

Direct-on-line					
Enclosure main composition	Direct	Reversing	Range		Page
Rotary switch Add-on modules, UL versions TeSys Vario	☑		Up to 45 kW		A1/2
Motor circuit breaker TeSys GV	☑		Up to 11 kW		A1/7
Motor circuit breaker TeSys GV	☑		Up to 30 kW		A1/8
Contactor + Overload relay TeSys LE1, LE2	☑	☑	Up to 37 kW		A1/10
Motor circuit breaker + Contactor + Overload relay TeSys LE1GV	☑		Up to 5.5 kW		A1/12
Fuse switch-disconnector + Contactor + Overload relay TeSys LE4, LE8	☑	☑	Up to 15 kW		A1/14
Star-delta					
3 contactors + Overload relay TeSys LE3	☑		Up to 30 kW		A1/16
Fuse switch-disconnector + 3 contactors + Overload relay TeSys LE6	☑		Up to 22 kW		A1/18
Replacement parts					A1/19
For safety application					
Motor circuit breaker + Emergency stop push button TeSys GV	☑		Up to 11 kW		A1/21
Motor circuit breaker + Contactor + Emergency stop switch TeSys LG1	☑		Up to 9 kW		A1/22
Motor circuit breaker + Contactor + Emergency stop push button TeSys LG7, LG8, LJ7, LJ8	☑	☑	Up to 9 kW		A1/24
Replacement parts					A1/28
For AS-interface bus					
Motor circuit breaker + Contactor + AS-Interface com. module TeSys LF3, LF4	☑	☑	Up to 5.5 kW		A1/30

TeSys enclosed starters
VARIO enclosed switch-disconnectors

Enclosed starters



VCF 0GE



VCF 3GE



VCF 5GEN



VCFN 12GE

Enclosed switch-disconnectors for high performance applications

- 3-pole rotary switch-disconnectors, 10 to 140 A, conforming to IEC 60947-4-1 and IEC 60204.
- Marking on operator $\text{O} \downarrow$.
- Padlockable operating handle (padlocks not included).
- IP 65 degree of protection enclosures, sealable and lockable.
- Cover lockable in position "I" (ON) up to 63 A rating.

3-pole main and Emergency Stop switch-disconnectors ⁽¹⁾

Operator Handle	Front plate Dimensions	Ithe	Power AC-23 at 400 V	Incorporated switch body	Possible attachments ⁽²⁾	Reference ⁽³⁾	Weight
							kg
Red, standard, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank)	Yellow 60 x 60	10	4	V02	2	VCF02GE	0.500
		16	5.5	V01	2	VCF01GE	0.500
		20	7.5	V0	2	VCF0GE	0.500
		25	11	V1	2	VCF1GE	0.500
		32	15	V2	2	VCF2GE	0.500
		50	22	V3	3	VCF3GE	0.930
		63	30	V4	3	VCF4GE	0.930
Red, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shanks)	Yellow 90 x 90	100	37	V5	1	VCF5GEN	2.190
		140	45	V6	1	VCF6GEN	2.190

3-pole main switch-disconnectors ⁽¹⁾

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
		16	5.5	V01	2	VBF01GE	0.500
		20	7.5	V0	2	VBF0GE	0.500
		25	11	V1	2	VBF1GE	0.500
		32	15	V2	2	VBF2GE	0.500
		50	22	V3	3	VBF3GE	0.930
		63	30	V4	3	VBF4GE	0.930
Black, long, padlockable with up to 3 padlocks (Ø 4 to Ø 8 shank)	Black 90 x 90	100	37	V5	1	VBF5GEN	2.190
		140	45	V6	1	VBF6GEN	2.190

Enclosed switch-disconnectors for standard applications

- 3-pole rotary switch-disconnectors, 10 to 32 A, conforming to IEC 60947-4-1.
- Degree of protection IP 55.

3-pole main and Emergency Stop switch-disconnectors ⁽¹⁾

Operator Handle	Front plate Dimensions	Ithe	Power AC-23 at 400 V	Incorporated switch body	Possible attachments ⁽²⁾	Reference ⁽³⁾	Weight
							kg
Red padlockable, either by 1 (Ø 8 shank) or by 3 padlocks (Ø 6 shank)	Yellow 60 x 60	10	4	VN 12	2	VCFN12GE ⁽²⁾	0.422
		16	5.5	VN 20	2	VCFN20GE ⁽²⁾	0.422
		20	7.5	V0	0	VCFN25GE	0.512
		25	11	V1	0	VCFN32GE	0.512
		32	15	V2	0	VCFN40GE	0.512

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

⁽²⁾ For VCF and VBF enclosures, see page A1/4. For VCFN enclosures, see page A1/5.

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

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



VBFX GE2

Empty enclosures

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

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

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

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

Switch bodies for standard applications ⁽³⁾

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

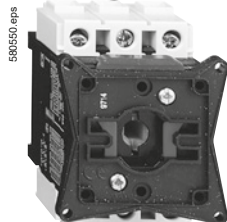
Switch bodies for high performance applications ⁽³⁾

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	0.200
	63	V4	0.200

(1) See pages A1/4. and A1/5.

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

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



V0

TeSys enclosed starters

VARIO enclosed switch-disconnectors

Add-on modules

Enclosed starters



VZ 0



VZ 11



VZ 15



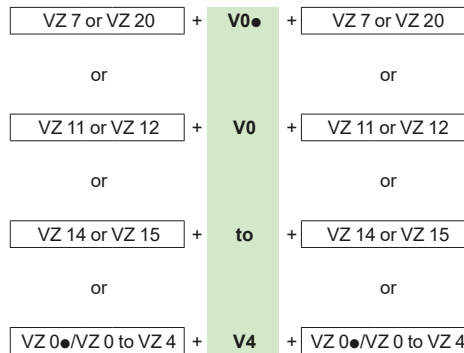
VZ 20

Add-on modules for enclosures VCF and VBF

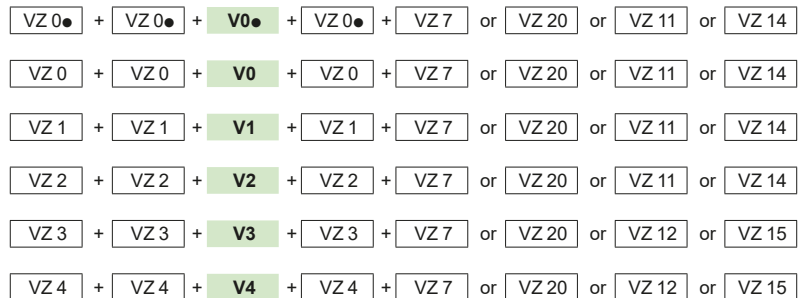
Description	Rating	Reference
Main pole module (mounted in enclosure)	A	
	10	VZ02
	16	VZ01
	20	VZ0
	25	VZ1
	32	VZ2
	50	VZ3
	63	VZ4
Neutral pole modules with early make and late break contacts	10 to 32	VZ11
	50 and 63	VZ12
	100 and 140	VZ13
Earthing modules	10 to 32	VZ14
	50 and 63	VZ15
	100 and 140	VZ16
Description	Type of contacts	Reference
Auxiliary contact block modules with 2 auxiliary contacts	N/O + N/C ⁽¹⁾	VZ7
	N/O + N/O	VZ20

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



2 add-on modules on each side of the switch body



Note: The add-on modules mounted next to the switch body are main pole modules. Maximum of 3 main pole modules per switch body.

⁽¹⁾ Late make N/O, early break N/C contacts.

TeSys enclosed starters

VARIO enclosed switch-disconnectors

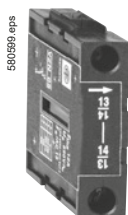
Add-on modules



VZN 11



VZN 14



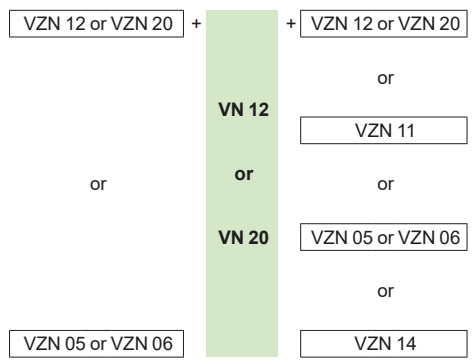
VZN 05

Add-on modules for enclosures VCFN 12GE and 20GE

Description	Rating	Reference
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

Maximum number of add-on modules that can be fitted on a switch body



Enclosed starters

TeSys enclosed starters

VARIO enclosed switch-disconnectors for the North American market, conforming to UL and CSA standards

Enclosed starters



VC1 GUN



VC3 GUN



VC5 GUN



VZ 11



VZ 15



VZ 20

Enclosed switch-disconnectors for high performance applications

- 3-pole rotary switch-disconnectors, 25 to 140 A, conforming to IEC 60947-4-1, IEC 60204, UL 508 and CSA 22.2 n° 14.
- Marking on operator $\circ \downarrow$
- Padlockable operating handle (padlocks not included).
- NEMA type 1 and type 12 enclosures, IP65 degree of protection, sealable and lockable.

3-pole main and Emergency stop switch-disconnectors ⁽¹⁾

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

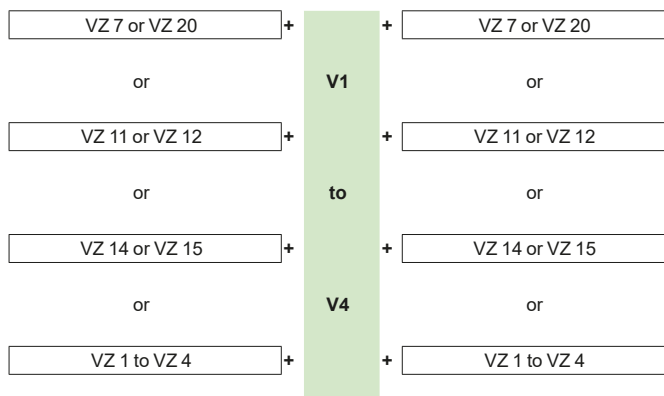
Add-on modules for VC enclosure

Description	Rating A	Reference
Main pole module (mounted in enclosure)	25	VZ1
	32	VZ2
	50	VZ3
	63	VZ4
Neutral pole module 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 ⁽³⁾	VZ7
	N/O + N/O	VZ20

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



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

TeSys enclosed starters

D.O.L. starters, manual control, with GV2ME thermal magnetic circuit breaker



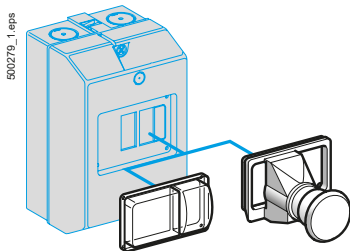
GV2 MC



GV2 MP



GV2 CP21



GV2 K011

Characteristics ⁽¹⁾

Conforming to standards	IEC 60947-2, IEC 60947-4-1
Operational voltage Ue	690 V
Material	Polycarbonate ⁽²⁾

GV2	ME 01	ME 02	ME 03	ME 04	ME 05	ME 06	ME 07	ME 08	ME 10	ME 14	ME 16	ME 20	ME 21	ME 22
lthe in enclosure (A)	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6.3	9	13	17	21	23

References

Enclosures for thermal-magnetic circuit breakers GV2 ME ⁽³⁾

Type	Degree of protection	Possible no. of side mounting auxiliary contact blocks on GV2 ME		Reference	Weight kg
		LH side	RH side		
Surface mounting, double insulated with protective conductor. Sealable cover	IP41	1	1	GV2MC01	0.290
	IP55	1	1	GV2MC02	0.300
				or GV2MCK04 ⁽⁴⁾	0.420
IP55 for temperature < +5 °C	1	1	GV2MC03	0.300	
Flush mounting, with protective conductor	IP41 (front face)	1	1	GV2MP01	0.115
	IP41 (front face reduced – flush mounting)	–	1	GV2MP03	0.115
	IP55 (front face)	1	1	GV2MP02	0.130
	IP55 (front face reduced flush mounting)	–	1	GV2MP04	0.130

Front plate

Description		Reference	Weight kg
For direct control, through a panel, of a chassis mounted GV2 ME	IP55	GV2CP21	0.800

Accessories common to all enclosures (to be ordered separately)

Description		Sold in lots of	Unit reference	Weight kg	
Padlocking device ⁽⁵⁾ for GV2 ME operator (padlocking is only possible in the "O" position)	1 to 3 padlocks Ø 4 to 8 mm	1	GV2V01	0.075	
Mushroom head pushbutton Ø 40 mm, red, IP55	Spring return ⁽⁵⁾	1	GV2K011	0.052	
Emergency stop Latching ⁽⁵⁾	Key release, key n° 455	1	GV2K021	0.160	
	Turn to release	1	GV2K031	0.115	
		1	GV2K04 ⁽³⁾	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
Neutral terminal		100	NSYTRV62BL	0.015	
Partition		50	NSYTRAC22BL	0.003	

⁽¹⁾ Characteristics of GV2ME circuit breakers and additives: see chapter B6 "Circuit breakers".

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

⁽³⁾ Circuit breaker to be ordered separately. Commercial references of GV2ME01 to M22: see chapter B6 "Circuit breakers".

⁽⁴⁾ Enclosure GV2 MCK04 is fitted with a GV2 K04 mushroom head Emergency stop pushbutton as standard.

⁽⁵⁾ Supplied with IP55 GV2 E01 sealing kit. To be fitted with enclosure GV2 M●01.

⁽⁶⁾ Padlockable in "O" position using Ø 4 to 8 mm shank padlocks.

TeSys enclosed starters

D.O.L. starters manual control, with magnetic circuit breaker GV2 L
or thermal-magnetic GV2 P

PB112219_L32.eps



GV2 PC

Characteristics ⁽¹⁾

Conforming to standards	IEC 60947-2, IEC 60947-4-1 (GV2 P only)
Degree of protection conforming to IEC 60529	IP65 / IK08
Operational voltage U _e	690 V
Material	Polycarbonate ⁽²⁾

GV2	L/P 01	L/P 02	L/P 03	L/P 04	L/P 05	L/P 06	L/P 07	L/P 08	L/P 10	L/P 14	L/P 16	L/P 20	L/P 21	L/P 22
lthe in enclosure (A)	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6.3	9	13	17	21	23

References

Enclosures fitted with padlockable rotary handle, for GV2P/L circuit breakers ⁽³⁾

Composition	Type	Reference
■ Insulating enclosure	Surface mounting	GV2PC01
■ Black handle, padlockable in ON/OFF position		
■ Insulating enclosure	Surface mounting	GV2PC02
■ Red handle on yellow background, padlockable in OFF position		

⁽¹⁾ Circuit breaker characteristics:

GV2 L: see chapter B6 "Circuit breakers".

GV2 P: see chapter B6 "Circuit breakers".

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

⁽³⁾ Circuit breaker to be ordered separately.

