dimensions and schemes	A3/18

Identification of terminals / Indicators / Setting means and procedure

Setting procedure



STEP	ACTION
1	Lift the cover on the front of the Hybrid motor starter to access the SET/RESET button.
2	Press and hold down the SET/RESET button for at least 6 seconds. After 6 seconds the 110-230 V AC or 24 V DC LED flashes once.
3	After the LED has flashed once, release the SET/RESET button.
4	Turn the potentiometer to select a nominal current, and then fine-tune the position until the LEDs indicate the exact nominal current.
5	Press the SET/RESET button to save the selected nominal current. The 110-230 V AC or 24 V DC LED comes on and the other LEDs go off.
6	Drop the cover back over the front of the Hybrid motor starter.

Protection functions

The protection of three - phase motors is ensured against potential faults

- Thermal overload: the motor currents exceed the set value.
- Phase unbalanced: the motor currents differ from each other by more than 33 %
- Phase loss: power missing on one or several phases
- Stall and jam: motor current exceeding 45 A for more that 2 s during starting or running phase - No motor is connected - Motor current is lower that the minimum configurable current for more than 2 seconds, on at least two phases.

For all this detected situations, the Hybrid motor starter will switch off, activate its TRP/ERR LED and fault signaling contact.

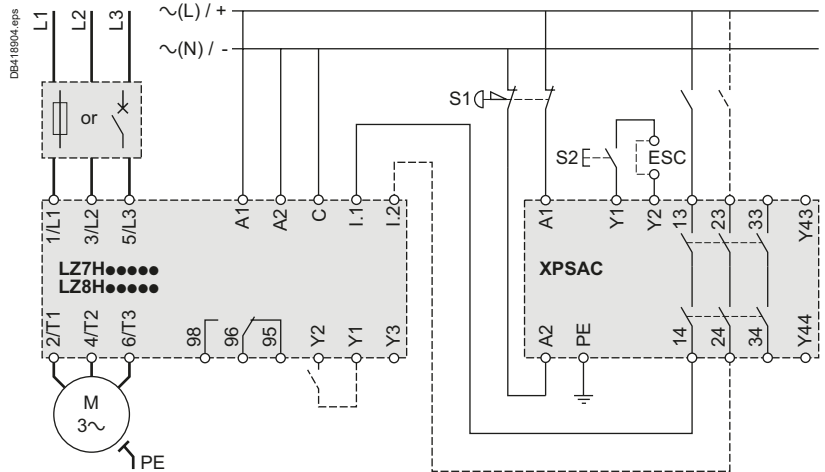
Please refer to the "Instruction sheet and User Guide" for more information.

Electrical diagrams for Safety chain applications

Preferred

Electrical life time: 30000000 AC53a electrical cycles

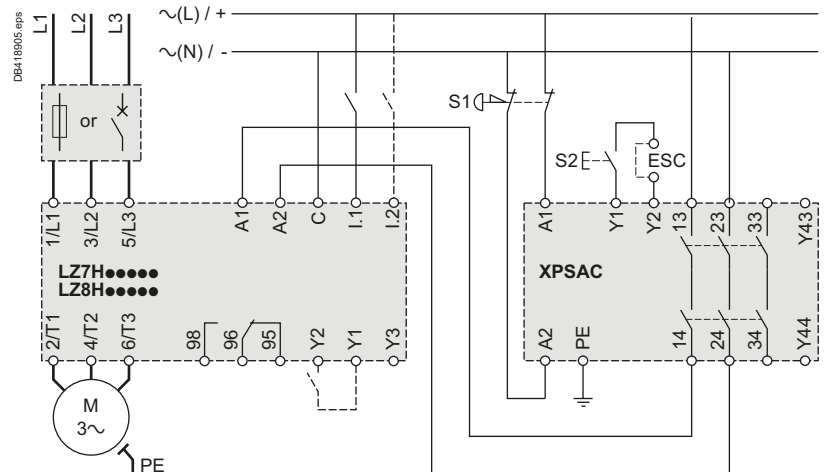
Safety Chain Application for Monitoring Emergency STOP Circuits with Two Channel Inputs and Two Channel Outputs with Preventa XPSAF Safety Processing Device.



Possible but non-recommended

Electrical life time: 10000 AC53 a electrical cycles

Safety Chain Application for Monitoring Emergency Stop Circuits with Two Channel Inputs and Two Channel Outputs with Preventa XPSAC Safety Processing Device.



TeSys Control

Hybrid motor starters

Characteristics

Hybrid motor starters

- Ref.
- i
-
-
-

Environment			
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 2	V	500
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-2	kV	6 (24 V DC control voltage); 4 (110 V - 230 V AC control voltage)
Conforming to standards			IEC / EN 60947-4-2
Product certifications			CE, CUL, ATEX (for failsafe product), CCC, UKCA
Degree of protection	Conforming to IEC / EN 60947-1		IP20
Environment category	Conforming to IEC / EN 60947-1		E
Climatic withstand			Conforming to IEC/EN 60068-2-30
Ambient air temperature around the device	Storage	°C	-40...+80
	Operation (see derating curves)	°C	-25...+70
Maximum operating altitude	without derating	m	2000
	with derating	m	No
Operating positions (see derating curves)	Vertical axis (horizontal DIN rail)		Yes
	Horizontal axis (vertical DIN rail)		Not authorised
Shock resistance	Conforming to IEC/EN 60068-2-27	gn	30 Starter OFF
1/2 sine wave = 18 ms		gn	30 Starter ON
Vibration resistance	Conforming to IEC/EN 60068-2-6	gn	5 Starter OFF
10... 150 Hz		gn	5 Starter ON
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	Air discharge: 8 kV
		kV	Contact discharge: 6 kV
Immunity to radiated high-frequency disturbance	Conforming to IEC/EN 61000-4-3		
	80 - 1 GHz	V/m	20
	1.0 - 6 GHz	V/m	10
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	kV	3
Immunity to conducted high frequency disturbances	Conforming to IEC/EN 61000-4-6	V	10
Radiated emission and conducted	Conforming to CISPR 11 and EN 55011		Class A
Surge	Conforming to IEC/EN 61000-4-5	kV	1 symmetrical
		kV	2 asymmetrical
Control circuit characteristics			
Rated voltage	~ 50/60 Hz	V	110 - 230
	≡	V	24
Voltage limits	~ 50/60 Hz	V	85...253
	≡	V	19.2...30
Voltage dips		ms	3
Short time interruptions		ms	3
Power circuit characteristics			
			LZ●2X4●●
			LZ●6X5●●
Power dissipation for corresponding Rated Operating Current (see derating curve)		W	0.88 ... 4.1
Rated Operating Current	AC51 conforming to IEC/EN 60947-4-3	A	0.18 - 2.4
	AC53a conforming to IEC/EN 60947-4-2	A	0.18 - 2.4
Electrical life	AC51	Op	30 000 000 ⁽¹⁾
		Op	10 000 ⁽²⁾
	AC53A	Op	30 000 000 ⁽¹⁾
		Op	10 000 ⁽²⁾
Maximum Operating rate	AC51	Op/h	7200
	AC53A		See curves
Time to restart after overload trip	Manual or remote mode	mn	2
	Automatic	mn	20
Power and control terminal Characteristics			
	Terminal type		Screw M3
			Push in
Flexible cable without cable end	1 conductor	mm ²	0.25...2.5
	2 conductors	mm ²	0.25...0.75
Flexible cable with cable end	1 conductor	mm ²	0.25...2.5
	2 conductors	mm ²	0.25...1.5
Solid cable without cable end	1 conductor	mm ²	0.25...2.5
	2 conductors	mm ²	0.25...0.75
Screwdriver		mm	flat screwdriver: 3 mm
Tightening torque		N.m	0.5..0.6
(1) With ON/OFF control through control inputs (I₁, I₂ terminals) (2) With ON/OFF control through power supply (A₁, A₂ terminals).			
References: pages A3/6 and A3/7	Description: pages A3/12 and A3/13	Curves: pages A3/16 and A3/17	Dimensions, schemes: page A3/18

TeSys Control

Hybrid motor starters

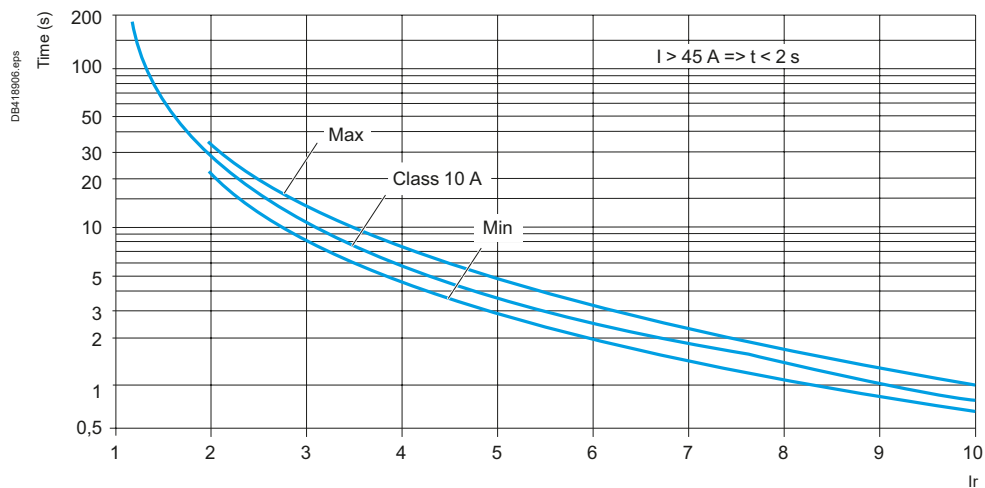
Characteristics

System conditions		
Database for failure rates		SN 29500
System type		Type B
Standard used		IEC 61508
Beta factor		1 %
Mean time to failure (MTTF) at an ambient temperature 40 °C		39.3 (LZ7H or LZ8H 24 V DC) 39.1 (LZ7H or LZ8H 110/230 V AC)

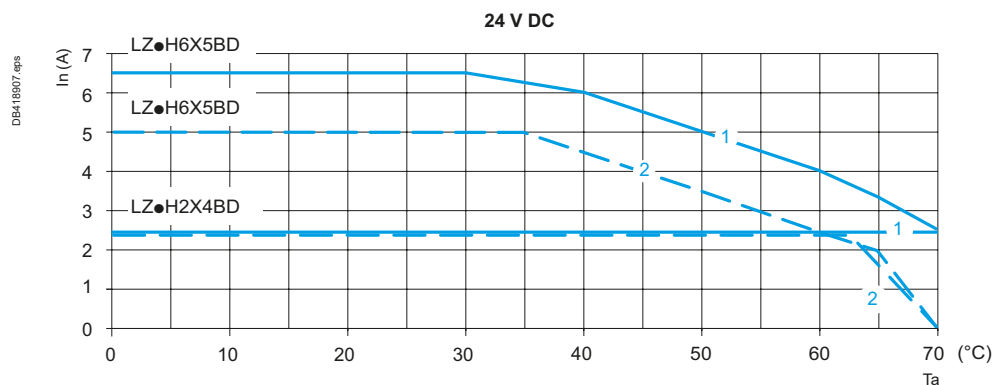
Safe torque-off			
		LZ7H or LZ8H 24 V DC	LZ7H or LZ8H 110/230 V AC
Ambient temperature	°C	40	40
Mean time to failure (MTTF)		517	289
Switch-off time		80	100
λ_{sd} [FIT] safe, detectable		664	638
λ_{su} [FIT] safe, undetectable		968	935
λ_{dd} [FIT] dangerous, detectable		218	388
λ_{du} [FIT] dangerous, undetectable		2.67	6.82
SFF [%] Safe failure fraction		99	99
DCS [%] Diagnostic coverage safe		40.7	40.6
DC [%] Diagnostic coverage		98	98
PFH Probability of dangerous failure per hour		2.67×10^{-9}	6.82×10^{-9}
Safety level		IEC/CEI 61508-1: SIL 3 ISO 13849-1: Category 3 PL e EN 60954-1: Category 3	

Motor overload protection			
		LZ7H or LZ8H 24 V DC	LZ7H or LZ8H 110/230 V AC
Ambient temperature	°C	40	40
Mean time to failure (MTTF)		447	273
Time to trip		As for Class 10 A, IEC/CEI 60947-4-2	
λ_{sd} [FIT] safe, detectable		637	636
λ_{su} [FIT] safe, undetectable		870	841
λ_{dd} [FIT] dangerous, detectable		239	402
λ_{du} [FIT] dangerous, undetectable		17	17
SFF [%] Safe failure fraction		99	99
DCS [%] Diagnostic coverage safe		42.3	43.1
DC [%] Diagnostic coverage		93	95
Safety level		IEC/CEI 61508-1: SIL 2	

Overload protection tripping curve at 20 °C

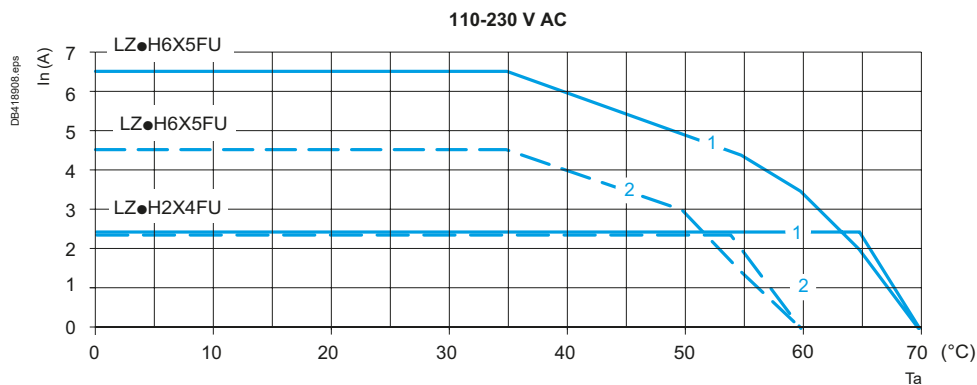


Derating curves: maximum load current (In)



Derating according:

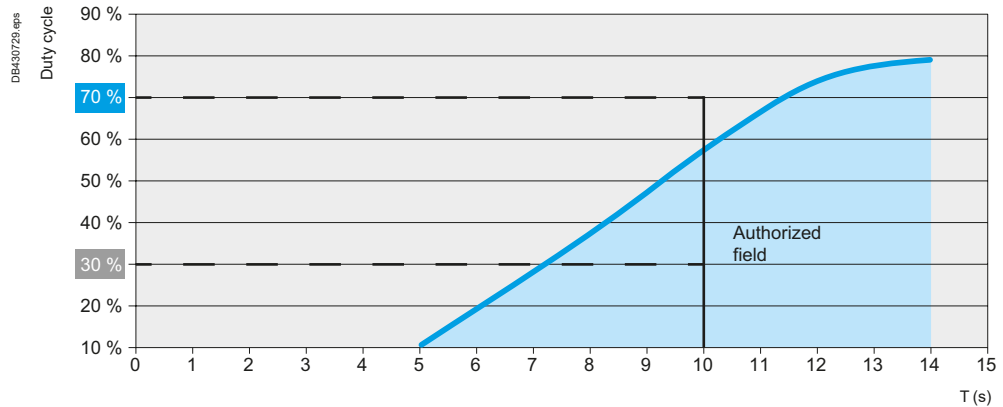
- motor starter control power supply
- ambient temperature (T_a)
- distance between devices **1**: 20 mm, with spacing
2: without spacing.



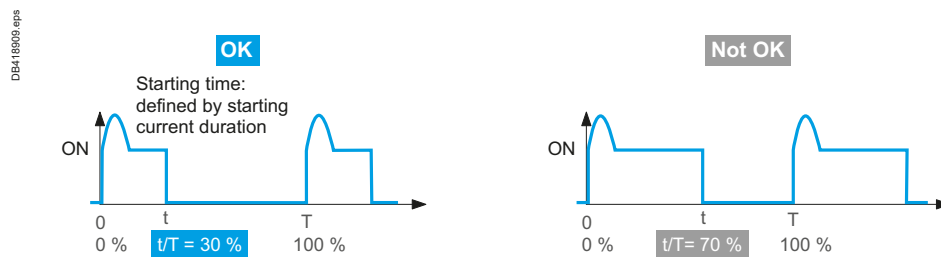
Minimum duty cycle t/T (%) versus cycle duration T (s)

Due to the effect of the peak current on the H monitoring circuit during the starting time, a stop/start sequence should not occur before a certain amount of time. The diagrams below show the minimum duty cycle according to the total period for 2 typical starting time values.

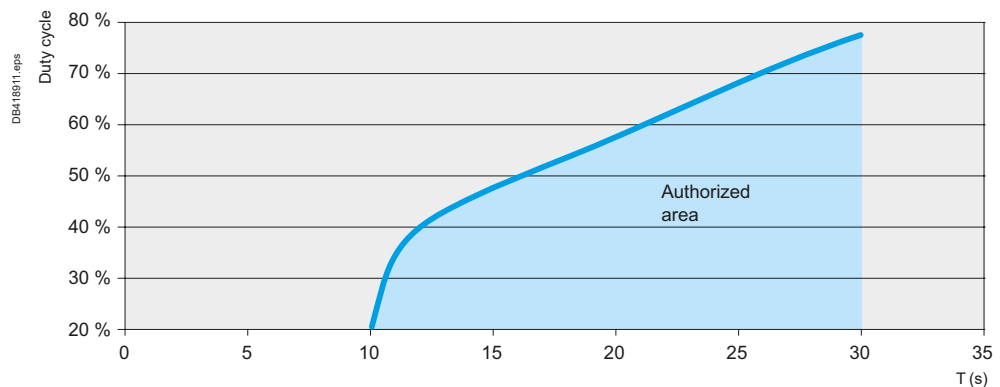
With a starting time = 100 ms



Example for starting time of 100 ms with period $T = 10$ s.

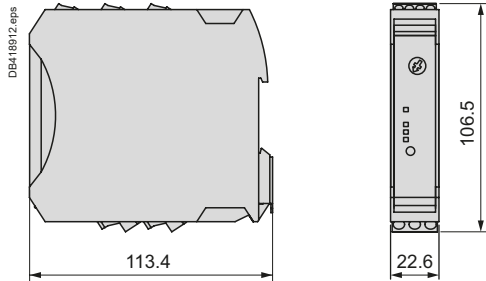


With a starting time = 150 ms

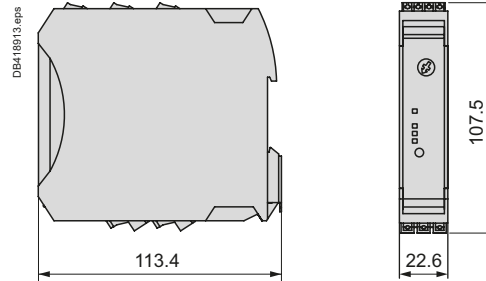


Dimensions mm

LZ●H●●●●●

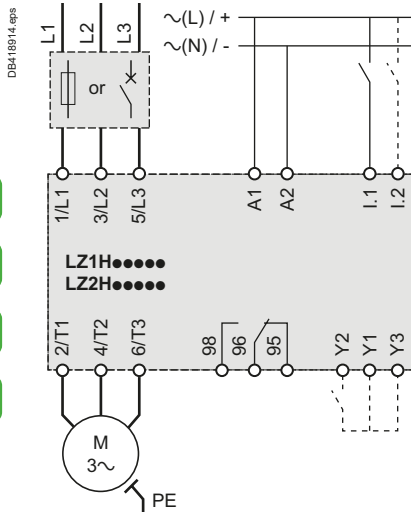


LZ●H●●●3●●

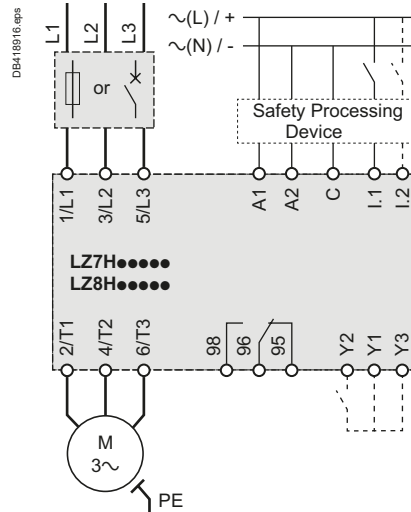


Wiring diagrams

Motor control by standard starter



Motor control by safety starter



Power terminals


T1, T2, T3 Motor connection
L1, L2, L3 Power inputs

Control terminals

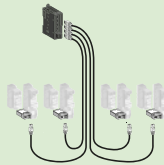
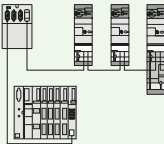

A1, A2 Auxiliary power unit
I.1 Control input, direction 1
I.2 Control input, direction 2 (LZ2H and LZ8H only)
C Control inputs common point (LZ7H and LZ8H only)
Y1 Reset mode, common point
Y2 Reset mode, remote, manual
Y3 Reset mode, automatic
98, 96, 95 Trip or error signaling contact

Introduction A4/2

TeSys Ultra - Power bases, control modules, connectors

Type of product	Range		Page
Standard power base, basic control functionalities Direct and reversing	Up to 18.5 kW		A4/10

TeSys Ultra - Communication components

Parallel type cabling system Principle and components			A4/16
Bus type cabling systems Principle, panorama and components			A4/21
TeSys LUFPP communication gateway			A4/30

TeSys Ultra - Accessories

Short circuit current limiter			A4/31
Handles and accessories for rotary control			A4/32
Handles and accessories for integration into a MCC drawer			A4/33
TeSys Ultra with Altistart U01 Soft starters and Variable speed controllers			A4/34

Ultra
motor
starters

Technical Data for Designers A4/43

From traditional solution to ...

Ultra motor starters

Motor circuit breaker:
GV2L



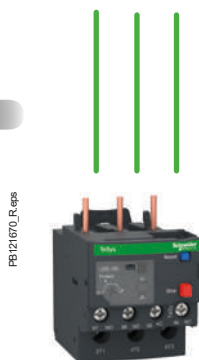
Magnetic protection
> short-circuit protection

Contactor:
D

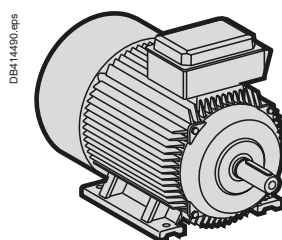


Control
> Start /Stop
Status monitoring
> signaling
> alarm monitoring

Protection relay:
LRD



Thermal protection
> overload



...Ultra motor starter

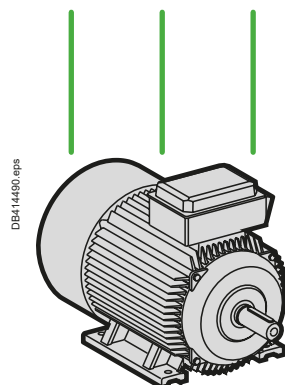


Ultra motor starters

Ultra motor starter

> All basic or advanced protection and control functions in one block and more...

- > Overload indication and alarm
- > Status report, remote control via communication bus



Ultra motor starters
can be used in **80 %**
of motor protection and control applications.



Ultra motor starters

1 All in one

- Optimising space in enclosures.
- Total coordination (No contact welding on short circuit).
- Reduces installation times.

2 Simplicity of choice

- Controlled power.
- Protection functions ensured.
- Signaling functions, communication with PLC ensured.

3 Universal mounting

- On DIN rail or grid.

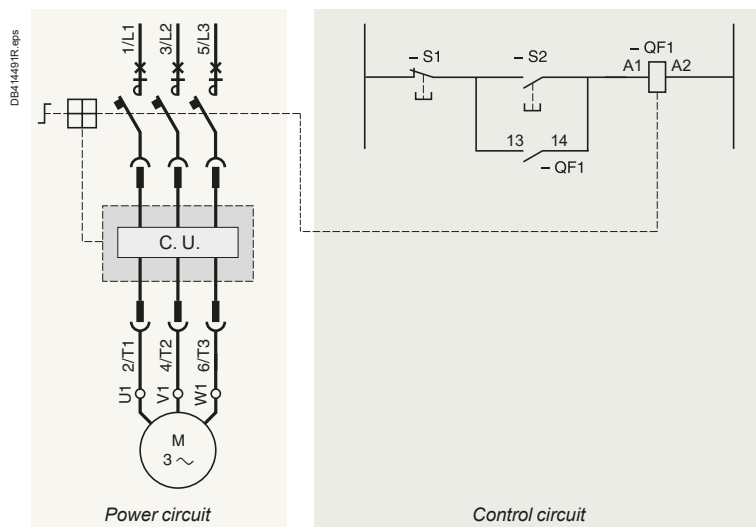
4 Conventional projet design

- Conventional control scheme with start , stop push buttons.

5 Electrically simple

Basic scheme of a Ultra starter-controller

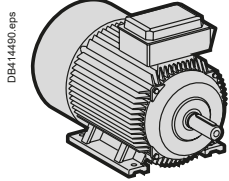
- Protection and power control functions acting on a single set of contact (QF1).
- The control unit (CU) monitors the voltage and current. In case of fault, it releases the coil, causing tripping.
- The coil is controlled by manual orders from an operator. Automatic control from a PLC is achieved with other diagrams.



TeSys Control

Ultra motor starters

Introduction



Motor up to

- 7.5 kW / 1-phase 230 V / 50-60 Hz.
- 18.5 kW / 3-phase 400-440 V / 50-60 Hz.
- 18.5 kW / 3-phase 500 V / 50-60 Hz.
- 22 kW / 3-phase 690 V / 50-60 Hz.
- Non-reversing or reversing.

Common characteristics

Short-circuit protection

- I_{sc}:
 - 50 kA at ≤ 400 V
 - 10 kA at 500 V
 - 4 kA at 690 V.
- Up to 690 V AC.

Overload protection

- From 0.15 to 38 A, 6 setting ranges (tripping 14.2 x I setting).
- Test button.
- Adjustment lock.
- Coil choice: 24 V, 48...72 V, 110...240 V DC/AC.

3 power contacts

- For non-reversing (reversing with reverser block).
- I_{max}, for 12 A power base (direct - reversing):
 - 12 A at up to 500 V / 50 Hz
 - 9 A > 500 V, up to 690 V.
- I_{max}, for 38 A power base (direct - reversing):
 - 38 A at up to 500 V / 50 Hz
 - 21 A > 500 V, up to 690 V.

1 NO contact

1 NC contact

- 5 A / max. 690 V AC or 250 V CC.

Other monitoring contacts

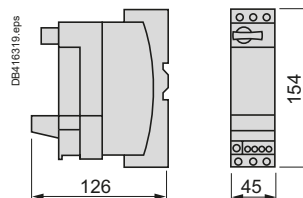
- 5 A / max. 690 V AC or 250 V DC.

Communication modules

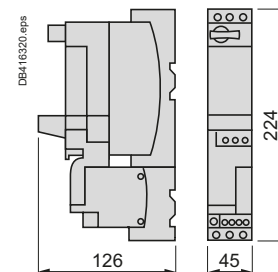
- Modbus,
- Ethernet,
- CANopen,
- DeviceNet,
- Advantys stb,
- Profibus DP,
- AS-interface.

Dimensions

- Base:



- Base + reverser block:



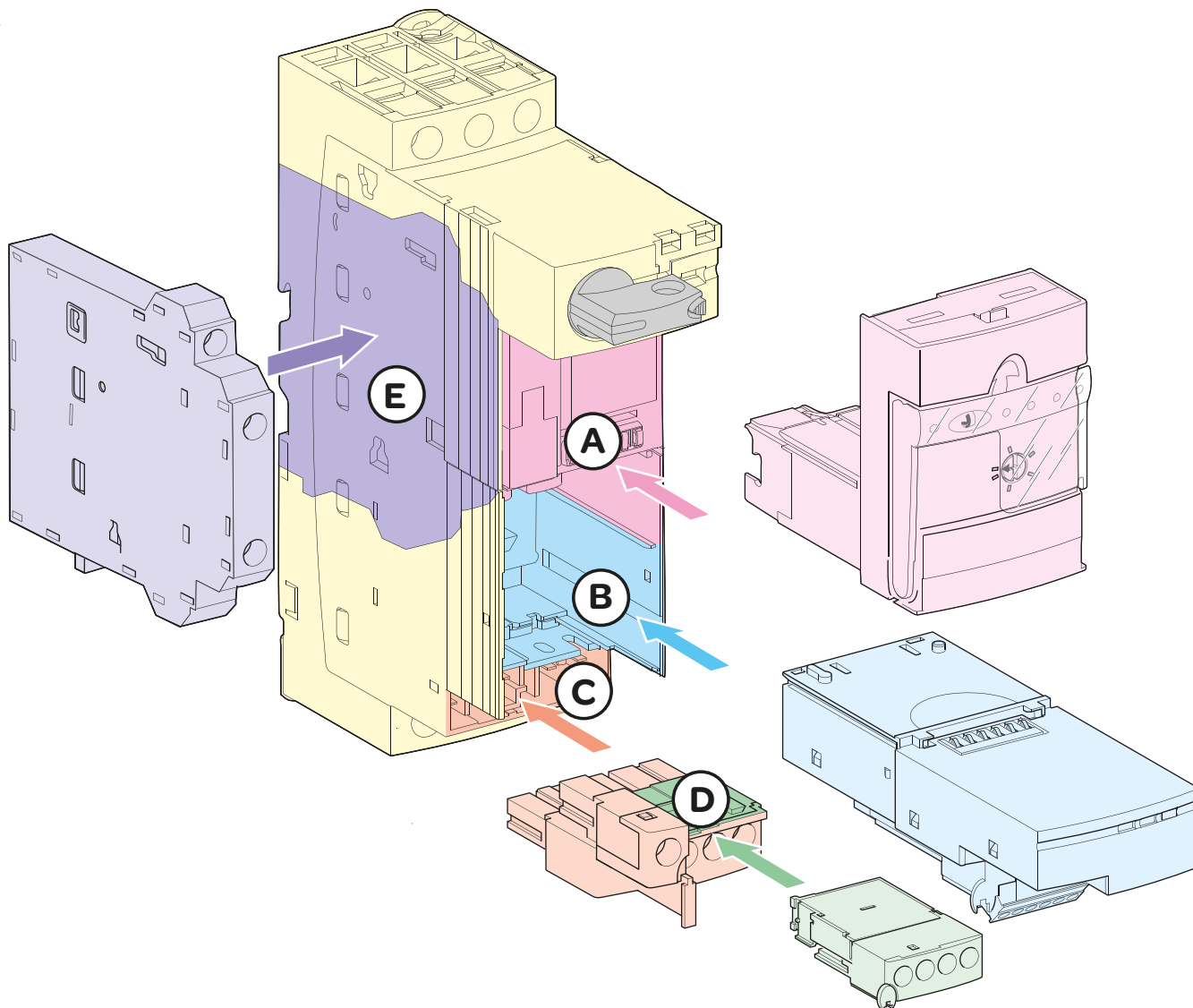
TeSys Control

Ultra motor starters

Introduction

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Ultra motor starters



The modularity principle

- Power base
- (A) Cavity for control unit
- (B) Cavity for auxiliary module
- (C) Cavity for control terminal block
- (D) Cavity for additional contact block or shutter
- (E) Space for additional block fastening

Power Base

This is the basic constituent of the motor starter, it is composed of the power contacts, the control coil, the opening / closing mechanism of the protection device and the control pad.

Additional lateral block

Composed of the protection device signaling contacts.

Control unit

Composed of the power base management processor and setting knobs.

Auxiliary module

Depending on its type, it integrates load status contacts or a communication processor or an alarm processor.

Control terminal block

It is composed of two terminals "coil control", 1 NO auxiliary contact, 1 NC auxiliary contact. It can be eventually connected to an auxiliary communication module via a dedicated cable.

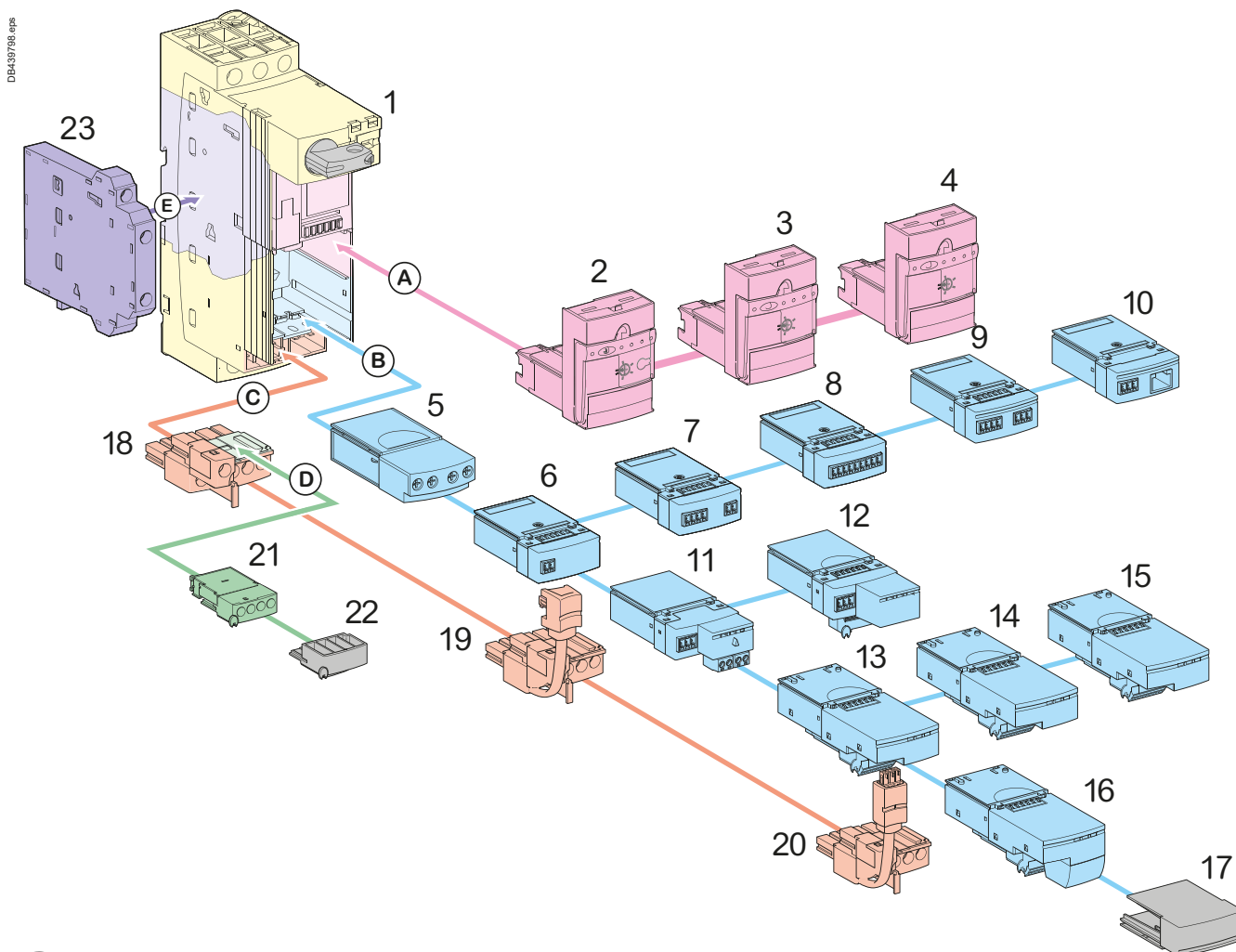
Additional block

It includes protection device additional signaling contacts. By default, this is a simple shutter.

TeSys Control

Ultra motor starters

Introduction



Ultra motor starters

Components overview

Power base

- 1- LUB
Non reversing power base - 1 rotation direction

Control units

- 2- LUCB/LUCC/LUCD
Advanced control units
- 3- LUCA
Standard control unit
- 4- LUCL
Magnetic protection control unit

Auxiliary module

- 5- LUFN
Auxiliary contacts module

Load monitoring auxiliary modules

- 6- LUFW10
Overload alarm module
- 7- LUFDH11
Overload alarm module with manual reset
- 8- LUFDA01/LUFAD10
Overload alarm module with automatic reset/remote reset
- 9- LUFV2
Motor load indication module

Communication auxiliary modules

- 10- L UFC00
Telefast parallel liaison module, with RJ45 connector
- 11- ASILUFC5/ASILUFC51
AS-Interface c. m.
- 12- LULC033
Modbus c. m
- 13- LULC07 Profibus DP c. m
- 14- LULC08 CANopen c. m.
- 15- LULC09 DeviceNET c. m.
- 16- LULC15 Advantys STB c. m.

Shutters

- 17- LU9C1
Shutter for module cavity
- 22- Shutter for contacts additional block cavity

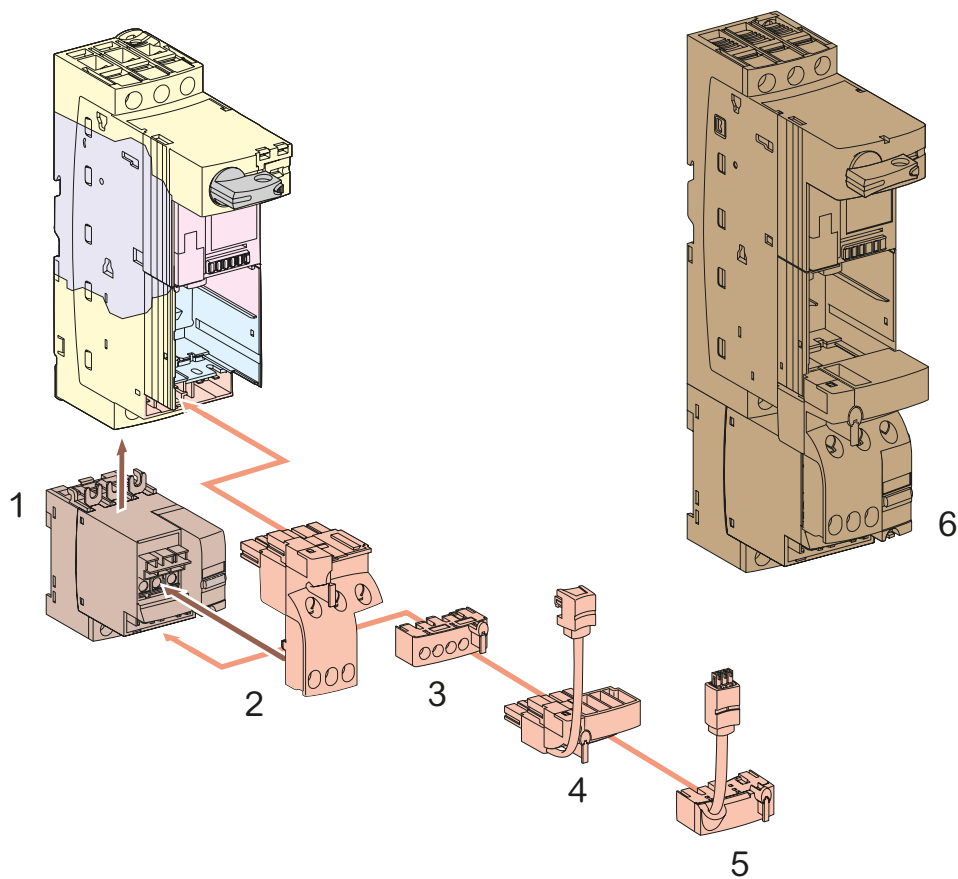
Control terminal blocks

- 18- LU9BN11
Terminal block for imbedded auxiliary contacts
- 19- LU9BN11C
Coil terminal block with its connecting cable
- 20- LU9BN11L
Coil terminal block with its connecting cable

Additional contacts blocks

- 21- LUA1
Additional contacts
- 23- LUA8
side-mounting additional contacts

DB41445R.eps



Ultra
motor
starters

Additional components overview

Reverser block

- 1- LU2MB0●●
vertical-mounting reverser block

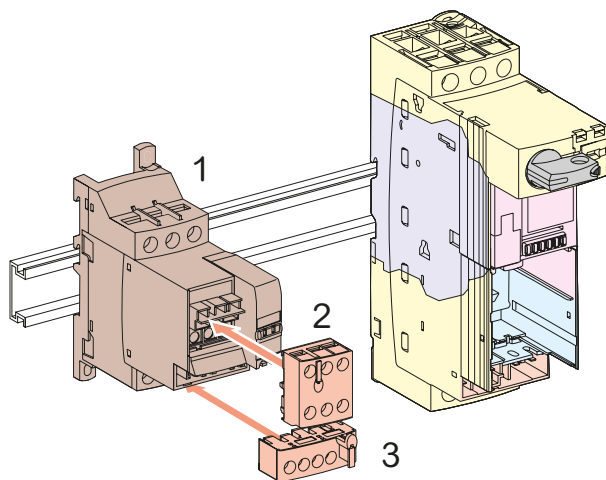
Evolving reversing power base

- 6- Pre-assembled reversing
power base LU2B12

Control terminal blocks

- 2- LU9MR1C
Base/block assembling connector, with
terminal block for imbedded auxiliary
contacts
- 3- LU9M1
Coil terminal block for wired control
- 4- LU9MRC
Coil terminal block with its connecting
cable for communicating control (only
compatible with a selection of com.
modules).
- 5- LU9MRL
Coil terminal block with its connecting
cable for communicating control (only
compatible with a selection of com.
modules).

DB414497 eps



Ultra
motor
starters

Additional components overview

Reverser block

- 1- LU6MB0●●
Side-mounting reverser block

Terminal blocks for electrical remote control

- 2- LU9MR1
Terminal block for 2 direction control (pulse or maintained control)
- 3- LU9M1
Terminal block for power base coil interlocking.
With direction of rotation monitoring contacts

TeSys Control

Ultra motor starters - Power bases

Product references



1 direction:
LUB12, LUB32, LUB38



1 direction:
LUB120, LUB320, LUB380
*LU9BN11: Terminal block
for embedded auxiliary
contacts to be ordered
separately.



2 direction:
LU2B12●●, LU2B32●●,
LU2B38●●



LU9MR1C



LU2MB0●●



LU6MB0●●



LU9M1



LU9MR1

Power bases

Ultra starters are composed with separate elements: power component + control units + auxiliary components.

The power base includes the electro mechanical parts. It is selected according to:

- Motor power to be handled
- Number of direction of rotation to be controlled: 1 or 2
- Type of control to be achieved: Basic or Advanced.

Basic control

1- direction rotation control
2 - direction rotation control
Overload + Short circuit protection
Main power monitoring
Status signaling contacts

Advanced control

Functions of basic control
+ Digital display of electrical values
+ Overload alarms
+ Network/bus communication

Function	Max motor standard power (400 V) kW	Lip_in (400 V) A	References	
			Basic ctrl	Advanced ctrl
1-direction rotation	5.5	12	LUB12	LUB120
	15	32	LUB32	LUB320
	18.5	38	LUB38	LUB380
2-direction rotation	5.5	12	LU2B12●● ⁽¹⁾	LUB120 + reverser block ass.
	15	32	LU2B32●● ⁽¹⁾	LUB320 + reverser block ass.
	18.5	38	LU2B38●● ⁽¹⁾⁽²⁾	LUB380 + reverser block ass.

(1) Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.

(2) With BL or FU code only.

Coil voltage (V)	24---	24~	48...72 --- or ~	110...220 --- and 110...240~
Code	BL	B	ES	FU

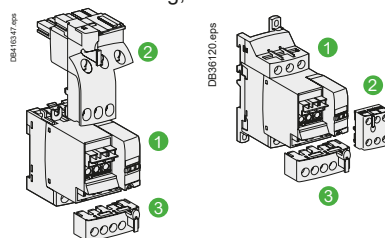
Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.

Reverser blocks - assemblies

A reverser block assembly has to be added to the power base (LUB120 to 380) to build an 'Advanced control' with '2-direction of rotation' Ultra starter.

Reverser blocks with 2 mounting possibilities:

- vertical mounting– mounted aspect: refer to LU2B12, 32, 38
- side mounting, on a Din rail.



Vertical mounting Side mounting

Blocks	References	
	Vertical mounting	Side mounting
1 Reverser block	LU2MB0●● ⁽¹⁾	LU6MB0●● ⁽¹⁾
2 Aux. contacts connector	LU9MR1C	LU9MR1
3 Coil supply connector	LU9M1	LU9M1

(1) Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.

Coil voltage (V)	24---	24~	48...72 --- or ~	110...220 --- and 110...240~
Code	BL	B	ES	FU

Main technical characteristics

Power bases

1-direction power base overall dimensions (HxWxD) : 154 x 45 x 126 mm

2-direction power base (assembly with vertical mounting reverser block) overall dimensions (HxWxD): 224 x 45 x 126 mm

Power bases are delivered with protective blanking plates.

3 power poles, for connections of a 1-phase or 3-phase motor

Screw clamp power terminals, for up to 2 x 6 mm² conductors

Screw clamp control terminals, for up to 2 x 1.5 mm² conductors

LUB12,32,38 imbedded terminals:

- coil supply,
- NO (13-14) contact (for control push button)
- NC (21-22) contact (for control push button).

Additional signaling contact modules provide more possibilities.

Reversing assemblies

LU2MB0, LU6MB0:

3 power poles, for connections of a 1-phase or 3-phase motor,

screw clamp power terminals, for up to 2 x 6 mm² conductors

LU9 connectors: screw clamp control terminals, for up to 2 x 1.5 mm² conductors

LU2MB0●●, LU6MB0●● provide terminals for power circuits.

LU9MR1C, LU9MR1 provide signalling contact terminals (82-81-84) that indicate the direction of rotation.

LU9M1 provides coil supply terminals (A2-A1-A3) and 2 NO contact terminals (A1-B1, A3-B3) for direction control.

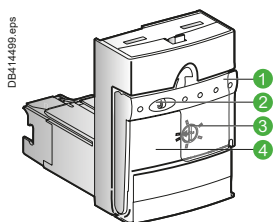
TeSys Control

Ultra motor starters - Control units

Product references



LUCA, LUCB, LUCC, LUCD, LUCL series.
Ex.: LUCA05BL



LUCA●●●●

- 1 Extraction and locking handle.
- 2 Sealing of locking handle.
- 3 Ir adjustment dial.
- 4 Locking of settings by sealing the transparent cover.

Ultra starters are composed with separate elements: power component + control units + auxiliary modules. The control unit includes electronic components and the current adjustment dial. The control unit is selected according to:

- Motor power to be handled.
- Type of protection: thermal+magnetic or magnetic only.

Control units for power bases with basic control

LUCA - thermal + magnetic (standard) units

- Protection against overload: 14.2 x Ir (setting current).
- Protection against short circuit: 13 x Ir max (max setting current).
- Protection against missing or unbalanced phases.
- Protection against insulation fault (protection of equipment only).
- Class 10 tripping.
- Frequency 50...60 Hz.

LUCL - magnetic units

- Protection against short circuits.
- To be used when a standard power base is connected to a motor drive or a soft starter, as they provide the overload protection.

Note: both LUCA and LUCL units can be used in the advanced power bases LUB120 and LUB320.

Maximum standardized power ratings of 3 phases motors 50/60 Hz			Setting range	Lip in mounting on the power base - Rating	Control unit product reference ⁽¹⁾	
400/440 V	500 V	690 V			Thermal + magnetic	Magnetic
kW	kW	kW	A	A	LUCA	LUCL
0.09	-	-	0.15...0.6	12 and 32	LUCAX6●●	LUCLX6●●
0.25	-	-	0.35...1.4	12 and 32	LUCA1X●●	LUCL1X●●
1.5	2.2	3	1.25...5	12 and 32	LUCA05●●	LUCL05●●
5.5	5.5	9	3...12	12 and 32	LUCA12●●	LUCL12●●
7.5	9	15	4.5...18	32	LUCA18●●	LUCL18●●
15	15	18.5	8...32	32	LUCA32●●	LUCL32●●
18.5	18.5	22	9.5...38	38	LUCA38●● ⁽²⁾	LUCL38●● ⁽²⁾

⁽¹⁾ Replace the 2 dots by the coil voltage code below – AC is 50-60 Hz.

⁽²⁾ With BL or FU code only.

Coil voltage (V)	24---	24~	48...72 --- or ~	110...220 --- and 110...240~
Code	BL	B	ES	FU

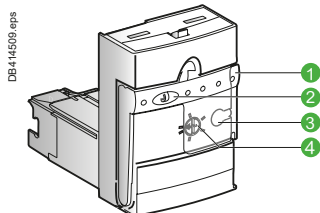
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TeSys Control

Ultra motor starters - Control units

Product references



LUCB●●●●, LUCC●●●●, LUCD●●●● control units

- 1 Extraction and locking.
- 2 Handle sealing of locking.
- 3 Handle
- 4 Ir adjustment dial test push button.

Control units for power bases with advanced control

LUCB, LUCC, LUCD control and diagnostic units

Motor protection, fault diagnostic.

Protection against

- overload: $14.2 \times I_r$ (setting current).
- Simulation of an overload by depressing the test push button.
- short circuit: $13 \times I_r$ max (max setting current).
- missing or unbalanced phases.

Overload alarm management:

- locally: with one of the LUF family module
- Remotely: with LULC031, LULC033, LULC07, LULC08, LULC09 or LULC15 (thermal alarm only) communication module.

Reset:

- manual
- automatic, with a communication module

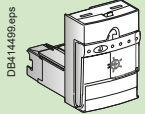
Ultra motor starters



PB123944.png



LUCB32BL

Maximum standardized power ratings of 3 phases motors 50/60 Hz				Setting range	Lip_in mounting on the power base - Rating		Protection type:		
400/440 V	500 V	600 V	- overload				- short-circuit	- Main power fault	- alarm
kW 1P	kW 3P	kW 3P	kW 3P	A	A	Class 10 3P	Class 10 1P	Class 20 3P	
-	0.09	-	-	0.15...0.6	12 and 32	LUCB6●●	LUCC6●●	LUCD6●●	
0.09	0.25	-	-	0.35...1.4	12 and 32	LUCB1X●●	LUCC1X●●	LUCD1X●●	
0.55	1.5	2.2	3	1.25...5	12 and 32	LUCB05●●	LUCC05●●	LUCD05●●	
2.2	5.5	5.5	9	3...12	12 and 32	LUCB12●●	LUCC12●●	LUCD12●●	
4	7.5	9	15	4.5...18	32	LUCB18●●	LUCC18●●	LUCD18●●	
7.5	15	15	18.5	8...32	32	LUCB32●●	LUCC32●●	LUCD32●●	
18.5	18.5	22	9.5...38	38		LUCB38●● ⁽¹⁾		LUCD38●● ⁽¹⁾	

Cial. ref. of the control unit: replace dots by the coil code.

Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.

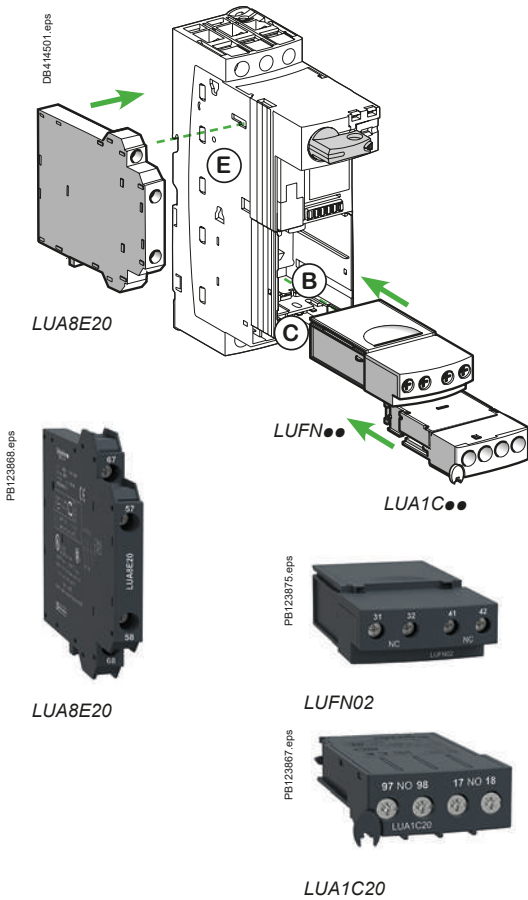
Coil voltage (V)	24~	24~	48...72 ~ and 48~	110...220 ~ and 110...240~
Coil code	BL	B	ES	FU

(1) With BL or FU code only.

TeSys Control

Ultra motor starters - Signaling Modules/Blocks - Function modules

Product references



Signaling module and blocks

They provide dry contacts of Normally Open (NO) or Normally Closed (NC) type for signaling purpose. The monitored status can be either the motor running status or the protection device status, depending on the commercial reference of the module or block.

Common electrical characteristics

Standard operating voltage: 24...250 V AC/DC.
Maximum current: 5 A.

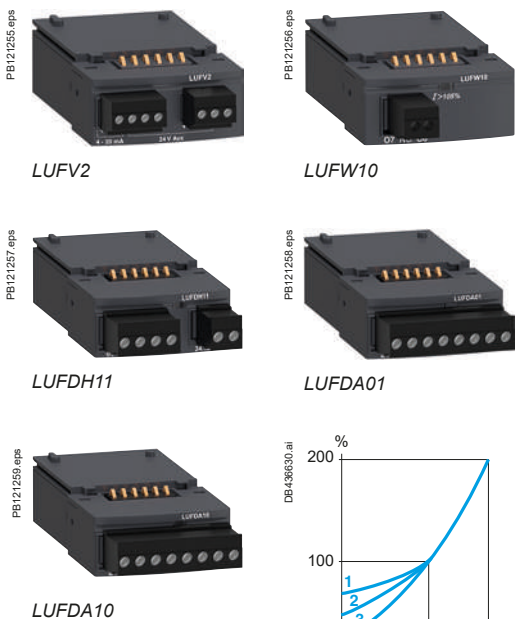
Compatibility - Positioning

The signaling module and blocks can be used in any power base. LUA8E20 is clipped on the E side of the power base. LUFN11, LUFN02, LUFN02 inserted into B cavity. LUA1C20, LUA1C11 inserted into C cavity.

Note: B and C cavities may be already used for reverser-starter, communication.

Signaling module and blocks	Output	References
Module	1 NO + 1 NC	LUFN11
Motor running status: ON / OFF	2 NC	LUFN02
	2 NO	LUFN20
Block	2 NO	LUA1C20
Protection status: OPEN / CLOSED (OF) STANDBY / TRIPPED (SD)	1 NO + 1 NC	LUA1C11
	2 NO	LUA8E20

Ultra motor starters



Function modules

They provide analog output or dry contacts of Normally Open (NO) or Normally Closed (NC) type for measurement or signaling purpose.

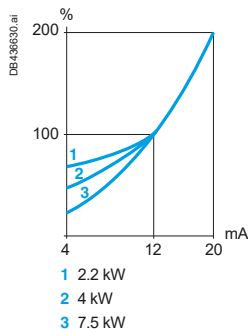
Common electrical characteristics

Standard operating voltage: 24...250 V AC/DC.
Maximum current: 5 A.

Compatibility - Positioning

The function modules can only be used in a LUB120, LUB320 or LUB380 power base, in cavity B.

Function modules	Output type	References
Electrical value: average current in each phase. The signal is the image of the percentage of I_n . External 24 V DC power supply needed	Analog: 4-20 mA	LUFV2
Contact closes if average current in the phases = 105 % of I_n	1 NO	LUFW10
Contacts change state if tripping is caused by overload	1 NO + 1 NC	LUFDH11
Contact opens if overload tripping is reset with control pad or remotely	1 NC	LUFDA01
Contact closes if overload tripping is reset with control pad or remotely	1 NO	LUFDA10



LUFV2 typical response curve

Characteristics: pages A4/50 to A4/54

Schemes: pages A4/62 to A4/64

TeSys Control

Ultra motor starters - Communication modules

Product references



LUFC00



LULC033



ASILUFC51



LULC07



LULC15



LU9BN11C



LU9BN11L



LU9MRC



LU9MRL

Auxiliary parallel wiring module ⁽¹⁾

Auxiliary parallel wiring module for Modicon Telefast system

Inputs

They collect the FWD, REV controls from an automation process. An RJ45 parallel port is used, for connection to the 24 V DC outputs of a PLC.

Outputs

They give the position of the control pad and the state of the poles. They provide 24 V DC controls to the LUB120, 320 or 380 power base coil via the LU9BN11C adapter (A2, A1) or to the LU2B12, 32, 38 power base coil with a LU9MRC adapter (A2, A1, A3).

Compatibility - Positioning

The parallel wiring module can only be used in any Ultra power base, with **LUC●●● control unit with coil voltage**

Compatible with:

- Modicon TM3 (map I/O controllers for RJ45 M221, M241, M25)
- Modicon STB modules (I/O for automation island)
- Modicon Telefast (interfaces RJ45/HE10).

The parallel wiring module is inserted in cavity B.

Note: the parallel wiring module must be connected to a LU9G02 or LU9G03 Telefast distribution

Note: more details on parallel wiring page A4/16.

Designation	References
Ultra power base parallel wiring module	LUFC00

Communication modules

Communication modules

These modules send the control pad position and pole state to a communicating system (PLC, monitoring system,...)

They collect the Forward, Reverse motor controls from an automation process.

The status and controls are coded according to an industrial communication protocol, depending on the communication module.

Bus cable connection, external power supply by crew clamp terminals.

Connector for coil control (to A1-A3-A2) via a prewired connection (LU9BN● for 1-direction control, LU9MR● for 2-direction control)

Compatibility - Positioning

The communication modules can only be used in a LUB120, LUB320 or LUB380 power base, in cavity B.

Designation	References
Ultra Modbus communication module	LULC033
Ultra AS-Interface communication module	ASILUFC51
Ultra Profibus DP communication module	LULC07
Ultra CANopen communication module	LULC08
Ultra DeviceNet communication module	LULC09
Ultra Advantys STB communication module	LULC15

Note: Ethernet communication can be achieved with LULC033 + ConneXium Port (ref. TCSEQM113M13M)

Note: more details on bus-type communication page A4/21.

Prewired connectors

They provide the necessary electrical link between a parallel or communication module and the coil supply connector, on the power base or reverser block. Thus, ON-OFF (1 direction) or FORWARD-REVERSE (2 direction) controls can be achieved.

Prewired connection	References	Compatibility with modules
1 direction Short cable	Side connection	LU9BN11C
	Bottom connection	LU9BN11L
2 direction Long cable	Side connection	LU9MRC
	Bottom connection	LU9MRL

TeSys Control

Ultra motor starters - Parallel-type cabling systems

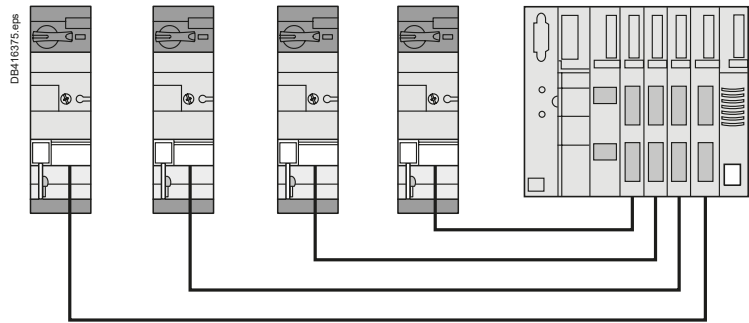
Introduction

PB 106090 eps



Ultra motor starters

Point-to-point wiring

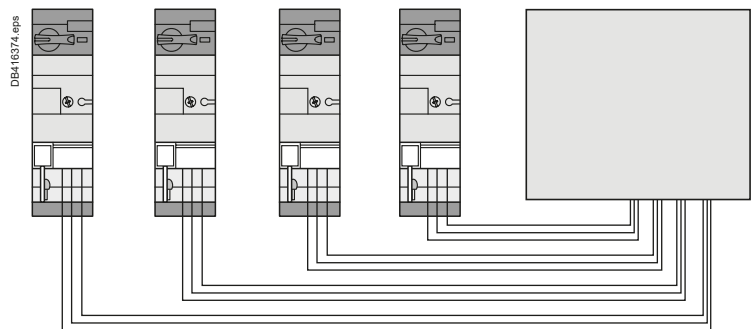


- The control inputs and signaling outputs of the starter are grouped in a single socket, usually RJ45. They are individually connected to PLC outputs and inputs.
- The wires run in parallel in a multicore cable equipped with a multipin connectors, RJ45 in the case of Telefast type system.
- 3 parallel wiring systems are available:
 - Modicon TM3, based on a RJ45 I/O module for M221, M241, M25 PLC
 - Modicon STB, based on I/O modules for automation island
 - Modicon Telefast: RJ45 / HE10 interfaces.
- Simple way of proximity wiring. Quick cabling. It is suitable for machine control panels when a large number of Ultra starter-controller are installed.

informations

- The control and signaling terminals of the starters are connected to the output and input terminals of a PLC. No specific connectors or cables are required.
- Conventional wiring mode, without optimization of the cabling time. May be suitable when a very small number of starters is used, with a very small number of links.

Parallel cabling systems



TeSys Control

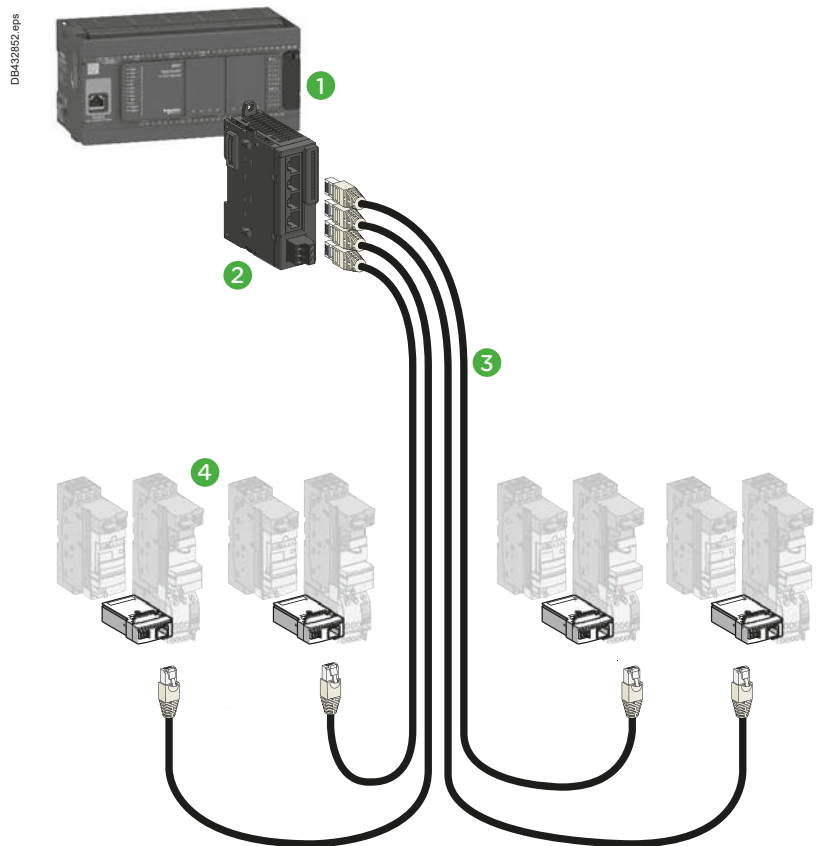
Ultra motor starters - Parallel-type cabling systems

Introduction

Integration in the Modicon TM3 wiring system

The Ultra starter-controller are directly connected to a I/O module equipped with RJ45 connectors.

- 1 Modicon M221, M241, M251 PLC's
- 2 TM3XTY I/O module for 4 starters
- 3 LU9R●● cables with RJ45 connectors,
- 4 LUFC00 module for TeSys Control parallel connection (1 or 2 direction of rotation).



Integration in the Modicon Advantys STB system

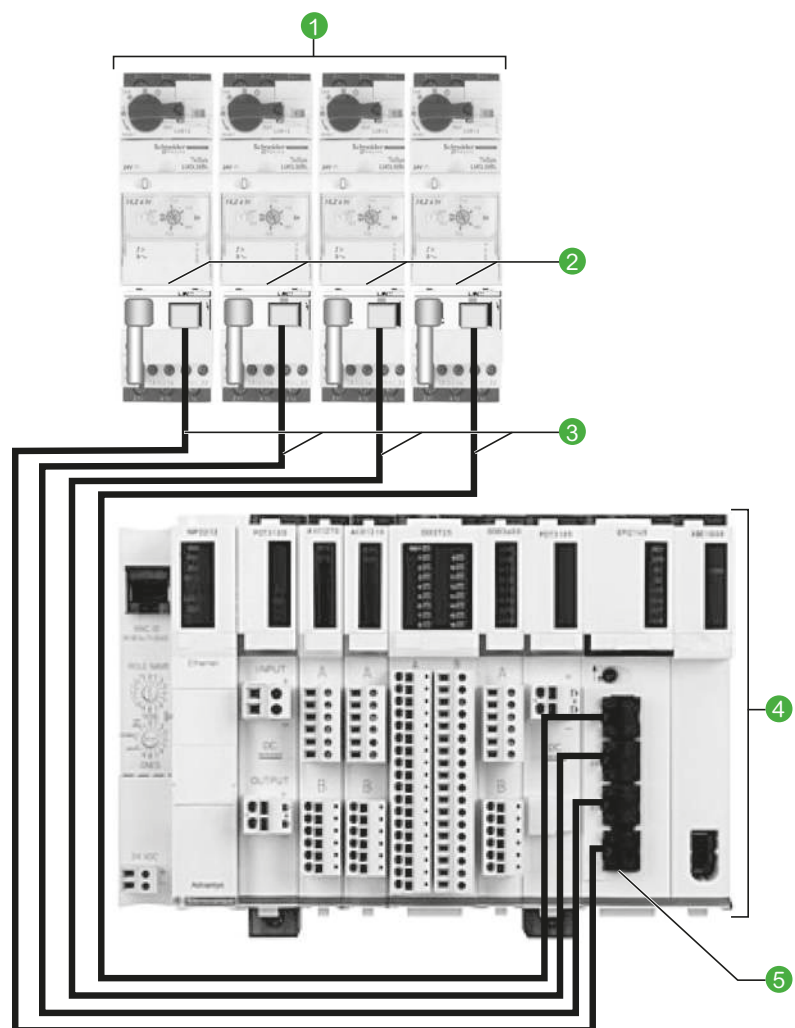
Advantys STB is a solution for remote I/O modules.

These communicate with the Modicon PLCs range thanks to a serial liaison, using the Advantys STB protocol.

In this example an Advantys I/O module is used to facilitate wiring.

Each of its four terminals receives a preassembled RJ45 cable connected to a Ultra starter-controller.

- 1 Ultra LUB120, 320 or 380 power base (equipped with 24 V DC LUC●●●●BL control modules)
- 2 TeSys Control module for parallel RJ45 wiring: LUFC00 + LU9BN11C (one direction) or LU9MRC (2 directions for LU2B12, 32 or 38 power base)
- 3 RJ45 cables (2 connectors):
≤ 3 m: LU9R●●
> 3 m: 490 NTW000●● (5, 12, 40 or 80 m)
- 4 PLC: Modicon range
- 5 I/O Modicon Advantys module: STB EPI 2145K



TeSys Control

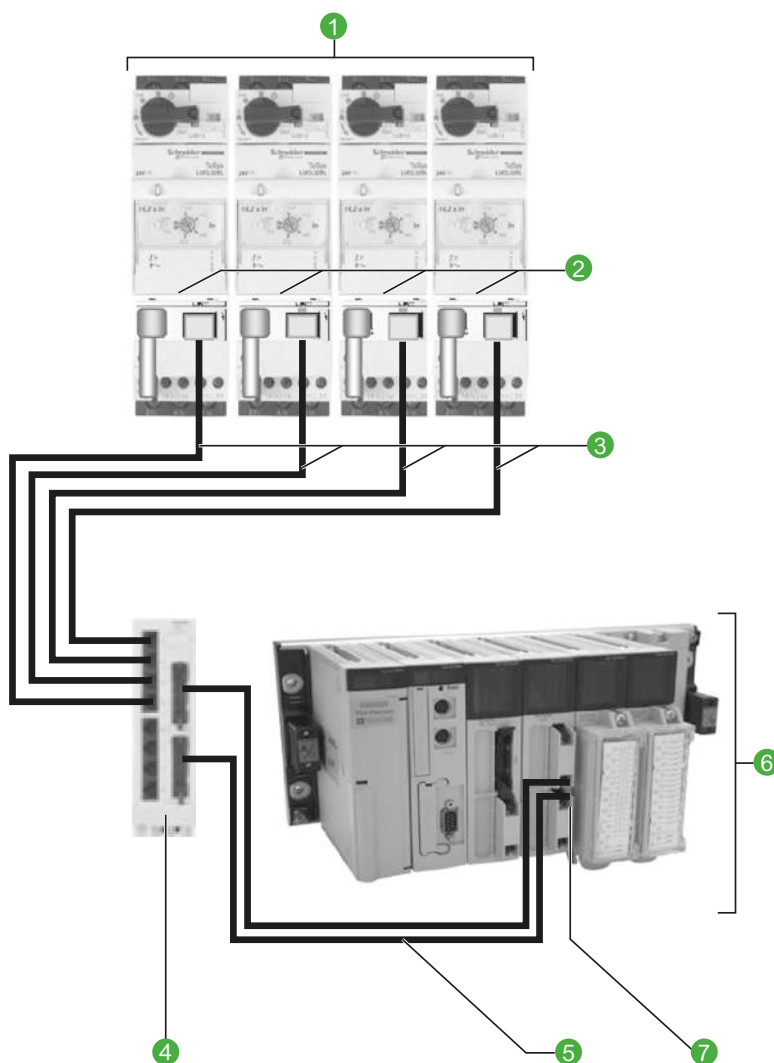
Ultra motor starters - Parallel-type cabling systems

Introduction

Integration in the Modicon Telefast system

The wiring hubb **LU9G0** facilitates the connection to Modicon Premium PLCs. It adapts RJ45 connectors to HE10 available on the Telefast I/O modules. Connection: up to 8 Ultra per hubb.

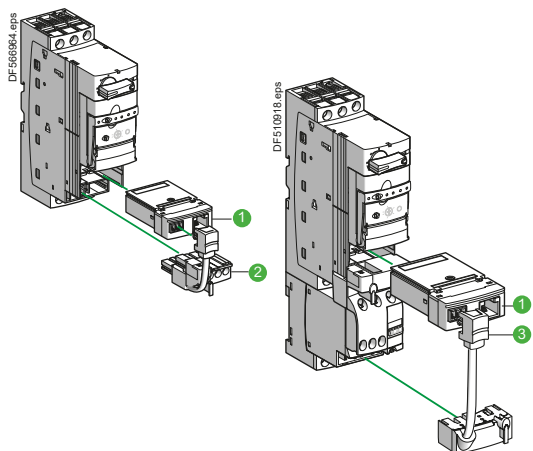
- 1 Ultra LUB120, 320 or 380 power base (equipped with 24 V DC LUC...BL control units)
- 2 TeSys Control module for parallel wiring RJ45: LUFC00 + LU9BN11C (one direction) or LU9MRC (2 directions for LU2B12, 32 or 38 power base)
- 3 RJ45 cables (2 connectors):
≤ 3 m: LU9R...
> 3 m: 490 NTW000... (5, 12, 40 or 80 m)
- 4 Telefast RJ45 / HE10 splitter box: LU9G02 or LU9G03 (different Ultra connection capacities)
- 5 HE10 cables (2 connectors): TSXCDP...
- 6 PLC: Modicon Premium range
- 7 I/O module: TSX DMY 28FK



TeSys Control

Ultra motor starters - Parallel-type cabling systems

Product references



Components for connection of a starter - 1 direction of rotation	
Designation	Reference
1 Parallel connection module, RJ45 output 2 coil control inputs, 3 signal outputs	LUFC00
2 Pre wired connector, one direction of rotation, for LUB120, 320 or 380 power base coil connection and one contact for emergency stop	LU9BN11C

Components for connection of a starter - 2 directions of rotation	
Designation	Reference
1 Parallel connection module, RJ45 output	LUFC00
3 Pre wired connector, 2 directions of rotation, for LU2B12, 32 or 38 power base coil connection and one contact for emergency stop	LU9MRC

Ultra motor starters

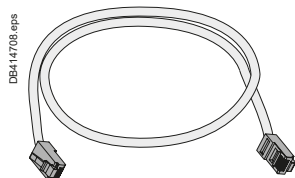


LU9G02



LU9G03

Telefast RJ45/ HE10 splitter box	
Designation	Reference
<p>Splitter box</p> <p>Connection to U:</p> <p>4 RJ45 connectors: for 1 to 4 U, 1 or 2 directions</p> <p>4 RJ45 connectors: for 1 to 4 U, 1 direction</p> <p>Connection to PLC:</p> <p>1 x HE10 connector - 20 channels, for pole status, alarms</p> <p>1 x HE10 connector - 20 channels, for control.</p> <p>24 V DC auxiliary power supply required</p>	LU9G02
<p>Splitter box</p> <p>Connection to U:</p> <p>8 RJ45 connectors: for 1 to 8 U, 1 or 2 directions</p> <p>Connection to PLC:</p> <p>1 x HE10 connector - 20 channels, for pole status, alarms</p> <p>1 x HE10 connector - 20 channels, for control.</p> <p>24 V DC auxiliary power supply required.</p>	LU9G03



RJ45 cables.

RJ45 connection cables, with 2 RJ45 connectors	
0.3 m	LU9R03
1 m	LU9R10
3 m	LU9R30

HE10 connection cables, with 2 HE10/20 way connectors	
Section: AWG 22 / 0.324 mm ²	
0.5 m	TSXCDP053
1 m	TSXCDP103
2 m	TSXCDP203
3 m	TSXCDP303
5 m	TSXCDP503
Section: AWG 28 / 0.080 mm ² (flat cable)	
1 m	ABFH20H100
2 m	ABFH20H200
3 m	ABFH20H300

Cable with stripped wires (PLC side) 1 x HE10/20 ways connector (Splitter box side)	
Section: AWG 22 / 0.324 mm ²	
3 m	TSXCDP301
5 m	TSXCDP501

TeSys Control

Ultra motor starters - Bus-type cabling systems

Introduction

PB105992.eps



> Application functionality, topology

1 Geographically expanded process

Many motors are scattered on the site, the process control requires individual control to ensure safety and proper operation. Ultra is a suitable communicating actuator. The integration of a bus communication module in the starter-controller saves space in the control board and simplifies wiring, compared to solutions based on conventional components (circuit breaker + contactor).

2 Application: automatic motor control / monitoring

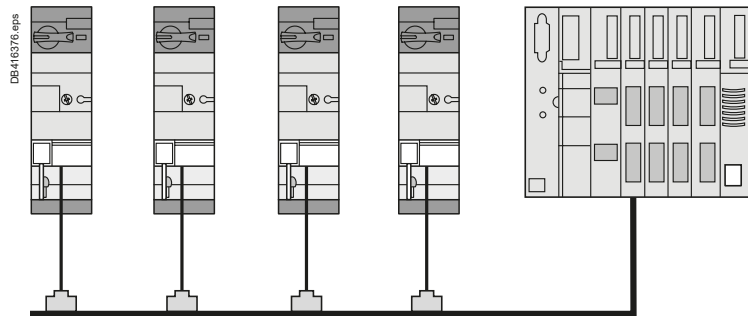
Thanks to a communication bus, starter-controllers are part of an automation system controlled by a PLC and (or) various communicating controllers. These equipment can then share the status and alarm information related to each motor control and perform specific treatments.

3 Bus-type connection

This type of connection allows different topologies (star, ring ...) and supports various protocols dialogue. It is therefore recommended for geographically expanded process, in order to to simplify wiring and ensure multiple-controller management.

Ultra motor starters

- The bus wiring interconnects Ultra starters controllers and components of the installation via a single the cable.
- Commands and status are coded according to the selected protocol and transmitted on the communication bus.
- This wiring is simple, usually a shielded (or not) pair of wires, suitable for monitored automation, regardless of the number of Ultra and their locations.



Available Ultra status and controls via a communication module

Control unit	LUCA	LUCB LUCC LUCD	LUCM
Starter status (ready, running, fault)	■	■	■
Start and Stop commands	■	■	■
Thermal overload alarm		■	■
Remote reset via the bus		■	■
Indication of motor load		■	■
Fault signalling and differentiation		■	■
Remote programming and monitoring of all functions			■
"Log" function			■
"Monitoring" function			■
Alarms (overcurrent, ...)			■

TeSys Control

Ultra motor starters - Bus-type cabling systems

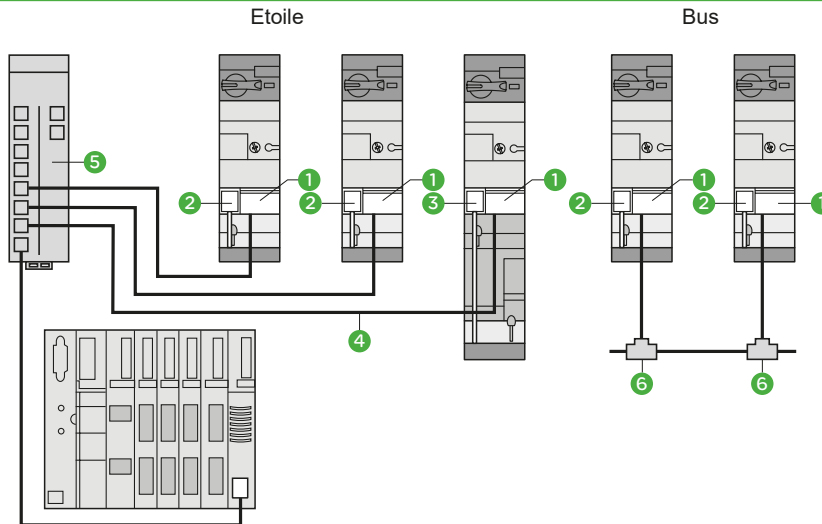
Introduction

Network

Architecture

Component references

Modbus



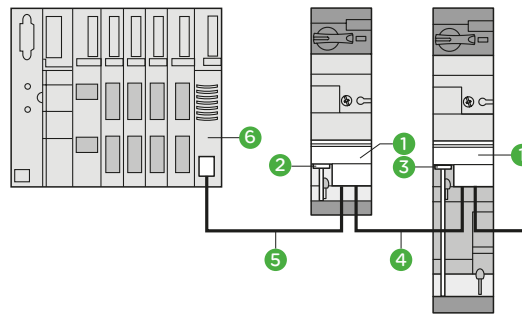
- ① LULC033
- ② LU9BN11C
- ③ LU9MRC
- ④ VW3A8306R●●●
- ⑤ LU9GC3
- ⑥ VW3A8306TF

Ultra motor starters

Details page
[A4/26](#)

Advantys STB

Starter-controllers communicate using ADVANTYS STB protocol to fit into a remote I/O architecture.



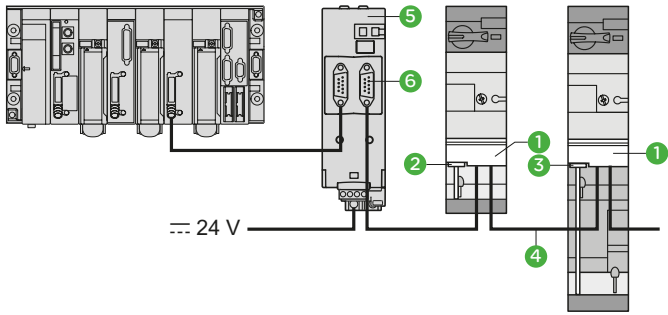
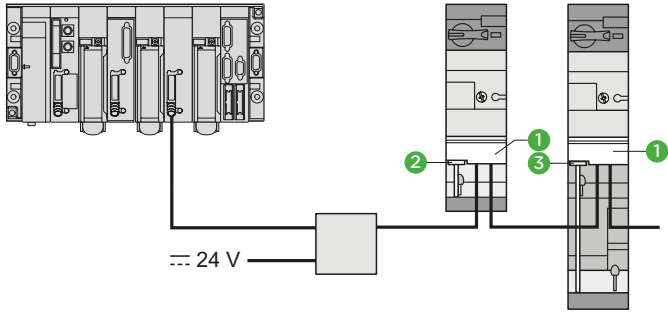
- ① LULC15
- ② LU9BN11L
- ③ LU9MRL
- ④ LU9RDD●●●
- ⑤ LU9RCD
- ⑥ STBxBE1100

Details page
[A4/27](#)

TeSys Control

Ultra motor starters - Bus-type cabling systems

Introduction

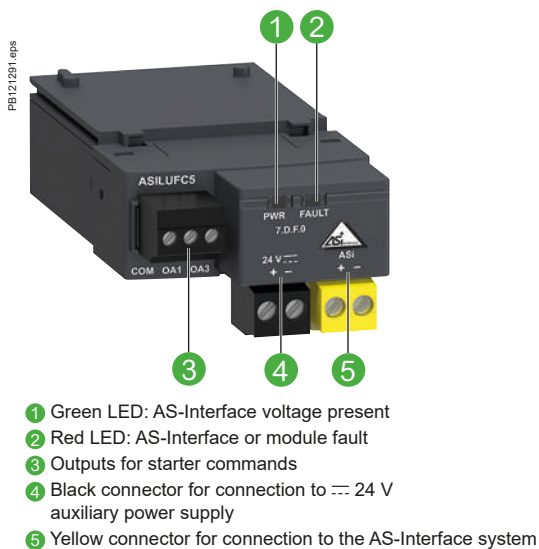
Network	Architecture	Component references
<p>Profibus-DP (Decentralized Peripherals)</p> <p>is used for connecting actuators and sensors to a central controller for applications in industrial production. The standard bus provides a number of diagnostic means</p> <p>Details page A4/28</p>		<ul style="list-style-type: none"> ① LULC07 ② LU9BN11L ③ LU9MRL ④ LU9RPB010 LU9RPB100 LU9RPB400 ⑤ LU9AD7 ⑥ LU9GC7
<p>DeviceNet</p> <p>Details page A4/29</p>		<ul style="list-style-type: none"> ① LULC09 ② LU9BN11L ③ LU9MRL

Ultra motor starters

TeSys Control

Ultra motor starters - AS-Interface communication modules

Product references



The ASILUFC5 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via DeviceNet bus. The LULC09 communication module is slave type.

Module Specifications

I/O terminal block

- Powered by external 24 V DC (power supply not included):
- 2 x configurable inputs for binary sensors
- 1 x 24 V DC output - 0.5 A local auxiliary command.

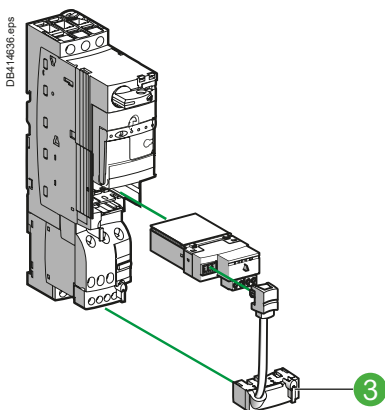
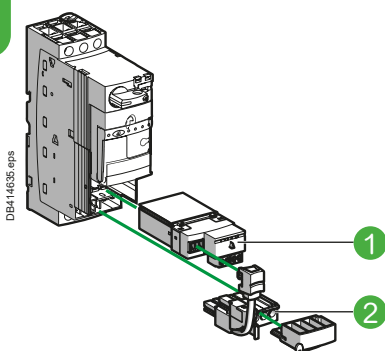
Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For AS-Interface bus.

Signaling

- Module Status - Error - 24 V, by LED.

Ultra motor starters



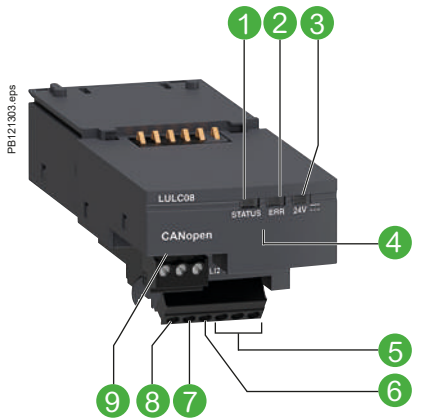
Tesys Control components

Description	Mark	Max number of slaves	References
AS-Interface communication module	1	31	ASILUFC5
		62	ASILUFC51
Pre-wired connector: coil - LUB powerbase	2	-	LU9BN11C
Pre-wired connector: coil - LU2B powerbase	3	-	LU9MRC

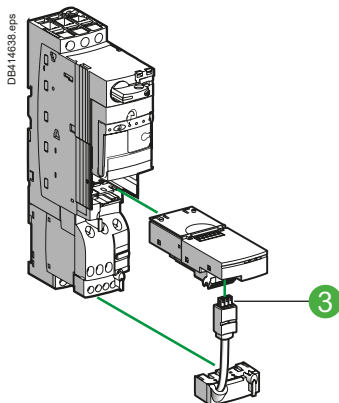
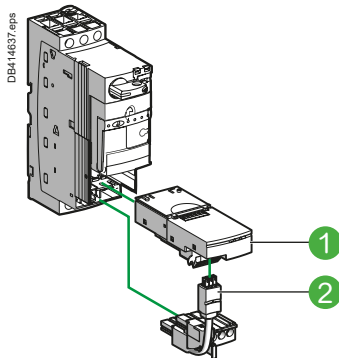
TeSys Control

Ultra motor starters - CANopen communication module

Product references



- 1 LED indicating module status
- 2 Fault signalling LED
- 3 LED indicating 24 V supply ON for outputs OA1, OA3 and LO1
- 4 SUB-D connector for bus link
- 5 24 V supply connection
- 6 Discrete input
- 7 Discrete input
- 8 Discrete output
- 9 Outputs for starter commands



The LULC08 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via CANopen bus. The LULC08 communication module is slave type.

Module Specifications

I/O terminal block

- Powered by external 24 V DC (power supply not included):
 - 2 x configurable inputs for binary sensors
 - 1 x 24 V DC output - 0.5 A local auxiliary command.

Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For CANopen bus.

Signaling

- Module Status - Error - 24 V, by LED.

Tesys Control components

Description	Item	References
CANopen communication module	1	LULC08
Pre-wired connector: coil - LUB powerbase	2	LU9BN11L
Pre-wired connector: coil - LU2B powerbase	3	LU9MRL

Compatibility of CANopen communication module with control units

LUCA ●●BL / B ●●BL / C ●●BL / D ●●BL	All versions marketed after 2T0481 ⁽¹⁾
LUCM●●BL	All versions ≥ V3.2
LUCMT1BL	All versions ≥ V3.2

(1) This "date code" is made up as follows:
 2T or 2C: factory code.
 04, 05, 06 and so on: year of manufacture.
 08: week.
 1: 1st day of the week.

How to get information on the design of a CANopen architecture and the choice of network accessories

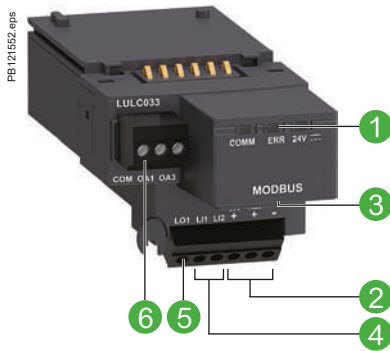
Consult the library of downloadable documents on schneider-electric.com by searching on the name of the communication protocol.

TeSys Control

Ultra motor starters - Modbus communication module

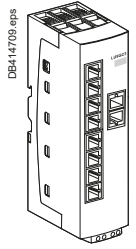
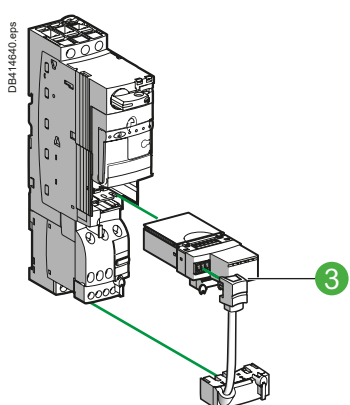
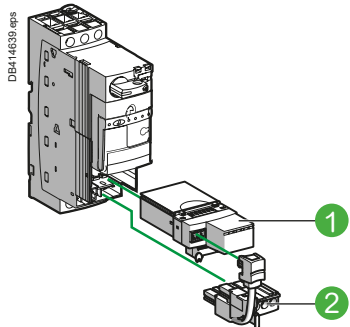
Product references

LULC033



- 1 Module status signalling LED
- 2 24 V supply connection
- 3 RJ45 connector for RS485 Modbus link
- 4 2 discrete inputs
- 5 1 discrete output
- 6 Outputs for starter commands

Ultra motor starters



LULC033 communication module, combined with the power base and control unit is used to control Ultra starters-controllers via Modbus.

Module Specifications

I/O terminal block

- Powered by external 24 V DC (power supply not included):
- 2 x configurable inputs for binary sensors (on LULC033 only)
- 1 x 24 V DC output - 0.5 A local auxiliary command.

Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- RJ45, For Modbus line.

Signaling

- Module Status - Error - 24 V, by LED.

Tesys Control components

Description	Item	Bin. input	References
Modbus communication module	1	2	LULC033
Pre-wired connector: coil - LUB powerbase	2	-	LU9BN11C
Pre-wired connector: coil - LU2B powerbase	3	-	LU9MRC

Modbus hub

Description	Length (m)	References
Modbus communication distributor	-	LU9GC3
Cables fitted with 2 x RJ45 connectors	0.3	VW3A8306R03
	1	VW3A8306R10
	3	VW3A8306R30
Tees derivations	0.3	VW3A8306TF03
	1	VW3A8306TF10

Description	References
RS 485 line terminator	VW3A8306R

Compatibility of Modbus communication modules

Communication modules (software version)		LULC033 from V2.1	LULC033 from V2.2
Power base	LUB●● / LU2B●2	■	■
	LUTM●●BL	■	■
Control unit	LUCA●●BL		■
	LUCB●●BL		■
	LUC●●BL		■
	LUCD●●BL		■
	LUCM●●BL		■ ⁽¹⁾
	LUCBT●●BL	■	
	LUCDT●●BL	■	
LUCMT●●BL	■		

(1) Except LUCM●●BL V1.04 and V1.06.

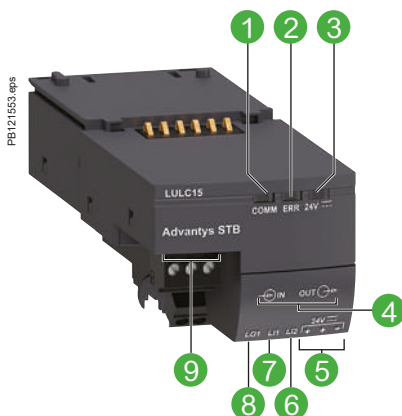
How to get information on the design of a Modbus architecture and the choice of network accessories

Consult the library of downloadable documents on schneider-electric.com by searching on the name of the communication protocol.

TeSys Control

Ultra motor starters - Advantys STB communication module

Product references



- 1 Two-colour LED indicating module status
- 2 Fault signalling LED
- 3 LED indicating that 24 V supply is ON
- 4 Bus connectors
- 5 24 V supply connection
- 6 Discrete input
- 7 Discrete input
- 8 Discrete output
- 9 Outputs for starter commands

Communication module LULC15 allows direct connection of Ultra starter-controllers and controllers on an Advantys STB island, between two segments or at the end of a segment. The starter-controller will then be able to make use of the services provided by Advantys STB: self-addressing, autobaud, fallback positions.

Module Specifications

I/O terminal block

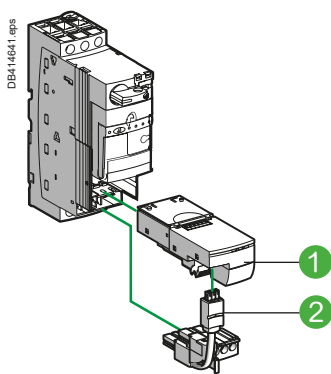
- Powered by external 24 V DC (power supply not included):
 - 2 x configurable inputs for binary sensors (on LULC033 only)
 - 1 x 24 V DC output - 0.5 A local auxiliary command.

Connectors

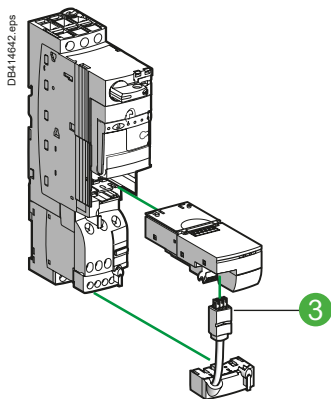
- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For Advantys STB bus.

Signaling

- Com - Error - 24 V, by LED.



LUB + LULC15 + LU9BN11L



LU2B + LULC15 + LU9MRL

Tesys Control components

Description	Item	References
Advantys STB communication module	1	LULC15
Pre-wired connector: coil - LUB powerbase	2	LU9BN11L
Pre-wired connector: coil - LU2B powerbase	3	LU9MRL

Cables

Description	Length (m)	References
Cables fitted with connectors, one straight and one elbowed	0.3	LU9RCD03
	1	LU9RCD10
	5	LU9RCD50
Cables fitted with two straight connectors	0.3	LU9RDD03
	3	LU9RDD30

Compatibility of Advantys STB communication module with control units

LUCA●●BL / B●●BL / C●●BL / D●●BL	All versions marketed after 2T0481 ⁽¹⁾
LUCM●●BL	All versions ≥ V3.2
LUCMT1BL	All versions ≥ V3.2

(1) This "date code" is made up as follows:
 2T or 2C: factory code.
 04, 05, 06 and so on: year of manufacture.
 08: week.
 1: 1st day of the week.

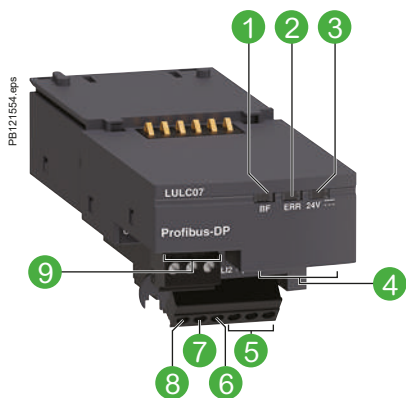
How to get information on the design of a Advantys STB architecture and the choice of network accessories

Consulter la librairie des documents téléchargeables sur le site schneider-electric.com en faisant une recherche sur le nom du protocole de transmission.

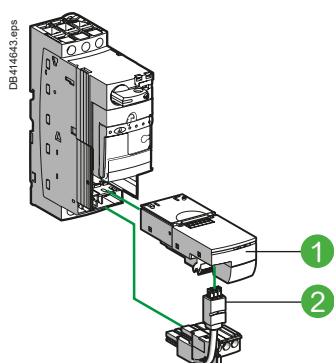
TeSys Control

Ultra motor starters - Profibus DP communication module

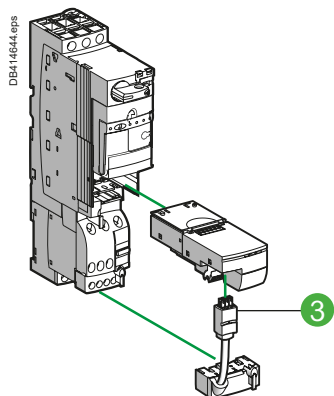
Product references



- 1 Two-colour LED indicating module status
- 2 Fault signalling LED
- 3 LED indicating 24 V supply ON for outputs OA1, OA3 and LO1
- 4 SUB-D connector for bus link
- 5 24 V supply connection
- 6 Discrete input
- 7 Discrete input
- 8 Discrete output
- 9 Outputs for starter-controller commands (non-reversing and reversing)



LUB + LUC...BL + LULC07 + LU9BN11L



LU2B + LUC...BL + LULC07 + LU9MRL

When used in conjunction with the power base and control unit, communication module LULC07 allows Ultra starter-controllers to be controlled via Profibus DP (Deported Periphery) bus. Communication module LULC07 is of the slave type.

Module Specifications

I/O terminal block

- Powered by external 24 V DC (power supply not included):
 - 2 x configurable inputs for binary sensors
 - 1 x 24 V DC output - 0.5 A local auxiliary command.

Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For Profibus DP bus.

Signaling

- Com - Error - 24 V, by LED.

TeSys Control components

Description	Item	References
Profibus DP communication module	1	LULC07
Pre-wired connector: coil - LUB powerbase	2	LU9BN11L
Pre-wired connector: coil - LU2B powerbase	3	LU9MRL

Components for connection to the bus and to the installation

The 24 V DC -Aux supply to Profibus DP modules LULC07 must pass through power supply module LU9GC7.

LULC07 modules must be connected to the LU9GC7 splitter box in order to be powered.

The number of Ultra starter-controllers that can be powered by an LU9GC7 module is limited by the maximum current (1.5 A) which it can deliver.

The 24 V supply for the inputs/outputs must be provided separately..

Description	Length (m)	References
Profibus DP power supply module	-	LU9GC7
Profibus DP connector	-	LU9AD7
Profibus DP cables 2-wire	100	TSXPBSCA100
	400	TSXPBSCA400
Profibus DP cables 4-wire	10	LU9RPB010
	100	LU9RPB100
	400	LU9RPB400

How to get information on the design of a Profibus DP architecture and the choice of network accessories

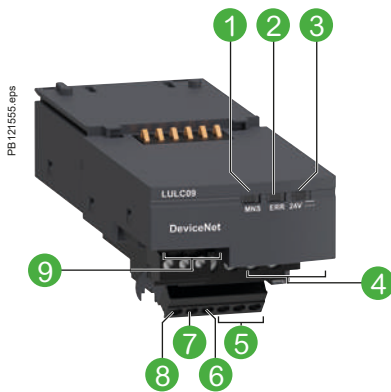
Consult the library of downloadable documents on schneider-electric.com by searching on the name of the communication protocol.



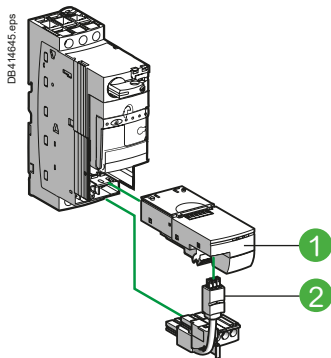
TeSys Control

Ultra motor starters - DeviceNet communication module

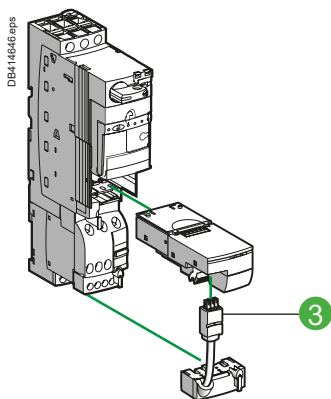
Product references



- 1 LED indicating module status
- 2 Fault signalling LED
- 3 LED indicating $\overline{\text{24 V}}$ supply ON for outputs OA1, OA3 and LO1 and 24 V bus
- 4 DeviceNet connector for bus link
- 5 $\overline{\text{24 V}}$ supply connection
- 6 Discrete input
- 7 Discrete input
- 8 Discrete output
- 9 Outputs for starter-controller commands (non-reversing and reversing)



LUB + LUC●●●BL + LULC07 + LU9BN11L



LU2B + LUC●●●BL + LULC07 + LU9MRL

When used in conjunction with the power base and control unit, communication module LULC09 allows Ultra starter-controllers to be controlled via DeviceNet bus. Communication module LULC09 is of the slave type.

Module Specifications

I/O terminal block

- Powered by external 24 V DC (power supply not included):
- 2 x configurable inputs for binary sensors
- 1 x 24 V DC output - 0.5 A local auxiliary command.

Connectors

- For Ultra 24 V DC coil (common, direction 1, direction 2).
- For DeviceNet bus.

Signaling

- Com - Error - 24 V , by LED.

Tesys Control components

Description	Item	References
DeviceNet communication module	1	LULC09
Pre-wired connector: coil - LUB powerbase	2	LU9BN11L
Pre-wired connector: coil - LU2B powerbase	3	LU9MRL

How to get information on the design of a DeviceNet architecture and the choice of network accessories

Consult the library of downloadable documents on schneider-electric.com by searching on the name of the communication protocol.

TeSys Control

Ultra motor starters - LUF communication gateways

Product references

PB 121517 eps



LUF9

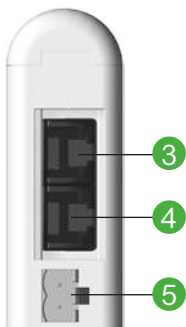
Ultra motor starters



DF526109-17-M eps



561512 eps



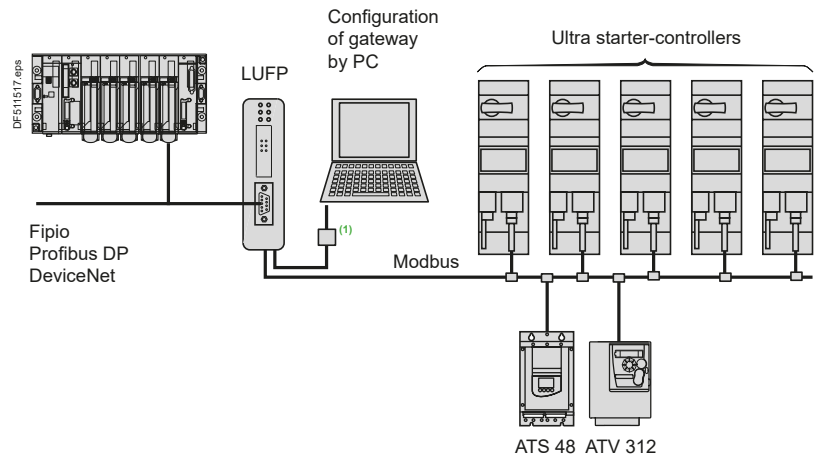
Introduction

LUF communication gateways allow connection between the Modbus serial link and Fipio, Profibus DP or DeviceNet field buses.

After configuration, these gateways manage information which can be accessed by the Modbus serial link and make this information available for read/write functions (command, monitoring, configuration and adjustment) on the field buses.

An LUF communication gateway consists of a box which can be clipped onto a 35 mm omega rail, allowing connection of up to 8 Slaves connected on the Modbus serial link.

Example of architecture



Communication gateway LUF

Description	Reference
Fipio / Modbus gateway	LUF1
Profibus DP / Modbus gateway	LUF7
DeviceNet / Modbus gateway	LUF9

Description

Front panel of the product

- ① LED indicating :
 - communication status of the Modbus serial links,
 - gateway status,
 - communication status of the Fipio, Profibus DP or DeviceNet bus.
- ② Connectors for connection to Fipio, Profibus DP or DeviceNet buses.

Underside of product

- ③ RJ45 connector for connection of the Modbus serial link
- ④ RJ45 connector for link to a PC
- ⑤ 24 V power supply

Software set-up

For the Fipio bus, software set-up of the gateway is performed using either PL7 Micro/Junior/Pro software or ABC Configurator software.

For the Profibus DP and DeviceNet buses, software set-up is performed using ABC Configurator.

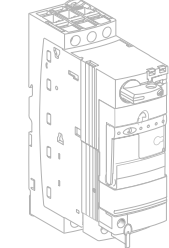
This software is included in the Ultra user's manual.

(1) Connection kit for PowerSuite software workshop.

TeSys Control

Ultra motor starters - Current limiter blocks - Accessories

Product references



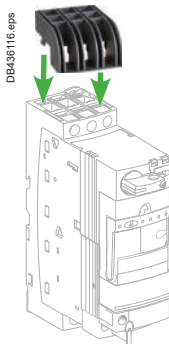
LUALB1



LUALF1



LA9LB920



LU9SP0



LU9ET1S

Short-circuit current limiter block

To be connected in series and upstream of a Ultra starter-controller. It increases its ability to withstand the short circuit current from 50 kA to 100 or 130 kA under 400 V.

Principle: under the action of a short-circuit, the opening of two contacts of each phase of the limiter creates a resistive arc. The current then decreases to a value tolerable by a Ultra power base.

Limiter blocks and accessories

Description	Breaking capacity Iq (kA)		Ie (A)	Ith (A)	Mounting	Unit reference
	≤ 440 V	690 V				
Limiter-disconnector (1 x LUALF1 cartridge supplied)	130	70	-	32	Direct on power base up to 15 kW/32 A	LUALB1 ⁽¹⁾
Limiter limiter cartridge for LUALB1	100	35	32	63	Separate	LA9LB920 ⁽²⁾
	130	70	-	-	Limiter-disconnector	LUALF1

(1) Must be connected to one power base only.

(2) Can be connected to multiple Ultra power bases in parallel with limitation :

- Total Ith max 63 A
- Total nominal current (Ie) 32 A from motor with simultaneous start (LA9LB920 could not withstand higher inrush peak current)

Phase barrier

Ensures a complementary electrical insulation between phases.

690 V AC network: compulsory.

440 V AC network: compulsory when assembling a UL508 type E compliant motor starter (Self Protected Starter).

Description	Use	Mounting	Reference
Phase separator	LUB or LU2B 12 or 120 LUB or LU2B 32 or 320 LUALB1	Live terminals L1, L2, L3	LU9SP0

Clip-in labels

Can be clipped on any Ultra power base, on LU6MB0●● inverter block, and Linergy HK busbar system.

Marking accessory

Description	Sold by lot of	Reference per unit
Clip-in label 8 x 18 mm	100	LAD90

Safety-chain identification - Red label

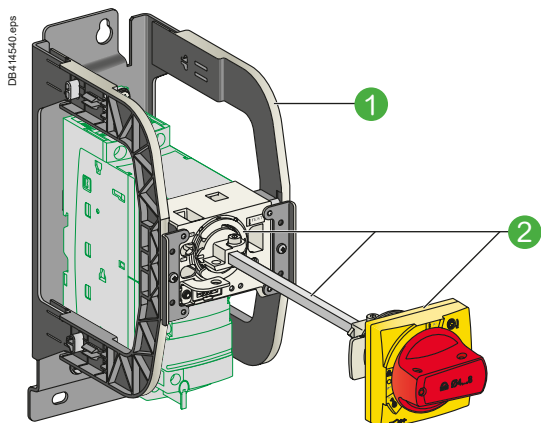
The red sticker is dedicated to Ultra LUCA, LUCB, LUCC, LUCD and LUCL control units.

Description	Reference per unit
Retrofit safety-chain identification sticker	LU9ET1S

TeSys Control

Ultra motor starters - Rotary handles

Product references



LU9APN21 mounting kit

Extended rotary handle

Allows a circuit breaker or a Ultra starter-controller installed in back of an enclosure to be operated from the front panel.

The rotary handle can be black or red/yellow, IP54 or IP65. It includes a function for locking the circuit breaker or the starter in the O (OFF) or I (ON) position (depending on the type of rotary handle) by means of up to 3 padlocks with a shank diameter of 4 to 8 mm.

The extension shaft must be adjusted to the depth of the enclosure.

The IP54 rotary handle is fixed with a nut (Ø22) to make it easier to assemble.

Mounting kit

① Ultra power base bracket; its horseshoe shaped sides hold the rotary mechanism facing the original handle.

② Mechanism, shaft and handle; the shaft enters the handle attached to the door during closing.

Long shaft

■ to be cut to the required length. Equipped with a connection endpiece.

Shaft support plate for deep enclosure

■ Provides horizontal guiding of the shaft, when the door is open.

Spacer base (retrofit accessory)

■ Fixed on a side of the box, for heightening an GVAP●●● handle.

Handle

■ Delivered as a single unit, to be fitted on a side of the enclosure.

Note: references below are suitable for Ultra power bases after 2004.

"Laser Square" Tool

■ On the principle of an angle extended with a laser beam, the "Laser Square" facilitates tracing the piercing marks on the door or the sides of an enclosure.

"Safety" stickers

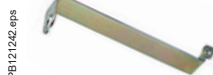
■ Marking: Electrical hazard, etc.

Ultra motor starters



GVAPA1 long shaft

PB100291 eps



GVAPK12 shaft support plate for deep enclosure

PB121242 eps



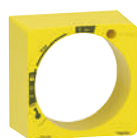
GVAPP1 spacer base (retrofit accessory)

PB100296 eps



GVAPR54 red handle, IP 54

PB100289 eps



GVAPYPHP external handle protection frame



GVAPL01 "Laser square" plotting tool

PB100297 eps

Description	Tripping indication	Reference
Mounting kit	Black handle, with error status, IP54	● LU9APN21
	Red handle, with error status, IP54	● LU9APN22
	Red handle, without error status, IP65	- LU9APN24
Separate elements	Long shaft = 315 mm	- GVAPA1
	Shaft (≥ 300 mm) support plate for deep enclosure	- GVAPK12
	Spacer base	- GVAPP1
	Black handle, IP54	● GVAPB54
	Red handle, IP54	● GVAPR54
	Red handle, IP65	● GVAPR65
Tool	"Laser square" plotting tool	GVAPL01
"Safety" stickers	German (x10)	GVAPSDE
	Chinese (x10)	GVAPSCN
	Portuguese (x10)	GVAPSPT
	Italian (x10)	GVAPSIT
External handle protection frame for U	Yellow frame	GVAPYPHP
	Black frame	GVAPBPHP

TeSys Control

Ultra motor starters - Handle mounting kit for MCC drawers

Product references

PB11807_104.eps



MCC drawers (Motor Control Center)

The drawers are composed of:

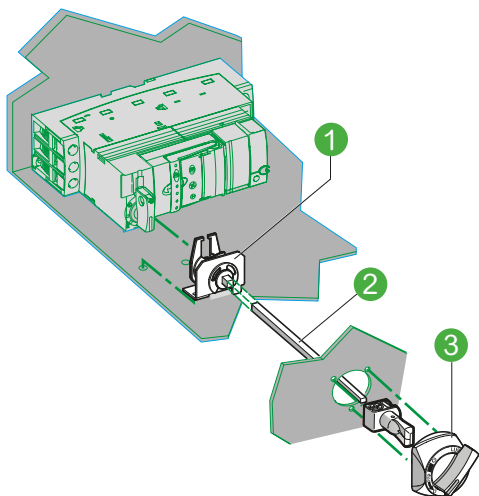
- a fixed part, in the frame of the panel,
- a fully withdrawable part, integrating the protection, control and automation components.

With a height of 3/4/6/8/12/18/24/36 modules, they allow the assembling of motor protection/control feeders:

- Direct, one direction of rotation
- Direct, 2 directions of rotation
- Star-delta
- Dahlander (2 speeds)
- 2-speed, separate winding
- Motor drives from 0 to 500 kW
- Soft starters of 0 to 75 kW.