References **GV2 L01 to L22:** see chapter B6 "Circuit breakers".

References **GV2 P01 to P22:** see chapter B6 "Circuit breakers".

TeSys enclosed starters

D.O.L. starters, manual control, with GV3P thermal magnetic or GV3L magnetic circuit breaker

PB11221_L32.eps



GV3 PC

Characteristics ⁽¹⁾

Conforming to standards	IEC 60947-2, IEC 60947-4-1 (GV3 P only)
Degree of protection conforming to IEC 60529	IP65/IK09
Operational voltage Ue	690 V
Material	Steel sheet

GV3	L40 P40	L50 P50	L65 P65
Ithe in enclosure (A)	35	41	55

References

Enclosures fitted with a padlockable rotary handle for GV3P/L circuit breakers ^{(2) (3)}

Composition ⁽⁴⁾	Type	Référence	Masse kg
<ul style="list-style-type: none"> ■ Metal enclosure ■ Black handle, padlocking in ON/OFF position ■ Circuit breaker/handle adapter 	Surface mounting	GV3PC01	2,000
<ul style="list-style-type: none"> ■ Metal enclosure ■ Red handle, padlocking in OFF position ■ Circuit breaker/handle adapter 	Surface mounting	GV3PC02	2,000

⁽¹⁾ Circuit breakers characteristics:

GV3L: see chapter B6 "Circuit breakers".

GV3P: see chapter B6 "Circuit breakers".

⁽²⁾ Circuit breakers to be ordered separately:

GV3L40 to 65: see chapter B6 "Circuit breakers".

GV3P40 to 65: see chapter B6 "Circuit breakers".

⁽³⁾ Assembling possibility: 1 GV3 P or GV3 L alone circuit breaker + 1 LC1D●●A●● contactor + GV3 S S-shape busbar.

⁽⁴⁾ Components for customer assembly.

TeSys enclosed starters

D.O.L. starters ⁽¹⁾

without isolating device

Enclosed starters



LE1 D●●



LE1 D●●A●●



LE2 D●●



LE2 D●●A●●

Characteristics

Conforming to standards	IEC 60947-4-1
Degree of protection conforming to IEC 60529	LE2 K: IP65 / IK09 LE● D09...D35: IP65 / IK07 LE● D40A...D65A: IP65 / IK09
Ambient air temperature	Operation: - 5...+ 40 °C
Operating positions	Same as that of the contactors
Material	LE2 K and LE● D09...D35: Polycarbonate ⁽²⁾ LE● D40A...D65A: Sheet steel

References

Non-reversing starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3						Maximum current I _{th} up to	Basic reference, to be completed by adding the voltage code ⁽³⁾	Weight
220 V	380 V	415 V	440 V	500 V	660 V			
230 V	400 V			690 V		A		kg
2.2	4	4	4	5.5	5.5	9	LE1D09●●	0.920
3	5.5	5.5	5.5	7.5	7.5	12	LE1D12●●	0.920
4	7.5	9	9	10	10	18	LE1D18●●	1.015
5.5	11	11	11	15	15	25	LE1D25●●	1.015
7.5	15	15	15	18.5	18.5	35	LE1D35●●	4.320
11	18.5	22	22	22	30	40	LE1D40A●●	4.820
15	22	25	30	30	33	50	LE1D50A●●	4.850
18.5	30	37	37	37	37	65	LE1D65A●●	4.850

Reversing starters

1.5	2.2	2.2	3	-	-	6	LE2K065●●	1.080
2.2	4	4	4	-	-	9	LE2K095●●	1.080
-	-	-	-	5.5	5.5	9	LE2D09●● ⁽⁴⁾	2.100
-	-	-	-	5.5	5.5	9	LE2D09●●	2.100
3	5.5	5.5	5.5	7.5	7.5	12	LE2D12●●	2.100
4	7.5	9	9	10	10	18	LE2D18●●	2.410
5.5	11	11	11	15	15	25	LE2D25●●	2.570
7.5	15	15	15	18.5	18.5	35	LE2D35●●	4.100
11	18.5	22	22	22	30	40	LE2D40A●●	5.270
15	22	25	30	30	33	50	LE2D50A●●	5.470
18.5	30	37	37	37	37	65	LE2D65A●●	5.470

⁽¹⁾ Overload protection must be provided by a thermal overload relay, to be ordered separately, see chapter B11 "Overload relays".

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

⁽³⁾ Standard control circuit voltages:

Volts	24	48	110	115	120	220	230	240	380	400	415	440
~ 50/60 Hz												
LE1 D09 to D35	B7	E7	F7	FE7	G7	M7	P7	U7	Q7	V7	N7	R7
LE1 D40A to D65A, LE2 D40A to D65A	-	-	-	FE7	-	-	P7	-	Q7	-	-	-
LE2 D09 to D35	B7	-	-	-	-	M7	P7	U7	Q7	V7	N7	-
LE2 K	-	-	-	-	-	M7	P7	U7	Q7	V7	-	-

⁽⁴⁾ Selection according to the dimensions and the number of operating cycles, please consult your Regional Sales Office.

References - Direct-on-line

TeSys enclosed starters

D.O.L. starters ⁽¹⁾

without isolating device



LE1 D●●A04



LE1 D●●A05



LE1 D●●A09



LE1 D●●A13

Description

Standard versions comprise:

- For non-reversing starters:
 - LE1 D09...D65A:
 - 1 green Start button "I",
 - 1 red Stop/Reset button "O".

- For reversing starters:
 - LE2 K:
 - 1 Start button ↑,
 - 1 Start button ↓,
 - 1 red Stop/Reset button.
 - LE2 D09...D65A:
 - 1 2-position spring return selector switch "I"- "II",
 - 1 red Stop/Reset button "O",

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.

Variants (pre-assembled)

Description	Available variants for starter ⁽²⁾	Suffix to be added to the starter reference ⁽³⁾
No pushbuttons on cover	LE1 D09...D65A●● LE2 D40A...D65A●●	A04
1 blue Reset button "R"	LE1 D09...D65A●● LE2 D40A...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"	LE1 D09...D25●●	A09
1 2-position stay put selector switch "O"- "I" ("O": Stop; "I": Manual Start) 1 blue Reset button "R"	LE1 D09...D25●●	A13
Mounting of an LC1 D09 contactor in an enclosure identical to LE1 D18	LE1 D09P7 LE1 D09P7A13	T

For LE1D09 à D35 and LE2 D09 à D35 starters:
A04, A29 and A39 versions can also be made from parts.
Empty enclosures, contactor and circuit breaker must be ordered separately.
A customer assembly.

DE1DS / DE2DS empty enclosures: see page A1/20.
LC1D / LC2D contactors: see chapter B8 "Contactors".
LRD thermal relays: see chapter B11 "Overload relays".

⁽¹⁾ See previous page.

⁽²⁾ Standard control circuit voltages:

Volts	220	230	240	380	400	415
~ 50/60 Hz						
LE1 D09 to D35	M7	P7	U7	Q7	V7	N7
LE1 D40A to D65A, LE2 D40A to D65A	-	P7	-	Q7	-	-

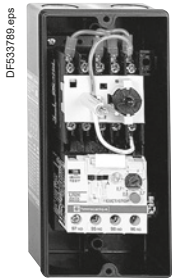
⁽³⁾ Example: **LE1 D09P7A04**.

TeSys enclosed starters

D.O.L. starters

with 3-phase thermal overload relay with 3 protected phases

Enclosed starters



LE1 M35●●●●●

Characteristics ⁽¹⁾

Conforming to standards	IEC 60947-4-1
Degree of protection conforming to IEC 60529	IP 65
Ambient air temperature	Operation: - 5 to + 40 °C
Operating positions	Same as for the TeSys K contactors
Material	Self-extinguishing ABS

References

Non-reversing starters

Starter LE1 M, combined with short-circuit protection components, provides type 1 or type 2 coordination, depending on the type of devices used.

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3				Setting range of thermal overload relay LR2 K ⁽²⁾	Basic reference, to be completed by adding the voltage code ⁽³⁾
220 V 230 V	240 V	380 V 400 V	415 V		
kW	kW	kW	kW	A	
0.12	0.12	0.25	0.25	0.54...0.8	LE1M35●●05
0.18	0.18	0.37	0.37	0.8...1.2	LE1M35●●06
0.25	0.25	0.55	0.55	1.2...1.8	LE1M35●●07
0.37	0.37	1.1	0.75	1.8...2.6	LE1M35●●08
0.55	0.55	1.5	1.5	2.6...3.7	LE1M35●●10
1.1	0.75	2.2	2.2	3.7...5.5	LE1M35●●12
1.5	1.1	3	3	5.5...8	LE1M35●●14
2.2	2.2	4	4	8...11.5	LE1M35●●16
3	3	5.5	5.5	10...14	LE1M35●●21
3.7	4	7.5	7.5	12...16	LE1M35●●22

- The standard version comprises:
 - 1 TeSys contactor LC1 K●●,
 - 1 TeSys thermal overload relay LR2 K,
 - 1 green Start button "I",
 - 1 red Stop/Reset button "O/R",
 - 1 yellow operating indicator.
- 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.
- Control may be pulsed or maintained.
- An earth terminal and a neutral terminal are provided on the bottom of the enclosure.
- For safety applications, see enclosed starters:
 - GV2 MC, LG1 K, LG1 D, LG7 K, LG7 D, LJ7 K, LG8 K and LJ8 K.

Variant

Starter without thermal overload relay LR2 K

Example: LE1 M35●●

Replacement part

Description	Basic reference, to be completed by adding the voltage code ⁽³⁾
Contactor	LC1K●●A80

⁽¹⁾ For characteristics of contactor, LC1 K, see chapter B8 "Contactors".
For characteristics of TeSys thermal overload relay LR2 K, see chapter B11 "Overload relays".

⁽²⁾ Thermal overload relay fitted as standard.

⁽³⁾ Standard control circuit voltages:

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

TeSys enclosed starters

D.O.L. starters

with thermal magnetic circuit breaker and contactor



LE1 GVMEK

PB112286_L32.eps

Enclosed starters

Characteristics	
Conforming to standards	IEC 60947-4-1
Degree of protection conforming to IEC 60529	IP 55
Ambient air temperature	Operation: - 5 to + 40 °C
Operating positions	Same as for the TeSys K contactors
Material	Polycarbonate ⁽¹⁾

References

Enclosures for GV2ME thermal magnetic circuit breakers and LC1K contactors ⁽²⁾

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

Accessories (to be ordered separately)

Description		Sold in lots of	Unit reference
Padlocking device ⁽³⁾ for GV2 ME operator (padlocking is only possible in the "O" position)	1 to 3 padlocks Ø 4 to 8 mm	1	GV2V01
Mushroom head "Stop" pushbutton Ø 40 mm, red	Spring return ⁽³⁾	1	GV2K011
	Lockable	1	GV2K021
	Emergency Stop. Key release, key n° 455	1	GV2K031
	IP55 ⁽³⁾	1	GV2K04 ⁽⁴⁾
Sealing kit	IP 55 for temperature between +5 °C and +40 °C	10	GV2E01
	IP 55 for temperature between -20 °C and +40 °C	10	GV2E02

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 current 13 Irth	For customer assembly	
400/415 V	440 V	500 V			Motor circuit breaker Reference	Contactor Reference to be completed with the reference voltage ⁽⁵⁾
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

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

⁽²⁾ Starter to be ordered separately. Commercial references of motor starters: see chapter A6 "Complementary technical information: coordination and standards".

⁽³⁾ Supplied with IP 55 GV2 E01 sealing kit.

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

⁽⁵⁾ Standard control circuit voltages:

Volts	24	110	220/230	230	230/240	380/400
~ 50/60 Hz	B7	F7	M7	P7	U7	Q7
--- ⁽⁶⁾	BW3	-	-	-	-	-

⁽⁶⁾ Coil: low consumption (1.5 W), wide range (0.7...1.3 Uc) with integral suppression device as standard.

TeSys enclosed starters

D.O.L. starters ⁽¹⁾

with isolating device



LE4 D●●



LE8 D●●

Characteristics

Conforming to standards	IEC 60947-4-1
Degree of protection conforming to IEC 60529	LE●K : IP65/IK09 LE●D09...D35 : IP65/IK07
Ambient air temperature	Operation: -5...+40 °C
Operating positions	Same as that of the contactors
Material	Polycarbonate ⁽²⁾

References

Non-reversing starters

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3						Maximum current I _e the up to	Fuses to be fitted by the customer		Basic reference, to be completed by adding the voltage code ⁽³⁾	Weight
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V		Size	Type aM		
kW	kW	kW	kW	kW	kW	A	A			kg
1.5	2.2	2.2	3	–	–	6	10 x 38	10	LE4K065●●	1.450
2.2	4	4	4	–	–	9	10 x 38	12	LE4K095●●	1.450
									or LE4D09●● ⁽⁴⁾	1.960
2.2	4	4	4	5.5	–	9	10 x 38	12	LE4D09●●	1.960
3	5.5	5.5	5.5	7.5	–	12	10 x 38	16	LE4D12●●	1.960
4	7.5	9	9	10	–	18	10 x 38	20	LE4D18●●	2.200
5.5	11	11	11	15	–	25	10 x 38	25	LE4D25●●	2.200
7.5	15	15	15	18.5	18.5	35	14 x 51	32	LE4D35●●	5.190

Reversing starters

1.5	2.2	2.2	3	–	–	6	10 x 38	10	LE8K065●●	1.600
2.2	4	4	4	–	–	9	10 x 38	12	LE8K095●●	1.600
									or LE8D09●● ⁽⁴⁾	3.550
–	–	–	–	5.5	–	9	10 x 38	12	LE8D09●●	3.550
3	5.5	5.5	5.5	7.5	–	12	10 x 38	16	LE8D12●●	3.550
4	7.5	9	9	10	–	18	10 x 38	20	LE8D18●●	3.700
5.5	11	11	11	15	–	25	10 x 38	25	LE8D25●●	4.670
7.5	15	15	15	18.5	18.5	35	14 x 51	32	LE8D35●●	5.800

⁽¹⁾ Overload protection must be provided by a thermal overload relay, to be ordered separately.References **LRD**: see chapter B11 "Overload relays".⁽²⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).⁽³⁾ Standard control circuit voltages.

Volts	24	48	110	115	120	220	230	240	380	400	415	440	
~ 50/60 Hz													
LE4 D		B7	E7	F7	FE7	G7	M7	P7	U7	Q7	V7	N7	R7
LE4 K	–	–	–	–	–	–	M7	P7	U7	Q7	V7	–	–
LE8 K, LE8 D	–	–	–	–	–	–	–	P7	–	Q7	V7	–	–

⁽⁴⁾ Selection according to dimensions and the number of operating cycles, please consult your Regional Sales Office.

References - Direct-on-line

TeSys enclosed starters

D.O.L. starters ⁽¹⁾

with isolating device



LE4 D09A04



LE4 D09A05

Description

Standard versions comprise:

■ For non-reversing starters:

- LE4 K and LE4:
 - 1 green Start button "I",
 - 1 red Stop/Reset button "O".

■ For reversing starters:

- LE8 K:
 - 1 Start button ↑,
 - 1 Start button ↓,
 - 1 red Stop/Reset button.
- LE8 D:
 - 1 2-position spring return selector switch "I"- "II",
 - 1 red Stop/Reset button "O",

Protection	Power circuit	Control circuit
LE4 and LE8 K	1 3-pole isolating device	None
LE4 and LE8 D	1 3-pole isolating device	+ 1 additional pole

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.

Variants (pre-assembled)

Description	Available variant for starter	Suffix to be added to the starter reference ⁽²⁾
No pushbuttons on cover	LE4 D09...D35 P7 (230 V), V7 (400 V)	A04
1 blue Reset button "R"	LE4 D09...D35 P7 (230 V), V7 (400 V)	A05

⁽¹⁾ See previous page

⁽²⁾ Example: **LE4 D09P7A04**.

References - Star-delta

TeSys enclosed starters

Star-delta starters

without isolating device ⁽¹⁾

Enclosed starters



LE3 D●●

PB11258_L3D.eps

Characteristics

Conforming to standards	IEC 60947-4-1
Degree of protection conforming to IEC 60529	IP65 / IK07
Ambient air temperature	Operation: -5 to +40 °C
Operating positions	Same as that of the contactors
Material	Polycarbonate ⁽²⁾

References

- Maximum operating rate: 30 starts/hour.
- Maximum starting time: 30 seconds.
- LE3 D: an LAD S2 timer imposes a delay of 40 ms ±15 ms on the delta contactor at the moment of changeover to ensure that the star contactor has sufficient breaking time.

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⁾	Weight kg
220 V	380/400 V	415 V	440 V		
kW	kW	kW	kW		
4	7.5	7.5	7.5	LE3D09●●	3.650
5.5	11	11	11	LE3D12●●	3.650
11	18.5	22	22	LE3D18●●	3.750
15	30	30	30	LE3D35●●	5.160

⁽¹⁾ Overload protection must be provided by a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current. References **LRD**: see chapter B11 "Overload relays".

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

⁽³⁾ Standard control circuit voltages:

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

TeSys enclosed starters

Star-delta starters

without isolating device ⁽¹⁾

LE3 D●●A04

Description

The standard version comprises:

- LE3 D:
- 1 green Start button "I",
- 1 red Stop/Reset button "O".

For supply voltages between 380 and 415 V (codes Q7, V7 or N7) the control circuit is pre-wired between phases. For other supply voltages, the control circuit must be wired by the customer.

Variants (pre-assembled)

Description	Available variant for starter	Suffix to be added to the starter reference ⁽²⁾
No pushbuttons on cover	LE3 D09...D35 P7 (230 V) V7 (400 V)	A04

⁽¹⁾ Overload protection must be provided by a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current.

References **LRD**: see chapter B11 "Overload relays"

⁽²⁾ Starter references, see previous page - Example: **LE3D09P7A04**.

TeSys enclosed starters

Star-delta starters ⁽¹⁾

with isolating device

Enclosed starters



LE6 D●●

PB112289_L32R.eps

Characteristics

Conforming to standards	IEC 60947-4-1
Degree of protection conforming to IEC 60529	IP 65 / IK07
Ambient air temperature	Operation: - 5 to +40 °C
Operating positions	Same as that of the contactors
Material	Polycarbonate ⁽²⁾

References

- Maximum operating rate: 30 starts/hour.
- Maximum starting time: 30 seconds.
- An LA2 DS2 timer imposes a delay of 40 ms ±15 ms on the delta contactor at the moment of changeover to ensure that the star contactor has sufficient breaking time.

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

⁽¹⁾ Overload protection must be provided by a thermal overload relay, to be ordered separately. Select appropriate overload relay for setting at 0.58 of the full load rated motor current. Reference LRD: see chapter B11 "Overload relays".

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

⁽³⁾ Standard control circuit voltages.

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

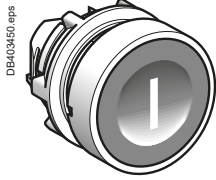
Description

The standard version comprises:

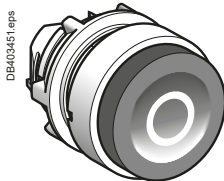
- LE6 D:
 - 1 green Start button "I",
 - 1 red Stop/Reset button "O".

For supply voltages between 380 and 415 V (codes Q7, V7 or N7) the control circuit is pre-wired between phases. For other supply voltages, the control circuit must be wired by the customer.

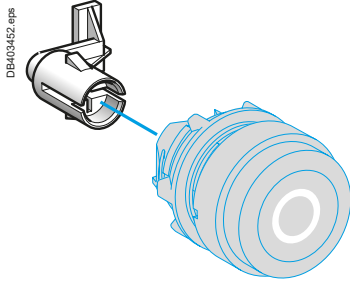
Protection	Power circuit	Control circuit
LE6 D09 and D12	1 3-pole isolating device	+ 1 additional pole
LE6 D18	1 3-pole isolating device	+ 1 circuit breaker GB2 CB08



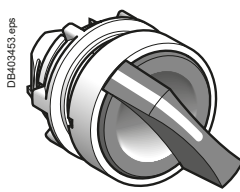
ZB5 AA331



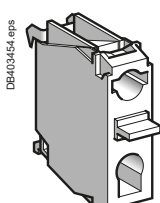
ZB5 AL432



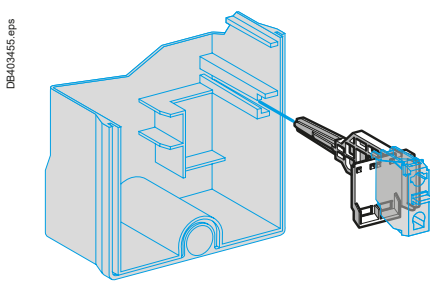
LAD 9091



ZB5 AD●



ZEN L1111



LAD 91809

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 ZB5 AL432	LE1 D09 and D12	LAD9091
	LE1 D18...D35, LE2 D09...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 ZB5 AA0 + ZBA 639	LE1 D09 and D12	LAD9092
	LE1 D18...D35, LE2 D09...D35	LAD91810
	LE3, LE6, LE4 and LE8 D09...D35	LAD9T4

Heads for selector switches

3-position stay put	LE1 D09...D35●●A09	ZB5AD3
2-position stay put	LE1 D09...D35●●A13	ZB5AD2
3-position spring return to centre	LE2 D09...D35 LE8 D09...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	LE1 D09 and D12	LAD90909
	LE1 D18...D35, LE2, LE3, LE4, LE6 and LE8 D09...D35	LAD91809

⁽¹⁾ Remember to order adaptation kit LAD 9091 or LAD 91810 or LAD 9TA, depending on size.
⁽²⁾ Remember to order adaptation kit LAD 9092 or LAD 91810 or LAD 9TA, depending on size.
⁽³⁾ Sold in lots of 10.

TeSys enclosed starters

Replacement parts for starters

Enclosed starters

PB11264_L32.eps



DE1 DS1A04

PB11266_L32.eps



DE1 DS1A05

PB11259_L32.eps



DE1 DS1

PB11275_L32.eps



DE1 DS1A13

Empty enclosures for starters without isolating device

Head(s) mounted on cover	Designed for use with	Reference
Without	LE1 D09 and D12	DE1DS1A04
	LE1 D18...D35	DE1DS2A04
	LE2 D09...D35	DE1DS2A04
1 flush blue head "R"	LE1 D09 and D12	DE1DS1A05
	LE1 D18...D35	DE1DS2A05
	LE2 D09...D35	DE1DS2A05
1 flush green head "I" 1 projecting red head "O"	LE1 D09 and D12	DE1DS1
	LE1 D18...D35	DE1DS2
1 flush blue head "R" 1 switch with 3 fixed positions	LE1 D09 and D12	DE1DS1A09
	LE1 D18...D35	DE1DS2A09
1 flush blue head "R" 1 switch with 2 fixed positions	LE1 D09 and D12	DE1DS1A13
	LE1 D18...D35	DE1DS2A13
1 flush blue head "R" 1 switch 3 positions with spring center	LE2 D09...D35	DE2DS2

References - For safety applications

TeSys enclosed starters

D.O.L. starters, manual control, with GV2ME thermal magnetic circuit breaker

Assembly of a safety enclosure



GV2 MC + GV2 K04

Assembly of a safety enclosure

(conforming to standards IEC 60974-4-1, IEC 60204-1)

Type of product	Page	Reference
Enclosure	A1/7	GV2MC●●
Circuit breaker	See chapter B6 "Circuit breakers"	GV2ME●●
Undervoltage trip or INRS trip ⁽¹⁾	See chapter B6 "Circuit breakers"	GV●A●●●● or GV●AX●●●
Mushroom head Emergency stop pushbutton Ø 40 mm, red	A1/7	GV2K021 or GV2K031 or GV2K04

⁽¹⁾ Safety device for dangerous machines conforming to INRS and VDE 0113.

TeSys enclosed starters

Safety starters

Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"

Enclosed starters



LG7 K06●●



LG7 D12●●

Characteristics

Conforming to standards	IEC 60947-4-1, IEC 60204-1
Material	Polycarbonate ⁽¹⁾

References

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 ⁽²⁾	Weight
220/230 V	400/415 V	440 V	A		kg
–	0.06	0.06	0.16...0.25	LG7K06●●02	1.300
0.06	0.09	0.12	0.25...0.40	LG7K06●●03	1.300
–	0.18	0.18	0.40...0.63	LG7K06●●04	1.300
0.12	0.25	0.37	0.63...1	LG7K06●●05	1.300
0.25	0.55	0.55	1...1.6	LG7K06●●06	1.300
0.37	0.75	1.1	1.6...2.5	LG7K06●●07	1.300
0.75	1.5	1.5	2.5...4	LG7K06●●08	1.300
1.1	2.2	3	4...6.3	LG7K06●●10	1.300
1.5	4	4	6...10	LG7K09●●14	1.450
3	5.5	5.5	9...14	LG7D12●●16	1.600
4	7.5	9	13...18	LG7D18●●20	1.630
4	9	9	17...23	LG7D18●●21	1.630

Specifications

Functions performed by the starter:

- isolation,
- locking of isolation fitted as standard as from LG7 K09,
- lockable Emergency Stop (1/4 turn) ⁽³⁾,
- short-circuit protection,
- overload protection,
- voltage drop protection from LG7 K09. For LG7 K06, a GVA X●● undervoltage trip may be added,
- pushbutton control: 1 white Start button "I" and 1 black Stop button "O",
- degree of protection of enclosure: IP55.

Switching back on of power supply after tripping must be by a deliberate action.

A GV2 SN●● indicator light may be added (to be assembled by customer), please consult your Regional Sales Office.

For supply voltages between 380 and 415 V (codes Q7, V7 or N7) the control circuit is pre-wired between phases. For other supply voltages, the control circuit must be wired by the customer.

Variants (pre-assembled)

See page A1/25.

⁽¹⁾ Avoid allowing the material to come into contact with strong bases (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).⁽²⁾ Standard control circuit voltages:

LG7 K						
Volts ~ 50/60 Hz	24	220/230	230	380/400	400	400/415
Code	B7	M7	P7	Q7	V7	N7

LG7 D						
Volts ~ 50/60 Hz	24	220/230	230	380/400	400	415
Code	B7	M7	P7	Q7	V7	N7

⁽³⁾ **LG7 K06**: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.
LG7 K09, D12, D18: 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.

TeSys enclosed starters

Safety starters

Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"



PE111993_L32Reps

LG1 K●●

Characteristics

Conforming to standards	IEC 60947-4-1, IEC 60204-1
Material	Polycarbonate ⁽¹⁾

References

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
220/230 V	400/415 V	440 V	A		kg
–	0.06	0.06	0.16...0.25	LG1K065●●02	0.970
0.06	0.09	0.12	0.25...0.40	LG1K065●●03	0.970
–	0.18	0.18	0.40...0.63	LG1K065●●04	0.970
0.12	0.25	0.25	0.63...1	LG1K065●●05	0.970
0.25	0.55	0.55	1...1.6	LG1K065●●06	0.970
0.37	0.75	1.1	1.6...2.5	LG1K065●●07	0.970
0.75	1.5	1.5	2.5...4	LG1K065●●08	0.970
1.1	2.2	3	4...6.3	LG1K065●●10	0.970
1.5	4	4	6...10	LG1K095●●14	1.120
3	5.5	5.5	9...14	LG1D122●●16	1.270
4	7.5	9	13...18	LG1D182●●20	1.290
4	9	9	17...23	LG1D182●●21	1.290

Specifications

Functions performed by the starter:

- isolation,
- locking of isolation,
- lockable Emergency Stop (red/yellow switch-disconnector),
- short-circuit protection,
- overload protection,
- pushbutton control: 1 white Start button "I" and 1 black Stop button "O",
- degree of protection of enclosure: IP55.

Switching back on of power supply after tripping must be by a deliberate action.

A GVA X●● undervoltage trip may be added.

A GV2 SN●● indicator light may be added (to be assembled by customer), please consult your Regional Sales Office.

For supply voltages between 380 and 415 V (codes Q7, V7 or N7) the control circuit is pre-wired between phases. For other supply voltages, the control circuit must be wired by the customer.

Variants (pre-assembled)

See page A1/25.

⁽¹⁾ Avoid allowing the material to come into contact with strong bases (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽²⁾ Standard control circuit voltages:

LG1 K					
Volts ~ 50/60 Hz	220/230	230	380/400	400	400/415
Code	M7	P7	Q7	V7	N7

LG1 D					
Volts ~ 50/60 Hz	220	230	380	400	415
Code	M7	P7	Q7	V7	N7

References

TeSys enclosed starters

Safety starters

Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"

Enclosed starters



LG8 K06●●



LG8 K09●●

Characteristics

Conforming to standards	IEC 60947-4-1, IEC 60204-1
Material	Polycarbonate ⁽¹⁾

References

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 ⁽²⁾	Weight
220/230 V	400/415 V	440 V	A		kg
–	0.06	0.06	0.16...0.25	LG8K06●●02	1.640
0.06	0.09	0.12	0.25...0.40	LG8K06●●03	1.640
–	0.18	0.18	0.40...0.63	LG8K06●●04	1.640
0.12	0.25	0.25	0.63...1	LG8K06●●05	1.640
0.25	0.55	0.55	1...1.6	LG8K06●●06	1.640
0.37	0.75	1.1	1.6...2.5	LG8K06●●07	1.640
0.75	1.5	1.5	2.5...4	LG8K06●●08	1.640
1.1	2.2	3	4...6.3	LG8K06●●10	1.640
1.5	4	4	6...10	LG8K09●●14	1.640
3	5.5	5.5	9...14	LG8K12●●16	1.640

Specifications

Functions performed by the starter:

- isolation,
- locking of isolation fitted as standard as from LG8 K09,
- lockable Emergency Stop (1/4 turn) ⁽³⁾,
- short-circuit protection,
- overload protection,
- voltage drop protection from LG8 K09. For LG8 K06, a GVA X●● undervoltage trip may be added,
- control by selector switch "I-II", position non maintained and Stop press button "O" (black),
- degree of protection of enclosure: IP55.