Ultra
motor
starters

DB123404.eps



Mounting kit and handle for MCC drawer

Together, this provides manual control of a Ultra starter-controller from the front face of the drawer.

As the clamping part on top of Ultra control pad is open, the kit may be used on Ultra power bases before 2005.

Mounting kit + small handle

Description	Item	Reference
Handle with mounting kit for MCC drawer	1 + 2 + 3	LU9AP20

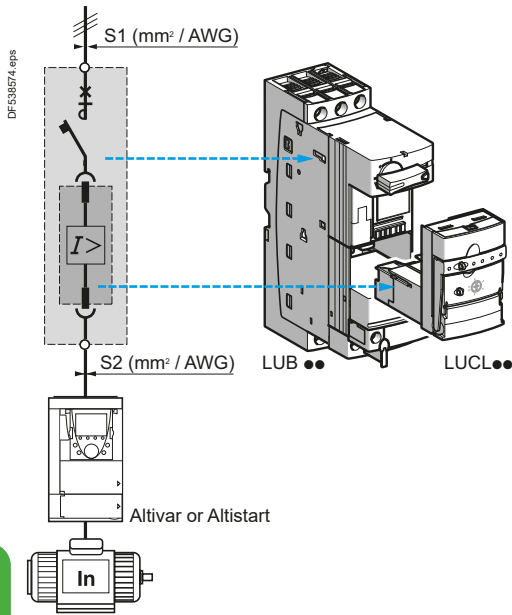
PB121243.eps



TeSys Control

Ultra motor starters - Use with soft starter / Variable Speed Drive - LUCL control module

Product references



Ultra motor starters



PB12873 eps



Introduction

When installed upstream of a variable speed controller or soft start unit, control unit LUCL●●, used in conjunction with an LUB12 or LUB32 power base, provides:

- isolation,
- short-circuit protection of the motor starter.
(variable speed controller-based or soft start unit-based motor starters).

Note: control unit LUCL, when used in conjunction with power base LUB12 or LUB32, conforms to standard IEC 60947-6-2.

Installation regulations

When the length of the cable between the Ultra starter and the variable speed controller is more than 1.5 m, the c.s.a. of the cable between the variable speed controller and the Ultra starter (S2) must be equal to the c.s.a. of the cable upstream of Ultra (S1).

Description of LUCL magnetic control unit

- 1 Extraction and locking handle
- 2 Sealing of locking handle
- 3 Dial for magnetic adjustment of motor In
- 4 Locking of settings by sealing the transparent cover

References

Description	Line current of the variable speed controller or soft start unit	Reference ⁽¹⁾
A		
Magnetic control unit	0.15...0.6	LUCLX6●●
	0.35...1.4	LUCL1X●●
	1.25...5	LUCL05●●
	3...12	LUCL12●●
	4.5...18	LUCL18●●
	8...32	LUCL32●●

⁽¹⁾ Standard control circuit voltage:

Volts	24	48...72	110...240
---	BL ^{(2) (3)}	—	—
~	B	—	—
--- or ~	—	ES ⁽⁴⁾	FU ⁽⁵⁾

Please check the availability of your variant in the index page A4/42. The SEARCH function of your viewer can be used.

⁽²⁾ Voltage code to be used for a starter-controller with communication module.

⁽³⁾ d.c. voltage with maximum ripple of ±10 %.

⁽⁴⁾ ---: 48...72 V, ~: 48 V.

⁽⁵⁾ ---: 110...220 V, ~: 110...240 V.

Control unit and associated power base selection						
Functions provided	Maximum motor power ratings 50/60 Hz			Power base reference	Control unit reference	Line current
	< 400/415 V	500 V	690 V			
	KW	KW	KW			
■ Short-circuit protection	0.09	–	–	LUB12 or LUB32	LUCLX6●●	0.15...0.6
■ Manual reset	0.25	–	–	LUB12 or LUB32	LUCL1X●●	0.35...1.4
	1.5	2.2	3	LUB12 or LUB32	LUCL05●●	1.25...5
	5.5	5.5	9	LUB12 or LUB32	LUCL12●●	3...12
	7.5	9	15	LUB32	LUCL18●●	4.5...18
	15	15	18.5	LUB32	LUCL32●●	8...32

Operating characteristics					
Control units	Standard		Advanced		
	LUCA	LUCB	LUCC	LUCD	LUCL
Thermal overload protection	Integrated function				
Over current protection	14.2 x the setting current				
Short-circuit protection	13 x I _r max (max current setting)				
Protection against phase loss	Non integrated function				
Protection against phase imbalance	Non integrated function				
Earth fault protection (equipment protection only)	Non integrated function				
Tripping class	10	10	10	20	20
Motor type	3-phase		Single-phase	3-phase	Single-phase and 3-phase
Thermal overload test function	Non integrated function				
Overtorque	Non integrated function				
No-load running	Non integrated function				
Long starting time	Non integrated function				
Reset method	Manual				
	Automatic or remote		With function module, or parameters can be set via the bus with a communication module (see page 24614/2).		

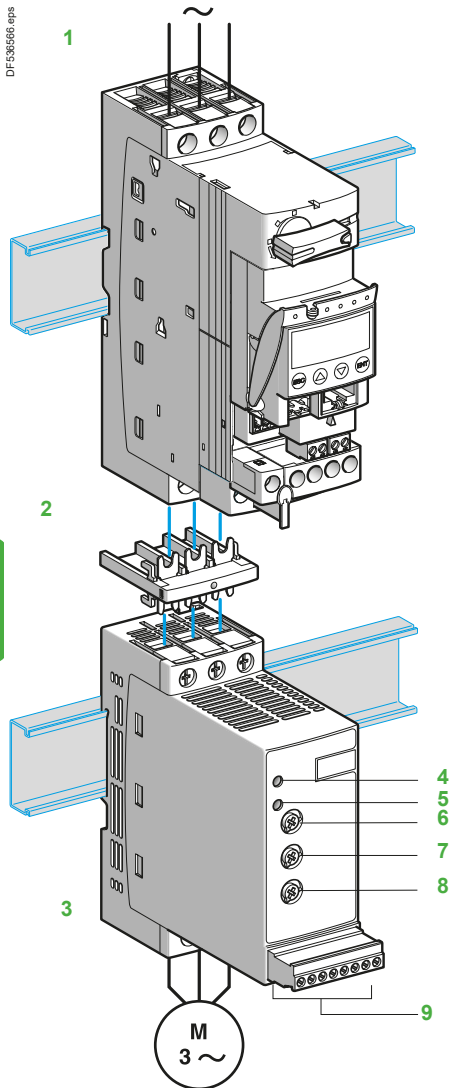
Integrated function
 Non integrated function
 Function provided with accessory

Compatibility			
Compatibility of control unit LUCL●● with	References	Functions	
The controller	No	LUTM	Controller (without thermal overload protection)
Add-on contact blocks with fault signalling and auxiliary contacts	Yes	LUA1C11	Add-on contact blocks with fault signalling (1 N/O + 1 N/C)
		LUA1C20	Add-on contact blocks with fault signalling (2 N/O)
		LUFN20	Auxiliary contacts (2 N/O)
		LUFN11	Auxiliary contacts (1 N/O + 1 N/C)
		LUFN02	Auxiliary contacts (2 N/C)
Communication modules	Yes	ASILUFC5 and ASILUFC51	AS-Interface communication modules
		LUFC00	Parallel wiring module
		LULC07	Profibus DP communication module (1 output/2 inputs)
		LULC08	CANopen communication module (1 output/2 inputs)
		LULC09	DeviceNet communication module (1 output/2 inputs)
		LULC15	Advantys STB communication module (1 output/2 inputs)
		LULC033	Modbus communication module (1 output/2 inputs)
Function modules	No	LUFW10	Alarm function module
		LUFDH11	Thermal overload signalling module with manual reset
		LUFDA01	Thermal overload signalling module with automatic or remote reset (1 N/C)
		LUFDA10	Thermal overload signalling module with automatic or remote reset (1 N/O)
		LUFV2	Motor load indication module

TeSys Control

Ultra motor starters - with Altistart U01 soft starter

Introduction



Introduction

The Altistart U01 is a soft start/soft stop unit for asynchronous motors. It is designed primarily for combinations with Ultra controller-starters.

When combined with a Ultra 1 controller by means of a connector 2, the Altistart U01 3 is a power option which provides the "Soft start/soft stop" function. The result is a unique, innovative motor starter.

Using the Altistart U01 starter enhances the starting performance of asynchronous motors by allowing them to start gradually, smoothly and in a controlled manner. It prevents mechanical shocks, which lead to wear and tear, and limits the amount of maintenance work and production downtime.

The Altistart U01 limits the starting torque and current peaks on starting, on machines which do not require a high starting torque.

The Altistart U01 is designed for the following simple applications:

- Conveyors
- Conveyor belts
- Pumps
- Fans
- Compressors
- Automatic doors and gates
- Small cranes
- Belt-driven machines, etc.

The Altistart U01 is compact and easy to install. It complies with standards IEC/EN 60947-4-2, carries UL, CSA, C-Tick, CCC certifications and CE marking.

■ ATSU01N2●●LT soft start/soft stop units

- Control two phases of the motor power supply to limit the starting current and for deceleration
- Internal bypass relay
- Motor power ratings ranging from 0.75 kW to 15 kW
- Motor supply voltages ranging from 200 V to 480 V, 50/60 Hz.

An external power supply is required for controlling the starter.

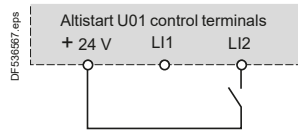
Description

- Altistart U01 soft start/soft stop units are equipped with:
 - A potentiometer for setting the starting time 6
 - A potentiometer for setting the deceleration time 8
 - A potentiometer for adjusting the start voltage threshold according to the motor load 7
 - 1 green LED 4 to indicate that the unit is switched on
 - 1 yellow LED 5 to indicate that the motor is powered at nominal voltage, if it is connected to the starter
 - A connector 9:
 - 2 logic inputs for Run/Stop commands
 - 1 logic input for the BOOST function
 - 1 logic output to indicate the end of starting
 - 1 relay output to indicate the starter has a power supply fault or the motor has reached a standstill at the end of the deceleration stage

ATSU01N2●●●LT soft start unit functions

■ 2-wire control

The run and stop commands are controlled by a single logic input. State 1 of logic input LI2 controls starting and state 0 controls stopping.



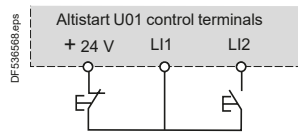
Wiring diagram for 2-wire control

■ 3-wire control

The run and stop commands are controlled by 2 different logic inputs.

Stopping is achieved when logic input LI1 opens (state 0).

The pulse on input LI2 is stored until input LI1 opens.



Wiring diagram for 3-wire control

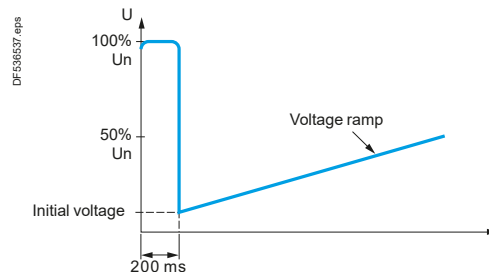
■ Starting time

Controlling the starting time means that the time of the voltage ramp applied to the motor can be adjusted to obtain a gradual starting time, dependent on the motor load.

■ Voltage boost function via logic input

Activating the BOOST logic input enables the function for supplying a starting overtorque capable of overcoming any mechanical friction.

When the input is at state 1, the function is active (input connected to the + 24 V) and the starter applies a fixed voltage to the motor for a limited time before starting.



Application of a voltage boost equal to 100% of the nominal motor voltage

■ End of starting

○ application function for logic output LO1

ATSU01N2●●●LT soft start/soft stop units are equipped with an open collector logic output LO, which indicates the end of starting when the motor has reached nominal speed.

TeSys Control

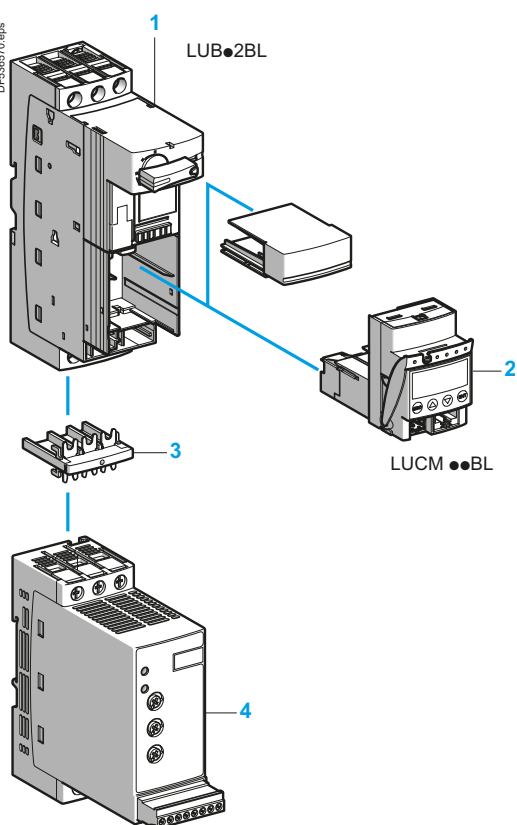
Altistart U01 soft starter

Product references



ATSU01N222LT

Ultra motor starters



ATSU 01N2●●LT

Soft start/soft stop units for 0.75 to 15 kW motors (can be combined with the Ultra starter)

Motor				Starter	
Motor power ⁽¹⁾				Nominal current	Reference
230 V		400 V	460 V	A	
kW	HP	kW	HP		
3-phase supply voltage: 200...480 V 50/60 Hz					
0.75	1	1.5	2	6	ATSU01N206LT
1.1	1.5	2.2	3		
1.5	2	–	5	9	ATSU01N209LT
–	–	4	–		
2.2	3	5.5	7.5	12	ATSU01N212LT
3	–	–	–		
4	5	7.5	10	22	ATSU01N222LT
5.5	7.5	11	15		
7.5	10	15	20	32	ATSU01N232LT

Accessories

Description	Used for starter	Reference
Power connector between ATSU01N2●●LT and U	ATSU01N2●●LT	VW3G4104

Ultra starter and soft start unit combinations

Numerous possibilities for combinations and options are offered. Please consult the "Ultra Starters-open version" specialist catalogue.

Motor power	Soft starter			U		
	230 V	400 V	460 V	Power base	Control unit ⁽²⁾	
Voltage	kW/HP	kW	HP			
0.75/1	1.5	2	–	ATSU01N206LT	LUB12	LUC●05BL
1.1/1.5	2.2/3	3	–	ATSU01N206LT	LUB12	LUC●12BL
1.5/2	–	–	–	ATSU01N209LT	LUB12	LUC●12BL
–	4	5	–	ATSU01N209LT	LUB12	LUC●12BL
2.2/3	–	–	–	ATSU01N212LT	LUB12	LUC●12BL
3/–	5.5	7.5	–	ATSU01N212LT	LUB32	LUC●18BL
4/5	7.5	10	–	ATSU01N222LT	LUB32	LUC●18BL
5.5/7.5	11	15	–	ATSU01N222LT	LUB32	LUC●32BL
7.5/10	15	20	–	ATSU01N232LT	LUB32	LUC●32BL

Example of a starter-motor combination with:

- 1 non-reversing power base for DOL starting (LUB●2BL)
- 2 control unit (LUCM●●BL)
- 3 power connector (VW3G4104)
- 4 Altistart U01 soft start/soft stop unit (ATSU01N2●●LT)

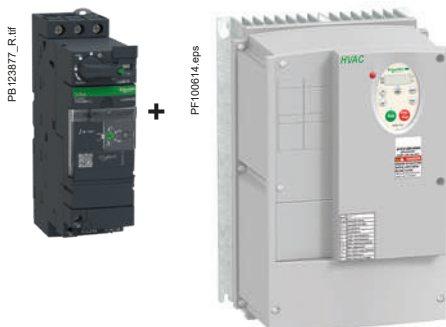
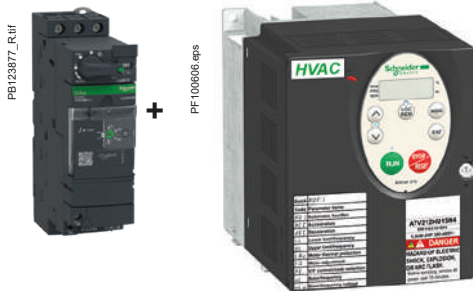
⁽¹⁾ Standard motor power ratings, HP power ratings indicated according to standard UL508.

⁽²⁾ Depending on the configuration of the chosen Ultra starter, replace the ● with A for standard, B for expandable, and M for multifunction.

TeSys Control

Ultra motor starters - Association with Soft starters / Variable speed controllers

Product references



Soft starter coordination

The standard defines tests at different levels of current; the purpose of these tests is to place the equipment in extreme conditions.

The standard defines 2 types of coordination, according to the condition of the components after testing: type 1 and type 2.

Type 1 coordination requires that in a short-circuit condition, the contactor or starter must not present any danger to personnel or installations and must not be able to resume operation without repair or the replacement of parts.

The product combinations given below provide type 1 coordination

Soft start-soft stop unit/ Ultra starter controller combination with magnetic protection

Ultra / Altistart 48: type 1 coordination

Power 400 V (kW)	Ultra references (protection + power switching)	Soft starter reference	
		Class 10	Class 20
5.5	LUB32 + LUCL32 or LUCL18	–	ATS48D17
7.5	LUB32 + LUCL32	ATS48D17	ATS48D22
11	LUB32 + LUCL32	ATS48D22	ATS48D32
15	LUB32 + LUCL32	ATS48D32	ATS48D38

Variable speed controller/ Ultra starter controller combination with magnetic protection

Ultra / Altivar 212 UL Type 1/IP 20

Power 400 V (kW)	Ultra references (protection + power switching)	Variable speed controller reference	
0.75	LUB12 + LUCL05	ATV212H075N4	
		ATV212HU15N4	
2.2	LUB12 + LUCL12	ATV212HU22N4	
3	LUB12 + LUCL12	ATV212HU30N4	
4	LUB12 + LUCL12	ATV212HU40N4	
5.5	LUB32 + LUCL32 or LUCL18	ATV212HU55N4	
7.5	LUB32 + LUCL32 or LUCL18	ATV212HU75N4	
11	LUB32 + LUCL32	ATV212HD11N4	
15	LUB32 + LUCL32	ATV212HD15N4	

Ultra / Altivar 212 IP 54

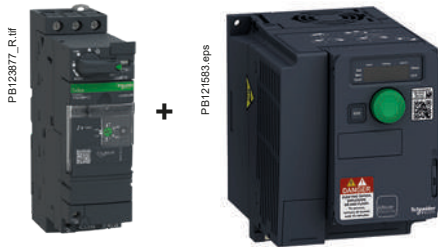
Power 400 V (kW)	Ultra references (protection + power switching)	Variable speed controller reference	
0.75	LUB12 + LUCL05	ATV212W075N4	
1.5	LUB12 + LUCL12 or LUCL05	ATV212WU15N4	
2.2	LUB12 + LUCL12	ATV212WU22N4	
3	LUB12 + LUCL12	ATV212WU30N4	
4	LUB12 + LUCL12	ATV212WU40N4	
5.5	LUB32 + LUCL32 or LUCL18	ATV212WU55N4	
7.5	LUB32 + LUCL32 or LUCL18	ATV212WU75N4	
11	LUB32 + LUCL32	ATV212WD11N4	
15	LUB32 + LUCL32	ATV212WD15N4	

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Ultra motor starters - Association with Soft starters / Variable speed controllers

Products references



Ultra motor starters



Variable speed controller/Ultra starter controller combination with magnetic protection (continued)

Ultra / Altivar 320

Power 400 V (kW)	Ultra references (protection + power switching)	Variable speed controller reference
0.37	LUB12 + LUCL05	ATV320U04N4C
0.55	LUB12 + LUCL05	ATV320U06N4C
0.75	LUB12 + LUCL05	ATV320U07N4C
1.1	LUB12 + LUCL12	ATV320U11N4C
1.5	LUB12 + LUCL12	ATV320U15N4C
2.2	LUB12 + LUCL12	ATV320U22N4C
3	LUB32 + LUCL18	ATV320U30N4C
4	LUB32 + LUCL18	ATV320U40N4C
5.5	LUB32 + LUCL32	ATV320U55N4C
7.5	LUB32 + LUCL32	ATV320U75N4C

Ultra / Altivar 630

Power 400V (kW)	Ultra references (protection + power switching)	Variable speed controller reference
0.75	LUB12 + LUCL05	ATV630U07N4
1.5	LUB12 + LUCL12	ATV630U15N4
2.2	LUB12 + LUCL12	ATV630U22N4
3	LUB32 + LUCL18	ATV630U30N4
4	LUB32 + LUCL18	ATV630U40N4
5.5	LUB32 + LUCL32	ATV630U55N4
7.5	LUB32 + LUCL32	ATV630U75N4


TeSys Control

Ultra motor starters

Product references

ASILUFC5	LU9R30	LUCB12FU	LUCD32FU
ASILUFC51	LU9RCD03	LUCB18B	LUCD38BL
GV1G10	LU9RCD10	LUCB18BL	LUCD38FU
GVAPA1	LU9RCD50	LUCB18ES	LUCDT1BL
GVAPA2	LU9RDD03	LUCB18FU	LUCDX6BL
GVAPB54S	LU9RDD30	LUCB1XB	LUCDX6FU
GVAPK12	LU9RFL15	LUCB1XBL	LUCL05B
GVAPL01	LU9RPB010	LUCB1XES	LUCL05BL
GVAPP1	LU9RPB100	LUCB1XFU	LUCL05ES
GVAPR65S	LU9RPB400	LUCB32B	LUCL05FU
LA9LB920	LU9SP0	LUCB32BL	LUCL12B
LU2B12B	LUA1C11	LUCB32ES	LUCL12BL
LU2B12BL	LUA1C20	LUCB32FU	LUCL12ES
LU2B12ES	LUA8E20	LUCB38BL	LUCL12FU
LU2B12FU	LUALB1	LUCB38FU	LUCL18B
LU2B32B	LUALF1	LUCBT1BL	LUCL18BL
LU2B32BL	LUB12	LUCBX6B	LUCL18ES
LU2B32ES	LUB120	LUCBX6BL	LUCL18FU
LU2B32FU	LUB32	LUCBX6FU	LUCL1XB
LU2B38BL	LUB320	LUCC05B	LUCL1XBL
LU2B38FU	LUB32NR	LUCC05BL	LUCL1XFU
LU2BA0BL	LUB38	LUCC05ES	LUCL32B
LU2BA0ES	LUB380	LUCC05FU	LUCL32BL
LU2BB0BL	LUCA05B	LUCC12B	LUCL32FU
LU2MB0B	LUCA05BL	LUCC12BL	LUCL38BL
LU2MB0BL	LUCA05ES	LUCC12ES	LUCL38FU
LU2MB0ES	LUCA05FU	LUCC12FU	LUCLX6BL
LU2MB0FU	LUCA12B	LUCC18BL	LUF000
LU6MB0B	LUCA12BL	LUCC18FU	LUFDA01
LU6MB0BL	LUCA12ES	LUCC1XB	LUFDA10
LU6MB0ES	LUCA12FU	LUCC1XBL	LUFDH11
LU6MB0FU	LUCA18B	LUCC1XES	LUFN02
LU9AD7	LUCA18BL	LUCC1XFU	LUFN11
LU9AP00	LUCA18ES	LUCC32B	LUFN20
LU9AP11	LUCA18FU	LUCC32BL	LUFN7
LU9AP20	LUCA1XB	LUCC32FU	LUFN9
LU9APN21	LUCA1XBL	LUCCX6B	LUFV2
LU9APN22	LUCA1XES	LUCCX6BL	LUFV10
LU9APN24	LUCA1XFU	LUCCX6FU	LULC031
LU9BN11	LUCA32B	LUCD05B	LULC033
LU9BN11C	LUCA32BL	LUCD05BL	LULC07
LU9BN11L	LUCA32ES	LUCD05ES	LULC08
LU9C1	LUCA32FU	LUCD05FU	LULC09
LU9C2	LUCA38BL	LUCD12B	LULC15
LU9ET1S	LUCA38FU	LUCD12BL	
LU9G02	LUCAX6B	LUCD12ES	
LU9G03	LUCAX6BL	LUCD12FU	
LU9GC3	LUCAX6ES	LUCD18BL	
LU9GC7	LUCAX6FU	LUCD18FU	
LU9M1	LUCB05B	LUCD1XB	
LU9MR1	LUCB05BL	LUCD1XBL	
LU9MR1C	LUCB05ES	LUCD1XES	
LU9MRC	LUCB05FU	LUCD1XFU	
LU9MRL	LUCB12B	LUCD32B	
LU9R03	LUCB12BL	LUCD32BL	
LU9R10	LUCB12ES	LUCD32ES	

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This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

Technical Data for Designers

Contents

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Dimensions	A4/60 to A4/61
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Altistart U01 Soft starter	A4/75 to A4/81

Environment			
Product certifications			UL, CSA, CCC, GOST, ASEFA, UKCA. ABS, BV, DNV, GL, LROS. ATEX.
Conforming to standards			IEC/EN 60947-6-2, CSA-22.2 N° 60947-4-1-14 UL 60947-4-1: with phase barrier LU9 SP0
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3	V	690
	Conforming to UL508, CSA C22-2 n°14	V	600
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-6-2	kV	6
Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact)	Front panel outside connection zone		IP 40
	Front panel and wired terminals		IP 20
	Other faces		IP 20
Protective treatment	Conforming to IEC/EN 60068		"TH"
	Conforming to IEC/EN 60068-2-30	Cycles	12
	Conforming to IEC/EN 60068-2-11	h	48
Ambient air temperature around the device	Storage	°C	-40...+85
	Operation	°C	Power bases ≤ 32 A (15 kW) associated with LUCA, LUCL, LUCB, LUCC, LUCD Control Units: -25 °...+70 °C. (At temperatures above 60 ° and up to 70 °C, for Starter Controllers LUB32, LU2B32 leave a minimum gap of 9 mm between products). Power bases = 38 A (18,5 kW) associated with LUCA, LUCL, LUCB, LUCC, LUCD Control Units: -25 °...+60 °C. (At temperatures above 45 °C, leave a minimum gap of 9 mm between products. At temperatures above 55 °C and up to 60 °C, leave a gap of 20 mm between products). Power bases ≤ 32 A (15 kW) and Multifunctions Control units: -25 °...+60 °C. (At temperatures above 45 °C, leave a minimum gap of 9 mm between products. At temperatures above 55 °C and up to 60 °C, leave a gap of 20 mm between products).
Maximum operating altitude		m	2000
Operating positions	In relation to normal vertical mounting plane		
Flame resistance	Conforming to UL 94		V2
	Conforming to IEC/EN 60695-2-12	°C	960 (parts supporting live components)
		°C	650
Environmental restrictions			Cadmium and silicone-free, recyclable
Shock resistance 1/2 sine wave = 11 ms	Conforming to IEC/EN 60068-2-27 ⁽¹⁾		Power poles open: 10 gn Power poles closed: 15 gn
Vibration resistance 5...300 Hz	Conforming to IEC/EN 60068-2-6 ⁽¹⁾		Power poles open: 2 gn Power poles closed: 4 gn ⁽²⁾
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	In open air: 8 - Level 3
		kV	On contact: 8 - Level 4
Immunity to radiated high-frequency disturbance	Conforming to IEC/EN 61000-4-3	V/m	10 - Level 3
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	kV	All circuits except for serial link: 4 - Level 4
		kV	Serial link: 2 - Level 3
Immunity to dissipated shock waves	Conforming to IEC/EN 60947-6-2 Uc ~ 24...240 V, Uc ~ 48...220 V Uc = 24 V ~	kV	Common mode
			Serial mode
			2
			1
Immunity to conducted high-frequency disturbance	Conforming to IEC/EN 61000-4-6	V	10
Radiated emission and conducted	Conforming to CISPR 11 and EN 55011		Class A

⁽¹⁾ Without modifying the contact states, in the most unfavourable direction.

⁽²⁾ 2 gn with Advantys STB or CANopen communication modules.

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Ultra motor starters

Characteristics

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Ref.



Power circuit connection characteristics

Connection to Ø4 mm screw clamp terminals

Power base, control unit or reverser block type			LUB12 + LUCA or LUCB or LUCC or LUCD	LUB32/LUB38 + LUCA or LUCB or LUCC or LUCD	LU2B LU2M LU6M
Flexible cable without cable end	1 conductor	mm ²	2.5...10	2.5...10	2.5...10
	2 conductors	mm ²	1.5...6	1.5...6	1.5...6
Flexible cable with cable end	1 conductor	mm ²	1...6	1...6	1...6
	2 conductors	mm ²	1...6	1...6	1...6
Solid cable without cable end	1 conductor	mm ²	1...10	1...10	1...10
	2 conductors	mm ²	1...6	1...6	1...6
Screwdriver			Philips n° 2 or flat screwdriver: Ø6 mm		
Tightening torque			N.m	1.9...2.5	1.9...2.5

Control circuit connection characteristics

Connection to Ø3 mm screw clamp terminals

Flexible cable without cable end	1 conductor	mm ²	0.75...1.5	0.75...1.5	0.75...1.5
	2 conductors	mm ²	0.75...1.5	0.75...1.5	0.75...1.5
Flexible cable with cable end	1 conductor	mm ²	0.34...1.5	0.34...1.5	0.34...1.5
	2 conductors	mm ²	0.34...1.5	0.34...1.5	0.34...1.5
Solid cable without cable end	1 conductor	mm ²	0.75...1.5	0.75...1.5	0.75...1.5
	2 conductors	mm ²	0.75...1.5	0.75...1.5	0.75...1.5
Screwdriver			Philips n° 1 or flat screwdriver: Ø5 mm		
Tightening torque			N.m	0.8...1.2	0.8...1.2

Control circuit characteristics

Rated voltage of control circuit	~ 50/60 Hz	V	24...240	24...240	–
	≡	V	24...220	24...220	–
Voltage limits	≡ 24 V ⁽¹⁾	V	20...27	20...27	–
	Operation	~ 24 V	V	20...26.5	–
Drop-out	~ or ≡ 48...72 V	V	~ 38.5...72. ≡ 38.5...93	–	–
	~ 110...240 V	V	~ 88...264	~ 88...264	–
	≡ 110...220 V	V	≡ 88...242	≡ 88...242	–
	≡ 24 V	V	14.5	14.5	–
	~ 24 V	V	14.5	14.5	–
	~ or ≡ 48...72 V	V	29	29	–
Typical consumption	≡ 24 V	mA	130	220	120
	I max while closing	~ 24 V	mA	140	2360
	~ or ≡ 48...72 V	mA	280	280	2300
	~ 110...240 V, ≡ 110...220 V	mA	280	280	1000
I rms sealed	≡ 24 V	mA	60	80	120
	~ 24 V	mA	70	90	⁽²⁾
	~ or ≡ 48...72 V	mA	35	45	⁽²⁾
	~ 110...240 V, ≡ 110...220 V	mA	35	25	⁽²⁾
Heat dissipation			W	2	3
Operating time	Closing	ms	24 V: 70; 48 V: 60; ≥ 72 V: 50		–
	Opening	ms	35	35	–
Resistance to micro-breaks			ms	3	3
Resistance to voltage dips			IEC/EN 61000-4-11		At least 70 % of Uc for 500 ms
Mechanical durability			In millions of operating cycles		15
Maximum operating rate			In operating cycles per hour		3600

Main pole characteristics

Number of poles			3	3	–
Isolation conforming to IEC/EN 60947-1	Possible		Yes	Yes	–
	Padlocking		1 padlock with Ø6.9 mm shank		–
Rated thermal current		A	12	32/38	–
Rated operational current (Ue ≤ 440V)	To IEC/ EN 60947-6-2	Category AC-41	θ ≤ 70°C: 12 A		–
	Category AC-43		θ ≤ 70°C: 12 A		–
Rated operational voltage		V	690 ⁽³⁾	690 ⁽³⁾	–
Frequency limits		Of the operating current	Hz	40...60	–
Power dissipated in the power circuits	Operational current	A	3 6 9 12	18 25 32 38	–
	Power dissipated in all three poles	W	0.1 0.3 0.6 1.1	2.4 4.6 7.5 10.6	–
Rated breaking capacity on short-circuit		V	230 440	500 690	–
		kA	50 50 (25 for LUB38)	10 4	–
Total breaking time		ms	2	2	–
Thermal limit		With Isc max on 440 V	kA ² s	90	120

⁽¹⁾ Voltage with maximum ripple of ±10 %.

⁽²⁾ No consumption sealed.

⁽³⁾ For 690 V, use phase barrier LU9SP0.

References:
pages A4/10 to A4/14

Curves:
pages A4/56 to A4/59

Dimensions:
pages A4/60 and A4/61

Schemes:
pages A4/62 to A4/74

TeSys Control

Ultra motor starters

Characteristics

Specific characteristics of power bases LU2B and reverser blocks LU2M or LU6M

Duration of inrush phase	~ 50/60 Hz	ms	25
	---	ms	15
Maximum operating time	Without change of direction	ms	75
	With change of direction	ms	150

General characteristics of auxiliary contacts

Conventional thermal current (Ith)	For ambient temperature $\theta < 70\text{ }^{\circ}\text{C}$	A	5
Frequency of the operational current		Hz	Up to 400
Minimum switching capacity $\lambda = 10^{-8}$	U min	V	17
	I min	mA	5
Short-circuit protection	Conforming to IEC/EN 60947-5-1	A	gG fuse: 4
Short-time rating	Permissible for	1 s	A 30
		500 ms	A 40
		100 ms	A 50
Insulation resistance		mΩ	10
Non-overlap time	Guaranteed between N/C and N/O contacts	ms	2 (on energisation and on de-energisation)

Specific characteristics of auxiliary contacts built-into the power base

Linked contacts	Conforming to IEC/EN 60947-4-1		Each power base has 1 N/O contact and 1 N/C contact which are mechanically linked
Mirror contact	Conforming to IEC/EN 60947-1		The N/C contact fitted in each power base reliably represents the state of the power contacts (safety scheme)
Rated operational voltage (Ue)		V	Up to ~ 690; --- 250
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-5-1	V	690
	Conforming to UL, CSA	V	600

Specific characteristics of auxiliary contacts in modules LUFN, of auxiliary contacts LUA1 and of reverser blocks LU2M and LU6M

Rated operational voltage (Ue)		V	Up to ~ 250; --- 250
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-5-1	V	250
	Conforming to UL, CSA	V	250

Rated operational power of contacts

Conforming to IEC/EN 60947-5-1

a.c. supply, categories AC-14 and AC-15

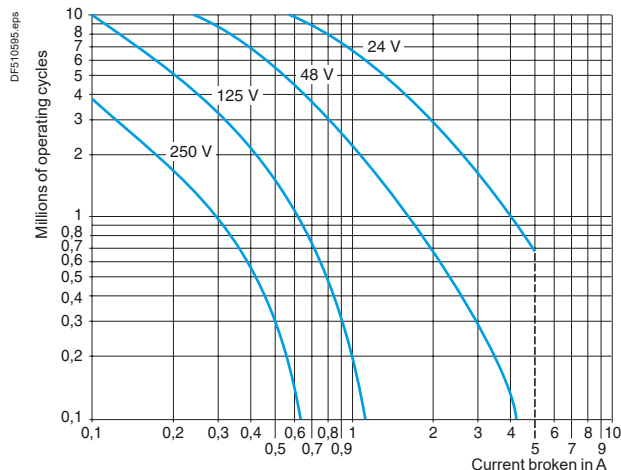
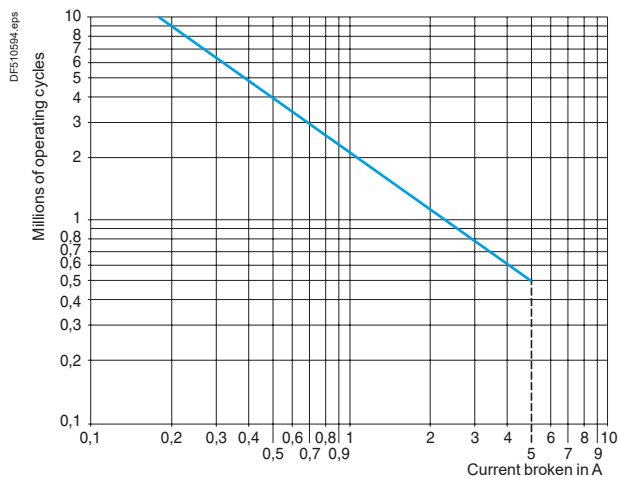
Electrical durability (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current ($\cos \varphi 0.7$) = 10 times the power broken ($\cos \varphi = 0.4$)

	V	24	48	115	230	400	440	690
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100

d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

	V	24	48	125	250
W		120	90	75	68
W		70	50	38	33
W		25	18	14	12



TeSys Control

Ultra motor starters - Control units

Characteristics

Characteristics of standard control units LUCA			
Protection	Motor type		3-phase
	Conforming to standard		IEC/EN 60947-6-2, UL 60947-4-1, CSA C22-2 n°14
Overload protection	Tripping class conforming to UL 508, IEC/EN 60947-6-2		10
	Frequency limits of the operational current	Hz	40...60
	Temperature compensation	°C	-25...+70
	Protection against phase imbalance		Yes
Short-circuit protection	Tripping threshold		13 x I _r max (max current setting)
	Tripping tolerance		±20 %

Characteristics of advanced control units LUCB, LUCC and LUCD				
Control unit type		LUCB	LUCC	LUCD
Protection	Motor type	3-phase	Single-phase	3-phase
	Conforming to standard	IEC/EN 60947-6-2, CSA C22-2 n°14	IEC/EN 60947-6-2, CSA C22-2 n°14	IEC/EN 60947-6-2, CSA C22-2 n°14
Overload protection	Tripping class conforming to UL 508, IEC/EN 60947-6-2	10	10	20
	Frequency limits of the operational current	Hz	40...60	40...60
	Temperature compensation	°C	-25...+70	-25...+70
	Protection against phase imbalance		Yes	–
Short-circuit protection	Tripping threshold	13 x I _r max.	13 x I _r max.	13 x I _r max.
	Tripping tolerance	±20 %	±20 %	±20 %

Ultra motor starters

Ref.

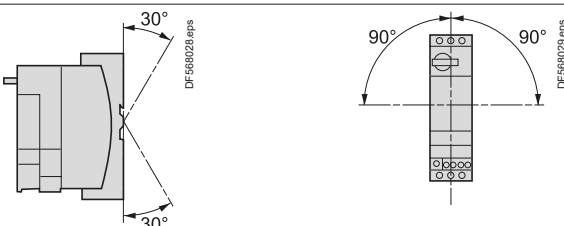


TeSys Control

Ultra motor starters - Control units

Characteristics

Characteristics of magnetic control unit LUCL

Protection	Motor type		3-phase
	Conforming to standard		When used in conjunction with an LUB12, LUB32 or LUB38 power base, magnetic control unit LUCL conforms to standard IEC 60947-6-2.
Short-circuit protection	Tripping threshold		14.2 x I _n (max. setting current)
	Tripping tolerance		±20 %
Environment			
Product certifications			CE
Conforming to standards			When used in conjunction an LUB power base, control unit LUCL conforms to standard 60947-6-2.
Rated insulation voltage (U _i)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3	V	690
Rated impulse withstand voltage (U _{imp})	Conforming to IEC/EN 60947-6-2	kV	6
Safety separation of circuits SELV	Conforming to IEC/EN 60947-1 appendix N	V	Between the control or auxiliary circuit and the main circuit: 400 Between the control and auxiliary circuits: 40
Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact)	Front panel outside connection zone		IP 40
	Front panel and wired terminals		IP 20
	Other faces		IP 20
Protective treatment	Conforming to IEC/EN 60068		"TH"
	Conforming to/EN 60068-2-30	Cycles	12
	Conforming to IEC/EN 60068-2-11	h	48
Ambient air temperature around the device	Storage	°C	- 40...+ 85
	Operation	°C	Power bases and standard and advanced control units: - 25... + 70. (At temperatures above 60 °C and up to 70 °C, for I _e = 32 A, leave a minimum gap of 9 mm between products). Power bases and multifunction control units: - 25... + 60. (At temperatures above 45 °C, leave a minimum gap of 9 mm between products. At temperatures above 55 °C up to 60 °C, leave a gap of 20 mm between products.)
Maximum operating altitude		m	2000
Operating positions	In relation to normal vertical mounting plane		
Flame resistance	Conforming to UL 94		V2
	Conforming to IEC/EN 60695-2-12	°C	960 (parts supporting live components) °C 650
Environmental restrictions			Cadmium and silicone-free, recyclable
Shock resistance 1/2 sine wave = 11 ms	Conforming to IEC/EN60068-2-27 ⁽¹⁾		Power poles open: 10 gn Power poles closed: 15 gn
Vibration resistance 5...300 Hz	Conforming to IEC/EN 60068-2-6 ⁽¹⁾		Power poles open: 2 gn Power poles closed: 4 gn ⁽²⁾
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	In open air: 8 - Level 3
		kV	On contact: 8 - Level 4
Immunity to radiated high-frequency disturbance	Conforming to IEC/EN 61000-4-3	V/m	10 - Level 3
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	kV	All circuits except for serial link: 4 - Level 4
		kV	Serial link: 2 - Level 3
Immunity to dissipated shock waves	Conforming to IEC/EN 60947-6-2 U _c ~ 24...240 V, U _c ∴ 48...220 V U _c = 24 V ∴		Common mode
		kV	2
			Serial mode 1
Immunity to conducted high-frequency disturbance	Conforming to IEC/EN 61000-4-6	V	10

(1) Without modifying the contact states, in the most unfavourable direction.
(2) 2 gn with Advantys STB or CANopen communication modules.

TeSys Control

Ultra motor starters - Control units

Characteristics

Power circuit connection characteristics of LUCL					
Power base and control unit type		LUB12 + LUCL		LUB32 + LUCL	LUB38 + LUCL
Connection to Ø4 mm screw clamp terminals					
Flexible cable without cable end	1 conductor	mm ²	2.5...10	2.5...10	
	2 conductors	mm ²	1.5...6	1.5...6	
Flexible cable with cable end	1 conductor	mm ²	1...6	1...6	
	2 conductors	mm ²	1...6	1...6	
Flexible cable without cable end	1 conductor	mm ²	1...10	1...10	
	2 conductors	mm ²	1...6	1...6	
Screwdriver		Philips n° 2 or flat screwdriver: Ø6 mm			
Tightening torque		N.m	1.9...2.5	1.9...2.5	
Control circuit connection characteristics of LUCL					
Connection to Ø3 mm screw clamp terminals					
Flexible cable without cable end	1 conductor	mm ²	0.75...1.5	0.75...1.5	
	2 conductors	mm ²	0.75...1.5	0.75...1.5	
Flexible cable with cable end	1 conductor	mm ²	0.34...1.5	0.34...1.5	
	2 conductors	mm ²	0.34...1.5	0.34...1.5	
Flexible cable without cable end	1 conductor	mm ²	0.75...1.5	0.75...1.5	
	2 conductors	mm ²	0.75...1.5	0.75...1.5	
Screwdriver		Philips n° 2 or flat screwdriver: Ø5 mm			
Tightening torque		N.m	0.8...1.2	0.8...1.2	
Control circuit characteristics of LUCL					
Rated control circuit voltage	~ 50/60 Hz	V	24...240	24...240	
	≡	V	24...220	24...220	
Voltage limits	≡ 24 V ⁽¹⁾	V	20...27	20...27	
	Operation	V	20...26.5	20...26.5	
Drop-out	~ or ≡ 48...72 V	V	~ 38.5...72, ≡ 38.5...93	~ 38.5...72, ≡ 38.5...93	
	~ 110...240 V	V	~ 88...264	~ 88...264	
	≡ 110...240 V	V	≡ 88...242	≡ 88...242	
	~ 24 V	V	14.5	14.5	
Typical consumption	~ 24 V	V	14.5	14.5	
	~ or ≡ 48...72 V	V	29	29	
	~ 110...240 V, ≡ 110...220 V	V	55	55	
	I max while closing	mA	280	280	
I rms sealed	~ 24 V	mA	280	280	
	~ 24 V	mA	60	80	
	~ 24 V	mA	70	90	
	~ or ≡ 48...72 V	mA	35	45	
Heat dissipation	~ 110...240 V, ≡ 110...220 V	mA	35	25	
		W	2	3	
Operating time	Closing	ms	24 V: 70; 48 V: 60; ≥ 72 V: 50	24 V: 70; 48 V: 60; ≥ 72 V: 50	
	Opening	ms	35	35	
Resistance to micro-breaks		ms	3	3	
Resistance to voltage dips	IEC/EN 61000-4-11		At least 70 % of U _c for 500 ms		
Mechanical durability	In millions of operating cycles		15	15	
Maximum operating rate	In operating cycles per hour		3600	3600	
Main pole characteristics of LUCL					
Number of poles			3	3	
Isolation conforming to IEC/EN 60947-1	Possible		Yes	Yes	
	Padlocking		1 padlock with Ø6.9 mm shank	1 padlock with Ø6.9 mm shank	
Rated thermal current		A	12	32	(38 A for LUB38)
Rated operational current (U _e ≤ 440 V)	Conforming to IEC/EN 60947-6-2	Category AC-41	θ ≤ 70 °C: 12 A	θ ≤ 70 °C: 32 A	(38 A for LUB38)
		Category AC-43	θ ≤ 70 °C: 12 A	θ ≤ 70 °C: 32 A	38
Rated operational voltage		V	690 ⁽³⁾	690 ⁽³⁾	690
Frequency limits		Hz	40...60	40...60	40...60
Power dissipated in the power circuits	Operational current	A	3 6 9 12 18 25 32 38		
	Power dissipated in all three poles	W	0.1 0.3 0.6 1.1 2.4 4.6 7.5 10.5		
Rated breaking capacity on short-circuit		V	230 440 500 690		
		kA	50 50 10 4		
Total breaking time		ms	2 2 2		
Thermal limit		kA ² s	90	120	

(1) d.c. voltage with maximum ripple of ± 10 %.

(2) No consumption sealed.

(3) For 690 V, use phase barrier LU9SP0.

References: page A4/34 Schemes: page A4/63

Characteristics of limiter-disconnector LUALB1

Rated insulation voltage (Ui) conforming to standard IEC/EN 60947-1	V	690
Conventional thermal current (Ith) conforming to standard IEC/EN 60947-1	A	32
Operating threshold I rms	kA	50
Breaking capacity	V	440 690
	kA	130 70
Mounting		Directly on the upstream terminals of the starter-controller
Cabling		
Solid cable	1 conductor	mm² 1.5...10
	2 conductors	mm² 1.5...6
Flexible cable without cable end	1 conductor	mm² 1...10
	2 conductors	mm² 1...6
Flexible cable with cable end	1 conductor	mm² 1...6
	2 conductors	mm² 1...6
Screwdriver		Phillips n°2 or flat screwdriver Ø6 mm
Tightening torque	N.m	1.9...2.5

Characteristics of current limiter LA9LB920

Rated insulation voltage (Ui) conforming to standard IEC/EN 60947-1	V	690
Conventional thermal current (Ith) conforming to standard IEC/EN 60947-1	A	63
Operating threshold I rms	A	1000
Breaking capacity	V	440 690
	kA	100 35
Mounting		Separate
Cabling		
Solid cable	1 conductor	mm² 1.5...25
	2 conductors	mm² 1.5...10
Flexible cable without cable end	1 conductor	mm² 1.5...25
	2 conductors	mm² 2.5...10
Flexible cable with cable end	1 conductor	mm² 1.5...16
	2 conductors	mm² 1.5...4
Screwdriver		Phillips n°2 or flat screwdriver Ø6 mm
Tightening torque	N.m	2.2

Characteristics of thermal overload alarm function modules LUFW10

Activation threshold		Fixed at 88 % of the thermal tripping state
Hysteresis between activation and switching off		5 %
Display		By LED on front panel
Supply		Powered by the control unit
Discrete output characteristics	Type	N/O contact
	AC-15	230 V max; 400 VA 100 000 operating cycles
	DC-13	24 V; 50 W 100 000 operating cycles
Conventional thermal current (Ith)	For ambient temperature $\theta < 70$ °C	A 2
Short-circuit protection	Conforming to IEC/EN 60947-5-1	A gG fuse: 2

Characteristics of thermal overload fault signalling and reset modules

Module type		LUFDH11	LUFDA01	LUFDA10
Fault signalling		By LED on front panel		
External power supply	V	~/- 24... 240		
Module consumption	mA	7 at ~ 24 1.1 at ~ 240		
Discrete outputs	Type	1 N/C+ 1 N/O	1 N/C	1 N/O
	AC-15	230 V max; 400 VA 100 000 operating cycles		
	DC-13	24 V; 50 W 100 000 operating cycles		
Conventional thermal current (Ith)	For ambient temperature $\theta < 70$ °C	A 2		
Short-circuit protection	Conforming to IEC/EN 60947-5-1	A gG fuse: 2		
Reset input	Conductor c.s.a.	mm² 0.2 min		
	Length	m 500 (R = 50 Ω , L = 52.8 mH, Cp = 93 pF)		



Characteristics of motor load indication function module LUFV2

Analogue output			4 - 20 mA
Signal delivered			Value of I average/I _r ratio within the range of 0 to 2 for LUCB and LUCD Value of I average/I _r ratio within the range of 0 to 3 for LUC C
Load impedance	Minimum	kΩ	–
	Maximum	Ω	500
	Typical	Ω	100
Signal characteristics with advanced control unit	Precision		±6 %
Signal characteristics with multifunction control unit	Precision		±10 %
	Resolution		1 % of I _r
Supply			External ~ 24 V

Characteristics of AS-Interface communication modules ASILUFC5 and ASILUFC51

Module type		ASILUF C5	ASILUF C51
Product certification		AS-Interface V2.1 n° 52901	AS-Interface V2.1 n° 52303
AS-Interface profile		7.D.F.0	7.A.7.E
Ambient air temperature		°C Operation -25...+70	
Cycle time		5 ms	10
Addressing		31 slaves	62 slaves
AS-Interface supply		V 29.5...31.5	
Current consumption	On the AS-Interface bus	mA	Normal operation: 25
		mA	Fault condition: 30
	On 24 V supply for the outputs	mA	200
Auxiliary supply		V ~ 24 ±30 %	
Number of outputs		2 dedicated to starter-controller coil operation	
Switching capacity of the solid state outputs		0.5 A/24 V (outputs protected against short-circuits)	
Indication/diagnostics		By 2 LEDs on front panel	

Characteristics of Modbus communication module LULC033

Physical interface			RS 485 multi-drop
Connections			RJ45 on front panel
Protocol			Modbus RTU
Maximum transmission speed		bit/s	19 200 (self-configuration up to this value)
Maximum return time		ms	30
Addressing			By switches: from 0...31
Ambient air temperature		°C	Operation -25...+55
Discrete inputs	Number		2 (to be assigned according to the configuration)
	Supply	V	~ 24
	Input current	mA	7
Nominal input values	Voltage	V	~ 24 (positive logic)
	Current	mA	7
Response time	Change to state 1	ms	10 (±30 %)
	Change to state 0	ms	10 (±30 %)
Input type			Resistive
Solid state outputs	Number		3, of which 2 dedicated to starter-controller coil operation
	Supply	V	~ 24
	Max. current	mA	500
Protection	gl fuse	A	1
Switching capacity			0.5 A/24 V
Indication/diagnostics			By 3 LEDs on front panel

TeSys Control

Ultra motor starters - Communication modules

Characteristics

Characteristics of CANopen, Profibus DP and DeviceNet communication modules					
Communication module			Profibus DP LULC07	CANopen LULC08	DeviceNet LULC09
Services	Conformity class		NA	S 20 (Schneider Electric)	NA
	Standard		Profibus DP	CIADS-301 V4.02 DR 303-2	IEC 62026-1, overvoltage category III, degree of pollution: 3
	Profile		LVSG V1.0 MS (Motor Starter) and MMS (Motor Management Starter)	–	ODVA (Open DeviceNet Vendor Association) MS (Motor Starter)
	Protocol		Profibus DP	CAN 2.0A (2B passive)	CAN 2.0A (2B passive)
	Address		1...125	0...127 (by switches)	0...63
Structure	Physical interface		9-way SUB-D male	9-way SUB-D female	"Open Style" connector
	Binary rate		9600 Kbits/s...12 Mbits/s	10, 20, 50, 125, 250, 500 and 1000 Kbits/s (by switches)	125...500 kbaud
	Cables		2 shielded twisted pairs		
Supply for the discrete outputs and control	~ 24 V	V	20...28		
	Current consumption	A	1.5 (max)		
	Protection by gl fuse	A	2		
Ambient air temperature		°C	Operation -25...+55		
Logic inputs	Number		2 (to be assigned according to the configuration)		
	Supply	V	~ 24		
	Input current	mA	7		
	Nominal input values	Voltage	V	~ 24 (positive logic)	
		Current	mA	7	
	Response time	Change to state 1	ms	10 (±30 %)	
		Change to state 0	ms	10 (±30 %)	
Input type			Resistive		
Discrete outputs	Number		3, of which 2 dedicated to starter-controller coil operation		
	Max. current	mA	500		
	Short-circuit protection		Yes		
	Switching capacity		0.5 A / ~ 24 V		
Indication/diagnostics			By 3 LEDs on front panel		
Characteristics of Advantys STB communication module LULC15					
Physical interface			CAN		
Connections			Fire Wire		
Protocol			CAN 2.0 and CAN 2.B (passive mode)		
Transmission speed		kbit/s	800		
Addressing			Self-addressing		
Supply for the discrete outputs and control	~ 24 V	V	20...28		
	Current consumption	A	1.5 (max)		
	Protection by gl fuse	A	2		
Ambient air temperature		°C	Operation -25...+55		
Discrete inputs	Number		2 (to be assigned according to configuration)		
	Supply	V	~ 24		
	Input current	mA	7		
	Nominal input values	Voltage	V	~ 24 (positive logic)	
		Current	mA	7	
	Response time	Change to state 1	ms	10 (± 30 %)	
		Change to state 0	ms	10 (± 30 %)	
Input type			Resistive		
Discrete outputs	Number		3, of which 2 dedicated to starter-controller coil operation		
	Max. current	mA	500		
	Short-circuit protection		Yes		
	Switching capacity		0.5 A / ~ 24 V		
Indication/diagnostics			By 3 LEDs on front panel		

References: pages A4/25, A4/27, A4/28, A4/29 Schemes: pages A4/66 and A4/67

Connection characteristics							
Module type			LUFW10, LUFDH11, LUFDA01 and LUFDA10	LUFV2	ASILUFC5 and ASILUFC51		
					Inputs and 24 V auxiliary supply	Outputs	
Connectors	Pitch		5.08	3.81	5.08	3.81	
Flexible cable without cable end	1 conductor	mm ²	0.2...1.5	0.14...1	0.2...1.5	0.14...1	
	2 identical conductors	mm ²	0.2...1	0.14...0.75	0.2...1	0.14...0.75	
Flexible cable with cable end	Without insulated ferrule	1 conductor	mm ²	0.25...1.5	0.25...1	0.25...1.5	0.25...1
		2 identical conductors	mm ²	0.25...1	0.25...0.34	0.25...1	0.25...0.34
	With insulated ferrule	1 conductor	mm ²	0.25...1.5	0.25...0.5	0.25...1.5	0.25...0.5
		2 identical conductors (Use a double cable end)	mm ²	0.5...1	0.5	0.5...1	0.5
Solid cable without cable end	1 conductor	mm ²	0.2...1.5	0.14...1	0.2...1.5	0.14...1	
	2 identical conductors	mm ²	0.2...1	0.14...0.5	0.2...1	0.14...0.5	
Conductor size	1 conductor		AWG24... AWG16	AWG26... AWG16	AWG24... AWG16	AWG26... AWG16	
Tightening torque		N.m	0.5...0.6	0.20...0.25	0.5...0.6	0.20...0.25	
Flat screwdriver		mm	3.5	2.5	3.5	2.5	
Module type			LULC033, LULC08 and LULC15	LUFC00	LULC09		
					Inputs and 24 V auxiliary supply	Connection on the bus	
Connectors	Pitch		3.81	3.81	3.81	5 (Open Style) DeviceNet	
Flexible cable without cable end	1 conductor	mm ²	0.14...1	0.14...1	0.14...1	0.2...2.5	
	2 identical conductors	mm ²	0.14...0.75	0.14...0.75	0.14...0.75	0.5...1.5	
Flexible cable with cable end	Without insulated ferrule	1 conductor	mm ²	0.25...1	0.25...1	0.25...1	0.25...2.5
		2 identical conductors	mm ²	0.25...0.34	0.25...0.34	0.25...0.34	0.25...1
	With insulated ferrule	1 conductor	mm ²	0.25...0.5	0.25...0.5	0.25...0.5	0.25...2.5
		2 identical conductors (Use a double cable end)	mm ²	0.5	0.5	0.75	0.5...1.5
Solid cable without cable end	1 conductor	mm ²	0.14...1	0.14...1	0.14...1	0.2...2.5	
	2 identical conductors	mm ²	0.14...0.5	0.14...0.5	0.14...0.5	0.14...0.5	
Conductor size	1 conductor		AWG26... AWG16	AWG26... AWG16	AWG26... AWG16	AWG24... AWG16	
Tightening torque		N.m	0.20...0.25	0.20...0.25	0.20...0.25	0.5...0.6	
Flat screwdriver		mm	2.5	2.5	2.5	3.5	

TeSys Control

Ultra motor starters - Operating status indication

Characteristics

Knob positions - Poles and Signaling contact states								
Ultra operating status	Position of rotary knob	Indication on front panel	N/O pole contact	N/C pole contact	N/O contact any fault	N/C ontact any fault	⊙ N/O contact product ready	N/C contact Rotary knob on OFF position
References of add-on contact blocks and auxiliary contact modules Terminal referencing	–	–	–	LUFN11 31-32	LUA1C20 97-98	LUA1C11 95-96	LUA1C20 17-18	–
	or	–	–	LUFN02 31-32 41-42	–	–	–	LUA8E20 57/58 67/68
	or	–	–	LUFN20 33-34 43-44	LU9BN11 21-22	–	–	LUA1C11 17-18
	or	–	–	LUFN11 43-44	–	–	–	–
	or	–	–	LU9BN11 13-14	–	–	–	–
Off	OFF	0						
Ready to operate		0						
Start		1						
Tripped on short-circuit	TRIP	I>>						
Tripped on thermal overload	Manual reset mode	TRIP	0					
	Automatic reset on thermal overload fault mode		0					
	Remote reset mode		0					

N/O contact in closed position.

N/C contact in open position.

Ultra motor starters

Ref.



TeSys Control

Ultra motor starters - Available status

Characteristics

Data profile under AS-Interface				Standard LUCA	Advanced LUCB, CC, CD
Control unit present in the product					
Status		D0	Ready (available)		
		D1	Poles closed (running)		
Commands		D0	Start - forward running		
		D1	Start - reverse running		

Main registers accessible with Modbus, CANopen, Advantys STB, Profibus DP and DeviceNet communication modules.					
For other registers and for further information, please consult the User's Manual <i>Communication variables</i> on the website www.schneider-electric.com					
Control unit present in the product				Standard	Advanced
Marking	Register 0...Register 99	Words...Bits	Commercial reference, serial number, software version		
Log	Register 100...Register 450	Words...Bits	Fault log, Operating log, Log of last 5 trips		
Status	Register 451...Register 464	Words...Bits	Alarm signalling (bits), Fault signalling (bits)		
Values	Register 465...Register 473	Words	Irms phase 1, phase 2, phase 3. Motor load, thermal status Earth leakage current. Phase imbalance and phase failure		
	Register 474...Register 599	Words...Bits	Reserved		
Configuration	Register 600...Register 699	Words...Bits	Protection and alarm thresholds, fallback mode and reset mode		
Commands	Register 700...Register 714	Words...Bits	Commands		

Status and values	Register 452	Bit 0	Short-circuit fault		
		Bit 1	Overcurrent fault		
		Bit 2	Thermal overload fault		
	Register 455	Bit 0	Ready (available)		
		Bit 1	Poles closed		
		Bit 2	Fault		
		Bit 3	Alarms		
		Bit 4	Tripped ("TRIP" position)		
		Bit 5	Fault acknowledgement allowed		
		Bit 6	Reserved		
		Bit 7	Motor running		
		Bit 8	Motor current % (bit 0)		
		Bit 9	Motor current % (bit 1)		
		Bit 10	Motor current % (bit 2)		
		Bit 11	Motor current % (bit 3)		
		Bit 12	Motor current % (bit 4)		
		Bit 13	Motor current % (bit 5)		
		Bit 14	Reserved		
Bit 15	Motor starting				
Register 461	Bit 3	Thermal overload alarm			
Register 465	Word	Thermal status value			
Register 466	Word	Motor load value (Im/Ir)			

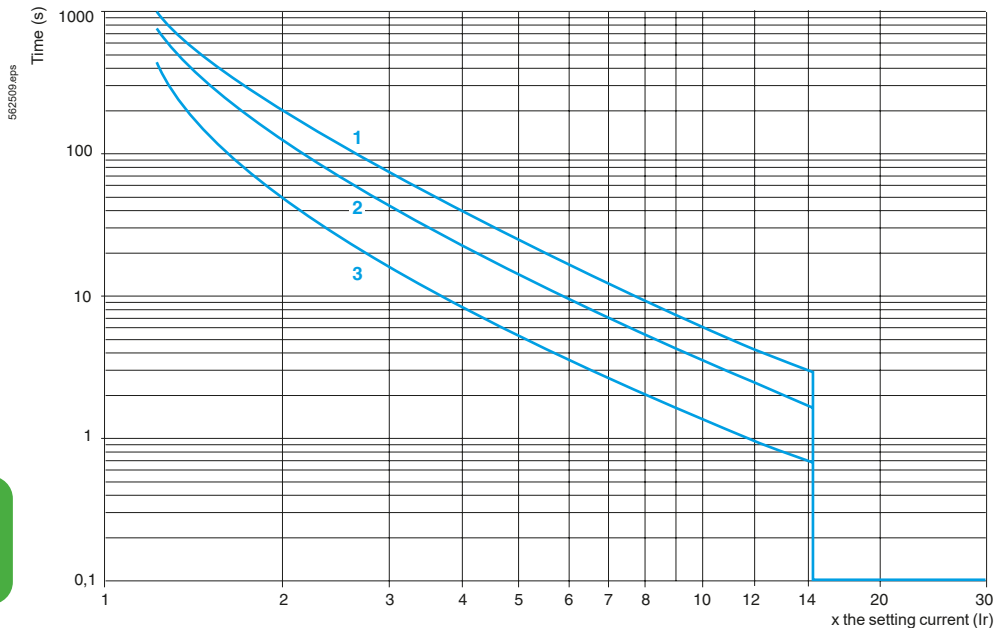
Configuration	Register 602	Bit 0	Manual reset on thermal overload fault		
		Bit 1	Remote reset on thermal overload fault		
		Bit 2	Automatic reset on thermal overload fault		
	Register 682	Value 0	Fallback mode validation		
		Value 1	Outputs OA1 and OA3 unchanged		
		Value 2	Outputs OA1 and OA3 forced to 0		
		Value 3	Outputs OA1 and OA3 unchanged, signalling existence of communication failure		
		Value 4	Outputs OA1 forced to 1 and OA3 unchanged		
		Value 5	Outputs OA3 forced to 1 and OA1 unchanged		

Commands	Register 700	Bit 0	LO1 output command		
	Register 704	Bit 0	OA1 output command		
		Bit 1	OA3 output command		
		Bit 2	Reserved		
		Bit 3	Fault acknowledgement		
		Bit 4	Reserved		
		Bit 5	Trip test		
		Bit 6...15	Reserved		

 Data accessible

Tripping curves for control units LUCA, LUCB, LUCD

Average operating times at 20 °C according to multiples of the setting current, tolerance : $\pm 20\%$.



Ultra motor starters

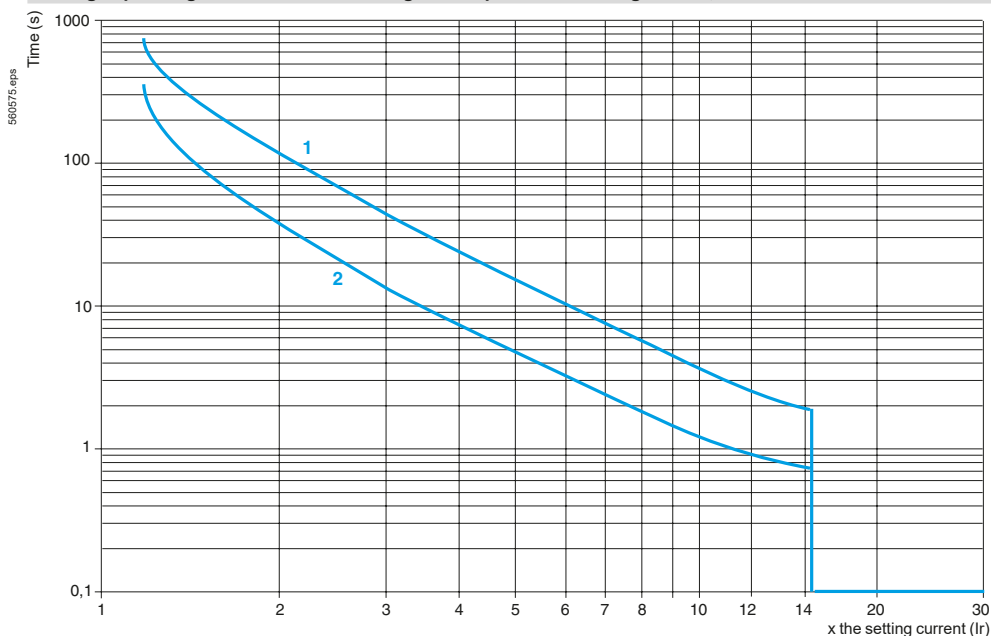
Ref.



- 1 LUCD, 3 poles from cold state, class 20.
- 2 LUCA, LUCB, 3 poles from cold state, class 10.
- 3 LUCA, LUCB, LUCD, 3 poles from hot state.

Tripping curves for control units LUCC

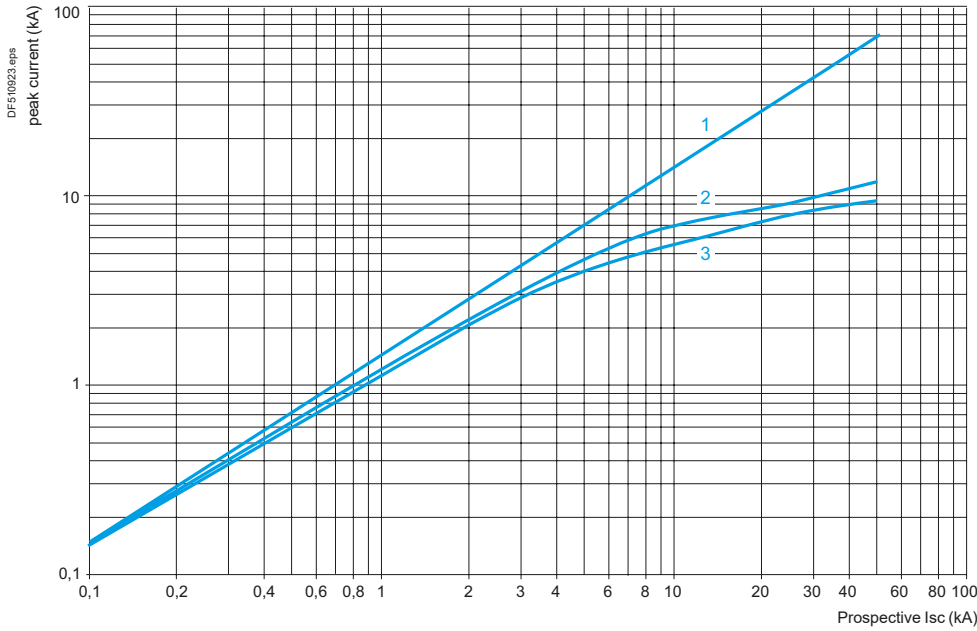
Average operating times at 20 °C according to multiples of the setting current, tolerance : $\pm 20\%$.



- 1 LUCC, single-phase, cold state.
- 2 LUCC, single-phase, hot state.

Current limitation on short-circuit

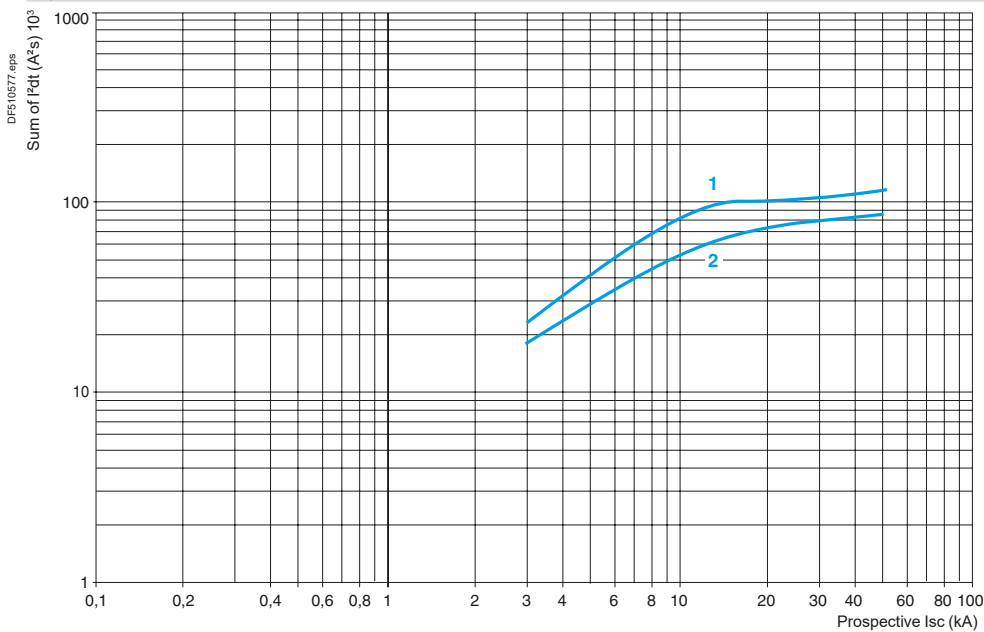
$U_e = 460 \text{ V}$



- 1 Maximum peak current
- 2 32 A, 38 A power base
- 3 12 A power base

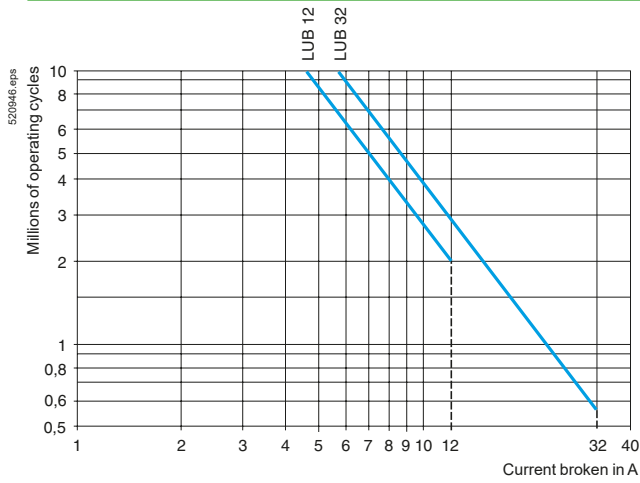
Thermal limit on short-circuit

$U_e = 460 \text{ V}$



- 1 32 A, 38 A power base
- 2 12 A power base

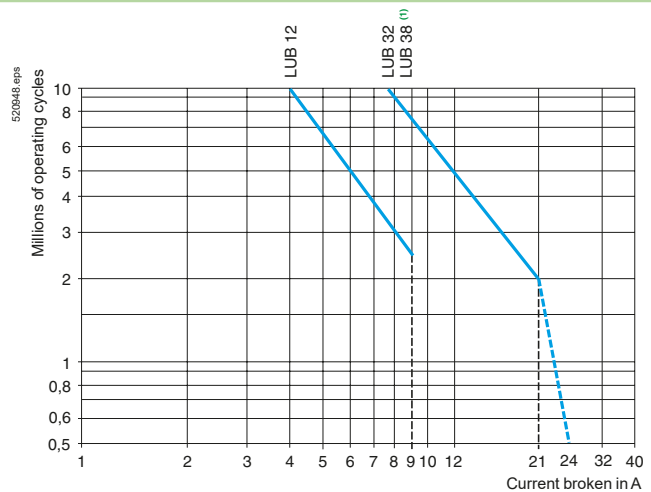
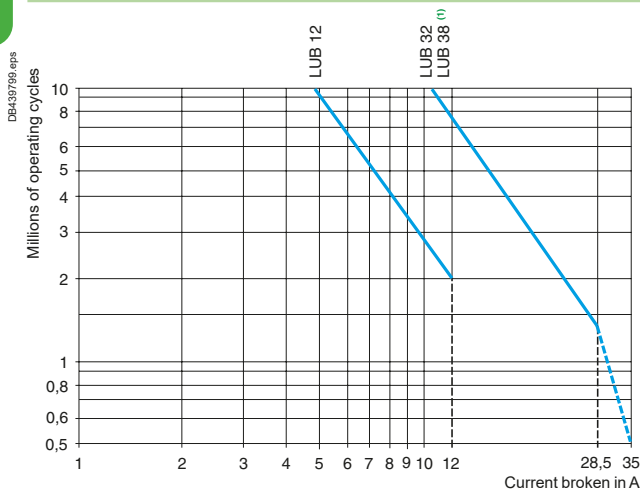
Use in category AC-41



Use in category AC-43

Ue ≤ 440 V

Ue = 690 V

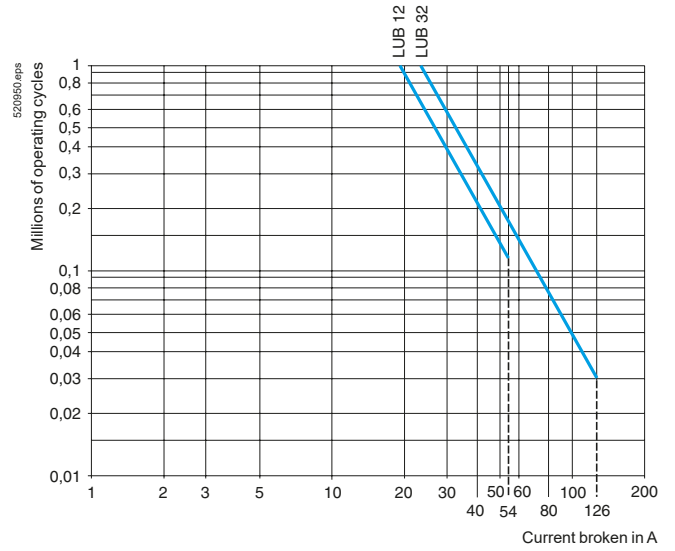
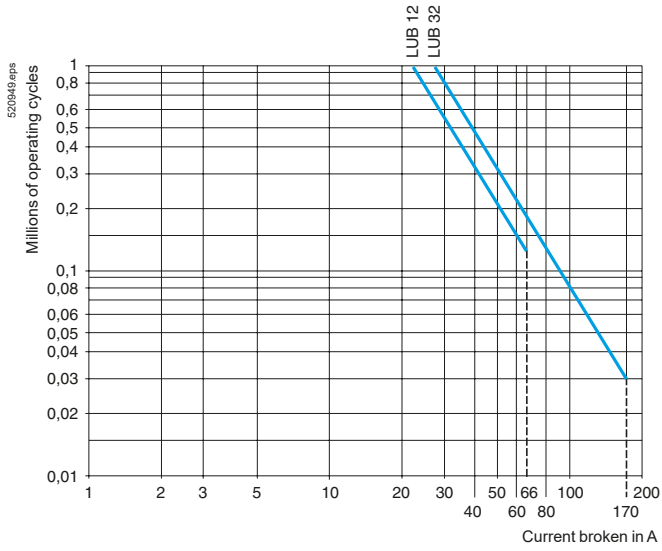


(1) Plain curve: LUB32 + LUB38, dotted curve: LUB38 only.

Use in category AC-44

Ue ≤ 440 V

Ue = 690 V



Ultra motor starters

Ref.



TeSys Control

Ultra motor starters

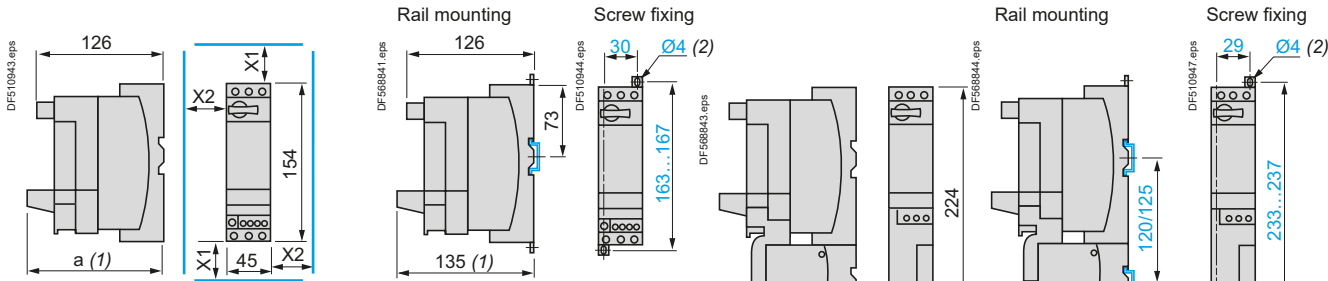
Dimensions

Dimensions

Starter-controllers

LUB: non-reversing

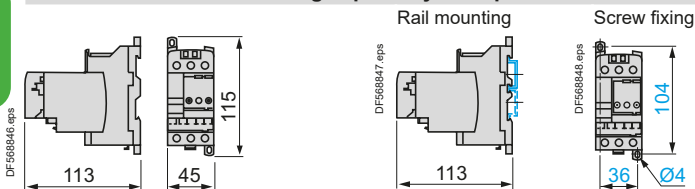
LU2B: reversing



With Modbus module	135
With Advantys STB, CANopen, Profibus DP or DeviceNet modules	147

Minimum electrical clearance:
 X1 = 50 mm for Ue = 440 V and 70 mm for Ue = 500 and 690 V, X2 = 0

Reverser block for mounting separately from power base

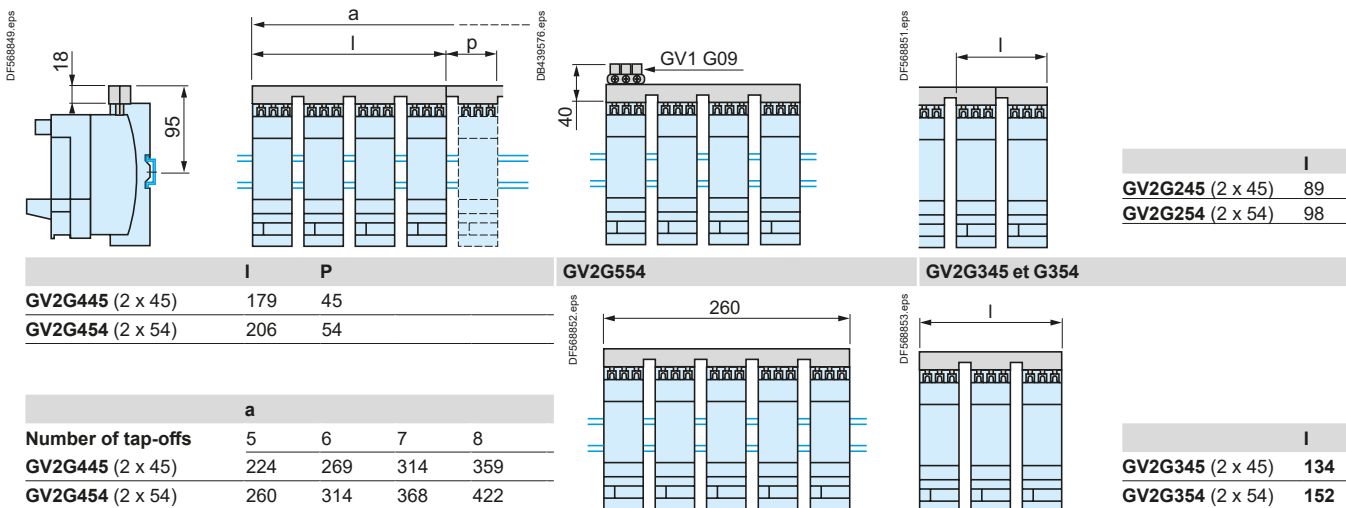


Sets of busbars and plug-in power sockets

GV2G445 and GV2G454

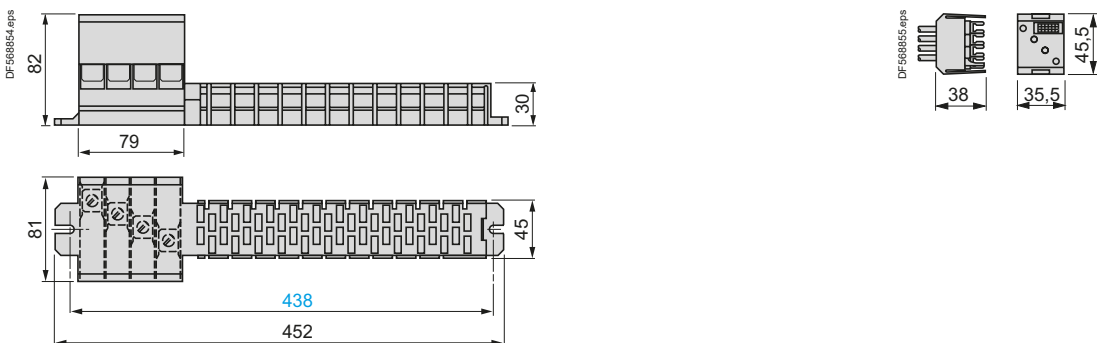
GV2G●●● with terminal block GV1G09

GV2G245 and G254



AK5JB144

AK5PC13, PC33, PC33L



(1) Depth with communication module.
 (2) Retractable fixing lugs.

References:
 pages A4/10 and A4/11

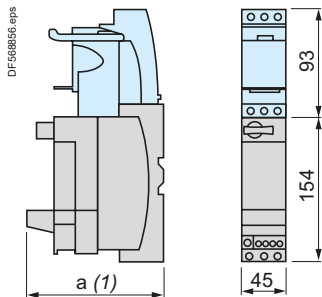
Characteristics:
 page A4/44

Curves:
 pages A4/56 to A4/59

Schemes:
 pages A4/61 to A4/74

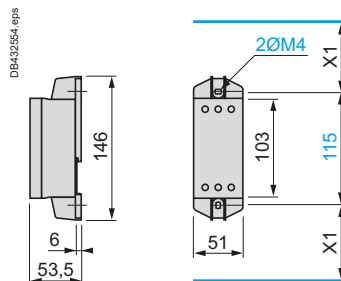
Dimensions, mounting

Dimmer-disconnector LUALB1 Dimmer-disconnector LUALB10



a	
With Modbus module	135
With Advantys STB, CANopen, Profibus DP or DeviceNet modules	147

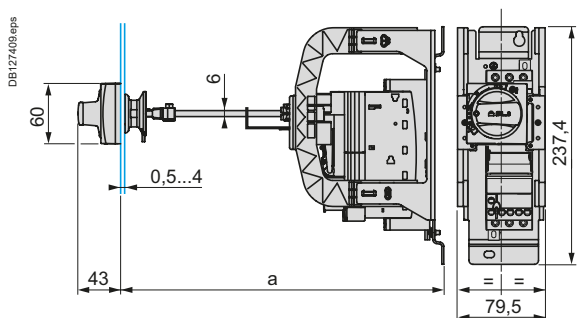
Current limiter LA9LB920



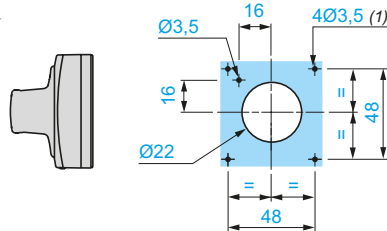
X1: Electrical clearance = 30 mm for $U_e \leq 690$ V

Door interlock mechanisms

LU9APN21, LU9APN22, LU9APN24



Door cut-out



(1) For IP65 only.

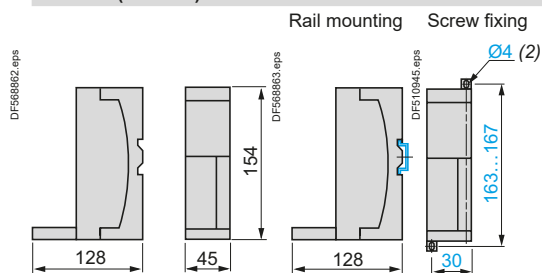
	a	
	Mini	Maxi
LU9APN●●	191	300
LU9APN●● + GVAPK12	300	483

Ultra
motor
starters

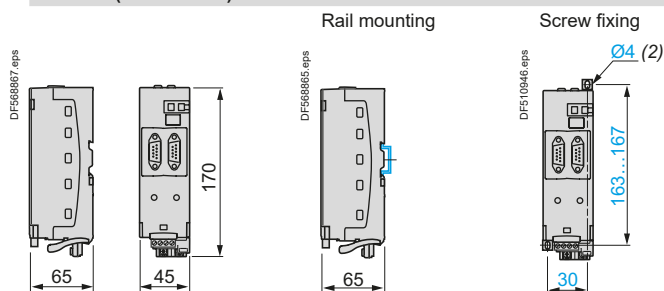
Ref.

Splitter boxes

LU9GC3 (Modbus) LU9G02 and LU9G03



LU9GC7 (Profibus DP)



(1) Depth with communication module.

(2) Retractable fixing lugs.

TeSys Control

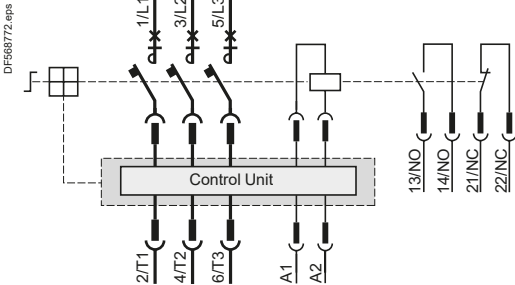
Ultra motor starters - Terminal identifications

Schemes

12, 32, 38 A power bases with standard, advanced or multifunction control unit

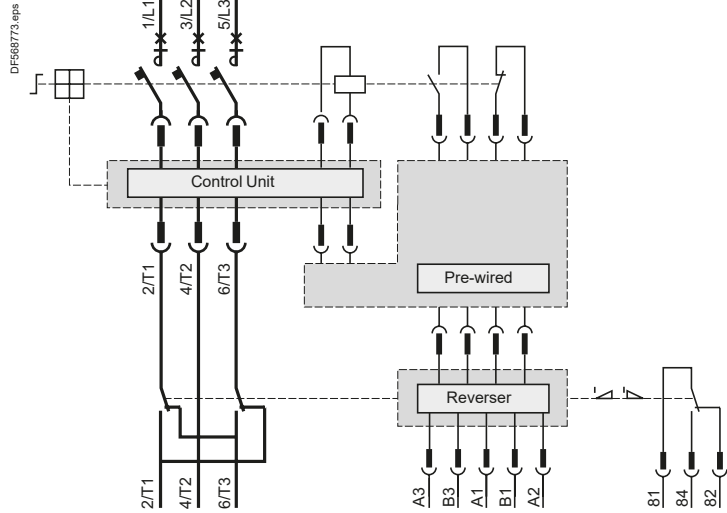
LUB

Non-reversing

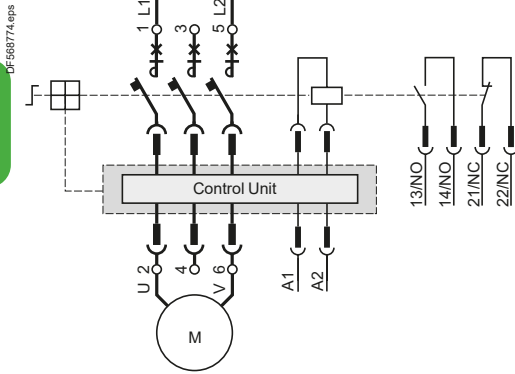


LU2B

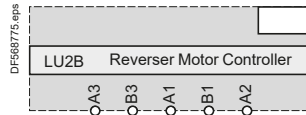
Reversing



With control unit LUCC or LUCM Connection of a single-phase motor

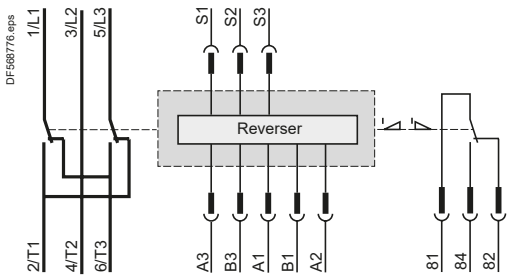


Control terminal block

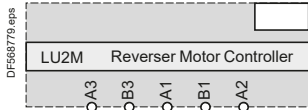


Reverser blocks

LU2M

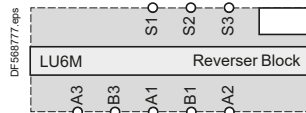


Control terminal block

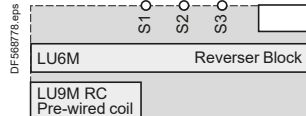


LU6M

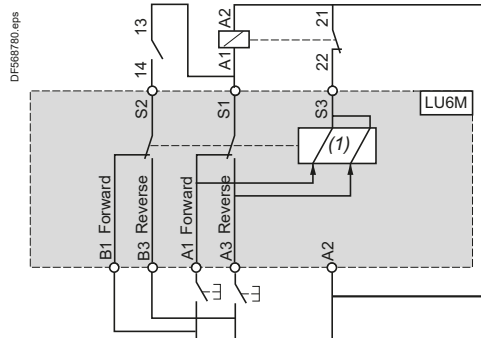
Control terminal blocks



With pre-wired connector LU9MRC



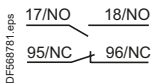
Basic scheme



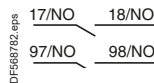
- S1 Start next stage
- S2 Electrical interlocking
- S3 Maintaining contact
- B1 Maintain forward running
- B3 Maintain reverse running
- A1 Pulse forward running
- A2 Common
- A3 Pulse reverse running
- (1) Electronically operated bistable electromagnet.

Add-on contact blocks

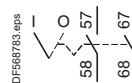
LUA1C11



LUA1C20

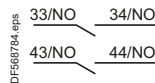


LUA8E20

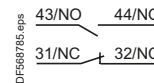


Add-on contact modules

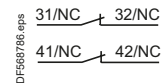
LUFN20



LUFN11



LUFN02



TeSys Control

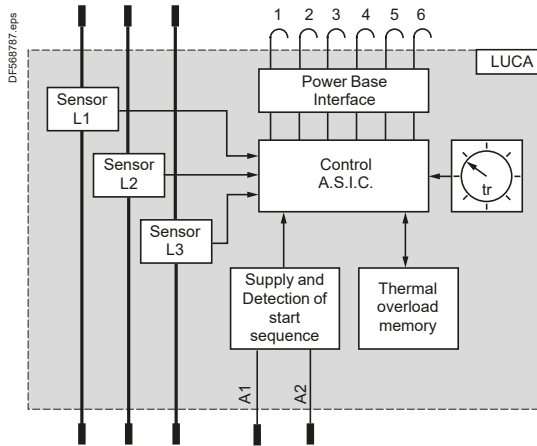
Ultra motor starters - Terminal identifications

Schemes

Control units

Standard control units LUCA

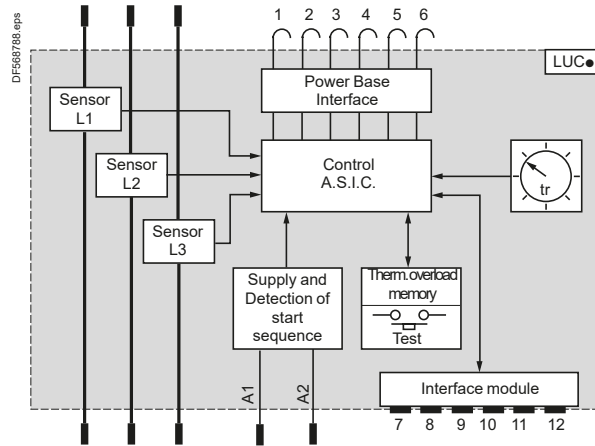
Basic scheme



- 1 and 2 Trips
- 3 and 4 Electromagnet
- 5 Power base rating
- 6 N/C

Advanced control units LUCB, LUCC, LUCD

Basic scheme



- 1 and 2 Trips
- 3 and 4 Electromagnet
- 5 Power base rating
- 6 N/C
- 7 Earth
- 8 Thermal status/Set
- 9 Reset mode/Reset
- 10 (Im/Ir)
- 11 Vc2
- 12 Vc1

Ultra motor starters

Ref.



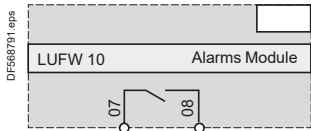
TeSys Control

Ultra motor starters - Terminal identifications

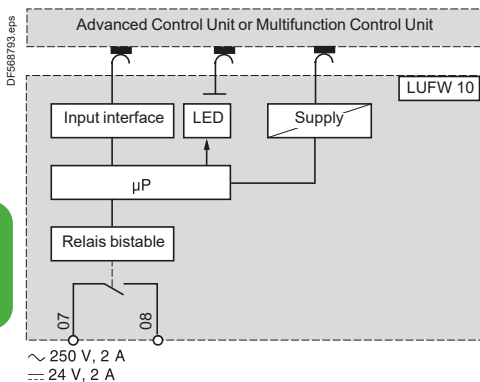
Schemes

Function modules

Alarm LUFW10



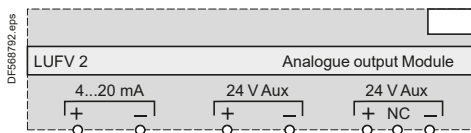
Basic scheme



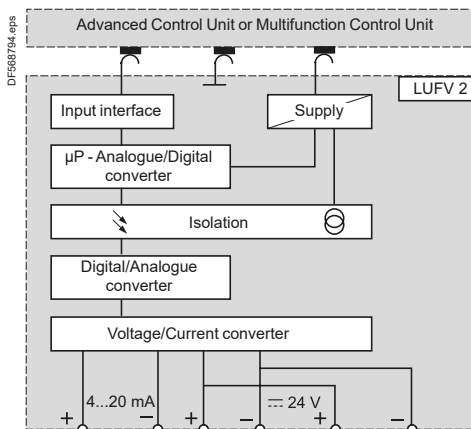
~ 250 V, 2 A
 ≍ 24 V, 2 A

Indication of motor load LUFV2

4-20 mA output



Basic scheme



100 Ω < load < 500 Ω ≍ 30 V max and 40 mA min

Ultra motor starters

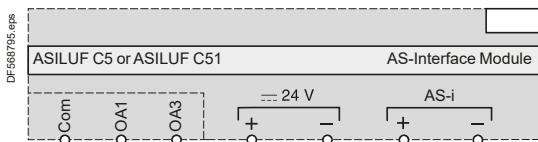
Ref.



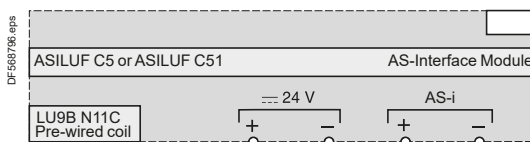
Communication modules

Communication modules ASILUFC5 and ASILUFC51

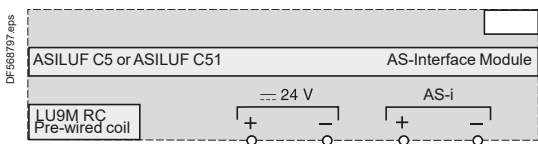
Without pre-wired coil connection



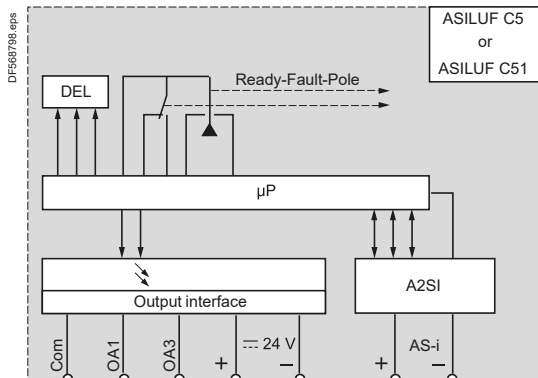
With pre-wired coil connection LU9BN11C



With pre-wired coil connection LU9MRC



Basic scheme



References:
 pages A4/13, A4/24

Characteristics:
 pages A4/50 to A4/55

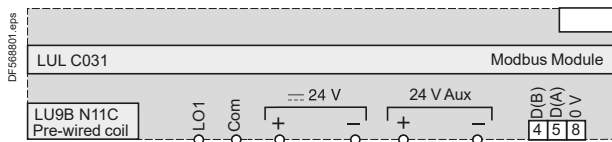
TeSys Control

Ultra motor starters - Terminal identifications

Schemes

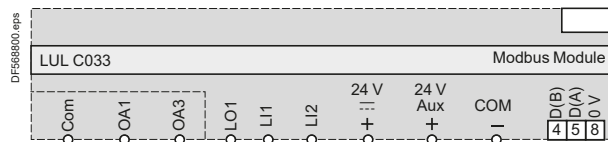
Communication modules (continued)

With pre-wired coil connection LU9BN11C

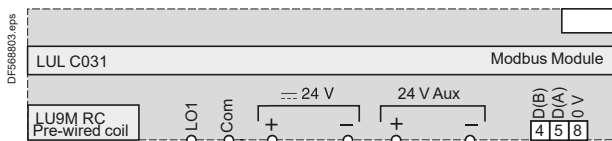


Modbus communication module LULC033

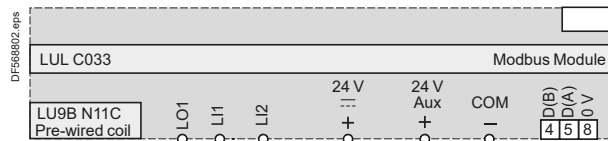
Without pre-wired coil connection



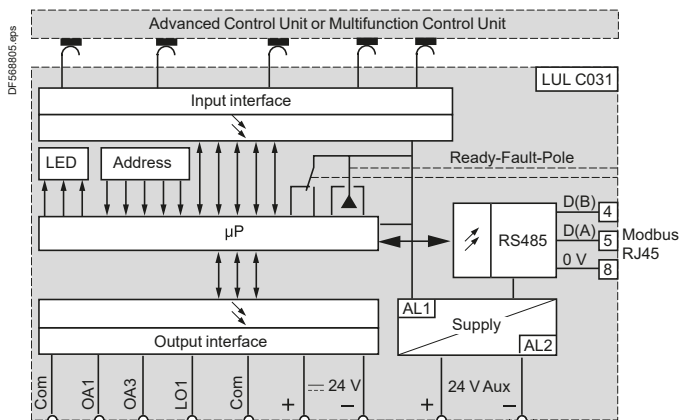
With pre-wired coil connection LU9MRC



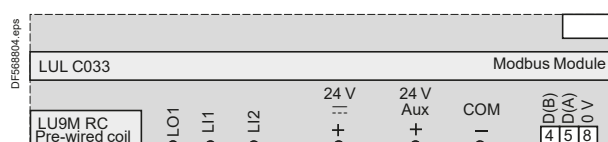
With pre-wired coil connection LU9BN11C



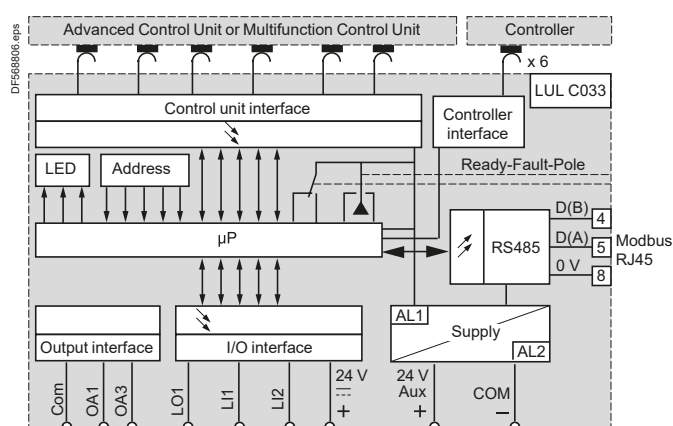
Basic scheme



With pre-wired coil connection LU9MRC



Basic scheme



Ultra motor starters

Ref.



TeSys Control

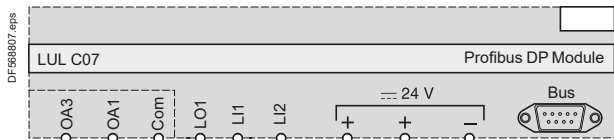
Ultra motor starters - Terminal identifications

Schemes

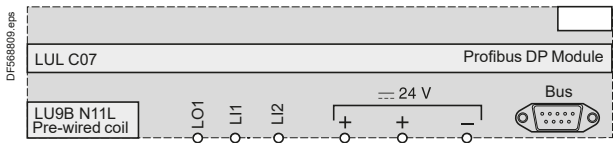
Communication modules (continued)

Profibus DP communication module LULC07

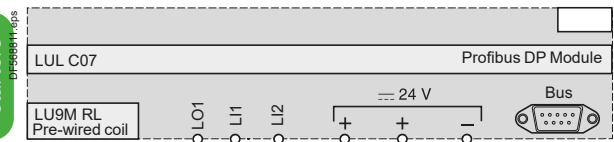
Without pre-wired coil connection



With pre-wired coil connection LU9BN11LC

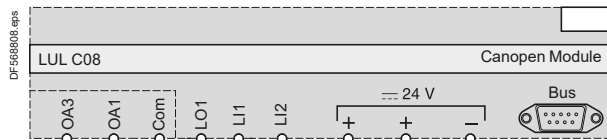


With pre-wired coil connection LU9MRC

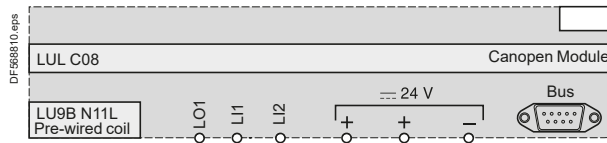


CANopen communication module LULC08

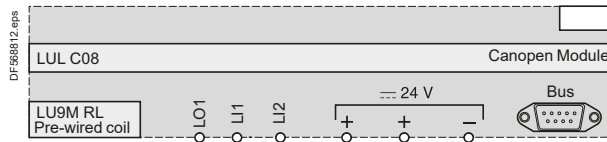
Without pre-wired coil connection



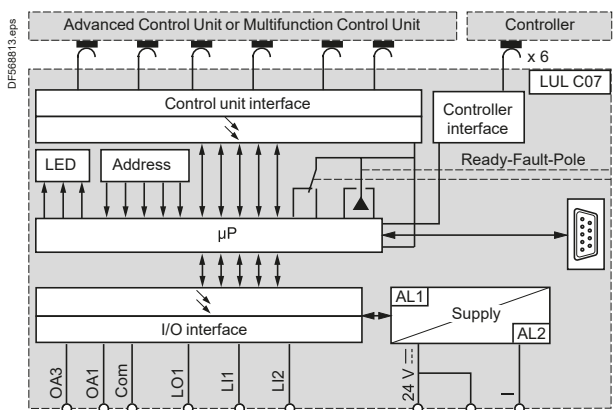
With pre-wired coil connection LU9BN11LC



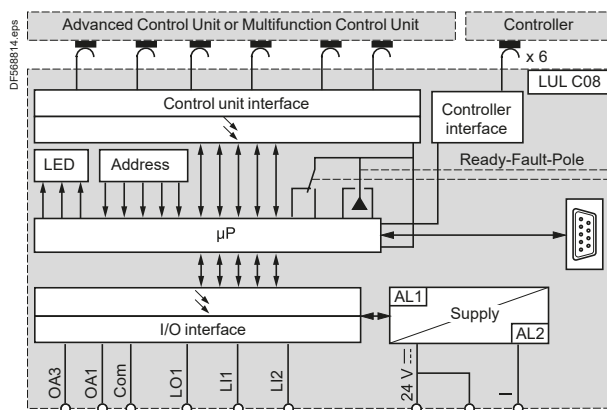
With pre-wired coil connection LU9MRC



Basic scheme

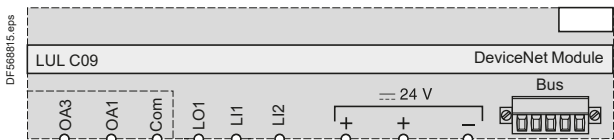


Basic scheme

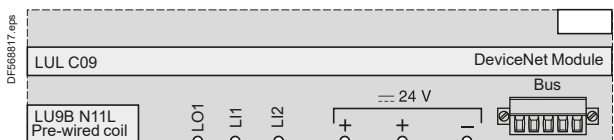


DeviceNet communication module LULC09

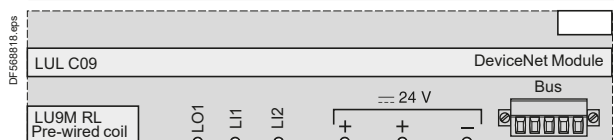
Without pre-wired coil connection



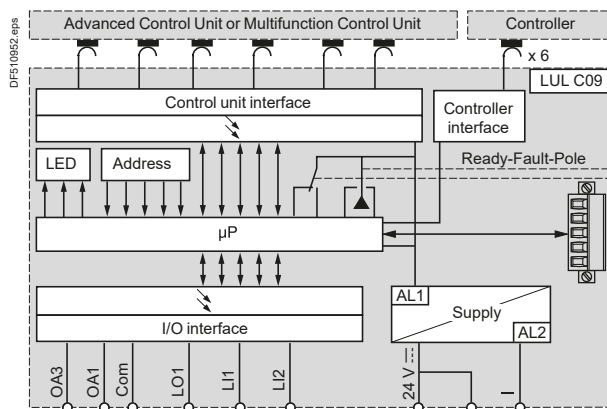
With pre-wired coil connection LU9BN11LC



With pre-wired coil connection LU9M RL



Basic scheme



TeSys Control

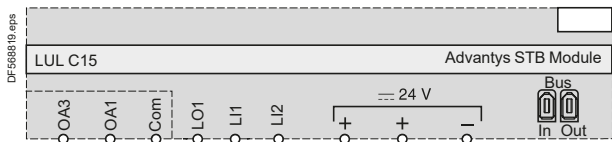
Ultra motor starters - Terminal identifications

Schemes

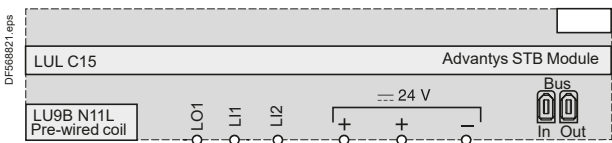
Communication modules (continued)

Advantys STB communication module LULC15

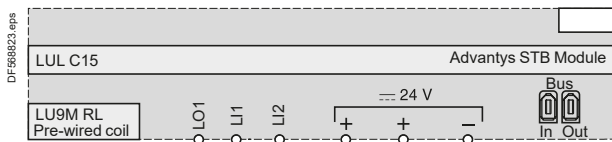
Without pre-wired coil connection



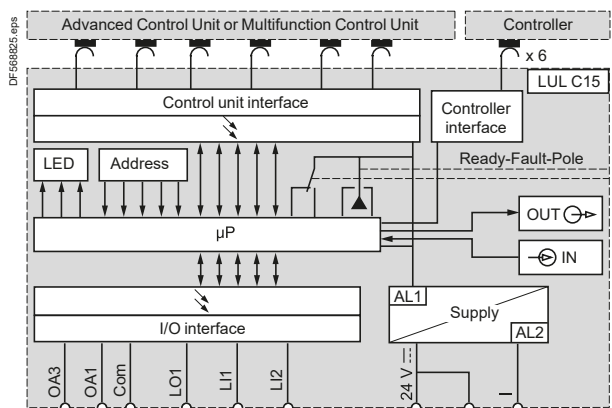
With pre-wired coil connection LU9BN11LC



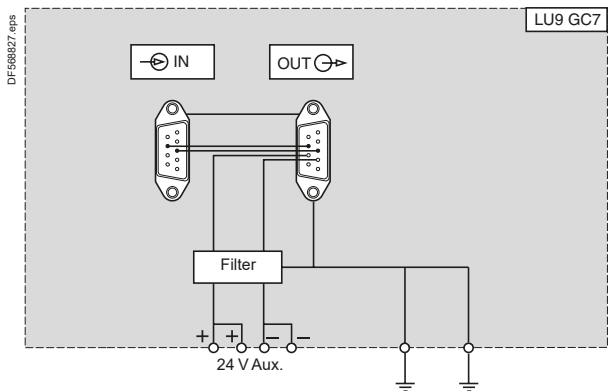
With pre-wired coil connection LU9MRC



Basic scheme

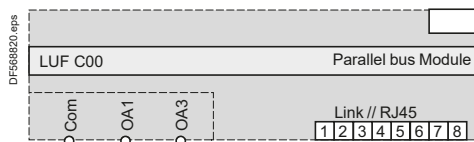


Profibus DP power supply module LU9GC7

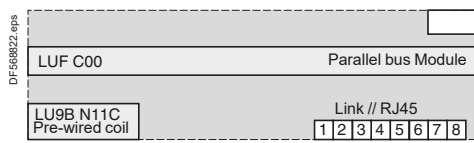


Parallel wiring modules

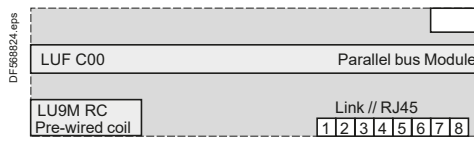
Without pre-wired coil connection



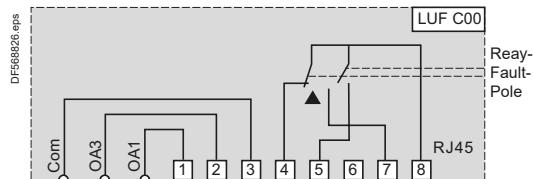
With pre-wired coil connection LU9BN11LC



With pre-wired coil connection LU9MRC



Basic scheme



- 1 Forward running
- 2 Reverse running
- 3 Output common
- 4 Selector in position
- 5 Pole state
- 6 Reserved
- 7 Fault
- 8 Input common

Ultra motor starters

Ref.