Switching back on of power supply after tripping must be by a deliberate action.

A GV2 SN●● indicator light may be added (to be assembled by customer), please consult your Regional Sales Office.

For supply voltages between 380 and 415 V (codes Q7, V7 or N7) the control circuit is pre-wired between phases. For other supply voltages, the control circuit must be wired by the customer.

Variants (pre-assembled)

See page A1/25.

⁽¹⁾ Avoid allowing the material to come into contact with strong bases (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽²⁾ Standard control circuit voltages:

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

⁽³⁾ **LG8 K06**: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.

LG8 K09: 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.

References

TeSys enclosed starters

Safety starters

Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"



LG7 ●●A04

Variants (pre-assembled)

Description	Variants available for starter	Suffix to be added to the starter reference ⁽¹⁾
With Emergency Stop No control pushbuttons	LG7 K06M705...K09M714 LG7 K06Q705...K09Q714	A04
With Emergency Stop, mushroom head ⁽²⁾	LG1 K06M705...K09M714 LG1 K06Q705...K09Q714	A37
With padlocking facility (fitted as standard from LG7 K09)	LG7 K06M705...K06M710	A29
Without circuit breaker ⁽³⁾ (or undervoltage release voltage)	LG1●●M7, LG1●●Q7, LG7●●M7, LG7●●Q7, LG8●●M7, LG8●●Q7	⁽⁴⁾

For LG7 starters: A04, A29 and A39 variants (Without Emergency Stop) can also be made from parts. Empty enclosures, contactor and circuit breaker must be ordered separately. A customer assembly.

DE1KS empty enclosures: see page A1/29.

LC1 K contactors: see chapter B8 "Contactors".

GV2 ME circuit breakers: see chapter B6 "Circuit breakers".

⁽¹⁾ Example: **LG7 D12M716A04**.

⁽²⁾ The mushroom head type Emergency Stop acts mechanically on the circuit breaker.

⁽³⁾ Order circuit breaker separately. References GV2 ME: see chapter B6 "Circuit breakers".

⁽⁴⁾ Delete the last 2 digits of the selected starter reference. Example: **LG1 K065●●08** becomes **LG1 K065●●**.

TeSys enclosed starters

Safety starters

Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"

PB11880_L32R.eps



LJ7 K06●●

Characteristics

Conforming to standards	IEC 60947-4-1, IEC 60204-1
Material	Polycarbonate ⁽¹⁾

References

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 Reference ⁽²⁾	Weight
380/400 V	Setting range of thermal trips		kg
kW	A		
0.06	0.16...0.25	LJ7K06Q702	2.270
0.09	0.25...0.40	LJ7K06Q703	2.270
0.18	0.40...0.63	LJ7K06Q704	2.270
0.25	0.63...1	LJ7K06Q705	2.270
0.55	1...1.6	LJ7K06Q706	2.270
0.75	1.6...2.5	LJ7K06Q707	2.270
1.5	2.5...4	LJ7K06Q708	2.270
2.2	4...6.3	LJ7K06Q710	2.270
4	6...10	LJ7K09Q714	2.270

Specifications

Functions performed by the starter:

- isolation,
- locking of isolation fitted as standard on LJ7 K09,
- lockable Emergency Stop (1/4 turn) ⁽³⁾,
- short-circuit protection,
- overload protection,
- voltage drop protection from LJ7 K09. For LJ7 K06, a GVA X●● undervoltage trip may be added,
- pushbutton control: 1 white Start button "I" and 1 black Stop button "O",
- terminal allowing connection of a volt-free contact, if required, in the control circuit,
- degree of protection of enclosure: IP55.

Switching back on of power supply after tripping must be by a deliberate action.

A GV2 SN●● indicator light may be added (to be assembled by customer), please consult your Regional Sales Office.

Integral transformer: 400/24 V, 25 VA.

Variants (pre-assembled)

Description	Variants available for starter	Suffix to be added to the starter reference ⁽⁴⁾
With Emergency Stop No control pushbuttons	LJ7 K06Q705...K09Q714	A04
With padlocking facility (fitted as standard on LJ7 K09)	LJ7 K06Q705...K06Q710	A29
Without circuit breaker ⁽⁶⁾ (or undervoltage release voltage)	LJ7	⁽⁵⁾
Without circuit breaker ⁽⁶⁾ With Emergency Stop No control pushbuttons	LJ7 K09Q7	A04
Without circuit breaker ⁽⁶⁾ Without Emergency Stop (if the emergency stop is on the machine)	LJ7 K09Q7	A39
Without circuit breaker ⁽⁶⁾ Without Emergency Stop No control pushbuttons	LJ7 K09Q7	A04A39

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

⁽²⁾ 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).

⁽³⁾ LJ7 K06: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.

⁽⁴⁾ LJ7 K09: the Emergency Stop function is performed by an undervoltage trip GV AX385, acting on the circuit breaker.

This circuit breaker is always supplied pre-wired for use on 380/400 V 50 Hz.

⁽⁵⁾ Example: LJ7 K06Q705A04.

⁽⁶⁾ Delete the last 2 digits of the selected starter reference. Example: LJ7 K06Q705 becomes LJ7 K06Q7.

⁽⁷⁾ Circuit breaker to be ordered separately. References GV2 ME: see chapter B6 "Circuit breakers".

TeSys enclosed starters

Safety starters

Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"

Characteristics

Conforming to standards	IEC 60947-4-1, IEC 60204-1
Material	Polycarbonate ⁽¹⁾

References

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
380/400 V	Setting range of thermal trips	Reference ⁽²⁾	
kW	A		kg
0.06	0.16...0.25	LJ8K06Q702	2.650
0.09	0.25...0.40	LJ8K06Q703	2.650
0.18	0.40...0.63	LJ8K06Q704	2.650
0.25	0.63...1	LJ8K06Q705	2.650
0.55	1...1.6	LJ8K06Q706	2.650
0.75	1.6...2.5	LJ8K06Q707	2.650
1.5	2.5...4	LJ8K06Q708	2.650
2.2	4...6.3	LJ8K06Q710	2.650
4	6...10	LJ8K09Q714	2.650



LJ8 K06●●



LJ8 K09●●

Specifications

Functions performed by the starter:

- isolation,
- locking of isolation fitted as standard on LJ8 K09,
- lockable Emergency Stop (1/4 turn) ⁽³⁾,
- short-circuit protection,
- overload protection,
- voltage drop protection from LJ8 K09. For LJ8 K06, a GVA X●● undervoltage trip may be added,
- 1 spring return selector switch "I-II" for command, non-maintained positions and 1 Stop pushbutton control "O" (black),
- terminal allowing connection of a volt-free contact, if required, in the control circuit,
- degree of protection of enclosure: IP55.

Switching back on of power supply after tripping must be by a deliberate action.

A GV2 SN●● indicator light may be added (to be assembled by customer), please consult your Regional Sales Office.

Integral transformer: 400/24 V, 25 VA.

Variants (pre-assembled)

Description	Variants available for starter	Suffix to be added to the starter reference
Without circuit breaker ⁽⁵⁾ (or undervoltage release voltage)	LJ8	⁽⁴⁾

⁽¹⁾ Avoid placing this material in contact with harsh substances (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).⁽²⁾ 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).⁽³⁾ LJ8 K06: the mushroom head type Emergency Stop acts mechanically on the circuit breaker.

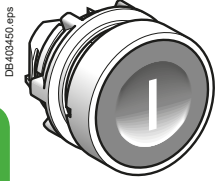
LJ8 K09: the Emergency Stop function is performed by an undervoltage trip GV AX385, acting on the circuit breaker. This circuit breaker is always supplied pre-wired for use on 380/400 V 50 Hz.

⁽⁴⁾ Delete the last 2 digits of the selected starter reference. Example: LJ8 K06Q702 becomes LJ8 K06Q7.⁽⁵⁾ Circuit breaker to be ordered separatel. References GV2 ME: see chapter B6 "Circuit breakers".

TeSys enclosed starters

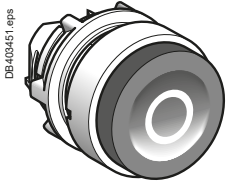
Replacement parts for starters

Enclosed starters



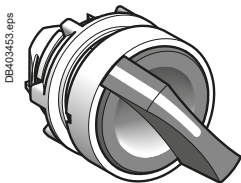
DB403450.eps

ZB5 AA331



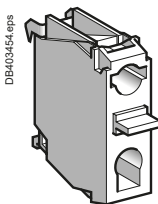
DB403451.eps

ZB5 AL432



DB403453.eps

ZB5 AD5



DB403454.eps

ZEN L1111



8274_L32R.eps

GV2 K04



110360_L32R.eps

ZB5 AS834

Heads for Start and Stop/Reset pushbuttons

Description	For use on	Unit reference
Flush, green "I"	LG1, LG7, LJ7	ZB5AA331
Projecting, red "O"	LG1, LG7, LJ7, LG8, LJ8	ZB5AL432

Heads for selector switches

3-position stay put	LG8, LJ8	ZB5AD5
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Mushroom head pushbutton

Emergency stop, latching, turn to release, Ø 40 mm, red, IP55	LG1 ●A37, LG7 K06, LJ7 K06, LG8 K06, LJ8 K06	GV2K04 ^{(1) (2)}
	LG7 K09...D18, LJ7 K09, LG8 K09...K12, LJ8 K09	ZB5AS834

Contact blocks

1 N/O spring return	LG1, LG7, LJ7, LG8, LJ8	ZENL1111
1 N/C spring return	LG1, LG7, LJ7, LG8, LJ8	ZENL1121

Add-on blocks

Padlocking device ⁽²⁾ for GV2 ME operator (padlocking is only possible in the "O" position), 1 to 3 padlocks Ø 4 to 8 mm	LG1, LG7, LJ7, LG8, LJ8	GV2V01	
Sealing kit	IP 55 for temperature between +5 °C and +40 °C	LG1, LG7, LJ7, LG8, LJ8	GV2E01
	IP 55 for temperature between -20 °C and +40 °C	LG1, LG7, LJ7, LG8, LJ8	GV2E02

(1) Registration the "O" position by a padlock Ø4 to 8 mm.

(2) Supplied with IP55 GV2 E01 sealing kit.

References - For safety applications

TeSys enclosed starters

Replacement parts for starters

PB111891_L32R.eps



DE1 KS217A06

PB111892R.eps



DE1 KS217A06A29

PB111896_L32R.eps



DE1 KS217A06A37

PB111899_L32R.eps



DE1 KS217A29A37

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"	Padlocking devices	DE1KS217A06A29
	1 flush white head "I" 1 projecting black head "O" 1 head emergency stop	Padlocking devices	DE1KS217A06A37
	Without	Padlocking devices	DE1KS217A29
	1 head emergency stop		DE1KS217A37
	1 head emergency stop	Padlocking devices	DE1KS217A29A37

Enclosed starters

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Enclosed starters



LF3 P●●E



LF3 P●●EA79A74



LF4 P●●E



LF4 P●●EA79A74

Characteristics

Conforming to standards	IEC 60204-1, IEC 60947-4-1, IEC 60439-1	
Degree of protection	Conforming to IEC 60529	IP54
Ambient air temperature	Operation	-5 to +40 °C
Operating positions	Same as that of the contactors	
Material	LF●P: polycarbonate ⁽¹⁾	

Starters in insulated (plastic) enclosure

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3		Circuit breaker adjustment range of thermal trips	Starter with extended addressing	Weight
220/230 V	400/415 V			
kW	kW	A		kg

Non-reversing starters with rotary control knob, with black handle on blue background

–	–	Without	LF3P00E ⁽²⁾	1.020
–	0.06	0.16...0.25	LF3P02E	1.300
0.06	0.09	0.25...0.40	LF3P03E	1.300
–	0.12	0.40...0.63	LF3P04E	1.300
–	0.18			
0.09	0.25	0.63...1	LF3P05E	1.300
0.12	–			
0.18	0.37	1...1.6	LF3P06E	1.350
0.25	0.55			
0.37	0.75	1.6...2.5	LF3P07E	1.350
0.55	1.1	2.5...4	LF3P08E	1.350
0.75	1.5			
1.1	2.2	4...6.3	LF3P10E	1.350
1.5	3	6...10	LF3P14E	1.350
–	4			
2.2	5.5	9...14	LF3P16E	1.350
3	–			

Reversing starters with rotary control knob, with black handle on blue background

–	–	Without	LF4P00E ⁽²⁾	1.020
–	0.06	0.16...0.25	LF4P02E	1.550
0.06	0.09	0.25...0.40	LF4P03E	1.550
–	0.12	0.40...0.63	LF4P04E	1.550
–	0.18			
0.09	0.25	0.63...1	LF4P05E	1.550
0.12	–			
0.18	0.37	1...1.6	LF4P06E	1.600
0.25	0.55			
0.37	0.75	1.6...2.5	LF4P07E	1.600
0.55	1.1	2.5...4	LF4P08E	1.600
0.75	1.5			
1.1	2.2	4...6.3	LF4P10E	1.600
1.5	3	6...10	LF4P14E	1.600
–	4			
2.2	5.5	9...14	LF4P16E	1.600
3	–			

Variants (pre-assembled)

Description	For mounting on	Suffix to be added to the starter reference ⁽³⁾
With HARTING connectors ⁽⁴⁾	Insulated or metal enclosure	A74
With local/AS-Interface control	Insulated or metal enclosure	A79
With local/AS-Interface control and with HARTING connectors ⁽⁴⁾	Insulated or metal enclosure	A79A74

⁽¹⁾ Avoid allowing the material to come into contact with strong bases (detergents, chlorine solvents, ketones, alcohol, aromatic hydrocarbons).

⁽²⁾ Supplied without GV2 P motor circuit breaker.

⁽³⁾ Example: LF3 P02EA79A74.

⁽⁴⁾ Connectors to be fitted to cables (to be ordered separately, see page A1/69).