TeSys Control

Ultra motor starters - Terminal identifications

Schemes

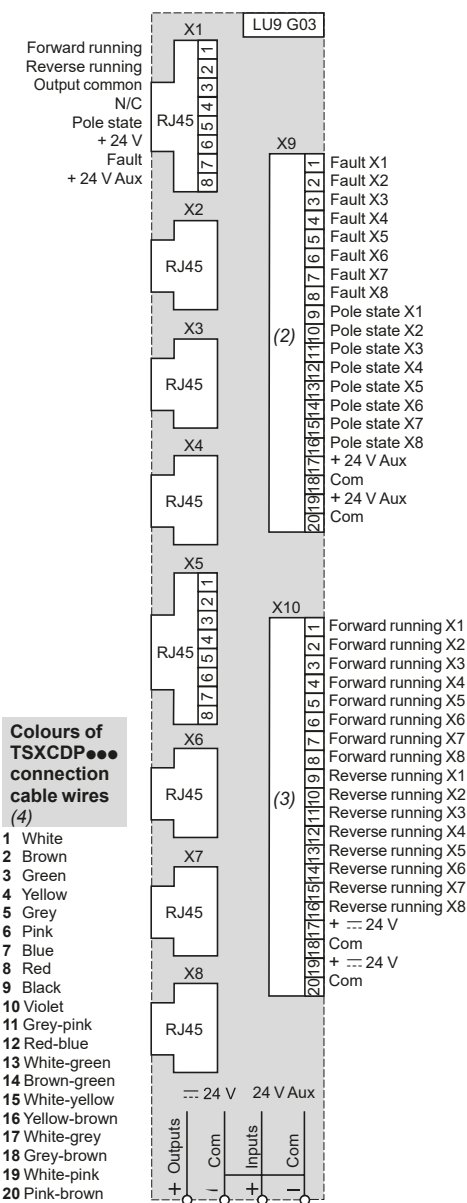
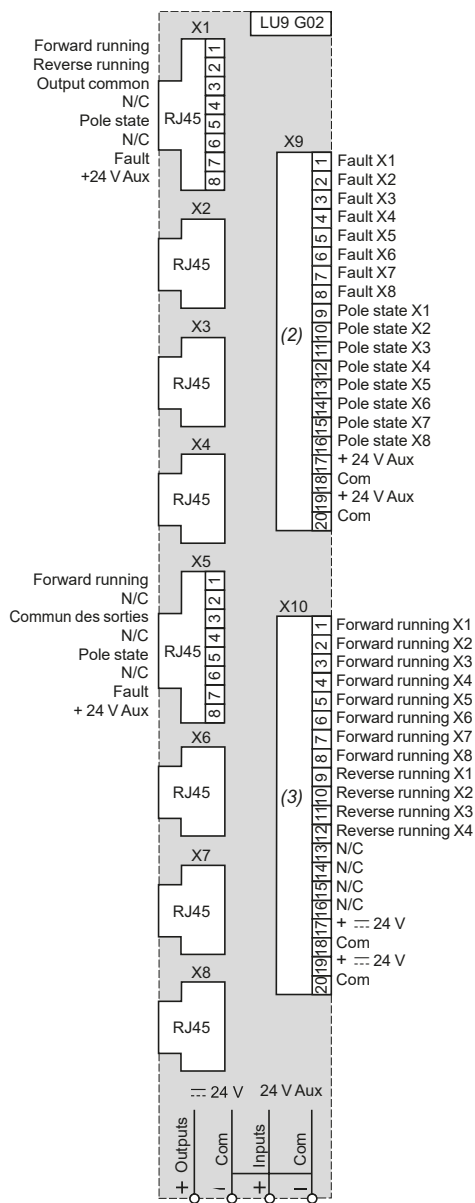
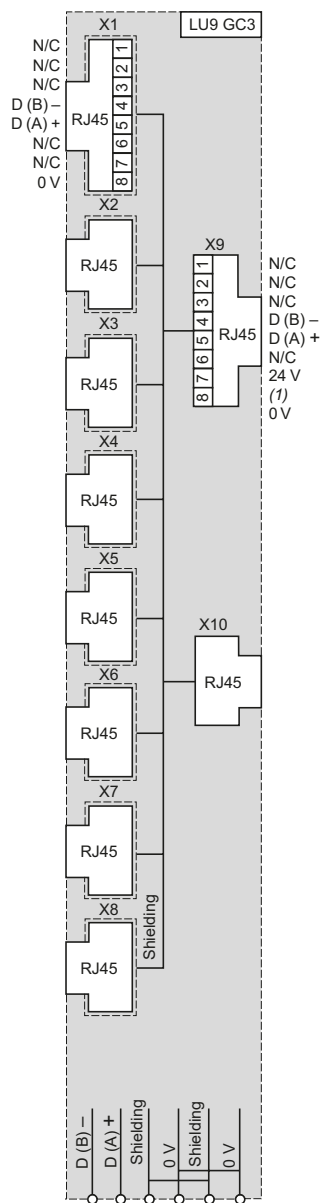
Communication modules (continued)

Wiring hub and splitter boxes

Modbus hub LU9GC3

Parallel wiring splitter box LU9G02

Parallel wiring splitter box LU9G03



Colours of TSXCDP... connection cable wires (4)

- 1 White
- 2 Brown
- 3 Green
- 4 Yellow
- 5 Grey
- 6 Pink
- 7 Blue
- 8 Red
- 9 Black
- 10 Violet
- 11 Grey-pink
- 12 Red-blue
- 13 White-green
- 14 Brown-green
- 15 White-yellow
- 16 Yellow-brown
- 17 White-grey
- 18 Grey-brown
- 19 White-pink
- 20 Pink-brown

(1) Not connected on connectors X1 to X8. Only present on RJ45 IN and OUT connectors.

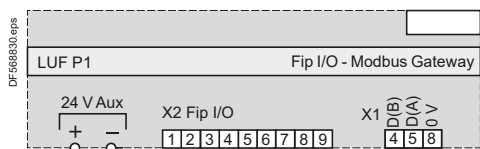
(2) 20-way HE10 input connector.

(3) 20-way HE10 output connector.

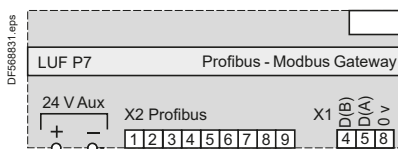
(4) Wire colours and corresponding HE10 connector pin numbers.

Gateways

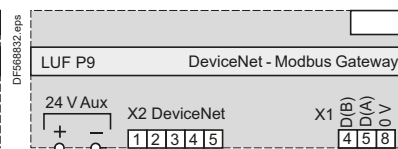
LUF P1



LUF P7



LUF P9

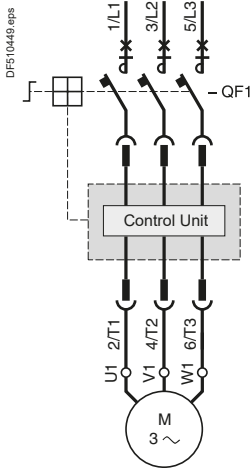


TeSys Control

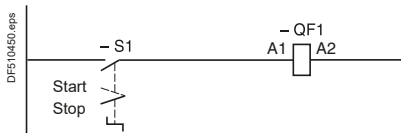
Ultra motor starters - Non-reversing basic applications

Schemes

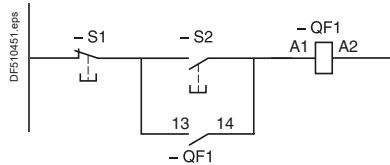
Non-reversing starter-controllers LUB



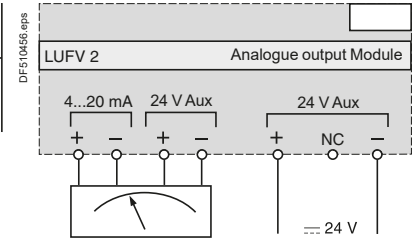
2-wire control via 2-position switch



3-wire control, pulsed start with maintaining contact



Connection of a motor load indicator module LUFV2

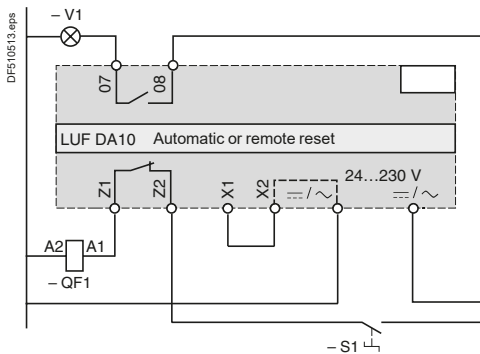


Ultra motor starters

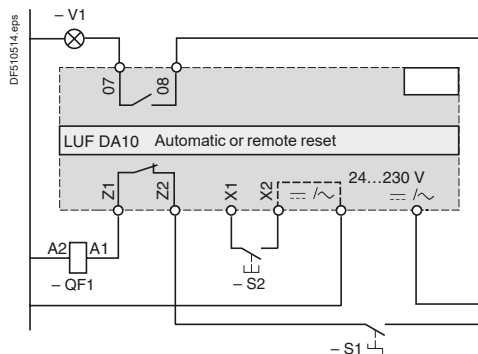
Ref.

Connection of thermal overload fault signalling modules LUFDA10

Automatic reset

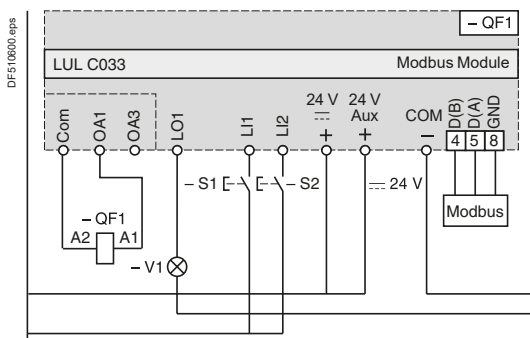


Remote reset



Control via Modbus communication module LULC033

Without pre-wired coil connection



References:
pages A4/10 to A4/14

TeSys Control

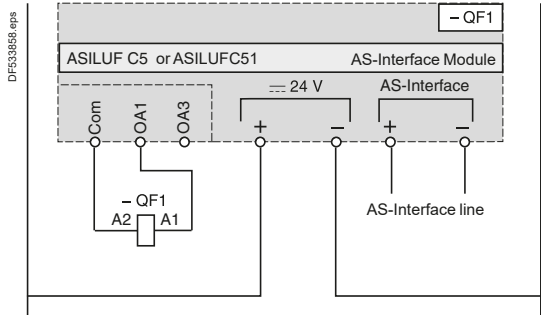
Ultra motor starters - Non-reversing basic applications

Schemes

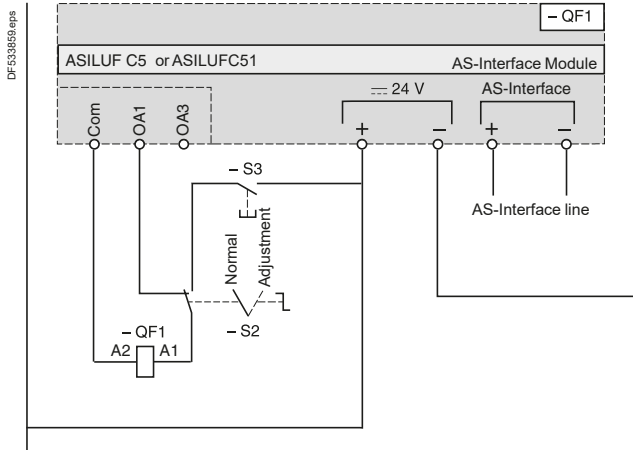
Non-reversing starter controllers LUB (continued)

Control by communication modules ASILUFC5 and ASILUFC51

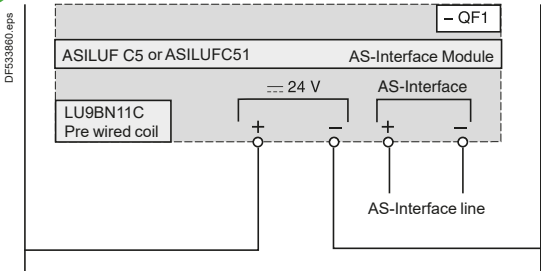
Without pre-wired coil connection



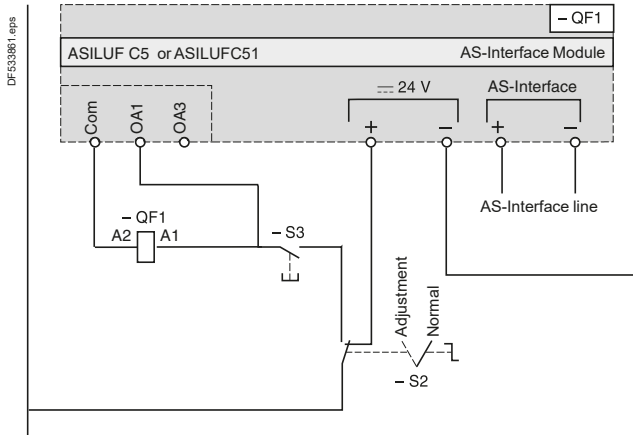
Without pre-wired coil connection With local control



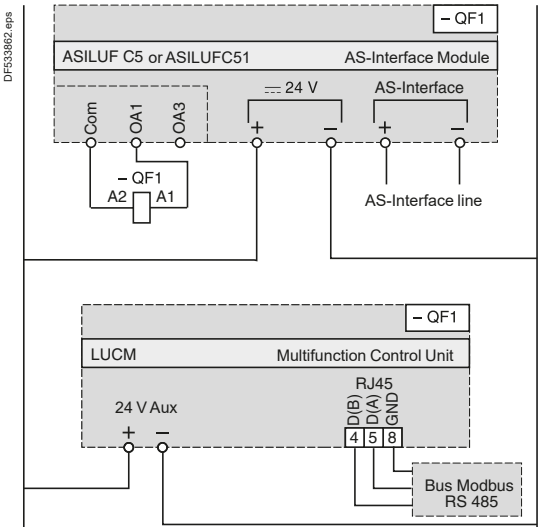
With pre-wired coil connection LU9BN11C



Without pre-wired coil connection With local control



Without pre-wired coil connection With multifunction control unit LUCM



References:
page A4/14

TeSys Control

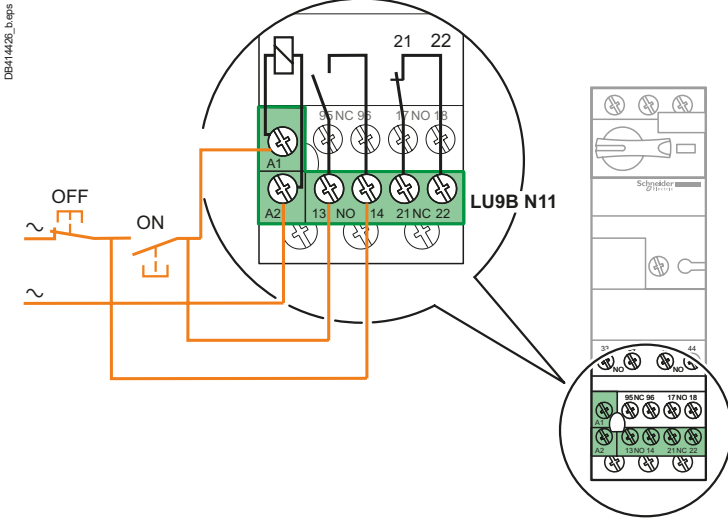
Ultra motor starters - Non-reversing basic applications

Schemes

Standard or advanced power base

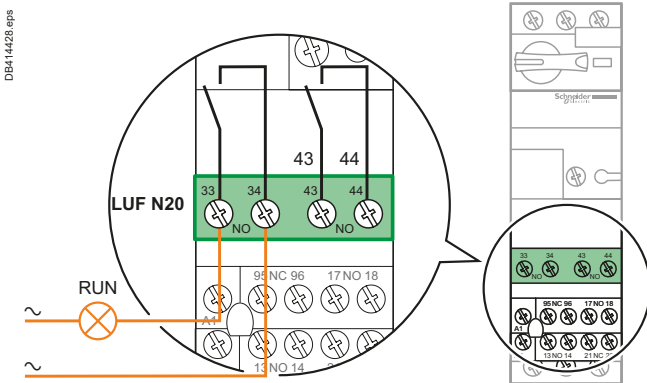
ON/OFF control (1 direction of rotation)

Push buttons wiring

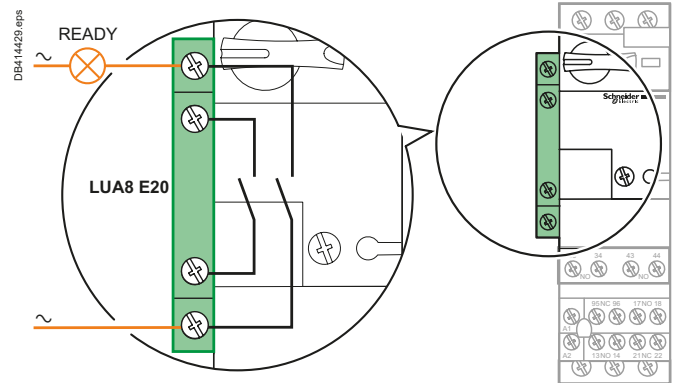


ON indication

"Motor RUN" indicator wiring

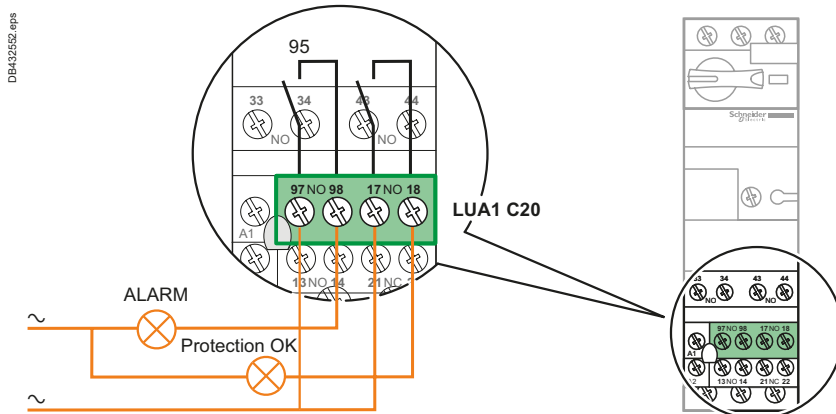


"Motor starter READY" indicator wiring



ALARM indication

Protection device status indicator wiring



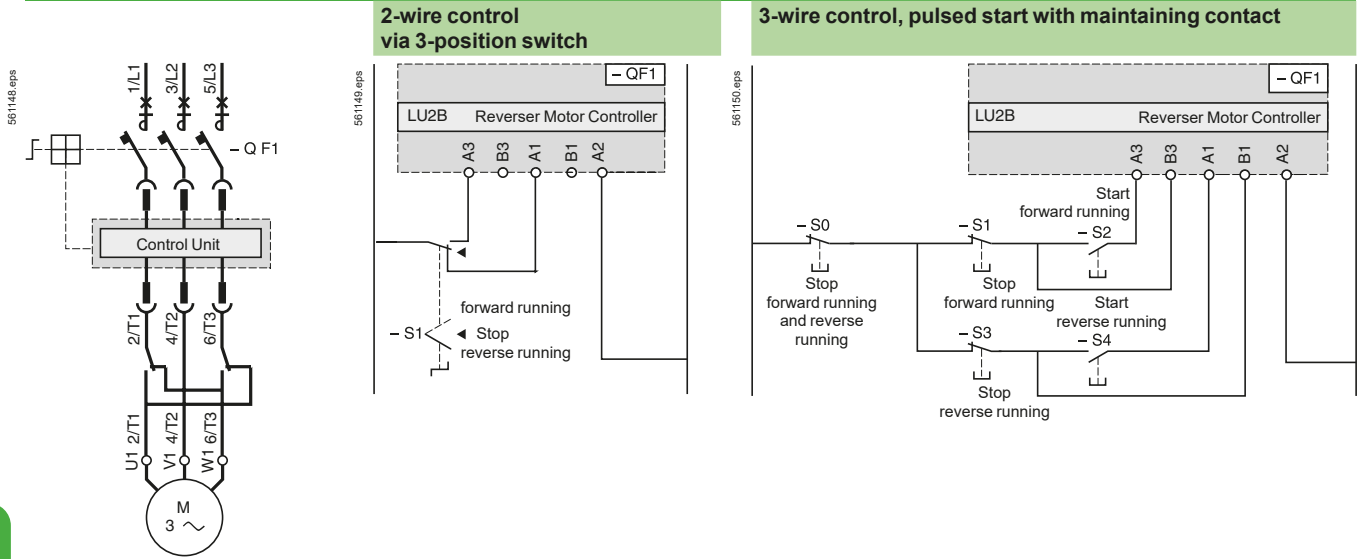
References:
pages A4/10 to A4/13

TeSys Control

Ultra motor starters - Reversing basic applications

Schemes

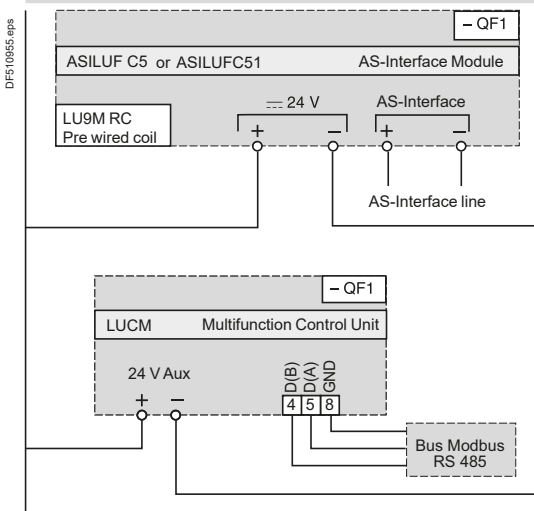
Reversing starter-controllers LUB



Ultra motor starters

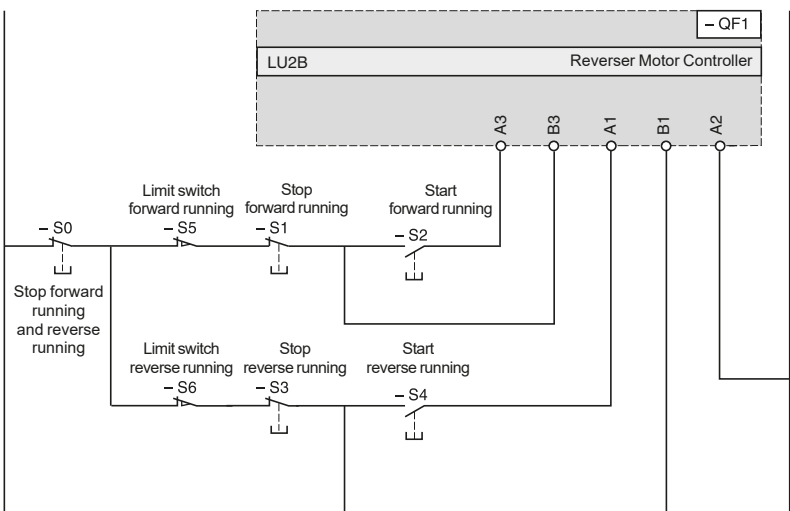
Control by communication modules ASILUFC5 and ASILUFC51

With pre-wired coil connection LU9MRC
With multifunction control unit LUCM



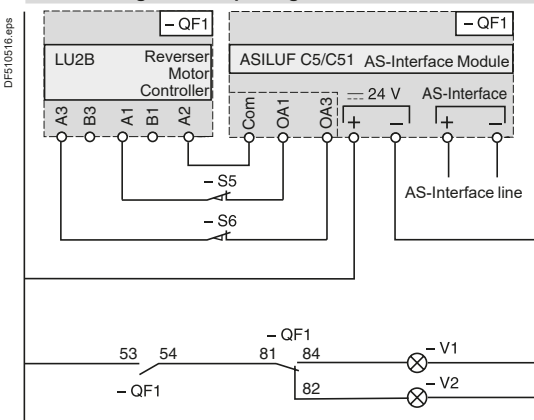
Ref.

3-wire control, pulsed start with maintaining contact and limit switches



Control by communication modules ASILUFC5 and ASILUFC51

Without pre-wired coil connection
With running direction pilot lights and limit switches



References:
pages A4/10 and A4/24

TeSys Control

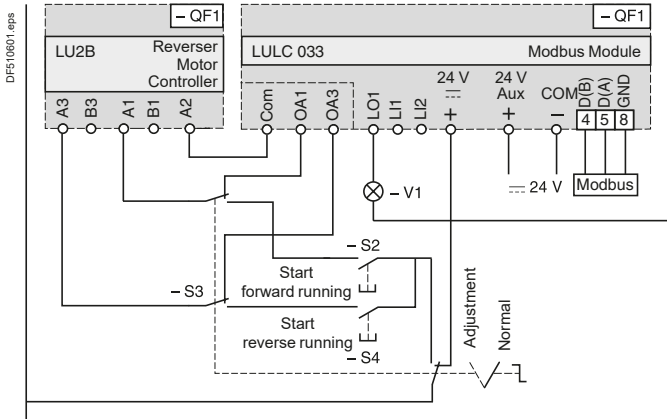
Ultra motor starters - Reversing basic applications

Schemes

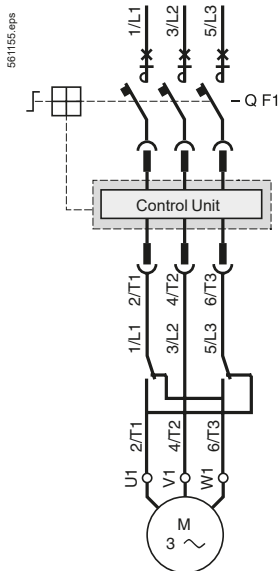
Reversing starter controllers LU2B (continued)

Control via Modbus communication module LULC033

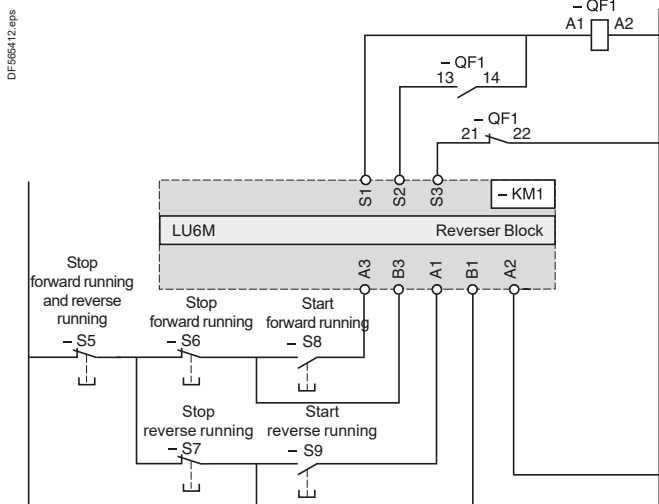
Without pre-wired coil connection. With local control



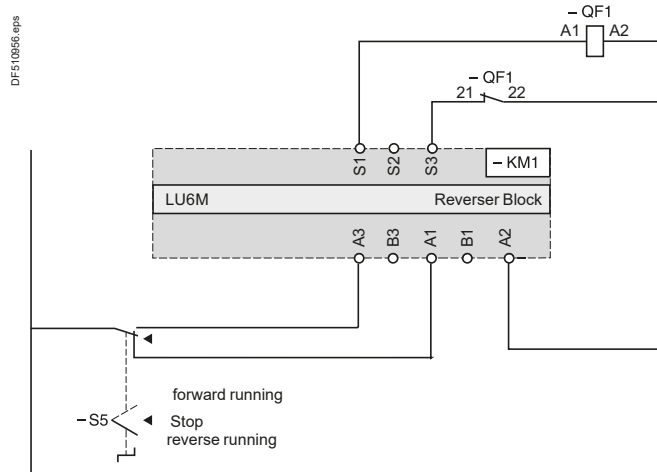
Reversing starter-controllers LUB + LU6M



3-wire control, pulsed start with maintaining contact



2-wire control via 3-position switch



References:
page A4/10

TeSys Control

Ultra motor starters - Reversing basic applications

Schemes

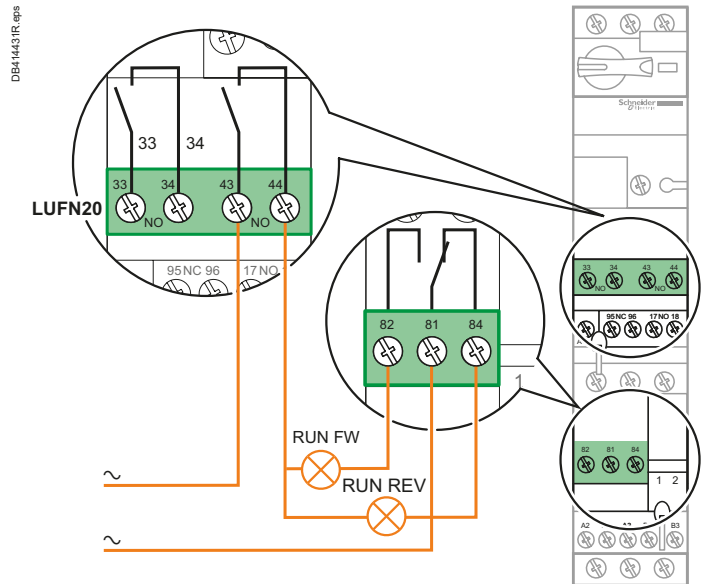
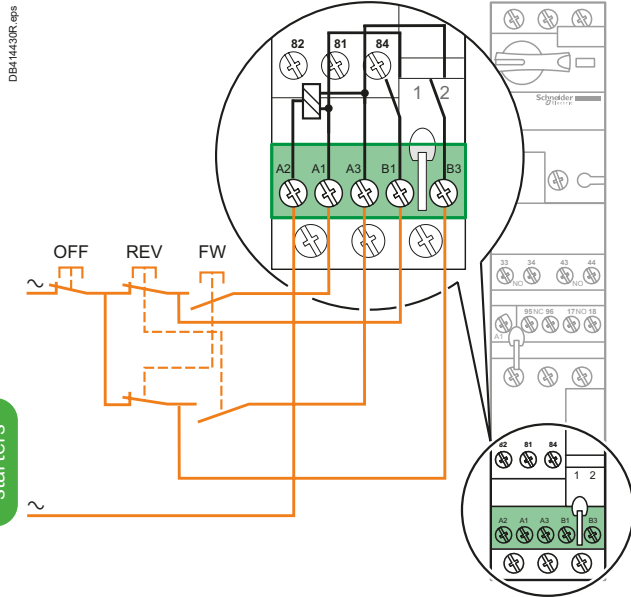
Power base with vertical mounting reverser block

FW/REV/OFF control (2 directions of rotation)

Push buttons wiring

FW/REV control

FW, REV indicators wiring



TeSys Control

Altistart U01 Soft starter

Characteristics

Environmental characteristics

Type of starter		ATSU01N2●●LT	
Conformity to standards		Altistart U01 electronic starters have been developed to conform to the strictest international standards and the recommendations relating to electrical industrial control devices (IEC, EN), in particular standard IEC/EN 60947-4-2.	
Electromagnetic compatibility EMC		CISPR 11 level B, IEC 60947-4-2, level B	
Conducted and radiated emissions		CISPR 11 level B, IEC 60947-4-2, level B	
Harmonics		IEC 1000-3-2, IEC 1000-3-4	
EMC immunity		EN 50082-2, EN 50082-1	
Electrostatic discharge		IEC 61000-4-2 level 3	
Immunity to radiated radio-electrical interference		IEC 61000-4-3 level 3	
Immunity to electrical transients		IEC 61000-4-4 level 4	
Voltage/current impulse		IEC 61000-4-5 level 3	
Conducted and radiated emissions		IEC 61000-4-6 level 3	
Immunity to conducted interference caused by radio-electrical fields		IEC 61000-4-11	
Damped oscillating waves		IEC 61000-4-12 level 3	
CE marking		The starters carry CE marking in accordance with the European low voltage directives IEC/EN 60947-4-2.	
Product certifications		UL, CSA, C-Tick and CCC	
Degree of protection		IP 20	
Degree of pollution		2 conforming to IEC/EN 60947-4-2	
Vibration resistance		1.5 mm peak to peak from 3 to 13 Hz, 1 gn from 13 to 150 Hz, conforming to IEC/EN 60068-2-6	
Shock resistance		15 gn for 11 ms conforming to IEC/EN 60068-2-27	
Relative humidity		5...95 % without condensation or dripping water conforming to IEC 60068-2-3	
Ambient temperature around the unit		Storage	°C -25...+70 conforming to IEC/EN 60947-4-2
		Operation	°C -10...+40 without derating, up to 50°C with current derating of 2 % per °C above 40°C
Maximum operating altitude		m 1000 without derating (above this, derate the current by 2.2 % per additional 100 m)	
Operating position		10° 10°	
Maximum permanent angle in relation to the normal vertical mounting position			

Electrical characteristics

Type of starter		ATSU01N2●●LT						
Category of use		Conforming to IEC 60947-4-2						
Rated operating voltage		3-phase ~ voltage						
Frequency		Hz 50 - 5 % to 60 + 5 %						
Output voltage		Maximum 3-phase voltage equal to line supply voltage						
Control supply voltage		24 V ~, 100 mA ±10 %						
Rated operating current		A 6...32						
Adjustable starting time		s 1...10						
Adjustable deceleration time		s 1...10						
Starting torque		% 30... 80 % of DOL motor starting torque						
Type of starter	ATSU	01N206LT	01N209LT	01N212LT	01N222LT	01N232LT		
Control power supply consumption		24 V ~, 65 mA						
Power dissipated		24 V ~, 100 mA						
At full load at end of starting		W 1.5	1.5	1.5	2.5	2.5		
In transient state at 5 times the rated operating current		W 61.5	91.5	121.5	222.5	322.5		
Type of starter	ATSU01N206LT to ATSU01N222LT			ATSU01N232LT				
Use								
	Starting time	s	1	5	10	1	5	10
	Maximum number of cycles per hour		100	20	10	50	10	5

TeSys Control

Altistart U01 Soft starter

Characteristics

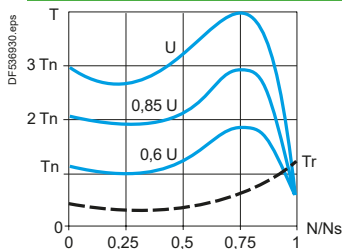
Electrical characteristics (continued)

Logic input power supply (electrically isolated between power and control) + 24 V, COM		24 V \pm 10 % Isolated Max. current 100 mA
Logic inputs LI1, LI2, BOOST Stop, run and boost on start-up functions		Logic inputs with impedance 27 k Ω ; 24 V power supply (U max 40 V) Max. current 8 mA State 0 if U < 5 V and I < 0.2 mA State 1 if U > 13 V and I > 0.5 mA
Logic output LO1 End of starting signal		Open collector logic output: External 24 V power supply (minimum 6 V, maximum 30 V) Max. current 200 mA
Relay output R1A/R1C		Normally open (N/O) contact Minimum switching capacity: 10 mA for 6 V --- Maximum switching capacity on inductive load ($\cos \phi = 0.5$ and L/R = 20 ms): 2 A for 250 V \sim or 30 V --- (AC-15) Maximum operating voltage 440 V
LED signalling	Green LED Yellow LED	Starter powered up Nominal voltage reached

Connections (maximum connection capacity and tightening torque)

Power circuit			Connection to $\varnothing 4$ mm screw clamps	
Flexible wire without cable end	1 conductor	mm ²	1.5...10	8 AWG
	2 conductors	mm ²	1.5...6	10 AWG
Flexible wire with cable end	1 conductor	mm ²	1...6	10 AWG
	2 conductors	mm ²	1...6	10 AWG
Rigid wire	1 conductor	mm ²	1...10	8 AWG
	2 conductors	mm ²	1...6	10 AWG
Tightening torque		N.m	1.9...2.5	
Control circuit			Screw connector	
Flexible wire without cable end	1 conductor	mm ²	0.5...2.5	14 AWG
	2 conductors	mm ²	0.5...1.5	16 AWG
Flexible wire with cable end	1 conductor	mm ²	0.5...1.5	16 AWG
	2 conductors	mm ²	0.5...1.5	16 AWG
Rigid wire	1 conductor	mm ²	0.5...2.5	14 AWG
	2 conductors	mm ²	0.5...1	17 AWG
Tightening torque		N.m	0.5	

Torque characteristics (typical curves)



The diagram opposite shows the torque/speed characteristic of a cage motor in relation to the supply voltage. The torque varies in line with the square of the voltage at a fixed frequency. The gradual increase in the voltage prevents the instantaneous current peak on power-up.

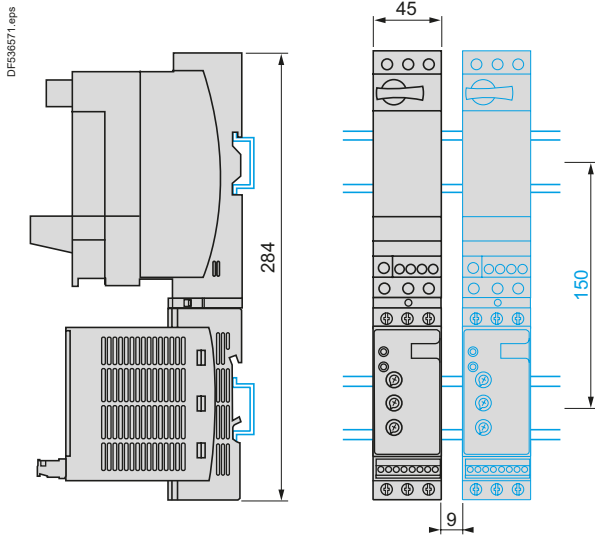


TeSys Control

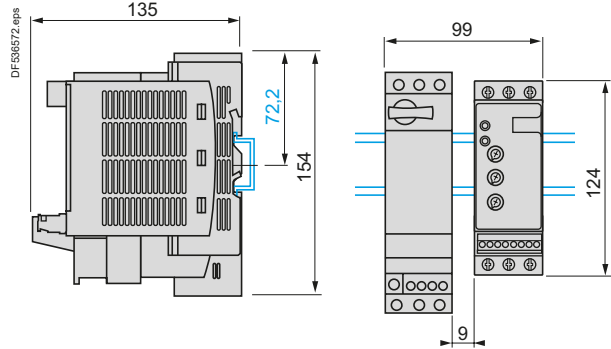
Altistart U01 Soft starter

Dimensions

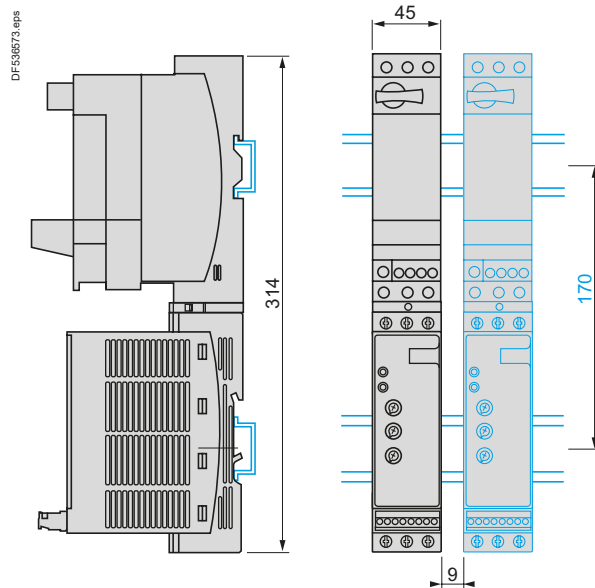
Ultra combination (non-reversing power base) and ATSU01N206LT to ATSU01N212LT
Mounting on L_r (35 mm) rail with VW3G4104 connector



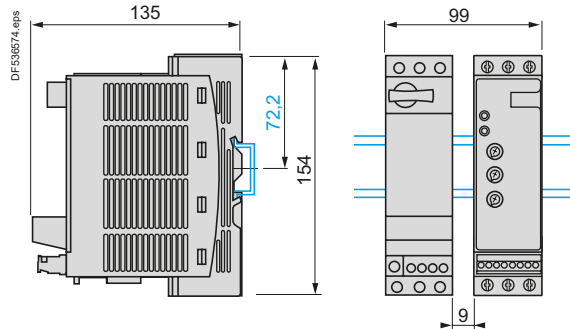
Ultra combination (non-reversing or reversing power base) and ATSU01N206LT to ATSU01N212LT
Side by side mounting



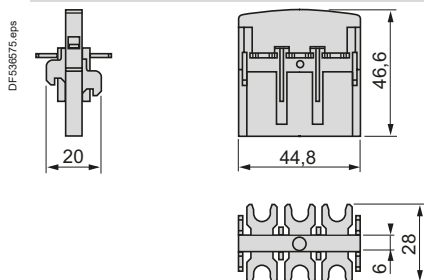
Ultra combination (non-reversing power base) and ATSU01N222LT to ATSU01N232LT
Mounting on L_r (35 mm) rail with VW3G4104 connector



Ultra combination (non-reversing or reversing power base) and ATSU01N222LT to ATSU01N232LT
Side by side mounting



VW3G4104 connector



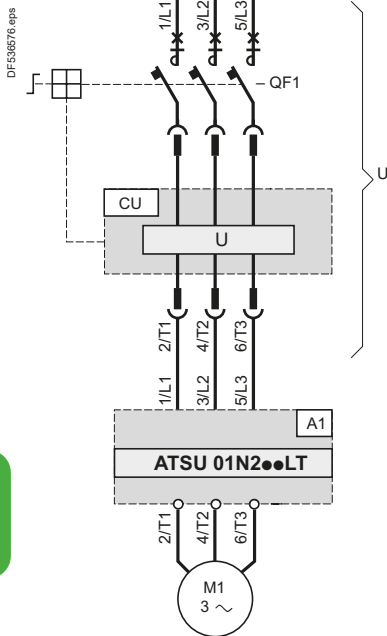
Ultra motor starters

Ref.

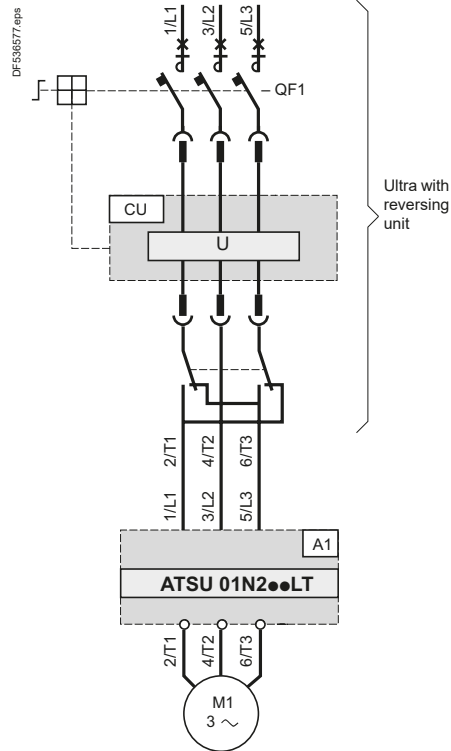


ATSU01N2●●LT soft start/soft stop units

Power wiring



Power wiring with reversing unit



Ultra motor starters

Ref.



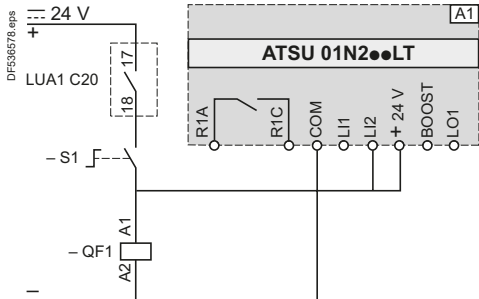
Compatible components

Code	Description
A1	Soft start/soft stop unit
QF1	Ultra controller-starter
CU	Ultra control unit

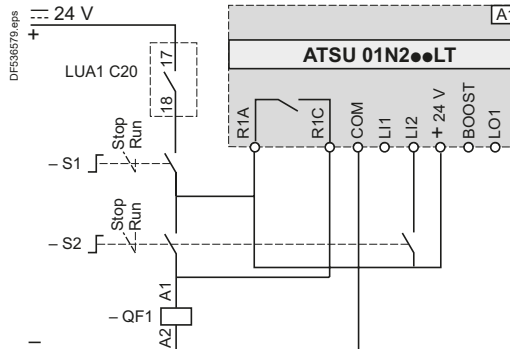
ATSU01N2●●LT soft start/soft stop units (continued)

Automatic 2-wire control

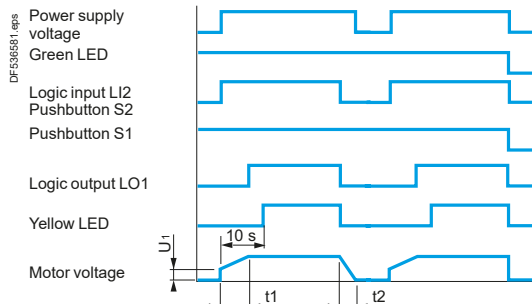
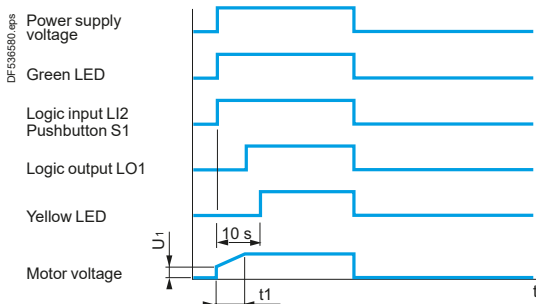
Without deceleration



With and without deceleration

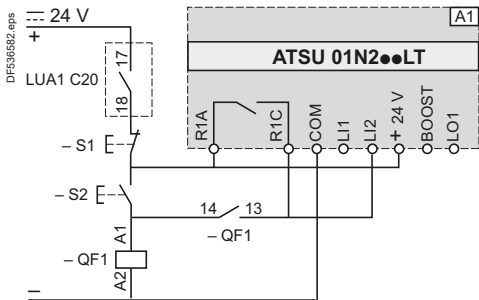


Functional diagrams

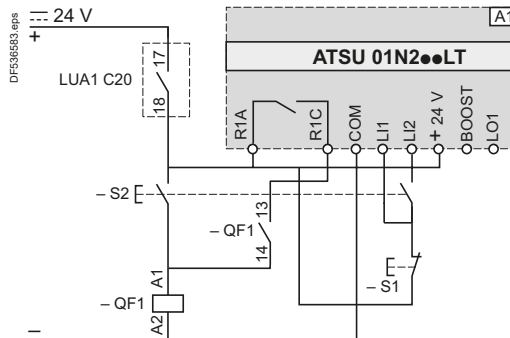


Automatic 3-wire control

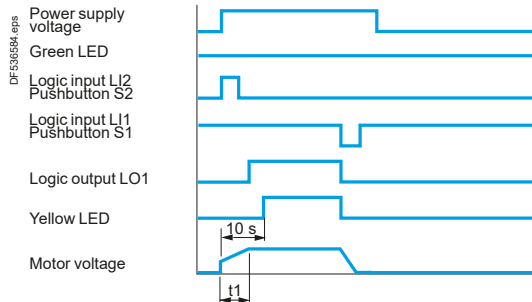
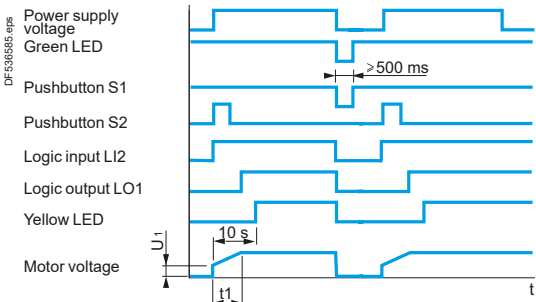
Without deceleration



With deceleration



Functional diagrams

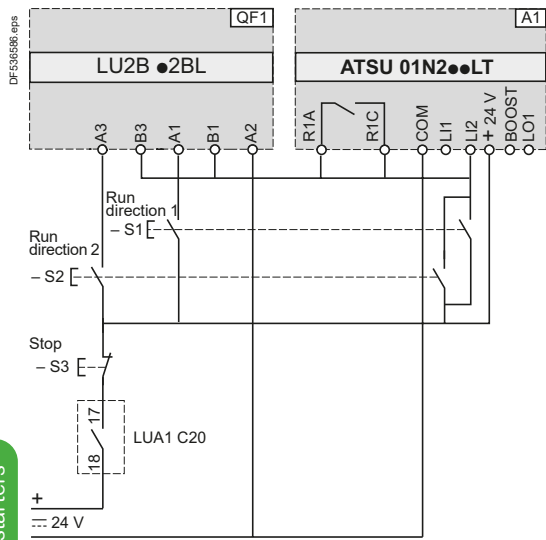


A1: Soft start/soft stop unit
 S1, S2: XB4B or XB5B pushbuttons
 QF1: Ultra controller-starter
 t1: Acceleration time can be controlled by a potentiometer
 t2: Deceleration time can be controlled by a potentiometer
 U₁: Starting time can be controlled by a potentiometer

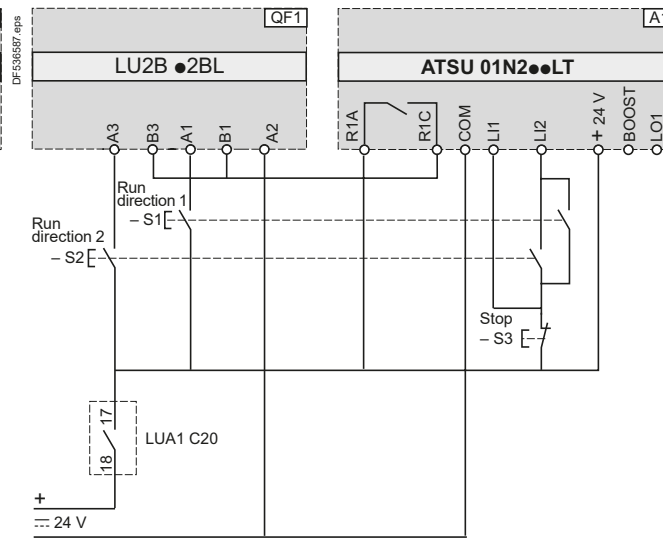
ATSU01N2●●LT soft start/soft stop units (continued)

Automatic 3-wire control, with reversing unit

Without deceleration



With deceleration



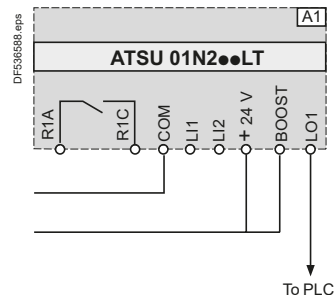
Ultra motor starters

Ref.

QF1: Ultra controller-starter with reversing unit
 A1: Soft start/soft stop unit
 S1, S2, S3: XB4B or XB5B pushbuttons
 S3: minimum depression time 500 ms

QF1: Ultra controller-starter with reversing unit
 A1: Soft start/soft stop unit
 S1, S2, S3: XB4B or XB5B pushbuttons

Boost on starting and end of starting signal

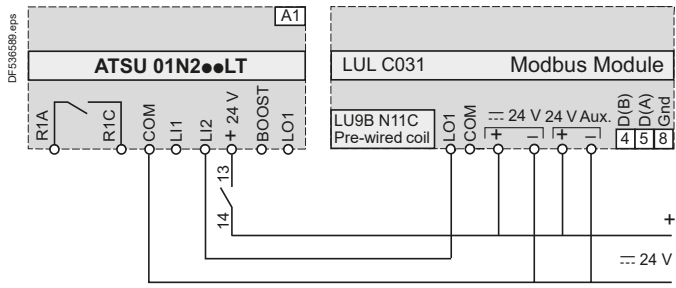


A1: Soft start/soft stop unit

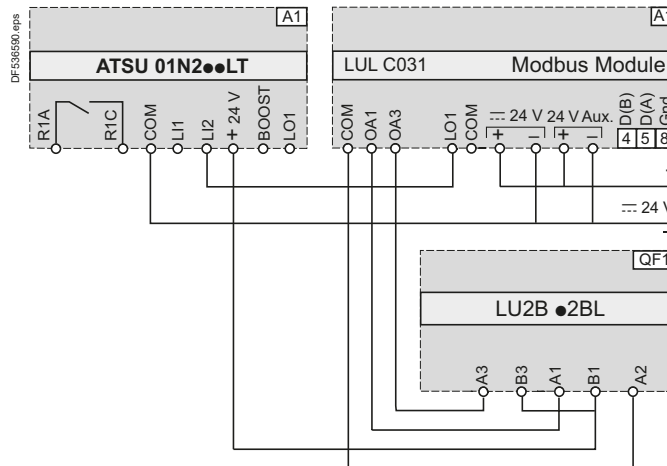
ATSU01N2●●LT soft start/soft stop units (continued)

Automatic control with Modbus communication module, with and without deceleration

Without reversing unit



With reversing unit



Function	Register	Bit	Value
Powering down U and ATSU			
-	704	0	0
Automatic control without deceleration			
Run	700	0	1
Stop	704	0	0
Automatic control with deceleration			
Run	700	0	1
Soft stop	700	0	0

Function	Register	Bit	Value
Powering up U and ATSU			
Forward	704	0	1
Reverse	704	1	1
Powering down U and ATSU			
Forward	704	0	0
Reverse	704	1	0
Automatic control without deceleration			
Run	700	0	1
Stop forward	704	0	0
Stop reverse	704	1	0
Automatic control with deceleration (forward or reverse)			
Run	700	0	1
Soft stop	700	0	0

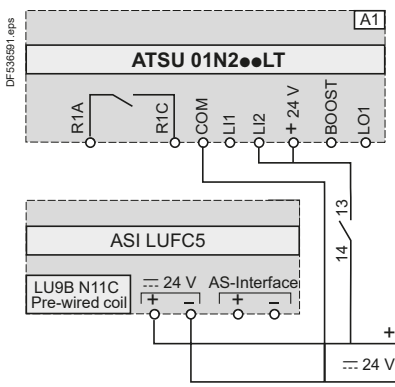
A1: Soft start/soft stop unit

A1: Soft start/soft stop unit

QF1: Ultra controller-starter with reversing unit

Automatic control with AS-Interface communication module, without deceleration

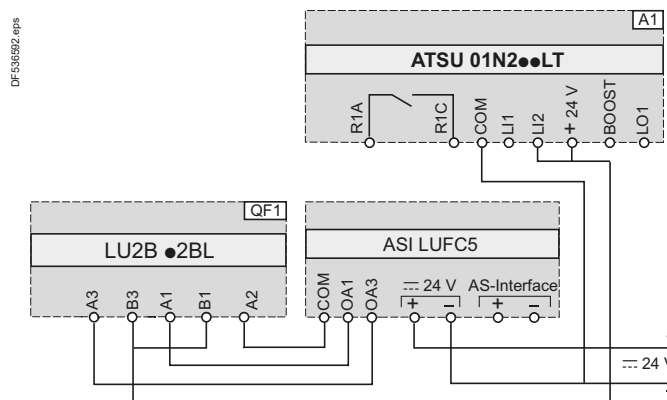
Without reversing unit



Function	Bit	Value
Power-up and automatic control without deceleration		
Run	D0	1
Stop	D0	0

A1: Soft start/soft stop unit

With reversing unit



Function	Bit	Value
Power-up and automatic control without deceleration		
Run forward	D0	1
Stop	D0	0
Run reverse	D1	1
Stop	D1	0

A1: Soft start/soft stop unit

QF1: Ultra controller-starter with reversing unit

Coordination between protection and control components

Type of information	Page
Types of coordination, according to the standard currents in the circuit to be considered	A5/2
Selection of the coordination type	A5/3

Suggested coordinated Direct-On-Line motor starter combinations

Fuses + Contactor + Overload relay	A5/4
Circuit breaker (with built in overload protection) + Contactor	A5/11
Circuit breaker + Contactor + Overload relay	A5/18

Suggested coordinated Star-delta motor starter combinations

Fuses + Contactors + Overload relay	A5/27
Circuit breaker (with built in overload protection) + Contactors	A5/31
Circuit breaker + Contactors + Overload relay	A5/36

Suggested coordinated TeSys island motor starter combinations

Protection Components / Starters - Coordination - IEC	A5/43
Protection Components / Starters - SCCR Ratings - UL	A5/50

Contactors: Utilisation categories – Standard characteristics – Selection tables per categorie

Definition: utilisation categories : AC-1, AC-2, AC-3, etc...	A5/51
Definition: contactor standard characteristics	A5/52
Contactor selection tables per utilisation categorie	A5/54

Contactors for specific application – Design information

Selection of contactors for lighting circuits	A5/68
Selection of contactors for heating circuits	A5/74
Selection of contactors for switching primaries of 3P LV/LV transformers	A5/76
Selection of contactors for switching 3P capacitor banks (factor correction)	A5/77
Selection of contactors auto-transformer starting	A5/78
Design of long distance remote control for contactors	A5/80
Current of asynchronous squirrel cage motors at nominal load	A5/84

Standards – Protection against contact – Protective treatments

International standards and certifications	A5/85
Protection against accidental direct contacts / IP codes	A5/87

Type 1 and type 2 coordination according to the standard

The standard defines tests at different levels of current; the purpose of these tests is to place the equipment in extreme conditions.

The standard defines 2 types of coordination, according to the condition of the components after testing:

- type 1,**
- type 2.**

To determine the type of coordination, the standard requires that the behaviour of the equipment be tested under overload and short-circuit conditions for 3 fault current values, covering overload and short-circuit conditions.

Type 1 coordination

Type 1 coordination requires that in a short-circuit condition, the contactor or starter must not present any danger to personnel or installations and must not be able to resume operation without repair or the replacement of parts.

Type 2 coordination

Type 2 coordination requires that in a short-circuit condition, the contactor or starter must not present any danger to personnel or installations and must subsequently be able to resume operation. The risk of contact welding is permissible; in this case, the manufacturer must indicate measures to be taken regarding maintenance of the equipment.

Type 2 coordination increases reliability of operation.

Current values

Current "Ico" (overload $I < 10 I_n$)

The thermal overload relay associated with the contactor provides protection against this type of fault, up to a value I_{co} (see curve) defined by the manufacturer.

Standard IEC 60947-4-1 specifies the 2 current values to be used for checking coordination between the thermal overload relay and the short-circuit protection device:

- at $0.75 I_{co}$ only the thermal overload relay must trip,
- at $1.25 I_{co}$ the short-circuit protection device must operate.

Current "r" (low level short-circuit $10 < I < 50 I_n$)

The main cause of this type of fault is the deterioration of insulating materials. Standard IEC 60947-4-1 defines an intermediate short-circuit current "r". This test current makes it possible to check whether the protection device is providing protection against low-level short-circuits.

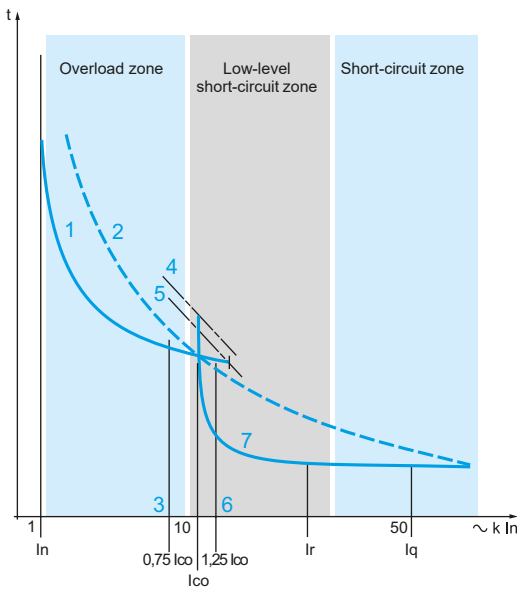
Operational current I_e (AC-3) (A)	Current "r" (kA)
$I_e \leq 16$	1
$16 < I_e \leq 63$	3
$63 < I_e \leq 125$	5
$125 < I_e \leq 315$	10
$315 < I_e \leq 630$	18
$630 < I_e \leq 1000$	30

Current "Iq" (short-circuit $>$ current "r")

This type of fault corresponds to a dead short and is relatively rare. It can be caused by a connection error during maintenance work. Short-circuit protection is provided by fast operating devices.

Standard IEC 60947-4-1 defines a current "Iq". The coordination tables supplied by Schneider Electric are based on a current "Iq" that is generally ≥ 50 kA.

(1) SCPD: short-circuit protection device.



- 1 Thermal overload relay curve.
- 2 Fuse.
- 3 Tripping of thermal overload relay only.
- 4 Thermal limit of the circuit breaker.
- 5 Thermal overload relay limit.
- 6 Current broken by the SCPD (1).
- 7 Circuit breaker magnetic trip.

Selection

No coordination

Considerable risks to both persons and equipment.

Not authorised by standards:

- NF C 15-100 and IEC 60364-1, article 133-1 (installation regulations),
- EN/IEC 60204-1, article 7 (electrical equipment in machines),
- IEC 60947-4-1, article 8.2.5. (starters)

Type 1 coordination

The most frequently used solution.

- Equipment costs are lower.
- Reliability of operation is not a requirement.
- Before restarting, it may be necessary to repair the motor starter.

Consequences:

- significant amount of machine downtime,
- skilled maintenance personnel required to repair, check, obtain supplies.

Example: air conditioning in commercial premises.

Type 2 coordination

This solution ensures reliability of operation.

Consequences:

- reduced machine downtime,
- reduced maintenance after a short-circuit.

Example: escalators.

Total coordination

With this solution, no damage or misadjustment is permissible and reliability of operation is guaranteed.

Consequences:

- immediate return to service,
- no special precautions required.

Examples: smoke extraction, fire-fighting pumps.

0.06 to 55 kW at 400/415 V: type 1 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Fuse carrier ⁽¹⁾ (basic block)	aM fuses		Contactor	Thermal overload relay class 10	
400/415 V		440 V		500 V		Reference	Size	Rating	Reference ⁽²⁾	Reference	Setting range
P	I _e	P	I _e	P	I _e			A			A
kW	A	kW	A	kW	A						A
0.06	0.2	0.06	0.19	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0302	0.16...0.23
–	–	0.09	0.28	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0303	0.23...0.36
0.09	0.3	–	–	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0304	0.36...0.54
0.12	0.44	0.12	0.37	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0304	0.36...0.54
0.18	0.6	0.18	0.55	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0305	0.54...0.8
–	–	0.25	0.76	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0305	0.54...0.8
0.25	0.85	–	–	–	–	LS1D32	10 x 38	2	LC1K06	LR2K0306	0.8...1.2
0.37	1.1	0.37	1	0.37	0.88	LS1D32	10 x 38	2	LC1K06	LR2K0306	0.8...1.2
0.55	1.5	0.55	1.36	0.55	1.2	LS1D32	10 x 38	2	LC1K06	LR2K0307	1.2...1.8
–	–	0.75	1.68	0.75	1.5	LS1D32	10 x 38	2	LC1K06	LR2K0307	1.2...1.8
0.75	1.9	–	–	1.1	2.2	LS1D32	10 x 38	4	LC1K06	LR2K0308	1.8...2.6
1.1	2.7	1.1	2.37	1.5	2.9	LS1D32	10 x 38	4	LC1K06	LR2K0308	1.8...2.6
1.5	3.6	1.5	3.06	–	–	LS1D32	10 x 38	4	LC1K06	LR2K0310	2.6...3.7
2.2	4.9	–	–	2.2	3.9	LS1D32	10 x 38	6	LC1K06	LR2K0312	3.7...5.5
–	–	–	–	3	5.2	LS1D32	10 x 38	6	LC1K06	LR2K0312	3.7...5.5
–	–	2.2	4.42	–	–	LS1D32	10 x 38	8	LC1K06	LR2K0312	3.7...5.5
3	6.5	3	5.77	4	6.8	LS1D32	10 x 38	8	LC1K09	LR2K0314	5.5...8
4	8.5	4	7.9	5.5	9.2	LS1D32	10 x 38	12	LC1K09	LR2K0316	8...11.5

(1) For breaking under load, add a rotary switch-disconnector.

(2) For reversing operation, replace the prefix LC1 with LC2.

0.06 to 55 kW at 400/415 V: type 1 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Fuse carrier ⁽¹⁾ (basic block)	aM fuses		Contactor	Thermal overload relay classe 10	
400/415 V		440 V		500 V		Reference	Size	Rating	Reference ⁽²⁾	Reference	Setting range
P	I _e	P	I _e	P	I _e			A			A
kW	A	kW	A	kW	A						
5.5	11.5	5.5	10.4	7.5	12.4	LS1D32	10 x 38	16	LC1K12	LR2K0321	10...14
7.5	15.5	7.5	13.7	9	13.9	LS1D32	10 x 38	16	LC1D18	LRD21	12...18
-	-	9	16.9	-	-	LS1D32	10 x 38	20	LC1D25	LRD21	12...18
22	41	22	39	30	44	GS●J	22 x 58	50	LC1D50A	LRD350	37...50
-	-	30	51.5	-	-	GS●J	22 x 58	80	LC1D50A	LRD365	48...65
-	-	-	-	37	53	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
30	55	37	64	-	-	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
-	-	-	-	45	64	GS●J	22 x 58	80	LC1D80	LRD3361	55...70
37 ⁽³⁾	66	45	76	-	-	GS●J	22 x 58	100	LC1D80	LRD3363	63...80
45	80	-	-	55	78	GS●J	22 x 58	100	LC1D95	LRD3365	80...104
-	-	55	90	-	-	GS●J	22 x 58	125	LC1D115	LRD4365	80...104
55	97	-	-	75	106	GS●J	22 x 58	125	LC1D115	LRD4367	95...120

(1) For breaking under load, add a rotary switch-disconnector.

(2) For reversing operation, replace the prefix LC1 with LC2.

(3) 400 V maximum.

0.06 to 315 kW at 400/415 V: type 2 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch-disconnector	aM fuses		Contactor	Thermal overload relay classe 10	
400/415 V		440 V		500 V		Reference ⁽¹⁾	Size	Rating	Reference ⁽²⁾	Reference	Setting range
P	I _e	P	I _e	P	I _e			A			A
kW	A	kW	A	kW	A						
0.06	0.2	0.06	0.19	–	–	GS1DD	10 x 38	2	LC1D09	LRD02	0.16...0.25
–	–	0.09	0.28	–	–	GS1DD	10 x 38	2	LC1D09	LRD03	0.25...0.4
0.09	0.3	–	–	–	–						
0.12	0.44	0.12	0.37	–	–	GS1DD	10 x 38	2	LC1D09	LRD04	0.4...0.63
0.18	0.6	0.18	0.55	–	–						
–	–	0.25	0.76	–	–	GS1DD	10 x 38	2	LC1D09	LRD05	0.63...1
0.25	0.85	–	–	0.37	0.88						
0.37	1.1	0.37	1	0.55	1.2						
0.55	1.5	0.55	1.36	0.75	1.5	GS1DD	10 x 38	2	LC1D09	LRD06	1...1.7
0.75	1.9	0.75	1.68	–	–						
–	–	1.1	2.37	1.1	2.2	GS1DD	10 x 38	4	LC1D09	LRD07	1.6...2.5
1.1	2.7	–	–	1.5	2.9						
1.5	3.6	1.5	3.06	2.2	3.9	GS1DD	10 x 38	4	LC1D09	LRD08	2.5...4
2.2	4.9	2.2	4.42	3	5.2	GS1DD	10 x 38	6	LC1D09	LRD10	4...6
3	6.5	3	5.77	4	6.8	GS1DD	10 x 38	8	LC1D09	LRD12	5.5...8
4	8.5	4	7.9	5.5	9.2	GS1DD	10 x 38	10	LC1D09	LRD14	7...10
5.5	11.5	5.5	10.4	7.5	12.4	GS1DD	10 x 38	16	LC1D12	LRD16	9...13
7.5	15.5	7.5	13.7	9	13.9	GS1DD	10 x 38	16	LC1D18	LRD21	12...18
–	–	9	16.9	–	–	GS●F	14 x 51	20	LC1D25	LRD21	12...18
9	18.1	11	20.1	11	17.6						
11	22	–	–	15	23	GS●F	14 x 51	25	LC1D25	LRD22	16...24
15	29	15	26.5	18.5	28	GS●F	14 x 51	32	LC1D32	LRD32	23...32
18.5	35	18.5	32.8	22	33	GS●F	14 x 51	40	LC1D40A	LRD340	30...40
22	41	22	39	30	44	GS●J	22 x 58	50	LC1D50A	LRD350	37...50
–	–	30	51.5	–	–	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
–	–	–	–	37	53	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
30	55	37	64	–	–	GS●J	22 x 58	80	LC1D65A	LRD365	48...65
–	–	–	–	45	64	GS●J	22 x 58	80	LC1D95	LRD3361	55...70
37	66	45	76	–	–	GS●J	22 x 58	100	LC1D80	LRD3363	63...80
–	–	–	–	55	78	GS●J	22 x 58	100	LC1D115	LR9D5367	60...100
45	80	–	–	–	–	GS●J	22 x 58	100	LC1D95	LRD3365	80...104
55	97	55	90	75	106	GS●L	T0	125	LC1D150	LR9D5369	90...150
75	132	75	125	90	128	GS●L	T0	160	LC1D150	LR9D5369	90...150

(1) GS●: GS1 for direct operator or GS2 for external operator.

(2) For reversing operation, replace the prefix LC1 with LC2.

55 to 335 kW at 400 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	Thermal overload relay	
400 V				Product type	Size		Rating	Product type
P	I _e	I _q (max)						
kW	A	kA			A			A
55	97	80	GS ₀ L	0	125	LC1G115	LR9G115	97
75	132	80	GS ₀ L	0	160	LC1G150	LR9G225	132
90	160	80	GS ₀ N	1	200	LC1G185	LR9G225	160
110	195	80	GS ₀ N	1	250	LC1G225	LR9G225	195
132	230	80	GS ₀ QQ	2	315	LC1G265	LR9G500	230
160	280	80	GS ₀ QQ	2	400	LC1G330	LR9G500	280
200	350	80	GS2S	3	500	LC1G400	LR9G500	350
220	380	80	GS2S	3	500	LC1G500	LR9G500	380
250	430	80	GS2S	3	500	LC1G500	LR9G500	430
315	540	80	GS2S	3	630	LC1G630	LR9G630	540
335	575	80	GS2V	4	800	LC1G630	LR9G630	575

75 to 400 kW at 440 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	Thermal overload relay	
440 V				Product type	Size		Rating	Product type
P	I _e	I _q (max)						
kW	A	kA			A			A
75	115	80	GS ₀ L	0	125	LC1G115	LR9G115	115
90	145	80	GS ₀ L	0	160	LC1G150	LR9G225	145
110	177	80	GS ₀ N	1	200	LC1G185	LR9G225	177
132	209	80	GS ₀ N	1	250	LC1G225	LR9G225	209
160	255	80	GS ₀ QQ	2	315	LC1G265	LR9G500	255
200	318	80	GS ₀ QQ	2	400	LC1G330	LR9G500	318
220	343	80	GS2S	3	500	LC1G400	LR9G500	343
250	390	80	GS2S	3	500	LC1G500	LR9G500	390
315	490	80	GS2S	3	500	LC1G500	LR9G500	490
355	554	80	GS2S	3	630	LC1G630	LR9G630	554
400	627	80	GS2V	4	800	LC1G630	LR9G630	627

65 to 375 kW at 500 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	Thermal overload relay	
500 V				Product type	Size		Rating	Product type
P	I _e	I _q (max)						
kW	A	kA			A			A
65	92	80	GS ₀ L	0	125	LC1G115	LR9G115	92
90	128	80	GS ₀ L	0	160	LC1G150	LR9G225	128
110	156	80	GS ₀ N	1	200	LC1G185	LR9G225	156
132	184	80	GS ₀ N	1	250	LC1G225	LR9G225	184
160	224	80	GS ₀ QQ	2	315	LC1G265	LR9G500	224
200	280	80	GS ₀ QQ	2	400	LC1G330	LR9G500	280
250	344	80	GS2S	3	500	LC1G400	LR9G500	344
295	405	80	GS2S	3	500	LC1G500	LR9G500	405
375	516	80	GS2S	3	630	LC1G630	LR9G630	516

⁽¹⁾ This setting is a general guidance, Ir should be adjusted according to motor characteristics and conditions of use.

0.75 to 400 kW at 690 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Switch-disconnector	aM fuses		Contactor	Thermal overload relay classe 10	
P	I _e		Reference ⁽¹⁾	Size	Rating	Reference ⁽²⁾	Reference	Setting range
kW	A				A			A
0.75	1.1		GS _o F	14 x 51	2	LC1D09	LRD06	1...1.6
1.1	1.6		GS _o F	14 x 51	2	LC1D09	LRD06	1...1.6
1.5	2.1		GS _o F	14 x 51	4	LC1D09	LRD07	1.6...2.5
2.2	2.8		GS _o F	14 x 51	4	LC1D09	LRD08	2.5...4
3	3.8		GS _o F	14 x 51	6	LC1D09	LRD08	2.5...4
4	4.9		GS _o F	14 x 51	6	LC1D09	LRD10	4...6
5.5	6.7		GS _o F	14 x 51	8	LC1D09	LRD12	5.5...8
7.5	8.9		GS _o F	14 x 51	10	LC1D25	LRD16	9...13
11	12.8		GS _o F	14 x 51	16	LC1D25	LRD16	9...13
15	17		GS _o F	14 x 51	20	LC1D25	LRD22	16...24
18.5	21		GS _o F	14 x 51	25	LC1D32	LRD22	16...24
22	24		GS _o J	22 x 58	32	LC1D40A	LRD332	23...32
30	32		GS _o J	22 x 58	40	LC1D40A	LRD340	30...40
37	39		GS _o J	22 x 58	50	LC1D65A	LRD350	37...50
45	47		GS _o J	22 x 58	63	LC1D80	LRD3357	37...50
55	57		GS _o J	22 x 58	80	LC1D115	LRD3359	48...65
75	77		GS _o KK	T00	100	LC1D115	LRD3363	63...80
90	93		GS _o KK	T00	125	LC1D150	LR9D5369	90...150

55 to 500 kW at 690 V: type 2 coordination								
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Switch-disconnector	aM fuses		Contactor	Thermal overload relay	
690 V			Product type	Size	Rating	Product type	Product type	I _r setting ⁽³⁾
P	I _e	I _q (max)			A			A
kW	A	kA			A			A
55	57	80	GS _o J	22 x 58	80	LC1G115	LR9G225	57
75	77	80	GS _o KK	00	100	LC1G115	LR9G225	77
90	93	80	GS _o KK	00	125	LC1G150	LR9G225	93
110	113	80	GS _o KK	00	160	LC1G185	LR9G225	113
132	134	80	GS _o L	0	160	LC1G225	LR9G225	134
160	162	80	GS _o N	1	200	LC1G225	LR9G225	162
200	203	80	GS _o N	1	250	LC1G265	LR9G500	203
220	223	80	GS _o QQ	2	250	LC1G330	LR9G500	223
250	250	80	GS _o QQ	2	315	LC1G330	LR9G500	250
315	313	80	GS _o QQ	2	400	LC1G400	LR9G500	313
355	354	80	GS _o QQ	3	500	LC1G500	LR9G500	354
500	493	80	GS _o S	3	630	LC1G630	LR9G630	493

(1) GS_o: GS1 for direct operator or GS2 for external operator.

(2) For reversing operation, replace the prefix LC1 with LC2.

(3) This setting is a general guidance, I_r should be adjusted according to motor characteristics and conditions of use.

0.18 to 55 kW at 400/415 V: type 2 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch- disconnecter	aM fuses		Contactor	Electronic thermal overload relay	
400/415 V			690 V				Reference	Size		Rating	Reference
P	I _e	I _q	P	I _e	I _q						
kW	A	kA	kW	A	kA			A			A
0.18	0.6	100	–	–	–	GS1DD	10 x 38	2	LC1D09	LR9D02	0.4...2.0
0.25	0.85	100	–	–	–	GS1DD	10 x 38	2	LC1D09	LR9D02	0.4...2.0
0.37	1.1	100	–	–	–	GS1DD	10 x 38	2	LC1D09	LR9D02	0.4...2.0
0.55	1.5	100	–	–	–	GS1DD	10 x 38	2	LC1D09	LR9D02	0.4...2.0
0.75	1.9	100	–	–	–	GS1DD	10 x 38	4	LC1D09	LR9D02	0.4...2.0
1.1	2.7	100	–	–	–	GS1DD	10 x 38	4	LC1D18	LR9D08	1.6...8.0
1.5	3.6	100	–	–	–	GS1DD	10 x 38	4	LC1D18	LR9D08	1.6...8.0
2.2	4.9	100	–	–	–	GS1DD	10 x 38	6	LC1D18	LR9D08	1.6...8.0
3	6.5	100	–	–	–	GS1DD	10 x 38	8	LC1D18	LR9D32	6.4...32
4	8.5	100	–	–	–	GS1DD	10 x 38	10	LC1D18	LR9D32	6.4...32
5.5	11.5	100	–	–	–	GS1DD	10 x 38	16	LC1D25	LR9D32	6.4...32
7.5	15.5	50	–	–	–	GS1DD	10 x 38	16	LC1D25	LR9D32	6.4...32
11	22	50	–	–	–	GS•F	14 x 51	25	LC1D25	LR9D32	6.4...32
15	29	50	–	–	–	GS•J	22 x 58	32	LC1D65A	LR9D110S	22...110
18.5	35	50	–	–	–	GS•J	22 x 58	40	LC1D65A	LR9D110S	22...110
22	41	50	–	–	–	GS•J	22 x 58	50	LC1D65A	LR9D110S	22...110
45 ⁽¹⁾	80	100	–	–	–	GS•N	T 1	100	LC1D150	LR9D110S	22...110
55 ⁽¹⁾	97	100	–	–	–	GS•N	T 1	125	LC1D150	LR9D110S	22...110
–	–	–	0.37	0.64	100	GS•F	14 x 51	2	LC1D09	LR9D02	0.4...2.0
–	–	–	0.55	0.87	100	GS•F	14 x 51	2	LC1D09	LR9D02	0.4...2.0
–	–	–	0.75	1.1	100	GS•F	14 x 51	2	LC1D09	LR9D02	0.4...2.0
–	–	–	1.1	1.6	100	GS•F	14 x 51	2	LC1D25	LR9D08	1.6...8.0
–	–	–	1.5	2.1	100	GS•F	14 x 51	4	LC1D25	LR9D08	1.6...8.0
–	–	–	2.2	2.8	100	GS•F	14 x 51	4	LC1D25	LR9D08	1.6...8.0
–	–	–	3	4	100	GS•F	14 x 51	6	LC1D25	LR9D08	1.6...8.0
–	–	–	4	5	100	GS•F	14 x 51	6	LC1D25	LR9D08	1.6...8.0
–	–	–	5.5	7	50	GS•F	14 x 51	8	LC1D25	LR9D32	6.4...32
–	–	–	7.5	8.9	50	GS•F	14 x 51	10	LC1D25	LR9D32	6.4...32
–	–	–	11	13	50	GS•F	14 x 51	16	LC1D32	LR9D32	6.4...32
–	–	–	15	16.5	50	GS•F	14 x 51	20	LC1D32	LR9D32	6.4...32
–	–	–	18.5	21	100	GS•F	14 x 51	25	LC1D95	LR9D32	6.4...32
–	–	–	18.5	21	50	GS•F	14 x 51	25	LC1D65A	LR9D32	6.4...32
–	–	–	22	25	50	GS•F	14 x 51	32	LC1D65A	LR9D32	6.4...32
–	–	–	30	33	100	GS•F	14 x 51	40	LC1D95	LR9D110	22...110
–	–	–	37	40	100	GS•F	14 x 51	50	LC1D95	LR9D110	22...110
–	–	–	45	49	100	GS•J	22 x 58	63	LC1D95	LR9D110	22...110

(1) Ratings valid up to 400 V AC only.

0.06 to 375 kW at 415 V: type 2 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch-disconnector-fuse	BS fuses		Contactor	Thermal overload relay	
415 V		440 V		500 V			Reference	Size	Rating	Reference ⁽¹⁾	Reference
P	I _e	P	I _e	P	I _e			A			A
kW	A	kW	A	kW	kA						
0.06	0.22	0.06	0.19	–	–	GS1DDB	A1	NIT 2	LC1D09	LRD02	0.16...0.25
–	–	0.09	0.28	–	–	GS1DDB	A1	NIT 2	LC1D09	LRD03	0.25...0.4
0.09	0.36	–	–	–	–						
0.12	0.42	0.12	0.37	–	–	GS1DDB	A1	NIT 2	LC1D09	LRD04	0.4...0.63
0.18	0.6	0.18	0.55	–	–	GS1DDB	A1	NIT 2	LC1D09	LRD05	0.63...1
–	–	0.25	0.76	–	–	GS1DDB	A1	NIT 4	LC1D09	LRD05	0.63...1
0.25	0.88	0.37	1	0.37	1						
0.37	1	0.55	1.36	0.55	1.2						
0.55	1.5	0.75	1.68	0.75	1.5	GS1DDB	A1	NIT 6	LC1D09	LRD06	1...1.7
0.75	2	–	–	–	–	GS1DDB	A1	NIT 10	LC1D09	LRD07	1.6...2.5
–	–	–	–	1.5	2.6	GS1DDB	A1	NIT 10	LC1D09	LRD08	2.5...4
1.5	3.5	1.5	3.06	2.2	3.8	GS1DDB	A1	NIT 16	LC1D09	LRD08	2.5...4
2.2	5	2.2	4.42	3	5	GS1DDB	A1	NIT 16	LC1D09	LRD10	4...6
3	6.5	3	5.77	4	6.5	GS1DDB	A1	NIT 20	LC1D09	LRD12	5.5...8
4	8.4	4	7.9	5.5	9	GS1DDB	A1	NIT 20	LC1D09	LRD14	7...10
5.5	11	5.5	10.4	7.5	12	GS1DDB	A1	NIT 20M25	LC1D12	LRD16	9...13
7.5	14	7.5	13.7	9	13.9	GS1DDB	A1	NIT 20M32	LC1D18	LRD21	12...18
9	18.1	9	16.9	–	–	GS2GB	A2	TIA 32M35	LC1D18	LRD21	12...18
11	21	11	20	11	18.4						
–	–	–	–	15	23	GS2GB	A2	TIA 32M50	LC1D25	LRD22	16...24
15	28.5	15	26.5	–	–	GS2GB	A2	TIA 32M63	LC1D32	LRD32	23...32
18.5	35	18.5	32.8	–	–	GS2GB	A3	TIS 63M80	LC1D40A	LRD340	25...40
22	41	22	39	–	–	GS2GB	A3	TIS 63M80	LC1D50A	LRD350	37...50
30	55	30	51.5	–	–	GS2GB	A3	TIS 63M100	LC1D65A	LRD365	48...65
–	–	37	64	–	–	GS2GB	A3	TIS 63M100	LC1D65A	LRD365	48...65
–	–	45	76	45	65	GS2LLB	A4	TCP 100M125	LC1D80	LRD3363	63...80
45	81	–	–	55	80	GS2LLB	A4	TCP 100M125	LC1D95	LRD3365	80...104
55	100	–	–	–	–	GS2LLB	A4	TCP 100M160	LC1D115	LR9D5369	90...150
–	–	55	90	–	–	GS2LLB	A4	TCP 100M160	LC1D115	LR9D5367	60...100
–	–	–	–	80	116	GS2LB	B2	TF 200	LC1D150	LR9D5369	90...150
80	138	80	132	–	–	GS2LB	B2	TF 200M250	LC1D150	LR9D5369	90...150

(1) For reversing operation, replace the prefix LC1 with LC2.

0.06 to 250 kW at 400/415 V: type 1 coordination											
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Circuit breaker	Contactor	
400/415 V			440 V			500 V			Reference <i>References in italics are available in CEE zone only</i>	Setting range of thermal trips	Reference ⁽²⁾
P	I _e	I _q ⁽¹⁾	P	I _e	I _q ⁽¹⁾	P	I _e	I _q ⁽¹⁾		A	
kW	A	kA	kW	A	kA	kW	A	kA			
0.06	0.2	50	0.06	0.19	50	–	–	–	GV2ME02 <i>GV2ME02AP</i>	0.16...0.25	LC1K06 or LC1D09
0.09	0.3	50	0.09 0.12	0.28 0.37	50	–	–	–	GV2ME03 <i>GV2ME03AP</i>	0.25...0.40	LC1K06 or LC1D09
0.12 0.18	0.44 0.6	50	–	–	–	–	–	–	GV2ME04 <i>GV2ME04AP</i>	0.40...0.63	LC1K06 or LC1D09
0.25 0.37	0.85 1.1	50	0.25 0.37	0.76 0.99	50	–	–	–	GV2ME05 <i>GV2ME05AP</i>	0.63...1	LC1K06 or LC1D09
–	–	–	–	–	–	0.37	0.88	50	GV2ME06 <i>GV2ME06AP</i>	1...1.6	LC1K06 or LC1D09
0.55	1.5	50	0.55	1.36	50	0.55	1.2	50	GV2ME06 <i>GV2ME06AP</i>	1...1.6	LC1K06 or LC1D09
–	–	–	–	–	–	0.75	1.5	50	GV2ME06 <i>GV2ME06AP</i>	1...1.6	LC1K06 or LC1D09
0.75	1.9	50	0.75	1.68	50	–	–	–	GV2ME07 <i>GV2ME07AP</i>	1.6...2.5	LC1K06 or LC1D09
–	–	–	1.1	2.37	50	1.1	2.2	50	GV2ME07 <i>GV2ME07AP</i>	1.6...2.5	LC1K06 or LC1D09
1.1 1.5	2.7 3.6	50	–	–	–	1.5	2.9	50	GV2ME08 <i>GV2ME08AP</i>	2.5...4	LC1K06 or LC1D09
1.5	3.6	50	1.5	3.06	50	2.2	3.9	50	GV2ME08 <i>GV2ME08AP</i>	2.5...4	LC1K06 or LC1D09
2.2	4.9	50	2.2	4.42	50	–	–	–	GV2ME10 <i>GV2ME10AP</i>	4...6.3	LC1K06 or LC1D09
–	–	–	3	5.77	50	3	5.2	50	GV2ME10 <i>GV2ME10AP</i>	4...6.3	LC1K06 or LC1D09
3	6.5	50	–	–	–	4	6.8	10	GV2ME14 <i>GV2ME14AP</i>	6...10	LC1K09 or LC1D09
4	8.5	50	4	7.9	15	5.5	9.2	10	GV2ME14 <i>GV2ME14AP</i>	6...10	LC1K09 or LC1D09
5.5	11.5	15	5.5	10.4	8	7.5	12.4	6	GV2ME16 <i>GV2ME16AP</i>	9...14	LC1K12 or LC1D12
7.5	15.5	15	7.5	13.7	8	9	13.9	6	GV2ME20 <i>GV2ME20AP</i>	13...18	LC1D18
–	–	–	9	16.9	8	–	–	–	GV2ME20 <i>GV2ME20AP</i>	13...18	LC1D18
9	18.1	15	11	20.1	6	11	17.6	4	GV2ME21 <i>GV2ME21AP</i>	17...23	LC1D25
11	22	15	–	–	–	15	23	4	GV2ME22 <i>GV2ME22AP</i>	20...25	LC1D25
15	29	10	15	26.5	6	18.5	28	4	GV2ME32 <i>GV2ME32AP</i>	24...32	LC1D32
18.5	35	50	18.5	32.8	50	22	33	10	GV3P40	30...40	LC1D40A
22	41	50	22	39	50	30	44	10	GV3P50	37...50	LC1D50A
30	55	50	30	51.5	50	37	53	10	GV3P65	48...65	LC1D65A
37	66	50	–	–	–	–	–	–	GV3P73	62...73	LC1D80A
–	–	–	37	64	70	45	64	30	GV4P80	40...80	LC1D65A
37	66	100	45	76	70	55	78	30	GV4P80	40...80	LC1D80
45	80	100	–	–	–	–	–	–	GV4P115	65...115	LC1D95
55	97	100	55	90	70	75	106	30	GV4P115	65...115	LC1D115
75	132	36	75	125	35	90	128	30	GV5P150F	70...150	LC1D150
–	–	–	90	146	35	–	–	–	⁽³⁾	–	⁽³⁾
90	160	36	–	–	–	110	156	30	⁽³⁾	–	⁽³⁾
110	195	36	–	–	–	–	–	–	⁽³⁾	–	⁽³⁾
160	280	36	318	280	35	–	–	–	⁽³⁾	–	⁽³⁾
–	–	–	–	–	–	220	308	30	⁽³⁾	–	⁽³⁾
200	350	36	220	318	35	–	–	–	⁽³⁾	–	⁽³⁾
250	430	36	250	401	35	335	460	30	⁽³⁾	–	⁽³⁾

⁽¹⁾ The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**.

⁽²⁾ For reversing operation, replace the prefix **LC1** with **LC2**.

⁽³⁾ Please consult your regional sales office.

0.06 to 250 kW at 400/415 V: type 2 coordination

Standard power ratings of 3-phase motors 50/60 Hz in categ or y AC-3									Circuit breaker	Setting range of thermal trips	Contactor Reference ⁽²⁾
400/415 V			440 V			500 V			Reference <i>References in italics are available in CEE zone only</i>	A	
P kW	I _e A	I _q ⁽¹⁾ kA	P kW	I _e A	I _q ⁽¹⁾ kA	P kW	I _e A	I _q ⁽¹⁾ kA			
0.06	0.2	130	0.06	0.19	130	–	–	–	GV2P02 or GV2ME02 or GV2ME02AP	0.16...0.25	LC1D09
–	–	–	0.09	0.28	130	–	–	–	GV2P03 or GV2ME03 or GV2ME03AP	0.25...0.4	LC1D09
0.09	0.3	130	0.12	0.37	130	–	–	–	GV2P04 or GV2ME04 or GV2ME04AP	0.4...0.63	LC1D09
0.12	0.44	130	–	–	–	–	–	–	GV2P05 or GV2ME05 or GV2ME05AP	0.63...1	LC1D09
0.18	0.6	130	0.18	0.55	130	–	–	–	GV2P06 or GV2ME06 or GV2ME06AP	1...1.6	LC1D09
0.25	0.85	130	0.25	0.76	130	–	–	–	GV2P06 or GV2ME06 or GV2ME06AP	1...1.6	LC1D09
0.37	1.1	130	0.37	0.99	130	–	–	–	GV2P07 or GV2ME07 or GV2ME07AP	1.6...2.5	LC1D09
–	–	–	–	–	–	0.37	0.88	130	GV2P08 or GV2ME08 or GV2ME08P	2.5...4	LC1D09
0.55	1.5	130	0.55	1.36	130	0.55	1.2	130	GV2P10 or GV2ME10 or GV2ME10AP	4...6.3	LC1D09
–	–	–	–	–	–	0.75	1.5	130	GV2ME10 or GV2ME10AP	4...6.3	LC1D09
0.75	1.9	130	0.75	1.68	130	–	–	–	GV2P10	4...6.3	LC1D09
–	–	–	1.1	2.37	130	1.1	2.2	130	GV2P14 or GV2ME14 or GV2ME14AP	6...10	LC1D09
1.1	2.7	130	–	–	–	1.5	2.9	130	GV2ME14 or GV2ME14AP	6...10	LC1D09
1.5	3.6	130	1.5	3.06	130	2.2	3.9	130	GV2P14	6...10	LC1D12
–	–	–	–	–	–	–	–	–	GV2P16 or GV2ME16 or GV2ME16AP	9...14	LC1D25
2.2	4.9	130	–	–	–	–	–	–	GV2P20 or GV2ME20 or GV2ME20AP	13...18	LC1D25
–	–	–	2.2	4.42	50	–	–	–	GV2P21 or GV2ME21 or GV2ME21AP	17...23	LC1D25
–	–	–	3	5.77	50	3	5.2	50	GV2P22 or GV2ME22 or GV2ME22AP	20...25	LC1D25
–	–	–	2.2	4.42	130	–	–	–	GV2P22	20...25	LC1D32
–	–	–	3	5.77	130	3	5.2	130	GV2P32 or GV2ME32 or GV2ME32AP	24...32	LC1D32
3	6.5	130	–	–	–	–	–	–	GV3P40	30...40	LC1D50A
4	8.5	130	–	–	–	–	–	–	GV3P40	30...40	LC1D65A
–	–	–	4	7.9	15	4	6.8	10	GV3P50	37...50	LC1D50A
–	–	–	–	–	–	5.5	9.2	10	GV3P50	37...50	LC1D65A
–	–	–	–	–	–	4	7.9	130	GV3P65	48...65	LC1D65A
5.5	11.5	130	5.5	10.4	50 or 8	7.5	12.4	42 or 6	GV3P65	48...65	LC1D65A
–	–	–	7.5	13.7	50 or 8	9	13.9	42 or 6	GV3P73	62...73	LC1D80A
7.5	15.5	50 or 15	9	16.9	20 or 8	–	–	–	GV4P80	40...80	LC1D65A
9	18.1	50 or 15	11	20.1	20 or 8	11	17.6	10 or 6	GV4P80	40...80	LC1D80
11	22	50 or 15	–	–	–	–	–	–	GV4P115	65...115	LC1D115
–	–	–	–	–	–	15	23	10 or 6	GV5P150H	70...150	LC1D150
15	29	50 or 10	15	26.5	20 or 6	18.5	28	10 or 4			
18.5	35	50	–	–	–	–	–	–			
–	–	–	18.5	32.8	50	22	33	10			
22	41	50	–	–	–	–	–	–			
–	–	–	22	39	50	30	44	10			
30	55	50	30	51.5	50	–	–	–			
–	–	–	–	–	–	37	53	10			
37	66	50	–	–	–	–	–	–			
–	–	–	37	64	70	–	–	–			
37	66	100	45	76	70	⁽³⁾	⁽³⁾	⁽³⁾			
45	80	100	55	90	70	⁽³⁾	⁽³⁾	⁽³⁾			
55	97	100	–	–	–	⁽³⁾	⁽³⁾	⁽³⁾			
75	132	70	75	125	65	–	–	–			
–	–	–	90	146	65	–	–	–			

(1) The breaking performance of circuit breakers GV2P can be increased by adding a current limiter GV1L3.

(2) Combinations with circuit breaker GV2ME are type 2 coordinated only at 400/415 V and 440 V.

(3) Please consult your regional sales office.

45 to 250 kW at 400 V: type 2 coordination (with TeSys GV4 / GV5 / GV6 circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
400 V			Product type ⁽¹⁾	I _r setting ⁽²⁾	I _{rm} ⁽²⁾	Product type
P	I _e	I _q (max)				
kW	A	kA		A	A	
45	80	100	GV4P/GV4PE/GV4PEM115●	86	774	LC1G115
55	97	100	GV4P/GV4PE/GV4PEM115●	100	900	LC1G115
55	97	70	GV5P150●	100	1300	LC1G115
75	132	70	GV5P150●	140	1820	LC1G150
90	160	70	GV5P220●	170	2210	LC1G185
110	195	70	GV5P220●	200	2600	LC1G225
110	195	70	GV6P320●	200	2600	LC1G265
132	230	70	GV6P320●	240	3120	LC1G265
160	280	70	GV6P320●	300	3900	LC1G330
200	350	70	GV6P500●	380	4940	LC1G400
220	380	70	GV6P500●	400	5200	LC1G500
250	430	70	GV6P500●	440	5720	LC1G500

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4P/GV4PE/GV4PEM115●			GV5P150●/ 220● GV6P320●/ 500●	
Breaking performance code	B	N	S	F	H
400 V	25	50	100	36	70

Coordination and standards

45 to 450 kW at 400 V: type 2 coordination (with ComPact NSX / NS circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
400 V			Product type ⁽¹⁾	I _r setting ⁽²⁾	I _{rm} ⁽²⁾	Product type
P	I _e	I _q (max)				
kW	A	kA		A	A	
45	80	130	NSX100● + MicroLogic 2.2 M	85	1105	LC1G115
55	97	130	NSX160● + MicroLogic 2.2 M ⁽³⁾	100	1300	LC1G115
75	132	130	NSX160● + MicroLogic 2.2 M ⁽³⁾	140	1820	LC1G150
90	160	130	NSX250● + MicroLogic 2.2 M ⁽³⁾	170	2210	LC1G185
110	195	130	NSX250● + MicroLogic 2.2 M ⁽³⁾	200	2600	LC1G225
110	195	130	NSX400● + MicroLogic 2.3 M ⁽³⁾	200	2600	LC1G265
132	230	130	NSX400● + MicroLogic 2.3 M ⁽³⁾	240	3120	LC1G265
160	280	130	NSX400● + MicroLogic 2.3 M ⁽³⁾	300	3900	LC1G330
200	350	130	NSX630● + MicroLogic 2.3 M ⁽³⁾	380	4940	LC1G400
220	380	130	NSX630● + MicroLogic 2.3 M ⁽³⁾	400	5200	LC1G500
250	430	130	NSX630● + MicroLogic 2.3 M ⁽³⁾	440	5720	LC1G500
300	500	130	NS800● + MicroLogic 5.0	560	5040	LC1G630
335	575	130	NS800● + MicroLogic 5.0	640	5760	LC1G630
355	610	130	NS800● + MicroLogic 5.0	640	5760	LC1G800
400	690	130	NS800● + MicroLogic 5.0	720	6480	LC1G800
450	770	130	NS1000● + MicroLogic 5.0	784	7840	LC1G800

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●/ NSX160●/ NSX250●/ NSX400●/ NSX630●					NS800●/ NS1000●
Breaking performance code	F	N	H	S	L	L
400 V	36	50	70	100	130	150

⁽²⁾ This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

⁽³⁾ Applicable also with MicroLogic 6.2 E-M and 6.3 E-M trip units.

55 to 300 kW at 440 V: type 2 coordination (with TeSys GV4/GV5/GV6 circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
440 V			Product type ⁽¹⁾	I _r setting ⁽²⁾	I _{rm} ⁽²⁾	Product type
P	I _e	I _q (max)		A	A	
kW	A	kA				
55	88	70	GV4P/GV4PE/GV4PEM115●	93	837	LC1G115
55	88	65	GV5P150●	90	1170	LC1G115
75	120	65	GV5P150●	130	1690	LC1G150
90	145	65	GV5P150●	150	1950	LC1G150
110	177	65	GV5P220●	185	2405	LC1G185
132	209	65	GV5P220●	210	2730	LC1G225
160	255	65	GV6P320●	260	3380	LC1G265
200	318	65	GV6P320●	320	4160	LC1G330
220	343	65	GV6P500●	350	4550	LC1G400
250	390	65	GV6P500●	400	5200	LC1G400
300	466	65	GV6P500●	470	6110	LC1G500

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4P/GV4PE/GV4PEM115●			GV5P150●/ 220●		GV6P320●/ 500●	
	B	N	S	F	H	F	H
440 V	20	50	70	35	65	30	65

55 to 450 kW at 440 V: type 2 coordination (with ComPact NSX/NS circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
440 V			Product type ⁽¹⁾	I _r setting ⁽²⁾	I _{rm} ⁽²⁾	Product type
P	I _e	I _q (max)		A	A	
kW	A	kA				
55	88	130	NSX100● + MicroLogic 2.2 M	90	1170	LC1G115
75	120	130	NSX160● + MicroLogic 2.2 M ⁽³⁾	130	1690	LC1G150
90	145	130	NSX160● + MicroLogic 2.2 M ⁽³⁾	150	1950	LC1G150
110	177	130	NSX250● + MicroLogic 2.2 M ⁽³⁾	185	2405	LC1G185
132	209	130	NSX250● + MicroLogic 2.2 M ⁽³⁾	210	2730	LC1G225
160	255	130	NSX400● + MicroLogic 2.3 M ⁽³⁾	260	3380	LC1G265
200	318	130	NSX400● + MicroLogic 2.3 M ⁽³⁾	320	4160	LC1G330
220	343	130	NSX630● + MicroLogic 2.3 M ⁽³⁾	350	4550	LC1G400
250	390	130	NSX630● + MicroLogic 2.3 M ⁽³⁾	400	5200	LC1G400
300	466	130	NSX630● + MicroLogic 2.3 M ⁽³⁾	470	6110	LC1G500
335	521	130	NS800● + MicroLogic 5.0	560	5040	LC1G630
355	554	130	NS800● + MicroLogic 5.0	560	5040	LC1G630
400	627	130	NS800● + MicroLogic 5.0	640	5760	LC1G800
450	695	130	NS800● + MicroLogic 5.0	720	6480	LC1G800

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●/ NSX160●/ NSX250●					NSX400●/ NSX630●					NS800●
	F	N	H	S	L	F	N	H	S	L	L
440 V	35	50	65	90	130	30	42	65	90	130	130

⁽²⁾ This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

⁽³⁾ Applicable also with MicroLogic 6.2 M and 6.3 M trip units.

65 to 295 kW at 500 V: type 2 coordination (with TeSys GV4 / GV5 / GV6 circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
500 V			Product type ⁽¹⁾	I _r setting ⁽²⁾	I _{rm} ⁽²⁾	Product type
P	I _e	I _q (max)		A	A	
kW	A	kA				
65	92	30	GV4P/GV4PE/GV4PEM115●	93	837	LC1G115
65	92	50	GV5P150●	100	1300	LC1G115
90	128	50	GV5P150●	130	1690	LC1G150
110	156	50	GV5P220●	170	2210	LC1G185
132	184	50	GV5P220●	185	2405	LC1G225
160	224	50	GV6P320●	240	3120	LC1G265
200	280	50	GV6P320●	300	3900	LC1G330
250	344	50	GV6P500●	350	4550	LC1G400
295	405	50	GV6P500●	440	5720	LC1G500

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4P/GV4PE/GV4PEM115●			GV5P150● / 220●		GV6P320● / 500●	
	B	N	S	F	H	F	H
500 V	10	25	30	30	50	25	50

65 to 425 kW at 500 V: type 2 coordination (with ComPacT NSX / NS circuit breakers)						
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
500 V			Product type ⁽¹⁾	I _r setting ⁽²⁾	I _{rm} ⁽²⁾	Product type
P	I _e	I _q (max)		A	A	
kW	A	kA				
65	92	70	NSX100● + MicroLogic 2.2 M	95	1235	LC1G115
65	92	70	NSX160● + MicroLogic 2.2 M ⁽³⁾	95	1235	LC1G115
90	128	70	NSX160● + MicroLogic 2.2 M ⁽³⁾	130	1690	LC1G150
110	156	70	NSX250● + MicroLogic 2.2 M ⁽³⁾	170	2210	LC1G185
132	184	70	NSX250● + MicroLogic 2.2 M ⁽³⁾	185	2405	LC1G225
160	224	70	NSX400● + MicroLogic 2.3 M ⁽³⁾	240	3120	LC1G265
200	280	70	NSX400● + MicroLogic 2.3 M ⁽³⁾	300	3900	LC1G330
250	344	70	NSX630● + MicroLogic 2.3 M ⁽³⁾	350	4550	LC1G400
295	405	70	NSX630● + MicroLogic 2.3 M ⁽³⁾	440	5720	LC1G500
375	516	70	NS800● + MicroLogic 5.0	560	5040	LC1G630
425	584	70	NS800● + MicroLogic 5.0	640	5760	LC1G800

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●					NSX160● / NSX250●					NSX400● / NSX630●					NS800●
	F	N	H	S	L	F	N	H	S	L	F	N	H	S	L	L
500 V	25	36	50	65	70	30	36	50	65	70	25	30	50	65	70	100

(2) This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

(3) Applicable also with MicroLogic 6.2 M and 6.3 M trip units.

0.06 to 22 kW at 690 V: type 2 coordination

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Limiting block	Circuit breaker		Contactor	
690 V			Product type	Product type	I _r Setting ⁽¹⁾	I _{rm} ⁽¹⁾	Product type
P	I _e	I _q			A	A	
kW	A	kA					
0.06	0.12	100		GV2P01	0.16	1.5	LC1D09
0.09	0.17	100		GV2P02	0.25	2.4	LC1D09
0.12	0.23	100		GV2P02	0.25	2.4	LC1D09
0.18	0.35	100		GV2P03	0.4	5	LC1D09
0.25	0.49	100		GV2P04	0.63	8	LC1D09
0.37	0.64	100		GV2P05	1	13	LC1D09
0.55	0.87	100		GV2P05	1	13	LC1D09
0.75	1.1	100		GV2P06	1.6	22.5	LC1D09
1.1	1.6	65	LA9LB920	GV2P07	1.6	22.5	LC1D25
1.5	2.1	65	LA9LB920	GV2P07	2.5	33.5	LC1D25
2.2	2.8	65	LA9LB920	GV2P08	4	51	LC1D25
3	3.8	65	LA9LB920	GV2P08	4	51	LC1D25
4	4.9	65	LA9LB920	GV2P10	6.3	78	LC1D25
5.5	6.7	65	LA9LB920	GV2P14	10	138	LC1D25
7.5	8.9	65	LA9LB920	GV2P14	10	138	LC1D25
9	12.8	65	LA9LB920	GV2P16	14	170	LC1D25
11	12.8	65	LA9LB920	GV2P16	14	170	LC1D25
15	17	65	LA9LB920	GV2P20	18	223	LC1D25
18.5	21	65	LA9LB920	GV2P21	23	327	LC1D32
22	24	65	LA9LB920	GV2P32	32	416	LC1D40A

(1) This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

30 to 560 kW at 690 V: type 2 coordination (with ComPacT NSX/NS circuit breakers)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker			Contactor
690 V			Product type ⁽¹⁾	I _r Setting ⁽²⁾	I _{rm} ⁽²⁾	Product type
P	I _e	I _q (max)		A	A	
kW	A	kA				
30	32	100	NSX100● + MicroLogic 2.2 M	36	468	LC1G115
37	39	100	NSX100● + MicroLogic 2.2 M	40	520	LC1G115
45	47	100	NSX100● + MicroLogic 2.2 M	50	650	LC1G115
55	57	100	NSX100● + MicroLogic 2.2 M	60	780	LC1G115
75	77	100	NSX100● + MicroLogic 2.2 M	80	1040	LC1G115
90	93	100	NSX250● + MicroLogic 2.2 M ⁽³⁾	95	1235	LC1G150
110	113	100	NSX250● + MicroLogic 2.2 M ⁽³⁾	115	1495	LC1G185
132	134	100	NSX250● + MicroLogic 2.2 M ⁽³⁾	140	1820	LC1G225
160	162	100	NSX250● + MicroLogic 2.2 M ⁽³⁾	170	2210	LC1G225
200	203	100	NSX250● + MicroLogic 2.2 M ⁽³⁾	210	2730	LC1G265
220	223	100	NSX400● + MicroLogic 2.3 M ⁽³⁾	240	3120	LC1G330
250	250	100	NSX400● + MicroLogic 2.3 M ⁽³⁾	260	3380	LC1G400
315	313	100	NSX630● + MicroLogic 2.3 M ⁽³⁾	320	4160	LC1G400
335	335	100	NSX630● + MicroLogic 2.3 M ⁽³⁾	350	4550	LC1G500
355	354	100	NSX630● + MicroLogic 2.3 M ⁽³⁾	380	4940	LC1G500
375	374	100	NSX630● + MicroLogic 2.3 M ⁽³⁾	380	4940	LC1G630
400	400	100	NSX630● + MicroLogic 2.3 M ⁽³⁾	440	5720	LC1G630
450	455	100	NSX630● + MicroLogic 2.3 M ⁽³⁾	470	6110	LC1G630
475	475	100	NSX630● + MicroLogic 2.3 M ⁽³⁾	500	6500	LC1G630
500	493	100	NSX630● + MicroLogic 2.3 M ⁽³⁾	500	6500	LC1G630
560	551	75	NS800● + MicroLogic 5.0	560	7280	LC1G800

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●/ NSX250●/ NSX400●/ NSX630●		NS800●
Breaking performance code	HB1	HB2	LB
690 V	75	100	75

(2) This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

(3) Applicable also with MicroLogic 6.2 E-M and 6.3 E-M trip units.

½ to 80 hp at 460 V - 3P

GV2P + contactor: compact, high SCCR solution.

GV3P + contactor: medium power, Everlink (long lasting power connection).

GV4PB + contactor: high power, advanced protection settings, Everlink (long lasting power connection), 18 (GV4PB●●●B), 35 (GV4PB●●●N) or 65 (GV4PB●●●S) kA SCCR.