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Enclosed starters

Characteristics

Conforming to standards		IEC 60204-1, IEC 60947-4-1, IEC 60439-1 UL 508, CSA C22-2 n° 14 ⁽¹⁾
Degree of protection	Conforming to IEC 60529	IP54
Ambient air temperature	Operation	-5 to +40 °C
Operating positions		Same as that of the contactors
Material		LF● MP: sheet steel

Starters in metal enclosures

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3		Circuit breaker adjustment range of thermal trips	Starter with extended addressing	Weight
220/230 V	400/415 V			

kW		A		kg
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Non-reversing starters with rotary control knob, with black handle on blue background

–	–	Without	LF3MP00EU ⁽²⁾	3.620
–	0.06	0.16...0.25	LF3MP02EU	3.900
0.06	0.09	0.25...0.40	LF3MP03EU	3.900
–	0.12	0.40...0.63	LF3MP04EU	3.900
–	0.18			
0.09	0.25	0.63...1	LF3MP05EU	3.900
0.12	–			
0.18	0.37	1...1.6	LF3MP06EU	3.950
0.25	0.55			
0.37	0.75	1.6...2.5	LF3MP07EU	3.950
0.55	1.1	2.5...4	LF3MP08EU	3.950
0.75	1.5			
1.1	2.2	4...6.3	LF3MP10EU	3.950
1.5	3	6...10	LF3MP14EU	3.950
–	4			
2.2	5.5	9...14	LF3MP16EU	3.950
3	–			

Reversing starters with rotary control knob, with black handle on blue background

–	–	Without	LF4MP00EU ⁽²⁾	3.620
–	0.06	0.16...0.25	LF4MP02EU	4.150
0.06	0.09	0.25...0.40	LF4MP03EU	4.150
–	0.12	0.40...0.63	LF4MP04EU	4.150
–	0.18			
0.09	0.25	0.63...1	LF4MP05EU	4.150
0.12	–			
0.18	0.37	1...1.6	LF4MP06EU	4.200
0.25	0.55			
0.37	0.75	1.6...2.5	LF4MP07EU	4.200
0.55	1.1	2.5...4	LF4MP08EU	4.200
0.75	1.5			
1.1	2.2	4...6.3	LF4MP10EU	4.200
1.5	3	6...10	LF4MP14EU	4.200
–	4			
2.2	5.5	9...14	LF4MP16EU	4.200
3	–			

Variants (pre-assembled)

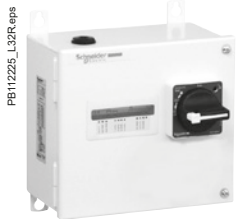
Description	For mounting on	Suffix to be added to the starter reference, before the letter U ⁽³⁾
With HARTING connectors ⁽⁴⁾	Insulated or metal enclosure	A74
With local/AS-Interface control	Insulated or metal enclosure	A79
With local/AS-Interface control and with HARTING connectors ⁽⁴⁾	Insulated or metal enclosure	A79A74

⁽¹⁾ Only for metal enclosures with letter U at the end of the reference.

⁽²⁾ Supplied without GV2 P motor circuit breaker.

⁽³⁾ Example: **LF3 MP02EA79A74U**.

⁽⁴⁾ Connectors to be fitted to cables (to be ordered separately, see page A1/69).



LF3 MP●●EU



LF3 MP●●A79A74U



LF4 MP●●EU



LF4 MP●●A79A74U

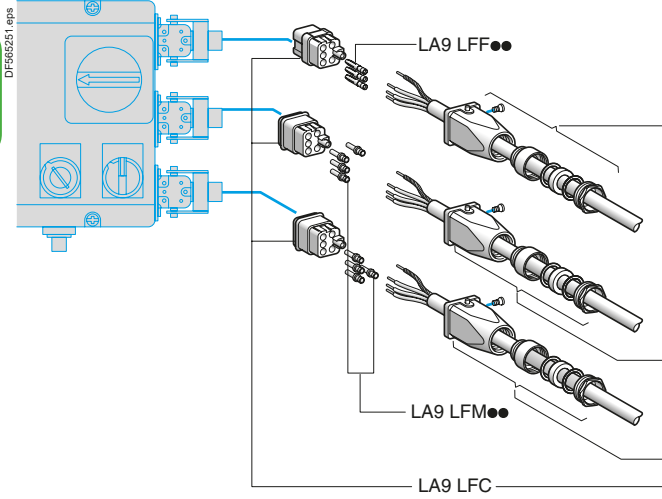
TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

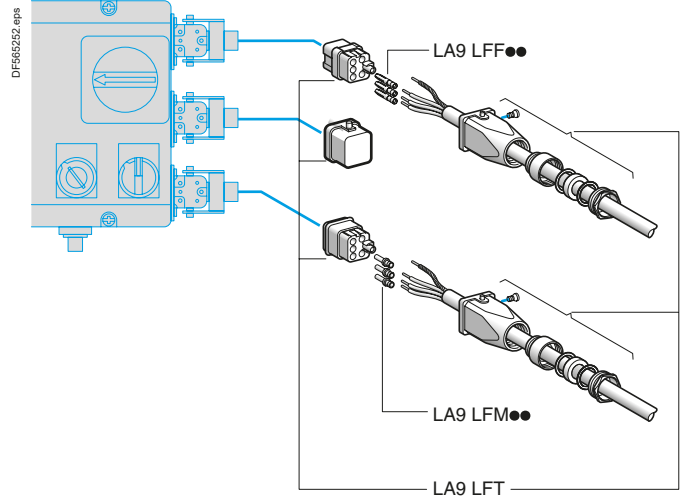
Enclosed starters

Insulated enclosures LF3 and LF4

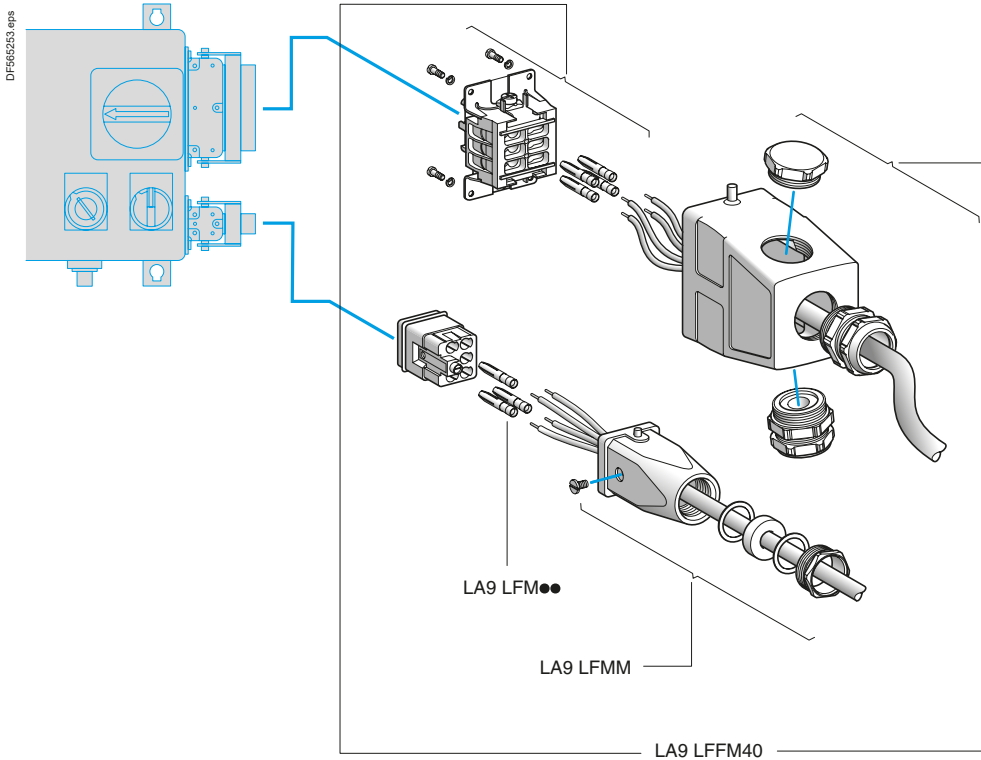
Power extension (daisy-chaining)



Terminal



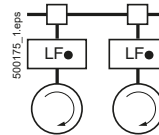
Metal enclosures LF3 and LF4



Accessories for insulated enclosures with variant A74

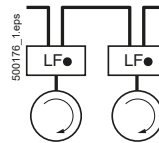
In order to reduce setting-up times and to simplify maintenance, variant A74 LF starters are fitted with Harting plug-in connectors. These starters are designed to allow 2 types of connection topology.

Connection using tap links



This configuration avoids having to switch off the power supply when replacing or adding one or more starters. Although machine availability is increased, a larger number of power connections is required: 4 per starter.

Connection using power extension (daisy-chaining)



The number of power connections per starter is halved, but continuity of service is no longer assured if any of the "upstream" starters are disconnected or removed. With this type of installation, special precautions must be taken because removal of a starter at the head of the power supply line de-energises all the remaining starters on that line. For safety reasons therefore, starters must not be removed under load (prohibited by standard EN60204 above 3kW/400V).

The 2 connection kits and accessories shown below have been designed to facilitate setting up of power extension configurations by the user.

Connection kit (depending on enclosure application)					
Enclosure application	Capacity	Kit contents	For mounting on	Reference	Weight
	mm ²				kg
Power extension (daisy-chaining)	3-pole 1.5 or 2.5	1 female connector 2 male connectors and corresponding power sockets ⁽¹⁾	Enclosures LF3 and LF4	LA9LFC	0.150
Terminal	3-pole 1.5 or 2.5	1 female connector 1 male connector 1 blanking plug and corresponding power sockets ⁽¹⁾	Enclosures LF3 and LF4	LA9LFT	0.110

Crimping contacts					
Type	Capacity		Sold in lots of	Unit reference	Weight
	mm ²				kg
Male	1.5		100	LA9LFM15	0.120
	2.5		100	LA9LFM25	0.120
Female	1.5		100	LA9LFF15	0.160
	2.5		100	LA9LFF25	0.150

Accessories for metal enclosures with variant A74

Connection kits					
For connector	Kit contents	For mounting on	Reference	Weight	
					kg
Input	1 metal cover 2 size 16 cable glands 1 blanking plug 1 female power socket (3P + earth) 4 female crimping contacts ⁽²⁾	Metal enclosures LF3, LF4	LA9LFFM40	0.260	
Output to motor	1 metal cover 1 size 16 cable gland 1 male power socket (3P+ earth) ⁽¹⁾	Metal enclosures LF3, LF4	LA9LFMM	0.060	

Crimping contacts						
Type	Capacity	Thermal current	Voltage	Sold in lots of	Unit reference	Weight
	mm ²	A	V			kg
Male	1.5	10	400	100	LA9LFM15	0.120
	2.5	10	400	100	LA9LFM25	0.120

⁽¹⁾ Crimping contacts to be ordered separately.
⁽²⁾ For flexible cable, 4 mm² maximum, lth: 16 A, Us: 400 V.

Technical Data for Designers

Contents

Switch-disconnectors	A1/36 to A1/38
Direct-on-line starters	A1/39 to A1/47
Star-delta starters	A1/48 to A1/49
Starters for safety applications	A1/50 to A1/53
Starters for AS-interface bus.....	A1/54 to A1/69

Dimensions - Switch-disconnectors

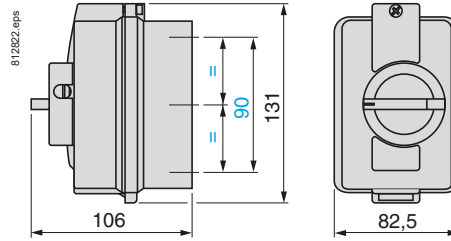
TeSys enclosed starters

VARIO enclosed switch-disconnectors

Enclosed starters

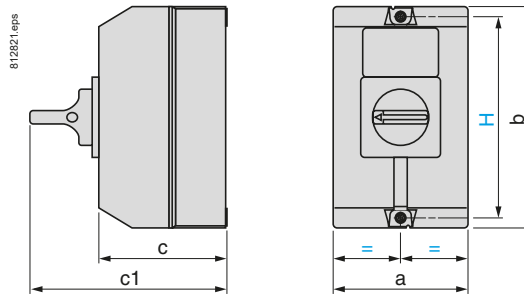
Dimensions

VCFN 12GE to VCFN 40GE



Cable glands: 2 x 16 P top and bottom.

VCF or VBF 02GE to 4GE VCFX or VBFX GE1 to GE4

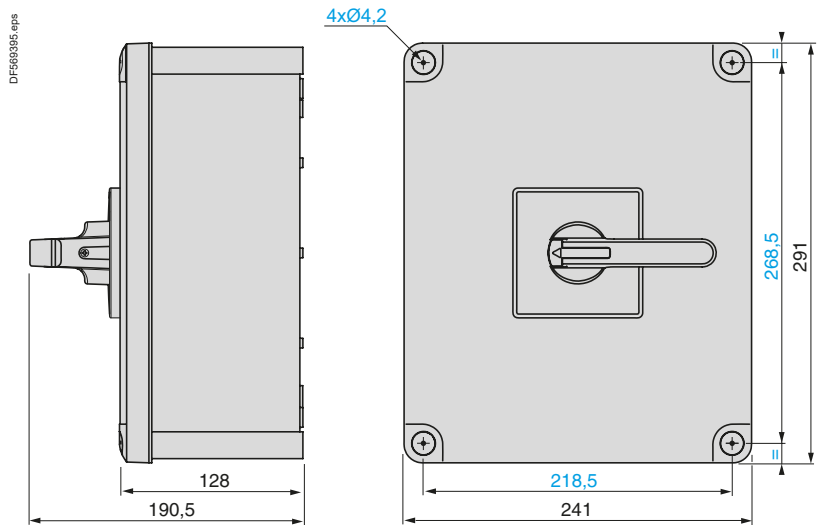


	a	b	c	c1	H
V•F 02GE to V•F 2GE, V•FX GE1 ⁽¹⁾	90	146	85	131	130
V•F 3GE and V•F 4GE ⁽²⁾	150	170	106	152	164
V•FX GE2 and V•FX GE4 ⁽²⁾	150	170	106	152	164

⁽¹⁾ Cable glands: 2 x 16 P top and bottom.

⁽²⁾ Cable glands: 2 x 16/21/29 P top and bottom.