Standard power ratings						Circuit breaker		Contactor		Circuit breaker		Contactor		Circuit breaker		Contactor		
200 V 3P		230 V 3P		460 V 3P		Product reference	Dial range	Product reference	Comb. SCCR 480Y	Product reference	Dial range	Product reference	Comb. SCCR 480Y	Product reference	Dial range	Product reference	SCCR 480Y As applied	
HP	FLA	HP	FLA	HP	FLA													(2)
						A		kA		A		kA		A		kA		
		½	1.1	GV2P06	1 to 1.6	LC1D09	100					GV4PB02S	0.8 to 2	LC1D09	65			
		¾	1.6	GV2P06	1 to 1.6	LC1D09	100					GV4PB02S	0.8 to 2	LC1D09	65			
½	2.5	½	2.2	1	2.1	GV2P07	1.6 to 2.5	LC1D09	100			GV4PB03S	1.4 to 3.5	LC1D09	65			
		1½	3	GV2P08	2.5 to 4	LC1D09	100					GV4PB03S	1.4 to 3.5	LC1D09	65			
¾	3.7	¾	3.2	2	3.4	GV2P08	2.5 to 4	LC1D09	100			GV4PB07S	2.9 to 7	LC1D09	65			
1	4.6	1	4.2	3	4.8	GV2P10	4 to 6.3	LC1D09	100			GV4PB07S	2.9 to 7	LC1D09	65			
		1½	6	GV2P10	4 to 6.3	LC1D09	100					GV4PB12S	5 to 12.5	LC1D12	65			
1½	6.9	2	6.8	GV2P14	6 to 10	LC1D12	100					GV4PB12S	5 to 12.5	LC1D12	65			
2	7.8		5	7.6	GV2P14	6 to 10	LC1D12	100				GV4PB12S	5 to 12.5	LC1D12	65			
		3	9.6	GV2P14	6 to 10	LC1D12	100	GV3P13	9 to 13	LC1D18	65	GV4PB12S	5 to 12.5	LC1D12	65			
3	11		7½	11	GV2P16	9 to 14	LC1D18	50 ⁽⁵⁾	GV3P13	9 to 13	LC1D18	65	GV4PB25S	10 to 25	LC1D25	65		
		10	14	GV2P16	9 to 14	LC1D18	50 ⁽⁵⁾	GV3P18	12 to 18	LC1D18	65	GV4PB25S	10 to 25	LC1D25	65			
5	17.5	5	15.2	GV2P20	13 to 18	LC1D18	50 ⁽⁵⁾	GV3P18	12 to 18	LC1D18	65	GV4PB25S	10 to 25	LC1D25	65			
		7½	22	15	21	GV2P21	17 to 23	LC1D25	50 ⁽⁵⁾	GV3G25	17 to 25	LC1D25	65	GV4PB25S	10 to 25	LC1D25	65	
7½	25.3			GV2P22	20 to 25	LC1D25	50 ⁽⁵⁾	GV3P32	23 to 32	LC1D32	65	GV4PB50S	20 to 50	LC1D50A	65			
		10	28	20	27			GV3P32	23 to 32	LC1D32	65	GV4PB50S	20 to 50	LC1D50A	65			
10	32.2		25	34				GV3P40	30 to 40	LC1D40A	65	GV4PB50S	20 to 50	LC1D50A	65			
		15	42	30	40			GV3P50	37 to 50	LC1D50A	65	GV4PB50S	20 to 50	LC1D50A	65			
15	48							GV3P65	48 to 65	LC1D65A	65	GV4PB50S	20 to 50	LC1D50A	65			
		20	54	40	52			GV3P65	48 to 65	LC1D65A	65	GV4PB80S	40 to 80	LC1D80	65			
20	62.1											GV4PB115S	40 to 80	LC1D80	65			
25	78.2	25	68	50	65							GV4PB115S	40 to 80	LC1D80	65			
30	92	30	80	60	77							GV4PB115S	65 to 115	LC1D115	65			

(1) Motor Full Load Amp Sizes are based on NEC Table 430.250.

(2) Requires use of GV1G09 or GV2GH7 line spacer for Type F rating.

(3) Add coil suffix to complete reference part number. For example, an LC1D09G7 includes a 120 V AC coil.

(4) Requires use of GV3G66 line spacer and GVAM11 short-circuit signaling contact for Type F rating.

(5) SCCR is 42 kA at 480Y when using GV2G busbar links.

0.06 to 250 kW at 400/415 V: type 1 coordination										Circuit breaker			Contactor	Thermal overload relay	
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Reference	Rating	I _{rm} ⁽¹⁾	Reference ⁽²⁾	Reference	Setting range	
400/415 V			440 V			500 V									
P	I _e	I _q	P	I _e	I _q	P	I _e	I _q		A	A			A	
kW	A	kA	kW	A	kA	kW	A	kA							
0.06	0.2	50	0.06	0.19	50	–	–	–	GV2LE03	0.4	5	LC1K06	LR2K0302	0.16...0.23	
–	–	–	0.09	0.28	50	–	–	–	GV2LE03	0.4	5	LC1K06	LR2K0303	0.23...0.36	
0.09	0.3	50	0.12	0.37	50	–	–	–	GV2LE03	0.4	5	LC1K06	LR2K0304	0.36...0.54	
0.12	0.44	50	–	–	–	–	–	–	GV2LE04	0.63	8	LC1K06	LR2K0304	0.36...0.54	
0.18	0.6	50	0.18	0.55	50	–	–	–	GV2LE04	0.63	8	LC1K06	LR2K0305	0.54...0.8	
–	–	–	0.25	0.76	50	–	–	–	GV2LE05	1	13	LC1K06	LR2K0305	0.54...0.8	
0.25	0.85	50	–	–	–	–	–	–	GV2LE05	1	13	LC1K06	LR2K0306	0.8...1.2	
0.37	1.1	50	0.37	1	50	0.37	0.88	50	GV2LE05	1	13	LC1K06	LR2K0306	0.8...1.2	
0.55	1.5	50	0.55	1.36	50	0.55	1.2	50	GV2LE06	1.6	22.5	LC1K06	LR2K0307	1.2...1.8	
–	–	–	–	–	–	0.75	1.5	50	GV2LE06	1.6	22.5	LC1K06	LR2K0307	1.2...1.8	
–	–	–	0.75	1.68	50	–	–	–	GV2LE07	2.5	33.5	LC1K06	LR2K0307	1.2...1.8	
0.75	1.9	50	–	–	–	–	–	–	GV2LE07	2.5	33.5	LC1K06	LR2K0308	1.8...2.6	
1.1	2.7	50	1.1	2.37	50	1.1	2.2	50	GV2LE07	2.5	33.5	LC1K06	LR2K0308	1.8...2.6	
1.5	3.6	50	1.5	3.06	50	1.5	2.9	50	GV2LE08	4	51	LC1K06	LR2K0310	2.6...3.7	
–	–	–	–	–	–	2.2	3.9	50	GV2LE08	4	51	LC1K06	LR2K0312	3.7...5.5	
2.2	4.9	50	2.2	4.4	50	3	5.2	50	GV2LE10	6.3	78	LC1K06	LR2K0312	3.7...5.5	
–	–	–	3	5.77	50	–	–	–	GV2LE10	6.3	78	LC1K06	LR2K0314	5.5...8	
–	–	–	4	7.9	15	–	–	–	GV2LE14	10	138	LC1K09	LR2K0314	5.5...8	
3	6.5	50	–	–	–	4	6.8	10	GV2LE14	10	138	LC1K09	LR2K0314	5.5...8	
4	8.5	50	–	–	–	–	–	–	GV2LE14	10	138	LC1K09	LR2K0316	8...11.5	
5.5	11.5	15	5.5	10.4	8	7.5	12.4	6	GV2LE16	14	170	LC1K12	LR2K0321	10...14	
–	–	–	7.5	13.7	8	9	13.9	6	GV2LE16	14	170	LC1D18	LRD21	12...18	
7.5	15.5	15	9	16.9	8	–	–	–	GV2LE20	18	223	LC1D18	LRD21	12...18	
9	18.1	15	–	–	–	11	17.6	4	GV2LE22	25	327	LC1D25	LRD22	16...24	
11	22	15	11	20.1	6	15	23	4	GV2LE22	25	327	LC1D25	LRD22	16...24	
15	29	10	15	26.5	6	18.5	28	4	GV2LE32	32	416	LC1D32	LRD32	23...32	
18.5	35	50	18.5	32.5	50	22	33	10	GV3L40	40	560	LC1D40A	LRD340	30...40	
22	41	50	22	39	50	30	44	10	GV3L50	50	700	LC1D50A	LRD350	37...50	

(1) I_{rm}: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

0.06 to 250 kW at 400/415 V: type 1 coordination														
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Circuit breaker			Contactor	Thermal overload relay	
400/415 V			440 V			500 V			Reference	Rating I _{rm} ⁽¹⁾		Reference ⁽²⁾	Reference	Setting range
P	I _e	I _q	P	I _e	I _q	P	I _e	I _q		A	A			A
kW	A	kA	kW	A	kA	kW	A	kA						
30	55	50	30	51.5	50	37	53	10	GV3L65	65	910	LC1D65A	LRD365	48...65
-	-	-	37	64	50	37	53	10	GV3L65	65	910	LC1D65A	LRD365	48...65
-	-	-	-	-	-	45	64	50	GV3L65	65	910	LC1D80	LRD3361	55...70
37	66	50	-	-	-	-	-	-	GV3L73	73	1120	LC1D80A	LRD380	62...80
-	-	-	37	64	70	-	-	-	GV4L80	80	880	LC1D65A	LRD365	48...65
-	-	-	-	-	-	45	64	30	GV4L80	80	880	LC1D80	LRD3361	55...70
37	66	100	-	-	-	-	-	-	GV4L80	80	1040	LC1D80	LRD3361	55...70
-	-	-	45	76	70	55	78	30	GV4L80	80	1040	LC1D80	LRD3363	63...80
45	80	100	-	-	-	-	-	-	GV4L115	115	1380	LC1D95	LRD3365	80...104
-	-	-	-	-	-	75	106	30	GV4L115	115	1380	LC1D115	LRD4367	95...120
-	-	-	55	90	70	-	-	-	GV4L115	115	1380	LC1D115	LRD4365	80...104
55	97	100	-	-	-	-	-	-	GV4L115	115	1495	LC1D115	LRD4367	95...120
-	-	-	-	-	-	50	90	⁽³⁾	NSX100●MA ⁽³⁾	100	1200	LC1D115	LRD4365	80...104
-	-	-	-	-	-	75	106	⁽³⁾	NSX160●MA ⁽³⁾	150	1500	LC1D115	LRD4367	95...120
55	97	⁽³⁾	-	-	-	-	-	-	NSX160●MA ⁽³⁾	150	1350	LC1D115	LRD4367	95...120
75	132	⁽³⁾	75	125	⁽³⁾	90	128	⁽³⁾	NSX160●MA ⁽³⁾	150	1800	LC1D150	LRD4369	110...140
-	-	-	90	146	⁽³⁾	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
90	160	⁽³⁾	-	-	-	110	156	⁽³⁾	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
110	195	⁽³⁾	-	-	-	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	110	178	⁽³⁾	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	-	-	-	132	184	⁽³⁾	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	132	215	⁽³⁾	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
132	230	⁽³⁾	-	-	-	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	-	-	-	160	224	⁽³⁾	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	160	256	⁽³⁾	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
160	280	⁽³⁾	200	321	⁽³⁾	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	-	-	-	200	280	⁽³⁾	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	-	-	-	220	310	⁽³⁾	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
200	350	⁽³⁾	220	353	⁽³⁾	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	250	401	⁽³⁾	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	-	-	-	250	344	⁽³⁾	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
220	388	⁽³⁾	-	-	-	-	-	-	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
250	430	⁽³⁾	280	470	⁽³⁾	315	432	⁽³⁾	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-
-	-	-	-	-	-	355	488	⁽³⁾	⁽⁴⁾	-	-	⁽⁴⁾	⁽⁴⁾	-

(1) I_{rm}: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

(3) Reference to be completed by replacing the ● with the breaking performance code:

Breaking performance I _q (kA)	NSX100●MA	NSX160●MA and NSX250●MA	NSX400● and NSX630●
400/415 V	36	70	150
440 V	35	65	130
500 V	25	50	70
660/690 V	8	10	20
Code	F	H	L

(4) Please consult your regional sales office.

0.06 to 250 kW at 400/415 V: type 2 coordination										Circuit breaker			Contactor		Thermal overload relay	
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Reference			Reference (2)		Reference		Setting range
400/415 V			440 V			500 V			Reference	Rating	I _{rm} (1)	Reference (2)	Reference	Setting range		
P	I _e	I _q	P	I _e	I _q	P	I _e	I _q								
kW	A	kA	kW	A	kA	kW	A	kA	A	A	A	A	A			
0.06	0.2	130	0.06	0.19	130	–	–	–	GV2L03 or LE03	0.4	5	LC1D09	LRD02	0.16...0.25		
0.09	0.3	130	0.09	0.28	130	–	–	–	GV2L03 or LE03	0.4	5	LC1D09	LRD03	0.25...0.40		
–	–	–	0.12	0.37	130	–	–	–	–	–	–	–	–	–		
0.12	0.44	130	–	–	–	–	–	–	GV2L04 or LE04	0.63	8	LC1D09	LRD04	0.4...0.63		
0.18	0.6	130	0.18	0.55	130	–	–	–	–	–	–	–	–	–		
0.25	0.85	130	0.25	0.76	130	–	–	–	GV2L05 or LE05	1	13	LC1D09	LRD05	0.63...1		
0.37	1.1	130	0.37	0.99	130	–	–	–	–	–	–	–	–	–		
–	–	–	–	–	–	0.37	0.88	130	GV2L05 or LE05	1	13	LC1D09	LRD06	1...1.7		
0.55	1.5	130	–	–	–	0.55	1.2	130	GV2L06 or LE06	1.6	22.5	LC1D09	LRD06	1...1.7		
–	–	–	0.55	1.36	130	0.75	1.5	130	–	–	–	–	–	–		
0.75	1.9	130	0.75	1.68	130	1.1	2.2	130	GV2L07 or LE07	2.5	33.5	LC1D09	LRD07	1.6...2.5		
1.1	2.7	130	1.1	2.37	130	1.5	2.9	130	GV2L08 or LE08	4	51	LC1D09	LRD08	2.5...4		
1.5	3.6	130	–	–	–	2.2	3.9	130	–	–	–	–	–	–		
–	–	–	1.5	3.06	130	–	–	–	GV2L08 or LE08	4	51	LC1D09	LRD10	4...6		
2.2	4.9	130	–	–	–	–	–	–	GV2L10 or LE10	6.3	78	LC1D09	LRD10	4...6		
–	–	–	–	–	–	3	5.2	13	–	–	–	–	–	–		
–	–	–	2.2	4.42	50	–	–	–	GV2LE10	6.3	78	LC1D09	LRD10	4...6		
–	–	–	3	5.77	50	3	5.2	50	–	–	–	–	–	–		
–	–	–	2.2	4.42	130	–	–	–	GV2L10	6.3	78	LC1D09	LRD10	4...6		
–	–	–	3	5.77	130	3	5.2	130	–	–	–	–	–	–		
3	6.5	130	–	–	–	–	–	–	GV2L14 or LE14	10	10	LC1D09	LRD12	5.5...8		
–	–	–	–	–	–	4	6.8	10	GV2LE14	10	138	LC1D12	LRD12	5.5...8		
–	–	–	–	–	–	4	6.8	50	GV2L14	10	138	LC1D12	LRD12	5.5...8		
4	8.5	130	–	–	–	–	–	–	GV2L14 or LE14	10	138	LC1D09	LRD14	7...10		
–	–	–	4	7.9	15	–	–	–	GV2LE14	10	138	LC1D09	LRD14	7...10		
–	–	–	4	7.9	130	–	–	–	GV2L14	10	138	LC1D09	LRD14	7...10		
–	–	–	–	–	–	5.5	9.2	10	GV2LE14	10	138	LC1D09	LRD14	7...10		
–	–	–	–	–	–	5.5	9.2	50	GV2L14	10	138	LC1D09	LRD14	7...10		
5.5	11.5	130	5.5	10.4	50	7.5	12.4	42	GV2L16	14	170	LC1D25	LRD16	9...13		
–	–	–	7.5	13.7	50	–	–	–	GV2L16	14	170	LC1D25	LRD21	12...18		
7.5	15.5	50	9	16.9	20	9	13.9	10	GV2L20	18	223	LC1D25	LRD21	12...18		
9	18.1	50	–	–	–	–	–	–	GV2L22	25	327	LC1D25	LRD22	16...24		
11	22	50	11	20.1	20	–	–	–	–	–	–	–	–	–		
–	–	–	–	–	–	11	17.6	10	GV2L22	25	327	LC1D32	LRD22	16...24		
–	–	–	–	–	–	15	23	10	–	–	–	–	–	–		
15	29	50	15	26.5	50	–	–	–	GV3L32	32	448	LC1D40A	LRD332	23...32		
–	–	–	–	–	–	18.5	28	10	GV3L32	32	448	LC1D65A	LRD332	23...32		

(1) I_{rm}: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

0.18 to 22 kW at 690 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Limiting block	Circuit breaker			Contactor	Thermal overload relay	
690 V			Product type	Product type	I _r setting ⁽¹⁾	I _{rm} ⁽¹⁾	Product type	Product type	Setting range
P	I _e	I _q			A	A			A
kW	A	kA							
0.18	0.35	100	–	GV2L03	0.4	5	LC1D09	LRD03	0.25...0.4
0.25	0.49	100	–	GV2L04	0.63	8	LC1D09	LRD04	0.4...0.63
0.37	0.64	100	–	GV2L05	1	13	LC1D09	LRD05	0.63...1
0.55	0.87	100	–	GV2L05	1	13	LC1D09	LRD05	0.63...1
0.75	1.1	100	–	GV2L06	1.6	22.5	LC1D09	LRD06	1...1.6
1.1	1.6	100	–	GV2L06	1.6	22.5	LC1D09	LRD06	1...1.6
1.5	2.1	65	LA9LB920 ⁽²⁾	GV2L07	2.5	33.5	LC1D25	LRD07	1.6...2.5
2.2	2.8	65	LA9LB920 ⁽²⁾	GV2L08	4	51	LC1D25	LRD08	2.5...4
3	3.8	65	LA9LB920 ⁽²⁾	GV2L08	4	51	LC1D25	LRD08	2.5...4
4	4.9	65	LA9LB920 ⁽²⁾	GV2L10	6.3	78	LC1D25	LRD10	4...6
5.5	6.7	65	LA9LB920 ⁽²⁾	GV2L14	10	138	LC1D32	LRD12	5.5...8
7.5	8.9	65	LA9LB920 ⁽²⁾	GV2L14	10	138	LC1D32	LRD14	7...10
9	10.6	65	LA9LB920 ⁽²⁾	GV2L16	14	170	LC1D32	LRD16	9...13
11	12.8	65	LA9LB920 ⁽²⁾	GV2L16	14	170	LC1D32	LRD16	9...13
15	17	65	LA9LB920 ⁽²⁾	GV2L20	18	223	LC1D32	LRD21	12...18
18.5	21	65	LA9LB920 ⁽²⁾	GV2L22	25	327	LC1D32	LRD22	16...24
22	24	65	LA9LB920 ⁽²⁾	GV2L22	25	327	LC1D32	LRD32	23...32
22	24	65	LA9LB920 ⁽²⁾	GV2L32	32	416	LC1D40A	LRD332	23...32

(1) This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

(2) For more information about the current limiter LA9LB920, see pages A4/31 and A4/61.

0.06 to 250 kW at 400/415 V: type 2 coordination														
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3									Circuit breaker			Contactor	Thermal overload relay	
400/415 V			440 V			500 V			Reference	Rating	I _{rm} ⁽¹⁾	Reference ⁽²⁾	Reference	Setting range
P	I _e	I _q	P	I _e	I _q	P	I _e	I _q		A	A			A
kW	A	kA	kW	A	kA	kW	A	kA						
18.5	35	50	–	–	–	–	–	–	GV3L40	40	560	LC1D50A	LRD340	30...40
–	–	–	18.5	32.5	50	–	–	–	GV3L40	40	560	LC1D65A	LRD340	30...40
22	41	50	–	–	–	–	–	–	GV3L50	50	700	LC1D50A	LRD350	37...50
–	–	–	22	39	50	30	44	10	GV3L50	50	700	LC1D65A	LRD350	37...50
30	55	50	30	51.5	50	37	53	10	GV3L65	65	910	LC1D65A	LRD365	48...65
37	66	50	–	–	–	–	–	–	GV3L73	73	1120	LC1D80A	LRD380	62...80
45	60	50	–	–	–	–	–	–	GV3L80	80	1120	LC1D95	LRD3363	63...80
–	–	–	37	64	70	–	–	–	GV4L80	80	880	LC1D65A	LRD365	48...65
37	66	100	45	76	70	(4)	(4)	(4)	GV4L80	80	1040	LC1D80	LRD3363	63...80
45	80	100	55	90	70	(4)	(4)	(4)	GV4L115	115	1380	LC1D115	LR9D5367	60...100
55	97	100	–	–	–	(4)	(4)	(4)	GV4L115	115	1495	LC1D115	LR9D5369	90...150
–	–	–	–	–	–	55	78	(3)	NSX100●MA ⁽³⁾	100	1040	LC1D80	LRD3363	63...80
45	80	(3)	55	90	(3)	–	–	–	NSX100●MA ⁽³⁾	100	1300	LC1D115	LR9D5367	60...100
55	97	(3)	–	–	–	–	–	–	NSX160●MA ⁽³⁾	150	1500	LC1D115	LR9D5369	90...150
–	–	–	–	–	–	75	106	(3)	NSX160●MA ⁽³⁾	150	1950	LC1D115	LR9D5369	90...150
75	132	(3)	75	125	(3)	–	–	–	NSX160●MA ⁽³⁾	150	1950	LC1D150	LR9D5369	90...150
–	–	–	90	146	(3)	–	–	–	NSX160●MA ⁽³⁾	150	1950	LC1D150	LR9D5369	90...150
–	–	–	–	–	–	90	128	(3)	NSX160●MA ⁽³⁾	150	1200	LC1D150	LR9D5369	90...150

(1) I_{rm}: setting current of the magnetic trip.

(2) For reversing operation, replace the prefix LC1 with LC2.

(3) Reference to be completed by replacing the ● with the breaking performance code:

Breaking performance I _q (kA)	NSX100●MA	NSX160●MA and NSX250●MA	NSX400● and NSX630●
400/415 V	36	70	70
440 V	35	65	65
500 V	25	50	50
660/690 V	8	10	20
Code	F	H	L

(4) Please consult your regional sales office.

45 to 335 kW at 400 V: type 2 coordination (with TeSys GV4 or ComPacT NSX circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker		Contactor	Thermal overload relay	
400 V			Product type ⁽¹⁾	I _{rm} ⁽²⁾	Product type	Product type	I _r setting ⁽²⁾
P	I _e	I _q (max)					
kW	A	kA		A			A
45	80	100	GV4L/GV4LE115●	1265	LC1G115	LR9G115	80
45	80	100	NSX100● + MA	1100	LC1G115	LR9G115	80
55	97	130	GV4L/GV4LE115●	1265	LC1G115	LR9G225	97
55	97	130	NSX160● + MA	1500	LC1G115	LR9G225	97
75	132	130	NSX160● + MA	1800	LC1G150	LR9G225	132
90	160	130	NSX250● + MA	2640	LC1G185	LR9G225	160
110	195	130	NSX250● + MA	2640	LC1G225	LR9G225	195
110	195	130	NSX400● + MicroLogic 1.3 M	3520	LC1G265	LR9G500	195
132	230	130	NSX400● + MicroLogic 1.3 M	3520	LC1G265	LR9G500	230
160	280	130	NSX400● + MicroLogic 1.3 M	3840	LC1G330	LR9G500	280
200	350	130	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	350
220	380	130	NSX630● + MicroLogic 1.3 M	5500	LC1G500	LR9G500	380
250	430	130	NSX630● + MicroLogic 1.3 M	6000	LC1G500	LR9G500	430
300	500	130	NS800● + MicroLogic 5.0 LR OFF	6400	LC1G630	LR9G630	500
335	575	130	NS800● + MicroLogic 5.0 LR OFF	7200	LC1G630	LR9G630	575

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4L115●/ GV4LE115●			NSX100●/ NSX160●/ NSX250●/ NSX400●/ NSX630●					NS800●
	B	N	S	F	N	H	S	L	L
400 V	25	50	100	36	50	70	100	130	150

55 to 355 kW at 440 V: type 2 coordination (with TeSys GV4 or ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker		Contactor	Thermal overload relay	
440 V			Product type ⁽¹⁾	I _{rm} ⁽²⁾	Product type	Product type	I _r setting ⁽²⁾
P	I _e	I _q (max)					
kW	A	kA		A			A
55	88	70	GV4L/GV4LE115●	1265	LC1G115	LR9G115	88
55	88	130	NSX100● + MA	1500	LC1G115	LR9G115	88
75	120	130	NSX160● + MA	1800	LC1G150	LR9G225	120
90	145	130	NSX160● + MA	2640	LC1G150	LR9G225	145
110	177	130	NSX250● + MA	2640	LC1G185	LR9G225	177
132	209	130	NSX250● + MA	2860	LC1G225	LR9G225	209
160	255	130	NSX400● + MicroLogic 1.3 M	3520	LC1G265	LR9G500	255
200	318	130	NSX400● + MicroLogic 1.3 M	4160	LC1G330	LR9G500	318
220	343	130	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	343
250	390	130	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	390
300	466	130	NSX630● + MicroLogic 1.3 M	6500	LC1G500	LR9G500	466
335	521	130	NS800● + MicroLogic 5.0 LR OFF	6400	LC1G630	LR9G630	521
355	554	130	NS800● + MicroLogic 5.0 LR OFF	7200	LC1G630	LR9G630	554

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4L115●/ GV4LE115●			NSX100●/ NSX160●/ NSX250●					NSX400●/ NSX630●					NS800●
	B	N	S	F	N	H	S	L	F	N	H	S	L	L
440 V	20	50	70	35	50	65	100	130	30	42	65	100	130	150

(2) This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

TeSys

Complementary technical information

Coordination: Magnetic circuit breaker + Contactor + Overload relay

65 to 425 kW at 500 V: type 2 coordination (with TeSys GV4 or ComPact NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker		Contactor	Thermal overload relay	
500 V			Product type ⁽¹⁾	I _{rm} ⁽²⁾	Product type	Product type	I _r setting ⁽²⁾
P	I _e	I _q (max)					
kW	A	kA					A
65	92	30	GV4L/GV4LE115●	1265	LC1G115	LR9G115	92
65	92	70	NSX100● + MA100	1300	LC1G115	LR9G115	92
90	128	70	NSX160● + MA150	1950	LC1G150	LR9G225	128
110	156	70	NSX250● + MA220	2200	LC1G185	LR9G225	156
132	184	70	NSX400● + MicroLogic 1.3 M	2560	LC1G225	LR9G225	184
160	224	70	NSX400● + MicroLogic 1.3 M	3200	LC1G265	LR9G500	224
200	280	70	NSX400● + MicroLogic 1.3 M	3840	LC1G330	LR9G500	280
250	344	70	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	344
295	405	70	NSX630● + MicroLogic 1.3 M	6500	LC1G500	LR9G500	405
375	516	70	NS800● + MicroLogic 5.0 LR OFF	6400	LC1G630	LR9G630	516
425	584	70	NS800● + MicroLogic 5.0 LR OFF	7200	LC1G800	LR9G630	584

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV4L115●/ GV4LE115●			NSX100●					NSX160●/ NSX250●					NSX400●/ NSX630●					NS800●
	B	N	S	F	N	H	S	L	F	N	H	S	L	F	N	H	S	L	L
500 V	10	25	30	25	36	50	65	70	30	36	50	65	70	25	30	50	65	70	100

(2) This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

Coordination and standards

0.06 to 30 kW at 400/415 V: type 2 coordination												
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Circuit breaker			Contactor		Electronic thermal overload relay	
400/415 V			690 V			Reference	Rating	I _{rm}	Reference	Reference	Setting range	
P	I _e	I _q	P	I _e	I _q		A	A			A	
kW	A	kA	kW	A	kA							
0.06	0.2	100	–	–	–	GV2L03	0.4	5	LC1D09	LR9D01	0.1...0.5	
0.09	0.3	100	–	–	–	GV2L03	0.4	5	LC1D09	LR9D01	0.1...0.5	
0.12	0.44	100	–	–	–	GV2L04	0.63	8	LC1D18	LR9D02	0.4...2.0	
0.18	0.6	100	–	–	–	GV2L04	0.63	8	LC1D18	LR9D02	0.4...2.0	
0.25	0.85	100	–	–	–	GV2L05	1	13	LC1D18	LR9D02	0.4...2.0	
0.37	1.1	100	–	–	–	GV2L05	1	13	LC1D18	LR9D02	0.4...2.0	
0.55	1.5	100	–	–	–	GV2L06	1.6	22.5	LC1D18	LR9D02	0.4...2.0	
0.75	1.9	100	–	–	–	GV2L07	2.5	33.5	LC1D18	LR9D08	1.6...8.0	
1.1	2.7	100	–	–	–	GV2L08	4	51	LC1D18	LR9D08	1.6...8.0	
1.5	3.6	100	–	–	–	GV2L08	4	51	LC1D18	LR9D08	1.6...8.0	
2.2	4.9	100	–	–	–	GV2L10	6.3	78	LC1D18	LR9D08	1.6...8.0	
3	6.5	100	–	–	–	GV2L14	10	138	LC1D25	LR9D32	6.4...32	
4	8.5	100	–	–	–	GV2L14	10	138	LC1D25	LR9D32	6.4...32	
5.5	11.5	100	–	–	–	GV2L16	14	170	LC1D25	LR9D32	6.4...32	
7.5	15.5	50	–	–	–	GV2L20	18	223	LC1D25	LR9D32	6.4...32	
11	22	50	–	–	–	GV2L22	25	327	LC1D25	LR9D32	6.4...32	
15	29	50	–	–	–	GV3L32	40	448	LC1D65A	LR9D110S	22...110	
18.5	35	50	–	–	–	GV3L40	40	560	LC1D65A	LR9D110S	22...110	
22	41	50	–	–	–	GV3L50	50	700	LC1D65A	LR9D110S	22...110	
30	55	50	–	–	–	GV3L65	65	910	LC1D65A	LR9D110S	22...110	
–	–	–	0.37	0.64	50	GV2L05	1	13	LC1D09	LR9D02	0.4...2.0	
–	–	–	0.55	0.87	50	GV2L05	1	13	LC1D09	LR9D02	0.4...2.0	
–	–	–	0.75	1.1	50	GV2L06	1.6	22.5	LC1D09	LR9D02	0.4...2.0	
–	–	–	1.1	1.6	50	GV2L07 + LA9LB920 ⁽¹⁾	2.5	33.5	LC1D25	LR9D08	1.6...8.0	
–	–	–	1.5	2.1	50	GV2L07 + LA9LB920 ⁽¹⁾	2.5	33.5	LC1D25	LR9D08	1.6...8.0	
–	–	–	2.2	2.8	50	GV2L08 + LA9LB920 ⁽¹⁾	4	51	LC1D25	LR9D08	1.6...8.0	
–	–	–	3	4	50	GV2L08 + LA9LB920 ⁽¹⁾	4	51	LC1D25	LR9D08	1.6...8.0	
–	–	–	4	5	50	GV2L10 + LA9LB920 ⁽¹⁾	6.3	78	LC1D25	LR9D08	1.6...8.0	
–	–	–	5.5	7	50	GV2L14 + LA9LB920 ⁽¹⁾	10	138	LC1D25	LR9D32	6.4...32	
–	–	–	7.5	8.9	50	GV2L14 + LA9LB920 ⁽¹⁾	10	138	LC1D25	LR9D32	6.4...32	
–	–	–	11	13	3	GV3L18+ LA9LB920 ⁽¹⁾	14	252	LC1D32	LR9D32	6.4...32	
–	–	–	15	16.5	3	GV2L22 + LA9LB920 ⁽¹⁾	18	327	LC1D32	LR9D32	6.4...32	
–	–	–	18.5	21	3	GV3L25 + LA9LB920 ⁽¹⁾	25	350	LC1D65A	LR9D32	6.4...32	
–	–	–	22	25	3	GV2L32 + LA9LB920 ⁽¹⁾	32	416	LC1D65A	LR9D32	6.4...32	

⁽¹⁾ For more information about the current limiter LA9LB920, see pages A4/31 and A4/61.

30 to 500 kW at 690 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3e			Circuit breaker		Contactor	Thermal overload relay	
690 V			Product type ⁽¹⁾	I _{rm} ⁽²⁾	Product type	Product type	I _r setting ⁽²⁾
P	I _e	I _q (max)					
kW	A	kA		A			A
30	32	100	NSX100● + MA	550	LC1G115	LR9G115	32
37	39	100	NSX100● + MA	550	LC1G115	LR9G115	39
45	47	100	NSX100● + MA	650	LC1G115	LR9G115	47
55	57	100	NSX100● + MA	1100	LC1G115	LR9G115	57
75	77	100	NSX100● + MA	1100	LC1G115	LR9G225	77
90	93	100	NSX250● + MA	1650	LC1G150	LR9G225	93
110	113	100	NSX250● + MA	1650	LC1G185	LR9G225	113
132	134	100	NSX250● + MA	1800	LC1G225	LR9G225	134
160	162	100	NSX250● + MA	2420	LC1G225	LR9G225	162
200	203	100	NSX250● + MA	2640	LC1G265	LR9G500	203
220	223	100	NSX400● + MicroLogic 1.3 M	3520	LC1G330	LR9G500	223
250	250	100	NSX400● + MicroLogic 1.3 M	3520	LC1G400	LR9G500	250
315	313	100	NSX630● + MicroLogic 1.3 M	5500	LC1G400	LR9G500	313
335	335	100	NSX630● + MicroLogic 1.3 M	5500	LC1G500	LR9G500	335
355	354	100	NSX630● + MicroLogic 1.3 M	5500	LC1G500	LR9G500	354
375	374	100	NSX630● + MicroLogic 1.3 M	5500	LC1G630	LR9G630	374
400	400	100	NSX630● + MicroLogic 1.3 M	5500	LC1G630	LR9G630	400
450	455	100	NSX630● + MicroLogic 1.3 M	6000	LC1G630	LR9G630	455
475	475	100	NSX630● + MicroLogic 1.3 M	6500	LC1G630	LR9G630	475
500	493	100	NSX630● + MicroLogic 1.3 M	6500	LC1G630	LR9G630	493

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX100●/ NSX250●/ NSX400●/ NSX630●	
Breaking performance code	HB1	HB2
690 V	75	100

(2) This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

1.5 to 315 kW at 400/415 V: type 1 coordination

Maximum operating rate: LC3K: 12 starts/hour; LC3D: 30 starts/hour.

Maximum starting time: LC3K and LC3D: 30 seconds.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3								Fuse carrier (basic block)	aM fuses		Star-delta contactors	Thermal overload relay	
400/415 V				440 V					Reference	Size		Rating	Reference
P	I _e	I _{rD} ⁽¹⁾	I _q	P	I _e	I _{rD} ⁽¹⁾	I _q						
kW	A	A	kA	kW	A	A	kA			A			A
1.5	3.5	2	50	1.5	3.06	2	50	LS1D32	10 x 38	4	LC3K06	LR2K0308	1.8...2.6
2.2	5	3	50	–	–	–	–	LS1D32	10 x 38	6	LC3K06	LR2K0310	2.6...3.7
–	–	–	–	2.2	4.42	3	50	–	–	–	–	–	–
–	–	–	–	3	5.77	3	50	LS1D32	10 x 38	8	LC3K06	LR2K0310	2.6...3.7
3	6.5	4	50	–	–	–	–	LS1D32	10 x 38	8	LC3K06	LR2K0312	3.7...5.5
4	8.4	5	50	4	7.9	5	50	LS1D32	10 x 38	12	LC3K06	LR2K0312	3.7...5.5
5.5	11	6	50	5.5	10.4	6	50	LS1D32	10 x 38	16	LC3K06	LR2K0314	5.5...8
7.5	14.8	9	50	7.5	13.7	8	50	LS1D32	10 x 38	16	LC3K09	LR2K0316	8...11.5
9	18.1	10	100	9	16.9	10	50	LS1D32	10 x 38	20	LC3D12A	LRD16	9...13
11	21	12	100	11	20.1	12	100	GK1EK	14 x 51	25	LC3D12A	LRD16	9...13
15	28.5	16	100	15	26.5	15	100	GK1EK	14 x 51	32	LC3D18A	LRD21	12...18
18.5	35	20	100	18.5	32.8	19	100	GK1EK	14 x 51	40	LC3D18A	LRD22	16...24
–	–	–	–	22	39	23	100	GS●J	22 x 58	50	LC3D18A	LRD22	16...24
22	42	24	100	–	–	–	–	GS●J	22 x 58	50	LC3D32A	LRD32	23...32
–	–	–	–	30	51.5	30	100	GS●J	22 x 58	63	LC3D32A	LRD32	23...32
30	57	33	100	37	64	37	100	GS●J	22 x 58	80	3 x LC1D40A	LRD340	30...40
37	69	40	100	–	–	–	–	GS●J	22 x 58	80	3 x LC1D40A	LRD350	37...50
–	–	–	–	45	76	44	100	GS●J	22 x 58	80	3 x LC1D50A	LRD350	37...50
45	81	47	100	–	–	–	–	GS●J	22 x 58	100	3 x LC1D50A	LRD350	37...50
–	–	–	–	55	90	52	100	GS●K	22 x 58	100	3 x LC1D50A	LRD365	48...65
55	100	58	100	–	–	–	–	GS●K	22 x 58	125	3 x LC1D65A	LRD365	48...65
75	135	78	100	75	125	72	100	GS●L	T0	160	LC3D80	LRD3363	63...80
–	–	–	–	90	146	84	100	GS●L	T0	160	LC3D115	LRD4365	80...104
90	165	95	100	–	–	–	–	GS●N	T1	200	LC3D115	LRD4367	95...120
110	200	115	100	110	178	103	100	GS●N	T1	200	LC3D115	LRD4367	95...120
132	240	139	100	132	215	124	100	GS●QQ	T2	250	LC3D150	LRD4369	110...140
160	285	165	100	160	256	148	100	(2)	–	–	(2)	(2)	–
–	–	–	–	200	321	185	100	(2)	–	–	(2)	(2)	–
220	388	225	100	–	–	–	–	(2)	–	–	(2)	(2)	–
–	–	–	–	250	401	233	100	(2)	–	–	(2)	(2)	–
280	480	278	100	–	–	–	–	(2)	–	–	(2)	(2)	–
–	–	–	–	315	505	293	100	(2)	–	–	(2)	(2)	–
315	555	322	100	355	518	300	100	–	–	–	–	–	–
–	–	–	–	375	575	334	100	(2)	–	–	(2)	(2)	–

(1) I_{rD}: current in the motor windings in delta connection.

(2) Please consult your regional sales office.

1.5 to 355 kW at 400/415 V: type 2 coordination

Maximum operating rate: LC1D: 30 starts/hour; LC1F: 12 starts/hour.

Maximum starting time: LC1D: 30 seconds; LC1F: 20 seconds.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch-disconnector-fuse	aM fuses		Star-delta contactors	Thermal overload relay	
400/415 V			440 V			Reference	Size	Rating	Reference	Reference	Setting range
P	I _e	I _q	P	I _e	I _q						
kW	A	kA	kW	A	kA			A			A
1.5	3.5	50	1.5	3.06	50	GS1DD	10 x 38	4	3 x LC1D09	LRD08	2.5...4
2.2	5	50	2.2	4.42	50	GS1DD	10 x 38	6	3 x LC1D09	LRD10	4...6
3	6.5	50	3	5.77	50	GS1DD	10 x 38	8	3 x LC1D09	LRD12	5.5...8
4	8.4	50	4	7.9	50	GS1DD	10 x 38	10	3 x LC1D09	LRD14	7...10
5.5	11	50	5.5	10.4	50	GS1DD	10 x 38	16	3 x LC1D12	LRD16	9...13
7.5	14.8	50	7.5	13.7	50	GS1DD	10 x 38	16	3 x LC1D18	LRD21	12...18
9	18.1	100	9	16.9	100						
11	21	100	11	20.1	100	GS●F	14 x 51	25	3 x LC1D25	LRD22	16...24
15	28.5	100	15	26.5	100	GS●F	14 x 51	32	3 x LC1D32	LRD32	23...32
18.5	35	100	18.5	32.8	100	GS●F	14 x 51	40	3 x LC1D40A	LRD340	30...40
22	42	100	22	39	100	GS●J	22 x 58	50	3 x LC1D50A	LRD350	37...50
30	57	100	30	51.5	100	GS●J	22 x 58	80	3 x LC1D65A	LRD365	48...65
37	69	100	37	64	100	GS●J	22 x 58	80	3 x LC1D80	LRD3363	63...80
–	–	–	45	76	100	GS●J	22 x 58	80	3 x LC1D80	LRD3365	80...104
45	81	100	–	–	–	GS●J	22 x 58	100	3 x LC1D115	LR9D5367	60...100
–	–	–	55	90	100	GS●L	T0	125	3 x LC1D115	LR9D5369	90...150
55	100	100	–	–	–	GS●L	T0	125	3 x LC1D150	LR9D5369	90...150
–	–	–	75	125	100	GS●L	T0	160	3 x LC1D150	LR9D5369	90...150
355	605	100	–	–	–	GS2V	T4	800	3 x LC1F780	LR9F7381	380...630

Coordination: Star-delta with Fuses (DIN type aM) + Contactors + Overload relay

Contactors: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

RE17RMMWS timer to be used for Star-Delta starter application.

90 to 335 kW at 400 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Switch-disconnector	aM fuses		Contactor Line (KM2) / Delta (KM3) ⁽¹⁾	Contactor Star (KM1) ⁽¹⁾	Thermal overload relay	
400 V			Product type	Size	Rating	Product type		Product type	Ir setting ⁽²⁾
P	I _e	I _q (max)							
kW	A	kA			A				A
90	160	80	GS●N	1	200	LC1G115	LC1D65	LR9G115	92
110	195	80	GS●N	1	250	LC1G150	LC1D80	LR9G225	113
132	230	80	GS●QQ	2	315	LC1G185	LC1G115	LR9G225	133
160	280	80	GS●QQ	2	400	LC1G225	LC1G115	LR9G225	162
200	350	80	GS2●S	3	500	LC1G265	LC1G115	LR9G225	202
220	380	80	GS2●S	3	500	LC1G330	LC1G150	LR9G500	219
250	430	80	GS2●S	3	500	LC1G400	LC1G150	LR9G500	248
315	540	80	GS2●S	3	630	LC1G500	LC1G225	LR9G500	312
335	575	80	GS2●V	4	800	LC1G500	LC1G225	LR9G500	332

110 to 400 kW at 440 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Switch-disconnector	aM fuses		Contactor Line (KM2) / Delta (KM3) ⁽¹⁾	Contactor Star (KM1) ⁽¹⁾	Thermal overload relay	
440 V			Product type	Size	Rating	Product type		Product type	Ir setting ⁽²⁾
P	I _e	I _q max							
kW	A	kA			A				A
110	177	80	GS●N	1	200	LC1G115	LC1D65	LR9G115	102
132	209	80	GS●N	1	250	LC1G150	LC1D80	LR9G225	121
160	255	80	GS●QQ	2	315	LC1G150	LC1G115	LR9G225	147
200	318	80	GS●QQ	2	400	LC1G185	LC1G115	LR9G225	184
220	343	80	GS2●S	3	500	LC1G225	LC1G115	LR9G225	198
250	390	80	GS2●S	3	500	LC1G265	LC1G150	LR9G500	225
315	490	80	GS2●S	3	500	LC1G330	LC1G185	LR9G500	283
355	554	80	GS2●S	3	630	LC1G330	LC1G225	LR9G500	320
400	627	80	GS2●V	4	800	LC1G400	LC1G225	LR9G500	362

90 to 315 kW at 500 V: type 2 coordination									
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Switch-disconnector	aM fuses		Contactor Line (KM2) / Delta (KM3) ⁽¹⁾	Contactor Star (KM1) ⁽¹⁾	Thermal overload relay	
500 V			Product type	Size	Rating	Product type		Product type	Ir setting ⁽²⁾
P	I _e	I _q max							
kW	A	kA			A				A
90	128	80	GS●N	1	200	LC1G115	LC1D65	LR9G115	74
110	156	80	GS●N	1	250	LC1G115	LC1D65	LR9G115	90
132	184	80	GS●QQ	2	315	LC1G115	LC1D65	LR9G225	106
160	224	80	GS●QQ	2	400	LC1G150	LC1D80	LR9G225	129
200	280	80	GS2●S	3	500	LC1G185	LC1G115	LR9G225	162
220	308	80	GS2●S	3	500	LC1G185	LC1G115	LR9G500	178
250	344	80	GS2●S	3	500	LC1G225	LC1G150	LR9G500	199
315	432	80	GS2●S	3	630	LC1G265	LC1G185	LR9G630	249

(1) Refer to diagram page A5/40.

(2) This setting is a general guidance, Ir should be adjusted according to motor characteristics and conditions of use.

1.5 to 375 kW at 415 V: type 2 coordination

Maximum operating rate: LC1D: 30 starts/hour.

Maximum starting time: LC1D: 30 seconds.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Switch-disconnector-fuse	BS fuses		Star-delta contactors	Thermal overload relay	
415 V			440 V				Reference	Size		Rating	Reference
P	I _e	I _q	P	I _e	I _q			A			A
kW	A	kA	kW	A	kA						
1.5	3.5	50	1.5	3.06	50	GS1DDB	A1	NIT 16	3 x LC1D09	LRD08	2.5...4
2.2	5	50	2.2	4.42	50	GS1DDB	A1	NIT 16	3 x LC1D09	LRD10	4...6
3	6.5	50	3	5.77	50	GS1DDB	A1	NIT 20	3 x LC1D09	LRD12	5.5...8
4	8.4	50	4	7.9	50	GS1DDB	A1	NIT 20	3 x LC1D09	LRD14	7...10
5.5	11	50	5.5	10.4	50	GS1DDB	A1	NIT 20M25	3 x LC1D12	LRD16	9...13
7.5	14.8	50	7.5	13.7	50	GS1DDB	A1	NIT 20M32	3 x LC1D18	LRD21	12...18
9	18.1	50	9	16.9	50	GS2GB	A2	TIA 32M35	3 x LC1D18	LRD21	12...18
11	21	50	11	20.1	50	GS2GB	A2	TIA 32M50	3 x LC1D25	LRD22	16...24
15	28.5	50	15	26.5	50	GS2GB	A2	TIA 32M63	3 x LC1D32	LRD32	23...32
22	42	50	22	39	50	GS2GB	A3	TIS 63M80	3 x LC1D50A	LRD350	37...50
-	-	-	30	51.5	50	GS2GB	A3	TIS 63M100	3 x LC1D65A	LRD365	48...65
30	57	50	-	-	-	GS2GB	A3	TIS 63M100	3 x LC1D65A	LRD365	48...65
45	81	50	45	76	50	GS2LLB	A4	TCP 100M125	3 x LC1D80	LRD3363	63...80
55	100	80	55	90	80	GS2LLB	A4	TCP 100M160	3 x LC1D115	LR9D5369	90...150
80	138	80	80	132	80	GS2LB	B2	TF 200M250	3 x LC1D150	LR9D5369	90...150

Coordination and standards

1.5 to 250 kW at 400/415 V and 440 V: type 1 coordination

Maximum operating rate: LC3K: 12 starts/hour; LC3D: 30 starts/hour.

Maximum starting time: 30 seconds.

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3								Circuit breaker		Star-delta contactors
400/415 V				440 V				Reference	Setting range of thermal trips	Reference
P	I _e	I _{rD} ⁽¹⁾	I _q ⁽²⁾	P	I _e	I _{rD} ⁽¹⁾	I _q ⁽²⁾	<i>References in italics are available in CEE zone only</i>		
kW	A	A	kA	kW	A	A	kA		A	
1.5	3.6	2	50	1.5	3.06	1.8	50	GV2ME08 <i>GV2ME08AP</i>	2.5...4	LC3K06
2.2	4.9	2.9	50	2.2	4.42	2.6	50	GV2ME10 <i>GV2ME10AP</i>	4...6.3	LC3K06
–	–	–	–	3	5.77	3.3	50			
3	6.5	3.8	50	–	–	–	–	GV2ME14 <i>GV2ME14AP</i>	6...10	LC3K06
4	8.5	4.9	50	4	7.9	4.6	15			
5.5	11.5	6.4	15	5.5	10.4	6	8	GV2ME16 <i>GV2ME16AP</i>	9...14	LC3K06
7.5	15.5	8.6	15	7.5	13.7	7.9	8	GV2ME20 <i>GV2ME20AP</i>	13...18	LC3K09
–	–	–	–	9	16.9	9.8	8	GV2ME20 <i>GV2ME20AP</i>	13...18	LC3D12A
9	18.1	10	15	11	20.1	12	6	GV2ME21 <i>GV2ME21AP</i>	17...23	LC3D12A
11	22	12	15	–	–	–	–	GV2ME22 <i>GV2ME22AP</i>	20...25	LC3D12A
15	29	17	10	15	26.5	15	6	GV2ME32 <i>GV2ME32AP</i>	24...32	LC3D18A
18.5	35	20	50	18.5	32.8	19	50	GV3P40	30...40	LC3D18A
–	–	–	–	22	39	23	50	GV3P50	37...50	LC3D32A
22	41	24	50	30	51.5	30	50	GV3P50	37...50	LC3D32A
30	55	33	50	30	51.5	30	50	GV3P65	48...65	LC3D32A
37	66	40	50	37	64	37	50	GV3P65	48...65	3 x LC1D40A ⁽³⁾
37	66	40	100	37	64	37	70	GV4P80	40...80	3 x LC1D40A ⁽³⁾
–	–	–	–	45	76	44	70	GV4P80	40...80	2 x LC1D50A +1 x LC1D40A ⁽³⁾
45	80	47	100	–	–	–	–	GV4P115	65...115	2 x LC1D50A +1 x LC1D40A ⁽³⁾
55	97	58	100	55	90	52	70	GV4P115	65...115	2 x LC1D65A +1 x LC1D40A ⁽³⁾
75	132	78	35	75	125	72	35	GV5P150F	70...150	LC3D80
–	–	–	–	90	146	84	35	GV5P150F	0...150	LC3D115
90	160	95	35	110	178	103	35	GV5P220F	100...220	LC3D115
110	195	115	35	–	–	–	–			
–	–	–	–	132	215	124	35	GV5P220F	100...220	LC3D150
132	230	135	36	–	–	–	–	GV6P320F	160...320	LC3D150
160	270	158	36	160	256	94	35	⁽⁴⁾	–	⁽⁴⁾
220	380	220	36	250	401	146	35	⁽⁴⁾	–	⁽⁴⁾
250	430	250	36	300	480	175	35	⁽⁴⁾	–	⁽⁴⁾

⁽¹⁾ I_{rD}: current in the motor windings in delta connection.

⁽²⁾ The breaking performance of circuit breakers **GV2ME** can be increased by adding a current limiter **GV1L3**, see page B6/23.

⁽³⁾ For mounting 3 contactors **LC1D●●A**, star-delta starter kit **LAD9SD3** must be ordered separately, see page B8/43.

⁽⁴⁾ Please consult your regional sales office.

1.5 to 90 kW at 400/415 V and 440 V: type 2 coordination

Maximum operating rate: LC1D: 30 starts/hour.

Maximum starting time: LC1D: 30 seconds.

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3								Circuit breaker		Star-delta contactors
400/415 V				440 V				Reference	Setting range of thermal trips	Reference
P	I _e	I _{rD} ⁽⁷⁾	I _q	P	I _e	I _{rD} ⁽⁷⁾	I _q ⁽¹⁾		A	
kW	A	A	kA	kW	A	A	kA			
1.5	3.6	–	130	1.5	3.06	–	130	GV2P08	2.5...4	3 x LC1D09 ⁽²⁾
2.2	4.9	–	130	2.2	4.42	–	130	GV2P10	4...6.3	3 x LC1D18 ⁽³⁾
–	–	–	–	3	5.77	–	130	GV2P10	4...6.3	3 x LC1D18 ⁽³⁾
3	6.5	–	130	–	–	–	–	GV2P14	6...10	3 x LC1D18 ⁽³⁾
4	8.5	–	130	4	7.9	–	130	GV2P14	6...10	3 x LC1D18 ⁽³⁾
5.5	11.5	–	130	5.5	10.4	–	50	GV2P16	9...14	3 x LC1D25 ⁽³⁾
–	–	–	–	7.5	13.7	–	50	GV2P16	9...14	3 x LC1D25 ⁽³⁾
7.5	15.5	–	50	9	16.9	–	20	GV2P20	13...18	3 x LC1D25 ⁽³⁾
9	18.1	–	50	11	20.1	–	20	GV2P21	17...23	3 x LC1D25 ⁽³⁾
11	22	–	50	–	–	–	–	GV2P22	20...25	3 x LC1D25 ⁽³⁾
15	29	–	50	15	26.5	–	50	GV3P32	23...32	3 x LC1D40A ⁽⁴⁾
18.5	35	–	50	–	–	–	–	GV3P40	30...40	2 x LC1D50A +1 x LC1D40A ⁽³⁾
–	–	–	–	18.5	32.8	–	50	GV3P40	30...40	2 x LC1D65A +1 x LC1D40A ⁽⁴⁾
22	41	–	50	–	–	–	–	GV3P50	37...50	2 x LC1D50A +1 x LC1D40A ⁽³⁾
–	–	–	–	22	39	–	50	GV3P50	37...50	2 x LC1D65A +1 x LC1D40A ⁽⁴⁾
30	55	–	50	30	51.5	–	50	GV3P65	48...65	2 x LC1D65A +1 x LC1D40A ⁽⁴⁾
37	66	–	100	45	76	–	70	GV4P80	40...80	3 x LC1D80 ⁽⁵⁾
–	–	–	–	37	64	–	70	GV4P80	40...80	3 x LC1D65A ⁽⁴⁾
45	80	–	100	–	–	–	–	GV4P115	65...115	3 x LC1D115 ⁽⁶⁾
55	97	–	100	55	90	–	70	GV4P115	65...115	3 x LC1D115 ⁽⁶⁾
75	132	78	70	75	125	74	65	GV5P150H	70...150	3 x LC1D150 ⁽⁶⁾
–	–	–	–	90	146	86	65	GV5P150H	70...150	3 x LC1D150 ⁽⁶⁾

(1) The breaking performance of circuit breakers GV2P can be increased by adding a current limiter GV1L3, see page B6/54.

(2) For mounting 3 contactors LC1D09, star-delta starter kit LAD91217 must be ordered separately, see page B8/43.

(3) For mounting 3 contactors LC1D18 or LC1D25, star-delta starter kit LAD93217 must be ordered separately, see page B8/43.

(4) For mounting 3 contactors LC1D●●A, star-delta starter kit LAD9SD3 must be ordered separately, see page B8/43.

(5) For mounting 3 contactors LC1D80, star-delta starter kit LA9D8017 must be ordered separately, see page B8/43.

(6) For mounting 3 contactors LC1D115 or LC1D150, see A2/13.

(7) I_{rD}: current in the motor windings in delta connection.

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

RE17RMMWS timer to be used for Star-Delta starter application.

90 to 250 kW at 400 V: type 2 coordination (with TeSys GV5 / GV6 circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾
400 V			Product type ⁽¹⁾	Ir setting ⁽²⁾	Irm ⁽²⁾	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
90	160	70	GV5P220●	170	1360	LC1G115	LC1D65
110	195	70	GV5P220●	200	1600	LC1G150	LC1D80
110	195	70	GV6P320●	200	1600	LC1G150	LC1D80
132	230	70	GV6P320●	240	1920	LC1G150	LC1D95
160	280	70	GV6P320●	300	2400	LC1G185	LC1G115
200	350	70	GV6P500●	380	3040	LC1G225	LC1G115
220	380	70	GV6P500●	400	3200	LC1G265	LC1G150
250	430	70	GV6P500●	440	3520	LC1G265	LC1G150

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV5P220● GV6P320●/GV6P500●		
Breaking performance code	F		H
400 V	36		70

90 to 450 kW at 400 V: type 2 coordination (with ComPact NSX / NS circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾
400 V			Product type ⁽¹⁾	Ir setting ⁽²⁾	Irm ⁽²⁾	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
90	160	130	NSX250● + MicroLogic 2.2 M	170	1360	LC1G115	LC1D65
110	195	130	NSX250● + MicroLogic 2.2 M	200	1600	LC1G150	LC1D80
110	195	130	NSX400● + MicroLogic 2.3 M	200	1600	LC1G150	LC1D80
132	230	130	NSX400● + MicroLogic 2.3 M	240	1920	LC1G150	LC1D95
160	280	130	NSX400● + MicroLogic 2.3 M	300	2400	LC1G185	LC1G115
200	350	130	NSX630● + MicroLogic 2.3 M	380	3040	LC1G225	LC1G115
220	380	130	NSX630● + MicroLogic 2.3 M	400	3200	LC1G265	LC1G150
250	430	130	NSX630● + MicroLogic 2.3 M	440	3520	LC1G265	LC1G150
300	500	130	NS800● + MicroLogic 5.0	480	4480	LC1G330	LC1G185
335	575	130	NS800● + MicroLogic 5.0	640	5120	LC1G400	LC1G225
355	610	130	NS800● + MicroLogic 5.0	640	5120	LC1G400	LC1G225
400	690	130	NS800● + MicroLogic 5.0	720	5760	LC1G500	LC1G265
450	770	130	NS1000● + MicroLogic 5.0	784	6272	LC1G500	LC1G330

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●/ NSX400●/ NSX630●					NS800●/ NS1000●
Breaking performance code	F	N	H	S	L	L
400 V	36	50	70	100	150	150

⁽²⁾ This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.

⁽³⁾ Refer to diagram page A5/40.

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

RE17RMMWS timer to be used for Star-Delta starter application.

110 to 300 kW at 440 V: type 2 coordination (with TeSys GV5/GV6 circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾
440 V			Product type ⁽¹⁾	Ir setting ⁽²⁾	Irm ⁽²⁾	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
110	177	65	GV5P220●	185	1480	LC1G115	LC1D65
132	209	65	GV5P220●	210	1680	LC1G150	LC1D80
160	255	65	GV6P320●	260	2080	LC1G185	LC1G115
200	318	65	GV6P320●	320	2560	LC1G225	LC1G115
220	343	65	GV6P500●	350	2800	LC1G225	LC1G150
250	390	65	GV6P500●	400	3200	LC1G265	LC1G150
300	466	65	GV6P500●	470	3760	LC1G330	LC1G185

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV5P220●			GV6P320●/GV6P500●		
Breaking performance code	F	H		F	H	
440 V	35	65		30	65	

110 to 450 kW at 440 V: type 2 coordination (with ComPact NSX/NS circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾
440 V			Product type ⁽¹⁾	Ir setting ⁽²⁾	Irm ⁽²⁾	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
110	177	130	NSX250● + MicroLogic 2.2 M	185	1480	LC1G115	LC1D65
132	209	130	NSX250● + MicroLogic 2.2 M	210	1680	LC1G150	LC1D80
160	255	130	NSX400● + MicroLogic 2.3 M	260	2080	LC1G185	LC1G115
200	318	130	NSX400● + MicroLogic 2.3 M	320	2560	LC1G225	LC1G115
220	343	130	NSX630● + MicroLogic 2.3 M	350	2800	LC1G225	LC1G150
250	390	130	NSX630● + MicroLogic 2.3 M	400	3200	LC1G265	LC1G150
300	466	130	NSX630● + MicroLogic 2.3 M	470	3760	LC1G330	LC1G185
335	521	130	NS800● + MicroLogic 5.0	560	4480	LC1G330	LC1G185
355	554	130	NS800● + MicroLogic 5.0	560	4480	LC1G400	LC1G225
400	627	130	NS800● + MicroLogic 5.0	640	5120	LC1G400	LC1G225
450	695	130	NS800● + MicroLogic 5.0	720	5760	LC1G500	LC1G265

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●					NSX400●/ NSX630●					NS800●
Breaking performance code	F	N	H	S	L	F	N	H	S	L	L
440 V	35	50	65	100	130	30	42	65	100	130	130

⁽²⁾ This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.

⁽³⁾ Refer to diagram page A5/40

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

RE17RMMWS timer to be used for Star-Delta starter application.

132 to 295 kW at 500 V: type 2 coordination (with TeSys GV5/ GV6 circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾
500 V			Product type ⁽¹⁾	Ir setting ⁽²⁾	Irm ⁽²⁾	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
132	184	50	GV5P220●	185	1480	LC1G115	LC1D65
160	224	50	GV6P320●	240	1920	LC1G150	LC1D80
200	280	50	GV6P320●	300	2400	LC1G185	LC1G115
250	344	50	GV6P500●	350	2800	LC1G225	LC1G115
295	405	50	GV6P500●	440	3520	LC1G265	LC1G150

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	GV5P220●			GV6P320●/ 500●		
Breaking performance code	F	H		F	H	
500 V	30	50		25	50	

132 to 425 kW at 500 V: type 2 coordination (with ComPact NSX/ NS circuit breakers)							
Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker			Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾
500 V			Product type ⁽¹⁾	Ir setting ⁽²⁾	Irm ⁽²⁾	Product type	
P	Ie	Iq (max)		A	A		
kW	A	kA					
132	184	70	NSX250● + MicroLogic 2.2 M ⁽⁴⁾	185	1480	LC1G115	LC1D65
160	224	70	NSX400● + MicroLogic 2.3 M ⁽⁴⁾	240	1920	LC1G150	LC1D80
200	280	70	NSX400● + MicroLogic 2.3 M ⁽⁴⁾	300	2400	LC1G185	LC1G115
250	344	70	NSX630● + MicroLogic 2.3 M ⁽⁴⁾	350	2800	LC1G225	LC1G115
295	405	70	NSX630● + MicroLogic 2.3 M ⁽⁴⁾	440	3520	LC1G265	LC1G150
375	516	70	NS800● + MicroLogic 5.0	560	4480	LC1G330	LC1G185
425	584	70	NS800● + MicroLogic 5.0	640	5120	LC1G400	LC1G225

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●					NSX400●/ NSX630●					NS800●
Breaking performance code	F	N	H	S	L	F	N	H	S	L	L
500 V	30	36	50	65	70	25	30	50	65	70	100

(2) This setting is a general guidance, Ir and Irm should be adjusted according to motor characteristics and conditions of use.

(3) Refer to diagram page A5/40.

(4) Applicable also with MicroLogic 6.2 M and 6.3 M trip units.

1.5 to 315 kW at 400/415 V: type 1 coordination

Maximum operating rate: LC3K: 12 starts/hour; LC3D: 30 starts/hour.

Maximum starting time: LC3K and LC3D: 30 seconds.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3								Circuit breaker			Star-delta contactors	Thermal overload relay	
400/415 V				440 V				Reference	Rating	I _{rm} ⁽²⁾	Reference	Reference	Setting range
P	I _e	I _{rD} ⁽¹⁾	I _q	P	I _e	I _{rD} ⁽¹⁾	I _q		A	A			A
kW	A	A	kA	kW	A	A	kA						
–	–	–	–	1.5	3.06	1.8	50	LC3D32A	4	51	LC3K06	LR2K0308	1.8...2.6
1.5	3.6	2	50	2.2	4.42	3	50						
2.2	4.9	3	50	3	5.77	3	50	GV2LE10	6.3	78	LC3K06	LR2K0310	2.6...3.7
3	6.5	4	50	–	–	–	–	GV2LE14	10	138	LC3K06	LR2K0312	3.7...5.5
–	–	–	–	4	7.9	5	50	GV2LE10	6.3	78	LC3K06	LR2K0312	3.7...5.5
4	8.5	5	50	–	–	–	–	GV2LE14	10	138	LC3K06	LR2K0312	3.7...5.5
–	–	–	–	5.5	10.4	6	15	GV2LE14	10	138	LC3K06	LR2K0314	5.5...8
5.5	11.5	6	15	–	–	–	–	GV2LE16	14	170	LC3K06	LR2K0314	5.5...8
–	–	–	–	7.5	13.7	8	8	GV2LE16	14	170	LC3K09	LR2K0316	8...11.5
7.5	15.5	9	15	–	–	–	–	GV2LE20	18	223	LC3K09	LR2K0316	8...11.5
–	–	–	–	9	16.9	1	8	GV2LE16	14	170	LC3D12A	LRD16	9...13
9	18.1	10	15	–	–	–	–	GV2LE22	25	327	LC3K12	LR2K0316	8...11.5
–	–	–	–	11	20.1	12	8	GV2LE20	18	223	LC3K12	LR2K0321	10...14
11	22	12	15	–	–	–	–	GV2LE22	25	327	LC3K12	LR2K0321	10...14
–	–	–	–	15	26.5	15	6	GV2LE22	25	327	LC3D18A	LRD21	12...18
15	29	16	10	–	–	–	–	GV2LE32	32	384	LC3D18A	LRD21	12...18
18.5	35	20	50	18.5	32.8	19	50	GV3L40	40	560	LC3D18A	LRD22	16...24
22	41	24	50	22	39	23	50	GV3L50	50	700	LC3D32A	LRD32	23...32
–	–	–	–	30	51.5	30	50	GV3L65	65	910	LC3D32A	LRD32	23...32
30	55	33	50	–	–	–	–	GV3L65	65	910	LC3D32A	LRD35	30...38
–	–	–	–	37	64	37	50	GV3L65	65	910	3 x LC1D40A ⁽⁴⁾	LRD340	30...40
37	66	40	100	–	–	–	–	GV4L80	80	640	3 x LC1D40A ⁽⁴⁾	LRD350	37...50
–	–	–	–	37	64	37	70	GV4L80	80	640	3 x LC1D40A ⁽⁴⁾	LRD340	30...40
–	–	–	–	45	76	44	70	GV4L80	80	800	2 x LC1D50A + 1 x LC1D40A ⁽⁴⁾	LRD350	37...50
45	80	47	100	–	–	–	–	GV4L115	115	805	2 x LC1D50A + 1 x LC1D40A ⁽⁴⁾	LRD350	37...50
–	–	–	–	55	90	52	70	GV4L115	115	805	2 x LC1D50A + 1 x LC1D40A ⁽⁴⁾	LRD365	48...65
–	–	–	–	75	125	72	⁽³⁾	NSX160●MA ⁽³⁾	150	1200	LC3D80	LRD3363	63...80
75	132	78	⁽³⁾	–	–	–	–	NSX160●MA ⁽³⁾	150	1200	LC3D80	LRD3363	63...80
–	–	–	–	90	146	85	⁽³⁾	NSX160●MA ⁽³⁾	150	1200	LC3D115	LRD4365	80...104
90	160	96	⁽³⁾	110	178	103	⁽³⁾	NSX250●MA ⁽³⁾	220	1760	LC3D115	LRD4365	80...104
–	–	–	–	132	215	125	⁽³⁾	NSX250●MA ⁽³⁾	220	1760	LC3D150	LRD4369	110...140
110	195	116	⁽³⁾	–	–	–	–	NSX250●MA ⁽³⁾	220	1760	LC3D115	LRD4367	95...120
–	–	–	–	160	256	148	⁽³⁾	NSX400● + Micrologic 1.3M ⁽³⁾	320	2240	LC3D150	LR9D5369	90...150
–	–	–	–	200	321	186	⁽³⁾	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–
132	230	139	⁽³⁾	–	–	–	–	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–
160	280	165	⁽³⁾	–	–	–	–	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–
200	350	204	⁽³⁾	220	353	204	⁽³⁾	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–
220	388	225	⁽³⁾	250	401	233	⁽³⁾	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–
280	480	278	⁽³⁾	–	–	–	–	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–
–	–	–	–	315	505	295	⁽³⁾	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–
315	540	322	⁽³⁾	355	518	300	⁽³⁾	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–
–	–	–	–	375	575	334	⁽³⁾	⁽⁵⁾	–	–	⁽⁵⁾	⁽⁵⁾	–

(1) I_{rD}: current in the motor windings in delta connection.

(2) I_{rm}: setting current of the magnetic trip.

(3) Reference to be completed by replacing the ● with the breaking performance code:

Breaking performance I _q (kA)	NSX100●MA		NSX160●MA, NSX250●MA		NSX400●, NSX630●		NS800●	
400/415 V	36	70	36	70	70	150	70	150
440 V	35	65	35	65	65	130	65	130
Code	F	H	F	H	H	L	H	L

(4) For mounting 3 contactors LC1D●●A, star-delta starter kit LAD9SD3 must be ordered separately, see page B8/43.

(5) Please consult your Regional Sales Office.

1.5 to 250 kW at 400/415 V: type 2 coordination

Maximum operating rate: LC3D: 30 starts/hour.

Maximum starting time: LC3D: 30 seconds.

Standard power ratings of 3-phase motors
50/60 Hz in category AC-3

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3						Circuit breaker			Star-delta contactors	Thermal overload relay	
400/415 V			440 V			Reference	Rating	I _{rm} ⁽¹⁾	Reference	Reference	Setting range
P	I _e	I _q	P	I _e	I _q		A	A			A
kW	A	kA	kW	A	kA						
1.5	3.6	130	1.5	3.06	130	GV2L08	4	51	3 x LC1D09	LRD08	2.5...4
2.2	4.9	130	2.2	4.42	130	GV2L10	6.3	78	3 x LC1D09	LRD10	4...6
3	6.5	130	3	5.77	130						
–	–	–	4	7.9	20	GV2L14	10	138	3 x LC1D18	LRD14	7...10
4	8.5	130	–	–	–	GV2L14	10	138	3 x LC1D18	LRD16	9...13
5.5	11.5	50	5.5	10.4	20	GV2L16	14	170	3 x LC1D25	LRD16	9...13
7.5	15.5	50	7.5	13.7	20	GV2L20	18	223	3 x LC1D25	LRD21	12...18
–	–	–	9	16.9	20	GV2L22	25	327	3 x LC1D25	LRD21	12...18
9	18.1	50	–	–	–	GV2L22	25	327	3 x LC1D25	LRD22	16...24
11	22	50	11	20.1	20						
15	29	50	15	26.5	50	GV3L32	32	448	3 x LC1D40A ⁽²⁾	LRD332	23...32
18.5	35	50	–	–	–	GV3L40	40	560	2 x LC1D50A +1 x LC1D40A ⁽²⁾	LRD340	30...40
–	–	–	18.5	32.8	50	GV3L40	40	560	2 x LC1D65A +1 x LC1D40A ⁽²⁾	LRD340	30...40
22	41	50	–	–	–	GV3L50	50	700	2 x LC1D50A +1 x LC1D40A ⁽²⁾	LRD350	37...50
–	–	–	22	39	50	GV3L50	50	700	2 x LC1D65A +1 x LC1D40A ⁽²⁾	LRD350	37...50
30	55	50	30	51.5	50	GV3L65	65	910	2 x LC1D65A +1 x LC1D40A ⁽²⁾	LRD365	48...65
–	–	–	37	64	50	GV3L65	65	910	3 x LC1D80	LRD3359	48...65
37	66	100	–	–	–	GV4L80	80	640	3 x LC1D80	LRD3363	63...80
–	–	–	45	76	70	GV4L80	80	800	3 x LC1D80	LRD3363	63...80
45	80	100	–	–	–	GV4L115	115	805	3 x LC1D115	LR9D5367	60...100
–	–	–	55	90	70	GV4L115	115	920	3 x LC1D115	LR9D5367	60...100
55	97	100	–	–	–	GV4L115	115	920	3 x LC1D115	LR9D5369	90...150
55	97	⁽³⁾	–	–	–	NSX160●MA ⁽³⁾	150	1200	3 x LC1D115	LR9D5369	90...150
–	–	–	75	125	⁽³⁾	NSX160●MA ⁽³⁾	150	1200	3 x LC1D150	LR9D5369	90...150
75	132	⁽³⁾	90	146	⁽³⁾	NSX160●MA ⁽³⁾	150	1200	3 x LC1D150	LR9D5369	90...150

⁽¹⁾ I_{rm}: setting current of the magnetic trip.

⁽²⁾ For mounting 3 contactors LC1D●●A, star-delta starter kit LAD9SD3 must be ordered separately, see page B8/43.

⁽³⁾ Reference to be completed by replacing the ● with the breaking performance code:

Breaking performance I _q (kA)	NSX100●MA		NSX160●MA, NSX250●MA		NSX400●, NSX630●	
400/415 V	36	70	36	70	70	150
440 V	35	65	35	65	65	130
Code	F	H	F	H	H	L

Coordination: Star-delta with Magnetic circuit breaker + Contactors + Overload relay

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

RE17RMMWS timer to be used for Star-Delta starter application.

90 to 450 kW at 400 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker	Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾	Thermal overload relay		
400 V			Product type ⁽¹⁾	I _{rm} ⁽²⁾	Product type	Product type	I _r setting ⁽²⁾	
P	I _e	I _q (max)		A			A	
kW	A	kA						
90	160	130	NSX250● + MA	1980	LC1G115	LC1D65	LR9G115	92
110	195	130	NSX250● + MA	1980	LC1G150	LC1D80	LR9G225	113
110	195	130	NSX400● + MicroLogic 1.3 M	1920	LC1G150	LC1D80	LR9G225	113
132	230	130	NSX400● + MicroLogic 1.3 M	1920	LC1G150	LC1D80	LR9G225	133
160	280	130	NSX400● + MicroLogic 1.3 M	2560	LC1G185	LC1G115	LR9G225	162
200	350	130	NSX630● + MicroLogic 1.3 M	3000	LC1G225	LC1G150	LR9G225	202
220	380	130	NSX630● + MicroLogic 1.3 M	3500	LC1G265	LC1G150	LR9G500	219
250	430	130	NSX630● + MicroLogic 1.3 M	3500	LC1G265	LC1G150	LR9G500	248
300	500	130	NS800● + MicroLogic 5.0 LR OFF	4800	LC1G330	LC1G185	LR9G500	266
335	575	130	NS800● + MicroLogic 5.0 LR OFF	4800	LC1G400	LC1G225	LR9G500	332
355	610	130	NS800● + MicroLogic 5.0 LR OFF	5600	LC1G400	LC1G225	LR9G500	352
400	690	130	NS800● + MicroLogic 5.0 LR OFF	5600	LC1G500	LC1G265	LR9G500	362
450	695	130	NS800● + MicroLogic 5.0 LR OFF	6400	LC1G500	LC1G265	LR9G500	401

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●/ NSX400●/ NSX630●					NS800●
Breaking performance code	F	N	H	S	L	L
400 V	36	50	70	100	130	150

110 to 355 kW at 440 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker	Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾	Thermal overload relay		
440 V			Product type ⁽¹⁾	I _{rm} ⁽²⁾	Product type	Product type	I _r setting ⁽²⁾	
P	I _e	I _q (max)		A			A	
kW	A	kA						
110	177	130	NSX250● + MA	1980	LC1G115	LC1D65	LR9G115	102
132	209	130	NSX250● + MA	1980	LC1G150	LC1D80	LR9G225	121
160	255	130	NSX400● + MicroLogic 1.3 M	2240	LC1G185	LC1D95	LR9G225	147
200	318	130	NSX400● + MicroLogic 1.3 M	2560	LC1G225	LC1G115	LR9G225	184
220	343	130	NSX630● + MicroLogic 1.3 M	3000	LC1G225	LC1G150	LR9G225	198
250	390	130	NSX630● + MicroLogic 1.3 M	3500	LC1G265	LC1G150	LR9G500	225
300	466	130	NSX630● + MicroLogic 1.3 M	4000	LC1G330	LC1G185	LR9G500	269
335	521	130	NS800● + MicroLogic 5.0 LR OFF	4800	LC1G330	LC1G185	LR9G500	301
355	554	130	NS800● + MicroLogic 5.0 LR OFF	4800	LC1G400	LC1G225	LR9G500	320

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX250●					NSX400●/ NSX630●				NS800L
Breaking performance code	F	N	H	S	L	F	N	S	L	L
440 V	35	50	65	100	130	30	42	100	130	130

⁽²⁾ This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

⁽³⁾ Refer to diagram page A5/40.

TeSys

Complementary technical information

Coordination: Star-delta with Magnetic circuit breaker + Contactors + Overload relay

Contactor: **Maximum operating rate:** 30 starts/hour - **Maximum starting time:** 30 seconds.

The coordination table is for normal starting conditions (Class 10e/ 20e). For other heavy starting applications with long start times, please contact technical support.

RE17RMMWS timer to be used for Star-Delta starter application.

132 to 425 kW at 500 V: type 2 coordination (with ComPacT NSX/NS circuit breakers and LR9G overload relays)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Circuit breaker	Contactor Line (KM2) / Delta (KM3) ⁽³⁾	Contactor Star (KM1) ⁽³⁾	Thermal overload relay		
500 V			Product type ⁽¹⁾	I _{rm} ⁽²⁾	Product type	Product type	I _r setting ⁽²⁾	
P	I _e	I _q (max)						
kW	A	kA		A			A	
132	184	70	NSX400● + MicroLogic 1.3 M	1600	LC1G115	LC1D65	LR9G225	106
160	224	70	NSX400● + MicroLogic 1.3 M	1920	LC1G150	LC1D80	LR9G225	129
200	280	70	NSX400● + MicroLogic 1.3 M	2560	LC1G185	LC1G115	LR9G225	162
250	344	70	NSX630● + MicroLogic 1.3 M	3000	LC1G225	LC1G150	LR9G225	199
295	405	70	NSX630● + MicroLogic 1.3 M	3500	LC1G265	LC1G150	LR9G500	234
375	516	70	NS800● + MicroLogic 5.0	4800	LC1G330	LC1G185	LR9G500	298
425	584	70	NS800● + MicroLogic 5.0	4800	LC1G400	LC1G185	LR9G500	337

⁽¹⁾ Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX400●/ NSX630●					NS800●
	F	N	H	S	L	L
500 V	25	30	50	65	70	100

⁽²⁾ This setting is a general guidance, I_r and I_{rm} should be adjusted according to motor characteristics and conditions of use.

⁽³⁾ Refer to diagram page A5/40.

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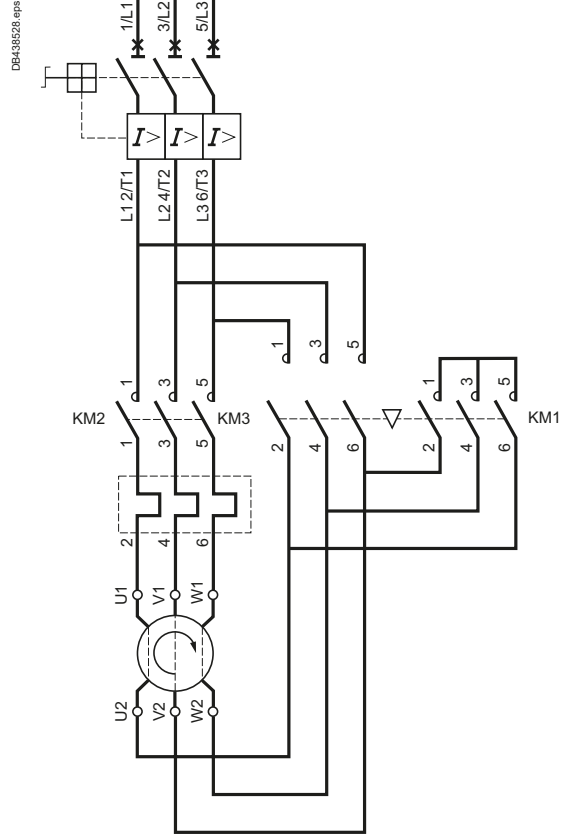
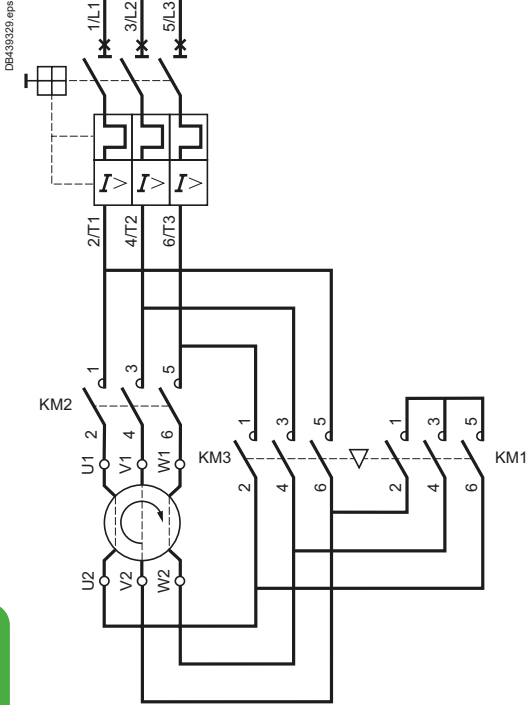
Complementary technical information

Coordination: Star-Delta motor starter - Common circuit diagrams

TeSys Giga star-delta motor 'Power' circuit diagram

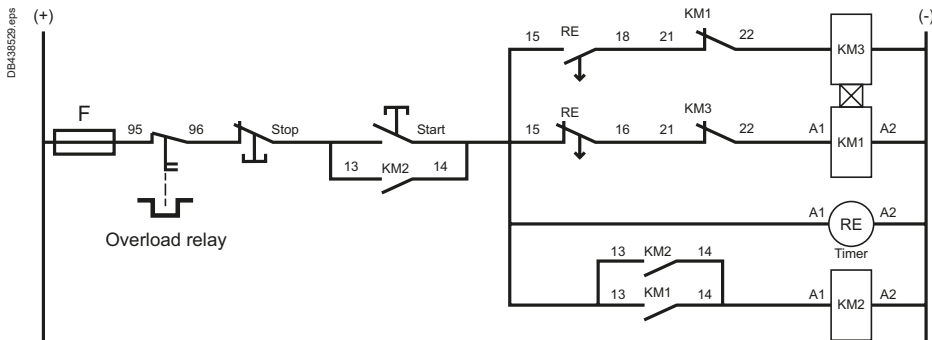
Thermal magnetic circuit breaker + contactors

Magnetic circuit breaker + contactors + overload relay



Coordination and standards

TeSys Giga star-delta Motor 'Control' circuit diagram



Recommended timing relay (RE): Zelio Timer ref. **RE17RMMWS** (12...240 V AC/DC 50/60 Hz – 8 AAC/DC contacts)

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Complementary technical information

Resistive load protection and control

Coordination: Thermal magnetic circuit breakers + Contactors

275 to 1000 A up to 690 V: type 2 coordination (with LC1G and ComPact NSX or NS circuit breakers)				
Current ratings of 3-phase loads 50/60 Hz in category AC-1		Circuit breaker		Contactor
Up to 690 V, temperature ≤ 40 °C		Product type ⁽¹⁾	In	Product type
Ie	Iq (max)		A	
A	kA		A	
275	100	NSX400● + MicroLogic 2.3	400	LC1G150
305	100	NSX400● + MicroLogic 2.3	400	LC1G185
330	100	NSX400● + MicroLogic 2.3	400	LC1G225
385	100	NSX400● + MicroLogic 2.3	400	LC1G265
440	100	NSX630● + MicroLogic 2.3	630	LC1G330
550	100	NSX630● + MicroLogic 2.3	630	LC1G400
700	75	NS800● + MicroLogic 5.0	800	LC1G500
1000	100 ⁽²⁾	NS1000● + MicroLogic 5.0	1000	LC1G630

(1) Product type to be completed by replacing the ● with the breaking performance code:

Rated conditional short-circuit (kA)	NSX400●/ NSX630●								NS800●/NS1000●	
	F	N	H	S	L	R	HB1	HB2	L	LB
400 V	36	50	70	100	150	200	-	-	150	200
440 V	30	42	65	90	130	200	-	-	130	200
500 V	25	30	50	65	70	80	85	100	100	100
690 V	10	10	20	25	35	45	75	100	-	75

(2) Up to 500 V AC.

Coordination
and
standards

TeSys

Complementary technical information

Resistive load protection and control

Coordination: Fuses (NFC, DIN type gG) + Contactors

275 to 1050 A up to 690 V: type 2 coordination (with NFC, DIN, type gG fuses)					
Current ratings of 3-phase loads 50/60 Hz in category AC-1		Switch-disconnector	gG fuse		Contactor
Up to 690 V, temperature ≤ 40 °C		Product type	Size	Rating	Product type
I _e	I _q (max)				
A	kA			A	
250	80	GS●QQ	2	315	LC1G115
275	80	GS●QQ	2	315	LC1G150
305	80	GS●QQ	2	315	LC1G185
330	80	GS●QQ	2	400	LC1G225
385	80	GS●QQ	2	400	LC1G265
440	80	GS●S	3	500	LC1G330
550	80	GS●S	3	630	LC1G400
700	80	GS●V	4	800	LC1G500
1000	80	GS●V	4	1000	LC1G630
1050	80	GS●V	4	1250	LC1G800

TeSys island motor starters

Standard, SIL starters - Power interface modules

IEC - Type 1 or 2 coordination with fuses - 690 V

690 V - Type 1 or 2 coordination with fuses			
Applications with 3-phase motors 50-60 Hz in category AC-3	aM fuses	Standard Starters SIL Starters Power Interface Modules	
690 V	Rating	References	Setting range
I _q			
kA	A		A
80	≤10	TPRST009 TPRSS009 TPRPM009	0.18-9
	≤25	TPRST025 TPRSS025 -	0.5-25
	≤40	TPRST038 TPRSS038 TPRPM038	0.76-38
	≤80	TPRST065 TPRSS065 -	3.25-65
	≤80	TPRST080 TPRSS080 TPRPM080	4-80

Coordination
and
standards

TeSys island motor starters

Standard, SIL starters - Power interface modules

IEC - Type 1 coordination with circuit breakers - 230 V

0.06 to 22 kW at 230 V: Type 1 coordination					
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters Power Interface Modules	
230 V			References	References	Setting range
P	I _e	I _q			
kW	A	kA			A
0.06	0.35	100	GV2L03	TPRST009 TPRSS009 TPRPM009	0.18-9
0.09	0.52	100	GV2L04	TPRST009 TPRSS009 TPRPM009	0.18-9
0.12	0.7	100	GV2L05	TPRST009 TPRSS009 TPRPM009	0.18-9
0.18	1	100	GV2L06	TPRST009 TPRSS009 TPRPM009	0.18-9
0.25	1.5	100	GV2L06	TPRST009 TPRSS009 TPRPM009	0.18-9
0.37	1.9	100	GV2L07	TPRST009 TPRSS009 TPRPM009	0.18-9
0.55	2.6	100	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
0.75	3.3	100	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
1.1	4.7	100	GV2L10	TPRST009 TPRSS009 TPRPM009	0.18-9
1.5	6.3	100	GV2L14	TPRST009 TPRSS009 TPRPM009	0.18-9
2.2	8.5	100	GV2L14	TPRST009 TPRSS009 TPRPM009	0.18-9
3	11.3	100	GV2L16	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
4	15	100	GV2L20	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
5.5	20	50	GV2L22	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
7.5	27	50	GV2L32	TPRST038 TPRSS038 TPRPM038	0.76-38
9	32	100	GV3L40	TPRST038 TPRSS038 TPRPM038	0.76-38
11	38	100	GV3L40	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
15	51	100	GV3L65	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
18.5	61	100	GV3L65	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
22	72	100	GV3L73	TPRPM080	4-80

TeSys island motor starters

Standard, SIL starters

IEC - Type 2 coordination with circuit breakers - 230 V

0.06 to 22 kW at 230 V: Type 2 coordination					
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters	
230 V			References	References	Setting range
P	I _e	I _q			
kW	A	kA			A
0.06	0.35	100	GV2L03	TPRST009 TPRSS009	0.18-9
0.09	0.52	100	GV2L04	TPRST009 TPRSS009	0.18-9
0.12	0.7	100	GV2L05	TPRST009 TPRSS009	0.18-9
0.18	1	100	GV2L06	TPRST009 TPRSS009	0.18-9
0.25	1.5	100	GV2L06	TPRST009 TPRSS009	0.18-9
0.37	1.9	100	GV2L07	TPRST009 TPRSS009	0.18-9
0.55	2.6	100	GV2L08	TPRST009 TPRSS009	0.18-9
0.75	3.3	100	GV2L08	TPRST025 TPRSS025	0.5-25
1.1	4.7	100	GV2L10	TPRST025 TPRSS025	0.5-25
1.5	6.3	100	GV2L14	TPRST025 TPRSS025	0.5-25
2.2	8.5	100	GV2L14	TPRST025 TPRSS025	0.5-25
3	11.3	100	GV2L16	TPRST025 TPRSS025	0.5-25
4	15	100	GV2L20	TPRST025 TPRSS025	0.5-25
5.5	20	50	GV2L22	TPRST025 TPRSS025	0.5-25
7.5	27	50	GV2L32	TPRST038 TPRSS038	0.76-38
9	32	100	GV3L40	TPRST038 TPRSS038	0.76-38
11	38	100	GV3L40	TPRST065 TPRSS065	3.25-65
15	51	100	GV3L65	TPRST065 TPRSS065	3.25-65
18.5	61	100	GV3L65	TPRST065 TPRSS065	3.25-65

Coordination
and
standards

TeSys island motor starters

Standard, SIL starters - Power interface modules

IEC - Type 1 coordination with circuit breakers - 400/415 - 440 - 500 V

0.06 to 37 kW at 400/415 - 440 - 500 V: Type 1 coordination											
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3									Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters Power Interface Modules	
400/415 V			440 V			500 V			References	References	Setting range
P	I _e	I _q	P	I _e	I _q	P	I _e	I _q			
kW	A	kA	kW	A	kA	kW	A	kA		A	
0.06	0.2	100	0.06	0.18	100	-	-	-	GV2L03	TPRST009 TPRSS009 TPRPM009	0.18-9
0.09	0.3	100	0.09	0.27	100	-	-	-			
0.12	0.44	100	0.12	0.4	100	-	-	-	GV2L04	TPRST009 TPRSS009 TPRPM009	0.18-9
0.18	0.6	100	0.18	0.55	100	-	-	-			
0.25	0.85	100	0.25	0.77	100	-	-	-	GV2L05	TPRST009 TPRSS009 TPRPM009	0.18-9
0.37	1.1	100	-	-	-	0.37	0.88	100			
-	-	-	0.37	1	100	-	-	-	GV2L06	TPRST009 TPRSS009 TPRPM009	0.18-9
0.55	1.5	100	0.55	1.4	100	0.55	1.2	100			
-	-	-	-	-	-	0.75	1.5	100	GV2L07	TPRST009 TPRSS009 TPRPM009	0.18-9
0.75	1.9	100	0.75	1.7	100	-	-	-			
1.1	2.7	100	-	-	-	1.1	2.2	100			
-	-	-	1.1	2.4	100	-	-	-	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
1.5	3.6	100	1.5	3.3	100	1.5	2.9	100			
2.2	4.9	100	2.2	4.5	100	2.2	3.9	100	GV2L10	TPRST009 TPRSS009 TPRPM009	0.18-9
-	-	-	3	5.9	100	3	5.2	100			
3	6.5	100	-	-	-	-	-	-	GV2L14	TPRST009 TPRSS009 TPRPM009	0.18-9
4	8.5	100	4	7.7	20	4	6.8	10			
-	-	-	-	-	-	5.5	9.2	10			
5.5	11.5	50	5.5	10.5	20	-	-	-	GV2L16	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
-	-	-	-	-	-	7.5	12.4	10			
7.5	15.5	50	7.5	14.1	20	-	-	-	GV2L20	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
-	-	-	9	16.5	20	9	13.9	10			
9	18.1	50	-	-	-	-	-	-	GV2L22	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
11	22	50	11	20	20	11	17.6	10			
-	-	-	-	-	-	15	23	10			
15	29	50	15	26.4	20	-	-	-	GV2L32	TPRST038 TPRSS038 TPRPM038	0.76-38
-	-	-	-	-	-	18.5	28	10			
18.5	35	50	18.5	31.8	50	-	-	-	GV3L40	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
-	-	-	-	-	-	22	33	12			
22	41	50	22	37.3	50	-	-	-	GV3L50	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
-	-	-	-	-	-	30	44	12			
30	55	50	30	50	50	-	-	-	GV3L65	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
-	-	-	37	60	50	37	53	12			
37	66	50	-	-	-	-	-	-	GV3L73	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80

Coordination and standards

TeSys island motor starters

Standard, SIL starters

IEC - Type 2 coordination with circuit breakers - 400/415 - 440 - 500 V

0.06 to 37 kW at 400/415 - 440 - 500 V: Type 2 coordination										Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters	Setting range
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3									References			
400/415 V			440 V			500 V				P	le	Iq
P	Ie	Iq	P	Ie	Iq	P	Ie	Iq	References			
kW	A	kA	kW	A	kA	kW	A	kA			A	
0.06	0.2	100	0.06	0.18	100	-	-	-	GV2L03	TPRST009 TPRSS009	0.18-9	
0.09	0.3	100	0.09	0.27	100	-	-	-				
0.12	0.44	100	0.12	0.4	100	-	-	-	GV2L04	TPRST009 TPRSS009	0.18-9	
0.18	0.6	100	0.18	0.55	100	-	-	-				
0.25	0.85	100	0.25	0.77	100	-	-	-	GV2L05	TPRST009 TPRSS009	0.18-9	
0.37	1.1	100	-	-	-	0.37	0.88	100				
-	-	-	0.37	1	100	-	-	-	GV2L06	TPRST009 TPRSS009	0.18-9	
0.55	1.5	100	0.55	1.4	100	0.55	1.2	100				
-	-	-	-	-	-	0.75	1.5	100	GV2L07	TPRST009 TPRSS009	0.18-9	
0.75	1.9	100	0.75	1.7	100	-	-	-				
						1.1	2.2	100				
1.1	2.7	100	-	-	-	-	-	-	GV2L07	TPRST025 TPRSS025	0.5-25	
-	-	-	1.1	2.4	100	-	-	-	GV2L08	TPRST009 TPRSS009	0.18-9	
-	-	-	-	-	-	1.5	2.9	100				
1.5	3.6	100	1.5	3.3	100	-	-	-	GV2L08	TPRST025 TPRSS025	0.5-25	
2.2	4.9	100	2.2	4.5	100	2.2	3.9	100	GV2L10	TPRST025 TPRSS025	0.5-25	
-	-	-	3	5.9	100	3	5.2	100				
3	6.5	100	-	-	-	-	-	-	GV2L14	TPRST025 TPRSS025	0.5-25	
4	8.5	100	4	7.7	20	4	6.8	10				
-	-	-	-	-	-	5.5	9.2	10				
5.5	11.5	50	5.5	10.5	20	-	-	-	GV2L16	TPRST025 TPRSS025	0.5-25	
-	-	-	-	-	-	7.5	12.4	10				
7.5	15.5	50	7.5	14.1	20	-	-	-	GV2L20	TPRST025 TPRSS025	0.5-25	
-	-	-	9	16.5	20	9	13.9	10				
9	18.1	50	-	-	-	-	-	-	GV2L22	TPRST025 TPRSS025	0.5-25	
11	22	50	11	20	20	11	17.6	10				
-	-	-	-	-	-	15	23	10				
15	29	50	15	26.4	20	-	-	-	GV2L32	TPRST038 TPRSS038	0.76-38	
-	-	-	-	-	-	18.5	28	10				
18.5	35	50	18.5	31.8	50	-	-	-	GV3L40	TPRST065 TPRSS065	3.25-65	
-	-	-	-	-	-	22	33	12				
22	41	50	22	37.3	50	-	-	-	GV3L50	TPRST065 TPRSS065	3.25-65	
-	-	-	-	-	-	30	44	12				
30	55	50	30	50	50	-	-	-	GV3L65	TPRST065 TPRSS065	3.25-65	
-	-	-	37	60	50	37	53	12				
37	66	50	-	-	-	-	-	-	GV3L73	TPRST065 TPRSS065	3.25-65	

Coordination
and
standards

TeSys island motor starters

Standard, SIL starters - Power interface modules

IEC - Type 1 coordination with circuit breakers - 690 V

0.06 to 37 kW at 690 V: Type 1 coordination					
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters Power Interface Modules	
690 V			References	References	Setting range
P	I _e	I _q			
kW	A	kA			A
0.37	0.64	100	GV2L05	TPRST009 TPRSS009 TPRPM009	0.18-9
0.55	0.87	4	GV2L05	TPRST009 TPRSS009 TPRPM009	0.18-9
0.75	1.1	4	GV2L06	TPRST009 TPRSS009 TPRPM009	0.18-9
1.1	1.6	4	GV2L07	TPRST009 TPRSS009 TPRPM009	0.18-9
1.5	2.1	4	GV2L07	TPRST009 TPRSS009 TPRPM009	0.18-9
2.2	2.8	4	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
3	3.8	4	GV2L08	TPRST009 TPRSS009 TPRPM009	0.18-9
4	4.9	4	GV2L10	TPRST009 TPRSS009 TPRPM009	0.18-9
5.5	6.7	4	GV2L14	TPRST009 TPRSS009 TPRPM009	0.18-9
7.5	8.9	4	GV2L14	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
9	10.5	4	GV2L16	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
11	12.8	4	GV2L16	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
15	17	4	GV2L20	TPRST025 TPRSS025 TPRPM038	0.5-25 / 0.76-38
18.5	21	4	GV2L22	TPRST038 TPRSS038 TPRPM038	0.76-38
22	24	4	GV2L22	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
30	32	6	GV3L40	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80
37	39	6	GV3L50	TPRST065 TPRSS065 TPRPM080	3.25-65 / 4-80

Coordination and standards

TeSys island motor starters

Standard, SIL starters

IEC - Type 2 coordination with circuit breakers - 690 V

0.06 to 37 kW at 690 V: Type 2 coordination					
Applications power ratings of 3-phase motors 50-60 Hz in category AC-3			Circuit breaker (Trip class 5 to 15)	Standard Starters SIL Starters	
690 V			References	References	Setting range
P	I _e	I _q			
kW	A	kA			A
0.37	0.64	100	GV2L05	TPRST009 TPRSS009	0.18-9
0.55	0.87	4	GV2L05	TPRST009 TPRSS009	0.18-9
0.75	1.1	4	GV2L06	TPRST009 TPRSS009	0.18-9
1.1	1.6	4	GV2L07	TPRST009 TPRSS009	0.18-9
1.1	1.6	50	GV2L07 + LA9LB920	TPRST025 TPRSS025	0.5-25
1.5	2.1	4	GV2L07	TPRST009 TPRSS009	0.18-9
1.5	2.1	50	GV2L07 + LA9LB920	TPRST025 TPRSS025	0.5-25
2.2	2.8	4	GV2L08	TPRST025 TPRSS025	0.5-25
2.2	2.8	50	GV2L08 + LA9LB920	TPRST025 TPRSS025	0.5-25
3	3.8	4	GV2L08	TPRST025 TPRSS025	0.5-25
3	3.8	50	GV2L08 + LA9LB920	TPRST025 TPRSS025	0.5-25
4	4.9	4	GV2L10	TPRST025 TPRSS025	0.5-25
4	4.9	50	GV2L10 + LA9LB920	TPRST025 TPRSS025	0.5-25
5.5	6.7	4	GV2L14	TPRST025 TPRSS025	0.5-25
5.5	6.7	50	GV2L14 + LA9LB920	TPRST025 TPRSS025	0.5-25
7.5	8.9	4	GV2L14	TPRST025 TPRSS025	0.5-25
7.5	8.9	50	GV2L14 + LA9LB920	TPRST025 TPRSS025	0.5-25
9	10.5	4	GV2L16	TPRST025 TPRSS025	0.5-25
11	12.8	4	GV2L16	TPRST025 TPRSS025	0.5-25
11	12.8	3	GV3L18 + LA9LB920	TPRST038 TPRSS038	0.76-38
15	17	4	GV2L20	TPRST025 TPRSS025	0.5-25
15	17	3	GV2L22 + LA9LB920	TPRST038 TPRSS038	0.76-38
18.5	21	4	GV2L22	TPRST038 TPRSS038	0.76-38
18.5	21	3	GV3L25 + LA9LB920	TPRST065 TPRSS065	3.25-65
22	24	4	GV2L22	TPRST065 TPRSS065	3.25-65
22	24	3	GV2L32 + LA9LB920	TPRST065 TPRSS065	3.25-65
30	32	6	GV3L40	TPRST065 TPRSS065	3.25-65
37	39	6	GV3L50	TPRST065 TPRSS065	3.25-65

Coordination
and
standards

TeSys island motor starters

Standard, SIL starters - Power interface modules

UL - SCCR Ratings

Short Circuit Current Ratings (SCCR)

UL File E39281 and File E48539 Suitable for use on a circuit delivering not more than:								Standard Starters SIL Starters Power Interface Modules	
High SCCR						Standard SCCR		References	Setting range
Max Voltage 600 V Class J Fuse ⁽¹⁾		Max Voltage 480 V Circuit Breaker		Max Voltage 600 V Circuit Breaker		Max Voltage 600 V Circuit Breaker or Fuse			
SCCR	Maximum Amperage	SCCR	Maximum Amperage	SCCR	Maximum Amperage	SCCR	Maximum Amperage		A
kA	A	kA	A	kA	A	kA	A		
100	25	85	35	50	35	5	35	TPRST009 TPRSS009 TPRPM009	0.18-9
100	60	85	60	50	60	5	100	TPRST025 TPRSS025	0.5-25
100	100	85	60	50	60	5	125	TPRST038 TPRSS038 TPRPM038	0.76-38
100	125	85	110	50	110	5	250	TPRST065 TPRSS065	3.25-65
100	125	85	110	50	110	5	250	TPRST080 TPRSS080 TPRPM080	4-80

(1) When protected by any Class J or CC time-delay fuse (Class CC applicable up to 30 A only).

Group Motor Rating

Suitable for group installation on a circuit delivering not more than:				Standard Starters SIL Starters	
Max voltage 600 V - Class J Fuse ⁽¹⁾		Max voltage 480 V - Circuit Breaker		References	Setting range
SCCR	Maximum Amperage	SCCR	Maximum Amperage		
kA	A	kA	A		A
5	90	5	90	TPRST009 TPRSS009	0.18-9
5	175	5	175	TPRST025 TPRSS025	0.5-25
5	175	5	175	TPRST038 TPRSS038	0.76-38
5	600	5	600	TPRST065 TPRSS065	3.25-65
5	600	5	600	TPRST080 TPRSS080	4-80

(1) When protected by any Class J or CC time-delay fuse.

TeSys Control

Contactors - Definitions and comments

General - Coordination and standards

Contactor utilisation categories conforming to IEC 60947-1

The standard utilisation categories define the current values which the contactor must be able to make or break.

These values depend on:

- the type of load being switched: squirrel cage or slip ring motor, resistors,
- the conditions under which making or breaking takes place: motor stalled, starting or running, reversing, plugging.

a.c. applications

Category AC-1	This category applies to all types of a.c. load with a power factor equal to or greater than 0.95 ($\cos \varphi \geq 0.95$). Application examples: heating, distribution.
Category AC-2	This category applies to starting, plugging and inching of slip ring motors. <ul style="list-style-type: none"> ■ On closing, the contactor makes the starting current, which is about 2.5 times the rated current of the motor. ■ On opening, it must break the starting current, at a voltage less than or equal to the mains supply voltage.
Category AC-3	This category applies to squirrel cage motors with breaking during normal running of the motor. <ul style="list-style-type: none"> ■ On closing, the contactor makes the starting current, which is about 5 to 7 times the rated current of the motor. ■ On opening, it breaks the rated current drawn by the motor. Application examples: all standard squirrel cage motors: lifts, escalators, conveyor belts, bucket elevators, compressors, pumps, mixers, air conditioning units, etc...
Category AC-3e	This category applies to high-efficiency IE3/ IE4 squirrel cage motors with breaking during normal running of the motor. <ul style="list-style-type: none"> ■ On closing, the contactor makes the starting current, which is about 5 to 9 times the rated current of the motor. ■ On opening, it breaks the rated current drawn by the motor. Application examples: all high-efficiency IE3/ IE4 squirrel cage motors typically used for elevators and escalators, machine tools, conveyor belts, compressors, pumps, mixers, air conditioning units, etc.
Category AC-4	This category covers applications with plugging and inching of squirrel cage and slip ring motors. The contactor closes at a current peak which may be as high as 5 or 7 times the rated motor current. On opening it breaks this same current at a voltage which is higher, the lower the motor speed. This voltage can be the same as the mains voltage. Breaking is severe. Application examples: printing machines, wire drawing machines, cranes and hoists, metallurgy industry.

d.c. applications

Category DC-1	This category applies to all types of d.c. load with a time constant (L/R) of less than or equal to 1 ms.
Category DC-3	This category applies to starting, counter-current braking and inching of shunt motors. Time constant ≤ 2 ms. <ul style="list-style-type: none"> ■ On closing, the contactor makes the starting current, which is about 2.5 times the rated motor current. ■ On opening, the contactor must be able to break 2.5 times the starting current at a voltage which is less than or equal to the mains voltage. The slower the motor speed, and therefore the lower its back e.m.f., the higher this voltage. Breaking is difficult.
Category DC-5	This category applies to starting, counter-current braking and inching of series wound motors. Time constant ≤ 7.5 ms. On closing, the contactor makes a starting current peak which may be as high as 2.5 times the rated motor current. On opening, the contactor breaks this same current at a voltage which is higher, the lower the motor speed. This voltage can be the same as the mains voltage. Breaking is severe.

Utilisation categories for auxiliary contacts & control relays conforming to IEC 60947-1

a.c. applications

Category AC-14⁽¹⁾	This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is less than 72 VA. Application example: switching the operating coil of contactors and relays.
Category AC-15⁽¹⁾	This category applies to the switching of electromagnetic loads whose power drawn with the electromagnet closed is more than 72 VA. Application example: switching the operating coil of contactors.

d.c. applications

Category DC-13⁽²⁾	This category applies to the switching of electromagnetic loads for which the time taken to reach 95 % of the steady state current ($T = 0.95$) is equal to 6 times the power P drawn by the load (with $P \leq 50$ W). Application example: switching the operating coil of contactors without economy resistor.
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⁽¹⁾ Replaces category AC-11.

⁽²⁾ Replaces category DC-11.

TeSys Control

Contactors - Definitions and comments

General - Coordination and standards

Definitions

Altitude	<p>The rarefied atmosphere at high altitude reduces the dielectric strength of the air and hence the rated operational voltage of the contactor. It also reduces the cooling effect of the air and hence the rated operational current of the contactor (unless the temperature drops at the same time).</p> <p>No derating is necessary up to 3000 m.</p> <p>Derating factors to be applied above this altitude for main pole operational voltage and current (a.c. supply) are as follows.</p> <table border="1"> <thead> <tr> <th>Altitude</th> <th>3500 m</th> <th>4000 m</th> <th>4500 m</th> <th>5000 m</th> </tr> </thead> <tbody> <tr> <td>Rated operational voltage</td> <td>0.90</td> <td>0.80</td> <td>0.70</td> <td>0.60</td> </tr> <tr> <td>Rated operational current</td> <td>0.92</td> <td>0.90</td> <td>0.88</td> <td>0.86</td> </tr> </tbody> </table>	Altitude	3500 m	4000 m	4500 m	5000 m	Rated operational voltage	0.90	0.80	0.70	0.60	Rated operational current	0.92	0.90	0.88	0.86
Altitude	3500 m	4000 m	4500 m	5000 m												
Rated operational voltage	0.90	0.80	0.70	0.60												
Rated operational current	0.92	0.90	0.88	0.86												
Ambient air temperature	<p>The temperature of the air surrounding the device, measured near to the device.</p> <p>The operating characteristics are given:</p> <ul style="list-style-type: none"> - with no restriction for temperatures between -5 and +55 °C, - with restrictions, if necessary, for temperatures between -50 and +70 °C. 															
Rated operational current (Ie)	This is defined taking into account the rated operational voltage, operating rate and duty, utilisation category and ambient temperature around the device.															
Rated conventional thermal current (Ith) ⁽¹⁾	The current which a closed contactor can sustain for a minimum of 8 hours without its temperature rise exceeding the limits given in the standards.															
Permissible short time rating	The current which a closed contactor can sustain for a short time after a period of no load, without dangerous overheating.															
Rated operational voltage (Ue)	This is the voltage value which, in conjunction with the rated operational current, determines the use of the contactor or starter, and on which the corresponding tests and the utilisation category are based. For 3-phase circuits it is expressed as the voltage between phases. Apart from exceptional cases such as rotor short-circuiting, the rated operational voltage Ue is less than or equal to the rated insulation voltage Ui.															
Rated control circuit voltage (Uc)	The rated value of the control circuit voltage, on which the operating characteristics are based. For a.c. applications, the values are given for a near sinusoidal wave form (less than 5 % total harmonic distortion).															
Rated insulation voltage (Ui)	This is the voltage value used to define the insulation characteristics of a device and referred to in dielectric tests determining leakage paths and creepage distances. As the specifications are not identical for all standards, the rated value given for each of them is not necessarily the same.															
Rated impulse withstand voltage (Uimp)	The peak value of a voltage surge which the device is able to withstand without breaking down.															
Rated operational power (expressed in kW)	The rated power of the standard motor which can be switched by the contactor, at the stated operational voltage.															

⁽¹⁾ Conventional thermal current, in free air, conforming to IEC standards.

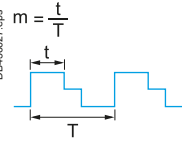
Note: these definitions are extracted from standard IEC 60947-1.

TeSys Control

Contactors - Definitions and comments

General - Coordination and standards

Definitions

Rated breaking capacity ⁽¹⁾	This is the current value which the contactor can break in accordance with the breaking conditions specified in the IEC standard.
Rated making capacity ⁽¹⁾	This is the current value which the contactor can make in accordance with the making conditions specified in the IEC standard.
On-load factor (m)	<div style="display: flex; align-items: center;"> <div style="flex: 1;">  </div> <div style="flex: 2;"> <p>This is the ratio between the time the current flows (t) and the duration of the cycle (T). Cycle duration: duration of current flow + time at zero current.</p> </div> </div>
Pole impedance	<p>The impedance of one pole is the sum of the impedance of all the circuit components between the input terminal and the output terminal.</p> <p>The impedance comprises a resistive component (R) and an inductive component ($X = L\omega$).</p> <p>The total impedance therefore depends on the frequency and is normally given for 50 Hz.</p> <p>This average value is given for the pole at its rated operational current.</p>
Electrical durability	This is the average number of on-load operating cycles which the main pole contacts can perform without maintenance. The electrical durability depends on the utilisation category, the rated operational current and the rated operational voltage.
Mechanical durability	This is the average number of no-load operating cycles (i.e. with zero current flow through the main poles) which the contactor can perform without mechanical failure.

⁽¹⁾ For a.c. applications, the breaking and making capacities are expressed by the rms value of the symmetrical component of the short-circuit current. Taking into account the maximum asymmetry which may exist in the circuit, the contacts therefore have to withstand a peak asymmetrical current which may be twice the rms symmetrical component.

Note: these definitions are extracted from standard IEC 60947-1.

TeSys Control

Contactors for utilisation category AC-3

Selection - Coordination and standards

Coordination and standards

Operational current and power conforming to IEC ($\theta \leq 60^\circ\text{C}$) - AC-3

Contactor size			LC1/LP1 K06	LC1/LP1 K09	LC1 K12	LC1 K16	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A
Maximum operational current in AC-3	$\leq 440\text{ V}$	A	6	9	12	16	9	12	18	25	32	38	40
Rated operational power P (standard motor power ratings)	220/240 V ⁽¹⁾	kW	1.5	2.2	3	3	2.2	3	4	5.5	7.5	9	11
	380/400 V ⁽²⁾	kW	2.2	4	5.5	7.5	4	5.5	7.5	11	15	18.5	18.5
	415 V	kW	2.2	4	5.5	7.5	4	5.5	9	11	15	18.5	22
	440 V	kW	3	4	5.5	7.5	4	5.5	9	11	15	18.5	22
	500 V	kW	–	–	–	–	5.5	7.5	10	15	18.5	18.5	22
	660/690 V ⁽³⁾	kW	3	4	4	4	5.5	7.5	10	15	18.5	18.5	30
	1000 V	kW	–	–	–	–	–	–	–	–	–	–	–

Operational current and power conforming to IEC ($\theta \leq 60^\circ\text{C}$) - AC-3e

Contactor size			LC1/LP1 K06	LC1/LP1 K09	LC1 K12	LC1 K16	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A
Maximum operational current in AC-3e	$\leq 440\text{ V}$	A	6	9	12	16	9	12	18	25	32	38	40
Rated operational power P (standard motor power ratings)	220/240 V ⁽¹⁾	kW	1.5	2.2	3	3	2.2	3	4	5.5	7.5	9	11
	380/400 V ⁽²⁾	kW	2.2	4	5.5	7.5	4	5.5	7.5	11	15	18.5	18.5
	415 V	kW	2.2	4	5.5	7.5	4	5.5	9	11	15	18.5	22
	440 V	kW	3	4	5.5	7.5	4	5.5	9	11	15	18.5	22
	500 V	kW	–	–	–	–	5.5	7.5	10	15	18.5	18.5	22
	660/690 V ⁽³⁾	kW	3	4	4	4	5.5	7.5	10	15	18.5	18.5	30
	1000 V	kW	–	–	–	–	–	–	–	–	–	–	–

Maximum operating rate in operating cycles/hour ⁽⁴⁾

On-load factor	Operational power	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A				
$\leq 85\%$	P	–	–	–	–	1200	1200	1200	1000	1000	1000	
	0.5 P	–	–	–	–	3000	3000	2500	2500	2500	2500	
$\leq 25\%$	P	–	–	–	–	1800	1800	1800	1800	1200	1200	1200

Operational current and power conforming to UL, CSA ($\theta \leq 60^\circ\text{C}$)

Contactor size			LC1/LP1 K06	LC1/LP1 K09	LC1/LP1 K12	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A
Maximum operational current in AC-3	$\leq 440\text{ V}$	A	6	9	12	9	12	18	25	32	–	40
Rated operational power P (standard motor power ratings 60 Hz)	200/208 V	HP	1.5	2	3	2	3	5	7.5	10	–	10
	230/240 V	HP	1.5	3	3	2	3	5	7.5	10	–	10
	460/480 V	HP	3	5	7.5	5	7.5	10	15	20	–	30
	575/600 V	HP	3	5	10	7.5	10	15	20	25	–	30

(1) 230 V for LC1G115 to LC1G800 contactors.

(2) 400 V for LC1G115 to LC1G800 contactors.

(3) 690 V for LC1K/LP1K and LC1G115 to LC1G800 contactors.

(4) Depending on the operational power and the on-load factor ($\theta \leq 60^\circ\text{C}$).

TeSys Control

Contactors for utilisation category AC-3

Selection - Coordination and standards

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780	LC1 F1000
50	65	66	80	95	115	150	115	150	185	225	265	330	400	500	630	800	780	1000
15	18.5	22	22	25	30	40	30	37	55	55	75	90	110	160	200	250	220	315
22	30	37	37	45	55	75	55	75	90	110	132	160	200	250	335	450	400	560
25	37	37	45	45	59	80	55	75	90	110	132	160	200	250	375	450	425	630
30	37	37	45	45	59	80	75	90	110	132	160	200	250	315	400	450	425	670
30	37	37	55	55	75	90	75	90	110	132	160	200	250	355	400	500	450	-
33	37	37	45	45	80	100	75	90	110	160	200	220	315	355	500	560	475	-
-	-	-	-	-	65	75	-	75	75	132	160	185	220	335	450	450	450	-

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800
50	65	66	80	95	115	150	115	145	177	209	255	294	391	437	555	587
15	18.5	22	22	25	30	40	30	37	55	55	75	90	110	147	180	200
22	30	37	37	45	55	75	55	75	90	110	132	160	200	250	315	335
25	37	37	45	45	59	80	55	75	90	110	132	160	200	250	335	355
30	37	37	45	45	59	80	75	90	110	132	160	185	250	280	355	375
30	37	37	55	55	75	90	75	90	110	132	160	200	250	315	375	425
33	37	37	45	45	80	100	75	90	110	160	200	220	315	355	500	560
-	-	-	-	-	65	75	-	75	75	132	160	185	220	335	450	450

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780	LC1 F1000
1000	1000	1000	750	750	750	750	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	500	(5)
2500	2500	2500	2000	2000	2000	1200	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	1200	(5)
1200	1200	1200	1200	1200	1200	1200	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	600	(5)

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780	LC1 F1000
50	65	65	80	95	115	150	115	150	185	225	265	330	400	500	630	800	780	1000
15	20	20	30	30	30	40	30	40	50	60	75	100	125	150	250	300	-	350
15	20	20	30	30	40	50	40	50	60	75	100	125	150	200	300	350	450	400
40	40	40	60	60	75	100	75	100	125	150	200	250	300	400	600	700	900	900
40	50	50	60	60	100	125	100	125	150	150	200	300	400	450	700	800	900	-

(5) Other values: please contact your regional sales office.

Coordination
and
standards

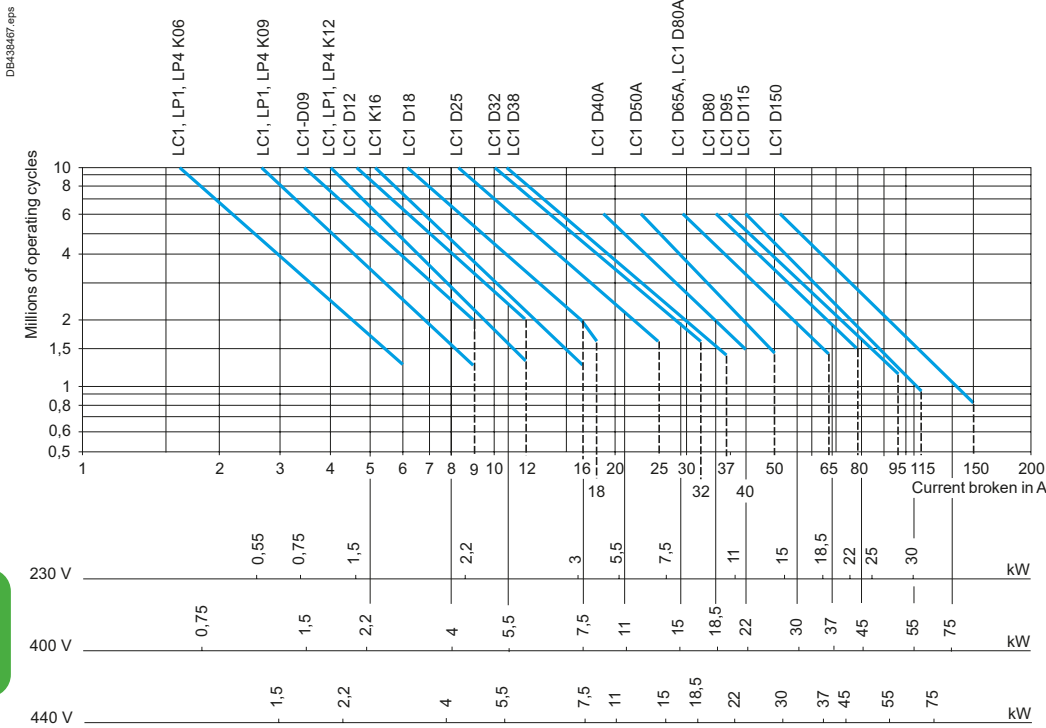
TeSys Control

Contactors for utilisation category AC-3

Selection - Coordination and standards

Selection according to required electrical durability, in category AC-3, AC-3e ($U_e \leq 440\text{ V}$)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
 The current broken (I_c) in category AC-3 is equal to the rated operational current (I_e) of the motor.



Operational power in kW-50 Hz.

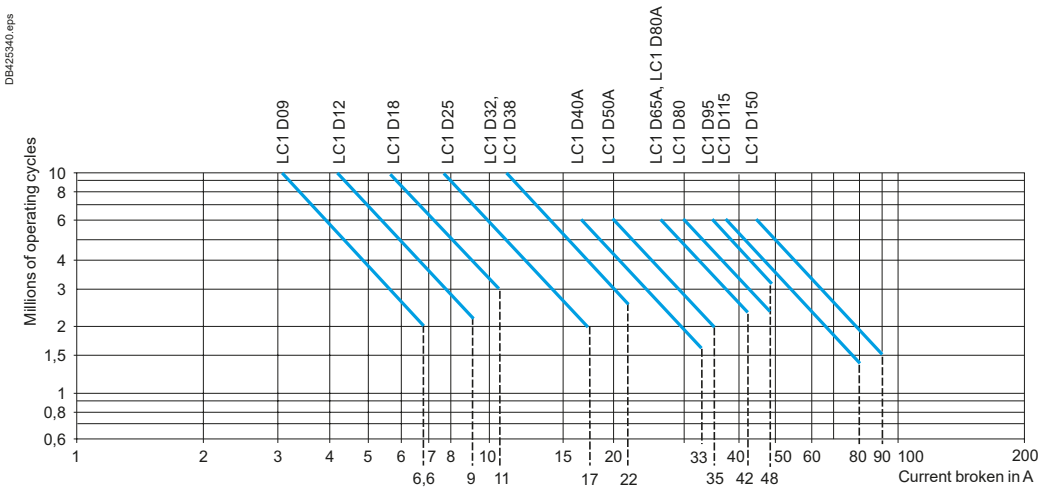
Example:

Asynchronous motor with $P = 5.5\text{ kW}$ - $U_e = 400\text{ V}$ - $I_e = 11\text{ A}$ - $I_c = I_e = 11\text{ A}$
 or asynchronous motor with $P = 5.5\text{ kW}$ - $U_e = 415\text{ V}$ - $I_e = 11\text{ A}$ - $I_c = I_e = 11\text{ A}$
 3 million operating cycles required.

The above selection curves show the contactor rating needed: LC1D18.

Selection according to required electrical durability, in category AC-3, AC-3e ($U_e = 660/690\text{ V}$)⁽¹⁾

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
 The current broken (I_c) in category AC-3 is equal to the rated operational current (I_e) of the motor.



⁽¹⁾ For $U_e = 1000\text{ V}$, use the 660/690 V curves, but do not exceed the operational current at the operational power indicated for 1000 V.

Coordination and standards

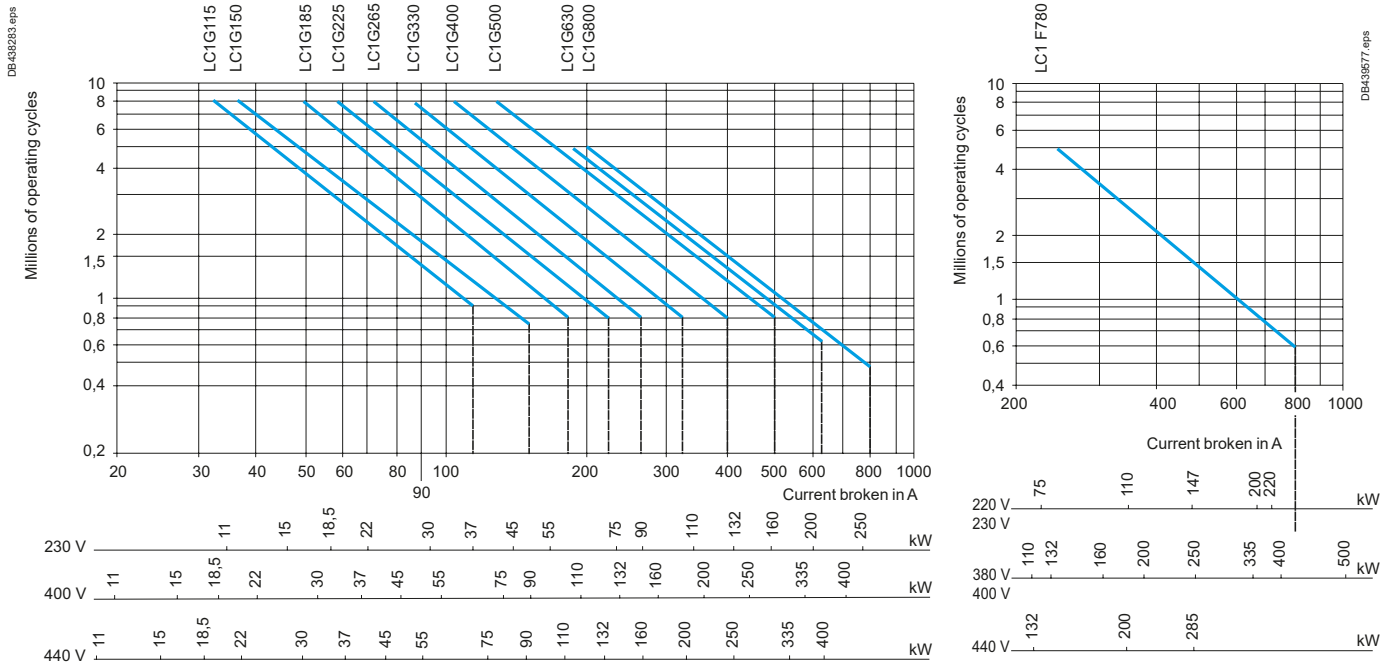
TeSys Control

Contactors for utilisation category AC-3

Selection - Coordination and standards

Selection according to required electrical durability, in category AC-3 ($U_e \leq 440$ V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running. The current broken (I_c) in category AC-3 is equal to the rated operational current (I_e) of the motor.



Operational power in kW-50 Hz.

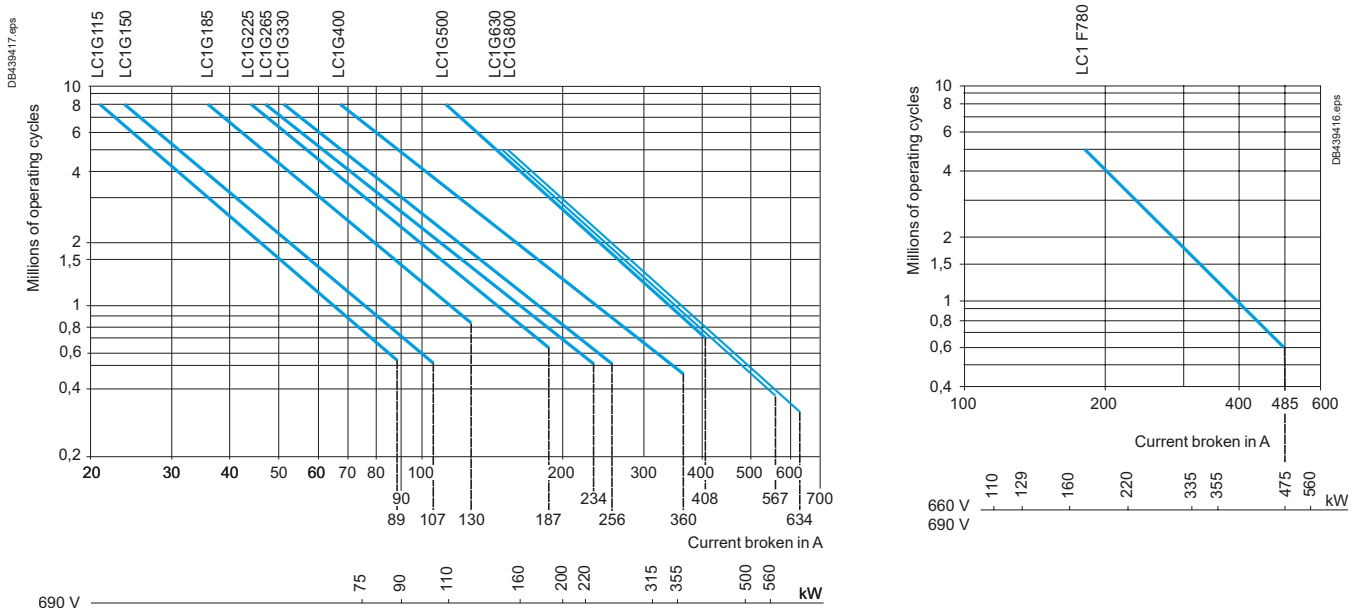
Example:

Asynchronous motor with $P = 132$ kW - $U_e = 400$ V - $I_e = 230$ A - $I_c = I_e = 230$ A
1.8 million operating cycles required.

The above selection curves show the contactor rating needed: LC1G400.

Selection according to required electrical durability, in category AC-3 ($U_e = 660/690$ V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (I_c) in category AC-3 is equal to the rated operational current (I_e) of the motor.



Example:

Asynchronous motor with $P = 200$ kW - $U_e = 690$ V - $I_e = 203$ A - $I_c = I_e = 203$ A
1 million operating cycles required.

The above selection curves show the contactor rating needed: LC1G400.

TeSys Control

Contactors for utilisation category AC-1

Selection - Coordination and standards

Maximum operational current (open-mounted device)

Contactor size		LC1/LP1 K09	LC1/LP1 K12	LC1 D09	LC1 DT20	LC1 D12 DT25	LC1 D18 DT32	LC1 D25 DT40	LC1 D32	LC1 D38	LC1 D40A DT60A	LC1 D50A	LC1 D65A DT80A	LC1/LP1 D80 D80	
Maximum operating rate in operating cycles/hour		600	600	600	600	600	600	600	600	600	600	600	600	600	
Connection conforming to IEC 60947-1	Cable c.s.a. mm ²	4	4	4	4	4	6	6	10	10	35	35	35	50	
	Bar c.s.a. mm	-	-	-	-	-	-	-	-	-	-	-	-	-	
Operational current in AC-1 in A, according to the ambient temperature conforming to IEC 60947-1	≤ 40 °C	A	20	20	25	20	25	32	40	50	50	60	80	80	125
	≤ 60 °C	A ⁽⁴⁾	20	20	25	20	25	32	40	50	50	60	80	80	125
	≤ 70 °C	A ⁽⁴⁾	(1)	(1)	17	(1)	17	22	28	35	35	42	56	56	80
Maximum operational power ≤ 60 °C	220/230 V	kW	8	8	9	8	9	11	14	18	18	21	29	29	45
	240 V	kW	8	8	9	8	9	12	15	19	19	23	31	31	49
	380/400 V	kW	14	14	15	14	15	20	25	31	31	37	50	50	78
	415 V	kW	14	14	17	14	17	21	27	34	34	41	54	54	85
	440 V	kW	15	15	18	15	18	23	29	36	36	43	58	58	90
	500 V	kW	17	17	20	17	20	23	33	41	41	49	65	65	102
	660/690 V	kW	22	22	27	22	27	34	43	54	54	65	80	80	135
	1000 V	kW	-	-	-	-	-	-	-	-	-	-	-	-	120

- (1) Please consult your Regional Sales Office.
- (2) With set of right-angled connectors LA9F2100.
- (3) With set of right-angled connectors LA9F2600.

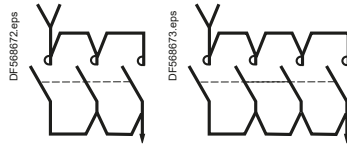
- (4) LC1F780 to LC1F2600, LC1G115 to LC1G800: the maximum control voltage must not exceed rated U_c for a temperature θ , 60 °C ≤ θ ≤ 70 °C.

Coordination and standards

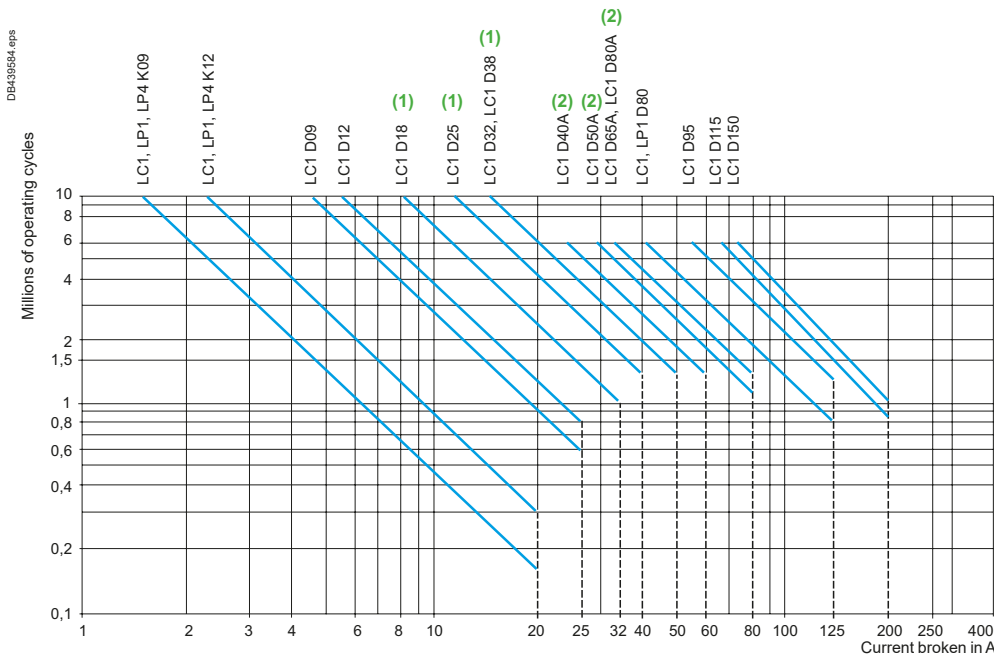
Increase in operational current by parallel connection of poles

Apply the following coefficients to the currents or power values given above; these coefficients take into account an often unbalanced current distribution between the poles:

- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8



Selection according to required electrical durability, in category AC-1 (U_e ≤ 690 V)



- (1) For Deca Green, consult online datasheets for values.
- (2) For Deca Green or DC coil, consult online datasheets for values.

Control of resistive circuits ($\cos \phi \geq 0.95$).

The current broken (I_c) in category AC-1 is equal to the current (I_e) normally drawn by the load.

Example:

- U_e = 220 V - I_e = 50 A $\theta \leq 40$ °C - I_c = I_e = 50 A
- 2 million operating cycles required
- the above selection curves show the contactor rating needed: LC1D50A.

TeSys Control

Contactors for utilisation category AC-1

Selection - Coordination and standards

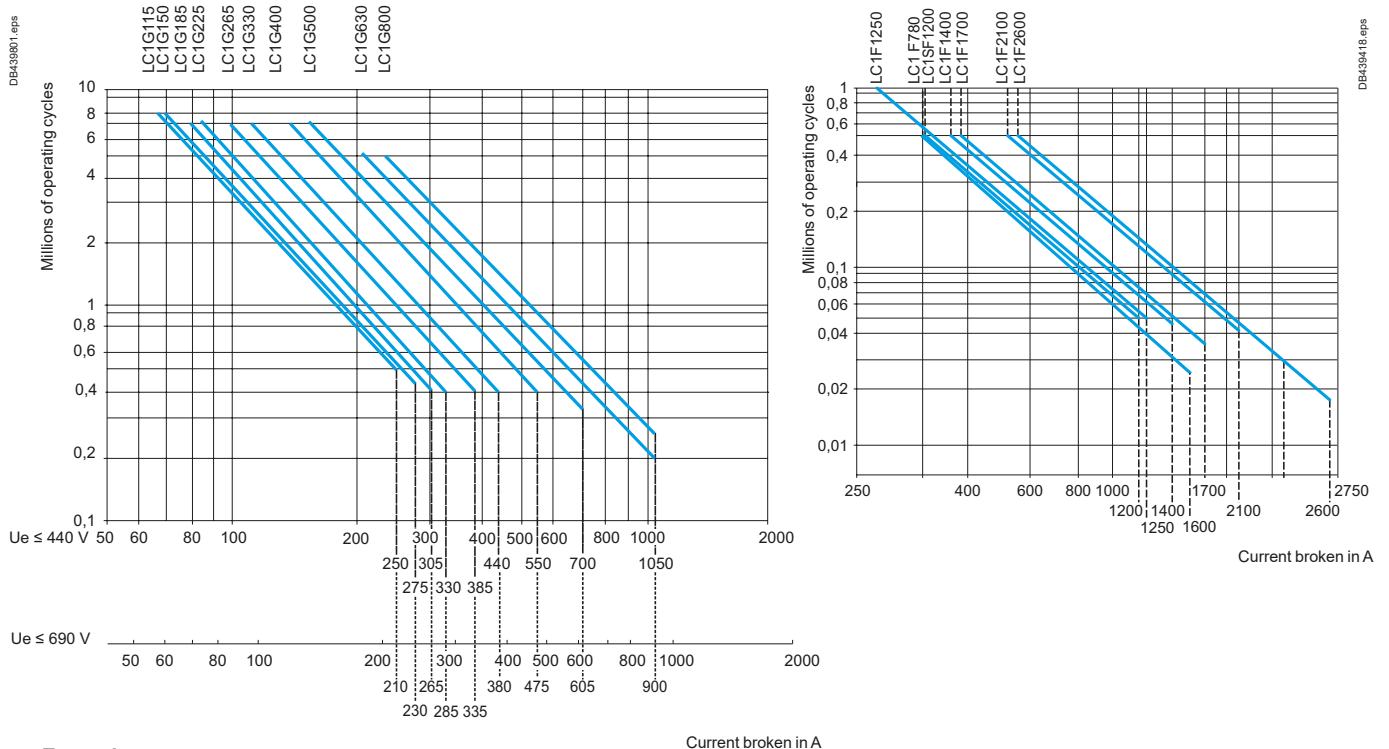
LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780	LC1 F1000	LC1S F1200	LC1 F1250	LC1 F1400	LC1 F1700	LC1 F2100	LC1 F2600
600	600	600	300	300	300	300	300	300	300	300	300	300	600	600	300	300	200	200	200	200
50	120	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	2 100x5	3 100x5	2 50x8	2 100x5	2 100x5	3 100x5	4 100x5	3 100x10
125	200	200	250	275	305	330	385	440	550	700	1050	1050	1600	1250	1200	1260	1400	1700	2100 ⁽²⁾	2600
125	200	200	225	250	275	300	350	400	500	600	800	800	1350	⁽¹⁾	1110	1060	1190	1450	1750 ⁽²⁾	2600 ⁽³⁾
80	160	160	210	235	255	280	330	380	470	540	640	640	1100	⁽¹⁾	1020	900	1080	1300	1500 ⁽²⁾	2150 ⁽³⁾
45	80	80	90	100	110	120	140	160	200	240	320	320	550	⁽¹⁾	400	420	474	570	700	840
49	83	83	90	100	110	120	150	170	210	250	330	330	570	⁽¹⁾	410	440	490	600	780	920
78	135	135	160	170	190	210	240	280	350	420	550	550	950	⁽¹⁾	700	730	820	1000	1200	1450
85	140	140	160	180	200	220	250	290	360	430	580	580	1000	⁽¹⁾	720	760	850	1050	1300	1580
90	150	150	170	190	210	230	270	300	380	460	610	610	1050	⁽¹⁾	750	810	910	1100	1350	1680
102	170	170	190	220	240	260	300	350	430	520	690	690	1200	-	850	920	1000	1250	1550	1910
135	235	235	270	300	330	360	420	480	600	720	960	960	1650	-	1200	1260	1400	1700	2100	2520
120	345	345	390	430	480	520	610	690	870	1040	1390	1390	2400	-	-	-	2100	2500	3100 ⁽²⁾	3820

- (1) Please consult your Regional Sales Office.
- (2) With set of right-angled connectors LA9F2100.
- (3) With set of right-angled connectors LA9F2600.

- (4) LC1F780 to LC1F2600, LC1G115 to LC1G800: the maximum control voltage must not exceed rated U_c for a temperature θ , $60^\circ\text{C} \leq \theta \leq 70^\circ\text{C}$.

Coordination and standards

Selection according to required electrical durability, in category AC-1 ($U_e \leq 690\text{ V}$, $\theta \leq 40^\circ\text{C}$)



- Example:**
- $U_e = 440\text{ V}$ - $I_e = 500\text{ A}$ - $\theta \leq 40^\circ\text{C}$ - $I_c = I_e = 500\text{ A}$
 - 0.8 million operating cycles required
 - the above selection curves show the contactor rating needed: LC1G630.

TeSys Control

Contactors for utilisation categories AC-2 or AC-4

Selection - Coordination and standards

Maximum breaking current

Category AC-2: slip ring motors - breaking the starting current.

Category AC-4: squirrel cage motors - breaking the starting current.

Contactor size			LC1/ LP1 K06	LC1/ LP1 K09	LC1/ LP1 K12	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A
In category AC-4 (Ie max)	Ue ≤ 440 V Ie max broken = 6 x I motor	A	36	54	54	54	72	108	150	192	192	240
	440 V < Ue ≤ 690 V Ie max broken = 6 x I motor	A	26	40	40	40	50	70	90	105	105	150

Depending on the maximum operating rate ⁽¹⁾ and the on-load factor, $\theta \leq 60^\circ\text{C}$ ⁽²⁾

From 150 and 15 % to 300 and 10 %	A	20	30	30	30	40	45	75	80	80	110
From 150 and 20 % to 600 and 10 %	A	18	27	27	27	36	40	67	70	70	96
From 150 and 30 % to 1200 and 10 %	A	16	24	24	24	30	35	56	60	60	80
From 150 and 55 % to 2400 and 10 %	A	13	19	19	19	24	30	45	50	50	62
From 150 and 85 % to 3600 and 10 %	A	10	16	16	16	21	25	40	45	45	53

Contactor size			LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800
In category AC-4 (Ie max)	Ue ≤ 440 V Ie max broken = 6 x I motor	A	690	900	1110	1350	1590	1980	2400	3000	3780	4050
	440 V < Ue ≤ 690 V Ie max broken = 6 x I motor	A	530	640	780	1120	1400	1530	2160	2450	3400	3800

Depending on the maximum operating rate ⁽¹⁾ and the on-load factor, $\theta \leq 60^\circ\text{C}$ ⁽²⁾

Duty Cycle [Cycle/h]	Load Factor [%]		LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800
150	15	A	319	400	478	562	641	758	869	1001	1124	1204
300	10	A	250	314	375	441	502	593	679	779	870	923
150	20	A	304	383	457	538	613	726	834	962	1083	1165
600	10	A	183	230	275	324	369	437	502	579	653	703
150	30	A	280	352	421	495	565	668	766	883	993	1065
1200 ⁽³⁾	10	A	131	164	196	230	262	309	353	404	449	473
150	55	A	239	300	358	421	480	568	652	750	842	902
2400 ⁽³⁾	10	A	120	151	181	212	242	287	329	379	426	457
150	85	A	208	261	312	368	420	498	572	661	748	809
3600 ⁽³⁾	10	A	120	151	181	212	242	287	329	379	426	457

(1) Do not exceed the maximum number of operating cycles.

(2) For temperatures higher than 60 °C, use a maximum operating rate value equal to 80 % of the actual value when selecting from the tables.

(3) Control Module can operate with higher duty cycle during limited time followed by proposed cooling time.

Operating cycles/hour	Cool time
1200	10 min
2400	30 min
3600	60 min

Counter current braking (plugging)

The current varies from the maximum plug-braking current to the rated motor current.

The making current must be compatible with the rated making and breaking capacities of the contactor.

As breaking normally takes place at a current value at or near the locked rotor current, the contactor can be selected using the criteria for categories AC-2 and AC-4.

Permissible AC-4 power rating for 200 000 operating cycles

Operational voltage		LC●/ LP● K06	LC●/ LP● K09	LC●/ LP● K12	LC● D09	LC● D12	LC● D18	LC● D25	LC● D32	LC● D38	LC● D40A
220/230 V ⁽⁴⁾	kW	0.75	1.1	1.1	1.5	1.5	2.2	3	4	4	4
380/400 V ⁽⁵⁾	kW	1.5	2.2	2.2	2.2	3.7	4	5.5	7.5	7.5	9
415 V	kW	1.5	2.2	2.2	2.2	3	3.7	5.5	7.5	7.5	9
440 V	kW	1.5	2.2	2.2	2.2	3	3.7	5.5	7.5	7.5	11
500 V	kW	2.2	3	3	3	4	5.5	7.5	9	9	11
660/690 V ⁽⁶⁾	kW	3	4	4	4	5.5	7.5	10	11	11	15

(4) 230 V for LC1G115 to LC1G800 contactors.

(5) 400 V for LC1G115 to LC1G800 contactors.

(6) 690 V for LC1G115 to LC1G800 contactors.

TeSys Control

Contactors for utilisation categories AC-2 or AC-4

Selection - Coordination and standards

LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 F780
300	390	390	480	570	630	830	4260
170	210	210	250	250	540	640	2910
140	160	160	200	200	280	310	1600
120	148	148	170	170	250	280	1400
100	132	132	145	145	215	240	1100
80	110	110	120	120	150	170	820
70	90	90	100	100	125	145	710

Coordination
and
standards

LC● D50A	LC● D65A	LC1 D80A	LC● D80	LC● D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780
5.5	7.5	7.5	7.5	9	9	11	11	11	15	18.5	22	22	30	37	37	37	63
11	11	11	15	15	18.5	22	22	22	30	30	37	45	55	55	55	75	110
11	11	11	15	15	18.5	22	22	22	30	30	37	45	55	55	55	75	110
11	15	15	15	15	18.5	22	22	22	30	37	45	55	55	55	75	75	132
15	15	15	22	22	30	37	11	11	18.5	22	22	30	45	45	55	55	150
15	18.5	18.5	25	25	30	45	18.5	22	22	30	37	45	55	55	75	90	185

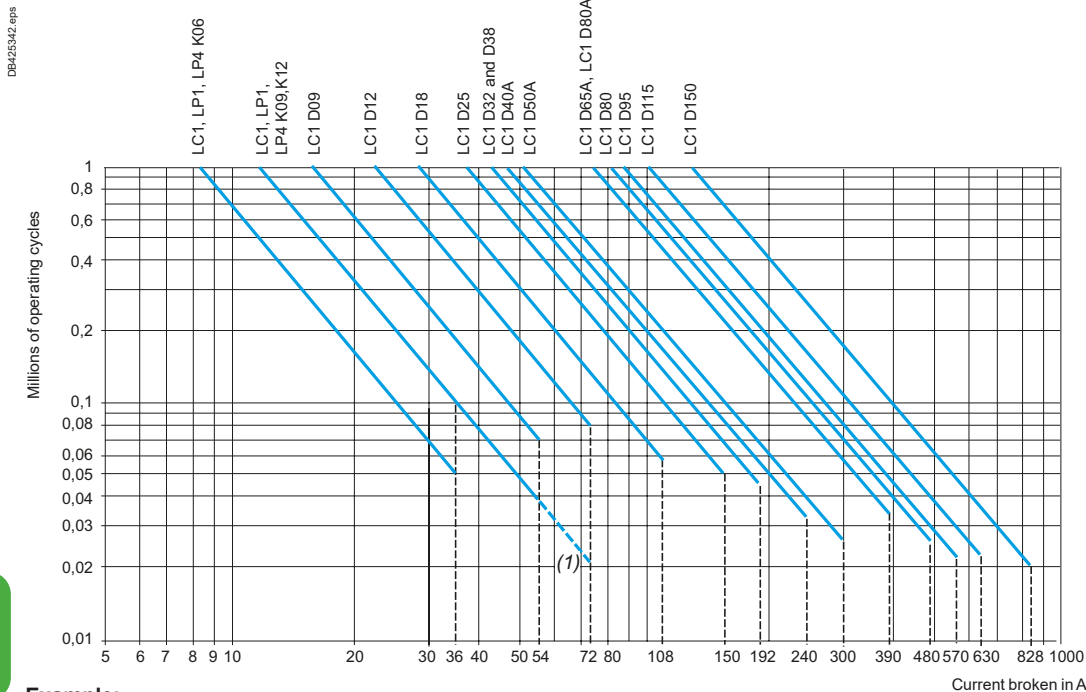
TeSys Control

Contactors for utilisation categories AC-2 or AC-4

Selection - Coordination and standards

Selection according to required electrical durability, in categories AC-2 or AC-4 ($U_e \leq 440 \text{ V}$)

Control of 3-phase asynchronous squirrel cage motors (AC-4) or slip ring motors (AC-2) with breaking whilst motor stalled.
 The current broken (I_c) in AC-2 is equal to $2.5 \times I_e$.
 The current broken (I_c) in AC-4 is equal to $6 \times I_e$ (I_e = rated operational current of the motor).



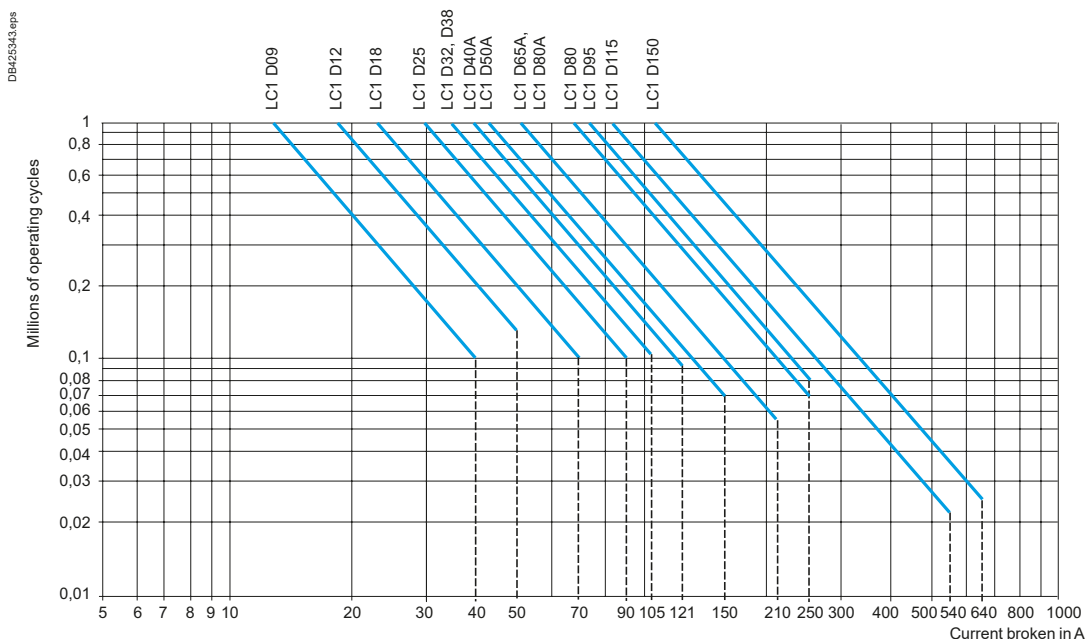
Example:

- asynchronous motor with $P = 5.5 \text{ kW}$ - $U_e = 400 \text{ V}$ - $I_e = 11 \text{ A}$. $I_c = 6 \times I_e = 66 \text{ A}$
- or asynchronous motor with $P = 5.5 \text{ kW}$ - $U_e = 415 \text{ V}$ - $I_e = 11 \text{ A}$. $I_c = 6 \times I_e = 66 \text{ A}$
- 200 000 operating cycles required
- the above selection curves show the contactor rating needed: LC1D25.

(1) The dotted lines are only applicable to LC1, LP1K12 contactors.

Selection according to required electrical durability, use in category AC-4 ($440 \text{ V} < U_e \leq 690 \text{ V}$)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor stalled.
 The current broken (I_c) in AC-2 is equal to $2.5 \times I_e$.
 The current broken (I_c) in AC-4 is equal to $6 \times I_e$ (I_e = rated operational current of the motor).



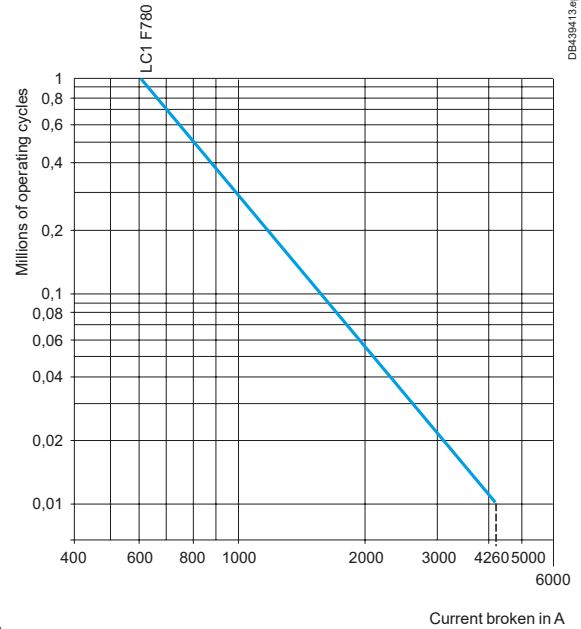
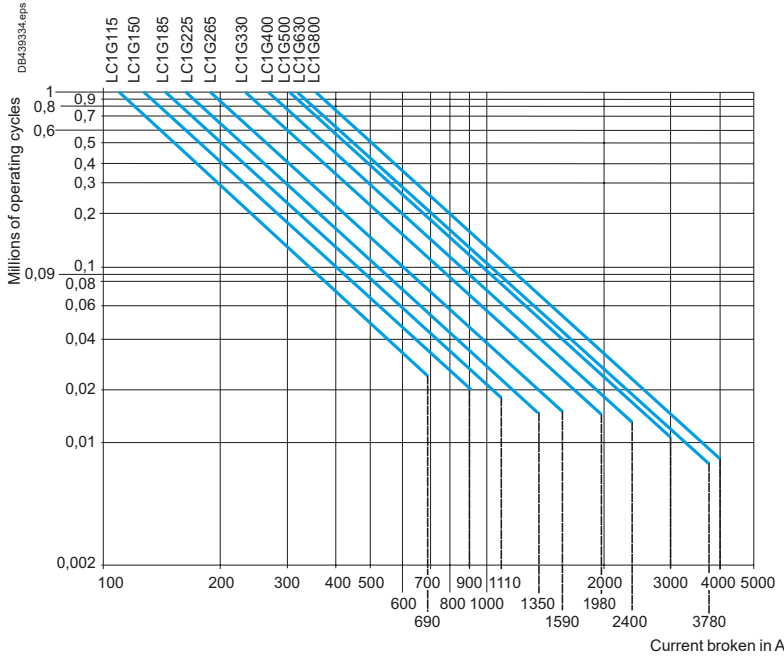
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Contactors for utilisation categories AC-2 or AC-4

Selection - Coordination and standards

Selection according to required electrical durability, in categories AC-2 or AC-4 ($U_e \leq 440\text{ V}$)

Control of 3-phase asynchronous squirrel cage motors (AC-4) or slip ring motors (AC-2) with breaking whilst motor stalled.
The current broken (I_c) in AC-4 is equal to $6 \times I_e$.
(I_e = rated operational current of the motor).

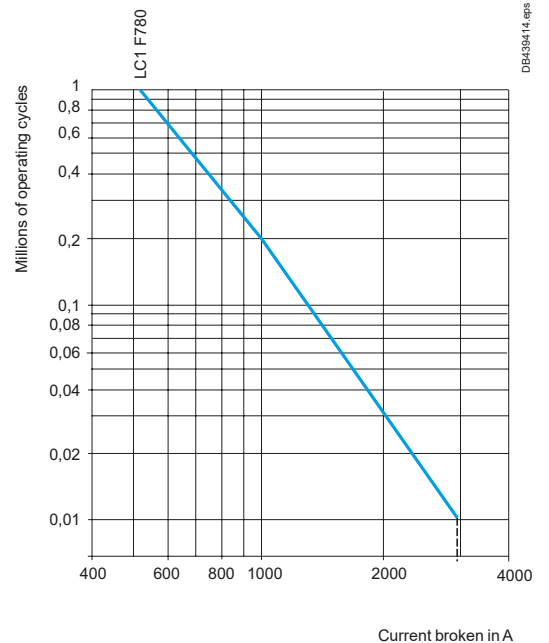
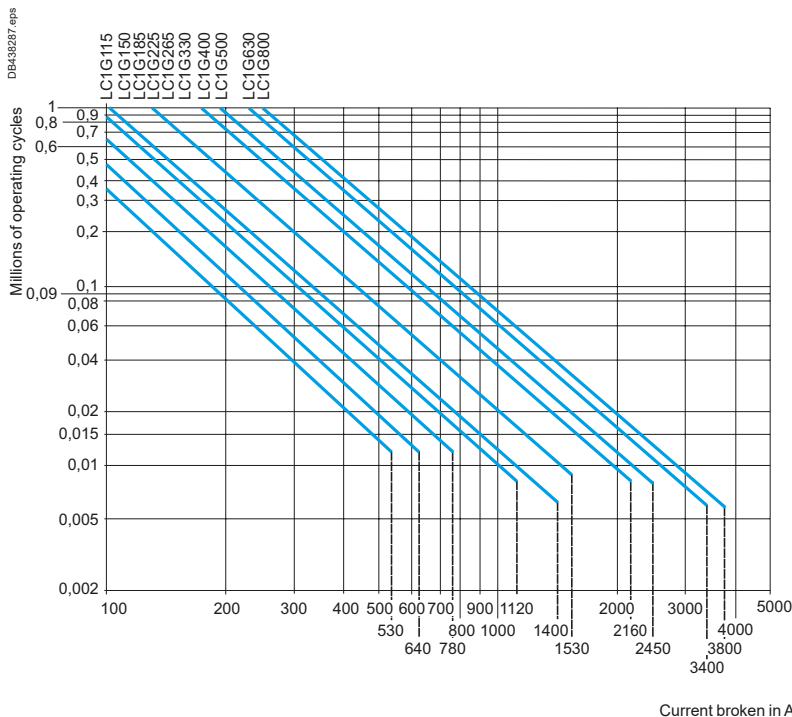


Example:

- asynchronous motor with $P = 132\text{ kW}$ - $U_e = 400\text{ V}$ - $I_e = 230\text{ A}$. $I_c = 6 \times I_e = 1380\text{ A}$. 30 000 operating cycles required.
- the above selection curves show the contactor rating needed: LC1G330.

Selection according to required electrical durability, use in category AC-4 ($440\text{ V} < U_e \leq 690\text{ V}$)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst motor stalled.
The current broken (I_c) in AC-4 is equal to $6 \times I_e$ (I_e = rated operational current of the motor).

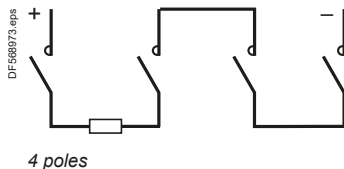
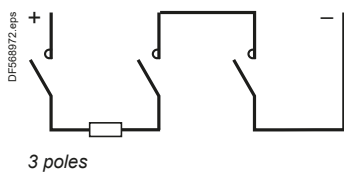
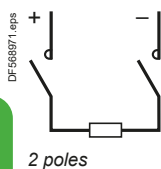
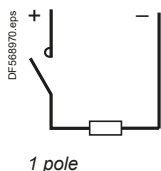


Coordination and standards

TeSys Control

Contactors for utilisation categories DC-1 to DC-5

Selection - Coordination and standards



Coordination and standards

Rated operational current (Ie) in Amperes, in utilisation category DC-1, resistive loads: time constant $\frac{L}{R} \leq 1$ ms, ambient temperature ≤ 60 °C

Rated operational voltage Ue V	No. of poles connected in series	Contactor rating								
		LC1 D09	LC1 DT20	LC1 D12 DT25	LC1 D18 DT32	LC1 D25 DT40	LC1 D32	LC1 D38	LC1 D40A	LC1 DT60A
24	1	20	20	20	25	32	40	40	50	50
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
48/75	1	20	20	20	25	32	40	40	50	50
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
125	1	4	4	4	4	7	7	7	7	7
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
250	1	1	1	1	1	1	1	1	1	1
	2	4	4	4	4	7	7	7	7	7
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
300	1	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–
	3	4	4	4	4	7	7	7	7	–
	4	–	20	20	25	32	–	–	–	50
460	1	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–

Rated operational current (Ie) in Amperes, in utilisation category DC-2 to DC-5, inductive loads: time constant $\frac{L}{R} \leq 15$ ms, ambient temperature ≤ 60 °C

Rated operational voltage Ue V	No. of poles connected in series	Contactor rating								
		LC1 D09	LC1 DT20	LC1 D12 DT25	LC1 D18 DT32	LC1 D25 DT40	LC1 D32	LC1 D38	LC1 D40A	LC1 DT60A
24	1	20	20	20	25	32	40	40	50	50
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
48/75	1	20	20	20	25	32	40	40	50	50
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
125	1	2	2	2	2	3	3	3	4	4
	2	20	20	20	25	32	40	40	50	50
	3	20	20	20	25	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
250	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1
	2	2	2	2	2	3	3	3	4	4
	3	8	8	8	8	32	40	40	50	50
	4	–	20	20	25	32	–	–	–	50
300	1	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–
	3	2	2	2	2	3	3	3	3	3
	4	–	8	8	8	32	–	–	–	50
460	1	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–

TeSys Control

Contactors for utilisation categories DC-1 to DC-5

Selection - Coordination and standards

Contactors rating

LC1 D50A	LC1 D65A D80A	LC1 DT80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1300
7	7	7	12	12	12	12	205	225	250	270	315	360	450	540	855	855	1180
65	65	65	100	100	200	200	205	225	250	270	315	360	450	540	855	855	1180
65	65	65	100	100	200	200	225	250	275	300	355	405	505	605	960	960	1300
-	-	65	100	-	200	-	225	250	275	300	355	405	505	605	960	960	1300
1	1.5	1.5	2	2	10	10	-	-	-	-	-	-	-	-	-	-	-
7	7	7	12	12	200	200	180	205	225	245	285	325	405	485	770	770	1000
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	945	945	1300
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	7	7	12	12	200	200	185	205	225	250	290	330	415	495	785	785	1000
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1000
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	200	-	185	205	225	245	285	325	410	490	775	775	1000

Contactors rating

LC1 D50A	LC1 D65A D80A	LC1 DT80A	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G115	LC1 G150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	LC1 F780
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
65	65	65	100	100	200	200	225	250	275	300	350	400	500	600	950	950	1300
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1300
4	4	4	5	5	10	10	-	-	-	-	-	-	-	-	-	-	-
65	65	65	100	100	200	200	190	210	230	250	290	335	420	500	795	795	1000
65	65	65	100	100	200	200	205	230	255	275	325	370	460	555	875	875	1000
-	-	65	100	-	200	-	205	230	255	275	325	370	460	555	875	875	1000
1	1.5	1.5	1	1	3	3	-	-	-	-	-	-	-	-	-	-	-
4	4	4	5	5	200	200	175	190	210	230	270	305	385	460	730	730	900
65	65	65	100	100	200	200	185	210	230	250	290	335	415	500	790	790	1000
-	-	65	100	-	200	-	225	250	275	300	355	405	505	605	960	960	1000
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	3	3	5	5	200	200	175	195	210	230	270	310	385	465	730	730	900
-	-	65	100	-	200	-	225	250	275	300	350	400	500	600	950	950	1000
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	200	-	175	190	210	230	270	310	385	460	730	730	800

Coordination and standards

Selection according to required electrical durability, use in categories DC-1 to DC-5

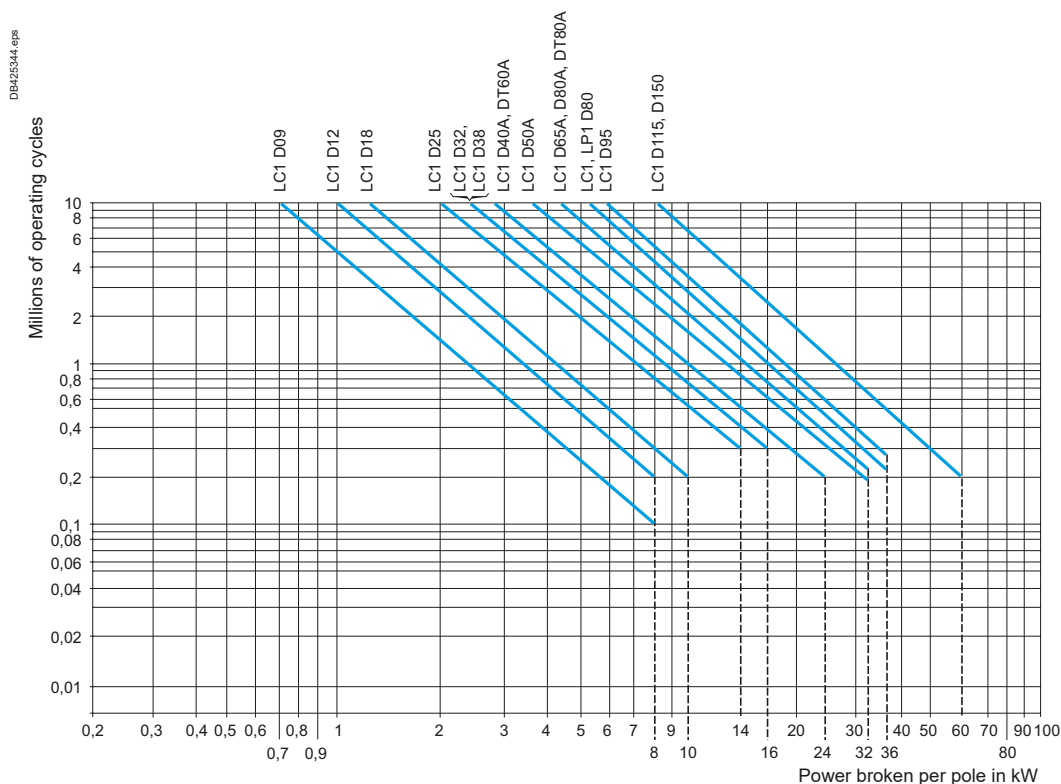
The criteria for contactor selection are:

- the rated operational current I_e
- the rated operational voltage U_e
- the utilisation category and the time constant L/R
- the required electrical durability.

Maximum operating rate (operating cycles)

The following limits must not be exceeded: 120 operating cycles/hour at rated operational current I_e .

Electrical durability

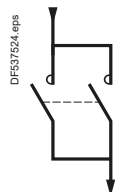


Example

Series wound motor - $P = 1.5 \text{ kW}$ - $U_e = 200 \text{ V}$ - $I_e = 7.5 \text{ A}$.

Utilisation: reversing, inching.

- Utilisation category = DC-5.
- Select contactor LC1D09 with 3 poles in series.
- The power broken is: $P_c \text{ total} = 2.5 \times 200 \times 7.5 = 3.75 \text{ kW}$.
- The power broken per pole is: 1.25 kW .
- The electrical durability read from the curve is ≥ 3 millions of operating cycles.



Use of poles in parallel

Electrical durability can be increased by using poles connected in parallel.

With N poles connected in parallel, the electrical durability becomes: electrical durability read from the curves $\times N \times 0.7$.

Note:

When the poles are connected in parallel, the maximum operational currents indicated on pages A5/64 and A5/65 must not be exceeded.

Note:

Ensure that the connections are made in such a way as to equalise the currents in each pole.

Selection according to required electrical durability, use in categories DC-1 to DC-5

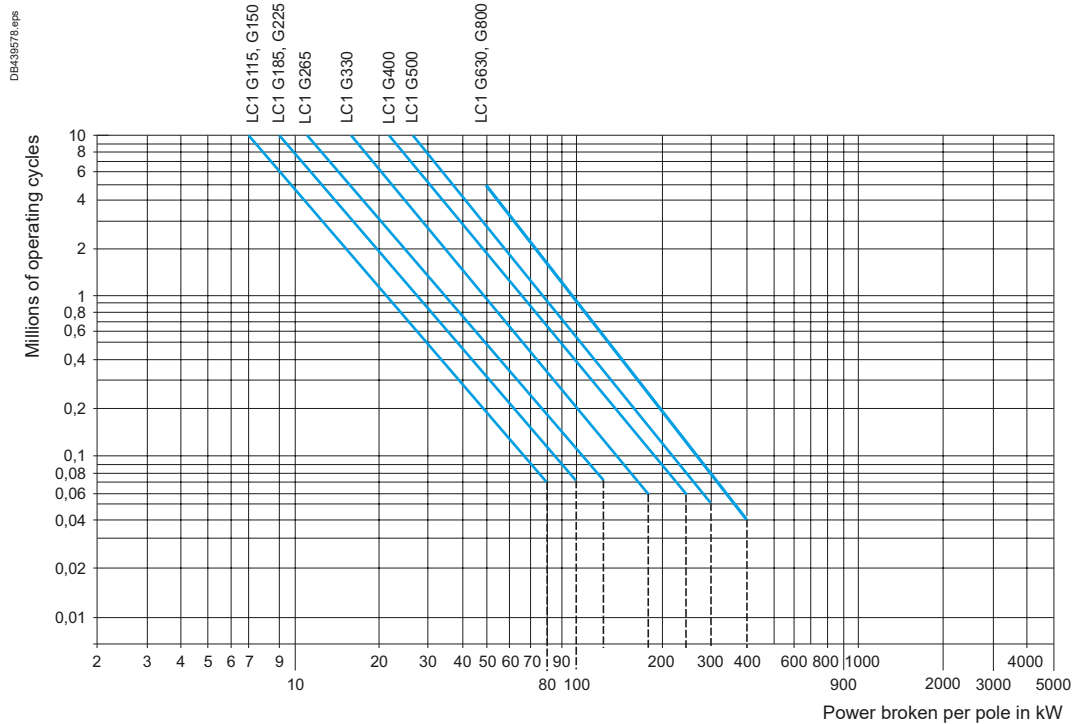
Determining the electrical durability

The electrical durability can be read directly from the curves below, having previously calculated the power broken as follows:

$$P \text{ broken} = U \text{ broken} \times I \text{ broken}$$

The tables below give the values of U_c and I_c for the various utilisation categories.

Power broken			
Utilisation categories	U broken	I broken	P broken
DC-1 Non inductive or slightly inductive loads	U_e	I_e	$U_e \times I_e$
DC-2 Shunt wound motors, breaking whilst motor running	$0.1 U_e$	I_e	$0.1 U_e \times I_e$
DC-3 Shunt wound motors, reversing, inching	U_e	$2.5 I_e$	$U_e \times 2.5 I_e$
DC-4 Series wound motors, breaking whilst motor running	$0.3 U_e$	I_e	$0.3 U_e \times I_e$
DC-5 Series wound motors, reversing, inching	U_e	$2.5 I_e$	$U_e \times 2.5 I_e$

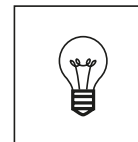


Example

Series wound motor: $P = 40 \text{ kW}$ - $U_e = 200 \text{ V}$ - $I_e = 200 \text{ A}$.

Utilisation: reversing, inching.

- Utilisation category = DC-5.
- Select contactor LC1G150 with 2 poles in series.
- The power broken is: $P_c \text{ total} = 2.5 \times 200 \times 200 = 100 \text{ kW}$.
- The power broken per pole is 50 kW.
- The electrical durability read from the curve is 200000 operating cycles.



General

The operating conditions of lighting circuits have the following characteristics:

- continuous duty: the switching device can remain closed for several days or even months
- a dispersion factor of 1: all luminaires in the same group are switched on or off simultaneously
- a relatively high temperature around the device due to the enclosure, the presence of fuses, or an unventilated control panel location.

This is why the operational current for lighting is lower than the value given for AC-1 duty.

Protection

The continuous duty current drawn by a lighting circuit is constant. In fact:

- it is unlikely that the number of luminaires of an existing circuit will be modified
- this type of circuit cannot create an overload of long duration.

It is therefore only necessary to provide short-circuit protection.

This can be provided by:

- gG type fuses, or
- modular circuit breakers.

Nevertheless, it is always possible and sometimes more economical (smaller cable size) to protect the circuit by a thermal overload relay and associated aM type uses.

Distribution system

Single-phase circuit, 220/240 V

The tables on pages A5/69 to A5/73 are based on a single-phase 220/240 V circuit and can therefore be applied directly in this case.

3-phase circuit, 380/415 V (with neutral)

The total number of lamps (N) to be switched simultaneously is divided into three equal groups, each connected between one phase and neutral. The contactor can then be selected from the 220/240 V single-phase tables for a number of lamps equal to $\frac{N}{3}$ lamps.

3-phase circuit, 220/240 V

The total number of lamps (N) to be switched simultaneously is divided into three equal groups, each connected between 2 phases (L1-L2), (L2-L3), (L3-L1). The contactor can then be selected from the 220/240 V single-phase table for a number of lamps equal to $\frac{N}{\sqrt{3}}$ lamps.

Contactor selection tables

For the different types of lamps, the tables on pages A5/69 to A5/73 give the maximum number of lamps of unit power P (in Watts), which can be switched simultaneously for each size of contactor.

They are based on:

- a 220/240 V single-phase circuit
- an ambient temperature of 55 °C ⁽²⁾, taking into account the operating conditions (see General paragraph)
- an electrical life of more than 10 years (200 days' operation per year).

They take into account:

- the total current drawn (including ballast)
- transient phenomena which occur at switch-on
- the starting currents and their duration
- the circulation of any harmonics which may be present.

Lamps with compensating capacitor C (µF) connected in parallel

Parallel connected compensating capacitors C cause a current peak at the moment of switch-on. To ensure that the value of this current peak remains compatible with the making characteristics of the contactors, the unit value of the capacitance must not exceed the following:

Switching contactor rating ⁽¹⁾	LC1 K09	LP1 K09	LC1 D09	LC1 D12	LC1 D18	LC1 D25	LC1 D32	LC1 D38	LC1 D40A	LC1 D50A	LC1 D65A	LC1 D80A	LC1 D80
Maximum unit value C (µF) of parallel connected compensating capacitor	7	3	18	18	25	60	96	96	120	120	240	240	240
Switching contactor rating ⁽¹⁾	LC1 D80	LC1 D95	LC1 D115	LC1 D150	LC1 G185	LC1 G225	LC1 G265	LC1 G330	LC1 G400	LC1 G500	LC1 G630	LC1 G800	
Maximum unit value C (µF) of parallel connected compensating capacitor	240	240	300	360	800	1200	1700	2500	4000	6000	9000	10800	

This value is independent of the number of lamps switched by the contactor.

⁽¹⁾ Validation tests have not been carried out with Deca Green contactors.

⁽²⁾ For an ambient temperature of 40 °C, multiply the number by 1.2.

TeSys Control

Contactors for lighting circuits ⁽¹⁾

Selection - Coordination and standards



Usual values

The tables show the following values:

- IB: value of current drawn by each lamp at its rated voltage,
 - C: unit capacitance for each lamp,
- corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

Incandescent and halogen lamps										
P (W)	60	75	100	150	200	300	500	750	1000	
IB (A)	0.27	0.34	0.45	0.68	0.91	1.40	2.30	3.40	4.60	LC1 ⁽¹⁾
Max. no. of lamps according to P (W)	35	28	21	14	10	6	4	2	2	K09
	59	47	35	23	17	11	7	4	3	D09, D12
	77	61	46	30	23	15	9	6	4	D18
	92	73	55	36	27	18	11	7	5	D25
	129	103	77	51	38	25	15	10	7	D32, D38
	163	129	97	64	48	31	19	13	9	D40A
	207	164	124	82	62	40	24	16	12	D50A, D65A, D80A
	296	235	177	117	88	57	34	23	17	D80, D95
	430	340	256	170	126	82	50	34	24	D115
	466	370	280	184	138	90	54	36	26	D150
	710	564	426	282	210	136	82	56	40	G185
	770	610	462	304	228	148	90	60	44	G225
	888	704	532	352	262	170	104	70	52	G265
	1006	800	604	400	298	194	118	80	58	G330
	1274	1010	764	504	378	244	148	100	74	G400
	1718	1364	1030	682	508	330	200	136	100	G500
	2328	1850	1396	924	690	448	272	184	136	G630
	2776	2204	1666	1102	824	534	326	220	162	G800

Mixed lighting lamps						
P (W)	100	160	250	500	1000	
IB (A)	0.45	0.72	1.10	2.30	4.50	LC1 ⁽¹⁾
Max. no. of lamps according to P (W)	21	13	8	4	2	K09
	35	22	14	7	3	D09, D12
	46	29	18	9	4	D18
	55	36	23	11	5	D25
	77	48	30	15	7	D32, D38
	97	61	38	19	9	D40A
	124	77	49	24	12	D50A, D65A, D80A
	177	111	70	34	17	D80, D95
	256	160	104	50	26	D115
	280	174	114	54	28	D150
	426	266	174	82	42	G185
	462	288	188	90	46	G225
	532	332	218	104	52	G265
	604	378	246	118	60	G330
	764	478	312	150	76	G400
	1030	644	422	202	102	G500
	1398	874	572	272	140	G630
	1666	1040	680	326	166	G800

⁽¹⁾ Validation tests have not been carried out with Deca Green contactors.

Coordination and standards

TeSys Control

Contactors for lighting circuits ⁽¹⁾

Selection - Coordination and standards



Usual values

The tables show the following values:

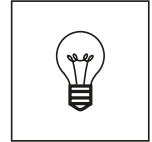
- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

Fluorescent lamps with starter. Single fitting												
	Non corrected				With parallel correction						LC1 ⁽¹⁾	
	P (W)	20	40	65	80	110	20	40	65	80		110
	IB (A)	0.39	0.45	0.70	0.80	1.2	0.17	0.26	0.42	0.52		0.72
	C (µF)	–	–	–	–	–	5	5	7	7	16	
Max. no. of lamps according to P (W)	24	21	13	12	8	56	36	22	18	–	–	K09
	41	35	22	20	13	94	61	38	30	22	–	D09, D12
	53	46	30	26	17	123	80	50	40	29	–	D18
	66	57	37	32	21	152	100	61	50	36	–	D25
	89	77	50	43	29	205	134	83	67	48	–	D32, D38
	112	97	62	55	36	258	169	104	84	61	–	D40A
	143	124	80	70	46	329	215	133	107	77	–	D50A, D65A, D80A
	205	177	114	100	66	470	367	190	153	111	–	D80, D95
	410	354	228	200	132	940	614	380	306	222	–	D115, D150
	492	426	274	240	160	1128	738	456	368	266	–	G185
	532	462	296	260	172	1224	800	490	400	288	–	G225
	614	532	342	300	200	1412	922	570	462	332	–	G265
	696	604	388	340	226	1600	1046	648	522	378	–	G330
	882	764	490	430	286	2024	1322	818	662	478	–	G400
	1190	1030	662	580	386	2728	1724	1104	892	644	–	G500
	1612	1398	698	786	524	3700	2418	1498	1210	874	–	G630, G800

Fluorescent lamps with starter. Twin fitting												
	Non corrected					With series correction					LC1 ⁽¹⁾	
	P (W)	2x20	2x40	2x65	2x80	2x110	2x20	2x40	2x65	2x80		2x110
	IB (A)	2x0.22	2x0.41	2x0.67	2x0.82	2x1.1	2x0.13	2x0.24	2x0.39	2x0.48		2x0.65
	C (µF)	–	–	–	–	–	–	–	–	–		
Max. no. of lamps according to P (W)	2x21	2x11	2x7	2x5	2x4	2x36	2x20	2x12	2x10	2x7	K09	
	2x36	2x18	2x10	2x8	2x6	2x60	2x32	2x20	2x16	2x12	D09, D12	
	2x46	2x24	2x14	2x12	2x8	2x80	2x42	2x26	2x20	2x16	D18	
	2x58	2x30	2x18	2x14	2x10	2x100	2x54	2x32	2x26	2x20	D25	
	2x78	2x42	2x26	2x20	2x14	2x134	2x72	2x44	2x36	2x26	D32, D38	
	2x100	2x52	2x32	2x26	2x18	2x168	2x90	2x56	2x44	2x32	D40A	
	2x126	2x68	2x40	2x34	2x24	2x214	2x116	2x70	2x58	2x42	D50A, D65A, D80A	
	2x180	2x96	2x58	2x48	2x36	2x306	2x166	2x102	2x82	2x60	D80, D95	
	2x360	2x194	2x118	2x96	2x72	2x614	2x332	2x204	2x166	2x122	D115, D150	
	2x436	2x234	2x142	2x116	2x86	2x738	2x400	2x246	2x200	2x148	G185	
	2x472	2x254	2x154	2x126	2x94	2x800	2x432	2x266	2x216	2x160	G225	
	2x544	2x292	2x178	2x146	2x108	2x922	2x500	2x308	2x250	2x184	G265	
	2x618	2x332	2x202	2x166	2x124	2x1046	2x566	2x348	2x282	2x208	G330	
	2x782	2x420	2x256	2x210	2x156	2x1322	2x716	2x440	2x358	2x264	G400	
	2x1054	2x566	2x346	2x282	2x210	2x1784	2x966	2x594	2x482	2x356	G500	
	2x1430	2x766	2x468	2x384	2x286	2x2418	2x1310	2x806	2x654	2x484	G630, G800	

⁽¹⁾ Validation tests have not been carried out with Deca Green contactors.



Usual values

The tables show the following values:

- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

Fluorescent lamps without starter. Single fitting												
	Non corrected					With parallel correction					LC1 ⁽¹⁾	
	P (W)	20	40	65	80	110	20	40	65	80		110
	IB (A)	0.43	0.55	0.80	0.95	1.4	0.19	0.29	0.46	0.57		0.79
C (µF)	–	–	–	–	–	5	5	7	7	16		
Max. no. of lamps according to P (W)	22	17	12	10	6	50	33	20	16	–	K09	
	37	29	20	16	11	84	55	34	28	20	D09, D12	
	48	38	26	22	15	110	72	45	36	26	D18	
	60	47	32	27	18	136	89	56	45	32	D25	
	97	63	43	36	25	184	101	76	61	44	D32, D38	
	102	80	55	46	31	231	151	95	77	55	D40A	
	130	101	70	58	40	294	193	121	98	70	D50A, D65A, D80A	
	186	145	100	84	57	421	275	173	140	101	D80, D95	
	372	290	200	168	114	842	550	346	280	202	D115, D150	
	446	348	240	202	136	1010	662	416	336	242	G185	
	484	378	260	218	148	1094	716	452	364	262	G225	
	558	436	300	252	170	1262	828	522	420	304	G265	
	632	494	340	286	194	1432	938	590	476	344	G330	
	800	624	430	362	246	1810	1186	748	604	434	G400	
	1078	844	580	488	330	2442	1600	1008	814	586	G500	
	1462	1144	786	662	448	3310	2168	1366	1104	796	G630, G800	

Fluorescent lamps without starter. Twin fitting												
	Non corrected					With series correction					LC1 ⁽¹⁾	
	P (W)	2x20	2x40	2x65	2x80	2x110	2x20	2x40	2x65	2x80		2x110
	IB (A)	2x0.25	2x0.47	2x0.76	2x0.93	2x1.3	2x0.14	2x0.26	2x0.43	2x0.53		2x0.72
C (µF)	–	–	–	–	–	–	–	–	–	–		
Max. no. of lamps according to P (W)	2x19	2x10	2x6	2x5	2x3	2x34	2x18	2x11	2x9	2x6	K09	
	2x32	2x16	2x10	2x8	2x6	2x56	2x30	2x18	2x14	2x10	D09, D12	
	2x42	2x22	2x12	2x10	2x8	2x74	2x40	2x24	2x18	2x14	D18	
	2x52	2x26	2x16	2x12	2x10	2x92	2x50	2x30	2x24	2x18	D25	
	2x70	2x36	2x22	2x18	2x12	2x124	2x66	2x40	2x32	2x24	D32, D38	
	2x88	2x46	2x28	2x22	2x16	2x156	2x84	2x50	2x40	2x30	D40A	
	2x112	2x58	2x36	2x30	2x20	2x200	2x106	2x64	2x52	2x38	D50A, D65A, D80A	
	2x160	2x84	2x52	2x42	2x30	2x234	2x152	2x92	2x74	2x54	D80, D95	
	2x320	2x170	2x104	2x86	2x60	2x570	2x306	2x186	2x150	2x110	D115, D150	
	2x384	2x204	2x126	2x102	2x74	2x686	2x368	2x222	2x180	2x132	G185	
	2x416	2x220	2x136	2x112	2x80	2x742	2x400	2x242	2x196	2x144	G225	
	2x480	2x254	2x158	2x128	2x92	2x856	2x462	2x278	2x226	2x166	G265	
	2x544	2x288	2x178	2x146	2x104	2x970	2x522	2x316	2x256	2x188	G330	
	2x688	2x366	2x226	2x184	2x132	2x1228	2x662	2x400	2x324	2x238	G400	
	2x928	2x494	2x304	2x248	2x178	2x1656	2x892	2x540	2x438	2x322	G500	
	2x1258	2x668	2x414	2x338	2x242	2x2246	2x1210	2x730	2x592	2x436	G630, G800	

⁽¹⁾ Validation tests have not been carried out with Deca Green contactors.

Coordination and standards

TeSys Control

Contactors for lighting circuits ⁽¹⁾

Selection - Coordination and standards



Usual values

The tables show the following values:

■ IB: value of current drawn by each lamp at its rated voltage

■ C: unit capacitance for each lamp

corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

Low pressure sodium vapour lamps																
	Non corrected							With parallel correction								
	P (W)	35	55	90	135	150	180	200	35	55	90	135	150	180	200	
	IB (A)	1.2	1.6	2.4	3.1	3.2	3.3	3.4	0.3	0.4	0.6	0.9	1	1.2	1.3	
	C (µF)	–	–	–	–	–	–	–	17	17	25	36	36	36	36	LC1 ⁽¹⁾
Max. no. of lamps according to P (W)	6	5	3	2	2	2	2	–	–	–	–	–	–	–	–	K09
	10	7	5	3	3	3	3	40	30	–	–	–	–	–	–	D09, D12
	12	9	6	4	4	4	4	50	37	25	–	–	–	–	–	D18
	15	11	7	6	5	5	5	63	47	31	21	19	15	14	–	D25
	21	16	10	8	8	7	7	86	65	43	28	26	21	20	–	D32, D38
	27	20	13	10	10	10	9	110	82	55	36	33	27	25	–	D40A
	35	26	17	13	13	12	12	140	105	70	46	42	35	32	–	D50A, D65A, D80A
	50	37	25	19	18	18	17	200	150	100	66	60	50	46	–	D80, D95
	100	75	50	38	36	36	34	400	300	200	132	120	100	92	–	D115, D150
	140	104	70	54	52	50	48	560	420	280	186	168	140	128	–	G185
	152	114	76	58	56	54	54	606	454	302	202	182	152	140	–	G225
	174	130	88	68	66	64	62	700	524	350	232	210	174	162	–	G265
	198	148	98	76	74	72	70	792	594	396	264	238	198	182	–	G330
	250	188	124	96	94	90	88	1002	752	502	334	300	250	252	–	G400
	338	254	168	130	126	122	118	1352	1014	676	450	406	338	312	–	G500
	496	372	248	192	186	180	174	1982	1488	992	660	594	496	458	–	G630, G800

High pressure sodium vapour lamps												
	Non corrected					With parallel correction						
	P (W)	150	250	400	700	1000	150	250	400	700	1000	
	IB (A)	1.9	3.2	5	8.8	12.4	0.84	1.4	2.2	3.9	5.5	
	C (µF)	–	–	–	–	–	20	32	48	96	120	LC1 ⁽¹⁾
Max. no. of lamps according to P (W)	4	2	1	–	–	–	–	–	–	–	–	K09
	6	3	2	1	–	–	–	–	–	–	–	D09, D12
	7	4	3	1	1	–	–	–	–	–	–	D18
	10	5	3	2	1	–	–	–	–	–	–	D25
	13	8	5	2	2	–	–	–	–	–	–	D32, D38
	17	10	6	3	2	–	–	–	–	–	–	D40A
	22	13	8	4	3	–	–	–	–	–	–	D50A, D65A, D80A
	31	18	12	6	4	–	–	–	–	–	–	D80, D95
	62	36	24	12	8	–	–	–	–	–	–	D115, D150
	88	52	34	18	14	–	–	–	–	–	–	G185
	96	56	36	20	16	–	–	–	–	–	–	G225
	110	66	42	24	18	–	–	–	–	–	–	G265
	124	74	48	26	20	–	–	–	–	–	–	G330
	158	94	60	34	24	–	–	–	–	–	–	G400
	214	126	80	46	32	–	–	–	–	–	–	G500
	312	186	118	68	48	–	–	–	–	–	–	G630, G800

(1) Validation tests have not been carried out with Deca Green contactors.



Usual values

The tables show the following values:

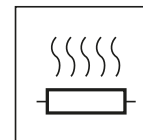
- IB: value of current drawn by each lamp at its rated voltage
- C: unit capacitance for each lamp corresponding to the values normally quoted by lamp manufacturers.

These values are given for an ambient temperature of 55 °C (for 40 °C, multiply the number by 1.2).

High pressure mercury vapour lamps																
Max. no. of lamps according to P (W)	Non corrected							With parallel correction								
	P (W)	50	80	125	250	400	700	1000	50	80	125	250	400	700	1000	
	IB (A)	0.54	0.81	1.20	2.30	4.10	6.80	9.90	0.3	0.45	0.67	1.3	2.3	3.8	5.5	
C (µF)	–	–	–	–	–	–	–	–	10	10	10	18	25	40	60	
																LC1 ⁽¹⁾
																K09
																D09, D12
																D18
																D25
																D32, D38
																D40A
																D50A, D65A, D80A
																D80, D95
																D115, D150
																G185
																G225
																G265
																G330
																G400
																G500
																G630, G800

Metal iodine vapour lamps																
Max. no. of lamps according to P (W)	Non corrected				With parallel correction											
	P (W)	250	400	1000	2000	250	400	1000	2000							
	IB (A)	2.5	3.6	9.5	20	1.4	2	5.3	11.2							
C (µF)	–	–	–	–	32	32	64	140								
																LC1 ⁽¹⁾
																K09
																D09, D12
																D18
																D25
																D32, D38
																D40A
																D50A, D65A, D80A
																D80, D95
																D115, D150
																G185
																G225
																G265
																G330
																G400
																G500
																G630, G800

⁽¹⁾ Validation tests have not been carried out with Deca Green contactors.



Selection

General

A heating circuit is a power switching circuit supplying one or more resistive heating elements switched by a contactor. The same general rules apply as for motor circuits, except that heating circuits are not normally subjected to overload currents. It is therefore only necessary to provide short-circuit protection.

Characteristics of heating elements

The examples below are based on resistive heating elements used for industrial furnaces or for the heating of buildings (infra-red or resistive radiant type, convactor heaters, closed loop heating circuits, etc.). The variation in resistance values between hot and cold states causes a current peak at switch-on which never exceeds 2 to 3 times the rated operational current (I_n). This initial peak does not recur during normal operation where subsequent switching is thermostatically controlled. The rated power and current of a heater are given for the normal operating temperature.

Protection

The steady state current drawn by a heating circuit is constant when the voltage is stable. In fact:

- it is unlikely that the number of loads in an existing circuit will be modified
- this type of circuit cannot create overloads. It is therefore only necessary to provide short-circuit protection.

This can be provided by:

- gG type fuses, or
- modular circuit breakers.

Nevertheless, it is always possible and sometimes more economical (smaller cable size) to protect the circuit by a thermal overload relay and associated aM type fuses.

Switching, control, protection

A heating element or group of heating elements of a given power may be either single-phase or 3-phase and may be supplied from a 220/127 V or a 400/230 V distribution system. Excluding a single-phase 127 V system (which is no longer commonly used), the following 3 types of circuit arrangement are possible:

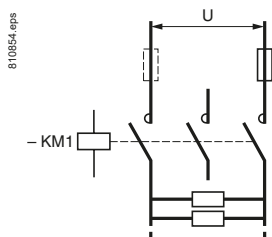
- single-phase, 2-pole switching
- single-phase, 4-pole switching
- 3-phase switching

Component selection according to the power switched

The combinations suggested below are based on an ambient temperature of 55 °C (60 °C for Giga contactors LC1G) and for powers at the nominal voltage, but they also ensure switching in the event of prolonged overloads up to 1.05 U_e .

Single-phase, 2-pole switching				
Maximum power (kW)				Contactor rating
220/240 V	380/415 V	660/690 V	1000 V	
3.5	6.5	11	–	LC1K09, LP1K09
4.5	8	14	–	LC1D12
6	10.5	18.5	–	LC1D18
7	13	22.5	–	LC1D25
10	18	30.5	–	LC1D32, LC1D38
13	22.5	39.5	–	LC1D40A
16.5	28.5	43.5	–	LC1D65A, LC1D80A
24	42	73	82.5	LC1D80, LP1D80
44	76	118	157	LC1D115, LC1D150
270	460	715	945	LC1F780

Maximum power (kW)				Contactor rating
230 V	400 V	690 V	1000 V	
40	75	125	185	LC1G115
45	80	140	205	LC1G150
50	90	155	225	LC1G185
55	100	170	250	LC1G225
65	115	200	290	LC1G265
75	130	230	330	LC1G330
95	165	285	415	LC1G400
115	200	345	500	LC1G500
150	265	460	665	LC1G630
150	265	460	665	LC1G800

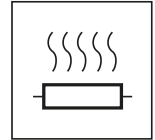


Circuit controlled by 2 poles of the contactor.

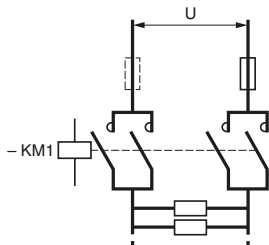
TeSys Control

Contactors for heating circuits

Selection - Coordination and standards

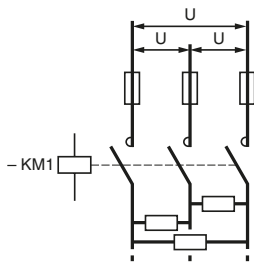


810856.eps



Circuit controlled by a 4-pole contactor with the poles parallel connected in pairs using appropriate connecting links. This solution enables the control of power values approximately equivalent to those controlled by the same contactor on 3-phase.

810857.eps



Circuit controlled by 3 poles of the contactor.

Component selection according to the power switched

Single-phase, 4-pole switching

Maximum power (kW)				Contactor rating
220/240 V	380/415 V	660/690 V	1000 V	
4.5	8	13.5	–	LC1K09004, LP1K09004
7	13	22.5	–	LC1DT25
12	21	36.5	–	LC1DT40
26	45.5	79.5	–	LC1DT80A
38	66	117.5	132	LC1D80004, LP1D80004
425	735	1140	1520	LC1F7804

Maximum power (kW)				Contactor rating
230 V	400 V	690 V	1000 V	
65	120	205	300	LC1G1154
75	130	230	330	LC1G1504
80	145	250	365	LC1G1854
90	160	275	400	LC1G2254
105	185	320	465	LC1G2654
120	210	365	530	LC1G3304
150	265	460	665	LC1G4004
180	320	550	800	LC1G5004
245	425	735	1065	LC1G6304
245	425	735	1065	LC1G8004

3-phase switching

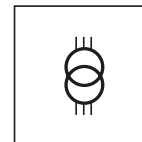
Maximum power (kW)				Contactor rating
220/240 V	380/415 V	660/690 V	1000 V	
4.5	8	13.5	–	LC1K09, LP1K09
7	13	22.5	–	LC1D12
10	18	30.5	–	LC1D18
13	22.5	39.5	–	LC1D25
18	31	52.5	–	LC1D32, LC1D38
22.5	38	68	–	LC1D40A
28.5	49	86	–	LC1D65A, LC1D80A
40.5	70.5	126	135.5	LC1D80, LP1D80
83	140	235	345	LC1D115, LC1D150
570	1000	1650	2400	LC1F780

Maximum power (kW)				Contactor rating
230 V	400 V	690 V	1000 V	
70	125	220	320	LC1G115
80	140	245	360	LC1G150
90	155	270	395	LC1G185
95	170	295	430	LC1G225
115	200	345	505	LC1G265
130	230	395	575	LC1G330
165	285	495	720	LC1G400
195	345	595	865	LC1G500
265	460	795	1150	LC1G630
265	460	795	1150	LC1G800

Application example

For a 220 V, 50 Hz, single-phase circuit supplying a total heating load of 12.5 kW. Select a 3-pole contactor **LC1D65A**.

Coordination
and
standards



Operating conditions

Maximum ambient temperature: 55 °C.

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:

- the characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, layout and size of the windings, ...)
- the performance of the magnetic laminations used
- the magnetic state of the circuit and the instantaneous value of the a.c. mains voltage at the moment of switch-on.

The inrush current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the “no-load” or “on-load” state of the transformer.

Contactor selection

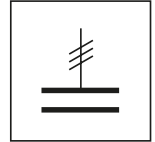
The peak magnetising current of the transformer must be lower than the values given in the tables below.

Maximum operating rate: 120 operating cycles/hour.

Contactor rating ⁽¹⁾		LC1/	LC1/	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1	LC1
		LP1 K06	LP1 K09	D09	D12	D18	D25	D32	D38	D40A	D50A	D65A D80A	D80	D95	D115	D150	F780	
Maximum permissible current peak at switch-on	A	160	225	350	350	420	630	770	770	1100	1250	1400	1550	1650	1800	2000	12000	
Maximum operational power ⁽²⁾	220 V	kVA	2	2.5	4	4	5	7	8.5	8.5	14	16	18	19.5	19.5	25	25	175
	240 V	kVA																
	380 V	kVA	3.5	5	7	7	8	12.5	15	15	24	27	31	34	34	50	50	280
	400 V	kVA																
	415 V	kVA	4	5.5	8	8	9	14	17	17	28	32	36	39	39	55	55	310
	440 V	kVA																
500 V	kVA	5	7	9	9	11	16.5	20	20	32	36	40	45	45	65	65	350	
660 V	kVA	6	8.5	12	12	14	21.5	26.5	26.5	42	48	53	59	59	80	80	400	
690 V	kVA																	
1000 V	kVA	-	-	-	-	-	-	-	-	-	-	-	85	95	100	100	650	

⁽¹⁾ Deca Green contactors have not been validated for switching the primaries of 3-phase LV/LV transformers.

⁽²⁾ Maximum operational power corresponding to a current peak at switch-on of 30 I_n.



Standard contactors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 In) at high frequencies (1 to 15 kHz).

As a general rule, the peak current on energisation is lower when:

- the mains inductances are high
- the line transformer ratings are low
- the transformer short-circuit voltage is high
- the ratio between the sum of the ratings of the capacitors already switched into the circuit and that of the capacitor to be switched in is small (for multiple step capacitor banks).

In accordance with standards IEC 60070, NF C 54-100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched. The rated operational powers given in the tables below take this overload into account. Short-circuit protection is normally provided by gl type HPC fuses rated at 1.7 to 2 In.

Contactor applications

Operating conditions

Capacitors are directly switched. **The values of peak current at switch-on must not exceed the values indicated opposite.**

An inductor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary. Inductance values are determined according to the selected operating temperature.

Power factor correction by a single-step capacitor bank

The use of a choke inductor is unnecessary: the inductance of the mains supply is adequate to limit the peak to a value compatible with the contactor characteristics.

Power factor correction by a multiple-step capacitor bank

Select a special contactor as defined on page B8/34.

If a standard contactor is used, it is essential to insert a choke inductor in each of the three phases of each step.

Maximum operational power of contactors

Standard contactors

Maximum operating rate: 120 operating cycles/hour.

Electrical durability at maximum load: 100 000 operating cycles.

With choke inductors connected, where necessary.

Operational power at 50/60 Hz						Max. peak current	Contactor rating ⁽¹⁾
$\theta \leq 40\text{ }^\circ\text{C}$ ⁽²⁾			$\theta \leq 55\text{ }^\circ\text{C}$ ⁽²⁾				
220/240 V	400/440 V	600/690 V	220/240 V	400/440 V	600/690 V	A	
kvAR	kvAR	kvAR	kvAR	kvAR	kvAR		
6	11	15	6	11	15	560	LC1D09, D12
9	15	20	9	15	20	850	LC1D18
11	20	25	11	20	25	1600	LC1D25
14	25	30	14	25	30	1900	LC1D32, D38
17	30	37	17	30	37	2160	LC1D40
22	40	50	22	40	50	2160	LC1D50
22	40	50	22	40	50	3040	LC1D65
35	60	75	35	60	75	3040	LC1D80, D95
50	90	125	38	75	80	3100	LC1D115
60	110	135	40	85	90	3300	LC1D150

⁽¹⁾ Deca Green contactors have not been validated for switching the primaries of 3-phase LV/LV transformers.

⁽²⁾ Upper limit of temperature category conforming to IEC 60070.

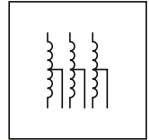
Operational power at 50/60 Hz						Max. peak current	Contactor rating
$\theta \leq 40\text{ }^\circ\text{C}$ ⁽³⁾			$\theta \leq 60\text{ }^\circ\text{C}$ ⁽³⁾				
220/240 V	400/440 V	600/690 V	220/240 V	400/440 V	600/690 V	A	
kvAR	kvAR	kvAR	kvAR	kvAR	kvAR		
50	90	150	45	80	135	1900	LC1G115
55	100	165	50	90	150	2480	LC1G150
60	110	185	55	100	165	3050	LC1G185
65	120	200	60	110	180	3710	LC1G225
75	140	235	70	125	210	4370	LC1G265
85	160	265	80	145	240	5450	LC1G330
110	200	335	100	185	305	6600	LC1G400
140	255	425	120	220	365	8250	LC1G500
210	385	640	160	295	485	10400	LC1G630
210	385	640	160	295	485	13200	LC1G800

⁽³⁾ Upper limit of temperature category conforming to IEC 60831-1.

TeSys Control

Contactors for auto-transformer starting ⁽¹⁾

Recommended wiring scheme, operation, curves
Coordination and standards



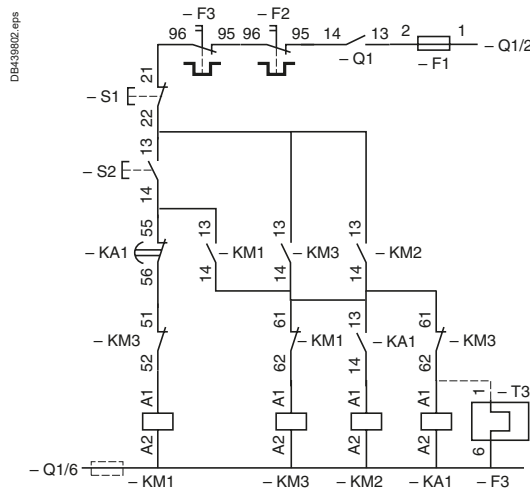
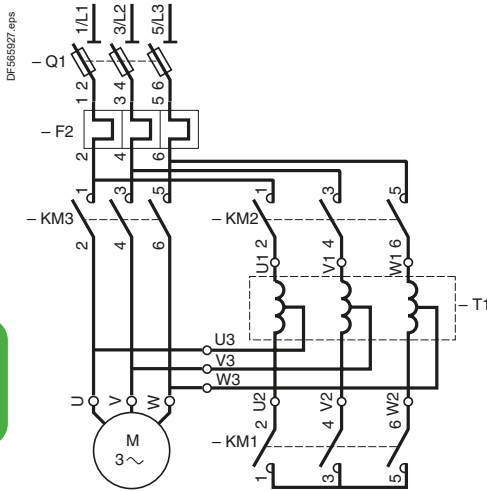
Applications

Auto-transformer starting is suitable for starting all types of squirrel cage motors: with 3, 6 or even 9 terminals according to North American technology. Starting is performed at reduced voltage and produces maximum torque at minimum line current.

It allows the starting torque ($C = f(U)^2$) to be adapted to the resistive torque of the driven machine by means of the 2 or 3 intermediate voltage take-off connections on the auto-transformer (0.65 and 0.8 U_n or 0.5, 0.65 and 0.8 U_n). In general, only one take-off connection is used.

This type of starting is used for high power and/or high inertia machines. The motor is never disconnected from its power supply during starting (closed transition) and transient phenomena are eliminated.

Recommended wiring scheme



Coordination and standards

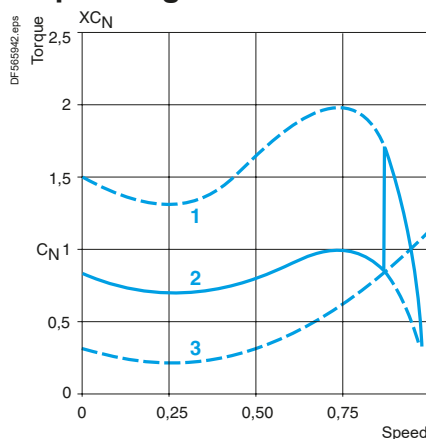
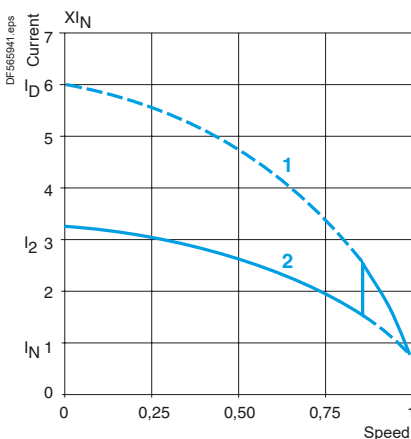
Operation

Starting is performed in 3 stages:

- star connection of the auto-transformer is made by KM1, then contactor KM2 closes and the motor starts under reduced voltage
- the neutral point is opened by KM1; part of the auto-transformer winding is switched into each phase for a short moment, constituting a stator starting inductance
- KM3 switches the motor to full mains voltage and causes the auto-transformer to be shunted out of circuit by KM2.

The auto-transformer used generally has an air gap (adjusted or not) in order to obtain, during the second phase of starting, a series inductance whose value is compatible with correct starting.

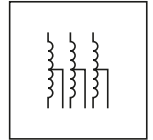
Operating curves



- 1 Direct switching current
- 2 Current with auto-transformer

- 1 Direct motor torque
- 2 Torque with auto-transformer
- 3 Resistive torque of the machine

⁽¹⁾ Deca Green contactors have not been validated for auto-transformer starting.



Auto-transformer starters from 59 to 900 kW up to 440 V (type 1 coordination)

The components recommended in the table below have been determined according to the following characteristics:

- auto-transformer: on 0.65 U_n connection with non adjusted air gap
- 3 starts per hour, of which 2 consecutive
- motor starting current: I_d/I_n = 6
- I_q = 70 kA
- transient current on closing of KM3 $\leq 7 \sqrt{2} I_n$
- maximum starting time: 30 seconds
- ambient temperature $\theta \leq 40$ °C.

Switch-disconnector-fuses: operators and accessories, please consult your Regional Sales Office.

Contactors: 3-pole.

LC1D: see pages B8/22 and B8/27.

Auxiliary contact blocks:

- for contactors LC1D: one LADN11 (1 N/O + 1 N/C) on KM1.

Thermal overload relays:

- LR: see pages B11/4 to B11/9
- LR9D: see pages B11/5 to B11/9.

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3					Switch-disconnector-fuse Reference	aM fuses		Contactors ⁽¹⁾			Overload relays	
220/230 V	380/400 V	415 V	440 V	In max		Size	Rating	KM3 LC1	KM2 LC1	KM1 LC1	Reference ⁽²⁾	Setting range
kW	kW	kW	kW	A		A					A	
30	55	59	59	105	GS●K	22 x 58	125	D115	D115	D3210	LR9D5369	90...150
											LRD4367	95...120
40	75	80	80	138	GS●L	T0	160	D150	D115	D5011	LR9D5369	90...150
											LRD4369	110...140

⁽¹⁾ Deca Green contactors have not been validated for auto-transformer starting.

⁽²⁾ For power ratings greater than or equal to 400 kW at 415 V, use one LRD-05 on the current transformer.

⁽³⁾ Check with the motor manufacturer whether the fuses should be fitted in parallel.

Voltage drop caused by the inrush current

When the operating coil of a contactor is energised, the inrush current produces a voltage drop in the control circuit cable caused by the resistance of the conductors, which can adversely affect closing of the contactor.

An excessive voltage drop in the control supply cables (both a.c. and d.c.) can lead to non closure of the contactor poles or even destruction of the coil due to overheating.

This phenomenon is aggravated by:

- a long line
- a low control circuit voltage
- a cable with a small c.s.a.
- a high inrush power drawn by the coil.

The maximum length of cable, depending on the control voltage, the inrush power and the conductor c.s.a., is indicated in the graphs below.

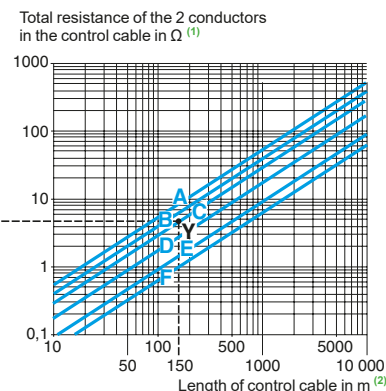
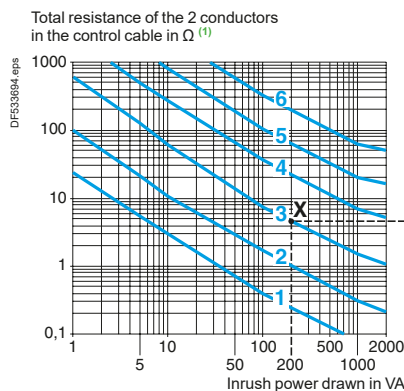
Remedial action

To reduce the voltage drop at switch-on:

- increase the conductor c.s.a.
- use a higher control circuit voltage
- use an intermediate control relay.

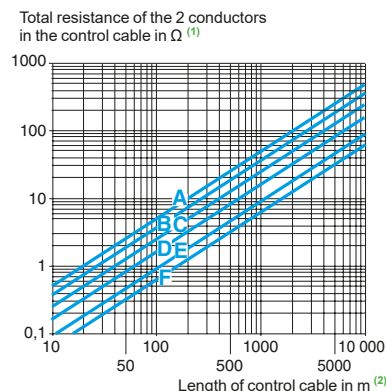
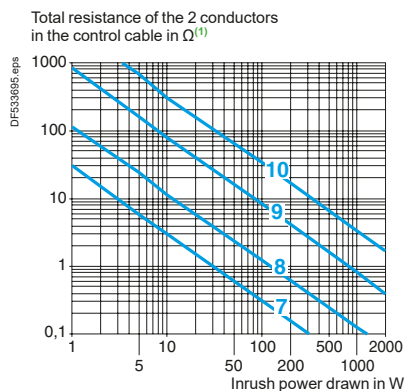
Selection of conductor c.s.a.

These graphs are for a maximum line voltage drop of 5%. They give a direct indication of the copper conductor c.s.a. to be used for the control cable, depending on its length, the inrush power drawn by the contactor coil and the control circuit voltage (see example page A5/81).



1 ~ 24 V 3 ~ 115 V 5 ~ 400 V

C.s.a. of copper cables
 A 0.75 mm² C 1.5 mm² E 4 mm²



2 ~ 48 V 4 ~ 230 V 6 ~ 690 V

B 1 mm² D 2.5 mm² F 6 mm²

7 ~ 24 V 9 ~ 125 V
 8 ~ 48 V 10 ~ 250 V

C.s.a. of copper cables
 A 0.75 mm² C 1.5 mm² E 4 mm²
 B 1 mm² D 2.5 mm² F 6 mm²

(1) For 3-wire control, the current only flows in 2 of the conductors.
 (2) This is the length of the cable comprising 2 or 3 conductors. (Distance between the contactor and the control device).

Voltage drop caused by the inrush current

What cable c.s.a. is required for the control circuit of an LC1 D40A, 115 V contactor, operated from a distance of 150 metres?

- Contactor LC1D40A, voltage 115 V, 50 Hz: inrush power: 200 VA.

On the left-hand graph on the page opposite, point X is at the intersection of the vertical line corresponding to 200 VA and the ~ 115 V voltage curve.

On the right-hand graph on the page opposite, point Y is at the intersection of the vertical line corresponding to 150 m and the horizontal line passing through point X.

Use the conductor c.s.a. indicated by the curve which passes through point Y, i.e.: 1.5 mm².

If point Y lies between two c.s.a. curves, choose the larger of the c.s.a. values.

Calculating the maximum cable length

The maximum permissible length for acceptable line voltage drop is calculated by the formula:

$$L = \frac{U^2}{SA} \cdot s \cdot K$$

where:

- L : distance between the contactor and the control device in m (length of the cable)
- U : supply voltage in V
- SA : apparent inrush power drawn by the coil in VA
- s : conductor c.s.a. in mm²
- K : factor given in the table below.

a.c. supply	SA in VA	20	40	100	150	200
	K	1.38	1.5	1.8	2	2.15
d.c. supply	Irrespective of the apparent inrush power SA, expressed in W K = 1.38					

Residual current in the coil due to cable capacitance

When the control contact of a contactor is opened, the control cable capacitance is effectively in series with the coil of the electromagnet. This capacitance can cause a residual current to be maintained in the coil, with the risk that the contactor will remain closed.

This only applies to contactors operating on an a.c. supply.

This phenomenon is aggravated by:

- a long line length between the coil control contact and the contactor, or between the coil control contact and the power supply,
- a high control circuit voltage,
- a low coil consumption, sealed,
- a low value of contactor drop-out voltage.

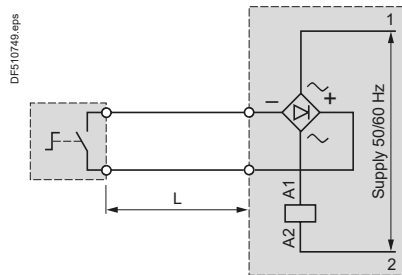
The maximum control cable length, according to the contactor coil supply voltage, is indicated in the graph on the page opposite.

Remedial action

Various solutions can be adopted to avoid the risk of the contactor remaining closed due to cable capacitance:

- use a d.c. control voltage, or
- add a rectifier, connected as shown in the scheme below, but retaining an a.c. operating coil: in this way, rectified a.c. current flows in the control cable.

When calculating the maximum cable length, take the resistance of the conductors into account.



- Connect a resistor in parallel with the contactor coil ⁽¹⁾.

Value of the resistance:

$$R \Omega = \frac{1}{10^{-3} C (\mu F)} \quad (C \text{ capacitance of the control cable})$$

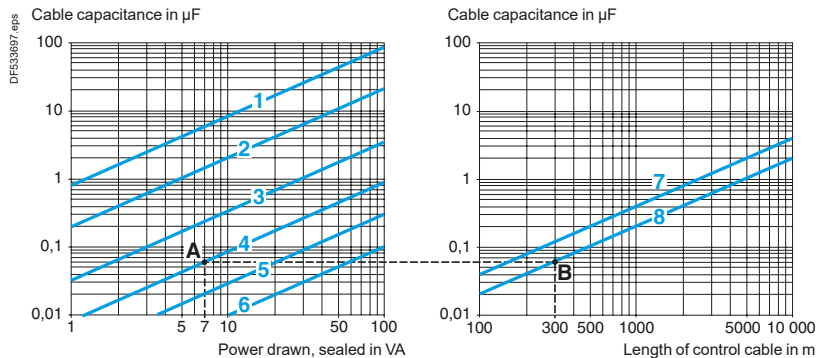
Power to be dissipated:

$$PW = \frac{U^2}{R}$$

(1) To avoid increasing the voltage drop due to inrush current, this resistor must be brought into operation after the contactor has closed by using an N/O contact.

Residual current in the coil due to cable capacitance

These graphs are for a capacitance, between 2 conductors, of 0.2 µF/km. They make it possible to determine whether there is a risk of the contactor remaining closed due to the power drawn by the coil when sealed, as well as the control circuit voltage, according to the length of the control cable.



1 ~ 24 V	3 ~ 115 V	5 ~ 400 V	7 3-wire control
2 ~ 48 V	4 ~ 230 V	6 ~ 690 V	8 2-wire control

In the zones below the straight lines for 3-wire and 2-wire control respectively, there is a risk of the contactor remaining closed.

Examples

What is the maximum length for the control cable of an LC1D12 contactor, operating on 230 V, with 2-wire control?

- Contactor LC1D12, voltage 230 V, 50 Hz: power sealed 7 VA.

On the left-hand graph, point A is at the intersection of the vertical line for 7 VA with the ~ 230 V voltage curve.

On the right-hand graph, point B is at the intersection of the horizontal line with the 2-wire control curve.

The maximum cable length is therefore 300 m.

In the same example, with a 600 m cable, the point lies in the risk zone. A resistor must therefore be connected in parallel with the contactor coil.

$$R = \frac{1}{10^{-3} \cdot C} = \frac{1}{10^{-3} \cdot 0.12} = 8.3 \Omega$$

Value of this resistance:

$$P = \frac{U^2}{R} = \frac{(220)^2}{8300} = 6 \text{ W}$$

Power to be dissipated:

Alternative solution: use a d.c. control supply.

Calculating the cable length

The maximum permitted length of control cable to avoid the effects of capacitance is calculated using the formula:

$$L = 455 \cdot \frac{S}{U^2 \cdot C_0}$$

L : distance between the contactor and the control device in km (length of the cable),

S : apparent power, sealed, in VA,

U : control voltage in V,

C₀ : line capacitance of the cable in µF/km.

Technical information

Current of asynchronous squirrel cage motors at nominal load

General - Coordination and standards

Coordination and standards

3-phase 4-pole motors				
Current values for power in kW				
Rated operational power ⁽¹⁾	Indicative rated operational current values at:			
	230 V	400 V	500 V	690 V
kW	A			
0.06	0.35	0.2	0.16	0.12
0.09	0.52	0.3	0.24	0.17
0.12	0.7	0.44	0.32	0.23
0.18	1	0.6	0.48	0.35
0.25	1.5	0.85	0.68	0.49
0.37	1.9	1.1	0.88	0.64
0.55	2.6	1.5	1.2	0.87
0.75	3.3	1.9	1.5	1.1
1.1	4.7	2.7	2.2	1.6
1.5	6.3	3.6	2.9	2.1
2.2	8.5	4.9	3.9	2.8
3	11.3	6.5	5.2	3.8
4	15	8.5	6.8	4.9
5.5	20	11.5	9.2	6.7
7.5	27	15.5	12.4	8.9
11	38	22	17.6	12.8
15	51	29	23	17
18.5	61	35	28	21
22	72	41	33	24
30	96	55	44	32
37	115	66	53	39
45	140	80	64	47
55	169	97	78	57
75	230	132	106	77
90	278	160	128	93
110	340	195	156	113
132	400	230	184	134
160	487	280	224	162
200	609	350	280	203
250	748	430	344	250
315	940	540	432	313
355	1061	610	488	354
400	1200	690	552	400
500	1478	850	680	493
560	1652	950	760	551
630	1844	1060	848	615
710	2070	1190	952	690
800	2340	1346	1076	780
900	2640	1518	1214	880
1000	2910	1673	1339	970

Current values for power in hp							
Rated operational power ⁽²⁾	Indicative rated operational current values at:						
	110 - 120 V	200 V	208 V	220 - 240 V	380 - 415 V	440 - 480 V	550 - 600 V
hp	A						
1/2	4.4	2.5	2.4	2.2	1.3	1.1	0.9
3/4	6.4	3.7	3.5	3.2	1.8	1.6	1.3
1	8.4	4.8	4.6	4.2	2.3	2.1	1.7
1 1/2	12	6.9	6.6	6	3.3	3	2.4
2	13.6	7.8	7.5	6.8	4.3	3.4	2.7
3	19.2	11	10.6	9.6	6.1	4.8	3.9
5	30.4	17.5	16.7	15.2	9.7	7.6	6.1
7 1/2	44	25.3	24.2	22	14	11	9
10	56	32.2	30.8	28	18	14	11
15	84	48.3	46.2	42	27	21	17
20	108	62.1	59.4	54	34	27	22
25	136	78.2	74.8	68	44	34	27
30	160	92	88	80	51	40	32
40	208	120	114	104	66	52	41
50	260	150	143	130	83	65	52
60	-	177	169	154	103	77	62
75	-	221	211	192	128	96	77
100	-	285	273	248	165	124	99
125	-	359	343	312	208	156	125
150	-	414	396	360	240	180	144
200	-	552	528	480	320	240	192
250	-	-	-	604	403	302	242
300	-	-	-	722	482	361	289
350	-	-	-	828	560	414	336
400	-	-	-	954	636	477	382
450	-	-	-	1030	-	515	412
500	-	-	-	1180	786	590	472

(1) Values conforming to standard IEC 60072-1 (at 50 Hz).

(2) Values conforming to standard UL 508 (at 60 Hz).

Note: These values are given as a guide. They may vary depending on the type of motor, its polarity and the manufacturer.

Standardisation

Conformity to standards

Schneider Electric products satisfy, in the majority of cases, national (for example: BS in Great Britain, NF in France, DIN in Germany), European (for example: CENELEC) or international (IEC) standards. These product standards precisely define the performance of the designated products (such as IEC 60947 series for low voltage equipment).

When used correctly, as designated by the manufacturer and in accordance with regulations and correct practices, these products will allow users to build equipment, machine systems or installations that conform to their appropriate standards (for example: IEC 60204-1, relating to electrical equipment used on industrial machines).

Schneider Electric is able to provide proof of conformity of its production to the standards it has chosen to comply with, through its quality assurance system.

On request, and depending on the situation, Schneider Electric can provide the following:

- a declaration of conformity,
- a certificate of conformity (CB certificate, Asefa/Lovag),
- a homologation certificate or approval, in the countries where this procedure is required or for particular specifications, such as those existing in the merchant navy.