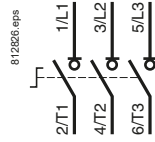
VCF or VBF 5GEN and 6GEN



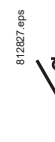
Schemes

Switch-disconnectors

Enclosed or switch bodies



Main pole module



Neutral pole module



Auxiliary contact blocks

VZ 7



VZ 20



VZN 05



VZN 06



Dimensions, schemes - Switch-disconnectors

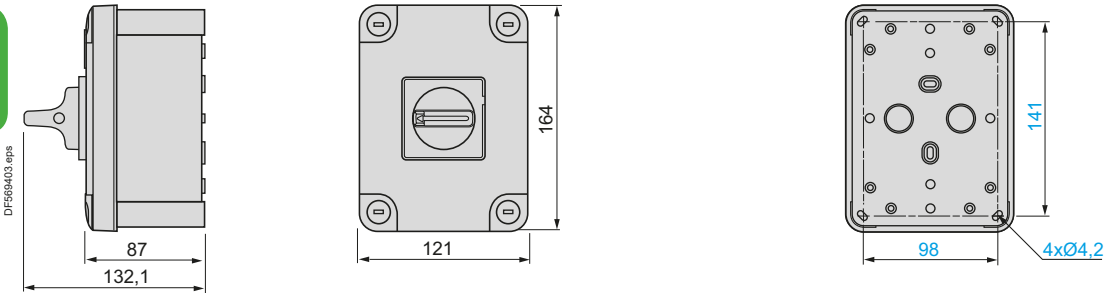
TeSys enclosed starters

VARIO enclosed switch-disconnectors for the North American market, conforming to UL and CSA standards

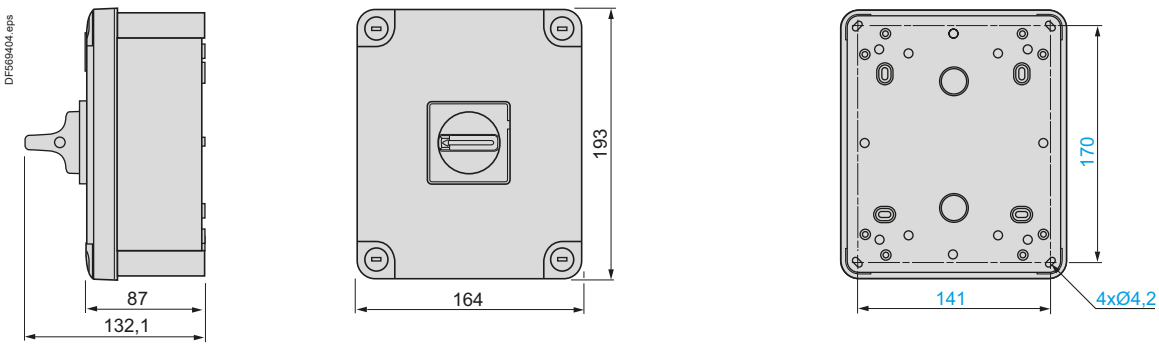
Enclosed starters

Dimensions

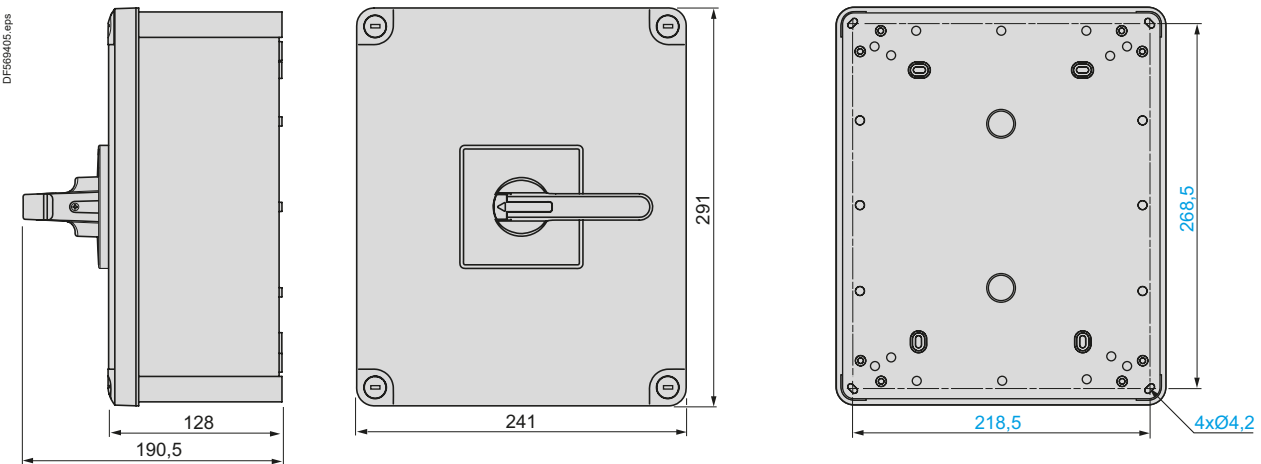
VC1 GUN and VC2 GUN



VC3 GUN and VC4 GUN



VC5 GUN and VC6 GUN



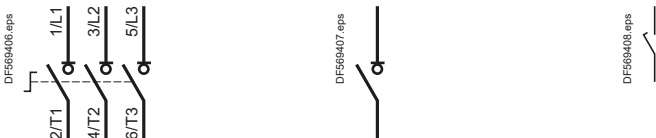
Schemes

Switch-disconnectors

Enclosed switch-disconnectors or switch bodies

Main pole module

Neutral pole module



Auxiliary contact block modules

VZ 7

VZ 20



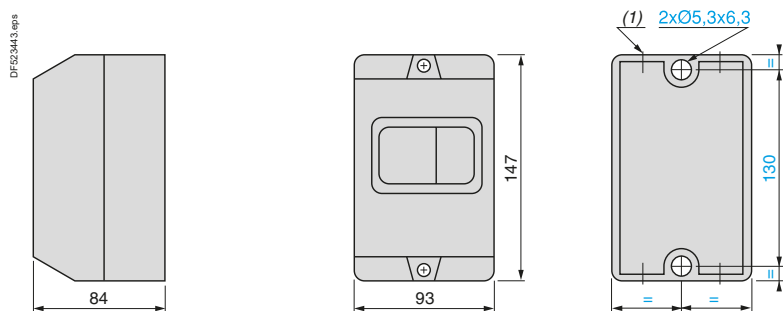
References:
A1/6

TeSys enclosed starters

D.O.L. starters, manual control, with GV2 ME thermal magnetic circuit breaker

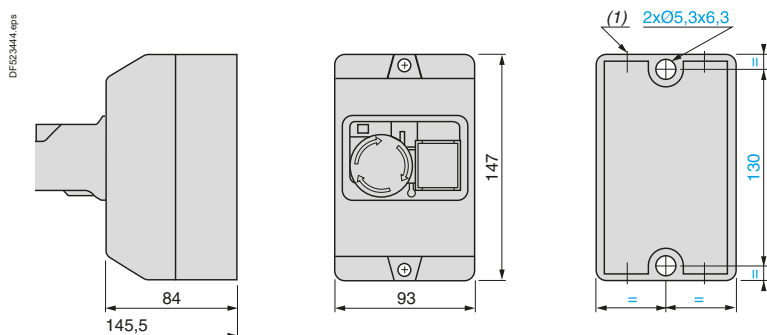
Dimensions

Surface mounting enclosure GV2 MC0●



(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.

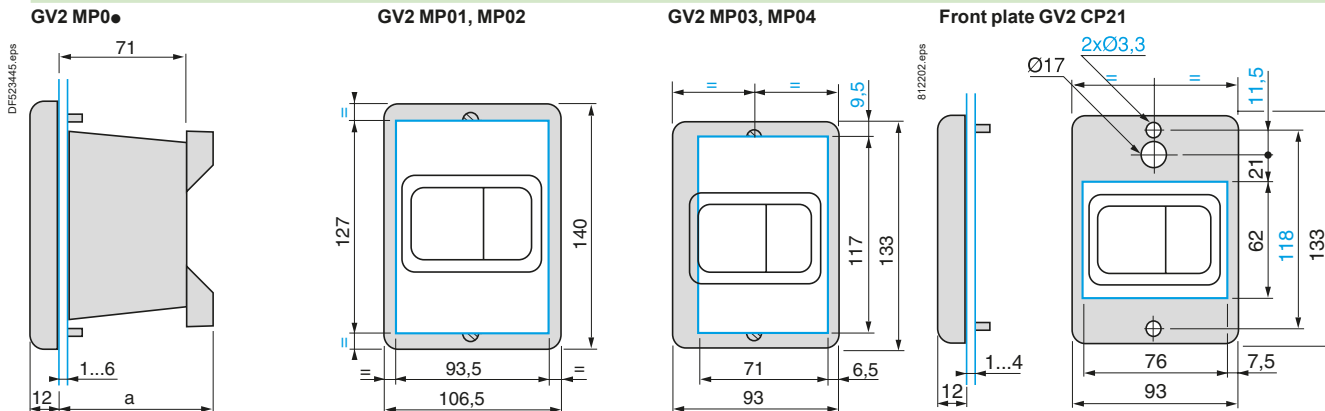
Surface mounting enclosure GV2 MCK04



(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

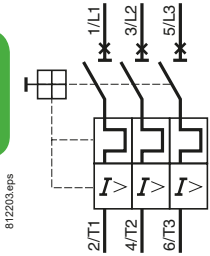
Flush mounting enclosures GV2 MP0● (panel cut-out)



GV2	a
MP01, MP02	-
MP03, MP04	86

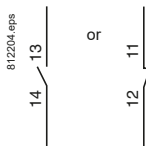
Schemes

GV2 ME●●

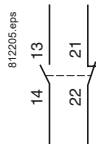


Instantaneous auxiliary contacts

GV AE1



GV AE11

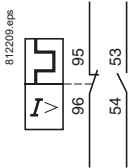


GV AE20

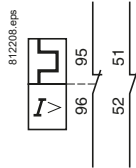


Instantaneous auxiliary contacts and fault signalling contacts

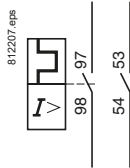
GV AD0110



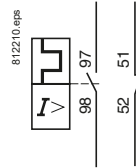
GV AD0101



GV AD1010

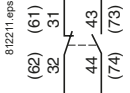


GV AD1001



Instantaneous auxiliary contacts

GV AN11

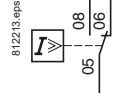


GV AN20



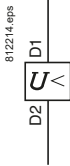
Short-circuit signalling contacts

GV AM11

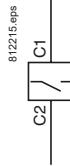


Undervoltage trips

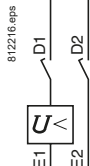
GV AU●●●



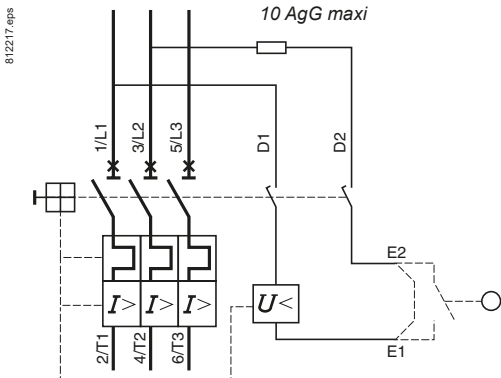
GV AS●●●



GV AX●●●



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

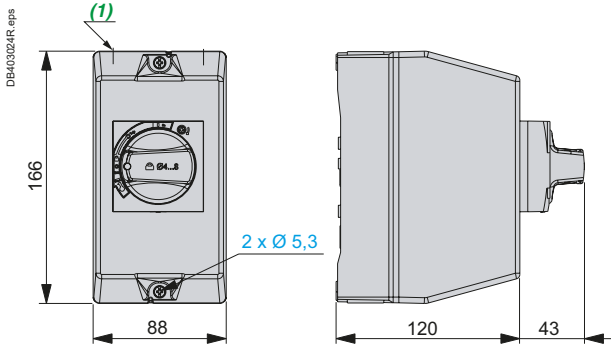


TeSys enclosed starters

D.O.L. starters manual control, with magnetic circuit breaker GV2 L, GV3 L or thermal-magnetic GV2 P, GV3 P

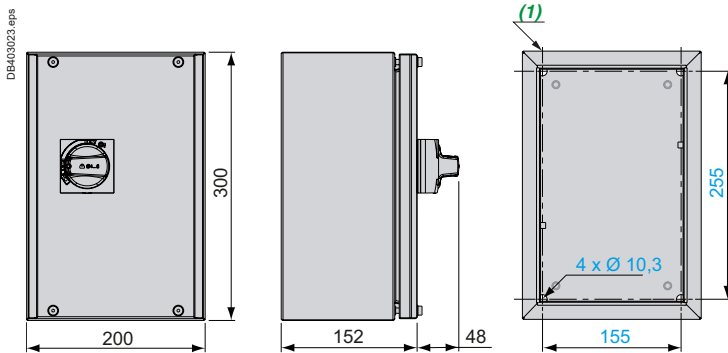
Dimensions

GV2 PC●●



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

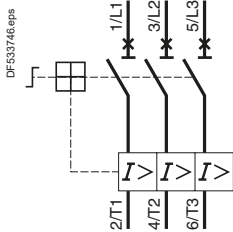
GV3 PC●●



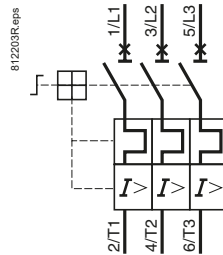
(1) Top face: 1 blanking plug for ISO32 cable gland.
Bottom face: 2 blanking plugs for ISO32 cable gland + 1 blanking plug for ISO20 cable gland.