Standard	Certification authority		Country
	Name	Regulation authority	
ANSI	American National Standards Institute	ANSI	USA
BS	British Standards Institution	BSI	Great Britain
CEI	Comitato Elettrotecnico Italiano	CEI	Italy
DIN/VDE	Verband Deutscher Electrotechniker	VDE	Germany
EN	Comité Européen de Normalisation Electrotechnique	CENELEC	Europe
TR	Eurasian Customs Union	EAC	Russia, Belarus, Kazakhstan
Regulation			
IEC	International Electrotechnical Commission	IEC	Worldwide
JIS	Japanese Industrial Standards Committee	JISC	Japan
NBN	Institut Belge de Normalisation	IBN	Belgium
NEN	Nederlands Normalisatie Instituut	NNI	Netherlands
NF	Union Technique de l'Electricité	UTE	France
SAA	Standards Association of Australia	SAA	Australia
UNE	Asociacion Española de Normalizacion y Certificacion	AENOR	Spain

European EN standards

These are technical specifications established in conjunction with, and with approval of, the relative bodies within the various CENELEC member countries (European Union, European Free Trade Association and many central and eastern European countries having «member» or «affiliated» status). Prepared in accordance with the principle of consensus, the European standards are the result of a weighted majority vote. Such adopted standards are then integrated into the national collection of standards, and contradictory national standards are withdrawn.

European standards incorporated within the French collection of standards carry the prefix NF EN. At the 'Union Technique de l'Electricité' (*Technical Union of Electricity*) (UTE), the French version of a corresponding European standard carries a dual number: European reference (NF EN ...) and classification index (C ...).

Therefore, the standard NF EN 60947-4-1 relating to motor contactors and starters, effectively constitutes the French version of the European standard EN 60947-4-1 and carries the UTE classification C 63-110.

This standard is identical to the British standard BS EN 60947-4-1 or the German standard DIN EN 60947-4-1.

Whenever reasonably practical, European standards reflect the international standards (IEC). With regard to automation system components and distribution equipment, in addition to complying with the requirements of French NF standards, Schneider Electric brand components conform to the standards of all other major industrial countries.

Regulations

European Directives

Opening up of European markets assumes harmonisation of the regulations pertaining to each of the member countries of the European Union.

The purpose of the European Directive is to eliminate obstacles hindering the free circulation of goods within the European Union, and it must be applied in all member countries. Member countries are obliged to transcribe each Directive into their national legislation and to simultaneously withdraw any contradictory regulations. The Directives, in particular those of a technical nature which concern us, only establish the objectives to be achieved, referred to as "essential requirements".

The manufacturer must take all the necessary measures to ensure that his products conform to the requirements of each Directive applicable to his production.

As a general rule, the manufacturer certifies conformity to the essential requirements of the Directive(s) for his product by affixing the CE marking.

The CE marking is affixed to Schneider Electric brand products concerned, in order to confirm compliance with French and European regulations.

Significance of the CE marking

- The CE marking affixed to a product signifies that the manufacturer declares that the product conforms to the relevant European Directive(s) which concern it; this condition must be met to allow free distribution and circulation within the countries of the European Union of any product subject to one or more of the E.U. Directives.
- The CE marking is intended solely for national market control authorities.
- The CE marking must not be confused with a conformity mark.

European Directives

For electrical equipment, only conformity to standards signifies that the product is suitable for its designated function, and only the guarantee of an established manufacturer can provide a high level of quality assurance.

For Schneider Electric brand products, one or several Directives are likely to be applicable, depending on the product, and in particular:

- the Low Voltage Directive 2014/35/EU: the CE marking relating to this Directive has been compulsory since April 2016.
- the Electromagnetic Compatibility Directive 2014/30/EU: the CE marking on products covered by this Directive has been compulsory since April 2016.

CB certificate, Asefa/Lovag certificate

- CB certification is issued according to IEC standards in respect to a multilateral agreement between almost industrial countries called CB scheme. It allows international certification of electrical and electronic products so that a single certification facilitates a worldwide market access.
- The function of ASEFA (Association des Stations d'Essais Française d'Appareils électriques - Association of French Testing Stations for Low Voltage Industrial Electrical Equipment) is to carry out tests of conformity to standards and to issue certificates of conformity and test reports. ASEFA laboratories are authorised by the French authorisation committee (COFRAC). ASEFA is now a member of the European agreement group LOVAG (Low Voltage Agreement Group). This means that any certificates issued by LOVAG/ASEFA are recognised by all the authorities which are members of the group and carry the same validity as those issued by any of the member authorities.

Quality labels

When components can be used in domestic and similar applications, it is sometimes recommended that a "Quality label" be obtained, which is a form of certification of conformity.

Code	Quality label	Country
CEBEC	Comité Electrotechnique Belge	Belgium
KEMA-KEUR	Keuring van Electrotechnische Materialen	Netherlands
NF	Union Technique de l'Electricité	France
ÖVE	Österreichischer Verband für Electrotechnik	Austria
SEMKO	Svenska Elektriska Materiel Kontrollnatanalen	Sweden

Product certifications

In some countries, the certification of certain electrical components is a legal requirement. In this case, a certificate of conformity to the standard is issued by the official test authority.

Each certified device must bear the relevant certification symbols when these are mandatory:

Code	Certification authority	Country
CSA	Canadian Standards Association	Canada
UL	Underwriters Laboratories	USA
CCC	China Compulsory Certification	China

Note on certifications issued by the Underwriters Laboratories (UL). There are two levels of approval:

- "Recognized" (UL)** The component is fully approved for inclusion in equipment built in a workshop, where the operating limits are known by the equipment manufacturer and where its use within such limits is acceptable by the Underwriters Laboratories.
The component is not approved as a "Product for general use" because its manufacturing characteristics are incomplete or its application possibilities are limited.
A "Recognized" component does not necessarily carry the certification symbol.
- "Listed" (UL)** The component conforms to all the requirements of the classification applicable to it and may therefore be used both as a "Product for general use" and as a component in assembled equipment. A "Listed" component must carry the certification.

Marine classification societies

Prior recognition by certain marine classification societies is generally required for electrical equipment which is intended for use on board merchant vessels.

Europe community has emitted regulation No. 391/2009 for common rules for Type approval of Marine equipment.

MR TA Mutual Recognition Type Approval is a certificate that is mutually recognized by all 12 classification societies from the **EU RO MR group** (European Recognized Organizations). Renewal of marine certifications, or new products certification is now covered by EU-MR (Mutual Recognition) process and therefore removes the need for multiple marine certifications. Current EU RO members include all major societies like DNV-GL, BV, ABS, LR as well as non-European societies like CCS, KR, NK, RMRS, etc.

Rules	Classification authority	Country
ABS	American Bureau of Shipping	Unites States of America
KRoS	Korean register of Shipping	South Korea
BV	Bureau Veritas	France
DNV-GL	Det Norske Veritas - Germanischer Lloyd	Norway - Germany
LRoS	Lloyd's Register of Shipping	Great Britain
NKK	Nippon Kaiji Kyokai	Japan
RINA	Registro Italiano Navale	Italy
RMRoS	Russian Maritime Register of Shipping	Russia
CCS	China Classification Society	Republic of China

Note: for further details on a specific product, please refer to the "Characteristics" pages in this catalogue or consult your Regional Sales Office.

Technical information

Degrees of protection provided by enclosures IP code

Introduction - Coordination and standards

Degrees of protection against the penetration of solid bodies, water and personnel access to live parts

The European standard EN 60529 dated October 1991, IEC publication 529 (2nd edition - November 1989), defines a coding system (IP code) for indicating the degree of protection provided by electrical equipment enclosures against accidental direct contact with live parts and against the ingress of solid foreign objects or water. This standard does not apply to protection against the risk of explosion or conditions such as humidity, corrosive gasses, fungi or vermin.

Certain equipment is designed to be mounted on an enclosure which will contribute towards achieving the required degree of protection (example : control devices mounted on an enclosure).















Different parts of an equipment can have different degrees of protection (example : enclosure with an opening in the base).

Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.

Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

IP ●●● code

The IP code comprises **2 characteristic numerals** (e.g. **IP 55**) and may include **an additional letter** when the actual protection of personnel against direct contact with live parts is better than that indicated by the first numeral (e.g. IP 20C). Any characteristic numeral which is unspecified is replaced by an X (e.g. IP XXB).

1 st characteristic numeral		2 nd characteristic numeral		Additional letter	
corresponds to protection of the equipment against penetration of solid objects and protection of personnel against direct contact with live parts.		corresponds to protection of the equipment against penetration of water with harmful effects.		corresponds to protection of personnel against direct contact with live parts.	
Protection of the equipment	Protection of personnel				
0 Non-protected	Non-protected	0 Non-protected	Non-protected	A	With the back of the hand.
1 Ø 50 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 50 mm.	1 	Protected against direct contact with the back of the hand (accidental contacts).	B	With the finger.
2 Ø 12,5 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 12.5 mm.	2 	Protected against direct finger contact.	C	With a Ø2.5 mm tool.
3 Ø 2,5 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 2.5 mm.	3 	Protected against direct contact with a Ø2.5 mm tool.	D	With a Ø1 mm wire.
4 Ø 1 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 1 mm.	4 	Protected against direct contact with a Ø1 mm wire.		
5 	Dust protected (no harmful deposits).	5 	Protected against direct contact with a Ø1 mm wire.		
6 	Dust tight.	6 	Protected against direct contact with a Ø1 mm wire.		
		7 			Protected against the effects of temporary immersion.
		8 			Protected against the effects of prolonged immersion under specified conditions.

Coordination and standards

Technical information

Degrees of protection provided by enclosures IK code

Introduction - Coordination and standards

Degrees of protection against mechanical impact

The European standard EN 50102 dated March 1995 defines a coding system (IK code) for indicating the degree of protection provided by electrical equipment enclosures against external mechanical impact.

Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.

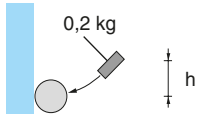
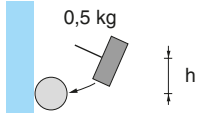
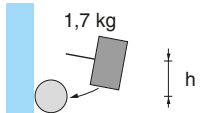
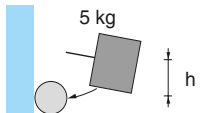
Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

IK ●● code

The IK code comprises **2 characteristic numerals** (e.g. **IK 05**).

2 characteristic numerals

corresponding to a value of impact energy.

		h (cm)	Energy (J)
00	Non-protected		
01		7.5	0.15
02		10	0.2
03		17.5	0.35
04		25	0.5
05		35	0.7
06		20	1
07		40	2
08		30	5
09		20	10
10		40	20

Part B

COMPONENTS FOR CONVENTIONAL SOLUTIONS

Linergy BZ, HK
Busbar systems

Up to 630 A



B1/1

Power
busbar
systems

GV, LAD, U
Wiring systems for motor
starters



B2/1

Wiring
systems

TeSys Control
Switch-disconnectors

Up to 175 A



B3/1

Switch-
disconnectors

TeSys Power
Fuse carriers

Up to 125 A

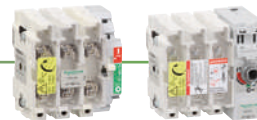


B4/1

Fuse
carriers

TeSys Power
Switch-disconnector fuses

Up to 1250 A



B5/1

Switch-
disconnector
fuses

TeSys Power
Deca, Giga and Modular
Motor circuit breakers

Up to 250 kW



B6/1

Motor
circuit
breakers

TeSys Control
SK, K, Deca Control relays

Up to 10 A



B7/1

Control
relays

TeSys Control
SK, K, SKGC, Deca, Modular
and other Contactors

Up to 150 A (AC-3)



B8/1

Contactors

TeSys Control
Giga High power contactors

Up to 800 A (AC-3)



B9/1

High power
contactors

TeSys Control
F High power contactors

Up to 2600 A (AC-1)



B10/1

High power
contactors

TeSys Protect
LRK, Deca, Giga
Overload relays

Up to 630 A



B11/1

Overload
relays

Busbar systems for electrical distribution and motors starters

Type of product	Range	Pages
Introduction Linery BZ		B1/2
Multistandard power busbar Linery BZ	From 160 to 630 A	B1/4
Introduction Linery HK		B1/10
Multistandard hot-plug distribution system Linery HK	Up to 160 A	B1/12

Technical Data for Designers

B1/17



All Schneider Electric **distribution and connection systems** are brought together into a single brand name:
Linery

Distribution blocks
Device feeders
Power busbars
Hot plug busbar system
Terminal blocks and bars.

Catalogue reference: **LVED213001EN**

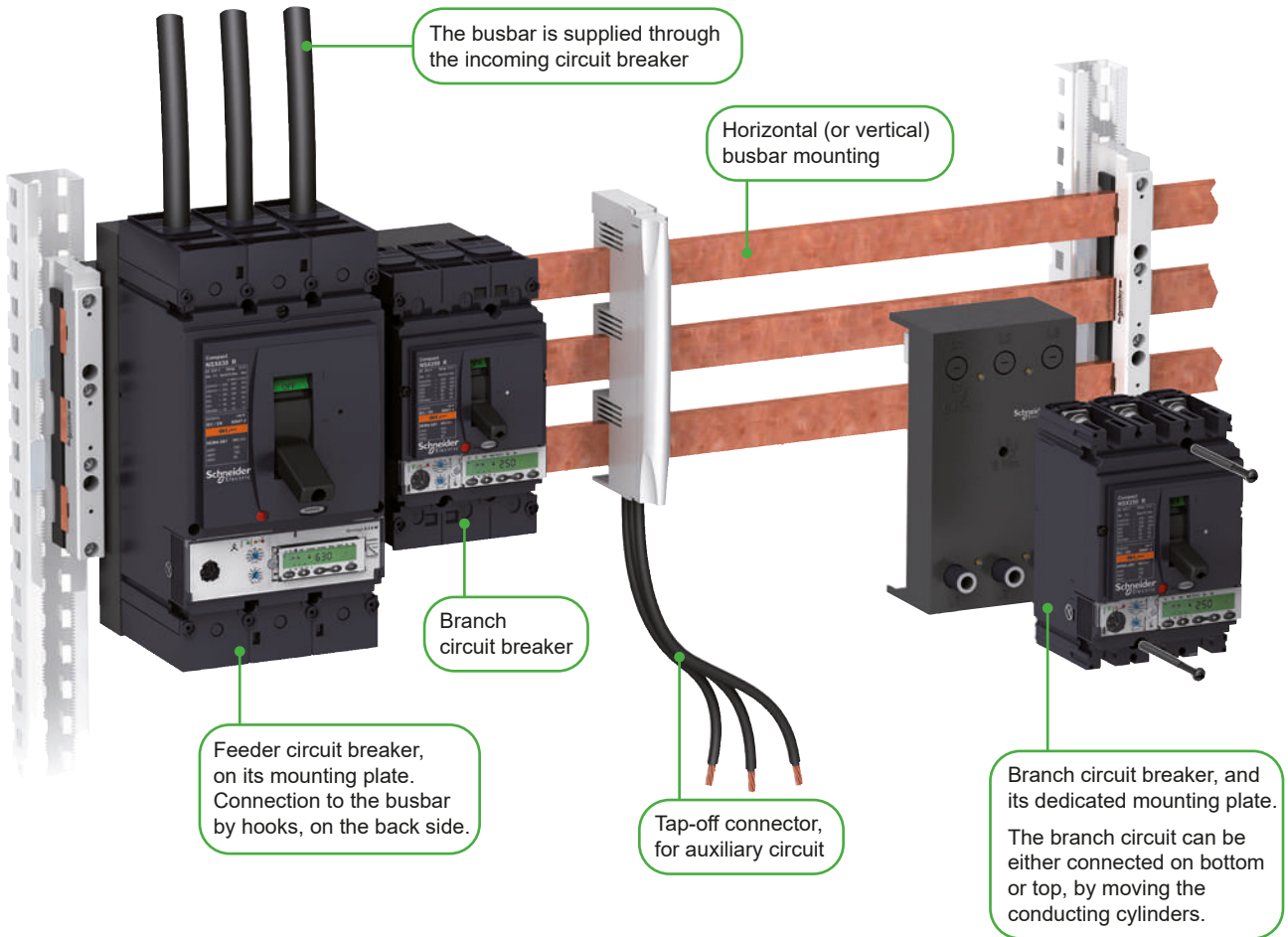
Linergy BZ, HK Busbar systems

Linergy BZ - Electrical distribution up to 630 A

Introduction

In enclosures, when space saving and fast connection are a strong requirement

Power busbar systems



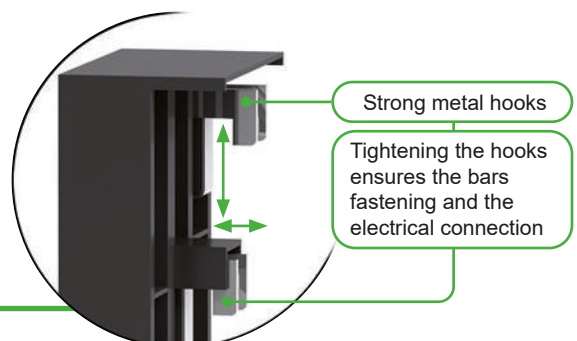
Ideal for industrial process application

Advantages

- Considerable space saving: components are directly mounted on the busbar
- Quick connection, disconnection: a metal hook combines mechanical fastening and electrical connection
- Multi standard: conform to IEC and UL standards

Detailed view: back face of a mounting plate

- Mounting plates, for Compact NSX, Powerpact and GV5 circuit breakers
- Compatible with bars:
 - Height 12, 15, 20, 25 or 30 mm,
 - Width 5 or 10 mm



Linergy BZ, HK Busbar systems

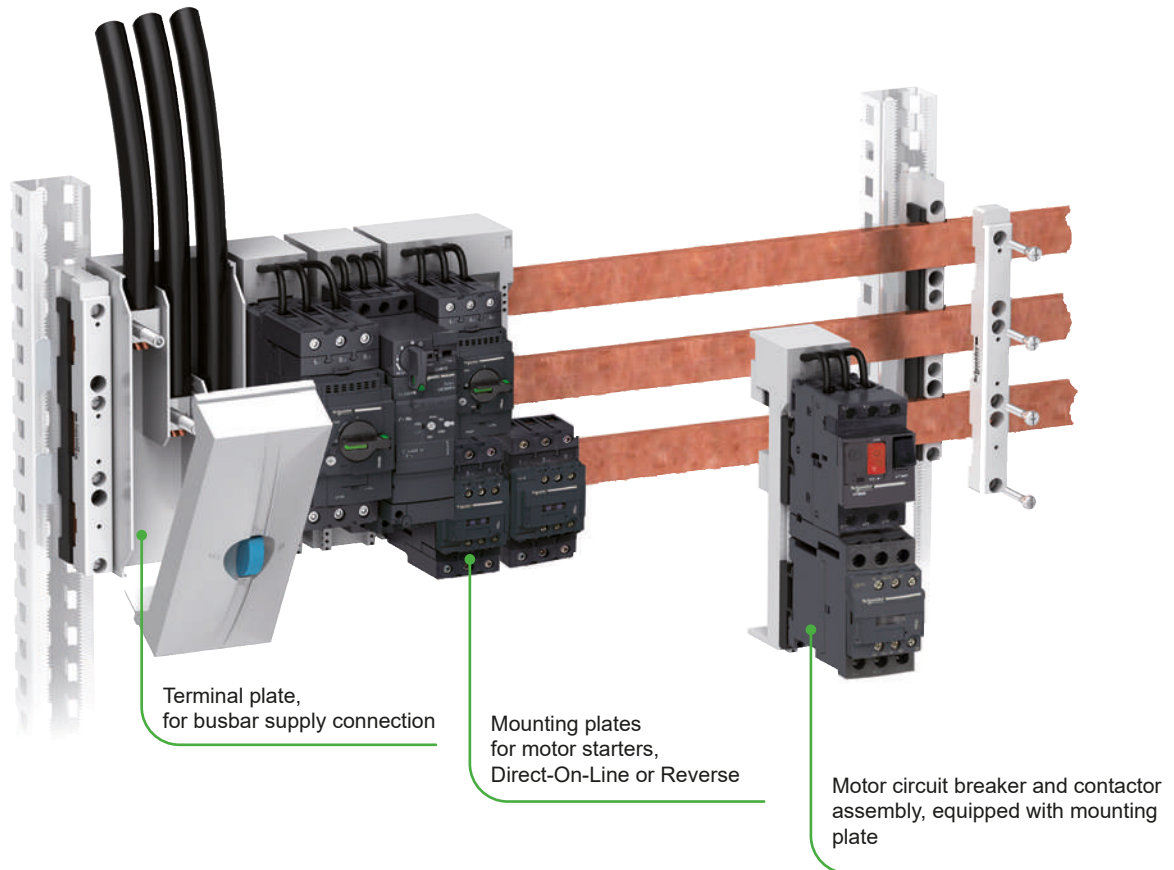
Linergy BZ - Electrical distribution to motor starters

Introduction



In control switchboards, when space saving, quick mounting and replacement are required

Power
busbar
systems

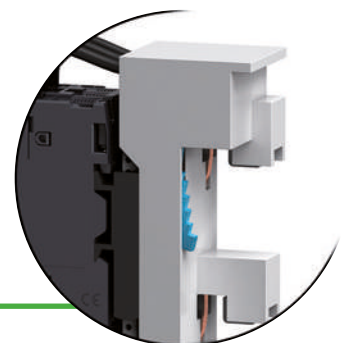


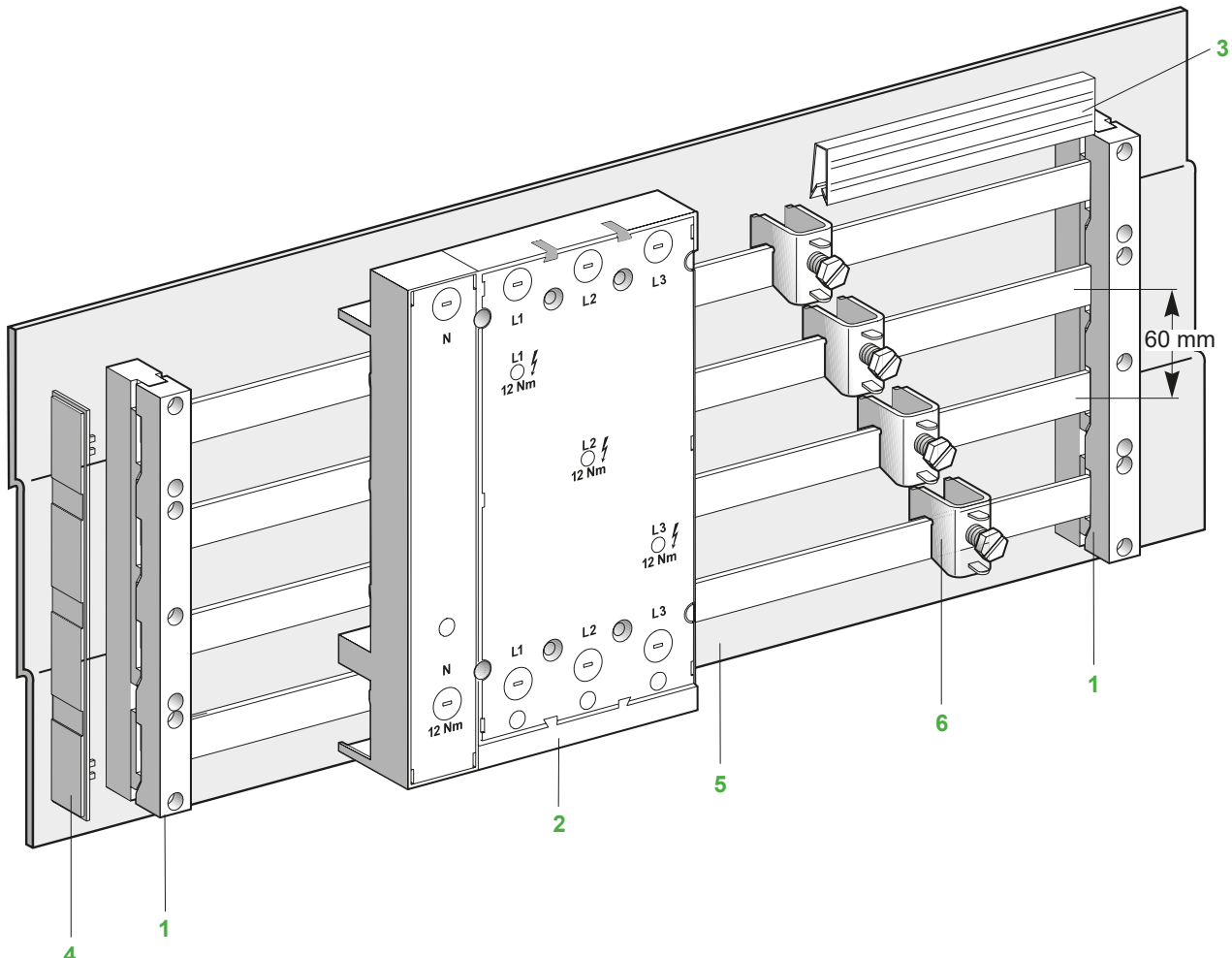
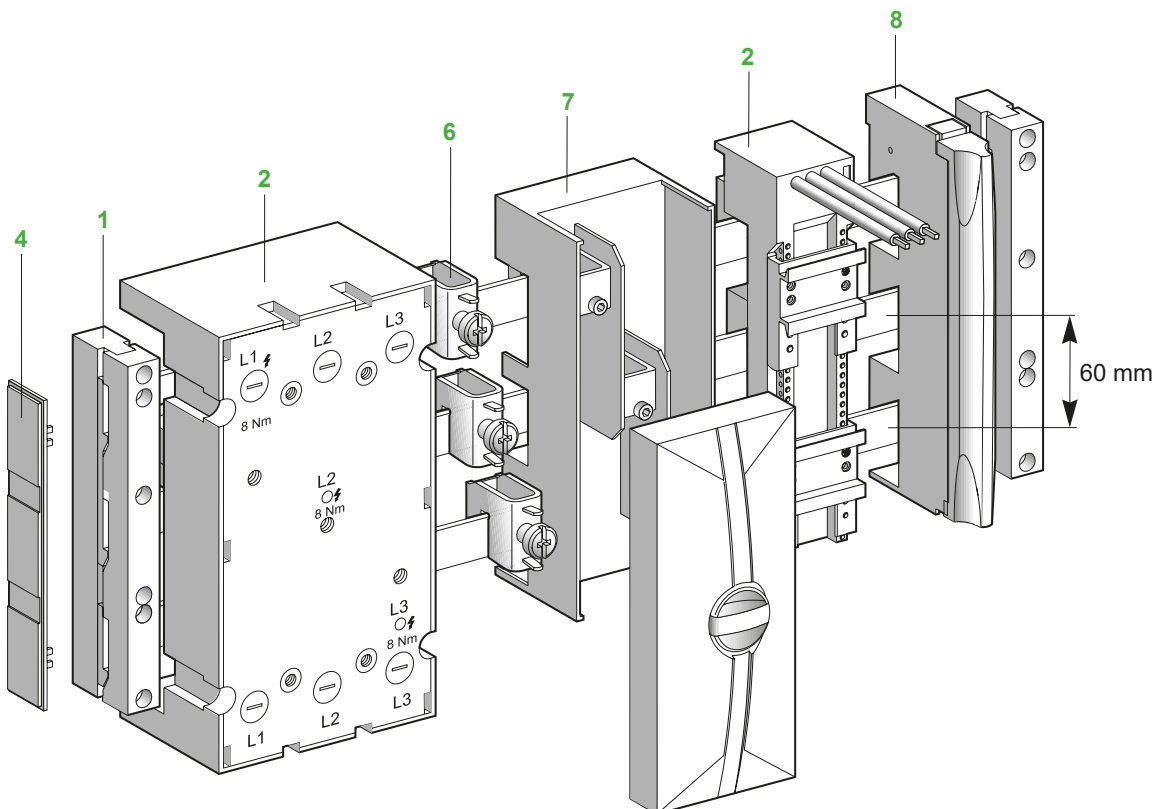
Advantages

- Considerable space saving: components are directly mounted on the busbar
- Large choice of mounting plates (for a Deca Frame 2 (GV2) , a Deca Frame 3 (GV3) motor circuit breakers and assemblies, a Deca Frame 5 (GV5) Ultra)
- Quick connection, disconnection (power off): clip-on mounting plates
- Vibration resistant busbar connections: no periodical re-tightening required
- Multi standard: conform to IEC and UL standards

Detailed view: back face of a motor starter mounting plate

- A reliable electrical contact is ensured by copper blades
- The blue part locks the mounting plate on the busbar, compatibility is provided with the standard profiles:
 - Height 12, 15, 20, 25 or 30 mm,
 - Width 5 or 10 mm

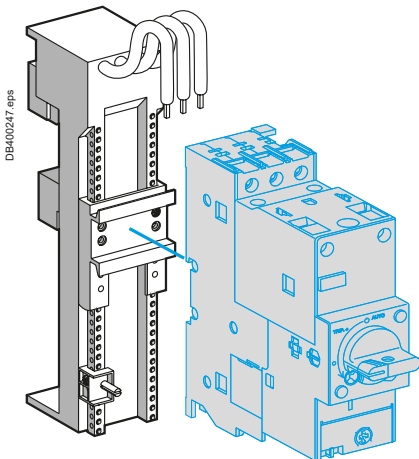
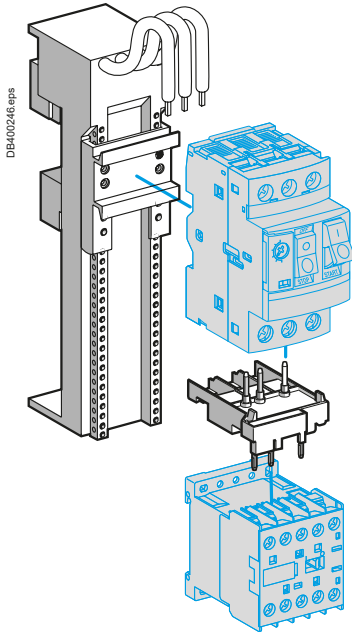




Linergy BZ, HK Busbar systems

Linergy BZ - Mounting plates for motor starters

Introduction



Installation examples.

Description

The mounting plate system for busbars simplifies the installation of motor feeder components used in your electrical installations. Power distribution is performed by a busbar.

The mounting plates are fitted directly on this busbar, by snap-on mounting, thus implementing mechanical and electrical connection.

This system offers numerous benefits:

- space saving in cabinets
- fast, safe and reliable electrical and mechanical connection
- easy connection
- protection for users against electric shocks by direct contacts (IP20) by using busbars end covers
- equipment flexibility and modularity
- increased equipment availability: easier maintenance
- power supply without drilling (connectors) from 1.5 to 120 mm².

Busbars system

The busbar interaxis is 60 mm. Depending on the cross section of the bars, the busbar can withstand a maximum current of 630 A.

Note: The bars forming the busbar are not part of the LA9Z offer. They are not supplied by us. Their selection depends on the maximum current needed for your installation (see next page).

Support for 3P and 4P busbar (1)

These are available in 2 versions: three-pole and four-pole.

For applications having to comply with the UL standard, use the LA9ZX01508 support (3P only).

The mounting plates (2)

These allow mounting of the power feeder components consisting of:

- a Deca Frame 2 (GV2) motor circuit breaker, mounted alone or in conjunction with a TeSys K or Deca contactor
- a Deca Frame 3 (GV3) motor circuit breaker, mounted alone or in conjunction with a Deca contactor
- a Ultra motor starter
- a Deca Frame 5 (GV5) motor circuit breaker
- an Integral motor starter
- a NSX100-250 or NSX400-630 A circuit breaker
- H/J/L PowerPact circuit breaker frame.

Accessories

Accessories complete the offer:

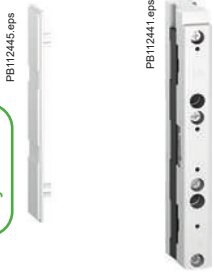
- covers (3) for 5 and 10 mm bars
- end covers (4)
- a base plate (5)
- 1P connectors (6)
- 3P connectors on mounting plate (7)
- a spring terminal 3P connection module (8).

Linergy BZ, HK Busbar systems

Linergy BZ - Busbar supports and accessories

Product references

Power busbar systems



LA9ZX01573 LA9ZX01495

IEC busbar supports and accessories

		Min. order qty	Unit reference
3-pole	For 12, 15, 20, 25, 30 x 5/10 mm busbars	10	LA9ZX01495
	End covers for 3-pole busbar support	10	LA9ZX01573
4-pole	For 12, 15, 20, 25, 30 x 5/10 mm busbars	10	LA9ZX01485
	End covers for 4-pole busbar support (5 left, 5 right)	10	LA9ZX01131



LA9ZX01131 LA9ZX01485

UL busbar supports and accessories

		Min. order qty	Unit reference
3-pole	For 12, 20, 30 x 5/10 mm busbars	10	LA9ZX01508
	Base plate 240 x 700	2	LA9ZX01515
	End covers for busbar support	10	LA9ZX01573

Other accessories

		Min. order qty	Unit reference
Covers, length 1 m	For 12-30 x 5 mm busbars	10	LA9ZX01244
	For 12-30 x 10 mm busbars	10	LA9ZX01245



LA9ZX01573 LA9ZX01508



LA9ZX01244

Linergy BZ, HK Busbar systems

Linergy BZ - Mounting plates

Product references



PB112427_R_1.eps

LA9ZA32627



PB103841_R_1.eps

LV429372



PB103841_R_1.eps

LA9ZA32600



PB112432_R_1.eps

LV432624

For Integral motor starter

Operating current AC-3 440 V	Protection by contactor-circuit breaker	Mounting plate l x h x d	Min. order qty	Unit reference
63 A	LD1, LD4LD●	108 x 260 x 63	1	LA9ZA32627

For Deca Frame 5 (GV5), Frame 6 (GV6) motor circuit breakers

Ratings	Mounting plate l x h x d	Min. order qty	Unit reference
150-220 A GV5	Mounting plate for 3P circuit breakers 104 x 190 x 63	1	LV429372
	Mounting plate for 4P circuit breakers 139 x 251 x 63	1	LV429373
320-500 A GV6	Mounting plate for 3P circuit breakers 139 x 270 x 63	1	LV432623
	Mounting plate for 4P circuit breakers 184 x 284 x 63	1	LV432624

For PowerPact 3P circuit breakers

Ratings	Mounting plate l x h x d	Min. order qty	Unit reference
60-100-150 A	Mounting plate for H frame circuit breakers 104 x 190 x 63	1	LA9ZA32600
250 A	Mounting plate for J frame circuit breakers 104 x 190 x 63	1	LV429372
250-400-600 A	Mounting plate for L frame circuit breakers 139 x 270 x 63	1	LV432623

Characteristics of busbar mounting plates

Type of mounting plate	LA9ZA32621 LA9ZA32622	LA9ZA32427 LA9ZA32428 LA9ZA32434 LA9ZA32623 LA9ZA32442 LA9ZA32443	LA9ZA32624 LA9ZA32625 LA9ZA32626 LA9ZA32627	LV429372 LV429373	LV432623 LV432624	LA9ZA32600	
Degree of protection as per IEC 60529	IP	20					
Rated insulation voltage	V	690					
Permissible current	A	25	32	63	80-100-250	400-630	60-100-150
Peak rated current	kA	50	50 ⁽¹⁾	50	50	50	50
SCCR (UL) with Compact NSX circuit breaker protection	mm ²	The reinforced breaking capacity due to cascading in circuit breaker combination is maintained					
Conductor cross section (color: black)	mm ²	4	6	10	NA		
	AWG	12	10	8	NA		
Type of conductor insulating material	PVC	105°			NA		

(1) 35 kA with LUB12 for LA9ZA32427 and LA9ZA32428.

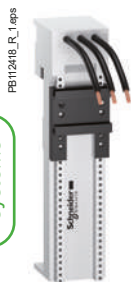


Linergy BZ, HK Busbar systems

Linergy BZ - Mounting plates

Product references

Power busbar systems



LA9ZA32443, LA9ZA32621



LA9ZA32434, LA9ZA32442



LA9ZA32622



LA9ZA32623



LA9ZA32427



LA9ZA32428



LA9ZA32624



LA9ZA32625



LA9ZA32626

For Deca Frame 2 (GV2) motor circuit breakers

Operating current AC-3 440 V	Protection by motor circuit breaker	For contactor	Mounting plate l x h x d	Min. order qty	Unit reference
Mounting plate, 1-way					
25 A	GV2ME GV2P GV2LE	LC1D LC1K LP4K06-K12	45 x 200 x 63	4	LA9ZA32621
32 A	GV2LE		63 x 200 x 63	4	LA9ZA32443
Mounting plate, 2-way⁽³⁾					
25 A	GV2ME GV2P GV2LE	LC1D LC1K LP4K06-K12	90 x 200 x 63	2	LA9ZA32622
32 A	GV2ME GV2P GV2LE	LC1D	45 x 200 x 63	4	LA9ZA32434
			54 x 200 x 63	4	LA9ZA32442
			90 x 200 x 63	2	LA9ZA32623

Ultra motor starters

Operating current AC-3 440 V	Protection by power base	Mounting plate l x h x d	Min. order qty	Unit reference
Mounting plate, 1-way				
32 A	LUB12, LUB32	45 x 200 x 63	4	LA9ZA32427
Mounting plate, 2-way				
32 A	LUB12, LUB32	45 x 260 x 63	4	LA9ZA32428

For Deca Frame 3 (GV3) motor circuit breakers

Operating current AC-3 440 V	Protection by power base	For contactor	Mounting plate l x h x d	Min. order qty	Unit reference
Mounting plate, 1-way⁽¹⁾					
63 A	GV3P	–	54 x 200 x 63	4	LA9ZA32624
	GV3P	LC1D40A...65 A	54 x 260 x 63	4	LA9ZA32625
Mounting plate, 2-way^{(1) (2)}					
63 A	GV3P	LC2D40A...65 A	117 x 260 x 63	4	LA9ZA32626

(1) Contactor-circuit breaker combination without additional part.

(2) Use the LAD9R3 kit for the execution of changeover contactors.

(3) Use the LAD9R1 or LAD9R1V kit for the execution of changeover contactors.

Note: the mounting plate rails can be shifted vertically in 1.25 mm increments.

Linergy BZ, HK Busbar systems

Linergy BZ - Accessories

Product references



LA9ZX01285



LA9ZX01287



LA9ZX01413



LA9ZX01243



LA9ZX01563

Terminals				
	I max		Set of	Unit reference
One-pole for flat bars, 5 mm	270 A	Capacity 4-35 mm ²	50	LA9ZX01285
	400 A	Capacity 16-70 mm ²	25	LA9ZX01287
3P cover, width 84 mm			10	LA9ZX01413

Terminals on mounting plate				
	I max		Min. order qty	Unit reference
3P, on mounting plate + cover, for 12 x 5 to 30 x 10 busbars, width 81 mm	440 A	Capacity 35-120 mm ²	1	LA9ZX01243
3P, on mounting plate + cover, for 20 x 5 to 30 x 10 busbars, width 135 mm	560 A	Capacity 120-300 mm ²	1	LA9ZX01754

Connection module				
	I max		Min. order qty	Unit reference
3P, spring terminal connection + cover, for 12 x 5 to 30 x 10 busbars, width 20 mm	80 A	Capacity 1.5-16 mm ²	8	LA9ZX01563

Connection by connectors											
		LA9ZX01285		LA9ZX01287		LA9ZX01243		LA9ZX01563		LA9ZX01754	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Flexible wire	mm ²	4	35	16	70	35	120	1.5	16	120	300
Multi-strand wire	mm ²	4	35	16	70	35	120	1.5	16	120	300
Rigid wire	mm ²	4	35	-	-	-	-	1.5	16	-	-
Tightening torque	N.m	... x 5		... x 5		... x 5-10		... x 5-10		... x 5-10	
Cover		LA9ZX01413		LA9ZX01413		Supplied without cover		Supplied without cover		Supplied without cover	

Power busbar systems



Linery BZ, HK Busbar systems

Linery HK - Electrical distribution up to 160 A

Introduction

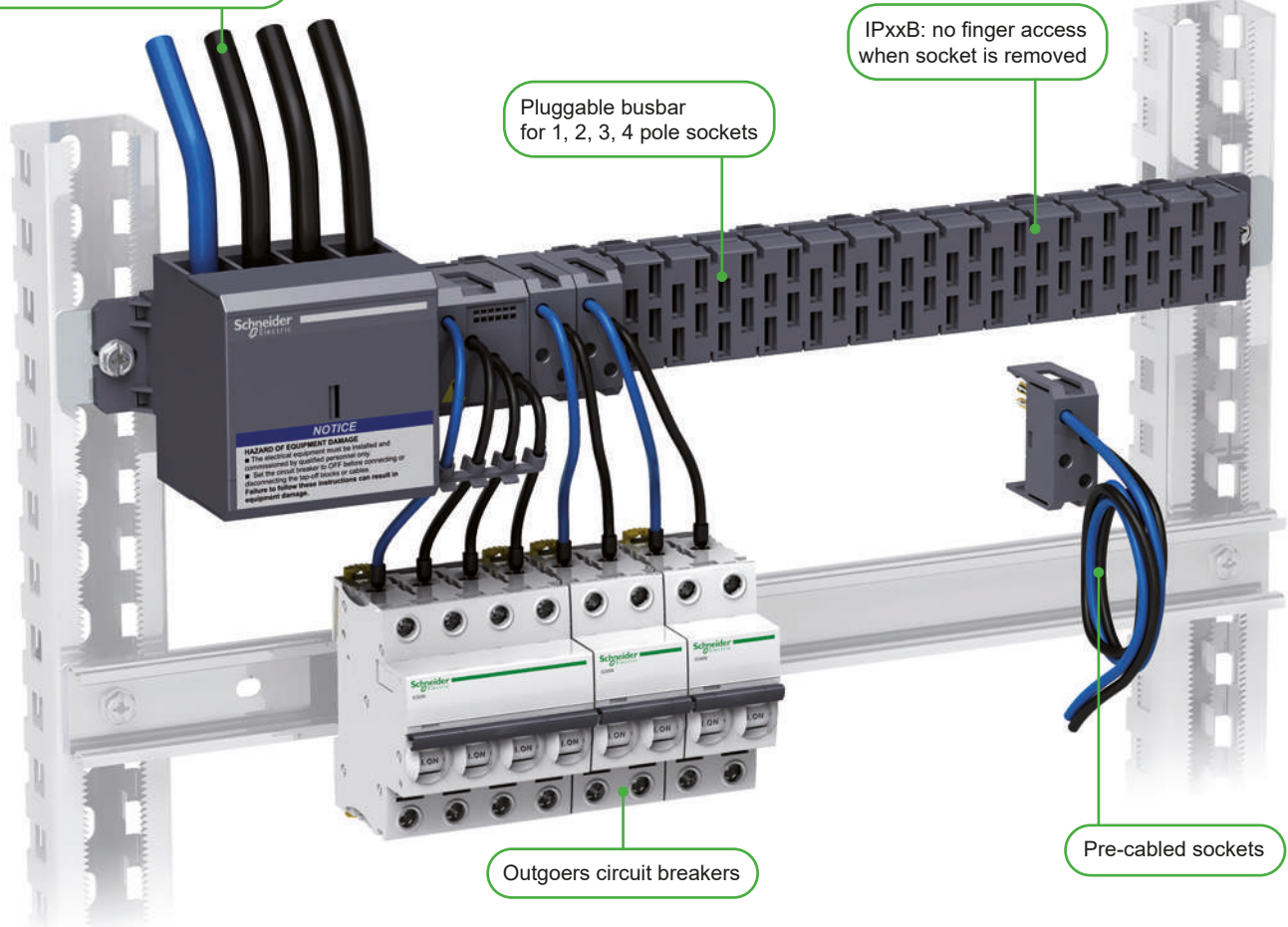
Hot-plug distribution: when continuity of service is required

Power busbar systems

The busbar is supplied through the incoming circuit breaker

IPxxB: no finger access when socket is removed

Pluggable busbar for 1, 2, 3, 4 pole sockets



Outgoers circuit breakers

Pre-cabled sockets

Advantages

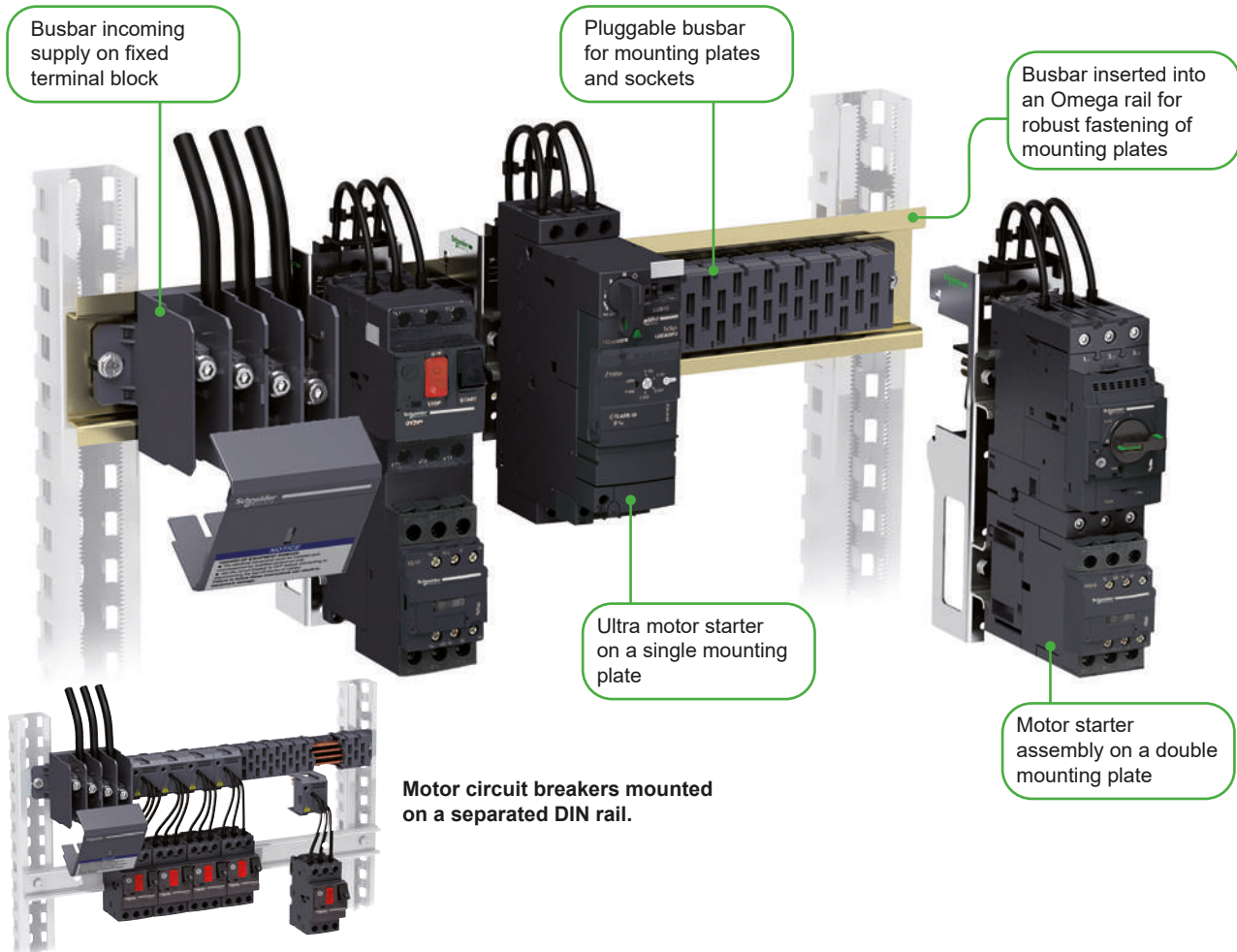
- Considerable time saving: stand alone busbar, fixed to the chassis with 2 screws
- Preserved continuity of service during modification: live connection, disconnection (off load)
- Wide adaptability: 6 busbar lengths from 344 to 1100 mm, 12 models of sockets
- Multi standard: conform to IEC and UL standards

Detailed view: pre cabled socket

- The assembling process and the technological choices ensure a long-lasting reliability
- Each wire is welded on a spring clip providing robustness to the socket and vibration resistant contacts



When compactness and continuity of service are required

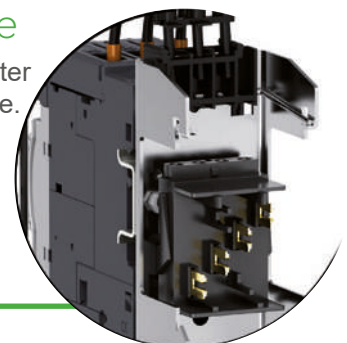


Advantages

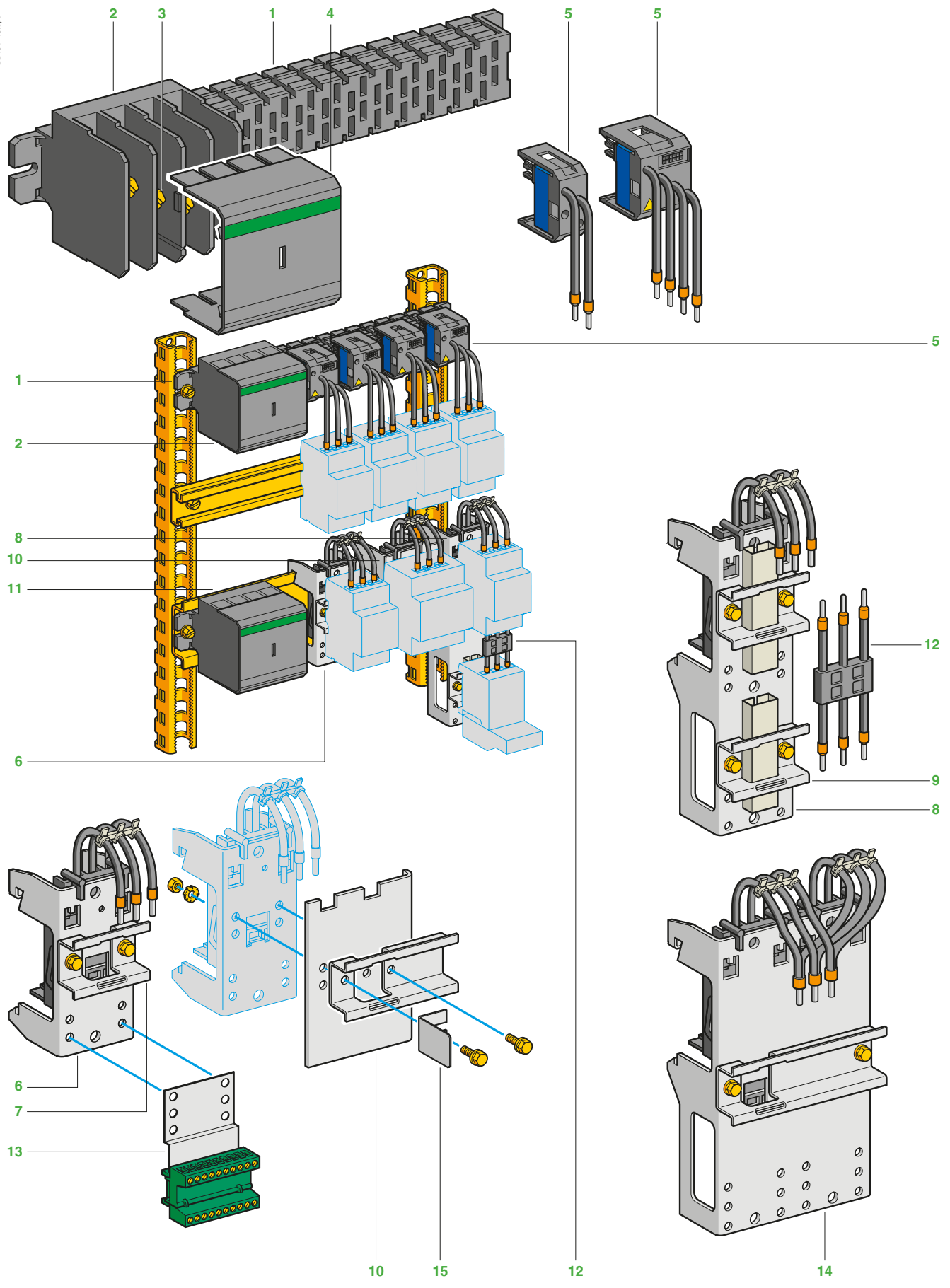
- Space saving in compact enclosures: the total volume is reduced to that of the motor starter assemblies
- Preserved continuity of service during modification and maintenance: live connection, disconnection (off load)
- Wide adaptability: 6 busbar lengths from 344 to 1100 mm, 12 models of sockets, 23 mounting plates for motor starters up to 25 or 50 A
- Multi standard: conform to IEC and UL standards

Detailed view: mounting plate back face

- Thanks to the plug and its pre-cabled wires the motor starter is safely assembled in the workshop, for immediate or later use.
- A piece of DIN profile rail is attached on the front face of the mounting plate for fastening the components.
- The metal mounting plate ensures a rigid and robust fastening on the omega rail.



DB404140 eps



The assembly of automated control and distribution panels requires the use of products that are not only safe but also simple and quick to mount and cable.

The Linergy HK pre-assembled busbar system meets all these criteria by incorporating prefabricated components which cater for 3 principal functions:

Carrying of electric current

By the pre-assembled 4-pole busbar system **1**, 160 A at 35 °C.

4-pole busbars can be used for 3-phase + Neutral or 3-phase + Common.

The busbars are available in 6 lengths: 344, 452, 560, 668, 992, 1100 mm.

An incoming supply terminal block **2** is located at the extreme left of the busbar.

"Knock-out" partitions allow connection of the power supply from above or below to connectors **3** which are protected by a removable cover **4**.

Upstream protection of the busbar is shown on page B1/20.

Current distribution

Tap-off units **5** (factory assembled) are available in 4 versions:

- 2-pole,
- 3-pole,
- 4-pole (3-phase + Neutral),
- 4-pole (3-phase + Common).

The tap-offs clip onto the busbar with instantaneous mechanical and electrical connection to the busbars.

2 ratings are available: 16 and 32 A.

The tap-off units ensure not only rapid mounting, but also a neat appearance for the power distribution system and complete safety when accessing under live circuit conditions.

Component mounting

Component mounting plates with incorporated tap-off allow mounting of and supply of power to components.

They are available in 25 A or 50 A ratings.

These mounting plates clip onto the mounting rail **11**, which also supports the busbar, and at the same time make electrical connection via the incorporated tap-off.

2 types of mounting plate are available:

- single plates **6** (height 105 mm), with bolt-on 35 mm wide rail **7**, which may be bolted on in one of two positions, allowing height adjustment of 10 mm.
- double plates **8** and **14** (height 190 mm), with two bolt-on, 35 mm wide rails **9** mounted on 100 mm fixing centres; each rail may be bolted on in one of 4 positions, allowing height adjustment in 10 mm steps. These plates are supplied with connectors **12** to allow wiring between control and protection devices.

Single mounting plates enable the following types of distribution:

- 2-pole (Ph + N) and (Ph + Ph)
- 3-pole,
- 4-pole (3 Ph + N or 3 Ph + common).

Double mounting plates enable the following types of distribution: 2-pole (Ph + N, Ph + Ph), 3-pole or 4-pole (3Ph+N and 3Ph + common).

Extension plates **10** can be bolted onto single and double mounting plates to enable mounting of wider components. Using a side stop **15** in conjunction with these extension plates also supports the Linergy HK busbar when used vertically.

A control terminal block **13** comprising a support plate bolted onto the single or double mounting plates and a 10-pole plug-in block, enables connection of the control circuit wires (c.s.a. 1.5 mm² max).

Linergy BZ, HK Busbar systems

Linergy HK

Product references

Power busbar systems

PB112410_Reps



AK5JB1●●

Busbars

The busbars can be screw-mounted onto any type of support. However, if it is to be used in conjunction with component mounting plates incorporating a tap-off, it is essential that it is mounted on the AM1DL201 rail.
When mounting tap-offs, the rated operational current of the busbar should be taken into account: 160 A at 35 °C.

Number of conductors	Number of tap-offs at 18 mm intervals	Length mm	Suitable for mounting in enclosure width mm	Reference	Weight kg
4 ⁽¹⁾	12	344	600	AK5JB143	0.700
	18	452	800	AK5JB144	0.900
	24	560	800	AK5JB145	1.100
	30	668	800	AK5JB146	1.300
	48	992	1200	AK5JB149	1.900
	54	1100	1200	AK5JB1410	2.100

Removable power sockets

Use	Number of points used on the busbar system		Thermal current	Cable lengths	Min. order qty	Unit reference
	Width	A	A	mm		
Single-phase + Neutral	1	9 mm	16	200	6 ⁽²⁾	AK5PC12
			32	1000	6 ⁽²⁾	AK5PC32L
2-phase	1	18 mm	16	200	6 ⁽³⁾	AK5PC12PH
			32	1000	6 ⁽³⁾	AK5PC32LPH
3-phase	2	18 mm	16	200	6	AK5PC13
			32	250	6	AK5PC33
			32	1000	6	AK5PC33L
3-phase + Neutral	2	18 mm	16	200	6	AK5PC14
			32	250	6	AK5PC34
3-phase + common	2	18 mm	16	200	6	AK5PC131
			32	250	6	AK5PC331

Accessories

Description	Maximum no. of connections	C.s.a. mm ²	Sold in lots of	Unit reference
Cable guide	4	2.5 or 4	20	AK5GF1

⁽¹⁾ 4-pole: 3-phase + Neutral or 3-phase + Common.

⁽²⁾ Total of 6 sockets supplied: 2 sockets (N + L1), 2 sockets (N + L2), 2 sockets (N + L3).

⁽³⁾ Total of 6 sockets supplied: 2 sockets (L1 + L2), 2 sockets (L1 + L3), 2 sockets (L2 + L3).

⁽⁴⁾ Cut and drill to suit use.

PB112411_Reps



AK5PC12

PB112412_Reps



AK5PC14

PB112405_eps



AK5GF1

Linergy BZ, HK Busbar systems

Linergy HK

Product references

FB112407_Reps



AK5PA241

FB112408_Reps



AK5PA242

FB503054_Reps



AM1DL201

Component mounting plates incorporating tap-off

Single plate (height 105 mm)

Use	No. of 18 mm points used on the busbar system	Phase	Thermal current A	Number of rails for component support	Min. order qty	Reference
Single-phase + neutral	3 (54 mm width)	Ph1+N	25	1	1	AK5PA211N1
		Ph2+N	25	1	1	AK5PA211N2
		Ph3+N	25	1	1	AK5PA211N3
2-phase	3	Ph1+Ph2	25	1	1	AK5PA211PH12
		Ph1+Ph3	25	1	1	AK5PA211PH13
		Ph2+Ph3	25	1	1	AK5PA211PH23
3-phase	3	–	25	1	1	AK5PA231
3-phase + common	3	–	25	1	1	AK5PA2311
3-phase + neutral	3	–	25	1	1	AK5PA241

Double plate (height 190 mm)

Prefabricated 25 A connectors are supplied for connecting the 2 protection and control devices.

Single-phase + neutral	3	Ph1+N	25	2	1	AK5PA212N1	
		Ph2+N	25	2	1	AK5PA212N2	
		Ph3+N	25	2	1	AK5PA212N3	
2-phase	3	Ph1+Ph2	25	2	1	AK5PA212PH12	
		Ph1+Ph3	25	2	1	AK5PA212PH13	
		Ph2+Ph3	25	2	1	AK5PA212PH23	
3-phase	3	–	25	2	1	AK5PA232	
		6 (108 mm width)	–	25	2	1	AK5PA232S
			–	50	1	1	AK5PA532
3-phase + neutral	3	–	25	2	1	AK5PA242	
3-phase + common	3	–	25 (10 common)	2	1	AK5PA2312	
			25 (10 common)	2	1	AK5PA2312S	
			50 (10 common)	1	1	AK5PA5312	
3-phase + neutral	6	–	50	1	1	AK5PA542	

Omega rail, width 75 mm

This rail is designed to accommodate the busbar system when it is used with Linergy HK mounting plates incorporating tap-offs. It supports the busbar system. The plates simply clip onto the rail.

Material and surface treatment	Depth	Length	Min. order qty	Reference	Weight
	mm	mm			kg
2 mm sheet steel	15	2000 ⁽⁴⁾	6	AM1DL201	3.000

Power busbar systems



Linergy BZ, HK Busbar systems

Linergy HK

Product references

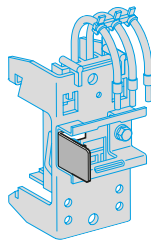
Power
busbar
systems

PB112404.eps



AK5BT01

DF52288.eps



PB112415.eps



AK5SB1

PB121278.eps



AB1R4

Extension plates

These plates bolt onto the equipment support plates, after having removed them from the rails, to be able to mount wider components.

Use		Number of tap-offs at 18 mm intervals	Reference
For mounting plates incorporating tap-off	Single	4	AK5PE17
	Double	4	AK5PE27

Side stop (AK5JB mounted vertically)

Use	Set of	Reference
For extension plate (for AK5PA●●●)	50	AK5BT01

Control terminal blocks

Description	Thermal current A	Set of	Reference
10-pole terminal blocks, for screwing onto plate AK5 PA●●●			
	10	10	AK5SB1

Accessories

Description	Marking	Set of	Reference
Strips of clip-in markers 10 identical numbers, signs or capital letters per strip	0...9	25	AB1R● ⁽¹⁾
	+	25	AB1R12
	-	25	AB1R13
	A...Z	25	AB1G● ⁽¹⁾

(1) Replace the ● in the selected reference with the number or letter required. Example: AB1R1 or AB1GA.

Note:

■ if the equipment is wider than the mounting plate, an extension plate can be used to increase the width of the support plate.

■ for upstream protection, see page B1/20.

Technical Data for Designers

Contents

Lineryg BZ:

- > characteristics B1/18
- > curves B1/19

Lineryg HK:

- > characteristics B1/20 and B1/21
- > dimensions B1/22 and B1/23

Linery BZ, HK Busbar systems

Linery BZ

Characteristics

Power busbar systems



LA9ZX01495



LA9ZX01485



LA9ZX01508



Ref.



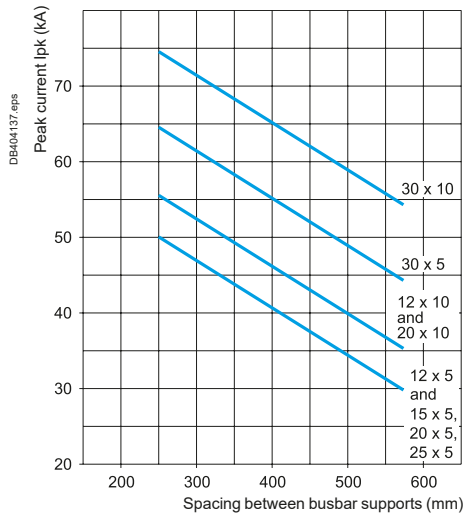
General characteristics									
		LA9ZX01495 and LA9ZX01485 (IEC 6.439-1)							
Bar dimensions compatibility	mm	12 x 5	15 x 5	20 x 5	25 x 5	30 x 5	12 x 10	20 x 10	30 x 10
Max. rated operating current	A	200	250	320	400	450	360	520	630
Min. peak permissible rated current	kA	30	30	30	30	45	35	35	53
Distance max. between 2 busbars supports	mm	570	570	570	570	570	570	570	570
Degree of protection	IP	20 (with cover LA9ZX01244 or LA9ZX01245)							
Thermal resistance	°C	125							
Rated current frequency	Hz	50/60							
Rated insulation voltage	V	690							
Rated operating voltage	V	690							
		LA9ZX01508 (UL) 508 A							
Bar dimensions compatibility	mm	12 x 5	20 x 5	30 x 5	12 x 10	20 x 10	30 x 10		
Rated operating current	A	150	362	500	300	564	630		
I _{eff} (RMS) surge current	kA	18	18	22 - 25	18	18	22 - 25		
SCCR (protected by 250 A 480 V AC)	kA	65	-	-	65	-	-		
(protected by 250 A 600 V AC)		25	-	-	25	-	-		
Compact NSX circuit breaker)		-	65	65	-	65	65		
400 A 480 V AC		-	35	35	-	35	35		
500 A 480 V AC		-	-	65	-	-	65		
600 A 600 V AC		-	-	35	-	-	-		
600 A 480 V AC		-	-	50	-	-	50		
600 A 600 V AC		-	-	25	-	-	25		
SCCR (protected by fuses Class J or T ...)		100	100	100	100	100	100		
400 A 480 V AC		-	-	100	-	-	100		
500 A 480 V AC		-	-	100	-	-	100		
500 A 600 V AC		-	-	100	-	-	100		
Distance max. between 2 busbars supports (busbar protected)	mm	400	800	800	400	800	800		
Degree of protection	IP	20 (with cover LA9ZX01244 or LA9ZX01245)							
Thermal resistance	°C	125							
Rated current frequency	Hz	50/60							
Rated operating voltage	V	600							

Linergy BZ, HK Busbar systems

Linergy BZ

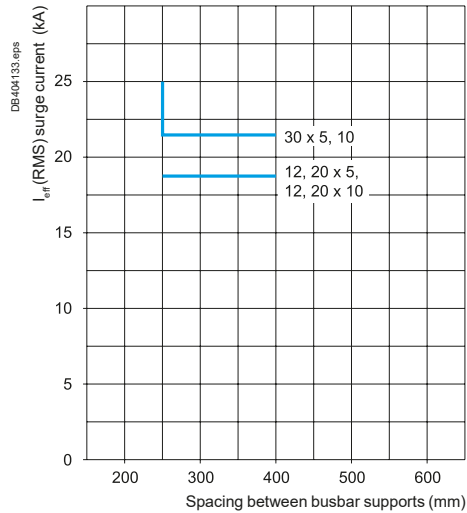
Curves

Determining the spacing between busbar supports (LA9ZX01495 and LA9ZX01485), according to IEC 61439-1 ⁽¹⁾



(1) Depending on the short-circuit current.

Short-circuit strength diagram according to UL845 (LA9ZX01508)

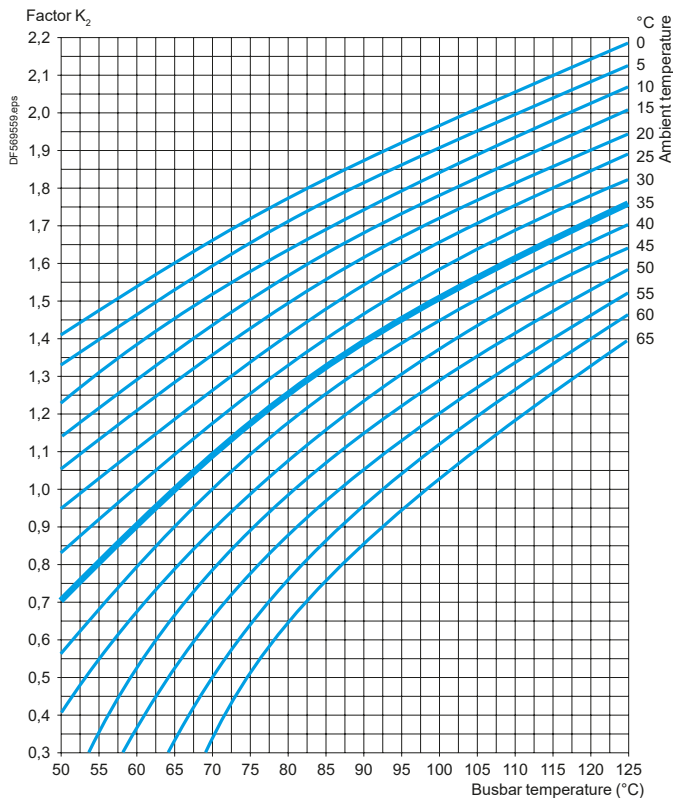


Load resistance of busbar assemblies in IEC applications

For an ambient temperature of 35 °C and a busbar temperature of 65 °C

Cross section	mm ²	12 x 5	15 x 5	20 x 5	25 x 5	30 x 5	12 x 10	20 x 10	30 x 10
Permissible current	A	200	250	320	400	450	360	520	630

In the event of changes in climatic conditions, the following curve indicates the correction factor K_2 to be applied.



Example: In normal operating conditions, a tinned busbar of 30 x 10 can permanently withstand 630 A.

For a load of 800 A, the correction factor K_2 to be applied will be 1.3 ($\frac{800 \text{ A}}{630 \text{ A}}$). As a result, the temperature rise in the busbars will reach 82.5 °C.

Introduction:
page B1/5

References:
pages B1/6 to B1/9

Characteristics:
page B1/18

Lineryg BZ, HK Busbar systems

Lineryg HK

Characteristics

Power busbar systems

i
Ref.
↑↓

Busbar system characteristics								
Conforming to standards			IEC 60439					
Product certifications			UL, CSA, DNV, LROS					
Degree of protection	Against access to live parts		IP XXB conforming to IEC 60529					
Flame resistance	Conforming to IEC 60695	°C	850 (incandescent wire)					
	Conforming to standard UL 94		V0					
Number of conductors	AK5JB14●		4					
Supply current			~					
Rated operational frequency		Hz	50 or 60					
Rated operational current	Ambient temperature 35 °C	A	160					
	Coefficient K to be applied according to the ambient temperature	°C	35	40	45	50	55	60
		K	1	0.96	0.92	0.88	0.83	0.78
Rated insulation voltage	Conforming to IEC 60439-1	V	690					
	Conforming to UL and CSA	V	600					
Operational voltage	Off-load plugging-in and unplugging, with supply switched on							
	Conforming to IEC 60439-1	V	400					
	Conforming to UL, CSA	V	480					
	Plugging-in and unplugging, with supply switched off							
	Conforming to IEC 60439-1	V	690					
	Conforming to UL, CSA	V	600					
Maximum permissible peak current		kA	25					
Maximum let-through energy		A²s	1 x 10 ⁷					
Upstream short-circuit ⁽¹⁾ and overload protection	Type of protection		Schneider Electric circuit-breaker		Fuses			
			NSX 160 N	NSX 160 H	aM	gF		
	Rating	A	160	160	160	160		
	Prospective short-circuit current	kA	36	70	100	100		
	Operational current	A	160	160	160	160		
Cabling			Maximum c.s.a.		Minimum c.s.a.			
	Flexible cable with cable end	mm ²	70		2.5			
	Solid cable	mm ²	70		2.5			
	Tightening torque	Nm	10					
Mounting position	Horizontal or vertical ⁽²⁾		Fixing with screws provided					

(1) For conditions where conditional short-circuit current exceeds 25 kA.

(2) Using side stop AK5BT01 on mounting plates AK5PA.

Linergy BZ, HK Busbar systems

Linergy HK

Characteristics

Tap-off characteristics												
Type		AK5 PC12	AK5 PC12PH	AK5 PC13	AK5 PC14	AK5 PC131	AK5 PC32L	AK5 PC32LPH	AK5 PC33 PC33L	AK5 PC34 PC34L	AK5 PC331	
Conforming to standards		IEC 60439										
Product certifications		UL, LROS, CSA, DNV										
Degree of protection		Against access to live parts: IP XXB conforming to IEC 529										
Polarity		Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common	Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common	
Conductor c.s.a. (UL cables)	mm ²	2 x 2.5	2 x 2.5	3 x 2.5	4 x 2.5	3 x 2.5 1 x 1.5	2 x 4	2 x 4	3 x 4	4 x 4	3 x 4 1 x 1.5	
Conductor colours		Black Blue (Neutral)	Black	Black	Black Blue (Neutral)	Black White	Black Blue (Neutral)	Black	Black	Black Blue (Neutral)	Black White (Common)	
Permissible current	A	16	16	16	16	16 10 (Common)	32	32	32	32	32 10 (Common)	
Rated insulation voltage	V	690 conforming to IEC 60439-1										
Rated peak current	kA	6										
Maximum let-through energy	A ² s	100 000					200 000					
Type of conductor insulation		PVC 105 °C										

Power
busbar
systems



Tap-off characteristics									
Type		AK5 PA211N1 PA211N2 PA211N3 PA212N1 PA212N2 PA212N3	AK5 PA211PH12 PA211PH13 PA211PH23 PA212PH12 PA212PH13 PA212PH23	AK5 PA231 PA232 PA232S	AK5 PA241 PA242	AK5 PA2311 PA2312 PA2312S	AK5 PA532	AK5 PA542	AK5 PA5312
Conforming to standards		IEC 60439							
Product certifications		UL, LROS, CSA, DNV							
Degree of protection		Against access to live parts: IP XXB conforming to IEC 60529							
Polarity		Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common	3-phase	3-phase + Neutral	3-phase + Common
Conductor c.s.a. (UL cables)	mm ²	2 x 4	2 x 4	3 x 4	4 x 4	3 x 4 1 x 1.5	2 x (3 x 4)	2 x (4 x 4)	2 x (3 x 4) 1 x 1.5
Permissible current	A	25	25	25	25	25 10 (Common)	50	50	50 10 (Common)
Rated insulation voltage	V	690 conforming to IEC 60439-1							
Rated peak current	kA	6							
Maximum let-through energy	A ² s	200 000							
Type of conductor insulation		PVC 105 °C							

Characteristics of mounting rails AM1DL201	
Type	Omega (width 75 mm, depth 15 mm)
Material	2 mm sheet steel
Surface treatment	Galvanized

Linery BZ, HK Busbar systems

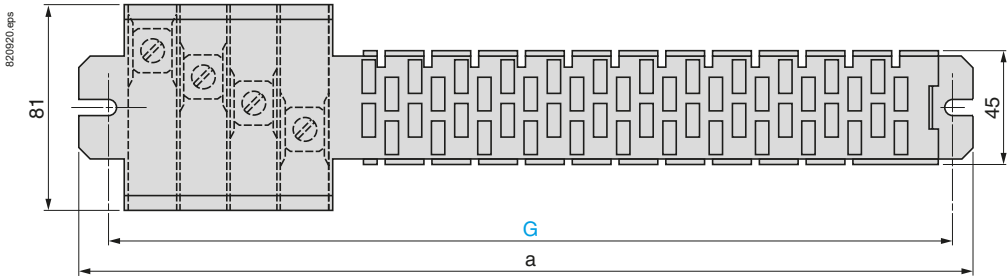
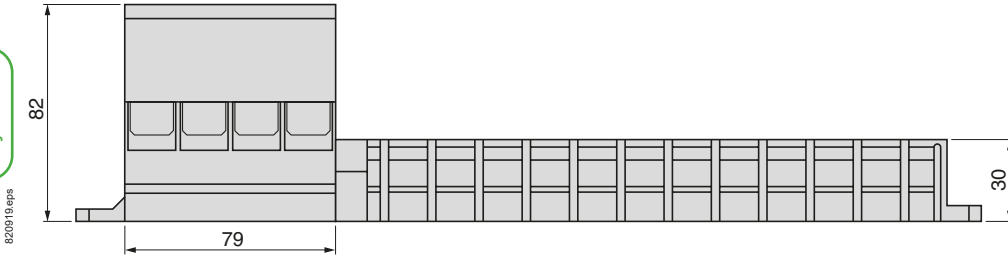
Linery HK

Dimensions

Power busbar systems

Busbars

AK5JB●●●

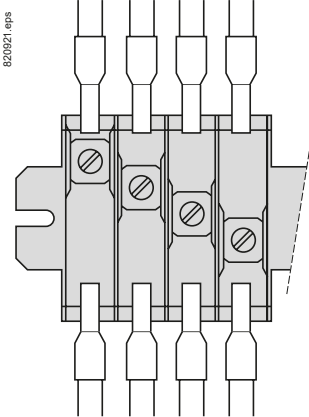


AK5	a	G	No. of 18 mm points
JB143	344	330	12
JB144	452	438	18
JB145	560	546	24
JB146	668	654	30
JB149	992	978	48
JB1410	1100	1086	54

Busbar feed units

AK5JB●●●

Installation of AK5JB●●● busbar systems

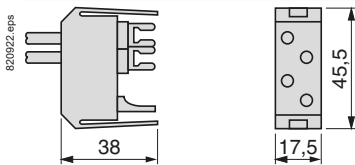


Connection	C.s.a. in mm ²	
	min	max
Flexible cable with or without cable end	1 x 2.5 2 x 2.5	1 x 70 ⁽¹⁾ 2 x 35
Flexible bar	-	2 x (9 x 4)
Flexible bar + flexible cable with or without cable end	9 x 4 + 1 x 2.5	9 x 4 + 1 x 35

(1) Maximum c.s.a. or connection of conductor without cable end.

Removable power sockets 16 and 32 A

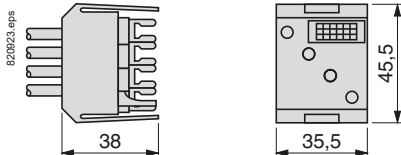
AK5PC12●. AK5PC32L●



AK5PC●3. AK5PC33L

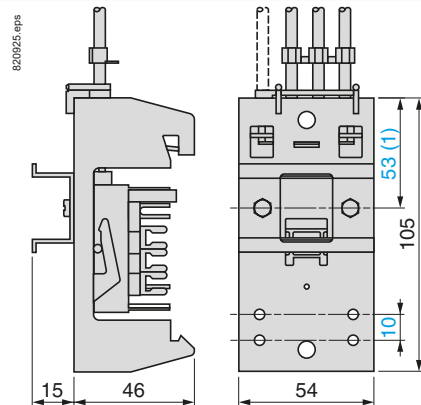
AK5PC●4. AK5PC34L

AK5PC●31



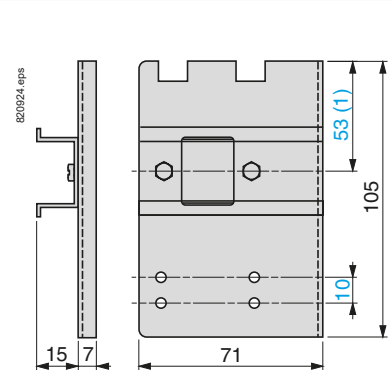
Mounting plates incorporating tap-offs, 25 A

AK5PA2●1. AK5PA2311. AK5PA211●●●●



Single width extension plates

AK5PE17



Note: It is recommended that the power sockets or the removable plates are connected as close as possible to the busbar feed unit.

(1) Can be fixed at 43 mm.

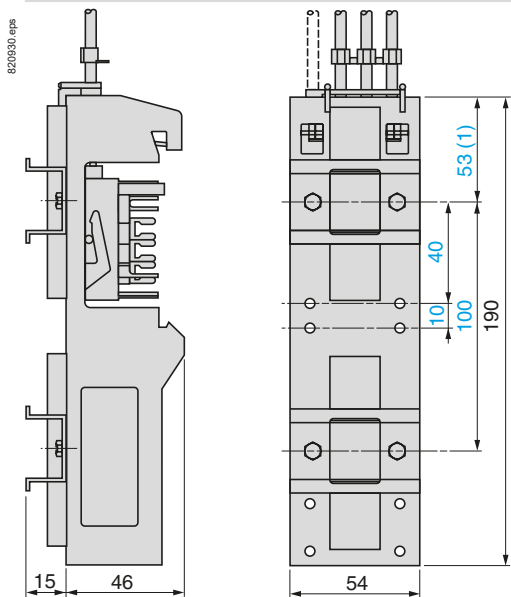
Linergy BZ, HK Busbar systems

Linergy HK

Dimensions

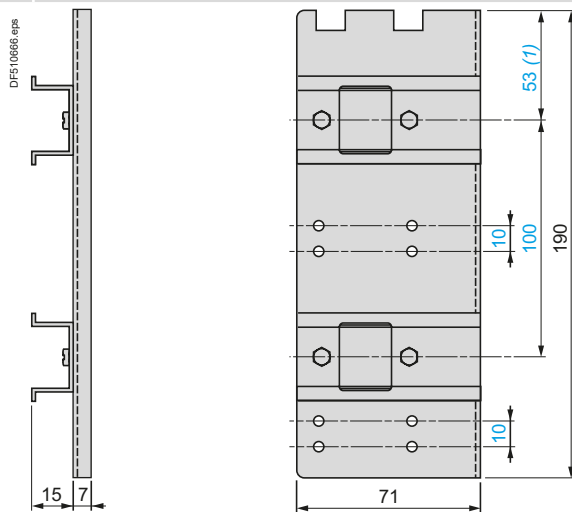
Component mounting plates incorporating tap-off

AK5PA232. AK5PA2312. AK5PA242



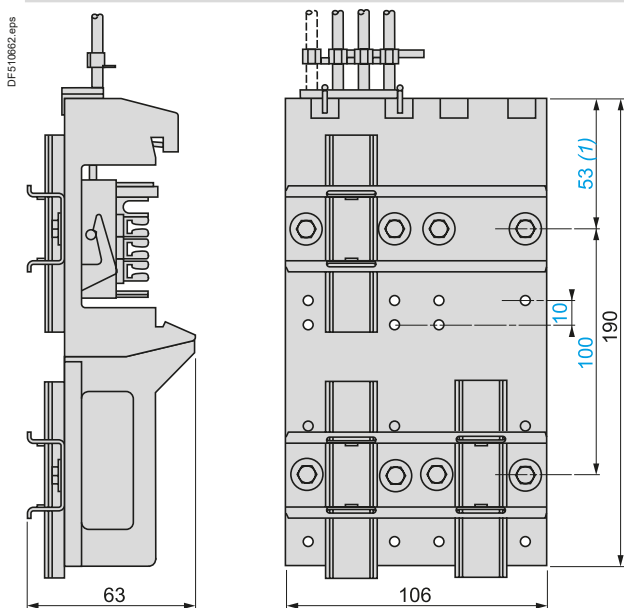
Double extension plate

AK5PE27

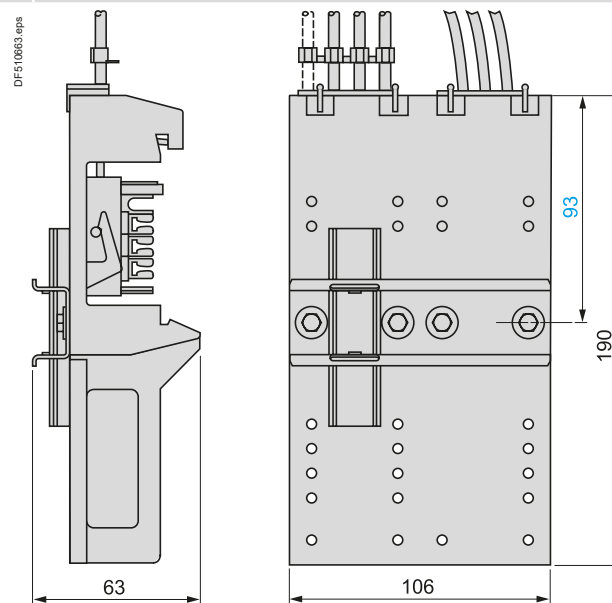


Component mounting plates incorporating tap-off

AK5PA232S. AK5PA2312S

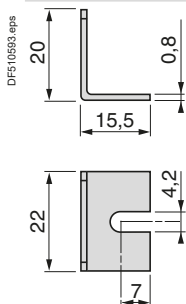


AK5PA532. AK5PA5312. AK5PA542



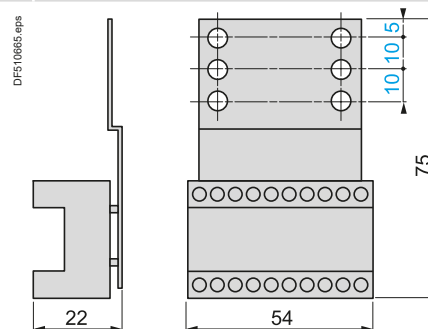
Side stop

AK5BT01

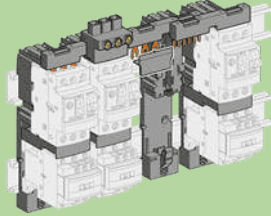




Control terminal block

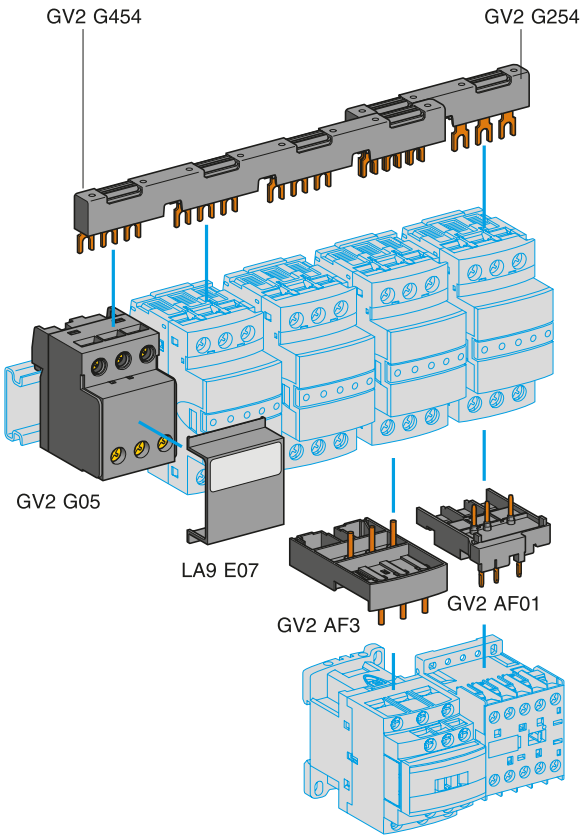
AK5SB1



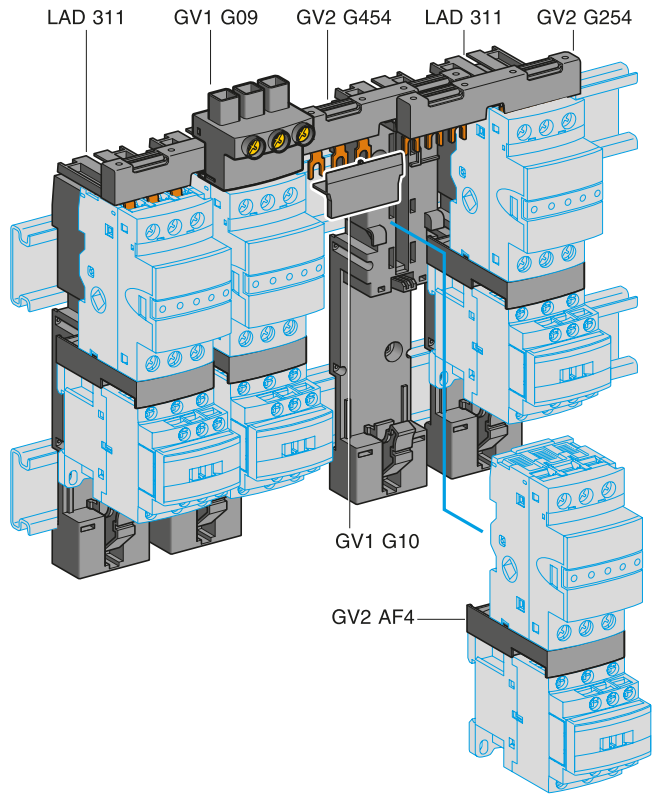
(1) Can be fixed at 43 mm.

Power wiring systems for motor starters	
Type of product	Pages
<p>Power wiring system for motor starter assemblies: screw clamp connection</p> 	B2/2
<p>Power wiring system for motor starter assemblies: spring terminals connection</p> 	B2/4
RJ45 Control wiring systems for motor starters	
<p>Motor starters-to-PLC Control wiring architectures Selection tables</p>	B2/6
<p>RJ45 connection module for Ultra motor starter Pluggable</p> 	B2/8

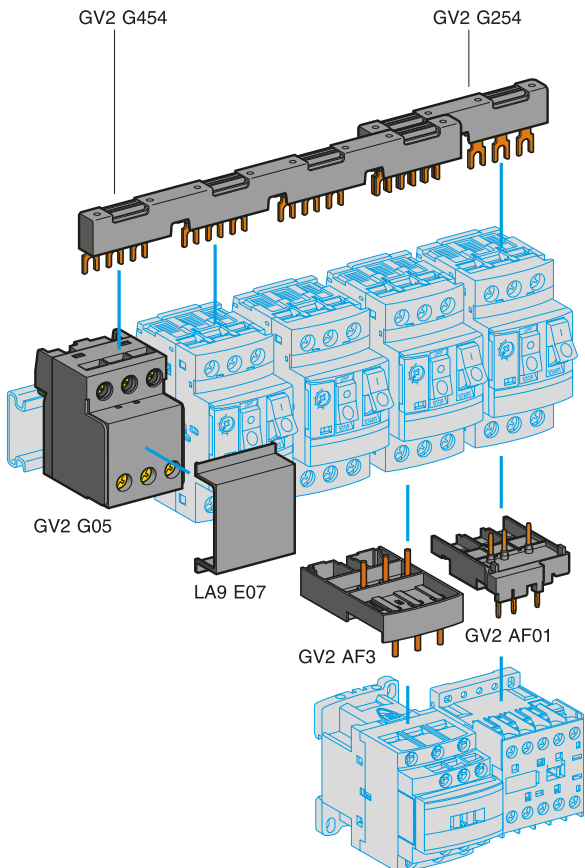
Group of fuse carriers directly mounted on DIN rail



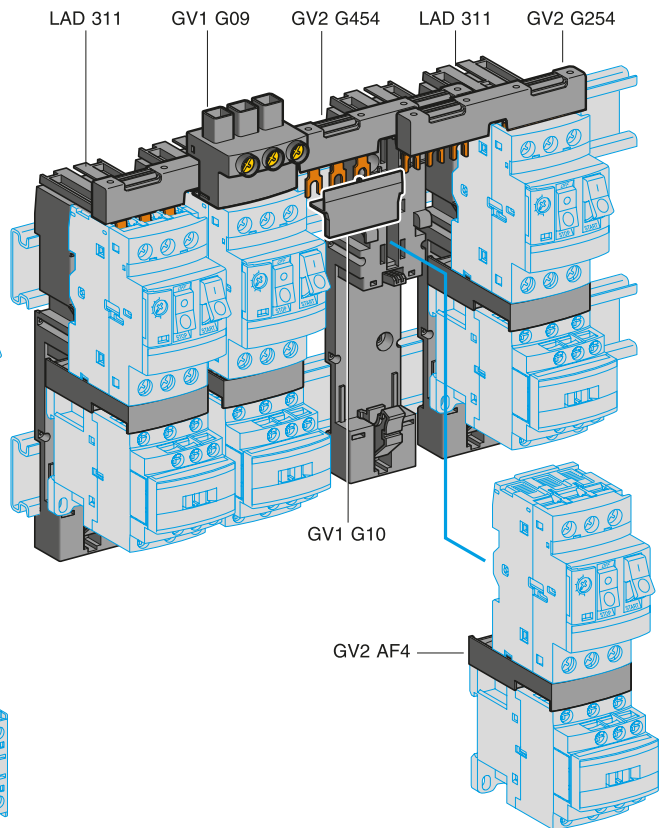
Group of fuse carriers + contactors mounted on adapter plates



Group of circuit breakers directly mounted on DIN rail



Group of circuit breakers + contactors mounted on adapter plates



TeSys Control

Power wiring system for Deca motor starter assemblies

Product references

This system is convenient when time and space savings are required.

The motor starter can be composed of:

- LS1D323 fuse carrier + Deca (LC1D) contactor
- Deca Frame 2 (GV2) circuit breaker + Deca (LC1D) contactor.

Upstream busbars and terminals

Description	Application	Pitch (mm)	Unit reference	
Sets of 3-pole 63 A busbars	2 tap-offs	45	GV2G245	
		54	GV2G254	
		72	GV2G272	
	3 tap-offs	45	GV2G345	
		54	GV2G354	
		72	GV2G472	
	4 tap-offs	45	GV2G445	
		54	GV2G454	
		72	GV2G472	
	5 tap-offs	54	GV2G554	
Description		Application	Sold in lots of	Unit reference
Terminal block for supply to one or more GV2G busbar sets		Connection from the top Can be fitted with current limiter GV1L3 (GV2ME and GV2P)	1	GV1G09
Cover for terminal block	For mounting in modular panels	10	LA9E07	
Protective end cover	For unused busbar outlets	5	GV1G10	

Assembling components

Description	Application	Sold in lots of	Unit reference
Combination blocks	Between GV2 and contactor LC1K or LP1K ⁽¹⁾	10	GV2AF01
	Between GV2 and contactor LC1D09...D38 ⁽¹⁾	10	GV2AF3
	Between GV2 mounted on LAD311 and contactor LC1D09...D38	10	GV2AF4
Adapter plates	For mounting a GV2ME and contactor LC1D09...D38 with front faces aligned	1	LAD311
Height compensation plate	7.5 mm	10	GV1F03

⁽¹⁾ Ensures both the connection and a rigid support to the contactor. No extra fixing mean required.

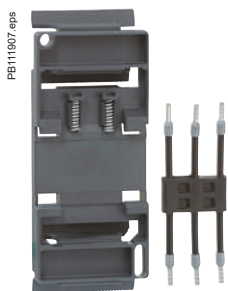
Accessories

Description	Application	Sold in lots of	Unit reference
Adapter plates	For mounting a GV2 by screw fixing	10	GV2AF02
Motor starter adapter plate	For mounting a GV2 and a contactor LC1D09...D25. Item delivered with a GV1G02 flexible connection	1	GK2AF01
Flexible 3-pole connection for connecting a GV2 to a contactor LC1-D09...D25	Centre distance between mounting rails: 100...120 mm	10	GV1G02
Incoming line spacer for UL 508 Type E applications	For GV2P (except 32 A)	1	GV2GH7
Clip-in marker holders (supplied with each circuit breaker)	For GV2 P, GV2L, GV2LE and GV2RT (8 x 22 mm)	100	LA9D92



PB111872.eps

GV2AF02



PB111907.eps

GK2AF01



PB111888.eps

GV1G02

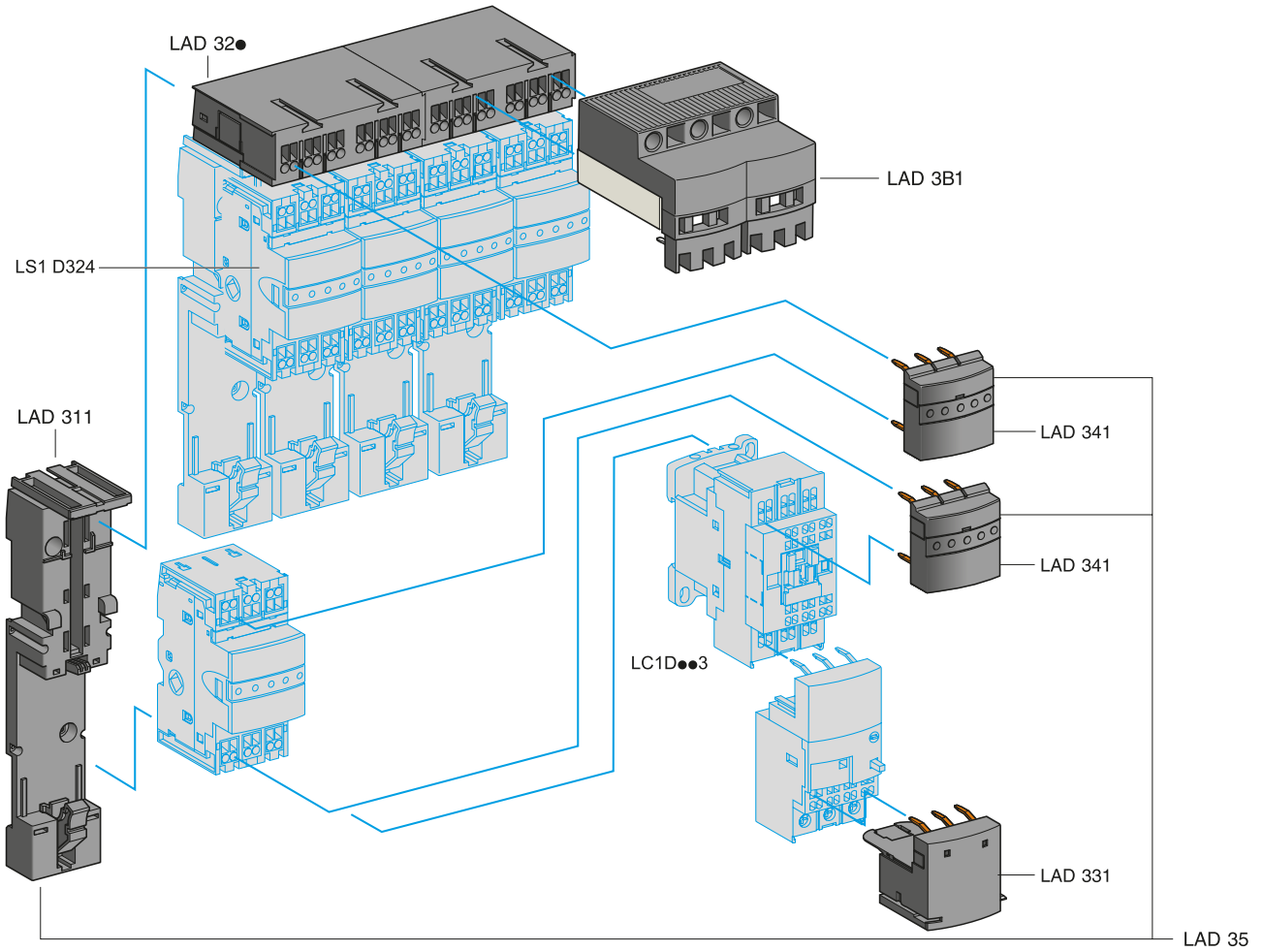
Dimensions:
page B2/13



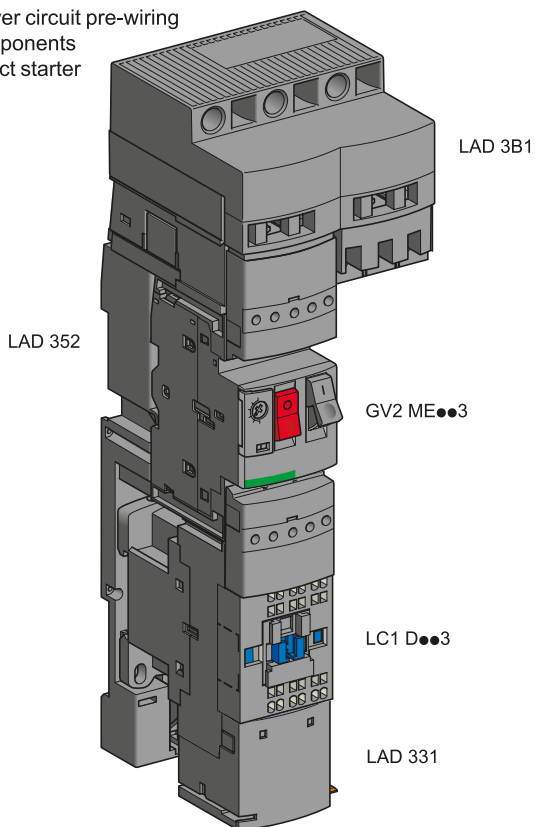
Group of fuse carriers + contactors mounted on adapter plates

D644377.eps

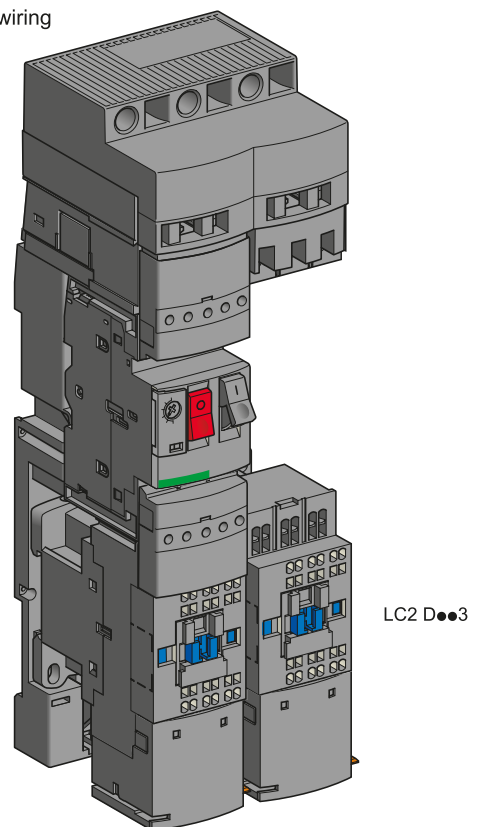
Wiring systems



Power circuit pre-wiring components
Direct starter



Power circuit pre-wiring components
Reversing starter



TeSys Control

Power wiring system for motor starter assemblies

Product references



LAD3B1



LAD324



LAD311



LAD341



LAD331

This system is convenient when time and space savings are required.

The motor starter can be composed of:

- LS1D323 fuse carrier + Deca (LC1D) contactor.
- Deca Frame 2 (GV2) circuit breaker + Deca (LC1D) contactor

Upstream terminal and splitter blocks

Description	Maximum connection c.s.a.	Application	Sold in lots of	Reference
Upstream terminal block	16 mm ² ⁽¹⁾	Power supply of 1 or 2 power splitter boxes	1	LAD3B1
Description	Extension by	Number of starters		Reference
Power splitter box, 60 A	LAD32●	2	1	LAD322
		4	1	LAD324

Assembling components

Description	Composition	Sold in lots of	Reference
Plate for mounting a GV2ME circuit breaker and a contactor	For 1 starter	10	LAD311
Power connection module	For 1 starter	10	LAD341
Power connection kit for direct starter ⁽²⁾	1 plate LAD311 for GV2ME and 2 power connection modules LAD341		LAD352

Downstream terminal and accessory

Description	Maximum connection c.s.a.	Application	Sold in lots of	Reference
Downstream terminal block	6 mm ²	Connection of motor cables	10	LAD331
Cable end reducer	-	For connection of conductors from 1 to 1.5 mm ²	20	LAD99

- ⁽¹⁾ Cables with one end pre-crimped are available to allow fast connection. References:
 1 set of 3 x 6 mm² cables (length 1 m: LAD3B061, length 2 m: LAD3B062 and length 3 m: LAD3B063),
 1 set of 3 x 10 mm² cables (length 1 m: LAD3B101, length 2 m: LAD3B102 and length 3 m: LAD3B103),
 1 set of 3 x 16 mm² cables (length 1 m: LAD3B161, length 2 m: LAD3B162 and length 3 m: LAD3B163).
- ⁽²⁾ To build a reversing starter, order 2 kits LAD352.



TeSys Control

Motor starter-to-PLC control wiring architectures

Selection table

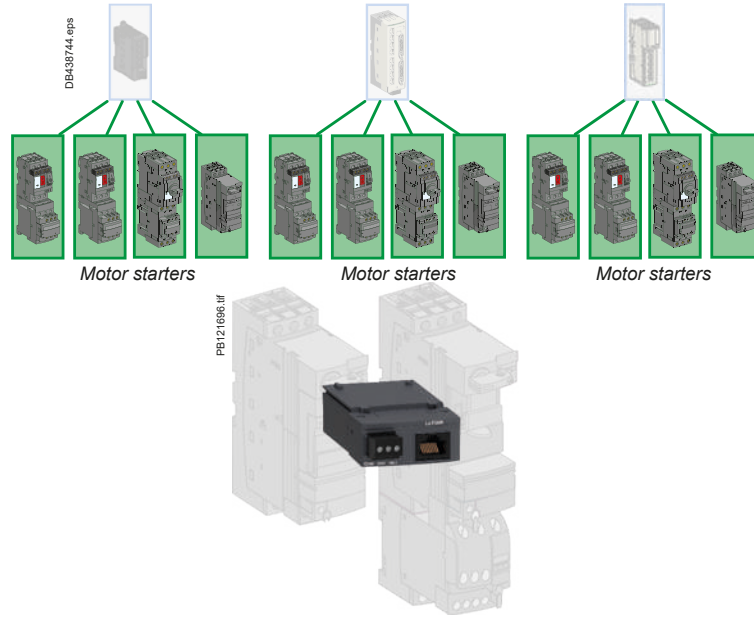
Wiring systems

Product type	Connection interfaces for a group of motor starters		
IO system name	Modicon TM3	Modicon Telefast	Modicon STB
Architecture	<p>DB415974.eps</p>	<p>DB415975.eps</p>	<p>DB415976.eps</p>
	<p>PFI30380C.eps</p>	<p>PBI121281.eps</p>	<p>PBI121282.eps</p>
Application	Control of single or multiple motor-starters assemblies by mean of a logic controller. Machines or processes requiring easy, fast cabling and replacement of motor starters.		
Function	IO module: Ensures the direct connection of up to 4 motor starters to logic controller (Modicon M221, M241, M251)	Splitter box: Ensures the connection of up to 8 motor starters to a logic controller via Modicon Telefast multiwire cable	IO module: Ensures the connection of up to 4 motor starters to a logic controller via an automation island (Modicon STB distributed IO architecture)
Upstream compatibility	With Modicon M221, M241, M251 logic controller, via logic controller internal bus	With any logic controller equipped with HE10 inputs/ outputs module	With Modicon STB automation island, via automation island internal bus
Upstream connectors	Backplane bus connector	HE10 connector	Backplane bus connector
Compatibility	Motor circuit breaker - Type Contactor - Type / Amp Motor circuit breaker + Contactor - terminals All types of motor starters equipped with RJ45 connection system		
Motor control	Reversing / Non reversing		
Number of motor starters	4	8	4
Downstream connector type	RJ45		
Reference	TM3XTYS4	LU9G02 / LU9G03	STBEPI2145K *
Pages	Refer to Modicon M221/M241/ M251 catalogue	Ultra motor starters - pages B2/8 and A4/20	Refer to IP20 distributed IO Modicon STB catalogue

* STBEPI2145K: GV2 + contactor D09 to D32, Ultra only.

RJ45 connection components for motor starter

Common components for Modicon TM3, Modicon Telefast, Modicon STB systems



Wiring systems

Connection module:

ensures the compatibility Ultra motor starters to the RJ45 connection system

TM3XTYS4 / LU9G02 / LU9G03 / STBEPI2145K

RJ45

Ultra motor starters
12 to 38 A

Screw-clamp

Reversing or Non reversing

Plugin module

LUFC00

B2/8

TeSys Control

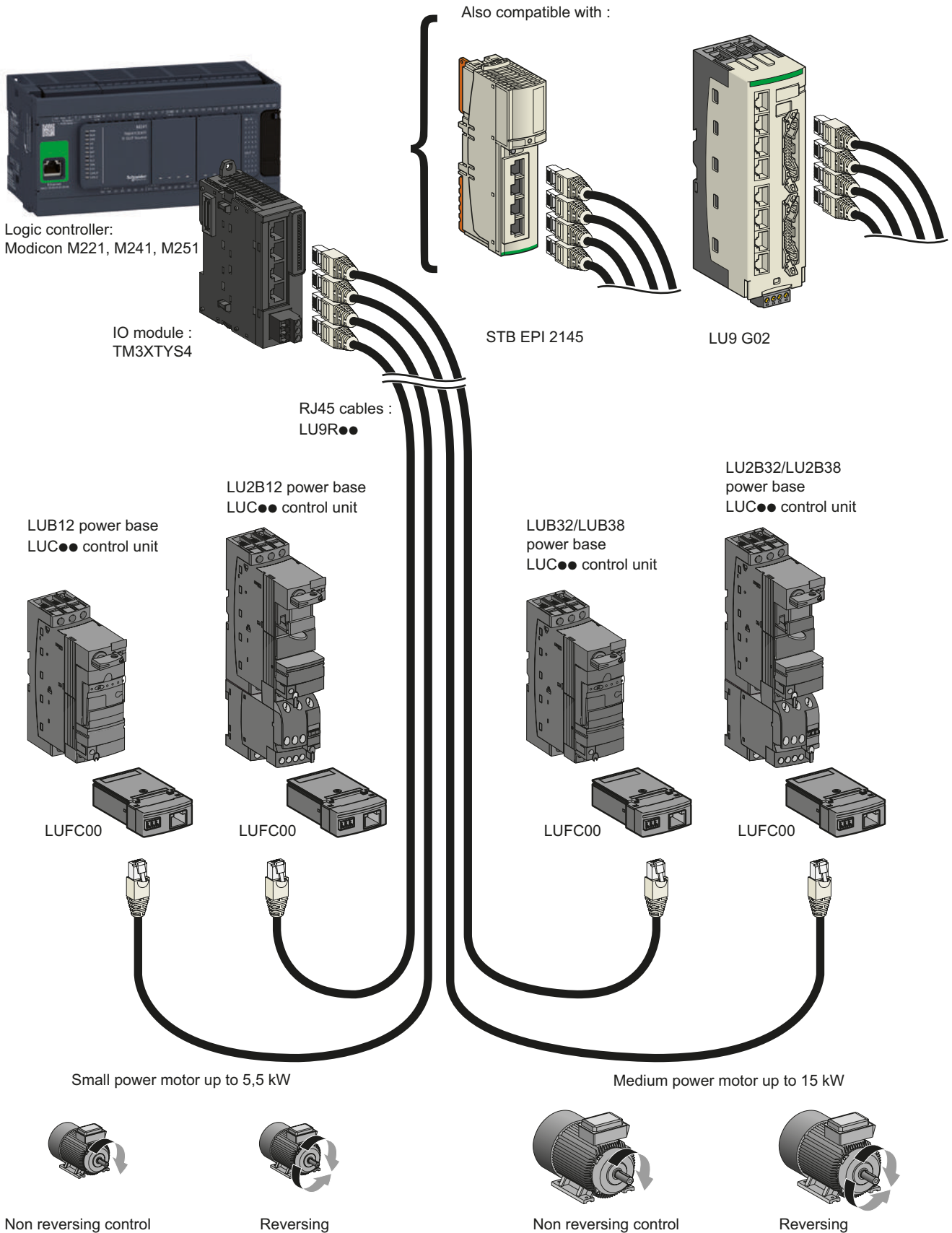
Ultra control wiring system

RJ45 wiring architecture

Description

DB439800_eps

Wiring systems



"Plug and play", for single or reversing motor starters

The LUF00 parallel connection module provides a simple and efficient solution for control and monitoring of a Ultra direct or reverse motor starter.

Compact, fast cabling

The connection to the Ultra power base is simply achieved by insertion of the module into it. The status and control signals are carried by a simple pre-connectorized RJ45 cable (LU9R●●) between an IO module or splitter box and Ultra motor starter.

Features

- On / OFF / Reverse control (functions non provided with LUB12, 32, 38 power bases).
- Handle position, power contacts position monitoring (function provided with all power bases).

Compatibility

12, 32 or 38 A direct motor starters: LUB12, LUB32 or LUB38 power base + LUC●● control unit (coil code BL),
LUB120, LUB320 or LUB380 power base + LU9N11C connector + LUC●● control unit (coil code BL)

12, 32 or 38 A reversing motor starters: LU2B12, LU2B32 or LU2B38 power base + LU9MRC connector + LUC●● control unit (coil code BL).



LUF00



LU9MRC



LU9BN11C

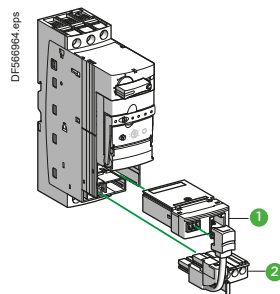
Ultra RJ45 connection module	
Designation	Commercial ref
1 Parallel wiring module	LUF00
Ultra coil connector	
Designation	Commercial ref
2 Pre wired coil connector for LUB120, LUB320 or LUB380 power base	LU9BN11C
3 Pre wired coil connector for LU2B12, LU2B32 or LU2B38 power base	LU9MRC

Design / Installation

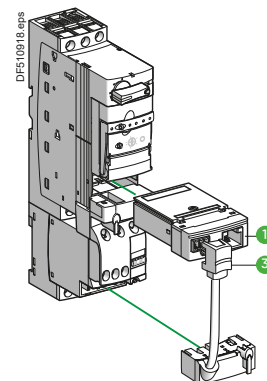
The LUF00 parallel (RJ45) connection module acts as a connection interface for controlling the coil (except with LUB12, 32, 38) and the monitoring of the auxiliary contacts. As a necessary complement, a pre wired connector is needed for carrying the signal to the coil and collecting:

- the status of the protection device (OK / Alarm) with LU9BN11C,
- the electrical interlock contacts with LU9MRC.

As the "reversing" is higher than the "direct" power base, the LU9MRC link is longer than the LU9BN11C.



Direct motor starter
(LUB120, 320, 380 power base).



Reversing motor starter
(LU2B12, 32, 38 power base).


TeSys Control

Wiring systems for motor starters

Product references

Wiring
systems

GV1F03	GV2GH7
GV1G02	LA9D92
GV1G09	LA9E07
GV1G10	LAD311
GV2AF01	LAD322
GV2AF02	LAD324
GV2AF3	LAD331
GV2AF4	LAD341
GV2AF5	LAD351
GV2G05	LAD352
GV2G245	LAD3B1
GV2G254	LU9BMRC
GV2G272	LU9BN11C
GV2G345	LU9G02
GV2G354	LU9G03
GV2G445	LUFC00
GV2G454	STBEPI2145K
GV2G472	TM3XTYS4
GV2G554	

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

Technical Data for Designers

Contents

Power wiring systems for motor starter assemblies:

- > Dimensions (GV2 + LAD311 assembly)..... B2/12
- > Dimensions (GV2G●●● busbars) B2/13

IO module, splitter box, for motor starters control circuits

- > Dimensions B2/14

TeSys Control

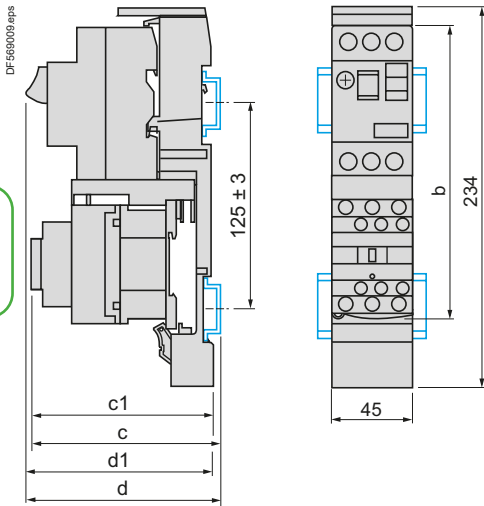
Power wiring system for motor starter assemblies

Dimensions

GV2AF4 + LAD311

Combination GV2ME + Deca contactor

Wiring systems



GV2ME +	LC1D09...D18	LC1D25 and D32
b	176.4	186.8
c1	103.1	136.4
c	135.6	141.9
d1	107	107
d	112.5	112.5

Ref.

7.5 mm height compensation plate GV1F03



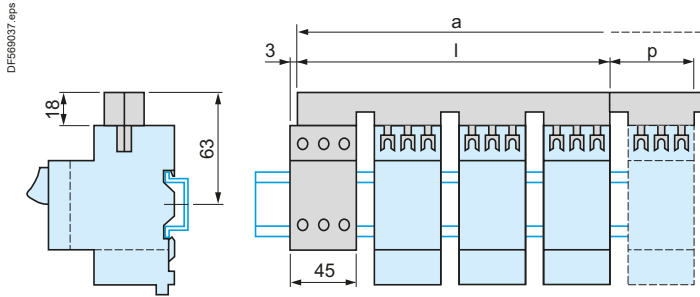
TeSys Control

Power wiring system for motor starter assemblies

Dimensions

Deca Frame 2 (GV2ME, GV2P, GV2L, GV2LE)

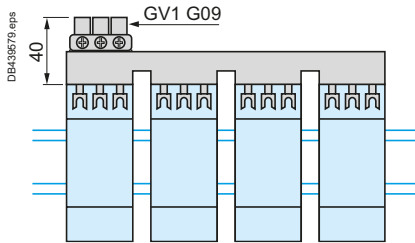
Sets of busbars GV2G445, GV2G454, GV2G472, with terminal block GV2G05



	l	p
GV2G445 (4 x 45 mm)	179	45
GV2G454 (4 x 54 mm)	206	54
GV2G472 (4 x 72 mm)	260	72

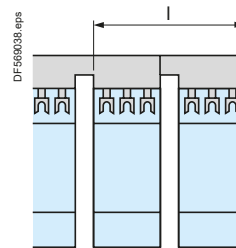
Number of tap-offs	a			
	5	6	7	8
GV2G445	224	269	314	359
GV2G454	260	314	368	422
GV2G472	332	404	476	548

Sets of busbars GV2G●●● with terminal block GV1G09

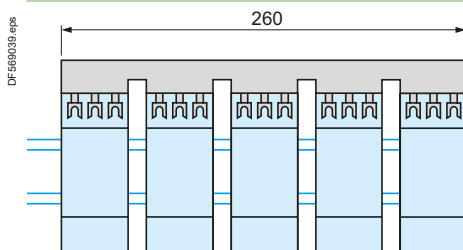


	l
GV2G245 (2 x 45 mm)	89
GV2G254 (2 x 54 mm)	98
GV2G272 (2 x 72 mm)	116

Sets of busbars GV2G245, GV2G254, GV2G272

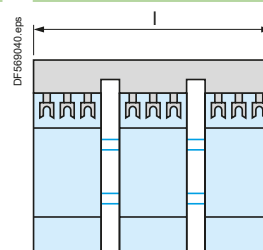


Sets of busbars GV2G554



	l
GV2G345 (3 x 45 mm)	134
GV2G354 (3 x 54 mm)	152

Sets of busbars GV2G345 and GV2G354



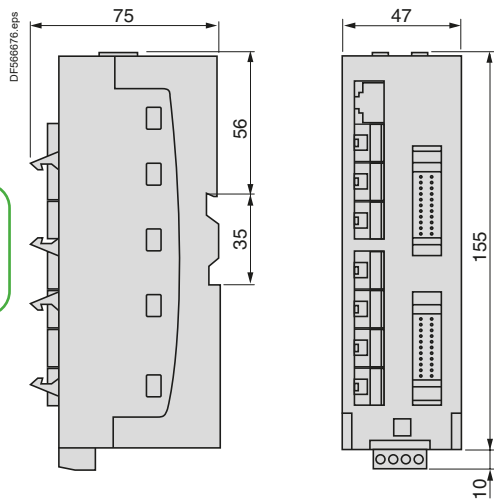
TeSys Control

LU9G02 RJ45 splitter box

Dimensions

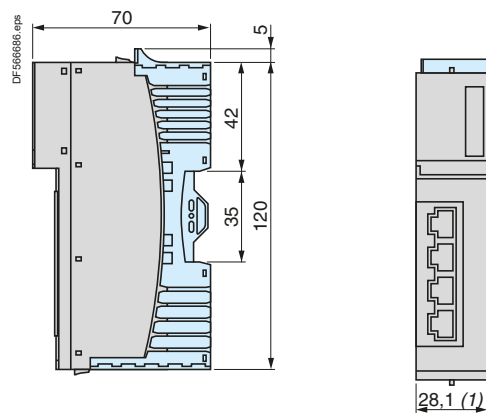
Parallel RJ45 wiring modules

Splitter box LU9G02





Wiring systems

Parallel wiring module Advantys STBEPI2145




(1) Dimension to be multiplied by the number of **STBEPI2145** modules present in the configuration.

Door mounting isolation switch			
Type of product	Range		Pages
Switch-disconnectors	Up to 12 or 20 A		B3/2
Switch-disconnectors, high performance applications	From 12 to 175 A		B3/6
Accessories for switch-disconnectors			B3/8
Technical Data for Designers			B3/17

Switch-disconnectors

Switch-disconnectors for standard applications

- 3-pole rotary switch-disconnectors, 12 to 20 A
- Marking on operator 
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.



PE121282.eps

VCDN20

Switch-disconnectors



FB121283.eps

VCCDN20



PE119284.eps

VBDN20

Main and Emergency stop switch-disconnectors for door mounting

Operator	Front plate	Fixing	Ith	Reference
Handle	mm	mm	A	
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	Ø22.5	12	VCDN12
			20	VCDN20

Main and Emergency stop switch-disconnectors for mounting at back of an enclosure ⁽¹⁾

Operator	Front plate	Fixing	Ith	Reference
Handle	mm	mm	A	
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	Ø22.5	12	VCCDN12
			20	VCCDN20

Main switch-disconnectors for door mounting

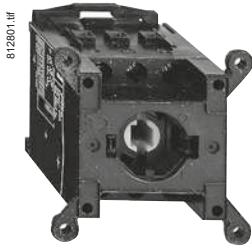
Operator	Front plate	Fixing	Ith	Reference
Handle	mm	mm	A	
Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 60 x 60	Ø22.5	12	VBDN12
			20	VBDN20

⁽¹⁾ Switches supplied with a shaft extension VZN17 and a door interlock plate KZ32 (see page B3/5).

TeSys Control

Switch-disconnectors

Product references



VN20



VZN11



VZN14



VZN05



VZN26



VZN08

Switch-disconnectors for standard applications

Switch bodies

Description	Rating A	Reference
3-pole switch-disconnectors	12	VN12
	20	VN20

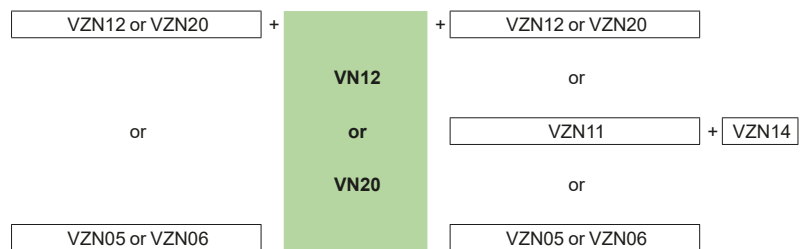
Add-on modules

Description	Rating A	Reference
Main pole modules	12	VZN12
	20	VZN20
Neutral pole module with early make and late break contacts	12 and 20	VZN11
Earthing module	12 and 20	VZN14
Auxiliary contact block modules	1 N/O late make contact	VZN05
	1 N/C early break contact	VZN06
Input terminal protection shrouds	For add-on pole modules or auxiliary contact block modules (single-pole shroud)	VZN26
	For switch bodies (3-pole shroud)	VZN08

Switch-disconnectors

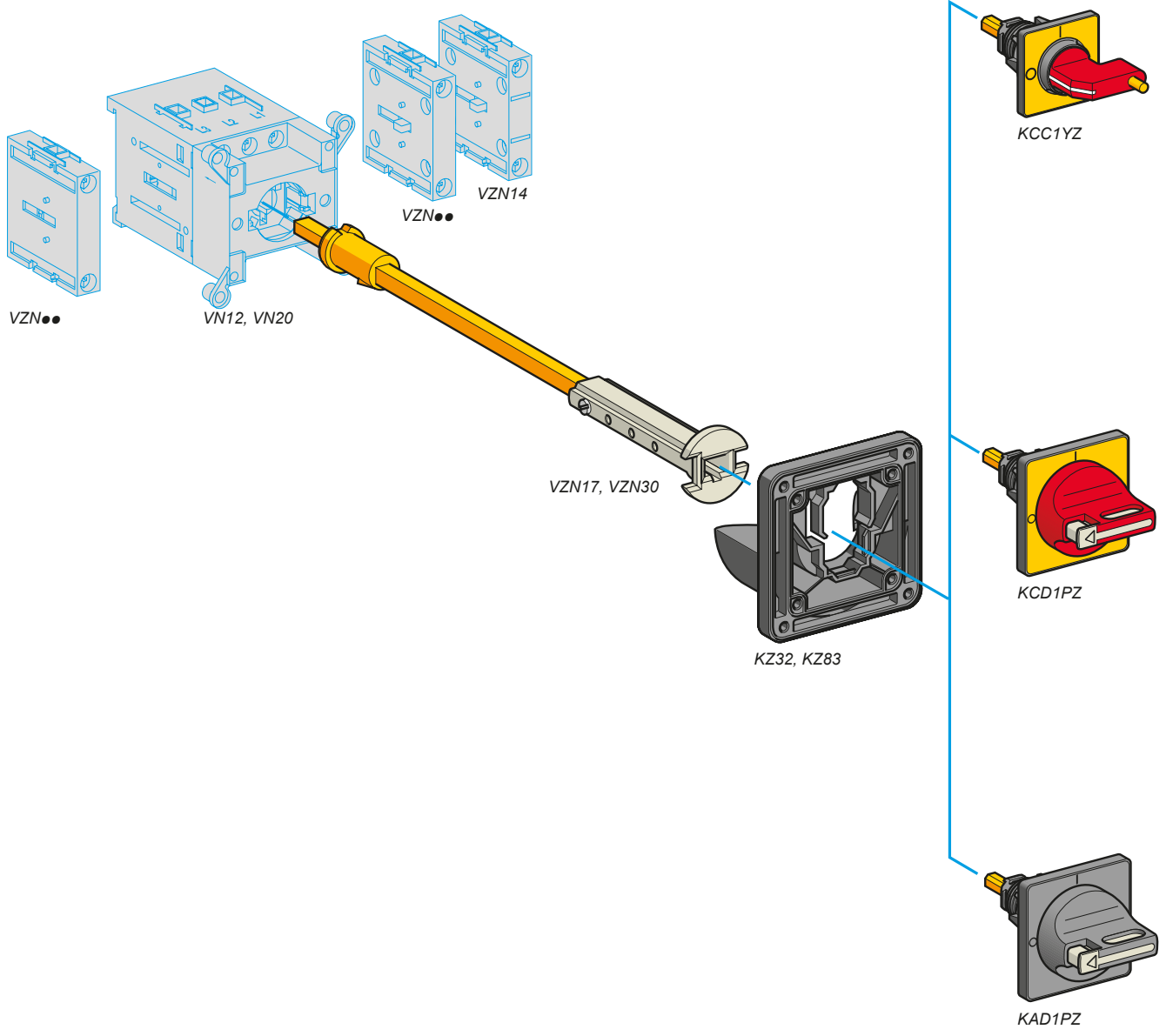


Maximum number of add-on modules that can be fitted on a switch body




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Switch-disconnectors



Switch-disconnectors for standard applications

- Degree of protection IP 65.
- Marking on operator .
- Padlockable operating handle (padlocks not supplied).
- Operator fixing by 1 Ø22.5 hole; for other operators see pages B3/11 and B3/13.
- For other accessories and empty enclosures, see pages B3/14, B3/15 and chapter A1.

Operators for main and Emergency stop switch-disconnectors

Handle	Front plate mm	Reference
Red, padlockable with 1 padlock (Ø4 to Ø6)	Yellow 45 x 45	KCC1YZ
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	KCD1PZ

Operators for main switch-disconnectors

Handle	Front plate mm	Reference
Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 60 x 60	KAD1PZ

Accessories for door interlocking

For rear fixing switch-disconnectors mounted at the back of an enclosure, in addition to a direct operator

Description	Front plate mm	Distance enclosure back/door mm	Sold in lots of	Unit reference
Shaft extensions	–	300...330	1	VZN17
		400...430	1	VZN30
Door interlock plate	45 x 45 or 60 x 60	–	5	KZ32
Plate for door mounting	45 x 45 or 60 x 60	–	5	KZ83



Switch-disconnectors for high performance applications

- 3-pole rotary switch-disconnectors, 12 to 175 A
- Marking on operator $\text{O} \downarrow$
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

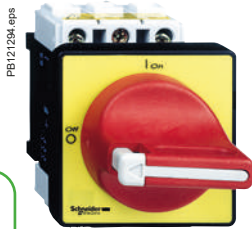
Main and Emergency stop switch-disconnectors for door mounting

Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	Ø22.5	12	VCD02	0.215
			20	VCD01	0.215
			25	VCD0	0.215
			32	VCD1	0.215
			40	VCD2	0.215
4 screws	Yellow 60 x 60	Ø22.5	12	VCF02	0.250
			20	VCF01	0.250
			25	VCF0	0.250
			32	VCF1	0.250
			40	VCF2	0.250
			63	VCF3	0.560
			80	VCF4	0.560
			Red, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 90 x 90	4 screws
175	VCF6	1.200			

Main and Emergency stop switch-disconnectors for mounting at back of an enclosure ⁽¹⁾

Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	Ø22.5	12	VCCD02	0.392
			20	VCCD01	0.392
			25	VCCD0	0.392
			32	VCCD1	0.392
			40	VCCD2	0.392
4 screws	Yellow 60 x 60	Ø22.5	12	VCCF02	0.527
			20	VCCF01	0.527
			25	VCCF0	0.527
			32	VCCF1	0.527
			40	VCCF2	0.527
			63	VCCF3	0.440
			80	VCCF4	0.680
			Red, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 90 x 90	4 screws
175	VCCF6	1.320			

⁽¹⁾ Unit supplied with a shaft extension VZN17 or VZ18 and a door interlock plate KZ32 or KZ74 (see page B3/14).



VCF0

Switch-disconnectors



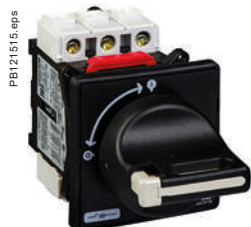
VCF5



VCCF0

Switch-disconnectors for high performance applications

- 3-pole rotary switch-disconnectors, 12 to 175 A
- Marking on operator $\circ \downarrow$.
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.



VBD01



VBF4



VVE1

Main switch-disconnectors for door mounting

Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 60 x 60	Ø22.5	12	VBD02	0.215
			20	VBD01	0.215
			25	VBD0	0.215
			32	VBD1	0.215
			40	VBD2	0.215
Black, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 90 x 90	4 screws	12	VBF02	0.250
			20	VBF01	0.250
			25	VBF0	0.250
			32	VBF1	0.250
			40	VBF2	0.250
			63	VBF3	0.560
			80	VBF4	0.560
Black, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 90 x 90	4 screws	125	VBF5	1.200
			175	VBF6	1.200

Main and Emergency stop switch-disconnectors

For mounting in an enclosure or for modular distribution boards

Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Red, padlockable with 1 padlock (Ø4 to Ø6)	Yellow 45 x 45	4 screws	25	VVE0	0.250
			32	VVE1	0.250
			40	VVE2	0.250
			63	VVE3	0.530
			80	VVE4	0.530

Main switch-disconnectors

For mounting in an enclosure or for modular distribution boards

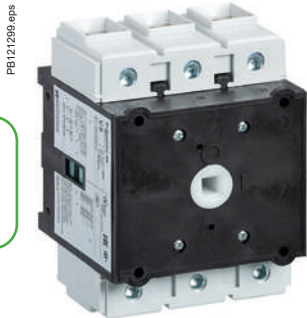
Handle	Front plate mm	Fixing	Rating A	Reference	Weight kg
Black, not padlockable	Black 45 x 45	4 screws	25	VVD0	0.250
			32	VVD1	0.250
			40	VVD2	0.250
			63	VVD3	0.560
			80	VVD4	0.560



Switch-disconnectors for high performance applications

Switch bodies

Description	Rating A	Reference
3-pole switch-disconnectors ⁽¹⁾	12	V02
	20	V01
	25	V0
	32	V1
	40	V2
	63	V3
	80	V4
	125	V5
	175	V6



V5

Switch-disconnectors



VZ0



VZ11



VZ15



VZ20

Add-on modules

Description	Rating A	Reference
Main pole modules	12	VZ02
	20	VZ01
	25	VZ0
	32	VZ1
	40	VZ2
	63	VZ3
	80	VZ4
Neutral pole modules with early make and late break contacts ⁽¹⁾	12 to 40	VZ11
	63 to 80	VZ12
	125 and 175	VZ13
Earthing modules	12 to 40	VZ14
	63 and 80	VZ15
	125 and 175	VZ16

Auxiliary contact block modules

Description	Type	Reference
Auxiliary contact block modules with 2 auxiliary contacts	N/O + N/C ⁽²⁾	VZ7
	N/O + N/O	VZ20

⁽¹⁾ Protection shrouds are available if required: see page B3/14.

⁽²⁾ Late make N/O, early break N/C contacts

Switch-disconnectors for high performance applications

Maximum number of add-on modules that can be fitted on a switch body

1 add-on module on each side of the switch body

VZ7 or VZ20	+	V0●	+	VZ7 or VZ20		VZ7	+		+	VZ7
	or						or			
VZ11 or VZ12	+	V0	+	VZ11 or VZ12		VZ20	+		+	VZ20
	or						or			
VZ14 or VZ15	+		+	VZ14 or VZ15		VZ13	+		+	VZ13
	or						or			
VZ0●/VZ0 to VZ4	+		+	VZ0●/VZ0 to VZ4		VZ16	+		+	VZ16

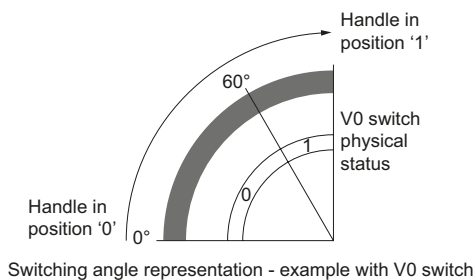
Switch-disconnectors

2 add-on modules on each side of the switch body

VZ0●	+	VZ0●	+	V0●	+	VZ0●	+	VZ7	or	VZ20	or	VZ11	or	VZ14
VZ0	+	VZ0	+	V0	+	VZ0	+	VZ7	or	VZ20	or	VZ11	or	VZ14
VZ1	+	VZ1	+	V1	+	VZ1	+	VZ7	or	VZ20	or	VZ11	or	VZ14
VZ2	+	VZ2	+	V2	+	VZ2	+	VZ7	or	VZ20	or	VZ11	or	VZ14
VZ3	+	VZ3	+	V3	+	VZ3	+	VZ7	or	VZ20	or	VZ12	or	VZ15
VZ4	+	VZ4	+	V4	+	VZ4	+	VZ7	or	VZ20	or	VZ12	or	VZ15

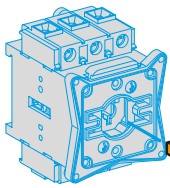
Note: The add-on modules mounted next to the switch body are main pole modules. Maximum of 3 main pole modules per switch body.

Auxiliary switch switching angles



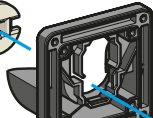
		0: contact open 1: contact close			
		Handle travel 0 > 1			
		0°	30°	60°	90°
3-pole switch-disconnectors				60°	
V02 / V01 / V0 / V1 / V2 / V3 / V4 / V5 / V6			0	1	
Main pole modules				60°	
VZ02 / VZ01 / VZ0 / VZ1 / VZ2 / VZ3 / VZ4			0	1	
Neutral pole modules with early make and late break contacts				45°	
VZ11 / VZ12 / VZ13			0	1	
Auxiliary contact block modules with 2 auxiliary contacts (N/0+N/C) VZ7					75°
N/0			0		1
N/C		1		0	
					20°
Auxiliary contact block modules with 2 auxiliary contacts (N/0+N/C) VZ20				60°	
			0	1	
			0	1	
					60°

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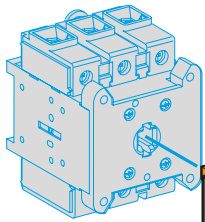


VN12, VN20
V02...V2

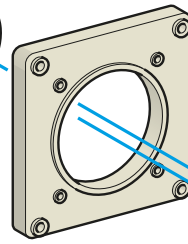
VZN17, VZN30



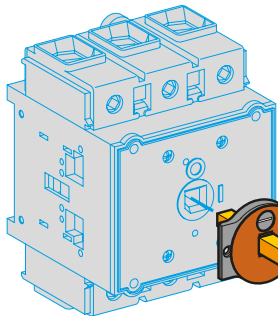
KZ32, KZ83



V3, V4



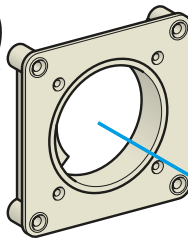
KZ81



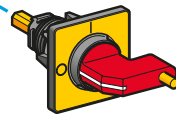
V5, V6

VZ18, VZ31

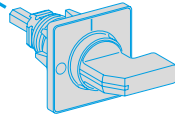
VZ18, VZ31



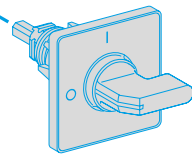
KZ74



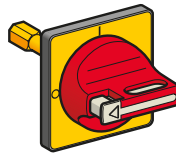
KC•1YZ



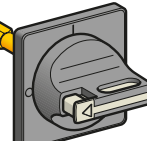
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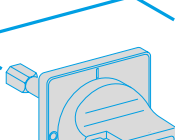
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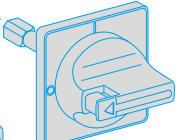
KC•1PZ



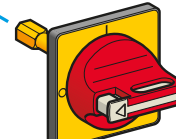
KA•1PZ



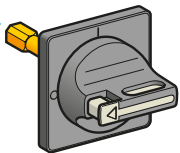
KD•1PZ



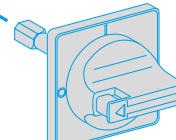
KB•1PZ



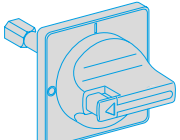
KCF2PZ



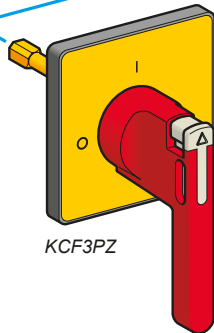
KAF2PZ



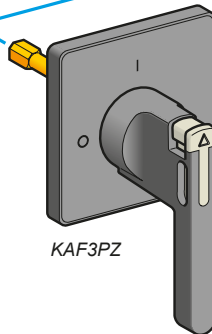
KDF2PZ



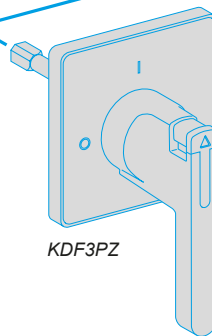
KBF2PZ



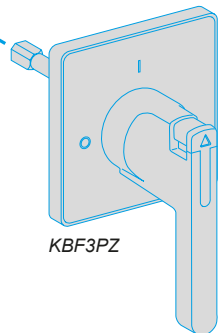
KCF3PZ



KAF3PZ



KDF3PZ



KBF3PZ

Switch-disconnectors

- Marking on operator $\circ \downarrow$.
- Padlockable operating handle (padlocks not supplied).
- Degree of protection IP 65.

Handles and front plates for main and Emergency stop switch-disconnectors

For switch body	Operator Handle	Front plate		Reference
		Dimensions	Fixing	
		mm		
VN12, VN20 V02...V2	Red, padlockable with 1 padlock (Ø4 to Ø6)	Yellow	Ø22.5	KCC1YZ
		45 x 45	4 screws	KCE1YZ
	Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow	Ø22.5	KCD1PZ
		60 x 60	4 screws	KCF1PZ
V3 and V4	Red, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 60 x 60	4 screws	KCF2PZ
V5 and V6	Red, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Yellow 90 x 90	4 screws	KCF3PZ ⁽¹⁾

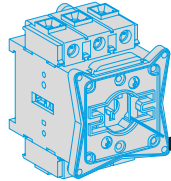
Handles and front plates for main switch-disconnectors

For switch body	Operator Handle	Front plate		Reference
		Dimensions	Fixing	
		mm		
VN12, VN20 V02...V2	Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black	Ø22.5	KAD1PZ
		60 x 60	4 screws	KAF1PZ
V3 and V4	Black, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 60 x 60	4 screws	KAF2PZ
V5 and V6	Black, long, padlockable with up to 3 padlocks (Ø4 to Ø8)	Black 90 x 90	4 screws	KAF3PZ ⁽¹⁾

⁽¹⁾ For door mounting of 63 and 80 A switch-disconnectors, adapter plate **KZ106** must be ordered separately (see page B3/14).

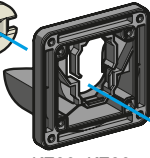


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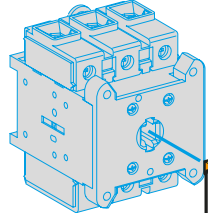


VN12, VN20
V02...V2

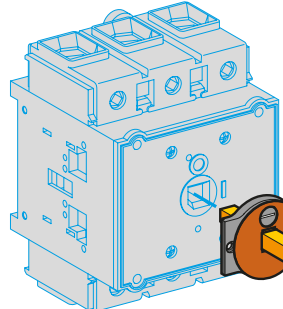
VZN17, VZN30



KZ32, KZ83

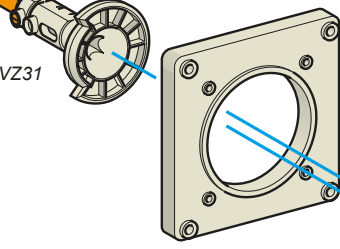


V3, V4



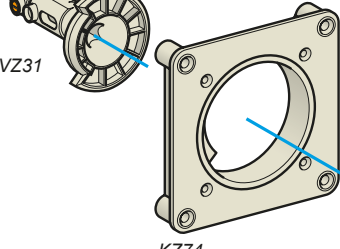
V5, V6

VZ18, VZ31



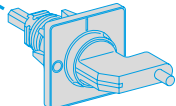
KZ81

VZ18, VZ31

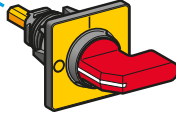


KZ74

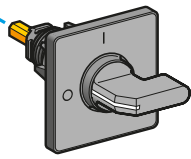
Switch-disconnectors



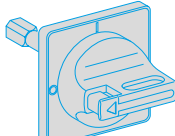
KC•1YZ



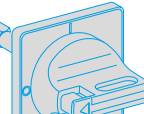
KC•1LZ



KA•1BZ



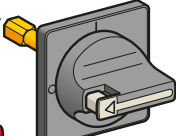
KC•1PZ



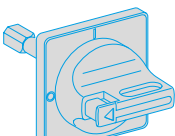
KA•1PZ



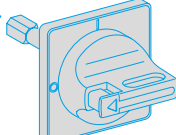
KD•1PZ



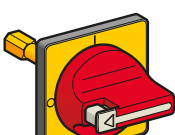
KB•1PZ



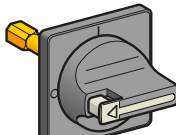
KCF2PZ



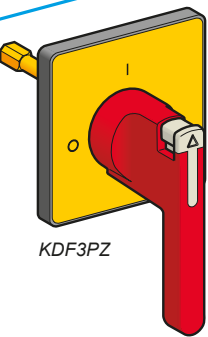
KAF2PZ



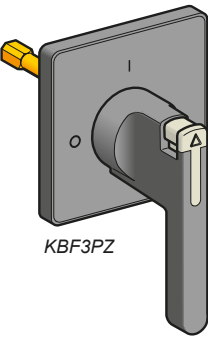
KDF2PZ



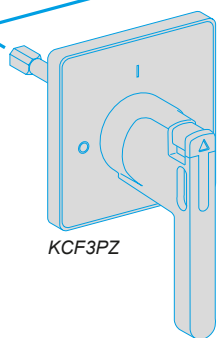
KBF2PZ



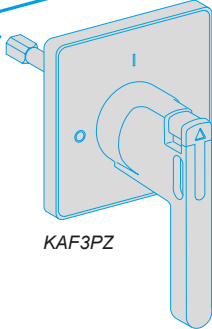
KDF3PZ



KBF3PZ



KCF3PZ



KAF3PZ

- Marking on operator $\circ \downarrow$.
- Degree of protection IP 65.

Handles and front plates for Emergency stop switch-disconnectors

For switch body	Operator Handle	Front plate		Reference
		Dimensions	Fixing	
mm				
VN12, VN20 V02...V2	Red, not padlockable	Yellow 45 x 45	Ø22.5	KCC1LZ
			4 screws	KCE1LZ
		Yellow 60 x 60	Ø22.5	KDD1PZ
			4 screws	KDF1PZ
V3 and V4	Red, long, not padlockable	Yellow 60 x 60	4 screws	KDF2PZ
V5 and V6	Red, long, not padlockable	Yellow 90 x 90	4 screws	KDF3PZ ⁽¹⁾

Handles and front plates for switch-disconnectors

For switch body	Operator Handle	Front plate		Reference
		Dimensions	Fixing	
mm				
VN12, VN20 V02...V2	Black, not padlockable	Black 45 x 45	4 screws	KAE1BZ
			Ø22.5	KBD1PZ
		Black 60 x 60	4 screws	KBF1PZ
V3 and V4	Black, not padlockable	Black 60 x 60	4 screws	KBF2PZ
V5 and V6	Black, not padlockable	Black 90 x 90	4 screws	KBF3PZ ⁽¹⁾

⁽¹⁾ For door mounting of 63 and 80 A switch-disconnectors, adapter plate KZ106 must be ordered separately (see next page).

Switch-disconnectors



TeSys Control

Accessories for switch-disconnectors

Product references



VZ8



VZ26



VZ29

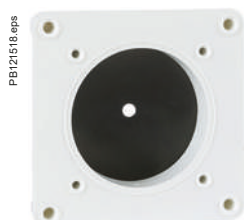
Switch-disconnectors



VZ31



KZ32



KZ81

Input terminal protection shrouds

Description	For use on	Reference
For switch bodies (3-pole shroud)	V02...V2	VZ8
	V3 and V4	VZ9
	V5 and V6	VZ10
For add-on pole modules (single-pole shroud)	VZ02...VZ2, VZ11, VZ14	VZ26
	VZ3, VZ4, VZ12, VZ15	VZ27
	VZ13, VZ16	VZ28
For contact blocks with 2 auxiliary contacts	–	VZ29

Components for door interlocking

For rear fixing switch-disconnectors mounted at the back of an enclosure, in addition to a direct operator

Description	For use on	Distance enc. back/door mm	Sold in lots of	Unit reference
Shaft extensions	VN12, VN20 V02...V2	300...330	1	VZN17 ⁽¹⁾
		400...430	1	VZN30 ⁽¹⁾
	V02...V2	300...330	1	VZ17
		400...430	1	VZ30
	V3 and V4	300...320	1	VZ18
		400...420	1	VZ31
V5 and V6	330...350	1	VZ18	
	430...450	1	VZ31	
Door interlock plates	VN12, VN20 V02...V2	–	5	KZ32
	V3...V6	–	5	KZ74
Description	For use on	Front plate dimensions mm	Sold in lots of	Unit reference
Plates for door mounting of handles with 4 screw fixing	VN12, VN20 V02...V2	45 x 45 or 60 x 60	5	KZ83
	V3...V6	60 x 60 or 90 x 90	5	KZ81
Adapter plate for switch-disconnectors	V3 and V4	90 x 90	5	KZ106

⁽¹⁾ Can be used with V02 to V2 switches.

TeSys Control

Accessories for switch-disconnectors

Product references



PB121519.eps

KZ15



PB121520.eps

KZ67



PB121521.eps

Z01

Accessories for operators

Description	For use on	Front plate dimensions mm	Sold in lots of	Unit reference	
Legend holder with silver coloured blank legend plate	Front plate	45 x 45	5	KZ13	
		60 x 60	5	KZ15	
		90 x 90	5	KZ103	
Legend holders without legend plate	Front plate	45 x 45	20	KZ14	
		60 x 60	10	KZ16	
		90 x 90	5	KZ101	
Silver coloured blank legend plates for engraving by customer	KZ16	–	10	KZ77	
Seals	VN12, VN20	45 x 45	5	KZ65	
		V02...V2	60 x 60	5	KZ66
		V3 and V4	60 x 60	5	KZ62
		V3...V6	90 x 90	5	KZ67
Tightening tool	For operators with Ø22.5 fixing	–	5	Z01	

Switch-disconnectors



TeSys Control

Switch-disconnectors

Product references

Switch-
disconnectors

KAD1PZ	VBF4GE	VCFN20GE
KAD1XZ	VBF5	VCFN25GE
KAE1BZ	VBF5GEN	VCFN32GE
KAF1PZ	VBF6	VCFN40GE
KAF2PZ	VBF6GEN	VCFXGE1
KAF2XZ	VBFXGE1	VCFXGE2
KAF3PZ	VBFXGE2	VCFXGE4
KBD1PZ	VBFXGE4	VCFXGE6
KBF1PZ	VBFXGE6	VGP1
KBF2PZ	VC1GUN	VGPCLIP1
KBF3PZ	VC2GUN	VN12
KCC1LZ	VC3GUN	VN20
KCC1YZ	VC4GUN	VVD0
KCD1PZ	VC5GUN	VVD1
KCD1YZ	VC6GUN	VVD2
KCE1LZ	VCCD0	VVD3
KCE1YZ	VCCD01	VVD4
KCF1PZ	VCCD02	VVE0
KCF1YZ	VCCD1	VVE1
KCF2PZ	VCCD2	VVE2
KCF2YZ	VCCDN12	VVE3
KCF3PZ	VCCDN20	VVE4
KCG2YZ	VCCF0	VZ0
KDD1PZ	VCCF01	VZ01
KDF1PZ	VCCF02	VZ02
KDF2PZ	VCCF1	VZ1
KDF3PZ	VCCF2	VZ10
KZ32	VCCF3	VZ11
KZ74	VCCF4	VZ12
KZ80	VCCF5	VZ13
KZ81	VCCF6	VZ14
KZ82	VCD0	VZ15
KZ83	VCD01	VZ16
V0	VCD02	VZ17
V01	VCD1	VZ17L127
V02	VCD2	VZ17L69
V1	VCDN12	VZ18
V2	VCDN20	VZ2
V3	VCF0	VZ20
V4	VCF01	VZ26
V5	VCF01GE	VZ27
V6	VCF01GEGP	VZ28
VBD0	VCF02	VZ29
VBD01	VCF02GE	VZ3
VBD02	VCF02GEGP	VZ30
VBD1	VCF0GE	VZ31
VBD2	VCF0GEGP	VZ4
VBDN12	VCF1	VZ45
VBDN20	VCF1GE	VZ7
VBF0	VCF1GEGP	VZ8
VBF01	VCF1YZ	VZ9
VBF01GE	VCF2	VZN05
VBF02	VCF2GE	VZN06
VBF02GE	VCF3	VZN08
VBF0GE	VCF3GE	VZN11
VBF1	VCF4	VZN12
VBF1GE	VCF4GE	VZN14
VBF2	VCF5	VZN17
VBF2GE	VCF5GEN	VZN19
VBF3	VCF6	VZN20
VBF3GE	VCF6GEN	VZN26
VBF4	VCFN12GE	VZN30

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

Technical Data for Designers

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> Schemes B3/25

TeSys Control

Switch-disconnectors

Characteristics

Characteristics

Environment

Switch type (bare type)	VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0	VZ0	VVD0 VVE0	V1	VZ1	VVD1 VVE1	
Conforming to standards	IEC/EN 60947-3 and UL/CSA 60947-4-1										
Product certifications	UL, CSA, UKCA	UL, CSA, DNV-GL, CCC, IEC, UKCA	UL, CSA, UKCA	UL, CSA, DNV-GL, IEC, EAC, CCC ⁽¹⁾ , UKCA							
Degree of protection with protection shroud	IP 20 conforming to IEC 60529										
Ambient air temperature	° C -20...+50										
Flame resistance	° C 960 conforming to IEC 60695-2-11										
Shock resistance 1/2 sine wave = 11ms conforming to IEC60068-2-27	gn	15	30	15	30						
Vibration resistance 10...150 Hz conforming to IEC 60068-2-6	gn	5		1							

Electrical characteristics, a.c. operation

Switch type (bare type)	VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0	VZ0	VVD0 VVE0	V1	VZ1	VVD1 VVE1	
Rated operational voltage (Ue)	V 690										
Rated impulse withstand voltage (Uimp)	kV 6		8		6		8				
Conventional thermal currents in free air (Ith) and rated uninterrupted (Iu)	A 12		20		25		32				
Conventional thermal current in enclosure (Ithe)	A 10		16		20		25				
Power dissipation per pole for the above operational currents	AC-23A		W -		1.25		2				
	AC-21A		W -		3.2		5				
Rated operational power and current	AC-21A/22A	230...690 V	A 12		20		25		32		
	AC-23A	230 V	A/kW 10.6/3		14/4		19.7/5.5				
		240 V	A/kW 10.6/3		14/4		19.9/5.5		18.9/5.5		
		400 V	A/kW 8.1/4		11/5.5		14.5/7.5		21.8/11		
		415 V	A/kW 8.1/4		11/5.5		14/7.5		21/11		
		500 V	A/kW 8.9/5.5		11.9/7.5		16.7/11				
		690 V	A/kW 8.6/7.5		12.3/11		17.5/15				
Rated operational power	AC -3	230/240 V	kW 1.5		3		4				
		400/415 V	kW 3		4		5.5		7.5		
		500 V	kW 4		5.5		7.5				
		690 V	kW 4		5.5		7.5		11		
Intermittent duty class	30										
Characteristics in normal operating conditions	Rated making capacity AC-21A/22A/23A (I rms)	A/ 400 V 120		200		250		320			
	Rated breaking capacity AC-21A/22A/23A (I rms)	A/ 400 V 120		200				250			
Short-circuit characteristics	Permissible rms short time rating (Icw)	A/ 400V/1s 140		300		140		300		384	
	Rated making capacity under short-circuit conditions (Icm) I peak	kA/ 400 V 0.5		1		0.5		1			
	Rated conditional short-circuit current (I rms) with aM/gG fuses	kA/ 400 V 6		10		6		10			
		A 12		20		25		35			

(1) CCC: except for VVD, VVE switches.

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Switch-disconnectors

Ref.



V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
IEC/EN 60947-3 and UL/CSA 60947-4-1								IEC/EN 60947-5-1, UL/CSA 60947-5-1	

UL, CSA, DNV-GL, IEC, EAC, CCC ⁽¹⁾, UKCA

IP 20 conforming to IEC 60529

-20...+50

960 conforming to IEC 60695-2-11

30

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1

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V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
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690

8

6

40	63	80	125	175	12	12
32	50	63	100	140	10	10
2.4	4.2	5.1	7.5	11	-	-
5.4	6.4	12.5	15	25	-	-
40	63	80	125	160	Ie/AC-15	
25.8/7.5	50.3/15	61.2/18.5	71.9/22	96.6/30	6 A	
24.8/7.5	48.2/15	58.5/18.5	68/22	92.7/30	6 A	
29/15	41.5/22	57/30	68.5/37	83/45	4 A	
28/15	40/22	55/30	66/37	80/45	4 A	
28.5/18.5	44/30	54/37	64.5/45	79/55	2 A	
17.5/15	25/22	33/30	42/37	49/45	1 A	
5.5	11	15	22	30	-	
11	18.5	22	30	37	-	
15	22	30	37	45	-	
11	18.5		30	37	-	
30					-	
400	630	800	1250	1750	-	
320	500	640	1000	1400	-	
480	756	960	1500	2100	-	
1	2.1		2.8		-	
10					1	
50	63	80	125	200	16	16

(1) CCC: except for VVD, VVE switches.

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Switch-
disconnectors

Ref.



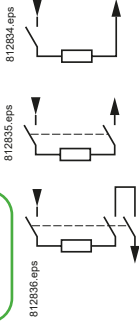



TeSys Control

Switch-disconnectors

Characteristics

Characteristics

Electrical characteristics, d.c. operation

Switch type (bare type)				VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0 VZ0	VVD0 VVE0	V1 VZ1	VVD1 VVE1	
	Rated operational current DC-1 (L/R = 1ms)	24 V	1 contact	A	12			25		32		
			2 contacts	A	12			25		32		
			3 contacts	A	12			25		32		
		48 V	1 contact	A	12		20		25		32	
			2 contacts	A	12		20		25		32	
			3 contacts	A	12		20		25		32	
		60 V	1 contact	A	12		20		25		32	
			2 contacts	A	12		20		25		32	
			3 contacts	A	12		20		25		32	
	110 V	1 contact	A	1.5		2		9		10		
		2 contacts	A	8		10		12		16		
		3 contacts	A	12		20		25		32		
	220 V	1 contact	A	1.5		2		2.5		3		
		2 contacts	A	7		8		10		12		
		3 contacts	A	10		14		16		20		
	250 V	1 contact	A	0.6		0.7		0.8		1		
		2 contacts	A	3		4		6		8		
		3 contacts	A	8		10		12		16		
Ref.   	Rated operational current DC-2 to DC-5 (L/R ≤ 15ms)	24 V	1 contact	A	12			25		32		
			2 contacts	A	12			25		32		
			3 contacts	A	12			25		32		
		48 V	1 contact	A	12		20		25		32	
			2 contacts	A	12		20		25		32	
			3 contacts	A	12		20		25		32	
		60 V	1 contact	A	10		14		16		20	
			2 contacts	A	12		20		25		32	
			3 contacts	A	12		20		25		32	
		110 V	1 contact	A	1.5		2		2.5		3	
			2 contacts	A	3		4		5		6	
			3 contacts	A	12		20		25		32	
		220 V	1 contact	A	0.4		0.5		0.5		0.8	
			2 contacts	A	1.4		1.5		1.5		2	
			3 contacts	A	1		2		3		4	
		250 V	1 contact	A	0.3		0.4		0.5		0.8	
			2 contacts	A	0.4		0.6		0.8		1	
			3 contacts	A	1.2		2.4		1.6		2	

Other characteristics

Switch type (bare type)				VN12 VZN12	V02 VZ02	VN20 VZN20	V01 VZ01	V0 VZ0	VVD0 VVE0	V1 VZ1	VVD1 VVE1
Mechanical durability (millions of operating cycles)				0.05	0.1	0.05	0.1				
Electrical durability in cat. AC-21 (millions of operating cycles)				0.05	0.1	0.05	0.1				
Electrical durability in cat. DC-1 to 5 (operating cycles)				30000							
Suitable for isolation				Yes							
Cabling	Flexible cable + cable end	mm ²	4	6	4	6					
	Solid cable	mm ²	4	10	4	10					
Tightening torque			N.m	0.7	2.1	0.7	2.1				

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V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
40		63		80		125	175	8 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	8 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
35		40		50		60	70	4 (le/DC-1)	
40		63		80		125	175	–	
40		63		80		125	175	–	
12		20		25		30	37	2 (le/DC-1)	
20		63		80		125	175	–	
40		63		80		125	175	–	
4		6		8		12	15	1 (le/DC-1)	
14		25		30		40	50	–	
25		30		40		80	100	–	
2		4		5		3	10	0.8 (le/DC-1)	
12		20		25		30	40	–	
20		30		40		50	61	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
25		40		50		60	70	–	
40		63		80		125	175	–	
40		63		80		125	175	–	
5		6		8		10	12	–	
8		10		20		22	24	–	
40		50		63		70	80	–	
1		1.5		2		2.2	2.4	–	
3		4		6		7	8	–	
7		10		15		16	13	–	
1		1.2		1.5		1.6	1.8	–	
2		3		6		7	8	–	
6		8		10		12	14	–	
V2 VZ2	VVD2 VVE2	V3 VZ3	VVD3 VVE3	V4 VZ4	VVD4 VVE4	V5	V6	VZ7 VZ20	VZN05 VZN06
0.1		0.03						0.1	0.05
0.1		0.03						0.1 (AC-15)	0.05
30000								30000 (DC-1)	
Yes								–	
6		16				70		2 x 0.75...1.5	
10		25				95		2 x 1...2.5	
2.1		4				22.6		0.7	

Switch-
disconnectors

Ref.



TeSys Control

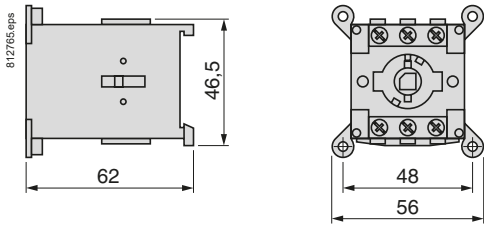
Switch-disconnectors for standard applications

Dimensions, mounting

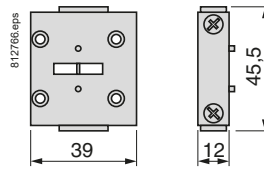
Dimensions

Switch-disconnectors

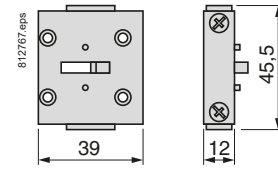
Switch bodies VN12, VN20



Add-on modules VZN12, VZN20



Add-on modules VZN11, VZN14 VZN05 and VZN06



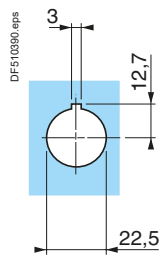
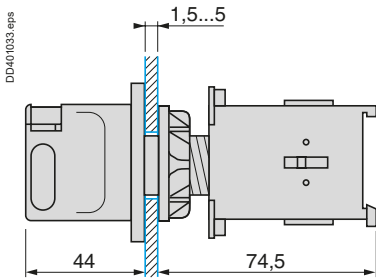
Switch-disconnectors

Mounting

Switch-disconnector mounted on enclosure door

VCDN12, VCDN20, VBDN12, VBDN20

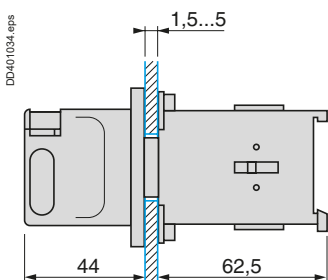
Single hole fixing



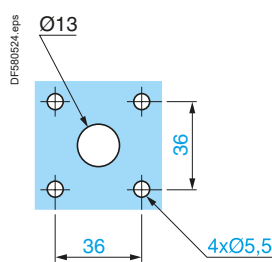
Ref.



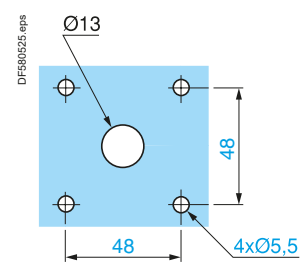
VN12, VN20
4 screw fixing



45 x 45 front plate



60 x 60 front plate



TeSys Control

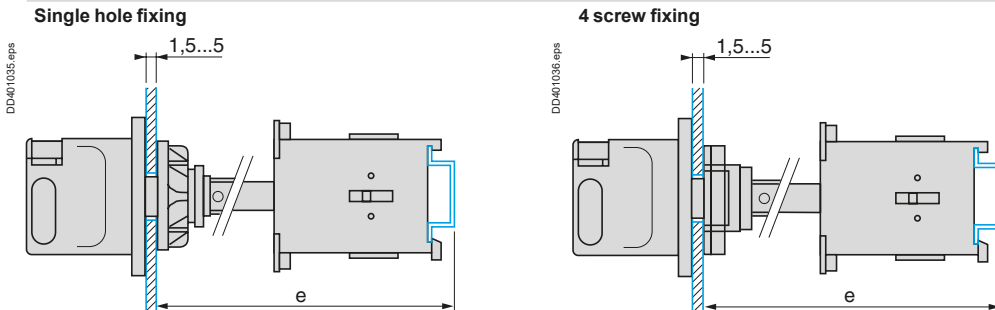
Switch-disconnectors for standard applications

Mounting, schemes

Mounting (continued)

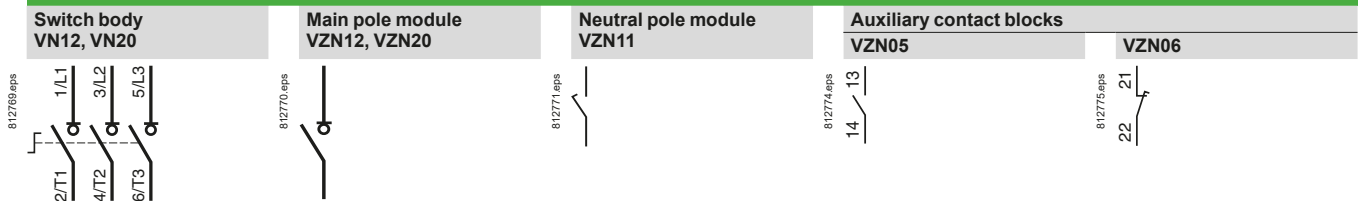
Switch-disconnector mounted at back of enclosure with shaft extension VZN17 or VZN30 (clip-on mounting on L rail)

VN12, VN20



	Shaft extension	Distance (e) enclosure back/door mm
VN12, VN20	VZN17	300...330
	VZN30	400...430

Schemes



Switch-disconnectors

Ref.



TeSys Control

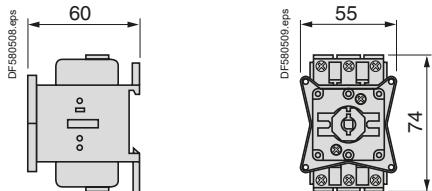
Switch-disconnectors for high performance applications

Dimensions, mounting

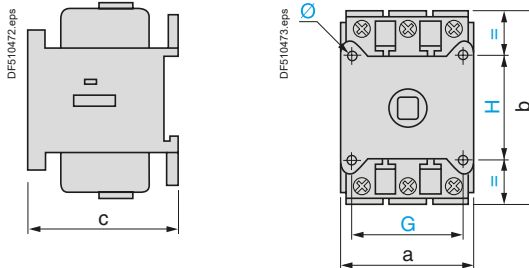
Dimensions

Switch-disconnectors

Switch bodies V0 \bullet , V0 to V2

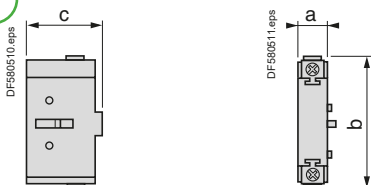


Switch bodies V3 to V6

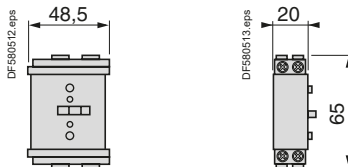


	a	b	c	G	H	Ø
V3, V4	60	83	65	48	48	5.5
V5, V6	90	125	90	68	68	5.5

Add-on modules VZ02 to VZ4 and VZ11 to VZ16



Add-on modules VZ7, VZ20



Switch-disconnectors

Ref.

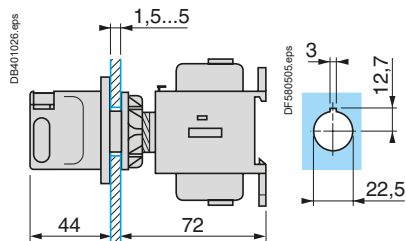


	a	b	c
VZ02 and VZ01, VZ0 to VZ2, VZ11, VZ14	16	74	35
VZ3, VZ4, VZ12, VZ15	20	83	46
VZ13, VZ16	30	125	63

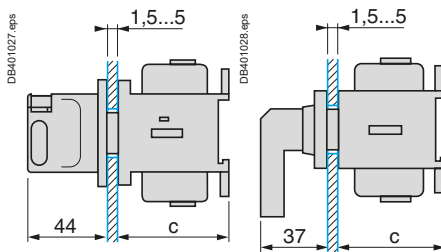
Mounting

Switch-disconnector mounted on enclosure door

Single hole fixing V0 \bullet , V0 to V2

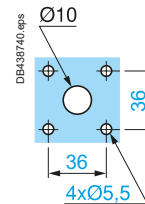


4 screw fixing V0 \bullet , V0 to V4

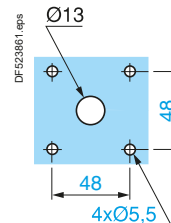


	c
V0 \bullet , V0 to V2	60
V3, V4	65

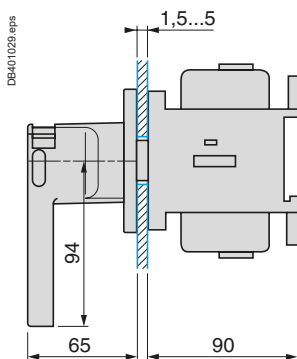
4 screw fixing 45 x 45 front plate V0 \bullet , V0 to V2



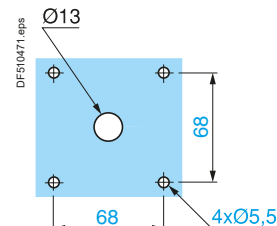
4 screw fixing 60 x 60 front plate V0 \bullet , V0 to V4



V5 and V6. 4 screw fixing



90 x 90 front plate



TeSys Control

Switch-disconnectors for high performance applications

Mounting, schemes

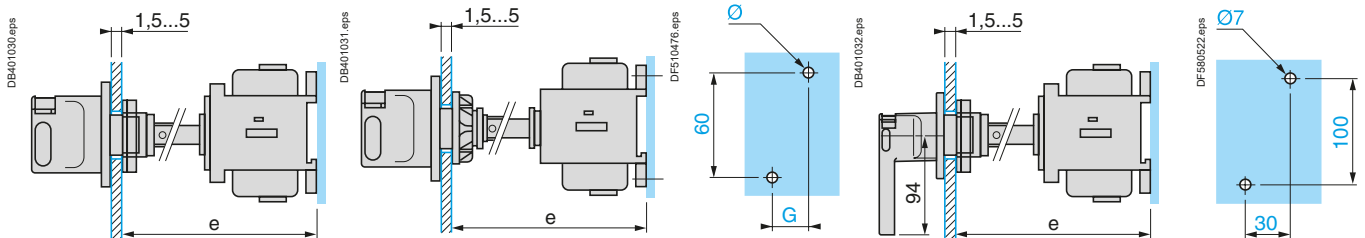
Mounting (continued)

Switch-disconnector mounted at back of enclosure

4 screw fixing
V0 \bullet , V0 to V2 with shaft extension VZ17 or VZ30 (clip-on mounting on \perp rail possible for V0 \bullet to V2)

Single hole fixing
V3 to V4 with shaft extension VZ18 or VZ31

V5 and V6 with shaft extension VZ18 or VZ31



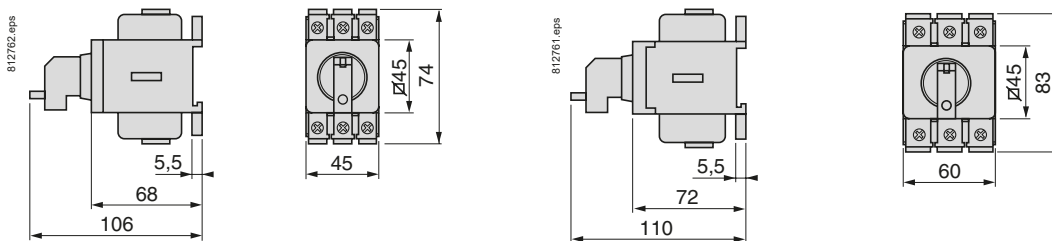
Shaft extension		Distance (e) enc.back/door mm	Ø	G
V02 and V01 V0 to V2	VZ17	300...330	2 x 4.2	15
	VZ30	400...430	2 x 4.2	15
V3 and V4	VZ18	300...320	2 x 5	20
	VZ31	400...420	2 x 5	20

Shaft extension		Distance (e) enc.back/door mm
V5 and V6	VZ18	300...350
	VZ31	430...450

Switch-disconnectors for modular distribution boards

VV \bullet 0 to VV \bullet 2

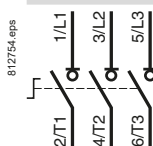
VV \bullet 3 to VV \bullet 4



Schemes

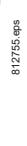
Switch body

V02 and V01
V0 to V6



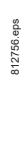
Main pole module

VZ02 and VZ01
VZ0 to VZ4



Neutral pole module

VZ11 to VZ13



Auxiliary contact blocks

VZ7



VZ20



Fuse carriers		
Type of product	Range	Pages
Introduction		B4/2
For protection of control circuits or transformer	Up to 25, 32, 50 or 125 A	B4/3
For protection of control circuits or transformer For North American market	Up to 30 A	B4/5
For protection of motors or transformers	Up to 25, 32 A	B4/6
Technical Data for Designers		B4/11



Fuse carriers

Operation: safety

The fuse carrier performs two basic functions:

- it isolates the downstream circuit by means of a visible break and wide opening contacts,
- it holds the cartridge fuses designed to protect the installation against short-circuits.

The type of cartridge fuse needed to protect the circuit must be determined before selecting the fuse carrier.

Cartridge fuse selection (type, rating, size)

Type

Application	<ul style="list-style-type: none"> ■ Motor protection. ■ Transformer protection.
Solution	<ul style="list-style-type: none"> ■ aM type fuses. These fuses are designed to withstand high current peaks of a very short duration. They must be combined with a thermal overload relay coupled with a contactor.
Application	<ul style="list-style-type: none"> ■ Lighting circuit protection. ■ Supply line protection. ■ Furnace protection.
Solution	<ul style="list-style-type: none"> ■ gG type fuses, which are more widely used but whose limiting capacity is weaker than that of aM type fuses.

Rating

gG fuses	See standard NF C 15-100.					
aM fuses	Table 53 A paragraph 532-2-1 and table 52 C paragraph 523-1.					
	Motors 3 x 220 V		Motors 3 x 400 V		Cartridge fuses type aM	
	P	in	P	in	Size	Rating
	kW	A	kW	A	A	A
	9	32	15	28.5	10 x 38 32	LS1D32

Size

Use the "fuse characteristics" table opposite to select the correct fuse size according to:

- the nominal current of the circuit to be protected,
- the operational voltage.

Fuse carrier selection

Application	Isolation of a circuit for safety reasons only.
Solution	The fuse carrier may be fitted with links. The maximum permissible current is indicated in the "pole characteristics" table opposite.
Application	Isolation of a circuit and its protection against short-circuits.
Solution	Select a fuse carrier according to: <ul style="list-style-type: none"> ■ the type of cartridge fuse required, ■ the maximum permissible current in the fuse carrier poles (see "pole characteristics" table opposite). If the operational current is greater than the maximum permissible current in the poles of the fuse carrier corresponding to the cartridge fuse size selected, select the fuse carrier the next size up. The safety provided by using a fuse carrier can be increased by adding a padlocking device with up to three padlocks.

Recommendations for use

The fuse carrier conforms to utilisation category AC-21A/22A of standard IEC 60947-3. It is therefore recommended that the fuse carrier early break auxiliary contacts always be inserted in the coil circuit of the contactor with which it is in series. If the fuse carrier is not associated with a contactor, it is essential to ensure that it will be operated off-load.

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Fuse carriers

Product references - DF type



DF101



DF141



DF221



DF101NV



DF141NV



DF221NV



DF103



DF143NC



DF223NC



DF103V



DF143VC



DF223VC

For protection of control circuits or transformers

Fuse carriers ⁽¹⁾

Conventional thermal current (Ith)	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
A	mm			
25	8.5 x 32	1 P	12	DF81
		N	12	DF10N
		1 P + N ⁽²⁾	6	DF81N
		2 P	6	DF82
		3 P	4	DF83
32	10 x 38	3 P + N ⁽²⁾	3	DF83N
		1 P	12	DF101
		N	12	DF10N
		1 P + N ⁽²⁾	6	DF101N
		2 P	6	DF102
50	14 x 51	3 P	4	DF103
		3 P + N ⁽²⁾	3	DF103N
		1 P	6	DF141
		N	6	DF14N
		1 P + N ⁽²⁾	3	DF141N
125	22 x 58	2 P	3	DF142
		3 P	2	DF143C ⁽³⁾
		3 P + N ⁽²⁾	1	DF143NC ⁽³⁾
		1 P	6	DF221
		N	6	DF22N
		1 P + N ⁽²⁾	3	DF221N
		2 P	3	DF222
		3 P	2	DF223C ⁽³⁾
		3 P + N ⁽²⁾	1	DF223NC ⁽³⁾

Fuse carriers with "blown fuse" indicators (LED) ^{(1) (4)}

Conventional thermal current (Ith)	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
A	mm			
25	8.5 x 32	1 P	12	DF81V
		1 P + N ⁽²⁾	6	DF81NV
		2 P	6	DF82V
		3 P	4	DF83V
		3 P + N ⁽²⁾	3	DF83NV
32	10 x 38	1 P	12	DF101V
		1 P + N ⁽²⁾	6	DF101NV
		2 P	6	DF102V
		3 P	4	DF103V
		3 P + N ⁽²⁾	3	DF103NV
50	14 x 51	1 P	6	DF141V
		1 P + N ⁽²⁾	3	DF141NV
		2 P	3	DF142V
		3 P	2	DF143VC ⁽³⁾
		3 P + N ⁽²⁾	1	DF143NVC ⁽³⁾
125	22 x 58	1 P	6	DF221V
		1 P + N ⁽²⁾	3	DF221NV
		2 P	3	DF222V
		3 P	2	DF223VC ⁽³⁾
		3 P + N ⁽²⁾	1	DF223NVC ⁽³⁾

⁽¹⁾ Each pole can be marked. A clip-in marker holder is provided for this purpose. Clip-in markers type AB1R● or AB1G● can also be used. DF8●●● and DF10●●● are pad lockable fuse carriers.

⁽²⁾ N: neutral pole fitted with a locked tubular link as standard.

⁽³⁾ A letter "C" in the reference indicates that the fuse carrier can be fitted with auxiliary early break, "blown fuse" signalling and "fuse present" signalling contacts.

⁽⁴⁾ Operational voltage of the blown fuse indicator: 110 V...690 V.

Introduction:
page B4/2

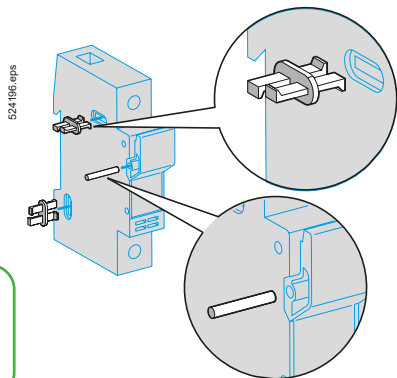
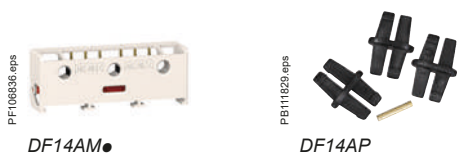
Characteristics:
page B4/12

Dimensions:
page B4/13

Schemes:
page B4/13

Fuse carriers





Detail of assembly clip and pin mounting

Fuse carriers



Accessories

Auxiliary early break and "blown fuse" signalling contacts ⁽¹⁾

Fuse carriers to be equipped	Size of cartridge fuse or link	Number of contacts	Sold in lots of	Unit reference
DF14 (3 P or 3 P + N)	14 x 51	1	1	DF14AM1
		2	1	DF14AM2
DF22 (3 P or 3 P + N)	22 X 58	1	1	DF22AM1
		2	1	DF22AM2

Fuse carrier assembly kits ⁽²⁾

Fuse carriers to be assembled	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
DF8	8.5 x 32	1 pin, 2 clips	12	DF10AP
DF10	10 x 38			
DF14	14 x 51	1 pin, 3 clips	10	DF14AP
DF22	22 x 58	1 pin, 3 clips	10	DF22AP

Marking accessories

Description	Composition	Marking	Sold in lots of	Unit reference
Clip-in markers	Strip of 10 identical numbers or letters	0...9 A...Z	25	AB1R● ⁽³⁾ AB1G● ⁽³⁾

Substitution

Fuse carriers

Old range			New range	
Reference	Size of cartridge fuse or link	Composition	Reference w/o indicator	Reference with indicator
DF6AB08	8.5 x 32	1 P	DF81	DF81V
DF6AB10	10 x 38	1 P	DF101	DF101V
DF6N10	8.5 x 32 or 10 x 38	1 N	DF10N	–
GK1CC	8.5 x 32	1 P + N	DF81N	DF81NV
GK1CD	8.5 x 32	2 P	DF82	DF82V
GK1CF	8.5 x 32	3 P	DF83	DF83V
GK1CH	8.5 x 32	3 P + N	DF83N	DF83NV
GK1DC	10 x 38	1 P + N	DF101N	DF101NV
GK1DD	10 x 38	2 P	DF102	DF102V
GK1DF	10 x 38	3 P	DF103	DF103V
GK1DH	10 x 38	3 P + N	DF103N	DF103NV
GK1EB	14 x 51	1 P	DF141	DF141V
GK1EN	14 x 51	1 N	DF14N	–
GK1EC	14 x 51	1 P + N	DF141N	DF141NV
GK1ED	14 x 51	2 P	DF142	DF142V
GK1EF	14 x 51	3 P	DF143C	DF143VC
GK1EH	14 x 51	3 P + N	DF143NC	DF143NVC
GK1FB	22 x 58	1 P	DF221	DF221V
GK1FN	22 x 58	1 N	DF22N	–
GK1FC	22 x 58	1 P + N	DF221N	DF221NV
GK1FD	22 x 58	2 P	DF222	DF222V
GK1FF	22 x 58	3 P	DF223C	DF223VC
GK1FH	22 x 58	3 P + N	DF223NC	DF223NVC

Fuse carrier assembly kits

Old range		New range
Reference	Size of cartridge fuse or link	Reference
GK1AP2	8.5 x 32 or 10 x 38	DF10AP
GK1AP3	8.5 x 32 or 10 x 38	DF10AP
	14 x 51	DF14AP
GK1AP4	8.5 x 32 or 10 x 38	DF10AP
	22 x 58	DF22AP
GK1AP5	14 x 51	DF14AP
GK1AP6	14 x 51	DF14AP
GK1AP9	22 x 58	DF22AP
	22 x 58	DF22AP

⁽¹⁾ These auxiliary contacts provide the following functions: early break, "blown fuse" signalling (if the fuse carrier is fitted with striker fuses) and "fuse present" signalling.

⁽²⁾ 1 pin and 2 clips are required to assemble two DF8 or DF10 fuse carriers together. 1 pin and 3 clips are required to assemble two DF14 or DF22 fuse carriers together.

⁽³⁾ When ordering, replace the ● in the reference with the number or letter required. Example: AB1-R1 or AB1-GA.

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Fuse carriers for North American market

Product references - DF type

For protection of control circuits or transformers

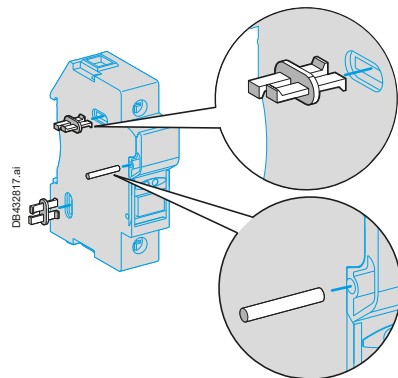
References



DFCC1



DFCC3V



Detail of assembly clip and pin mounting

Fuse carriers ⁽¹⁾

Conventional thermal current (Ith)	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
A				
30	Class CC	1 P	12	DFCC1
		2 P	12	DFCC2
		3 P	6	DFCC3

Fuse carriers with "blown fuse" indicators (LED) ^{(1) (2)}

Conventional thermal current (Ith)	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
A				
30	Class CC	1 P	12	DFCC1V
		2 P	6	DFCC2V
		3 P	6	DFCC3V

Fuse carrier assembly kits ⁽³⁾

Fuse carriers to be assembled	Size of cartridge fuse or link	Composition	Sold in lots of	Unit reference
DFCC	Class CC	1 pin, 2 clips	12	DF10AP

Marking accessories

Description	Composition	Marking	Sold in lots of	Unit reference
Clip-in markers	Strip of 10 identical numbers or letter	0...9	25	AB1R● ⁽⁴⁾
		A...Z	25	AB1G● ⁽⁴⁾

⁽¹⁾ Each pole can be marked. A clip-in marker holder is provided for this purpose.

Clip-in markers type AB1R● or AB1G● can also be used.

DFCC fuse holders are pad lockable.

⁽²⁾ Operational voltage of the blown fuse indicator: 230 V...690 V.

⁽³⁾ 1 pin and 2 clips are required to assemble two DFCC fuse carriers together.

⁽⁴⁾ When ordering, replace the p in the reference with the number or letter required.

Example: AB1R1 or AB1GA.

Fuse carriers





PB111831.eps

LS1D323



PB111830.eps

LS1D32

Fuse carriers



PB111830.eps

LS1D32



PB121303.eps

+ LA8D324

For protection of motors or transformers

3-pole basic blocks

Connection by spring terminals

Rating	Cartridge fuse size	Number of early break contacts ⁽¹⁾	Single-phase protection device ⁽²⁾	Reference ⁽³⁾	Weight kg
25 A	10 x 38	– ⁽⁴⁾	Without	LS1D323	0.270

Connection by screw clamp terminals or connectors

32 A	10 x 38	– ⁽⁴⁾	Without	LS1D32	0.300
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4-pole basic blocks

Connection by screw clamp terminals or connectors

32 A	10 x 38	– ⁽⁴⁾	Without	LS1D32 + LA8D324 ⁽⁵⁾	0.300
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Fuse carriers for the North American market

25 and 30 A basic blocks: please consult your Regional Sales Office.

- (1) With 1 or 2 early break contacts to be inserted in the contactor control circuit.
- (2) Fuse carriers with single-phase protection device must be fitted with striker fuses.
- (3) LS1D: clips directly onto a 35 mm rail or screw fixing.
- (4) Addition of add-on contact block, see page B4/7.
- (5) Can be mounted on left-hand or right-hand side of the basic block.

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Fuse carriers - Handles and accessories

Product references - for LS type

Add-on contact blocks

Description	For use on	Mounting	Maximum number	Type of contacts	Sold in lots of	Unit reference
Instantaneous auxiliary contacts (early break contacts)	LS1D32	Front	1	N/O + N/C	10	GVAE11
				N/O + N/O	10	GVAE20
	LS1D323	Front	1	N/O + N/C	10	GVAE113
				N/O + N/O	10	GVAE203

Operators

External handles

32 A	3 or 4	Right-hand side (IP54)	LS1D32005 ⁽¹⁾
		Left-hand side (IP54)	LS1D32006

Links

Tubular links

For fuse carrier		Sold in lots of	Unit reference
Rating	Number of poles		
32 A	3 or 4	10	DK1CB92 ⁽²⁾

⁽¹⁾ Reference **LS1D32005** replaces reference **DK1FB005**.

⁽²⁾ For use on a neutral circuit, the tubular link can be interlocked with special device **LA8D25906** (sold in lots of 10).

Fuse carriers



TeSys Power

Fuse carriers - Accessories

Product references - for LS type

Fuse carriers



Accessories for LS1D32 (screw clamp terminals)

Description	Application	Sold in lots of	Unit reference
Plate for mounting	LS1D32 and contactor LC1D09...D38 with front faces aligned	1	LAD311
Combination blocks	Between LS1D32 and contactor LC1K or LP1K	10	GV2AF01
	Between LS1D32 and contactor LC1D09...D38	10	GV2AF3
	Between LS1D32 mounted on LAD311 and contactor LC1D09...D38	10	GV2AF4

Description	Application	Pitch mm	Reference
Sets of 3-pole 63 A busbars	2 tap-offs	45	GV2G245
		54	GV2G254
		72	GV2G272
	3 tap-offs	45	GV2G345
		54	GV2G354
	4 tap-offs	45	GV2G445
		54	GV2G454
		72	GV2G472
	5 tap-offs	54	GV2G554

Description	Application	Sold in lots of	Unit reference
Protective end cover	For unused busbar outlets	5	GV1G10
Terminal block Connection from the top	For supply to one or more GV2G busbar sets	1	GV1G09
Cover for terminal block	For mounting in modular panels	10	LA9E07
Padlocking device	For use with up to 4 padlocks (not supplied) Ø6 mm shank max	1	GV2V03

Accessories for LS1D323 (spring terminals)

Description	Application	Reference
Plate for mounting	LS1D323 and contactor LC1D09...D38 with front faces aligned	LAD311

Description	Extension by	Number of starters	Reference
Power splitter box, 63 A	LAD32●	2	LAD322
		4	LAD324

Description	Kit contents	Reference
Assembly and power connection kit for LS1D323 and LC1D093...D323	1 LAD311 plate for mounting LS1D323 2 LAD341 power connection modules - between LS1D323 and power splitter box - between LS1D323 and contactor	LAD352

Description	Maximum capacity	Application	Sold in lots of	Unit reference
Upstream terminal block	16 mm ²	Power supply to 1 or 2 power splitter boxes	1	LAD3B1
Downstream terminal block	16 mm ²	Connection of motor cables	1	LAD331
Cable end reducer	–	For connection of conductors from 1 to 1.5 mm ²	20	LAD99


TeSys Power

Fuse carriers, handles and accessories

Product references

DF101	DF222V
DF101N	DF223C
DF101NV	DF223NC
DF101PV	DF223NVC
DF101V	DF223VC
DF102	DF22AM1
DF102V	DF22AM2
DF103	DF22AP
DF103N	DF22N
DF103NV	DF81
DF103V	DF81N
DF10AP	DF81NV
DF10N	DF81V
DF141	DF82
DF141N	DF82V
DF141NV	DF83
DF141V	DF83N
DF142	DF83NV
DF142V	DF83V
DF143C	DFCC1
DF143NC	DFCC1V
DF143NVC	DFCC2
DF143VC	DFCC2V
DF14AM1	DFCC3
DF14AM2	DFCC3V
DF14AP	DK1CB92
DF14N	LA8D324
DF221	LS1D30
DF221N	LS1D32
DF221NV	LS1D32005
DF221V	LS1D32006
DF222	LS1D323

Fuse
carriers

This document is current.  Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet).
If your product variant is no longer available, please consult your distributor or regional sales office.

Technical Data for Designers

Contents

DF type:

- > Characteristics B4/12
- > Dimensions and schemes B4/13

DF type for the North American market:

- > Characteristics B4/14
- > Dimensions and schemes B4/15

LS, GK type:

- > Characteristics B4/16
- > Dimensions B4/17
- > Schemes B4/18

Environment characteristics					
Fuse carrier type		DF8	DF10	DF14	DF22
Conforming to standards		IEC/EN 60947-3, IEC/HD 60269-2	IEC/EN 60947-3 ⁽¹⁾ , IEC/HD 60269-2, R22HL2, UL 4248-1 ⁽²⁾ , CSA C22.2 No 4248-1 ⁽²⁾	IEC/EN 60947-3, UL 4248-1, CSA C22.2 No 4248-1	
Product certification		IEC, EAC, CCC, UKCA	IEC, UL, CSA, EAC, DNV-GL, CCC, UKCA	IEC, UL, CSA, EAC, UKCA	
Degree of protection	Conforming to IEC 60529	IP 20			
Ambient air temperature	Storage	°C -40...+80			
	For operation, with derating ⁽¹⁾	°C -20...+60			
Operating positions		± 23° in relation to normal mounting plane			
Flame resistance	Conforming to IEC 60695-2-1	°C 960			

Pole characteristics										
Fuse size	mm	8.5 x 32	10 x 38	14 x 51	22 x 58					
Maximum power dissipated by fuse	W	2.50	3.00	5.00	9.50					
Rated insulation voltage (Ui) with tubular links, a.c. or D.C. supply	V	500	690	690	690					
Rated impulse withstand voltage (Uimp)	kV	6	6	8	8					
Conventional thermal current (Ith) for ambient air temperature ≤ 20 °C ⁽³⁾										
	With tubular links	A	25	32	50	125				
	With aM cartridge fuses	A	25	32	50	125				
	With gG cartridge fuses	A	25	32	50	100				
Rated conditional short-circuit current Conforming to IEC 60947-3										
	400 V	kA	20	120	120	120				
	500 V	kA	–	120	120	120				
	690 V	kA	–	–	80	80				
Peak withstand current (dynamic stress) Conforming to IEC 60269-1										
	With tubular links	kA	11	15	15	19				
Cabling (number of conductors x c.s.a.)			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
	Solid cable	mm ²	1 x 1.5	1 x 16 2 x 6	1 x 1.5	1 x 16 2 x 6	1 x 2.5	1 x 25 2 x 10	1 x 2.5	1 x 35 2 x 25
	Flexible cable without cable end	mm ²	1 x 1.5	1 x 10 2 x 6	1 x 1.5	1 x 10 2 x 6	1 x 2.5	1 x 25 2 x 10	1 x 2.5	1 x 35 2 x 16
	Flexible cable with cable end	mm ²	1 x 1.5	1 x 10 2 x 6	1 x 1.5	1 x 10 2 x 6	1 x 2.5	1 x 25 2 x 10	1 x 2.5	1 x 35 2 x 16
Tightening torque	Nm	2.2			3.5		4			

Characteristics of early break and signalling contacts DF14 AM and DF22 AM					
Rated insulation voltage (Ui) a.c. supply	V	250			
Conventional thermal current (Ith) for ambient air temperature ≤ 20 °C ⁽¹⁾	A	5			
Rated operational current		24 V	48 V	127 V	240 V
	Category AC-15	A 4	4	3	2.5
	Category DC-13	A 3	1	0.2	0.1
Definition of rated characteristics	Conforming to IEC 60947-5-1	B300			
Low load operating characteristics	Minimum voltage	V 10			
	Minimum current	mA 30			
Cabling		Faston connectors			

⁽¹⁾ DF101PV excluded.

⁽²⁾ DF101PV add UL/CSA 4248-19.

⁽³⁾ For use in an installation with ambient temperature > 20 °C, apply a derating coefficient:

Maximum temperature	20 °C	30 °C	40 °C	50 °C	60 °C
Max. relative humidity	95 %	90 %	80 %	50 %	50 %
Current derating coefficient	1	0.95	0.9	0.8	0.7

Number of poles (each side)	1 to 3	4 to 6	≥7
Current derating coefficient	1	0.95	0.9

TeSys Power

Fuse carriers

Dimensions, schemes - DF type

Dimensions

Modular fuse carriers 25 A and 32 A

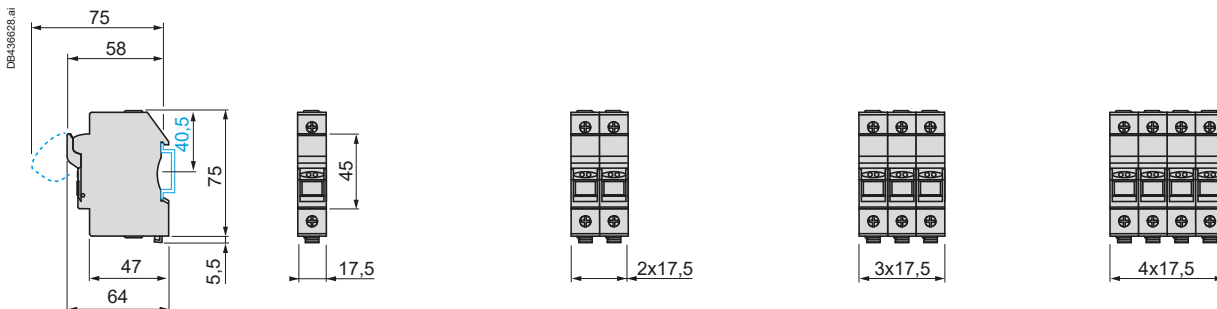
Mounting on 35 mm L rail

DF81 and DF81V
DF101 and DF101V
DF10N

DF81N and DF81NV
DF82 and DF82V
DF101N and DF101NV
DF102 and DF102V

DF83 and DF83V
DF103 and DF103V

DF83N and DF83NV
DF103N and DF103NV



Modular fuse carriers 50 A

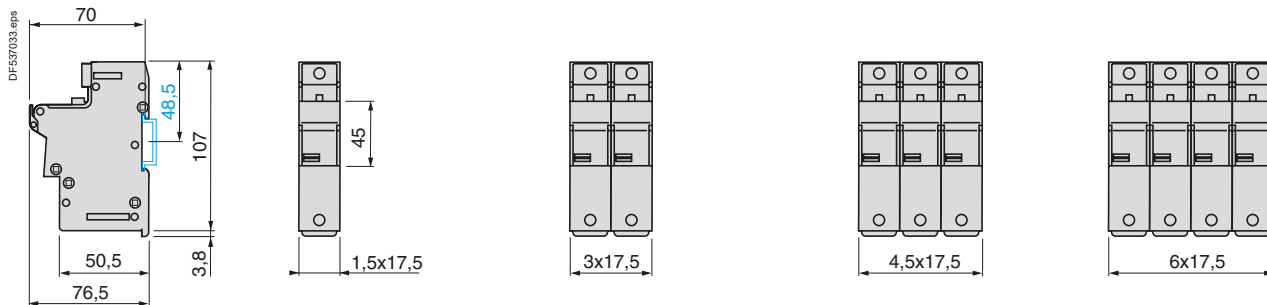
Mounting on 35 mm L rail

DF141 and DF141V
DF14N

DF141N and DF141NV
DF142 and DF142V

DF143C and DF143VC

DF143NC and DF143NVC



Modular fuse carriers 125 A

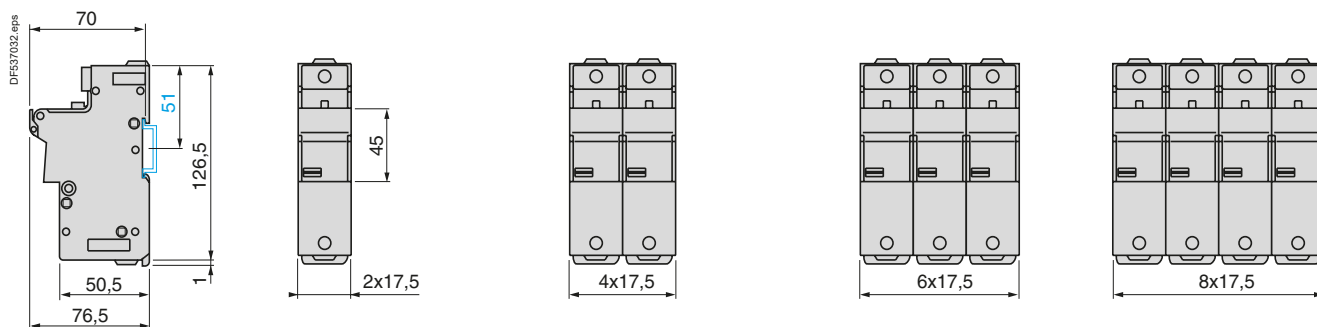
Mounting on 35 mm L rail

DF221 and DF221V
DF22N

DF221N and DF221NV
DF222 and DF222V

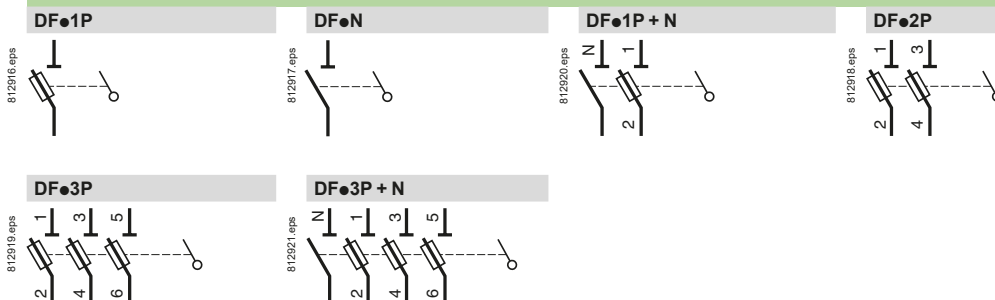
DF223C and DF223VC

DF223NC and DF223NVC



Schemes

Modular fuse carriers



TeSys Power

Fuse carriers for North American market

Characteristics - DF type

Fuse carriers



Ref.



Environment characteristics			
Fuse carrier type		DFCC	
Conforming to standards		UL 4248-1 & 4, CSA 22-2 No 4248-1 & 4	
Product certification		UL, CSA, CCC, UKCA	
Degree of protection	Conforming to IEC 60529	IP 20	
Ambient air temperature	Storage	°C	-40...+80
	For operation, with derating ⁽¹⁾	°C	-20...+60
Operating positions	Without derating	±23° in relation to normal vertical mounting plane	
Flame resistance	Conforming to IEC 60695-2-1	°C	960

Pole characteristics			
Fuse carrier type		DFCC	
Fuse size		Class CC	
Maximum power dissipated by fuse		W	3.00
Rated insulation voltage (Ui) with tubular links, a.c. supply		V	600
Rated impulse withstand voltage (Uimp)		kV	6
Conventional thermal current (Ith) for ambient air temperature ≤ 40 °C ⁽¹⁾		A	30
With tubular links			
With aM cartridge fuses			
With gG cartridge fuses		A	30
Short-circuit current withstand With UL 248-4 Class CC fuses		kA	200
Conforming to UL 512 at 600 V			
Cabling (number of conductors x c.s.a.)		Min.	Max.
Solid cable		mm ²	1 x 1.5 2 x 6
Flexible cable without cable end		mm ²	1 x 1.5 2 x 6
Flexible cable with cable end		mm ²	1 x 1.5 2 x 6
Tightening torque		Nm	2.2

⁽¹⁾ For use in an installation with ambient temperature > 20 °C, apply a derating coefficient:

Maximum temperature	20 °C	30 °C	40 °C	50 °C	60 °C
Max. relative humidity	95 %	90 %	80 %	50 %	50 %
Current derating coefficient	1	0.95	0.9	0.8	0.7


TeSys Power

Fuse carriers for North American market

Dimensions, schemes - DF type

Dimensions

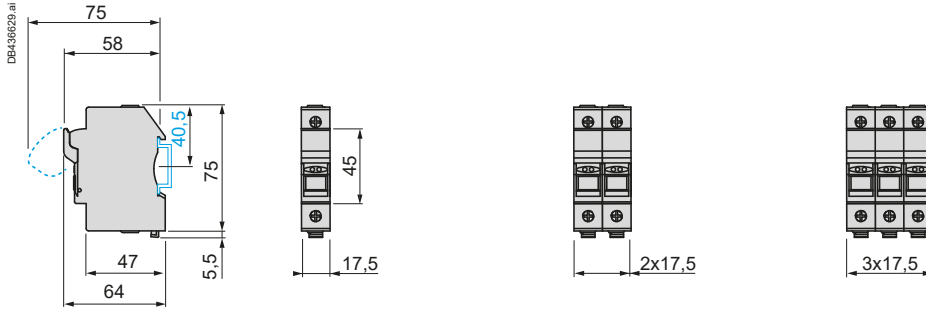
Modular fuse carriers 30 A

Mounting on 35 mm  rail

DFCC1 and DFCC1V

DFCC2 and DFCC2V

DFCC3 and DFCC3V



Schemes

Modular fuse carriers

DFCC1P

DFCC2P

DFCC3P



Fuse carriers



TeSys Power

Fuse carriers

Characteristics - LS type

Fuse carriers



Ref.



Environment			
Fuse carrier type		LS1D32	LS1D323
Conforming to standards	NF EN 60947-3	•	
	IEC 60947-3	•	
Product certifications		BV, UR	
Ambient air temperature for operation with links without derating	°C	-50...+70	
Maximum tilt in relation to normal vertical mounting plane		±23°	

Pole characteristics			
Fuse size		10 x 38	10 x 38
Rated operational voltage with links. a.c. supply	V	690	690
Maximum continuous current at ambient temperature ≤ 40 °C ⁽¹⁾ (Min. cable Ø/le)	With tubular links	mm ² /A 6/32 or 4/25 or 2.5/16	4/25 or 2.5/16
	With aM fuses	mm ² /A 6/32 or 4/22 or 2.5/20	4/25 or 2.5/20
	With gG fuses	mm ² /A 4/25 or 2.5/20 or 1.5/16	2.5/20 or 1.5/16

Early break contact characteristics			
Rated operational voltage	V	~ 250. --- 60	~ 250. --- 60
Conventional thermal current	A	2.5	2.5

Blow fuse contact characteristics 95/96-98			
Rated operational voltage	V	–	–
Conventional thermal current	A	–	–

Cartridge fuse characteristics			
Fuse size		10 x 38	10 x 38
Type aM	~ 400 V	A 32 ⁽²⁾	25
	~ 500 V	A 20	20
	~ 660 V	A –	–
Type gG	~ 400 V	A 25 ⁽²⁾	25
	~ 500 V	A 25	25
	~ 660 V	A –	–
Maximum power dissipated by fuse	W	3	3

Cabling

Connection by screw clamp terminals or connectors					
Number and c.s.a. of conductors		Min.	Max.	Min.	Max.
Solid cable	mm ²	2 x 1	2 x 6	–	–
Flexible cable without cable end	mm ²	2 x 1.5	2 x 6	–	–
Flexible cable with cable end	mm ²	2 x 1	2 x 4	–	–
Connection		Screw clamp terminals		–	–
Tightening torque	Nm	1.7		–	–

Connection by spring terminals					
Number and c.s.a. of conductors		Min.	Max.	Min.	Max.
Solid cable	mm ²	–	–	2 x 1 ⁽³⁾	2 x 4
Flexible cable without cable end	mm ²	–	–	2 x 1.5 ⁽¹⁾	2 x 4

(1) For use in an installation with ambient temperature > 55 °C, apply a derating coefficient equivalent to $\sqrt{\frac{120 - \text{ambient temperature}}{80}}$

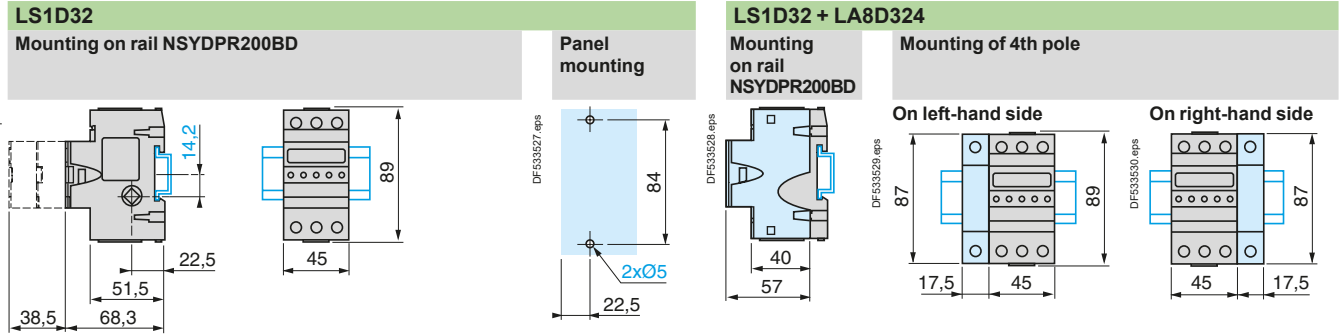
(2) These values are for fuse carriers mounted side by side with a gap of 10 mm between them or mounted with sets of busbars GV2•54. If mounted side by side without a gap, use the following fuse sizes: aM fuse: 25 A and gG fuse: 20 A.

(3) For cross-sections 1 to 1.5 mm², the use of an LA9D99 cable end reducer is recommended.

TeSys Power

Fuse carriers

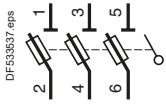
Dimensions, mounting - LS type



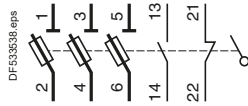
Fuse carriers without single-phase protection device

3-pole

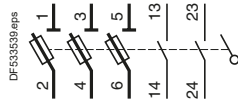
LS1D32, D323



LS1D32, D323 + GVAE11●

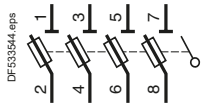


LS1D32, D323 + GVAE20●



4-pole

LS1D32 + LA8D324



Introduction		B5/2
Switch-disconnector fuses		
Type of product	Range	Pages
IEC - Switch-disconnector fuses For NFC / DIN fuses	From 32 to 1250 A	 B5/4
IEC - Switch-disconnector fuses For BS fuses	From 32 to 1250 A	 B5/6
UL - Switch-disconnector fuses For CC / J fuses	From 30 to 800 A	 B5/8
NFC - Cartridge fuses Type aM, gG	From 0.16 to 125 A	 B5/10
DIN - Cartridge fuses Type aM, gG	From 10 to 1250 A	 B5/11
Auxiliary contacts for IEC and UL switch-disconnector fuses	From 32 to 1250 A	 B5/12
Handles	From 32 to 1250 A	 B5/13
Other accessories	From 32 to 1250 A	B5/14
Technical Data for Designers		B5/17

Switch-
disconnector
fuses

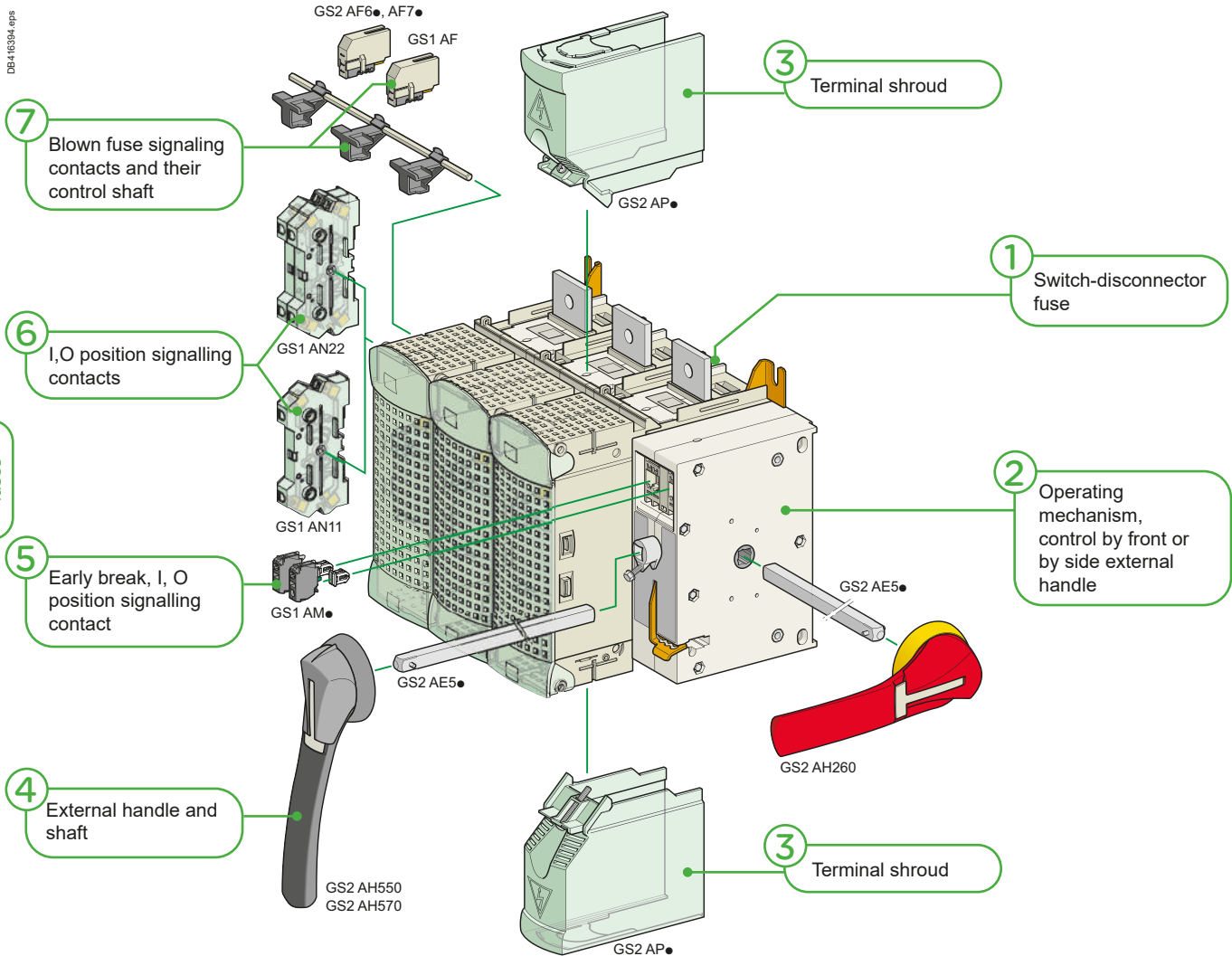
TeSys Power

Switch-disconnector fuses

Introduction

A customizable functional block

Whatever its rating, the switch-disconnector fuse fits the need: particular position of the handle, triggering of an automatic control before full opening, enhanced protection of terminals...



+
Customizable

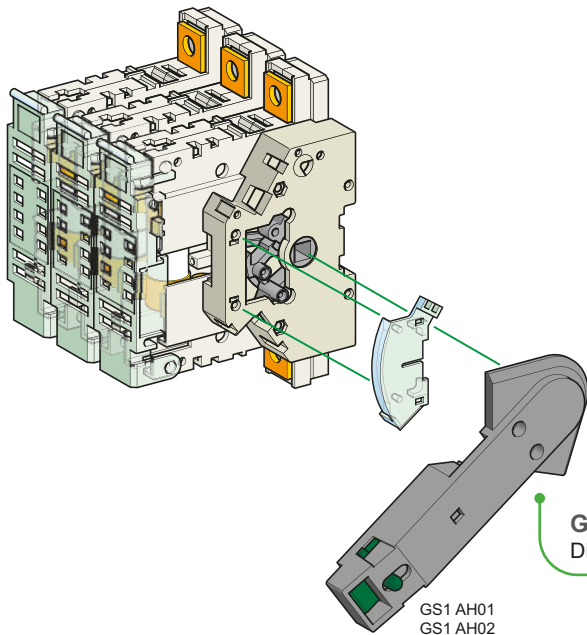
GS2630 A switch-disconnector fuse

- 1 Switch-disconnector fuse**
 - NFC/DIN or BS fuse compatible
 - Enhanced isolation between poles
 - On-load making/breaking with double break isolation of the power circuit
- 2 Operating mechanism**
 - For one front or side external handle, right or left side
 - Cavity for early-break contacts
- 3 Terminal shrouds**
 - For use when the switch-disconnector fuse is installed outside an enclosure or when the operating voltage is over 500 V AC
- 4 Operating handle**
 - Padlockable in open position
- 5 GS1AM●●● Early-break signalling contacts**
 - Activated before the poles are opened
- 6 GS1AN●● Position signalling contacts**
 - Synchronized with the poles operation
- 7 GS1AF●● Blown fuse signalling contacts**
 - A missing fuse is also indicated

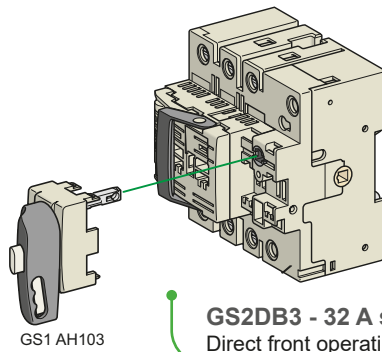
Simplicity of the direct operating

The mounting of an operating handle directly on the side of the switch-disconnector fuse is a simple operation. This handle will be for use by qualified personnel only. As the mechanical design is simplified, the manoeuvre will be immediately understood by the operator. Each handle can be padlocked in open position. Locking device for 3 padlocks.

DB416395.eps



DB416396.eps



GS2DB3 - 32 A switch-disconnector fuse
Direct front operating

GS1JD3 - 100 A switch-disconnector fuse
Direct lateral operating

GS1 AH01
GS1 AH02

Position of the handle, a free choice

Switch-disconnector fuses

Performance remote operating

Located on the front or side panel of an enclosure, the operating handle provide complementary features:

- simple (IP55) or reinforced (IP65) protection against dust
- intermediate "Test" position
- door interlock when the handle is in "Close" position, opening by mean of a special tool is needed for opening.
- optional key-operated handle lock

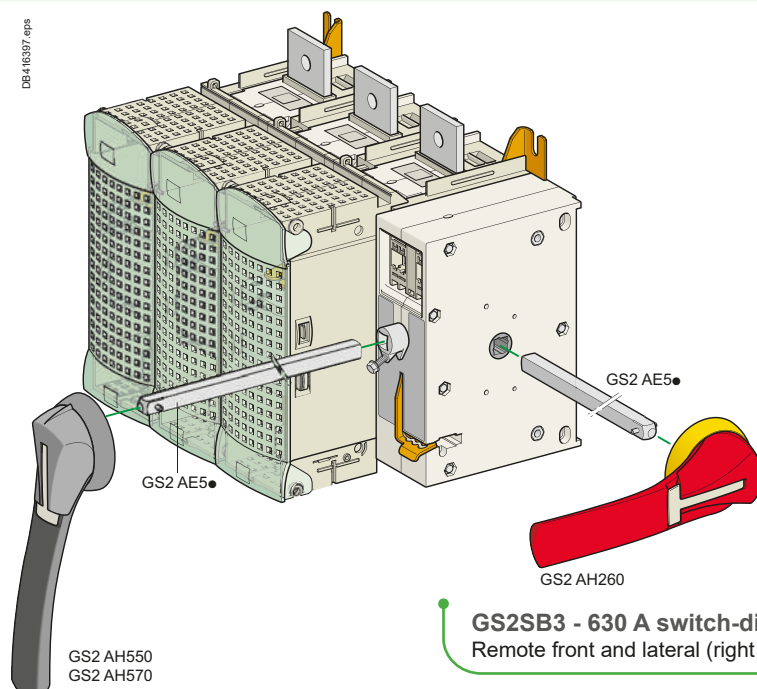


The handles are available in different lengths. They are chosen according the operating effort which depends on the rating of the switch-disconnector fuse.

The drive shaft can be cut to the ideal length.

The choice of a red and yellow handle (CNOMO standard) will identify an "Emergency Stop handle" among others handles, generally black and gray.

DB416397.eps



GS2 AH550
GS2 AH570

GS2SB3 - 630 A switch-disconnector fuse
Remote front and lateral (right only) operating

IEC - For NFC / DIN fuses - From 32 to 1250 A



GS1DD3



GS1FD3



GS1KD4

Rating	A	32	50	63	100	125
Number of poles		3 3+N	3 4	3 4	3 4	3 4
Fuse size		10 x 38	14 x 51	Size 000	22 x 58	22 x 58

For direct operators

Switch-disconnector fuses reference	GS1DD3	GS1DD4	GS1FD3	GS1FD4	GS1GD3	GS1GD4	GS1JD3	GS1JD4	GS1KD3	GS1KD4
Handle	Black									
Auxiliary contacts	O/I + Test	1NO + 1NC	-	GS1AN11			GS1AH02			
		2NO + 2NC	-	GS1AN22						
	O/I + early break		GS1AM111 (1 OF)	GS1AM1 (1 OF)						
	Blown fuse		GS1AM211 (2 OF)	GS1AM2 (2 OF)						
			-	GS1AF1	-		GS1AF23	GS1AF24	GS1AF23	GS1AF24

For external left hand side-mounted operators

Switch-disconnector fuses reference	GS1DD3	GS1DD4	GS2FG3	GS2FG4	GS2GG3	GS2GG4	GS2JG3	GS2JG4	GS2KG3	GS2KG4
Handle	Black/Grey	IP65								
	Red/Yellow	IP65								
Auxiliary contacts	O/I + Test	1NO + 1NC	-	GS1AN11G						
		2NO + 2NC	-	GS1AN22G						
	O/I + early break	1NO								
		2NO								
	Blown fuse		GS1AF1	-			GS1AF23	GS1AF24	GS1AF23	GS1AF24

For external front-mounted and right-hand side-mounted operators

Switch-disconnector fuses reference	GS1DD3	GS1DD4	GS2F3	GS2F4	GS2G3	GS2G4	GS2J3	GS2J4	GS2K3	GS2K4
Front-mounted handle	Black/Grey	IP55								
	Black/Grey	IP65								
	Red/Yellow	IP65								
Front-mounted handle + Test position	Black/Grey	IP65								
	Red/Yellow	IP65								
RH side-mounted handle	Black/Grey	IP55								
	Black/Grey	IP65								
	Red/Yellow	IP65								
Auxiliary contacts	O/I + Test	1NO + 1NC	-	GS1AN11						
		2NO + 2NC	-	GS1AN22						
		1NO + 1NC + test	-	GS1ANT11						
		2NO + 2NC + test	-	GS1ANT22						
	O/I + Test + early break	1NO								
		1NC								
	Blown fuse		GS1AF1	-			GS1AF23	GS1AF24	GS1AF23	GS1AF24

Accessories

Shaft for external handle (mm)	200	GS2AE82	GS2AE22
	320	GS2AE8	GS2AE2
	400	GS2AE81	GS2AE21
Terminal shroud		Integrated	GS1AP33 (3P), GS1AP34 (4P)

Dimensions

Direct front-mounted version	page B5/25	page B5/26
External front-mounted version	page B5/25	page B5/27

Handles





GS1KKD3



GS1LLD4



GS1ND3

125		160		250		400		630		1250	
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3	4	3	4	3	4	3	4	3	4	3	4	3	4
Size 00		Size 00		Size 0		Size 1		Size 2		Size 3		Size 4	

GS1KKD3	GS1KKD4	GS1LLD3	GS1LLD4	GS1LD3	GS1LD4	GS1ND3	GS1ND4	GS1QQD3	GS1QQD4	GS2S3	GS2S4	GS2V3	GS2V4
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GS1AH02											GS2AH104	GS2AH105
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GS1AN11													
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GS1AN22													
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GS1AM1 (1 OF)											GS1AM110 (1 NO)
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GS1AM2 (2 OF)											GS1AM101 (1 NC)
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-	GS1AF33						GS1AF34	GS1AF43	GS1AF44	GS1AF43	GS1AF44	GS2AF63	GS2AF64	GS2AF73	GS2AF74
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GS2KKG3	GS2KKG4	GS2LLG3	GS2LLG4	GS2LG3	GS2LG4	GS2NG3	GS2NG4	GS2QQG3	GS2QQG4	GS2SG3	GS2SG4	GS2VG3	
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GS2AH330											GS2AH350	
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GS2AH340											GS2AH360	
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GS1AN11G													
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GS1AN22G													
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GS1AM110													
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GS1AM101													
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-	GS1AF33						GS1AF34	GS1AF43	GS1AF44	GS1AF43	GS1AF44	GS2AF63	GS2AF64	GS2AF73	GS2AF74
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GS2KK3	GS2KK4	GS2LL3	GS2LL4	GS2L3	GS2L4	GS2N3	GS2N4	GS2QQ3	GS2QQ4	GS2S3	GS2S4	GS2V3	GS2V4
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GS2AH535											-	
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GS2AH530											GS2AH550	GS2AH570
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GS2AH540											GS2AH560	GS2AH580
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GS2AHT530													
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GS2AHT540													
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GS2AH235													
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GS2AH230											GS2AH250	
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GS2AH240											GS2AH260	
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GS1AN11													
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GS1AN22													
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GS1ANT11													
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GS1ANT22													
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GS1AM110													
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GS1AM101													
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-	GS1AF33						GS1AF34	GS1AF43	GS1AF44	GS1AF43	GS1AF44	GS2AF63	GS2AF64	GS2AF73	GS2AF74
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GS2AE22											GS2AE52
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GS2AE2											GS2AE5
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GS2AE21											GS2AE51
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GS1AP33 (3P), GS1AP34 (4P)							GS1AP43 (3P), GS1AP44 (4P)	GS2AP73	GS2AP64	GS2AP83	GS2AP84
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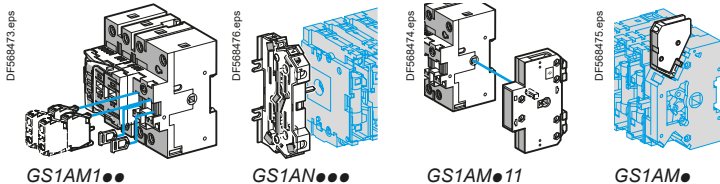
page B5/26

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Auxiliary contacts



Maximal number of auxiliary contacts

Switch rating (A)	Standard configuration	With additional bracket	Reference of additional bracket
30...32	4	4	GS1AD10 ⁽¹⁾
32...400	4	4	GS2AD20 ⁽²⁾
200...400	8	8	GS2AD20 ⁽²⁾
630...1250	8	-	-

⁽¹⁾ Only compatible with switch disconnecter fuses starting by GS1D●●

⁽²⁾ Only compatible with switch disconnecter fuses starting by GS2●●●



See details on auxiliary contacts, page B5/12.

IEC - For BS fuses - From 32 to 1250 A



GS1DDB3



GS2JB3

Rating	A	32	63	100	160
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Number of poles		3	3+N	3	4	3	4	3	4	3	4	
Fuse size		A1	A1	A2-A3	A4	A4		A4		B1-B2		

For direct operators

Switch-disconnector fuses reference	GS1DDB3	GS1DDB4	-
Handle	Black	GS1AH103	-
Auxiliary contacts	O/I + Test	1NO + 1NC	-
		2NO + 2NC	-
	O/I + early break	GS1AM111 (1 OF)	-
		GS1AM211 (2 OF)	-

For external front-mounted and right-hand side-mounted operators

Switch-disconnector fuses reference	GS1DDB3	GS1DDB4	GS2DB3	GS2DB4	GS2GB3	GS2GB4	GS2JB3	GS2JB4	GS2LLB3	GS2LLB4	GS2LB3	GS2LB4
Front-mounted handle	Black/Grey IP55	GS2AH515					GS2AH535					
	Black/Grey IP65	GS2AH510					GS2AH530					
	Red/Yellow IP65	GS2AH520					GS2AH540					
Front-mounted handle	Black/Grey IP65	GS2AHT510					GS2AHT530					
	Red/Yellow IP65	GS2AHT520					GS2AHT540					
+ Test position												
RH side-mounted handle	Black/Grey IP55	GS2AH215					GS2AH235					
	Black/Grey IP65	GS2AH210					GS2AH230					
	Red/Yellow IP65	GS2AH220					GS2AH240					
Auxiliary contacts	O/I + Test	1NO + 1NC	-	GS1AN11								
		2NO + 2NC	-	GS1AN22								
		1NO + 1NC + test	-	GS1ANT11								
		2NO + 2NC + test	-	GS1ANT22								
	O/I + Test + early break	1NO	GS1AM110 - max 4 contacts									
	1NC	GS1AM101 - max 4 contacts										

Accessories

Shaft for external handle (mm)	200	GS2AE82	GS2AE22
	320	GS2AE8	GS2AE2
	400	GS2AE81	GS2AE21
Terminal shroud		Integrated	GS1AP33 (3P), GS1AP34 (4P)

Dimensions

	Direct front-mounted version	page B5/25	page B5/26
	External front-mounted version	page B5/25	page B5/27



GS2MMB3



GS2SB3

200		250		315		400		630		800		1250			
3	4	3	4	3	4	3	4	3	4	3	4	3	4		
B1-B2		B1...B3		B1...B3		B1...B4		C1-C2		C1...C3		D1			
-															
-															
-															
-															
-															
-															
GS2MMB3	GS2MMB4	GS2NB3	GS2NB4	GS2PPB3	GS2PPB4	GS2QQB3	GS2QQB4	GS2SB3	GS2SB4	GS2TB3	GS2TB4		GS2VB4		
GS2AH535								-							
GS2AH530								GS2AH550				GS2AH570			
GS2AH540								GS2AH560				GS2AH580			
GS2AHT530								-							
GS2AHT540								-							
GS2AH235								-							
GS2AH230								GS2AH250							
GS2AH240								GS2AH260							
GS1AN11															
GS1AN22															
GS1ANT11								-							
GS1ANT22															
GS1AM110 - max 8 contacts															
GS1AM101 - max 8 contacts															
GS2AE22								GS2AE52							
GS2AE2								GS2AE5							
GS2AE21								GS2AE51							
GS1AP43 (3P), GS1AP44 (4P)								GS2AP73 (3P), GS2AP64 (4P)				GS2AP83		GS2AP84	
page B5/26								page B5/28							
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Switch-disconnector fuses

UL - For CC and J fuses - From 32 to 800 A



GS1DU3



GS2GU3N

Rating	30 Compact		30		60	100
Number of poles	3		3		3	3
Fuse size	CC	J	CC	J	J	J

For direct operators						
Switch-disconnector fuses reference		GS1DDU3	GS1DU3	-	-	-
Handle	Black	GS1AH106	-	-	-	-
Auxiliary contacts	O/I + Test	1NO + 1NC	-	-	-	-
		2NO + 2NC	-	-	-	-
O/I + early break	1NO	GS1AM110 + GS1AD10	-	-	-	-
	1NC	GS1AM101 + GS1AD10	-	-	-	-

For external front-mounted operators							
Switch-disconnector fuses reference		GS1DDU3	GS1DU3	GS2EEU3	GS2EU3N	GS2GU3N	GS2JU3N
Front-mounted handle	Black/Grey	1,3R, 12	GS2AH110	GS2AH130			
		4, 4X	GS2AH410	GS2AH430			
Front-mounted handle + Test position	Red/Yellow	1,3R, 12	GS2AH120	GS2AH140			
		4, 4X	GS2AH420	GS2AH440			
Auxiliary contacts	O/I + Test	1NO + 1NC	-	GS1AN11			
		2NO + 2NC	-	GS1AN22			
O/I + Test + early break	1NO	GS1AM110 - max 4 contacts ⁽¹⁾	GS1AM110 - max 4 contacts ⁽¹⁾	GS1AM110 - max 4 contacts ⁽¹⁾			
	1NC	GS1AM101 - max 4 contacts ⁽¹⁾	GS1AM101 - max 4 contacts ⁽¹⁾	GS1AM101 - max 4 contacts ⁽¹⁾			

Accessories						
Shaft for external handle (mm)	320	GS2AE8	GS2AE2			
	400	GS2AE81	GS2AE21			
Terminal shroud		Integrated				

Dimensions						
Direct front-mounted version		page B5/25			page B5/26	
		page B5/25			page B5/27	

(1) 4 more contacts allowed with GS1AD10 additional bracket.

Switch-disconnector fuses



GS2QU3N



GS2TU3

	200	400	600	800
	3	3	3	3
	J	J	J	J
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	GS2MU3N	GS2QU3N	GS2SU3	GS2TU3
	GS2AH130		-	
	GS2AH430		GS2AH150	
	GS2AH140		-	
	GS2AH440		GS2AH160	
	GS2AHT130		-	
	GS2AHT430		-	
	GS2AHT140		-	
	GS2AHT440		-	
	GS1AN11			
	GS1AN22			
	GS1ANT11		-	
	GS1ANT22		-	
	GS1AM110 - max 8 contacts ⁽¹⁾		GS1AM110 - max 8 contacts only	
	GS1AM101 - max 8 contacts ⁽¹⁾		GS1AM101 - max 8 contacts only	
	GS2AE2		GS2AE5	
	GS2AE21		GS2AE51	
	GS2AP43	GS2AP53	GS2AP73	
	page B5/26		page B5/28	
	page B5/27		page B5/29	

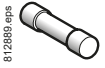
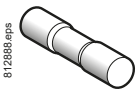


Switch-disconnector fuses

TeSys Power

Switch-disconnector fuses

Product references

NFC Cartridge fuses - Type aM / gG - From 0.25 to 125 A							
Fuse type	Maximum rated voltage	Rating	Sold in lots of	Fuses without striker			
				Unit reference			
	V ~	A		aM	gG		
 812889.eps DF2CA●●●● DF2CN●●	Cylindrical 8.5 x 31.5	400	1	10	-	DF2BN0100	
			2	10	DF2BA0200	DF2BN0200	
			4	10	DF2BA0400	DF2BN0400	
			6	10	DF2BA0600	DF2BN0600	
			8	10	-	DF2BN0800	
			10	10	-	DF2BN1000	
			12	10	-	DF2BN1200	
			16	10	-	DF2BN1600	
			20	10	-	DF2BN2000	
			 812888.eps DF2EA●●●● DF2EN●●	Cylindrical 10 x 38	500	0.50	10
1	10	DF2CA01				-	
2	10	DF2CA02				DF2CN02	
4	10	DF2CA04				DF2CN04	
6	10	DF2CA06				DF2CN06	
8	10	DF2CA08				DF2CN08	
10	10	DF2CA10				DF2CN10	
12	10	DF2CA12				DF2CN12	
16	10	DF2CA16				DF2CN16	
20	10	-				DF2CN20	
400	20	10				DF2CA20	-
	25	10				DF2CA25	DF2CN25
	32	10				DF2CA32	DF2CN32
	Cylindrical 14 x 51	690				0.25	10
		500	0.50	10	DF2EA005	-	
			16	10	DF2EA16	-	
20			10	DF2EA20	-		
25	10		DF2EA25	DF2EN25			
32	10		DF2EA32	DF2EN32			
40	10		DF2EA40	DF2EN40			
400	50	10	DF2EA50	DF2EN50			
Cylindrical 22 x 58	690	500	10	10	-	DF2FN10	
			20	10	-	DF2FN20	
			25	10	-	DF2FN25	
			32	10	-	DF2FN32	
			40	10	DF2FA40	DF2FN40	
			50	10	DF2FA50	DF2FN50	
			400	63	10	DF2FA63	DF2FN63
				80	10	DF2FA80	DF2FN80
				100	10	DF2FA100	DF2FN100
				125	10	DF2FA125	-

Switch-disconnector fuses



For protection of equipment with current peaks
For protection of circuits without significant current peaks

TeSys Power

Switch-disconnector fuses

Product references

PB121654.eps



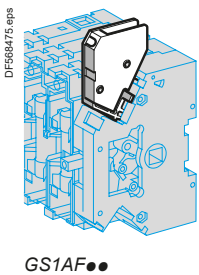
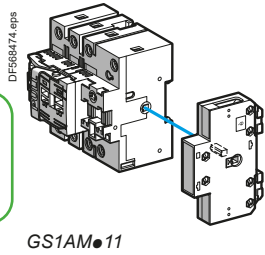
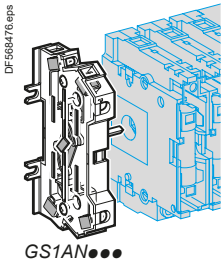
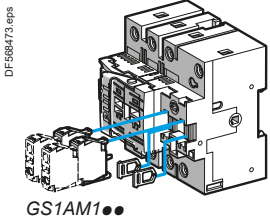
DF2HA1161

DIN Cartridge fuses - Type aM /gG - From 10 to 1250 A								
Fuse type	Maximum rated voltage	Rating	Sold in lots of		Fuses without striker		Fuses with striker	
			aM	gG	Unit reference		Unit reference	
	V ~	A	aM	gG	aM	gG	aM	gG
Blade size 00	690	100	3	10	-	DF2FGN100	-	-
		125	3	10	-	DF2FGN125	-	-
		500	-	10	-	DF2FGN160	-	-
Blade size 1	690	160	3	3	DF2HA1161	-	-	-
		200	3	3	DF2HA1201	DF2HN1201	-	-
		250	3	-	DF2HA1251	-	-	-
		500	-	3	-	DF2HN1251	-	-

Switch-disconnector fuses



For protection of equipment with current peaks
For protection of circuits without significant current peaks



Auxiliary contacts for IEC and UL switch-disconnector fuses

Auxiliary early break and/or O, I and Test position signalling contacts ^{(1) (2) (3)}

Switch rating	Contact type	Type of operator	Rated operating current I _e (A)		Reference
			< 24 V DC	< 240 V AC	
A (CEI)	A (UL)				
32...1250	30 Compact 30...800	1 N/O 1 N/C	2.8	3	GS1AM110 GS1AM101

Auxiliary O, I and Test position signalling contacts ^{(3) (5)}

Switch rating	Contact type	Type of operator	Rated operating current I _e (A)		Reference
			< 24 V DC	< 240 V AC	
A (CEI)	A (UL)				
50...1250	30...800	1 N/C + 1 N/O Direct	–	10	GS1AN11
		External, LH side	–	10	GS1AN11G*
		2 N/C + 2 N/O Direct	–	10	GS1AN22
		External, LH side	–	10	GS1AN22G*

Auxiliary O, I and Test position signalling contacts ⁽³⁾

Switch rating	Contact type	Type of operator	Rated operating current I _e (A)		Reference
			–	10	
50...400	30...400	1 N/C + 1 N/O 2 N/C + 2 N/O	–	10	GS1ANT11 GS1ANT22

Auxiliary early break O and I position signalling contacts

Switch rating	Contact type	Type of operator	Rated operating current I _e (A)		Reference
			< 24 V DC	< 240 V AC	
A (CEI)					
32	1 C/O 2 C/O	–	12	4	GS1AM111* GS1AM211*
50...400	1 C/O 2 C/O	Direct, RH side Direct, RH side	12	4	GS1AM1* GS1AM2*

Auxiliary "blown fuse" signalling contacts for use with NF C and DIN fuses ⁽⁶⁾

Contact type	Switch rating	Fuse size	Number of poles	Rated operating current I _e (A)		Reference
				< 24 V DC	< 240 V AC	
	A (CEI)					
1 st C/O	50	14 x 51	3 or 4	12	4	GS1AF1*
	100 and 125	22 x 58	3	12	4	GS1AF23*
			4	12	4	GS1AF24*
	160	Size 0	3	12	4	GS1AF33*
			4	12	4	GS1AF34*
	250 and 400	Size 1 and Size 2	3	12	4	GS1AF43*
			4	12	4	GS1AF44*
	630	Size 3	3	12	4	GS2AF63*
			4	12	4	GS2AF64*
	1250	Size 4	3	12	4	GS2AF73*
			4	12	4	GS2AF74*
2 nd C/O	50...1250	–	3 or 4	12	4	GS1AF*

(* Not for UL switch-disconnector.

(1) For 32 A (CEI), 30 (UL) switch-disconnector fuses, these auxiliary contacts allow:

- early break and O and I position signalling, - O and I position signalling,
- O, I and Test position signalling, - Test position signalling.

For 50 to 400 A (CEI), 30-400 A (UL) switch-disconnector fuses, they allow:

- early break, - O and I position signalling,
- O, I and Test position signalling, - Test position signalling.

For 630 and 1250 A (CEI), 630 and 800 A (UL) switch-disconnector fuses, they allow:

- early break and O and I position signalling,

(2) Maximum number of auxiliary contacts:

Switch rating	A (CEI)	A (UL)	Standard	With additional bracket	Reference of additional bracket
32 ⁽⁷⁾	30 Compact	CC	4	4 + 4	GS1AD10
		J	2	2 + 4	GS1AD10
32 ⁽⁸⁾ ...160	30...100		4	4 + 4	GS2AD20
200...400	200 and 400		8	8 + 4	GS2AD20
630...1250	600 and 800		8	8	–

(3) The Test position allows testing of the control circuits off-load. Auxiliary contacts GS1AM110, GS1AM101 and GS1ANT●● only allow the test function with external handles GS2AHT●●●.

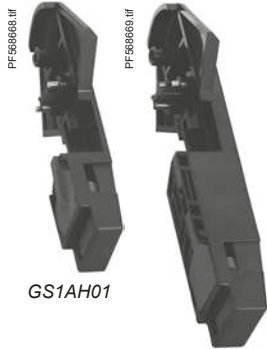
(4) These auxiliary contacts can also be used with 630, 800 and 1250 A switch-disconnector fuses fitted with a direct front-mounted operator.

(5) Reversible add-on attachments for converting an N/C contact to an N/O contact and vice versa.

(6) For striker fuses (BS fuses are not available with striker).

(7) For GS1DDB3 fuse switch disconnector only.

(8) For 32 A: for fuse switch disconnector GS2DB3 only.



GS1AH02



Handles for IEC and UL switch-disconnector fuses

Handles for direct operators

Switch rating A (CEI)	A (UL)	Type of operator	Handle colour	Reference
Handles for direct operators, padlockable				
-	30 Compact	Front-mounted	Black	GS2AH106
32	-	Front	Black	GS1AH103
50 and 63	-	RH side	Black	GS1AH01
100...400	-	RH side	Black	GS1AH02
-	600 and 800	Front-mounted	Black	GS2AH107
630 and 800	-	Front	Black	GS2AH104
1250	-	Front	Black	GS2AH105

Handles for external operator

Switch rating A (CEI)	A (UL)	Handle colour	Degree of protection	Protection index Nema	Reference
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Handles for front-mounted external operators, padlockable and lockable in position O ⁽¹⁾

Door interlock in I position ⁽²⁾

32...63	-	Grey/Black	IP 65	-	GS2AH510
		Red/Yellow	IP55	-	GS2AH515
100...400	-	Grey/Black	IP 65	-	GS2AH520
		Red/Yellow	IP65	-	GS2AH530
630 and 800	-	Grey/Black	IP65	-	GS2AH535
		Red/Yellow	IP 65	-	GS2AH540
1250	-	Grey/Black	IP65	-	GS2AH550
		Red/Yellow	IP65	-	GS2AH560
-	30 Compact	Grey/Black	-	1, 3R, 12	GS2AH570
		Red/Yellow	-	1, 3R, 12	GS2AH580
-	30...400	Grey/Black	-	1, 3R, 4, 4X, 12	GS2AH110
		Red/Yellow	-	1, 3R, 4, 4X, 12	GS2AH120
-	30...400	Grey/Black	-	1, 3R, 4, 4X, 12	GS2AH410
		Red/Yellow	-	1, 3R, 4, 4X, 12	GS2AH420
-	600 and 800	Grey/Black	-	1, 3R, 12	GS2AH130
		Red/Yellow	-	1, 3R, 12	GS2AH140
-	600 and 800	Grey/Black	-	1, 3R, 4, 4X, 12	GS2AH430
		Red/Yellow	-	1, 3R, 4, 4X, 12	GS2AH440
-	600 and 800	Grey/Black	-	1, 3R, 12	GS2AH150
		Red/Yellow	-	1, 3R, 12	GS2AH160

Handles for front-mounted external operators with test facility ⁽³⁾, padlockable and lockable in "O" position ⁽¹⁾. Door interlock in "I" position ⁽²⁾

32...63	-	Grey/Black	IP 65	-	GS2AHT510
		Red/Yellow	IP65	-	GS2AHT520
100...400	-	Grey/Black	IP65	-	GS2AHT530
		Red/Yellow	IP65	-	GS2AHT540
-	30 Compact	Grey/Black	-	1, 3R, 12	GS2AHT110
		Red/Yellow	-	1, 3R, 12	GS2AHT120
-	30...400	Grey/Black	-	1, 3R, 4, 4X, 12	GS2AHT410
		Red/Yellow	-	1, 3R, 4, 4X, 12	GS2AHT420
-	30...400	Grey/Black	-	1, 3R, 12	GS2AHT130
		Red/Yellow	-	1, 3R, 12	GS2AHT140
-	30...400	Grey/Black	-	1, 3R, 4, 4X, 12	GS2AHT430
		Red/Yellow	-	1, 3R, 4, 4X, 12	GS2AHT440

Handles for external right-hand side-mounted operators, padlockable and lockable in "O" position ⁽¹⁾

32...63	-	Grey/Black	IP 65	-	GS2AH210
		Red/Yellow	IP55	-	GS2AH215
100...400	-	Grey/Black	IP65	-	GS2AH220
		Red/Yellow	IP65	-	GS2AH225
630...1250	-	Grey/Black	IP65	-	GS2AH230
		Red/Yellow	IP55	-	GS2AH235
630...1250	-	Grey/Black	IP65	-	GS2AH240
		Red/Yellow	IP65	-	GS2AH245
630...1250	-	Grey/Black	IP65	-	GS2AH250
		Red/Yellow	IP65	-	GS2AH255
630...1250	-	Grey/Black	IP65	-	GS2AH260
		Red/Yellow	IP65	-	GS2AH265

Handles for external left-hand side-mounted operators, padlockable and lockable in "O" position ⁽¹⁾

32...63	-	Grey/Black	IP 65	-	GS2AH310
		Red/Yellow	IP65	-	GS2AH320
100...400	-	Grey/Black	IP65	-	GS2AH330
		Red/Yellow	IP65	-	GS2AH340
630...1250	-	Grey/Black	IP65	-	GS2AH350
		Red/Yellow	IP65	-	GS2AH360

⁽¹⁾ Lockable with device **GS2AX1**, to be ordered separately.

⁽²⁾ Door interlock override by means of a tool.

⁽³⁾ The Test facility allows testing of the control circuits off-load, by using auxiliary contacts **GS1AM110**, **GS1AM101** or **GS1ANT00**. In the "Test" position, the enclosure door can be opened.

PB121455.eps



GS2AE5

PB121456.eps



GS2AE2 - GS2AE21

PB121457.tif



GS2AE8 - GS2AE81

Switch-disconnector fuses

Accessories for IEC and UL switch-disconnector fuses

Shafts for external operators

Switch rating A (CEI)	A (UL)	Shaft length mm	Shaft cross section mm	Reference
32	30 Compact	200	5 x 5	GS2AE82
		320	5 x 5	GS2AE8
		400	5 x 5	GS2AE81
50...400	30...400	200	10 x 10	GS2AE22
		320	10 x 10	GS2AE2
		400	10 x 10	GS2AE21
630...1250	600 and 800	200	12 x 12	GS2AE52
		320	12 x 12	GS2AE5
		40	12 x 12	GS2AE51

Terminal protection shrouds for upstream or downstream connector plates

Switch rating A (CEI)	A (UL)	Number of poles	Reference
50 and 63	30 Compact, 30...60 (3P)	3 or 4	(1)
100...160	100	3	GS1AP33
		4	GS1AP34
200...400	200	3	GS1AP43
		4	GS1AP44
-	400	3	GS1APU53
		4	GS1APU54
630...800	600 and 800	3	GS2AP73
		4	GS2AP64
1250	-	3	GS2AP83
		4	GS2AP84

Devices for locking fuse covers in "I" position (2)

Switch rating A	Fuse size	Number of poles	Reference
50	14 x 51	3 or 4	(3)
63	Size 00C	3 or 4	GS1AV1
100...160	22 x 58, Size 00	3 or 4	GS1AV2
160	Size 0	3	GS1AV33
250	Size 1	3	GS1AV53
		4	GS1AV54
400	Size 2	3	GS1AV73
		4	GS1AV74

Cage terminals for connection of bare cables (without lug)

Switch rating A	Number of poles	Reference
50 and 63	3 or 4	(4)
100...160	3	GS1AW33
	4	GS1AW34
200...250	3	GS1AW43
	4	GS1AW44

External handle locking device

Switch rating A	Description	Reference
32...1250	Device for RONIS EL11AP keylock (lock to be ordered separately).	GS2AX1

Flat mounting kit

Switch rating A	Description	Reference
50...400	The kit, for use with a front-mounted external handle, includes: <ul style="list-style-type: none"> ■ a 200 mm shaft, cross section 10 x 10 mm, ■ an adapter plate 	GS2ADL2

(1) For these ratings, the switch-disconnector fuses are fitted with terminal covers as standard.

(2) For NF C and DIN switch-disconnector fuses fitted with right-hand mounted direct operator.

(3) For this rating, switch-disconnector fuses are fitted with a cover locking device as standard.

(4) For these ratings, switch-disconnector fuses are fitted with cage terminals as standard.

Switch-
disconnect
fuses

TeSys Power

Switch-disconnector fuses

Product references

GS1AD010	GS1DDB3	GS2AH250	GS2J4
GS1AD10	GS1DDB4	GS2AH260	GS2JB3
GS1AE6	GS1DDU3	GS2AH310	GS2JB4
GS1AE7	GS1DU3	GS2AH320	GS2JG3
GS1AF	GS1FD3	GS2AH330	GS2JG4
GS1AF1	GS1FD4	GS2AH340	GS2JU3N
GS1AF23	GS1GD3	GS2AH350	GS2K3
GS1AF24	GS1GD4	GS2AH360	GS2K4
GS1AF33	GS1JD3	GS2AH36F	GS2KKG3
GS1AF34	GS1JD4	GS2AH410	GS2KG4
GS1AF43	GS1KD3	GS2AH420	GS2KK3
GS1AF44	GS1KD4	GS2AH430	GS2KK4
GS1AH01	GS1KKD3	GS2AH440	GS2KKG3
GS1AH02	GS1KKD4	GS2AH460F	GS2KKG4
GS1AH101	GS1LD3	GS2AH510	GS2L3
GS1AH102	GS1LD4	GS2AH515	GS2L4
GS1AH103	GS1LLD3	GS2AH520	GS2LB3
GS1AH110	GS1LLD4	GS2AH530	GS2LB4
GS1AH130	GS1ND3	GS2AH535	GS2LG3
GS1AH160	GS1ND4	GS2AH540	GS2LG4
GS1AH220	GS1QQD3	GS2AH550	GS2LL3
GS1AH440	GS1QQD4	GS2AH560	GS2LL4
GS1AM1	GS2AD030N	GS2AH570	GS2LLB3
GS1AM101	GS2AD040N	GS2AH580	GS2LLB4
GS1AM110	GS2AD20	GS2AH60F	GS2LLG3
GS1AM111	GS2ADL2	GS2AHT110	GS2LLG4
GS1AM2	GS2AE2	GS2AHT120	GS2MLU3N
GS1AM211	GS2AE21	GS2AHT130	GS2MMB3
GS1AN11	GS2AE22	GS2AHT140	GS2MMB4
GS1AN11G	GS2AE23	GS2AHT410	GS2MU3N
GS1AN22	GS2AE5	GS2AHT420	GS2N3
GS1AN22G	GS2AE51	GS2AHT430	GS2N4
GS1ANT11	GS2AE52	GS2AHT440	GS2NB3
GS1ANT22	GS2AE61	GS2AHT510	GS2NB4
GS1AP33	GS2AE8	GS2AHT520	GS2NG3
GS1AP34	GS2AE81	GS2AHT530	GS2NG4
GS1AP43	GS2AE82	GS2AHT540	GS2PPB3
GS1AP44	GS2AEH12	GS2AP43	GS2PPB4
GS1AP63	GS2AESB	GS2AP53	GS2QQ3
GS1AP83	GS2AF63	GS2AP64	GS2QQ4
GS1AV1	GS2AF64	GS2AP73	GS2QQB3
GS1AV2	GS2AF73	GS2AP83	GS2QQB4
GS1AV33	GS2AF74	GS2AP84	GS2QQG3
GS1AV54	GS2AH100TO200	GS2AX1	GS2QQG4
GS1AV73	GS2AH104	GS2DB3	GS2QU3N
GS1AW303	GS2AH106	GS2DB4	GS2S3
GS1AW306	GS2AH110	GS2EEU3	GS2S4
GS1AW33	GS2AH120	GS2EU3N	GS2SB3
GS1AW34	GS2AH130	GS2F3	GS2SB4
GS1AW403	GS2AH140	GS2F4	GS2SB3
GS1AW406	GS2AH150	GS2FG3	GS2SG4
GS1AW43	GS2AH160	GS2FG4	GS2SU3
GS1AW44	GS2AH170	GS2G3	GS2TB3
GS1AW503	GS2AH180	GS2G4	GS2TB4
GS1AW506	GS2AH210	GS2GB3	GS2TU3
GS1AW603	GS2AH215	GS2GB4	GS2V3
GS1AW606	GS2AH220	GS2GG3	GS2V4
GS1AW903	GS2AH230	GS2GG4	GS2VG3
GS1DD3	GS2AH235	GS2GU3N	LC1BL
GS1DD4	GS2AH240	GS2J3	

Switch-
disconnector
fuses

This document is current. Click on the product reference to get the most recent availability status (hyperlink to [se.com](https://www.se.com) product datasheet). If your product variant is no longer available, please consult your distributor or regional sales office.

Technical Data for Designers

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TeSys Power

Switch-disconnector fuses

Characteristics

IEC - For NFC / DIN fuses - From 32 to 1250 A

Switch-disconnector-fuse characteristics

Type		GS1DD	GS•F	GS•G	GS•J	
Environment						
Conforming to standards	Switch-disconnector fuses		IEC 60947-3			
	Fuses		IEC 60269-1 and 2			
Product certifications			ASEFA/LOVAG, LROS, UKCA			
Degree of protection conforming to IEC 60529	On front panel with terminal covers		IP 20			
Ambient air temperature around the device	Storage	°C	-40...+80			
	Operation	°C	-20...+70			
Flame resistance conforming to IEC 60695-2-1	Body	°C	960	960		
	Fuse cover	°C	–	850		
Pole characteristics						
Conventional thermal current (I _{th}) for ambient temperature ≤ 40 °C		A	32	50	63	100
Fuse size			10 x 38	14 x 51	T00C	22 x 58
Power dissipated per 1 pole		W	1.20	2.45	4.35	6.80
Maximum fuse dissipation allowed per 1 pole		W	2.90	4.60	6.00	9.00
Rated insulation voltage (U _i)		V	800	750	750	750
Rated impulse withstand voltage (U _{imp})		kV	8	8	8	8
Rated operational current (I _e)	Cat. AC-23A/B ⁽¹⁾ ~ 400 V	A	32	50	63	100
	~ 500 V	A	32	50	63	100
	~ 690 V	A	32	50	63	100 ⁽³⁾
	Cat. DC-23A/B ⁽¹⁾ ∴ 440 V ⁽²⁾	A	20	40	40	100
Rated operational power	Cat. AC-23A/B ⁽¹⁾ ~ 400 V	kW	15	25	30	51
	~ 500 V	kW	18.5	33	40	63
	~ 690 V	kW	25	45	55	90
Rated conditional short-circuit current	I _{rms} at ~ 400 V with protection by gG (gl) fuses	kA	100	100	100	100
	Rating of associated fuses	A	32	50	63	100
Peak value of permissible current (dynamic short-circuit withstand)	Conforming to ~ 400 V IEC 60269-1	kA	5.5	7.6	10.6	20
Rated making capacity	I _{rms} at 400 V Cat. AC-23B	A	320	500	630	1000
Rated breaking capacity	I _{rms} at 400 V Cat. AC-23B	A	256	400	500	800
Mechanical durability	Number of operating cycles		20000	10000	10000	10000
Electrical durability	Number of operating cycles cat. AC/DC-23A/B ⁽¹⁾		1500/300	1500/300	1500/300	1500/300
Cabling	Cable (c.s.a. min/max)	mm²	2.5/16	6/25	10/25	25/95
	Bars (max width)	mm	–	–	–	20
Tightening torque		N.m	3	3.2	3.2	12

(1) Category "A": frequent operating cycles, category "B": infrequent operating cycles.

(2) 2 poles in series per phase.

(3) With terminal covers.

(4) Poles not juxtaposed.

References:
pages B5/4 and B5/5

Dimensions:
pages B5/25 to B5/29

Schemes:
page B5/33

B5/18

Life Is On

Schneider
Electric

Ref.



Switch-disconnector fuses

	GS●K	GS●KK	GS●LL	GS●L	GS●N	GS●QQ	GS2S	GS2V
	IEC 60947-3							
	IEC 60269-1 and 2							
	ASEFA/LOVAG, LROS, UKCA							
	IP 20							
	-40...+80							
	-20...+70							
	960							
	850							
	125	125	160	160	250	400	630	1250
	22 x 58	T00	T00	T0	T1	T2	T3	T4
	8.63	6.00	10.40	10.40	19.00	24.40	61.00	154.00
	11.00	12.00	12.00	15.00	23.00	33.00	60.00	110.00
	750	750	750	750	750	800	1000	1000
	8	8	8	8	8	8	12	12
	125	125	160	160	250	400	630	1000
	125	125	160	160	250	315	500	800
	100 ⁽³⁾	100 ⁽³⁾	125 ⁽³⁾	125 ⁽³⁾	250 ⁽³⁾	250/315	315/400	630
	100	100	125	125	200	200/315 ⁽⁴⁾	400/630 ⁽⁴⁾	1000
	63	63	80	80	132	220	355	560
	90	90	110	110	160	220	355	560
	80	80	110	110	220	220/295	295/400	400/475
	100	100	100 (50)	100	100	50	100	100
	125	125	125 (160)	160	250	400	630	1250
	20	20	22.7	20	32.5	40	70	90
	1250	1250	1600	1600	2500	4000	6300	10 000
	1000	1000	1280	1280	2000	3200	5040	8000
	10000	10000	10000	10000	10000	10000	8000	5000
	1000/200	1000/200	1000/200	1000/200	1000/200	1000/200	1000/200	500/100
	35/95	35/95	50/95	50/95	95/240	185/240	2 x 150 / 2 x 300	- / 4 x 185
	20	20	20	20	32	45	63	80
	12	12	12	12	25	25	44	44

Ref.



Switch-disconnector fuses

TeSys Power

Switch-disconnector fuses

Characteristics

IEC - For BS fuses - From 32 to 1250 A

Switch-disconnector-fuse characteristics

Type		GS1DDB	GS2DB	GS2GB	GS2JB	
Environment						
Conforming to standards	Switch-disconnector fuses		IEC 60947-3			
	Fuses		IEC 60269-1 and 2			
Product certifications			ASEFA/LOVAG, LROS, UKCA			
Degree of protection conforming to IEC 60529	On Front panel, with terminal covers		IP 20			
Ambient air temperature around the device	Storage	°C	-40...+80			
	Operation	°C	-20...+70			
Flame resistance conforming to IEC 60695-2-1	Body	°C	960			
	Fuse cover	°C	-		850	
Pole characteristics						
Conventional thermal current (I _{th}) for ambient temperature ≤ 40 °C		A	32	32	63	100
Fuse size			A1	A1	A2-A3	A4 Ø ≤ 31 mm
Power dissipated per 1 pole		W	1.20	1.20	4.35	3.70
Maximum fuse dissipation allowed per 1 pole		W	3.10	3.10	3.80	8.60
Rated insulation voltage (U _i)		V	800	750	750	750
Rated impulse withstand voltage (U _{imp})		kV	8	8	8	8
Rated operational current (I _e)	Cat. AC-23A/B ⁽¹⁾ ~ 400 V	A	32	32	63	100
	~ 500 V	A	32	32	63	100
	~ 690 V	A	32	32	63	100 ⁽⁴⁾
	Cat. DC-23A/B ⁽¹⁾ --- 440 V ⁽²⁾	A	20	20	40	100
Rated operational power	Cat. AC-23A/B ⁽¹⁾ ~ 400 V	kW	15	15	30	51
	~ 500 V	kW	18.5	18.5	40	63
	~ 690 V	kW	25	25	55	90
Rated conditional short-circuit current	I _{rms} at ~ 400 V with protection by gG (gl) fuses	kA	80	80	80	80
	Rating of associated fuses	A	32	32	63	100
Peak value of permissible current (dynamic short-circuit withstand)	Conforming to ~ 400 V IEC 60269-1	kA	5.5	9	10.6	20
Rated making capacity	I _{rms} at 400 V Cat. AC-23B	A	320	320	630	1000
Rated breaking capacity	I _{rms} at 400 V Cat. AC-23B	A	256	256	500	800
Mechanical durability	Number of operating cycles		20000	10000	10000	10000
Electrical durability	Number of operating cycles cat. AC/DC-23A/B ⁽¹⁾		1500/300	1500/300	1500/300	1500/300
Cabling	Cable (c.s.a. min/max)	mm²	2.5/16	6/25	10/25	25/95
	Bars (max width)	mm	-	-	-	20
Tightening torque		N.m	3	3.2	3.2	12

(1) Category "A": frequent operating cycles, category "B": infrequent operating cycles.

(2) 2 poles in series per phase.

(3) Fit switch-disconnector fuses **GS2LB** with B1 or B2 fuses and **GS2LLB** with A4 fuses.

(4) With terminal covers.

(5) Poles not juxtaposed.

	GS2LB or LLB ⁽³⁾	GS2MMB	GS2NB	GS2PPB	GS2QQB	GS2SB	GS2TB	GS2VB
	IEC 60947-3							
	IEC 60269-1 and 2							
	ASEFA/LOVAG, LROS, UKCA							
	IP 20							
	-40...+80							
	-20...+70							
	960							
	850							
	160	200	250	315	400	630	800	1250
	B1-B2 or A4 ⁽³⁾	B1-B2	B1...B3	B1...B3	B1...B4	C1-C2	C1...C3	D1
	11.20 or 9.70	8.80	13.80	17.00	24.40	61.00	68.00	154.00
	13.40 or 15.30	14.30	19.70	29.60	29.60	55.00	70.00	100.00
	750	750	750	800	800	1000	1000	1000
	8	8	8	8	8	12	12	12
	160	200	250	315	400	630	800	1000
	160	200	250	315	315	500	630	800
	125 ⁽⁴⁾	200/160 ⁽⁴⁾	250 ⁽⁴⁾	250/315 ⁽⁴⁾	250/315	315/400	630	630
	125	200	200	200	200/315 ⁽⁵⁾	400/630 ⁽⁵⁾	800	1000
	80	100	132	150	220	355	450	560
	110	140	160	220	220	355	450	560
	110	150/185	220	220/295	220/295	295/400	400	400/475
	80	80	80	80	50	80	80	80
	160	200	250	315	400	630	800	1250
	22.7	32.5	32.5	40	40	70	80	90
	1600	2000	2500	3150	4000	6300	8000	10 000
	1280	1600	2000	2520	3200	5040	6400	8000
	10000	10000	10000	10000	10000	8000	8000	5000
	1000/200	1000/200	1000/200	1000/200	1000/200	1000/200	500/100	500/100
	50/95	95/240	95/240	185/240	185/240	2 x 150 / 2 x 300	2 x 185 / 2 x 300	- / 4 x 185
	20	32	32	45	45	63	63	80
	12	25	25	25	25	44	44	44

Ref.



Switch-disconnector fuses

TeSys Power

Switch-disconnector fuses

Characteristics

UL, CSA, IEC - For CC and J fuses - From 32 to 800 A

Switch-disconnector-fuse characteristics			GS1DDU3	GS1DU3	GS2EEU3	GS2EU3N	
Type							
Environment							
Conforming to standards	Switch-disconnector fuses		UL 489, CSA 22.2 n°5, IEC 60947-3		UL 98, UL 248, CSA 22.2 n°4, IEC 60947-3		
	Fuses		UL 248				
Degree of protection conforming to IEC 60529	With terminal covers		IP 20				
Ambient air temperature around the device	Storage	°C	-40...+80				
	Operation	°C	-20...+70				
Flame resistance conforming to IEC 60695-2-1	Body	°C	960	960	960		
	Fuse cover	°C	-	-	850		
Pole characteristics							
Conventional thermal current (I _{th}) for ambient temperature ≤ 40 °C		A	30	30	30	30	
Fuse size			CC	J	CC	J	
Rated insulation voltage (U _i)		V	800	800	750	750	
Rated impulse withstand voltage (U _{imp})		kV	8	8	8	8	
Rated operational current (I _e)	Cat. AC-23A/B ⁽¹⁾ ~ 400 V	A	32	32	32	32	
	~ 500 V	A	32	32	32	32	
	~ 690 V	A	32	32	32	32	
Rated operational power	Cat. AC-23A/B ⁽¹⁾ ~ 400 V	kW	15	15	15	15	
	~ 500 V	kW	18.5	18.5	18.5	18.5	
	~ 690 V	kW	25	25	25	25	
Prospective short-circuit current withstand	Conforming to UL 98 / UL 489	~ 600 V	kA	100	100	200	200
Peak value of permissible current (dynamic short-circuit withstand)	Conforming to IEC 60269-1	~ 400 V	kA	5.5	5.5	7.6	17.6
Rated making capacity	I _{rms} at 400 V Cat. AC-23B		A	300	300	300	300
Rated breaking capacity	I _{rms} at 400 V Cat. AC-23B		A	240	240	240	240
Mechanical durability	Number of operating cycles			10000	10000	10000	10000
Electrical durability	Number of operating cycles Cat. AC/DC-23A/B ⁽¹⁾			1500/300	1500/300	1500/300	1500/300
Cabling	Cable (c.s.a. min/max)	mm²	2.5/6	2.5/6	2.5/6	2.5/16	
		AWG	#14/#10	#14/#10	#14/#10	#14/#6	
	Bars (max width)	mm	-	-	-	-	
Tightening torque		N.m	3 (for wire)	4 (for wire)	5.5 (for wire)	3.5 (for wire)	
		lb-in	27	27	48	31	

(1) Category "A": frequent operating cycles, category "B": infrequent operating cycles.

	GS2GU3N	GS2JU3N	GS2MU3N	GS2QU3N	GS2SU3	GS2TU3
	UL 98, CSA 22.2 n°4, IEC 60947-3					
	UL 248					
	IP 20					
	-40...+80					
	-20...+70					
	960					
	850					
	60	100	200	400	600	800
	J	J	J	J	J	L
	750	750	750	800	1000	1000
	8	8	8	8	12	12
	63	100	200	400	630	800
	63	100	200	315	630	630
	63	100	200	250	630	630
	30	51	100	220	355	450
	40	63	140	220	450	560
	55	90	185	220	600	600
	100	200	200	200	200	200
	17.6	22	32	36	80	80
	600	1000	2000	4000	6000	8000
	480	800	1600	3200	4800	6400
	10000	10000	8000	6000	5000	5000
	1500/300	1500/300	1000/200	1000/200	1000/200	500/100
	2.5/16	4/50	16/150	25/300	2 x 150	-
	#14/#6	#12/#1	#6/300 Kcmil	#4/600 Kcmil	#2/600 Kcmil	-
	-	20	32	45	100	100
	3.5 (for wire)	4 (for wire)	18 (for lug)	35 (for lug)	35 (for lug)	35 (for lug)
	31	35.4	160	310	310	310

Ref.

Switch-
disconnector
fuses

TeSys Power

Switch-disconnector fuses

Characteristics

Auxiliary contacts

GS1AM11, GS1AM1 and GS1AM2 early break and signalling contact characteristics

Conventional thermal current (I _{th}) for ambient temperature ≤ 40 °C		A	16
Rated operational current (I _e)	Cat. AC-15	A	127 V: 5 - 230 V: 4 - 400 /415 V: 3 - 440 V: 2
	Cat. DC-13	A	24 V: 12 - 48 V: 2 - 110 V: 0.6 - 220 V: 0.4
Durability	Number of operating cycles		Mechanical: 1000000 Electrical: cat. AC-15: 30000
Fuse protection	gG	A	6 max
Cabling		mm	Faston connectors: 1 x 6.35 or 2 x 2.8

GS1AN and GS1ANT signalling contact characteristics

Conventional thermal current (I _{th}) for ambient temperature ≤ 40 °C		A	20
Rated operational current (I _e)	Cat. AC-15	A	127 V: 12 - 230 V: 10 - 400/415 V: 8 - 440 V: 6
	Cat. DC-13	A	48 V: 4 - 110 V: 1.2 - 220 V: 1
Durability	Number of operating cycles		Mechanical: 30000 Electrical: cat. AC-15: 30000
Fuse protection	gG	A	16 max
Cabling	Cable (c.s.a. min/max)	mm²	Min: 1.5 - max: 10

GS1AM110 and GS1AM101 early break and signalling contact characteristics

Conventional thermal current (I _{th}) for ambient temperature ≤ 40 °C		A	10
Rated operational current (I _e)	Cat. AC-15	A	120 V: 6 - 240 V: 3 - 400 V: 1.8 - 480 V: 1.5
	Cat. DC-13	A	24 V: 2.8 - 48 V: 1.4 - 125 V: 0.55 - 250 V: 0.27 - 400 V: 0.15
Durability	Number of operating cycles		Mechanical: 5000000 Electrical: cat. AC-15: 1000000
Cabling	Cable (c.s.a. min/max)	mm²	Min: 1 x 0.22 - max: 2 x 2.5

GS1AF "blown fuse" signalling contact characteristics

Conventional thermal current (I _{th}) for ambient temperature ≤ 40 °C		A	16
Rated operational current (I _e)	Cat. AC-15	A	230 V: 4 - 400 V: 3
	Cat. DC-13	A	24 V: 12 - 48 V: 2 - 110 V: 0.6 - 220 V: 0.4
Durability	Number of operating cycles		Mechanical: 30000 Electrical: cat. AC-15: 30000
Cabling		mm	Faston connectors: 1 x 6.35

Ref.



Switch-disconnector fuses

TeSys Power

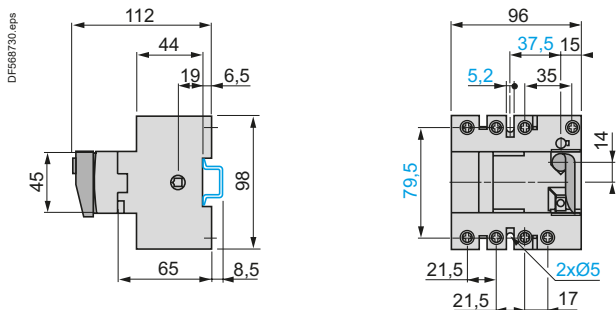
Switch-disconnector fuses

Dimensions

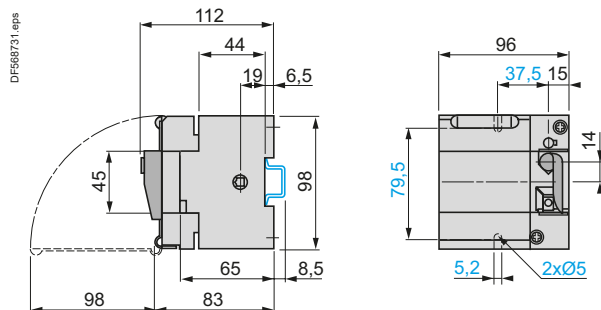
IEC - GS1●● (32 A) Switch-disconnector-fuse

Direct front-mounted operator

GS1DD

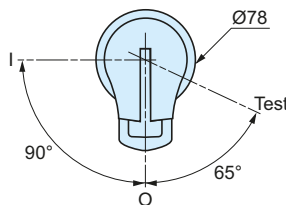
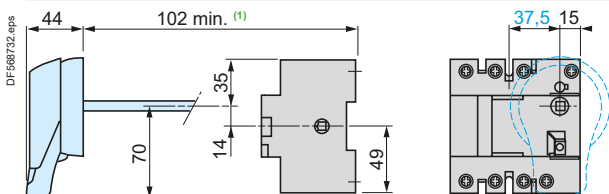


GS1DDB

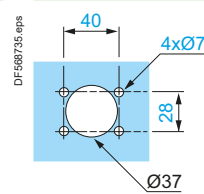


External front-mounted operator

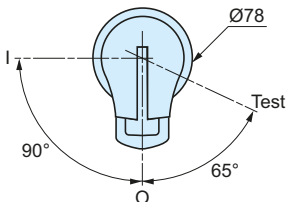
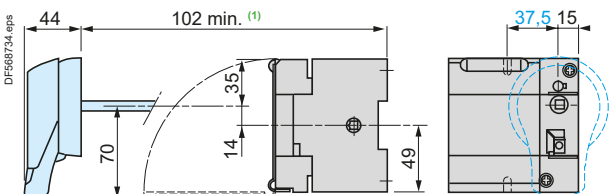
GS1DD



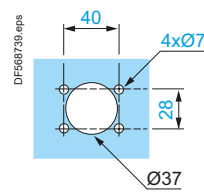
Door cut-out



GS1DDB



Door cut-out

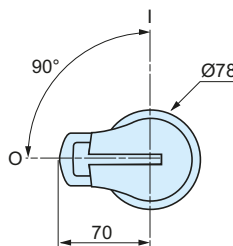
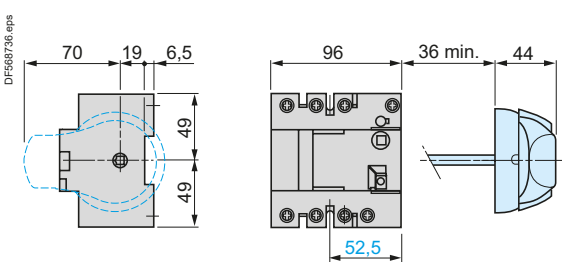


(1) With 1 or 2 auxiliary contacts GS1AM1●●: 130 mm.

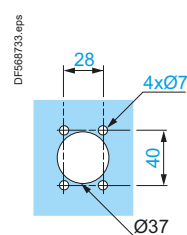
(2) With 3 or 4 auxiliary contacts GS1AM1●●: 155 mm.

External right-hand side-mounted operator

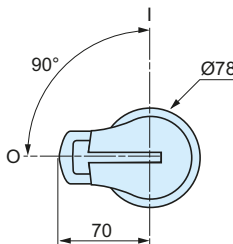
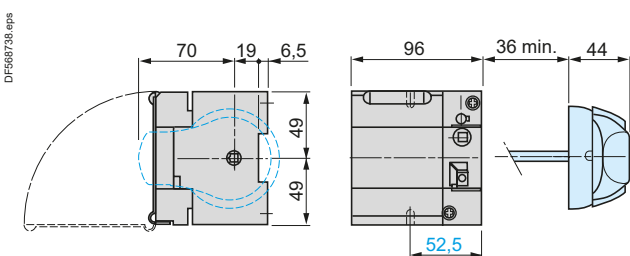
GS1DD



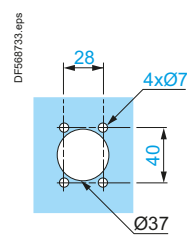
Door cut-out



GS1DDB



Door cut-out



TeSys Power

Switch-disconnector fuses

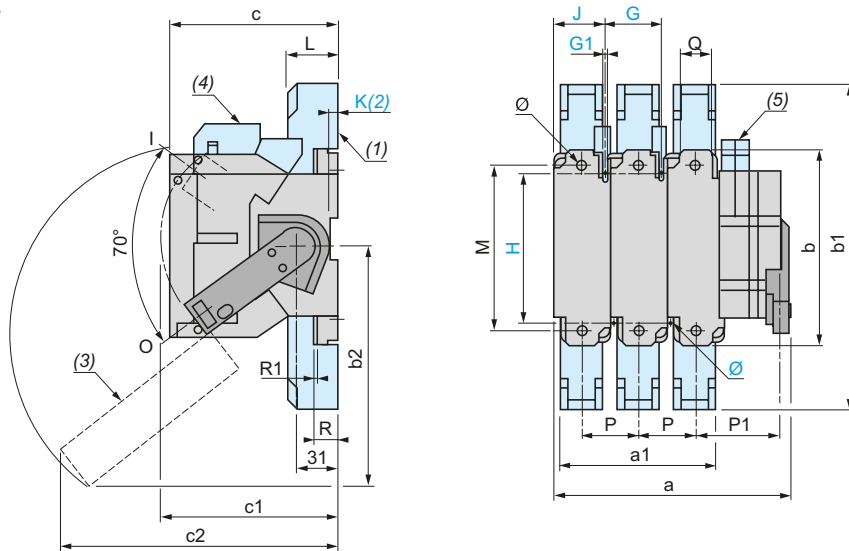
Dimensions

IEC - GS1●● (50...400 A) Switch-disconnector-fuse

Direct right-hand side-mounted operator

GS1FD (50 A), GD (63 A), JD (100 A), KD, KKD (125 A), LD, LLD (160 A), ND (250 A) and QQD (400 A)

DF538732.eps



Ref.



Switch-disconnector fuses

GS1		a	a1	b	b1	b2	c	c1	c2	G	G1	H	J	K	Ø	L	M	P	P1	Q	R	R1	Ø
FD	3P	118	-	118	-	-	87	134	-	27	5.4	106	31	6.5	5	-	-	27	33.5	-	-	-	-
	4P	145	-	118	-	-	87	134	-	27	5.4	106	31	6.5	5	-	-	27	33.5	-	-	-	-
GD	3P	133	-	118	-	159	116.5	134	145	32	5.4	106	36	6.5	5	-	-	32	36	-	-	-	-
	4P	165	-	118	-	159	116.5	134	145	32	5.4	106	36	6.5	5	-	-	32	36	-	-	-	-
JD, KD	3P	150	108	162	268	-	116	173	-	36	5.4	127	40	-	5	44	141	36	38	20	19.5	2.5	8.5
	4P	186	144	162	268	-	116	173	-	36	5.4	127	40	-	5	44	141	36	38	20	19.5	2.5	8.5
KKD, LLD	3P	150	108	162	268	141	126.5	173	193	36	5.4	127	40	-	5	44	141	36	38	20	19.5	2.5	8.5
	4P	186	144	162	268	141	126.5	173	193	36	5.4	127	40	-	5	44	141	36	38	20	19.5	2.5	8.5
LD	3P	192	136	162	268	174	136.5	173	229	50	5.4	140	54	-	5	44	141	50	45	20	19.5	2.5	8.5
	4P	242	172	162	268	174	136.5	173	229	50	5.4	140	54	-	5	44	141	50	45	20	19.5	2.5	8.5
ND	3P	253	180	195	345	185	146	173	251	60	6.4	162	64	-	6	65	166	60	81	32	19.5	2.5	11
	4P	313	240	195	345	185	146	173	251	60	6.4	162	64	-	6	65	166	60	81	32	19.5	2.5	11
QQD	3P	271	192	205	355	200	149	173	260	66	6.4	172	70	-	6	65	175	66	86	50	20	3	11
	4P	337	258	205	355	200	149	173	260	66	6.4	172	70	-	6	65	175	66	86	50	20	3	11

(1) Terminal cover.

(2) Mounting on rail only for GS1FD and GS1GD (50 and 63 A).

(3) Protective screen, lockable in I position.

(4) 1 or 2 auxiliary contacts GS1AF●●.

(5) 1 or 2 auxiliary contacts GS1AM●.

TeSys Power

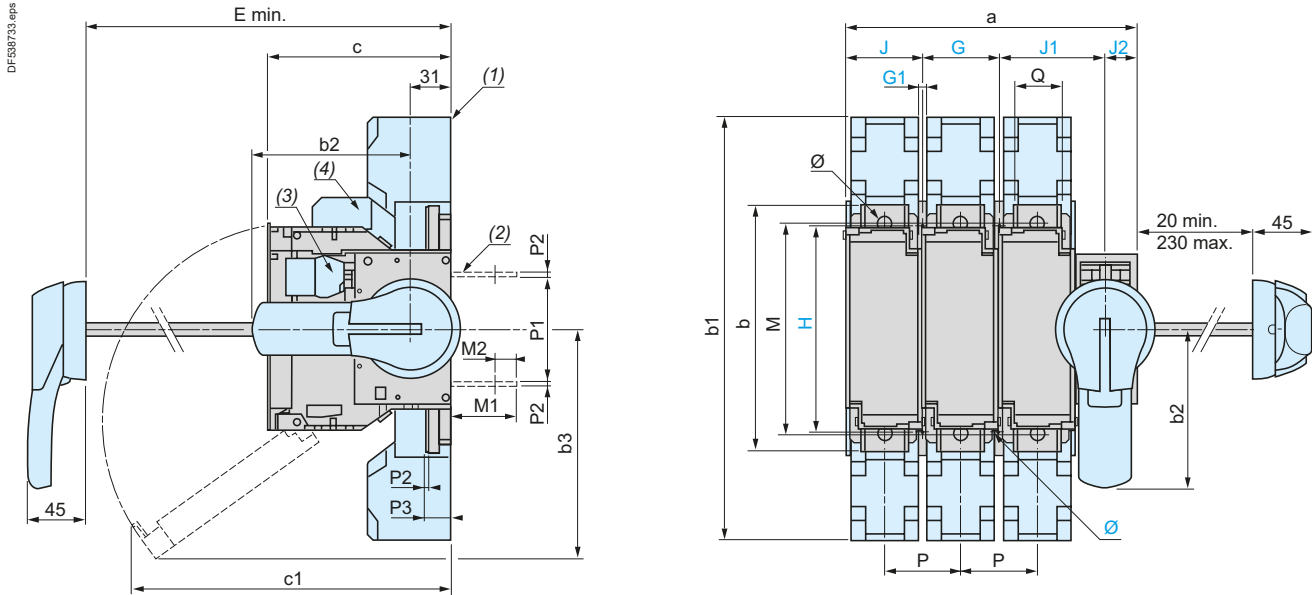
Switch-disconnector fuses

Dimensions

IEC - GS2●● (32...400 A) Switch-disconnector-fuse

External front and right-hand side-mounted operator

GS2DB (32 A), F (50 A), G, GB, JB (63 A), J (100 A), K, KK (125 A), L, LL, LB, LLB (160 A), MMB (200 A), N, NB (250 A), PPB (315 A), QQ and QQB (400 A)

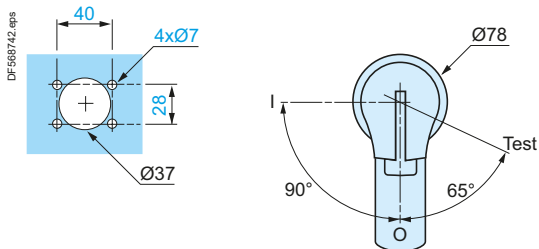


GS2	a	b	b1	b2	b3	c	c1	E min.	G	G1	H	J	J1	J2	Ø	M	M1	M2	P	P1	P2	P3	Q	Ø	
F, DB	3P	121	118	-	70	85	87 ⁽⁵⁾	153	100 ⁽⁵⁾	27	5.4	106	31	45	18	5	-	15	6	27	59	2	-	12	-
	4P	148	118	-	70	85	87 ⁽⁵⁾	153	100 ⁽⁵⁾	27	5.4	106	31	45	18	5	-	15	6	27	59	2	-	12	-
G, GB	3P	136	118	-	70	159	116.5 ⁽⁶⁾	145	125	32	5.4	106	36	50	18	5	-	15	6	32	59	2	-	12	-
	4P	168	118	-	70	159	116.5 ⁽⁶⁾	145	125	32	5.4	106	36	50	18	5	-	15	6	32	59	2	-	12	-
J, JB, K	3P	148	162	268	125	141	116 ⁽⁶⁾	187	135	36	5.4	127	40	54	18	5	141	41	8	36	62	2.5	19.5	20	8.5
	4P	184	162	268	125	141	116 ⁽⁶⁾	187	135	36	5.4	127	40	54	18	5	141	41	8	36	62	2.5	19.5	20	8.5
KK, LL	3P	148	162	268	125	141	126.5 ⁽⁶⁾	193	135	36	5.4	127	40	54	18	5	141	41	8	36	62	2.5	19.5	20	8.5
	4P	184	162	268	125	141	126.5 ⁽⁶⁾	193	135	36	5.4	127	40	54	18	5	141	41	8	36	62	2.5	19.5	20	8.5
L, LB, LLB	3P	190	162	268	125	174	136.5	229	145	50	5.4	140	54	64	18	5	141	41	8	50	62	2.5	19.5	20	8.5
	4P	240	162	268	125	174	136.5	229	145	50	5.4	140	54	64	18	5	141	41	8	50	62	2.5	19.5	20	8.5
MMB, NB, N	3P	234	195	345	125	185	146	251	154	60	6.4	162	64	86	25	6	166	52	17	60	84	2.5	19.5	32	11
	4P	294	195	345	125	185	146	251	154	60	6.4	162	64	86	25	6	166	52	17	60	84	2.5	19.5	32	11
PPB, QQB, QQ	3P	252	205	355	125	200	149	260	157	66	6.4	172	70	91	25	6	175	54	14.5	66	84	3	20	50	11
4P	318	205	355	125	200	149	260	157	66	6.4	172	70	91	25	6	175	54	14.5	66	84	3	20	50	11	

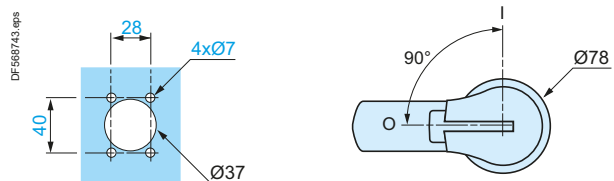
- (1) Terminal cover.
- (2) Rear access connector plates (option).
- (3) 1 to 8 auxiliary contacts GS1AM1●●.
- (4) 1 or 2 auxiliary contacts GS1AF●●.
- (5) 1 auxiliary contact GS1AM1●●: + 23.5 mm, 2 auxiliary contacts GS1AM1●●: + 47 mm.
- (6) 132 mm with 2 auxiliary contacts GS1AM1●●.

Door cut-out

For external front-mounted operator



For external right-hand side-mounted operator



TeSys Power

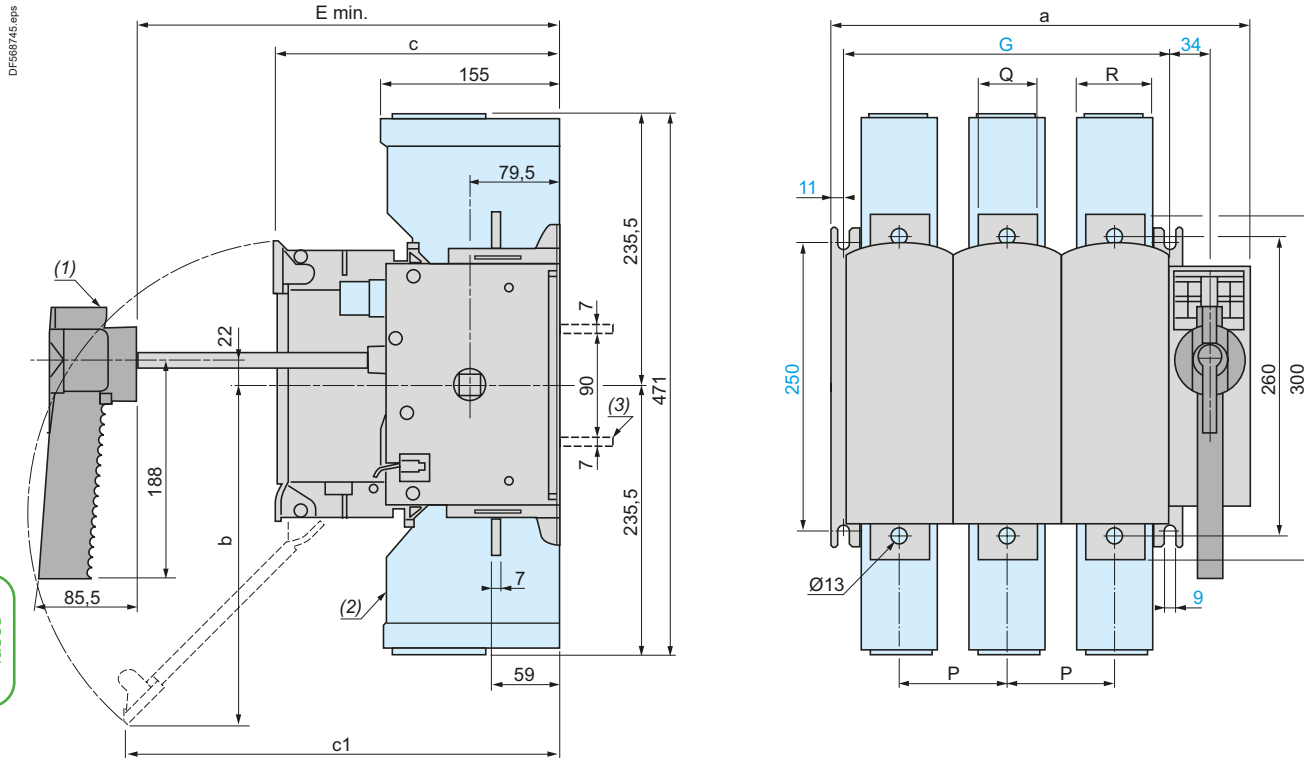
Switch-disconnector fuses

Dimensions

IEC - GS2●● (630...1250 A) Switch-disconnector-fuse

Direct front-mounted operator

GS2S, SB (630 A), TB (800 A), V and VB (1250 A)

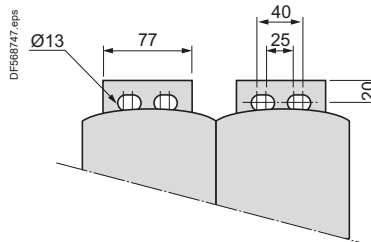
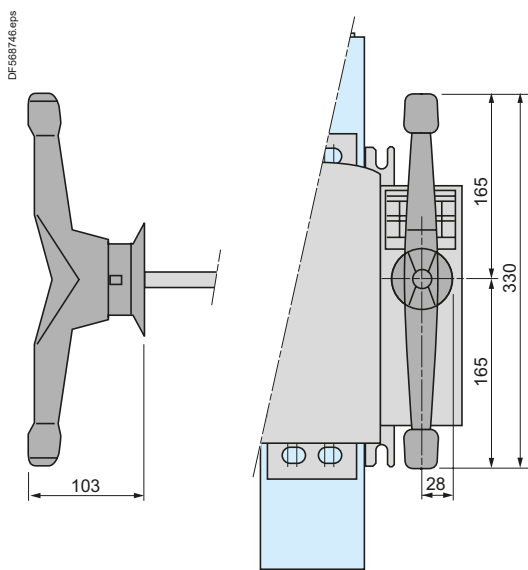


GS2		a	b	c	c1	E min.	G	P	Q	R
S, SB, TB	3P	364	300	250	380	265	284	94	51	65
	4P	458	300	250	380	265	378	94	51	65
V, VB	3P	442	355	289	295	304	362	120	77	88
	4P	562	355	289	295	304	482	120	77	88

- (1) Handle GS2AH104 for GS2S, GS2SB and GS2TB.
- (2) Terminal cover.
- (3) Rear access connector plates (GS2V and GS2VB).

Handle GS2AH105 for GS2V and GS2VB
(direct front-mounted operator)

Connector plates for GS2V and GS2VB



TeSys Power

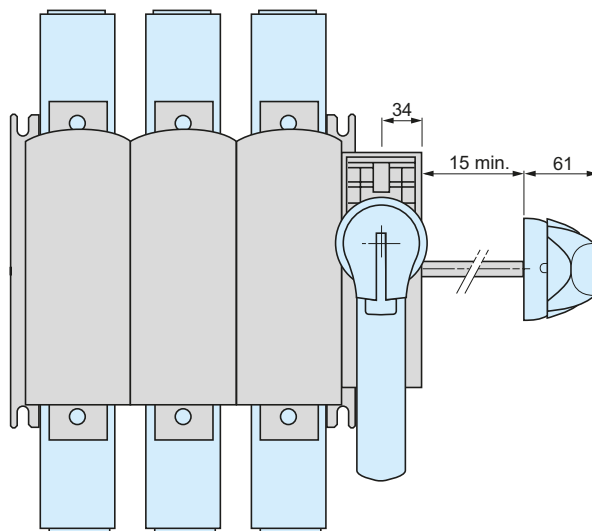
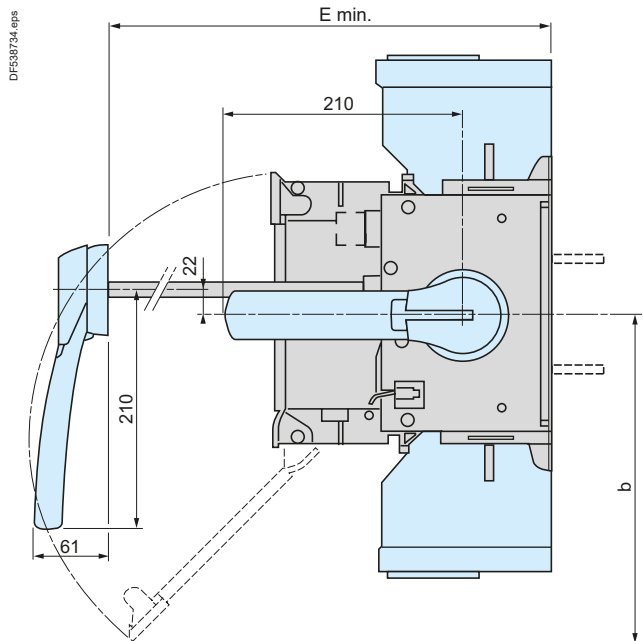
Switch-disconnector fuses

Dimensions

IEC - GS2●● (630...1250 A) Switch-disconnector-fuse

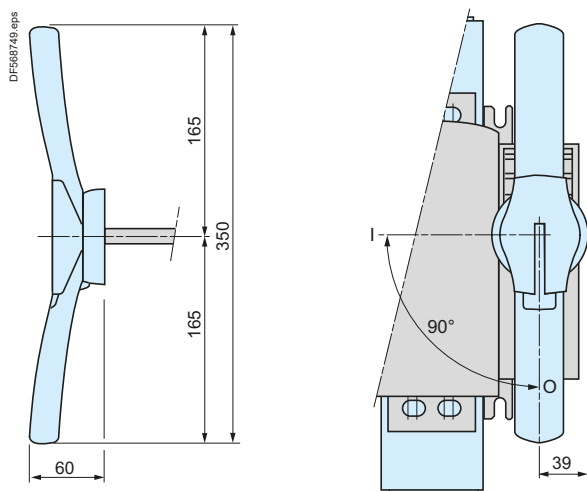
External front and right-hand side-mounted operator

GS2S, SB (630 A), TB (800 A), V and VB (1250 A)



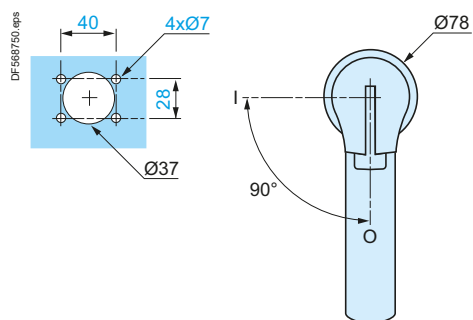
Handle GS2AH570 or GS2AH580 for GS2V and GS2VB (external front-mounted operator)

GS2		b	E min.
S, SB, TB	3P	297	265
	4P	297	265
V, VB	3P	350	304
	4P	350	304

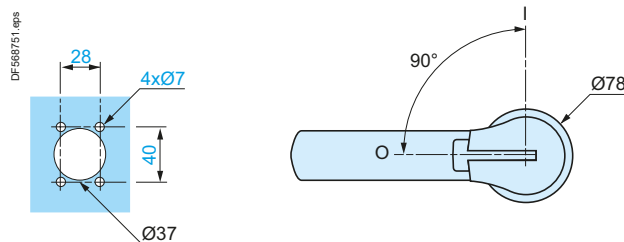


Door cut-out

For external front-mounted operator



For external right-hand side-mounted operator



References:
page B5/5

Characteristics:
pages B5/19 to B5/21

Schemes:
page B5/33

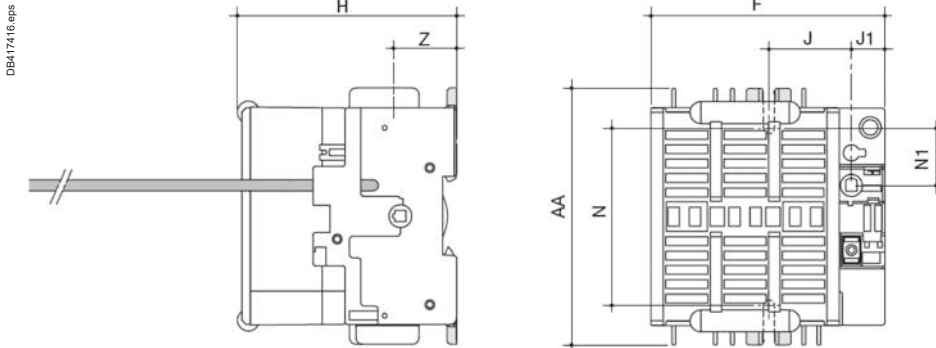
TeSys Power

Switch-disconnector fuses

Dimensions

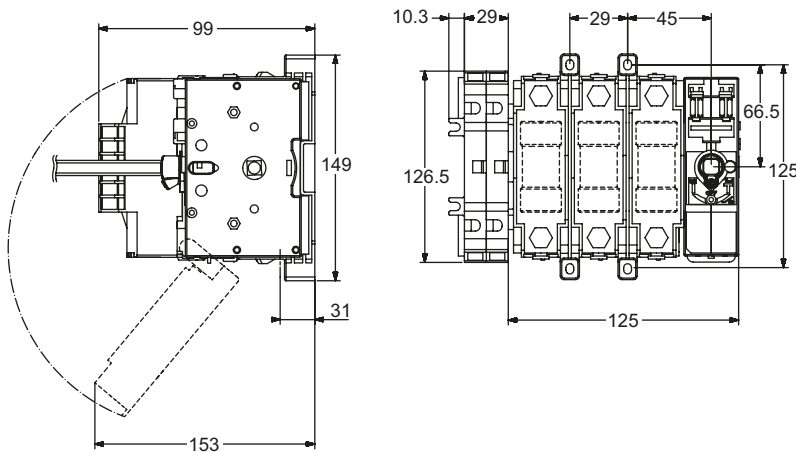
UL, CSA, IEC - GS1●● GS2●● Switch-disconnector fuses (30 and 60 A)

GS1DU3 (30 A) class CC fuses, GS1DDU3 (30 A) class J fuses

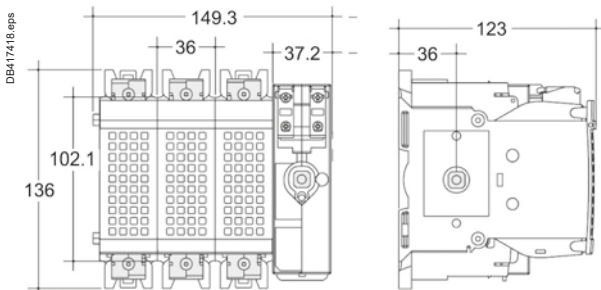


Rating	F	H	J	J1	N	N1	AA	Z
30 / CC	96	83.5	37.5	15	79.5	25.5	116	28.5
30 / J	105	99	37.5	15	79.5	25.5	116	28.5

GS2EU3 (30 A) class CC fuses



GS2EU3N, GS2GU3N (60 A) class J fuses



Accessories

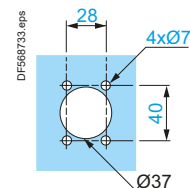
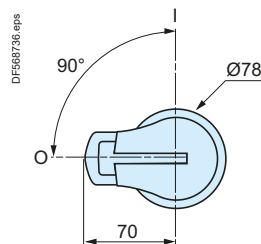
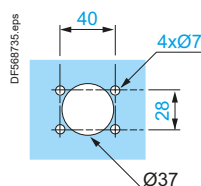
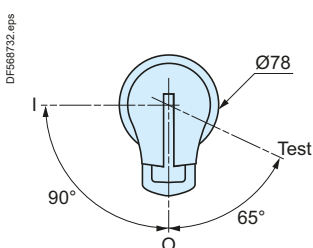
Handle for 30 and 60 A switch-disconnector fuses

External front handle

Door cut-out

External side handle

Door cut-out



References:
pages B5/8 and B5/9

Characteristics:
pages B5/22 and B5/23

Schemes:
page B5/33

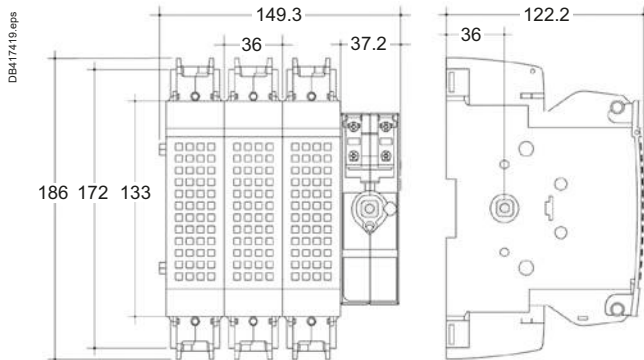
TeSys Power

Switch-disconnector fuses

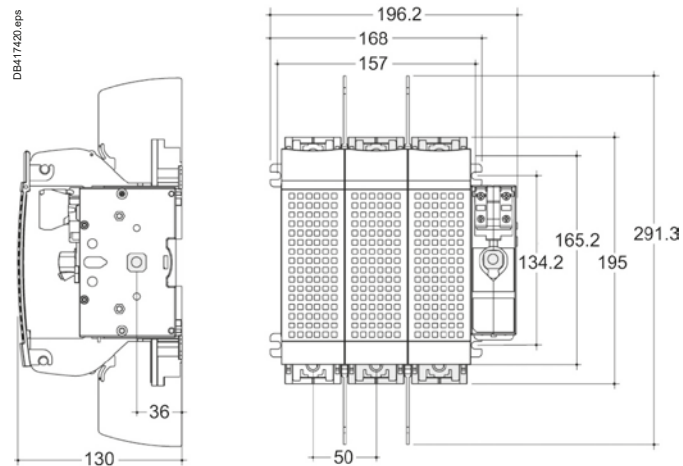
Dimensions

UL, CSA, IEC - GS2●● Switch-disconnector fuses (100 and 400 A)

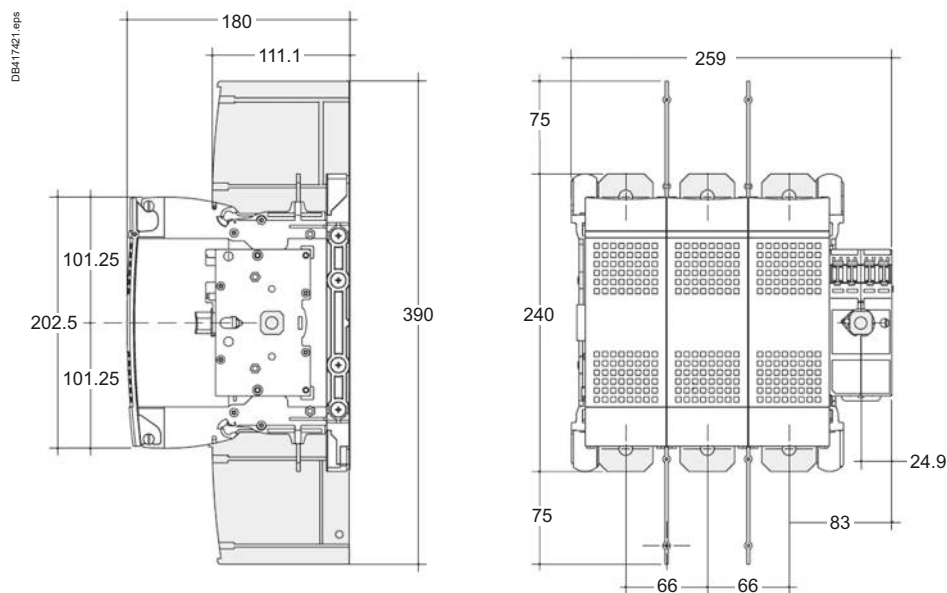
GS2JU3N (100 A) class J fuses



GS2MU3N (200 A) class J fuses



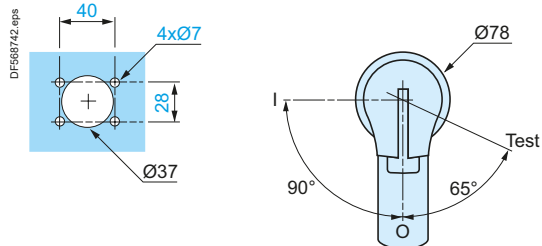
GS2QU3N (400 A) class CC fuses



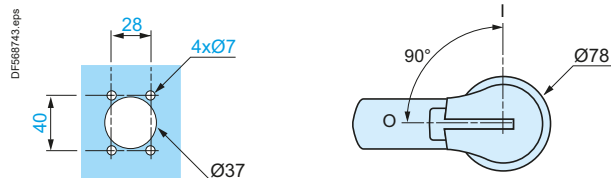
Accessories

Handle for 100, 200 and 400 A switch-disconnector fuses

For external front-mounted operator



For external right-hand side-mounted operator



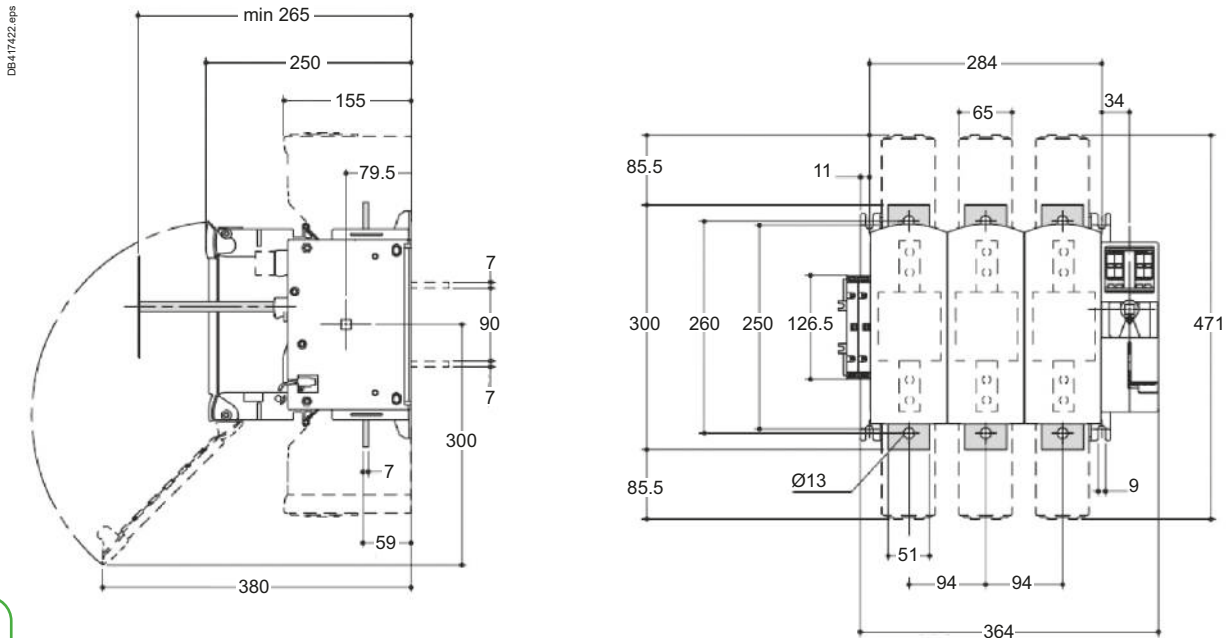
TeSys Power

Switch-disconnector fuses

Dimensions

UL, CSA, IEC - GS2●● Switch-disconnector fuses (600 and 800 A)

GS2SU3 (600 A), GS2TU3 (800 A) class J fuses



Ref.



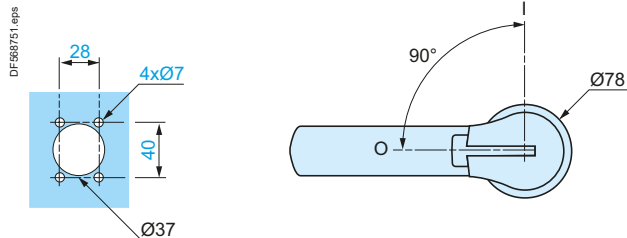
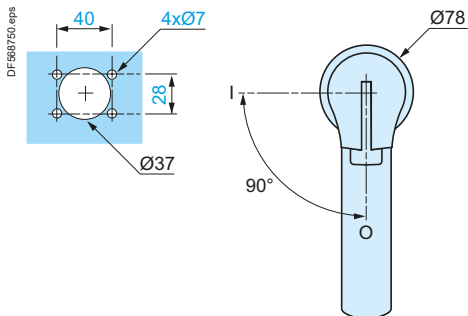
Switch-disconnector fuses

Accessories

Handle for 600 and 800 A switch-disconnector fuses

For external front-mounted operator

For external right-hand side-mounted operator



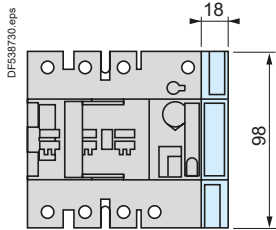
TeSys Power

Switch-disconnector fuses

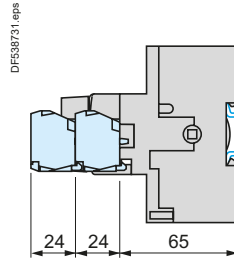
Dimensions, schemes

Auxiliary contacts

GS1AM111, GS1AM211

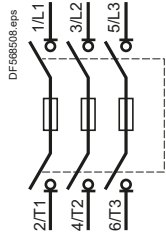


GS1AM110, GS1AM101

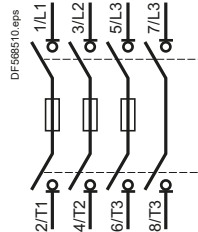


Schemes

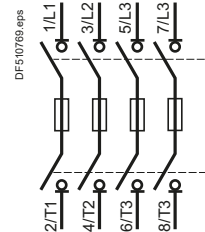
3-pole GS
32 to 1250 A



4-pole GS
32 A



50 to 1250 A



Auxiliary contacts

GS1AM110
1 N/O



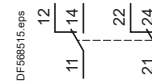
GS1AM101
1 N/C



GS1AM111 and GS1AM1
1 C/O



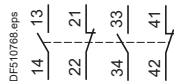
GS1AM211 and GS1AM2
2 C/O



GS1AN●●
1 N/C + 1 N/O



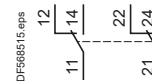
2 N/C + 2 N/O



GS1AF●
1 C/O



2 C/O



Switch-
disconnecter
fuses

TeSys Power - Deca, Giga Motor circuit breakers		
Type of product	Range (400/415 V AC)	Pages
Introduction		B6/3
TeSys Deca Frame 2 - Motor circuit breakers Magnetic, Thermal magnetic (Product ref. GV2L, GV2LE, GV2P, GV2ME)	0.06 or 15 kW	 B6/11
TeSys Deca Frame 2 - Motor circuit breakers Thermal magnetic - delayed tripping - For high current peak motors or 3-phase transformers (Product ref. GV2RT)	0.09 or 11 kW	 B6/18
Add-on blocks, accessories (for TeSys Deca Frame 2 circuit breakers)		
TeSys Deca Frame 3 - Motor circuit breakers Magnetic, Thermal magnetic (Product ref. GV3L, GV3P)	5.5 to 45 kW	 B6/25
Add-on blocks, accessories (for TeSys Deca Frame 3 circuit breakers)		
TeSys Deca Frame 4 - Motor circuit breakers Magnetic, Thermal magnetic (Product ref. GV4L, GV4LE, GV4P, GV4PE, GV4PEM, GV4PB)	0.25 to 55 kW 1/2 to 60 HP	 B6/31
Add-on blocks, accessories (for TeSys Deca Frame 4 circuit breakers)		
TeSys Giga Frame 5, 6 - Motor circuit breakers Thermal magnetic (Product ref. GV5P, GV6P)	55 to 250 kW	 B6/49
Add-on blocks, accessories (for TeSys Giga Frame 5, 6 circuit breakers)		
PowerLogic™ Energy measurement solutions		
PowerTag Energy sensors can be used with TeSys Deca, Giga motor circuit breakers		 B6/58
PowerTag Energy Link Modbus TCP/IP concentrator for PowerTag Energy sensors		 B6/62
TeSys Power - Modular circuit breakers for auxiliary circuits		
Modular circuit breakers Thermal magnetic (Product ref. GB)	0.5 to 20 A	 B6/63

Motor
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TeSys Power

Deca, Giga Motor circuit breakers

Introduction

Circuit breakers for motor protection and control

Deca, Giga motor circuit breakers provide compact, reliable and efficient solutions for:

- isolation,
 - protection against short circuits and overloads,
 - On-Off manual control of motors from 0.06 to 250 kW.
- They are conforming to, depending of the versions, IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1 and UL 60497-4-1, CSA 22.2 n° 60497-4-1.

Deca, Giga protection technologies

Deca, Giga circuit breakers are carried with 3 variants:

- Magnetic detection: product references GV2LE, GV2L, GV3L, GV4L, GV4LE for protection against short-circuit.
- Thermal-magnetic: product references GV2ME ⁽¹⁾, GV2P, GV3P, GV4P, GV4PE, GV5, GV6 for protection against short-circuits, overload, phase loss and phase unbalance.
- Advanced: product references GV4PEM combines GV4P protections and motor jam, long start, ground-fault protections.

With a magnetic circuit breaker, a thermal relay is frequently associated in order to have a short circuit protection and an overload protection.

TeSys Deca - Frame 2 circuit breakers: 45 mm width, for motors up to 15 kW

The most commonly used circuit breaker. with a choice of about 100 auxiliaries and accessories. TeSys Deca Frame 2 circuit breakers and TeSys K, Deca contactors can be easily assembled as a single block with one accessory.

The high Frame 2 electrical endurance (up to 100 000 operating cycles) makes it very suitable for direct manual motor control, especially ref. GV2ME ⁽¹⁾ (thermal-magnetic c.b., Ith up to 32 A).

Enclosure mounting is well adapted to ref. GV2L and GV2P, with their possible extended rotary handle and visible trip indication.

TeSys Deca - Frame 3 circuit breakers: 55 mm width, for motors up to 45 kW

High performance breakers, high breaking capacity (Ics 100 kA/400 V for ratings up to 32 A, 50 kA up to 80 A).

Wide choice of auxiliaries / accessories, possible extended rotary handle. Visible tri indication.

Patented Everlink connectors provide everlasting connection (no re-tightening required).

Direct monoblock starter assembly with TeSys Deca contactors. No accessory required.

TeSys Deca - Frame 4 circuit breakers: 81 mm width, for motors up to 55 kW

State-of-the-art technology, TeSys Deca Frame 4 is compact and robust. Electronic core of ref. GV4P gives a great detection accuracy, with alarming and advanced protections for ref. GV4PEM, GV4PB.

Magnetic, electronic thermal-magnetic, or electronic thermal magnetic with advanced protections versions.

Ratings up to 115 A with breaking capacity Ics of 25 kA/400 V (B series), 50 kA/400 V (N series) or 100 kA/400 V (S series).

TeSys Giga - Frame 5: 105 mm width, for motors up to 110 kW / Frame 6: 140 mm width, for motors up to 250 kW

TeSys Giga - Frame 5 and 6 with advanced thermal-magnetic trip unit provide more effective protection to high power motors in the most demanding appliances.

They provide protection to motors against overloads with selection of a trip class (5, 10 or 20), short-circuits, phase unbalance or phase loss.

Adjustable over-load and short circuit current settings provide flexibility.

Wide choice of auxiliaries/accessories are available for indication, control and operation.

⁽¹⁾ Ref. GV2ME●●AP are specific GV2ME references for CEE zone.



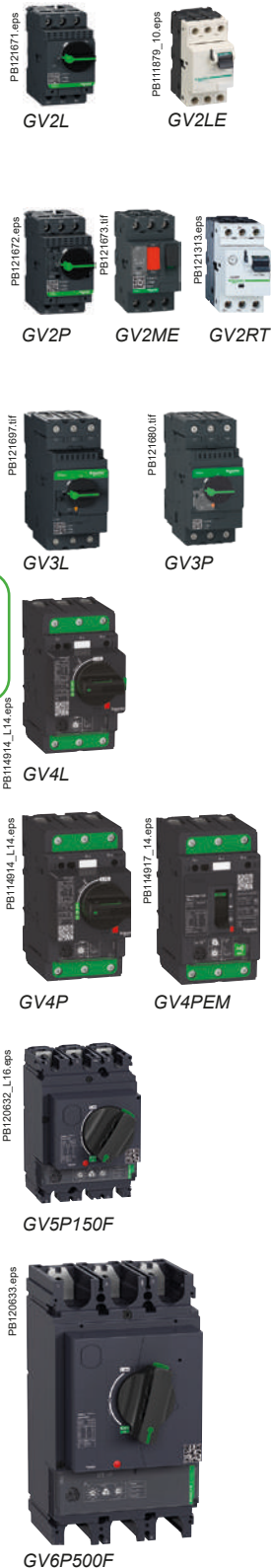
Motor circuit breakers

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Deca, Giga Motor circuit breakers

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TeSys Deca, Giga circuit breakers - Range overview

Molded case circuit breakers for motor protection and control

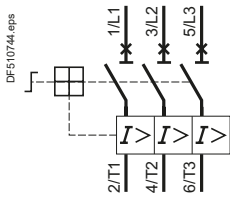
Deca - Frame 2							
Product reference	Protection against			Range (kW / 415 V AC)	Control	Terminals	Dimensions (W x H x D)
	Short-circuits	Overload	Jam, ground-fault, long start... (Multifunction - see page B6/6)				
GV2L	●			0.09 to 15	Rotary handle	Screw clamp	44.5 x 89 x 97 (with rotary handle)
GV2LE	●			0.06 to 15	Toggle	Screw clamp	44.5 x 89 x 78.5 (with toggle)
GV2P	●	●		0.06 to 15	Rotary handle	Screw clamp	44.5 x 89 x 97 (with rotary handle)
GV2ME ⁽¹⁾	●	●		0.06 to 11	Push button	Screw clamp, lug or spring	44.5 x 89 x 78.2 (with push button) ⁽²⁾
GV2RT	●	●		0.09 to 11	Toggle	Screw clamp	44.5 x 89 x 78.5 (with toggle)
Deca - Frame 3							
GV3L	●			11 to 45	Rotary handle	Lug, EverLink (BTR screw)	55 x 132 x 136 (with rotary handle)
GV3P	●	●		5.5 to 45			
Deca - Frame 4							
GV4L	●			0.25 to 55 kW	Rotary handle	Lug, EverLink (BTR screw)	81 x 156 x 116 (with toggle)
GV4LE	●				Toggle		81 X 156 x 165 (with rotary handle)
GV4P	●	●			Rotary handle		
GV4PE	●	●			Toggle		
GV4PEM	●	●	●		Toggle		
GV4PB	●	●	●	½ to 60 HP	Toggle		
Giga - Frame 5							
GV5P150●	●	●		55 to 110	Direct rotary handle	Lug, screw clamp	105 x 161 x 155 ⁽³⁾ (with direct rotary handle)
GV5P220●	●	●					
Giga - Frame 6							
GV6P320●	●	●		132 to 250	Direct rotary handle	Lug, screw clamp	140 x 255 x 179 ⁽³⁾ (with direct rotary handle)
GV6P500●	●	●					

(1) Ref. GV2ME●●AP are specific GV2ME references for CEE zone.
 (2) 44.5 x 101 x 78.2 mm for GV2ME●●3.
 (3) Depth without keylock.

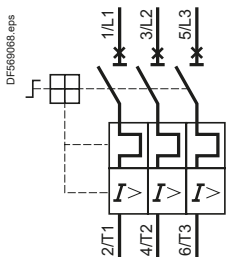
TeSys Power

Deca, Giga Motor circuit breakers

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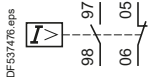
Thermal protection circuit breaker (with rotary control)



Thermal magnetic protection circuit breaker (with rotary control)



Voltage trip



Fault signalling

Basic functions

Short circuit protection (magnetic/thermal magnetic circuit breakers)

It provides a protection of the installation against short-circuit by an instantaneous trip of the circuit breaker. The tripping is obtained by means of a magnetic element incorporated in the motor circuit breaker or by an electronic detection (ref. GV4P, GV5 and GV6).

The magnetic tripping threshold is not adjustable, except on ref. GV4L, and is a fixed ratio of the maximum setting current I_n .

Overload protection (thermal magnetic circuit breakers)

It provides a protection of the motor against overload. When current drawn by the motor is above its rated current, this continuous overcurrent lead to increase of motor internal temperature and reduce motor life time. Use of suitable protective device shall avoid this damage to the motor. This is obtained by means of a thermal element incorporated in the motor circuit breaker, or by sensors for electronic products (ref. GV4P, GV5 and GV6).

An automatic compensation for ambient temperature variations is also provided. The rated operational current of the motor is displayed by turning a graduated knob.

Motor ON/OFF control

The circuit breaker provides a local manual control of the motor when used on its own (without contactor). The operation is possible by push buttons, toggle, or a single rotary handle.

Contacts position indication

Because they are suitable for isolation, the circuit breakers, in the open position, provide an adequate isolation distance and indicate the accurate position of the moving contacts by the position of the operators.

Additional functions

They are provided by additional modules.

Under voltage protection

Trips the circuit breaker in case of under voltage. The user is therefore protected against sudden starting of the machine when normal voltage is restored. Circuit breaker reset and/or start button "I" has to be pressed to restart the motor.

Remote off-power

Circuit breaker can be remotely tripped with the addition of a shunt trip.

Off-power locking

The operators on both open-mounted and enclosed motor circuit breakers can be locked in the off position "O" by up to 3 padlocks.

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Motor circuit breakers versus fuse protection ?

Circuit breakers are a common solution for Powering motor against short circuits and overloads.

As a comparison, a fuse based solution can only provide a partial protection depending on the choice of the fuse type and rating. The thermal magnetic circuit breaker is adjustable and can be fine-tuned to the practical motor load.

The fuse based solution offers a very fast protection.

TeSys Power

Deca, Giga Motor circuit breakers

Introduction



PB114517 eps

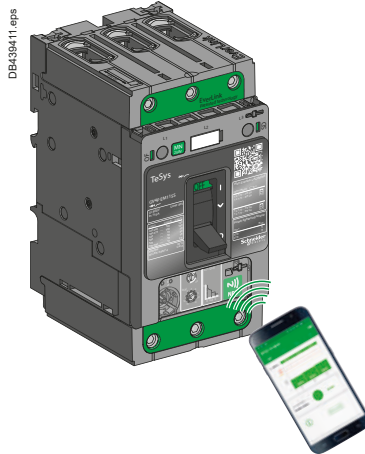
Advanced protections embedded on Deca - Frame 4 ref. GV4PEM, GV4PB (multifunction)

In addition to basic protections, ref. GV4PEM, GV4PB embed protections against:

- Long start (high inertia, resistive torque machines)
- Jam (overtorque, machine failure)
- Ground-fault (reduced isolation)
- Unbalanced (phase currents are not equal)
- Phase loss (1 or 2 phases missing).

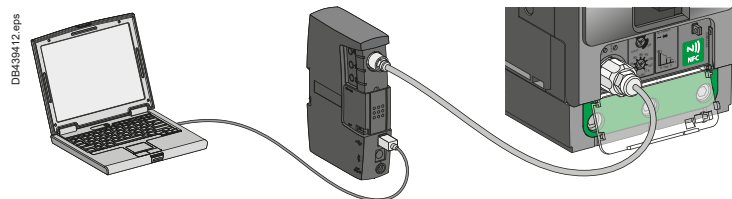
Fully configurable-advanced protections:

- wireless with 'EcoStruxure Power Device App' application for Android smartphone through NFC (near field communication).



DB439411 eps

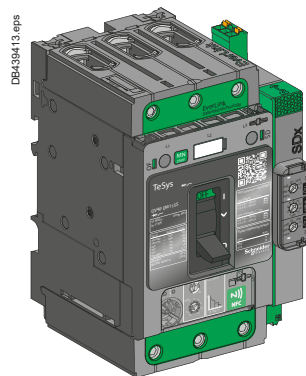
- with EcoStruxure Power Commission software on a computer connected to the test socket through a configuration and maintenance module.



DB439412 eps

Remote indications:

Ref. GV4PEM, GV4PB circuit breaker may be equipped with an SDx alarming / fault differentiation module to prevent to trip or to identify the type of fault after a trip (see page B6/44).



DB439413 eps

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Introduction

EverLink technology for Frame 3 and 4

Frame 3 and 4 features a cable connection method with patented creep-compensating technology built directly into the terminal — EverLink:

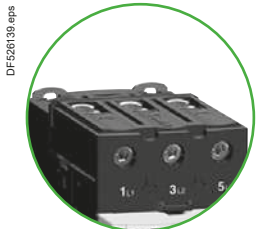
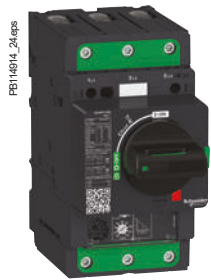
- With EverLink connectors, save space and time during panel assembly.
- Bare cable connections are as safe as compression lug ones.

No overheating connections - EverLink creep-compensated terminals for Frame 3, 4

The EverLink patented technology for terminals dramatically reduces the risk of loose bare cables due to copper creeping. Vibration withstand is improved and periodic re-tightening is no longer needed.

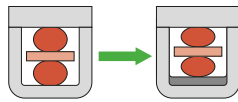


The clamp connectors which don't need re-tightening.



EverLink terminals, with BTR screws

Creeping phenomena

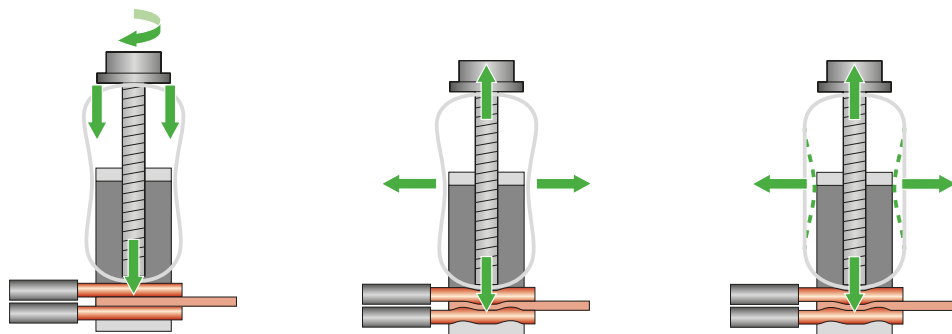


Copper conductors are subject to creep with the time, reducing the contact pressure in conventional clamps

During the tightening a force is applied on the conductors and on a spring.

Maintaining of cables assured by pressure of spring and crimping of conductor on the contact plate.

The spring compensates for cable conductor creep. Tightening force is assured.



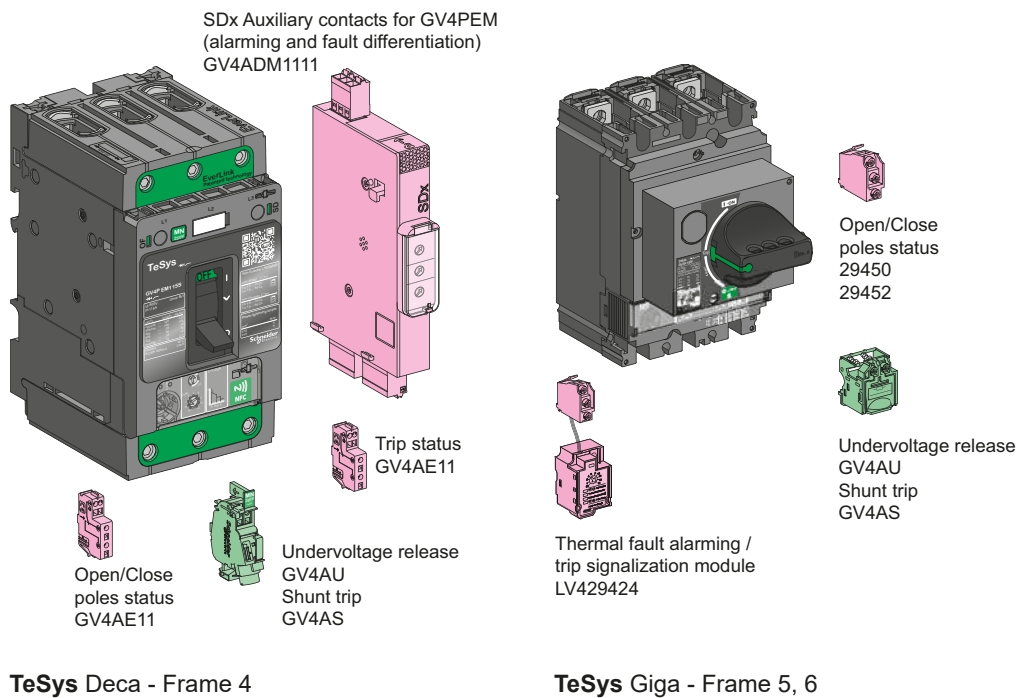
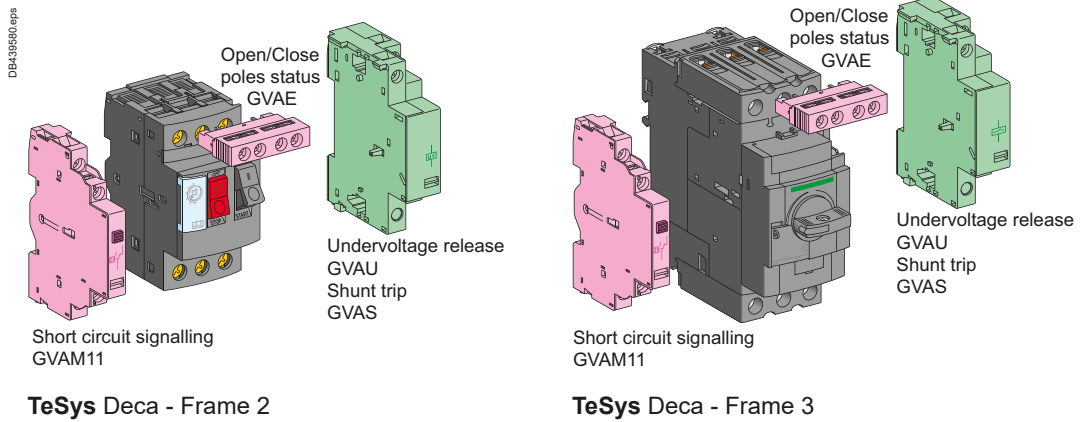
Motor circuit breakers

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Deca, Giga Motor circuit breakers

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Auxiliary functions provided by add-on blocks



Motor circuit breakers

- Auxiliary contacts add-on blocks**
For control, alarms, automatic actions:
- Instantaneous indication of the position of the circuit breaker contacts
 - Trip indication,
 - Alarming.
- Trip units**
For remote tripping of circuit breaker:
- Shunt trip / MX, trips the circuit breaker when powered
 - Undervoltage release / MN, trips the circuit breaker when voltage is loss.

TeSys Power

Deca, Giga Motor circuit breakers

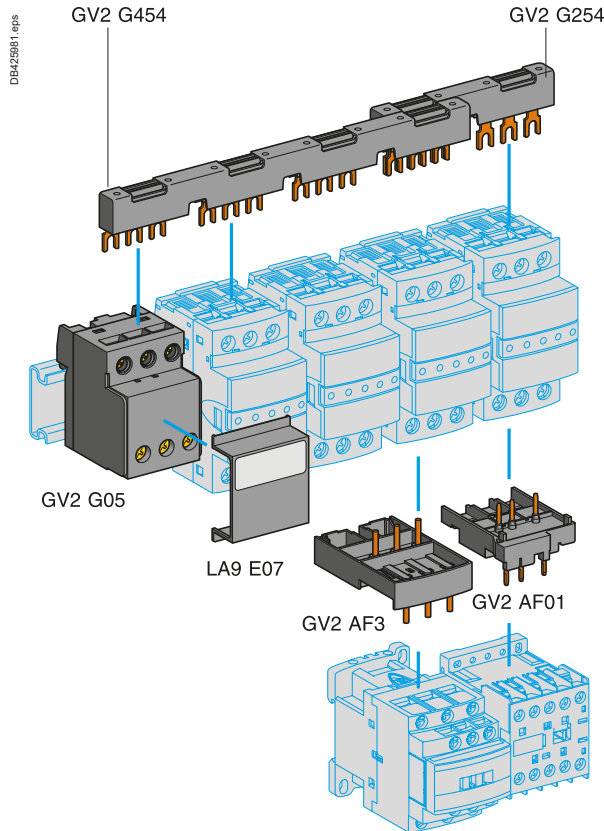
Introduction

Compact power circuits wiring with TeSys Deca circuit breakers (Frame 2) and Deca contactors ⁽¹⁾

Busbars and combination blocks

Power busbars and combinations blocks provide a compact solution for assembling a group of motor starters. They save wiring time and provide a clear finish aspect.

These solutions are available for Deca - Frame 2 circuit breakers + Deca contactors.



⁽¹⁾ Details on these solution in chapter B2 of catalogue.

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