Schemes

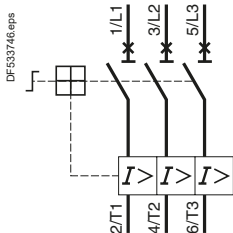
GV2 L



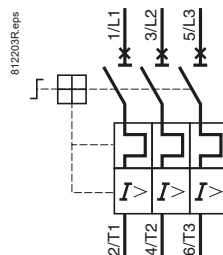
GV2 P



GV3 L

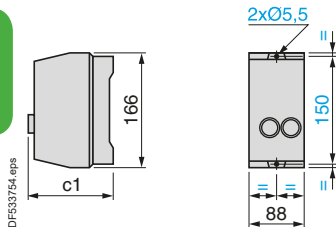


GV3 P



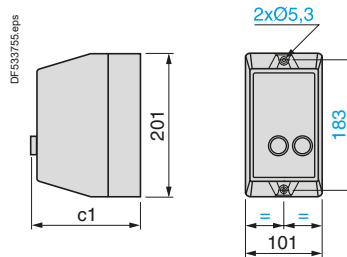
Dimensions

LE1 D09 and D12



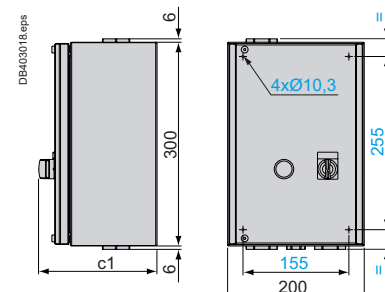
	c1
Standard version	128.5
Variant A04	120
Variant A05	128.5
Variant A09	120
Variant A13	120

**LE1 D09●●T
LE1 D18...D35 and LE2 D09...D35**



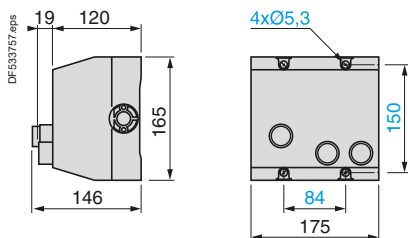
	c1	
	LE1 D	LE2 D
Standard version	153.5	160
Variant A04	145	145
Variant A05	153.5	153.5
Variant A09	160	–
Variant A13	160	–

**LE1 D40A...D65A
LE2 D40A...D65A**



	c1	
	LE1 D	LE2 D
Standard version	158.5	174
Variant A04	150	150
Variant A05	158.5	158.5

LE2 K06 and K09



Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE1 D09 and D12	–	2 x 20	–	2 x 20
LE1 D18...D35 and LE2 D09...D35	–	2 x 20 or 2 x 25	–	2 x 20 or 2 x 25
LE1 and LE2 D40A...D65A	–	1 x 32	–	1 x 20 and 2 x 32
LE2 K06 and K09	2 x 13 and 2 x 16	4 x 20	2 x 13 and 2 x 16	4 x 20

Schemes - Direct-on-line

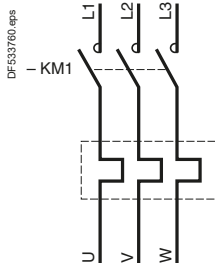
TeSys enclosed starters

D.O.L. starters

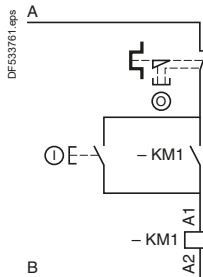
without isolating device

Schemes

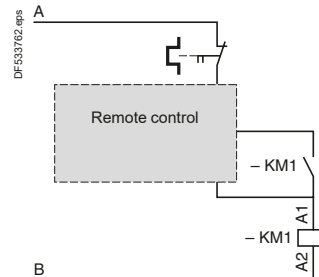
LE1 D09...D65A



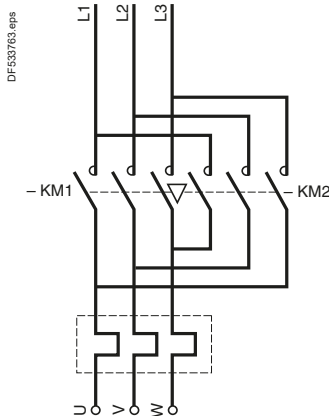
LE1 D09...D65A



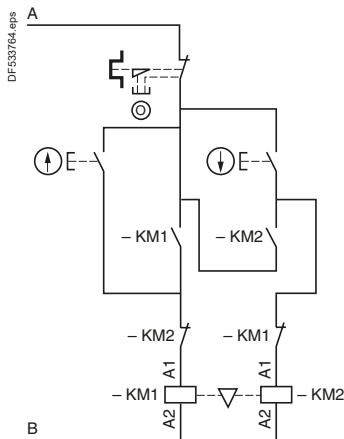
LE1 D09...D65A with variant A04 or A05



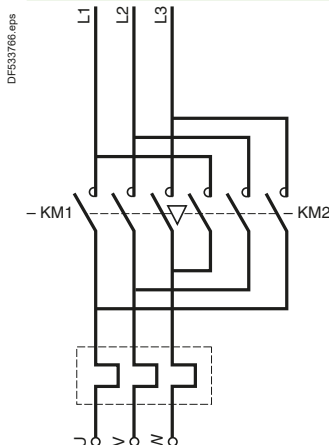
LE2 K06, K09



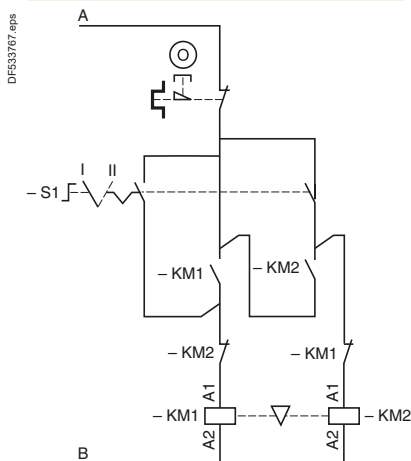
LE2 K06, K09



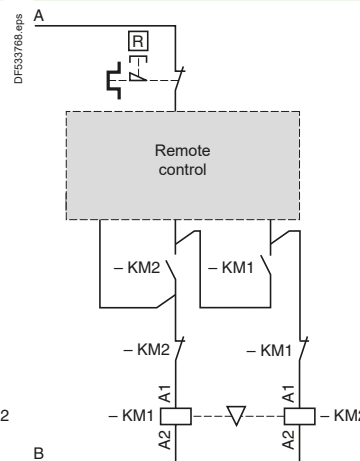
LE2 D09...D65A



LE2 D09...D65A



LE2 D40A...D65A with variants A04 or A05



LE1 D09...D65A, LE2 D09...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	

LE2 K06, 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:
A1/10 and A1/11

Dimensions:
A1/42

Enclosed starters

Dimensions - Direct-on-line

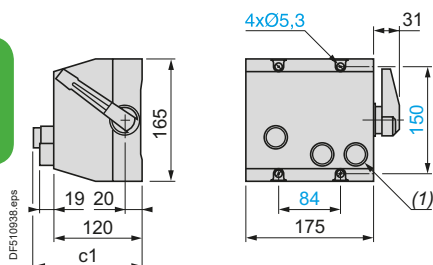
TeSys enclosed starters

D.O.L. starters

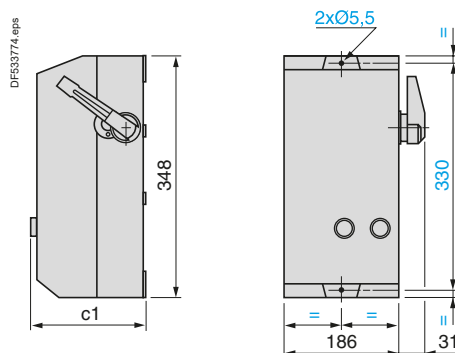
with isolating device

Dimensions

LE4 K06 and K09, LE8 K06 and K09



LE4 D09...D35, LE8 D09...D35



	c1	
	LE4 K	LE8 K
Standard version	146	146
Variant A05	–	139

(1) For LE8 only.

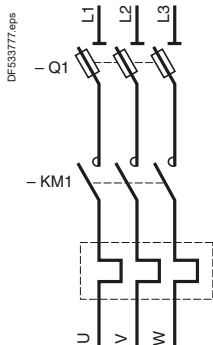
	c1	
	LE4 D	LE8 D
Standard version	175.5	182
Variant A04	167	167
Variant A05	175.5	175.5

Knock-outs or blanking plugs for cable glands

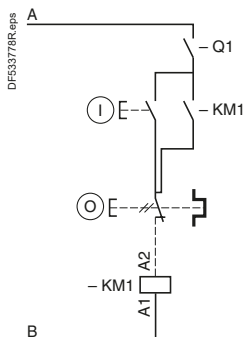
Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE4 and LE8 D09...D35	–	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40	–	2 x 20 or 2 x 25 or 2 x 32 or 2 x 40
LE4 and LE8 K06 and K09	2 x 13 and 2 x 16	4 x 20	2 x 13 and 2 x 16	4 x 20

Schemes

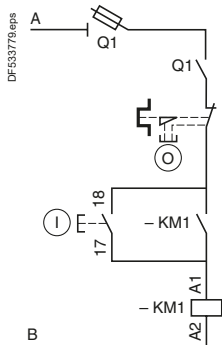
**LE4 K06, K09
LE4 D09...D35**



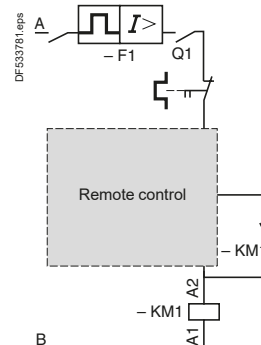
LE4 K06, K09



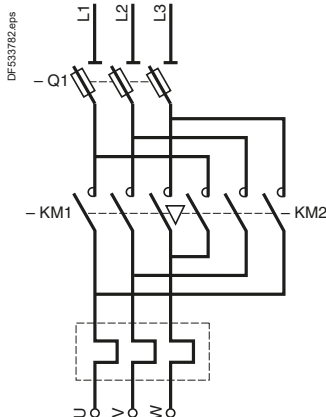
LE4 D09...D35



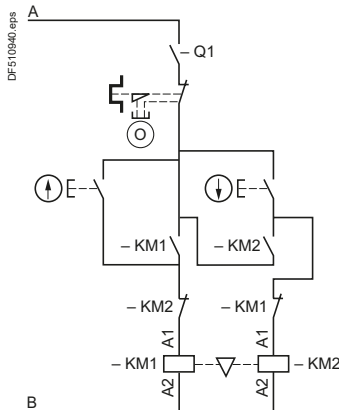
**LE4 D09...D35 with
variant A04 or A05**



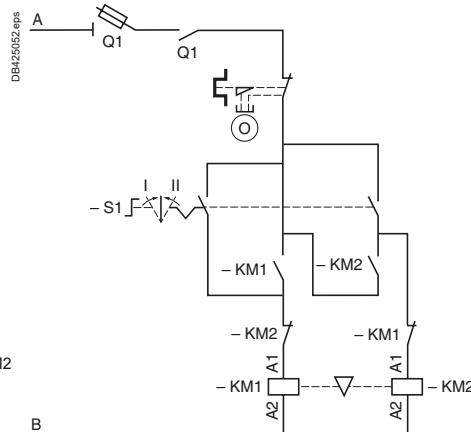
**LE8 K06, K09
LE8 D09...D35**



LE8 K06, K09



LE8 D09...D35



LE4 D09 and D12, LE8 D09 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	

LE4 D18...D35, LE8 D18...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	

LE4 K06, K09, LE8 K06, 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 enclosed starters

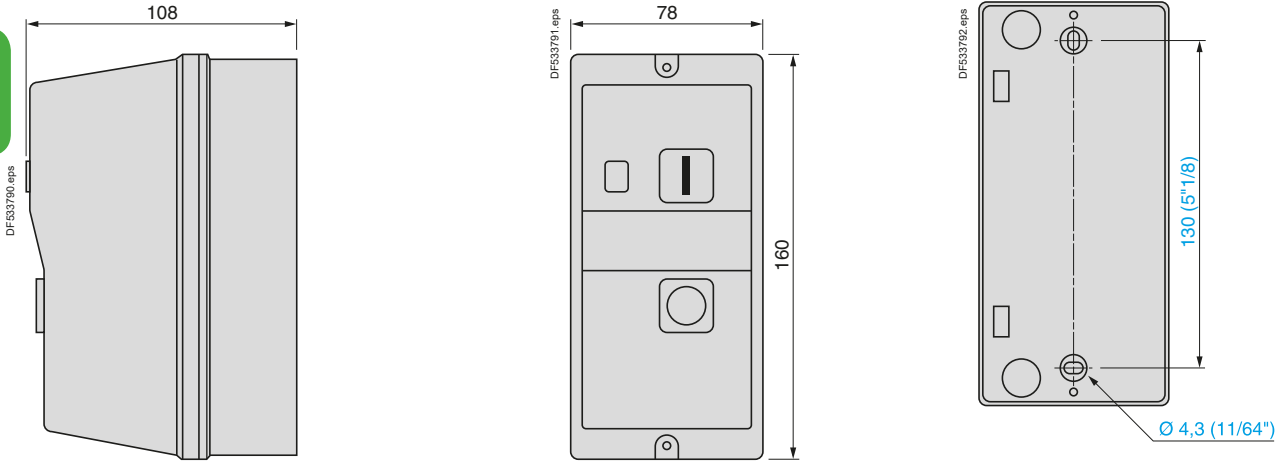
D.O.L. starters

with 3-phase thermal overload relay with 3 protected phases

Enclosed starters

Dimensions

LE1 M35 ⁽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.

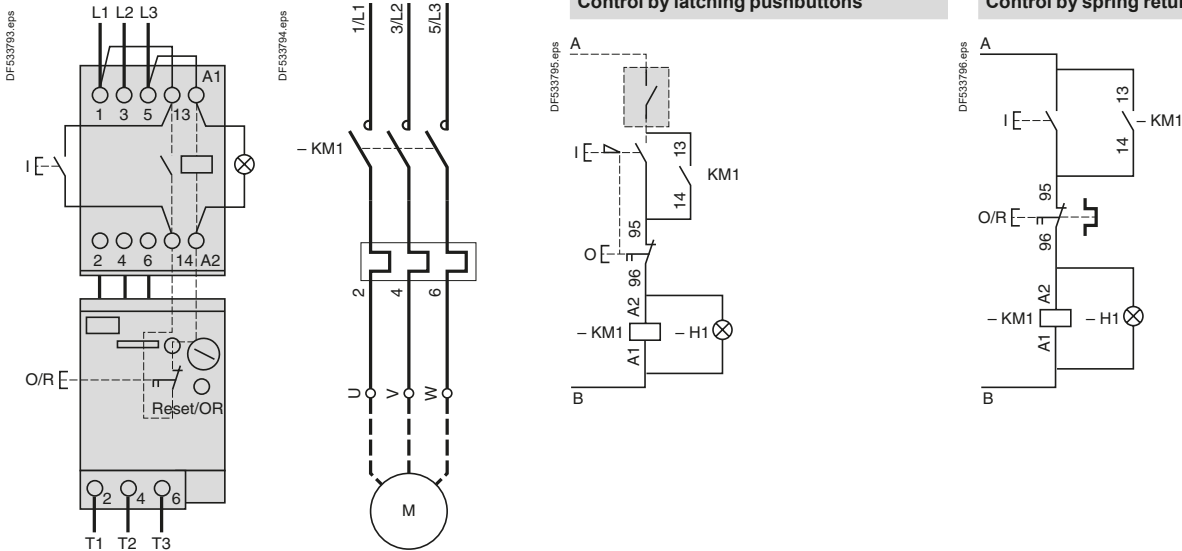
Schemes

LE1 M35

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:

A1/12

A1/46

Life Is On

Schneider Electric

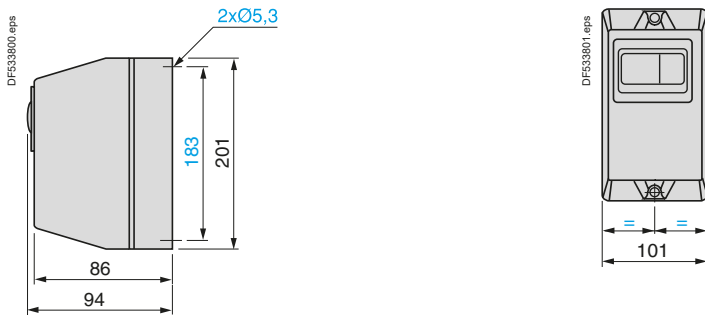
TeSys enclosed starters

D.O.L. starters

with thermal magnetic circuit breaker and contactor

Dimensions

LE1 GVMEK

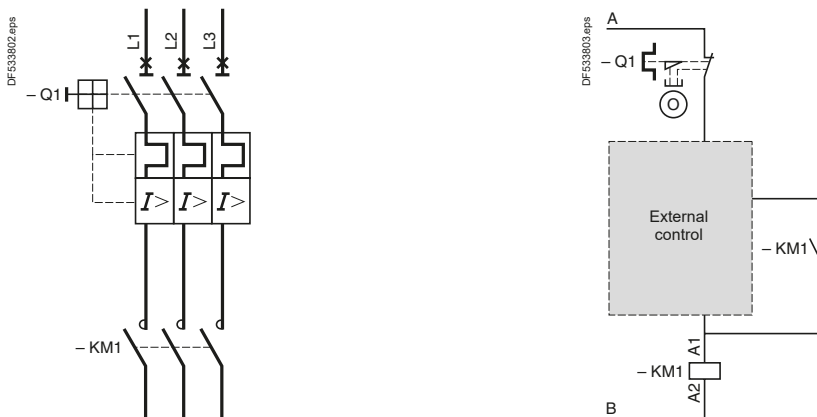


Knock-outs or blanking plugs for cable glands

Enclosure type	At top	At bottom
LE1 GV	ISO	ISO
	2 x 20 or 2 x 25	2 x 20 or 2 x 25

Schemes

LE1 GVMEK



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	

Dimensions, schemes - Star-delta

TeSys enclosed starters

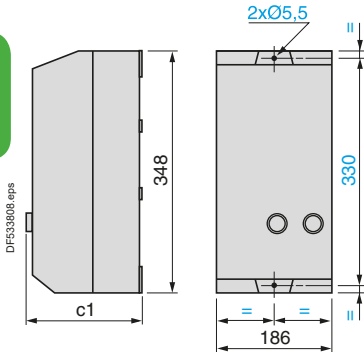
Star-delta starters

without isolating device

Enclosed starters

Dimensions

LE3 D09...D35



	c1
Standard version	175.5
Variant A04	167
Variant A05	175.5

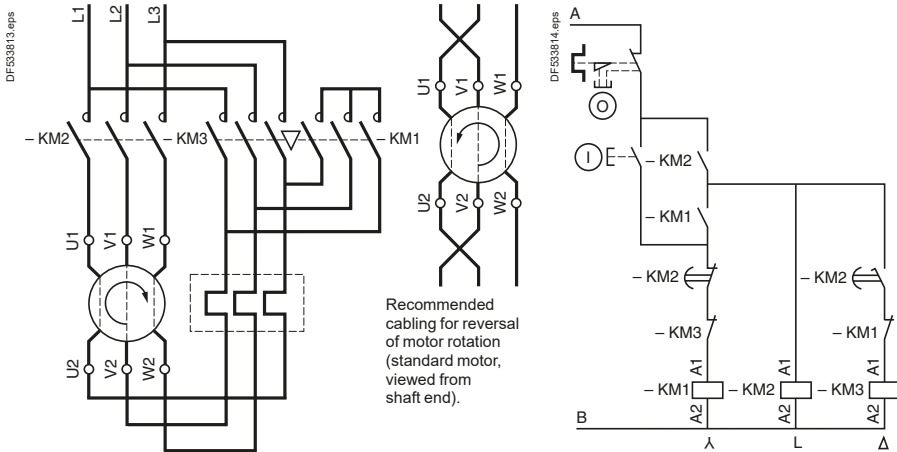
Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE3 D09...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

Schemes

LE3 D09...D35

LE3 D09...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	L 1
	Other voltages	Terminal 1	Terminal 2
Other voltages	All voltages (600 V max)	For customer assembly	

References:
A1/16 and A1/17

A1/48

Life Is On

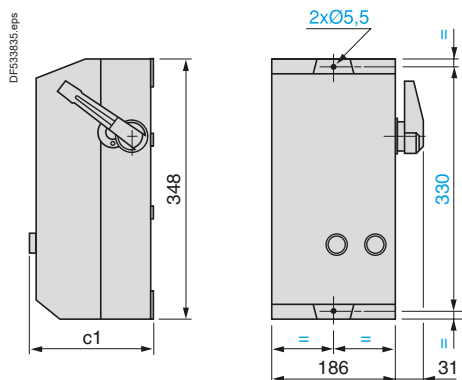
Schneider Electric

TeSys enclosed starters

Star-delta starters
with isolating device

Dimensions

LE6 D09...D18



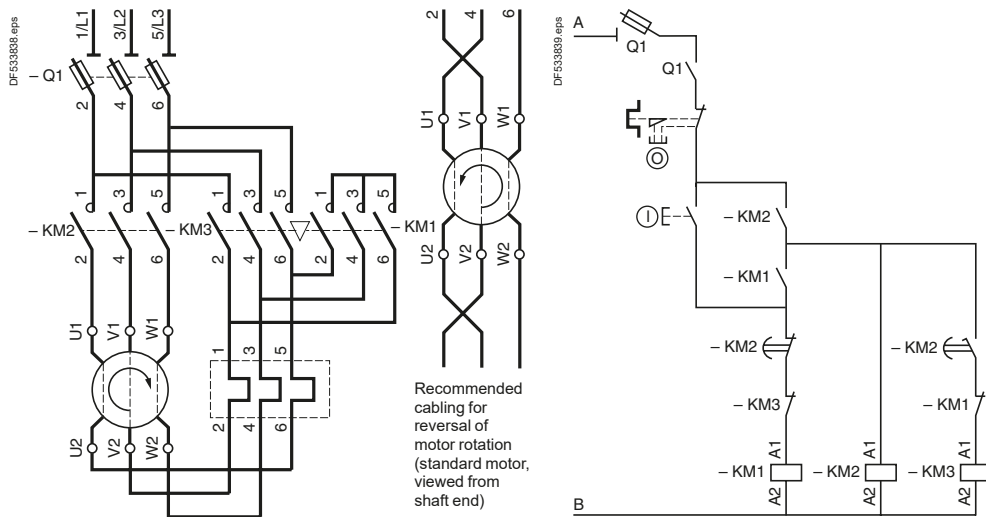
	c1
Standard version	175.5
Variant A04	167
Variant A05	175.5

Knock-outs or blanking plugs for cable glands

Type of enclosure	At top		At bottom	
	PG	ISO	PG	ISO
LE6 D09...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

Schemes

LE6 D09...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	

Dimensions - For safety applications

TeSys enclosed starters

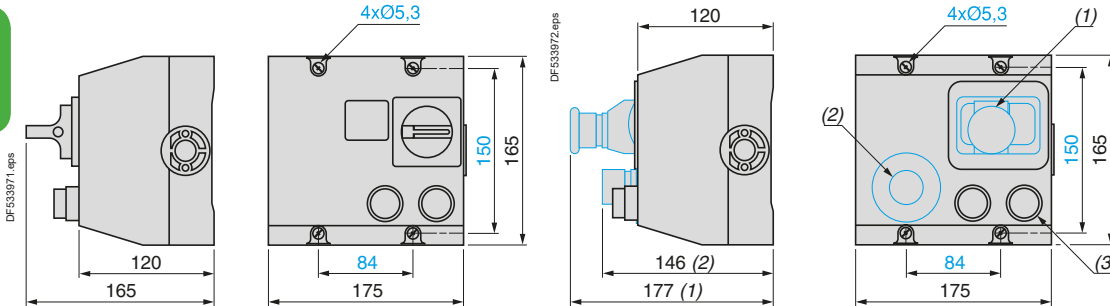
Safety starters

Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"

Dimensions

LG1 K06, K09
LG1 D12, D18

LG7 K06, K09, D12, D18
LG8 K06, 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
LG1 K and LG1 D	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P
LG7 K and LG7 D	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P
LG8 K	2 x 13 P and 2 x 16 P	2 x 13 P and 2 x 16 P

Schemes - For safety applications

TeSys enclosed starters

Safety starters

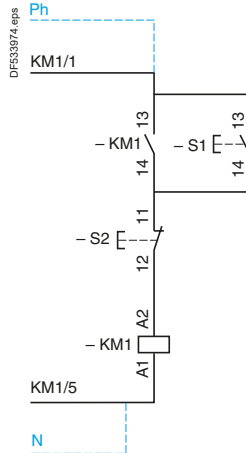
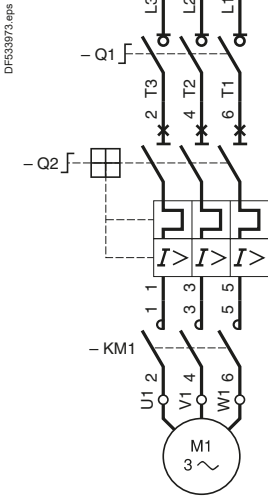
Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"

Schemes

LG1 K06, K09, D12, D18

LG1 K06, K09, D12, D18

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

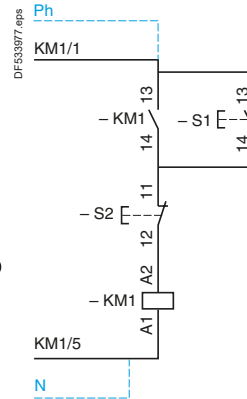
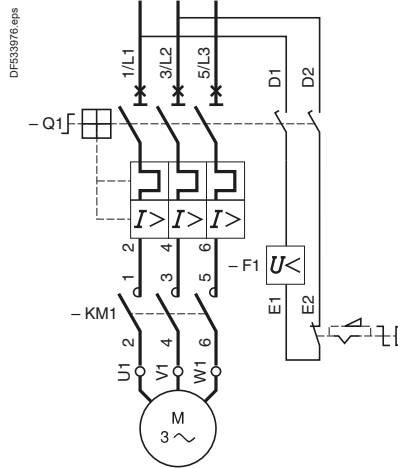
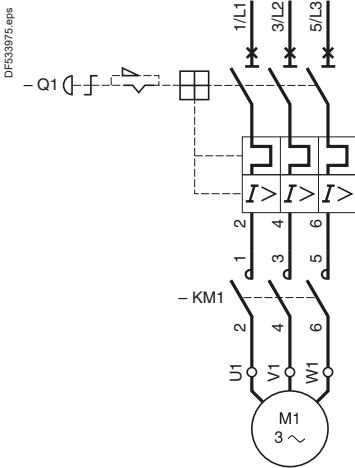


LG7 K06

LG7 K09, D12, D18

LG7 K06, K09, D12, D18

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

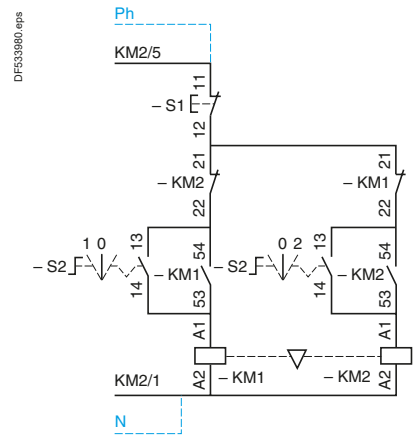
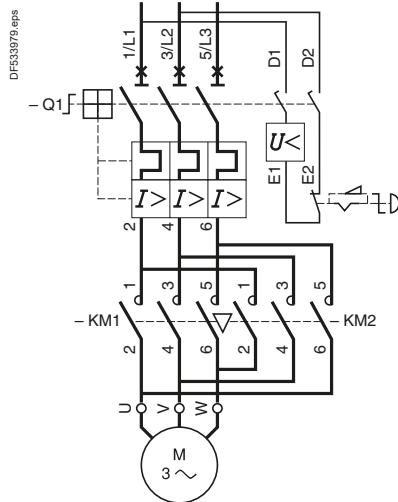
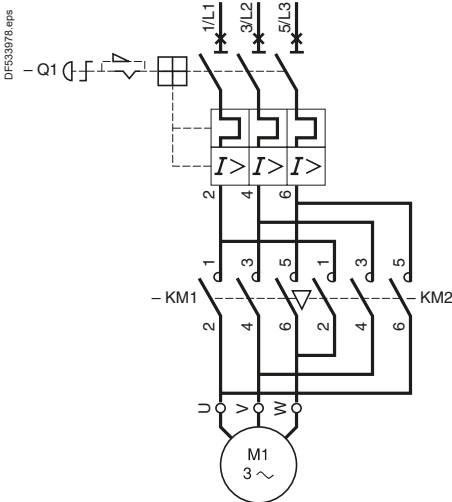


LG8 K06

LG8 K09, K12

LG8 K06, K09, K12

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



Dimensions - For safety applications

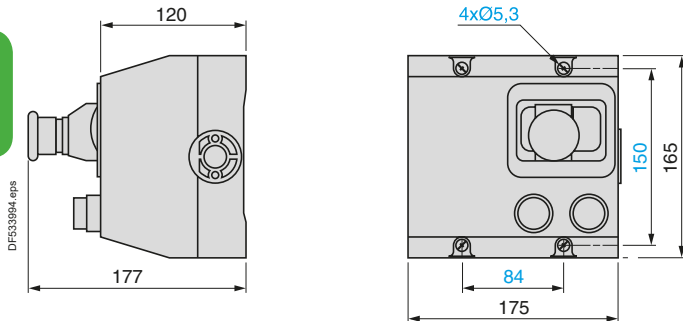
TeSys enclosed starters

Safety starters

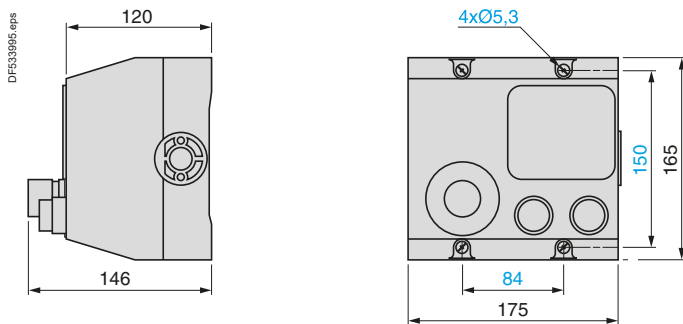
Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"

Dimensions

LJ7 K06, LJ8 K06



LJ7 K09, LJ8 K09



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

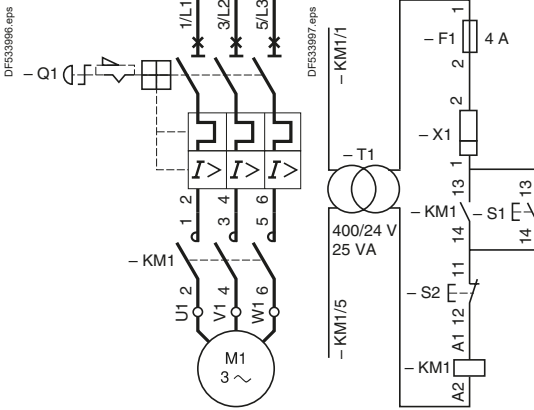
TeSys enclosed starters

Safety starters

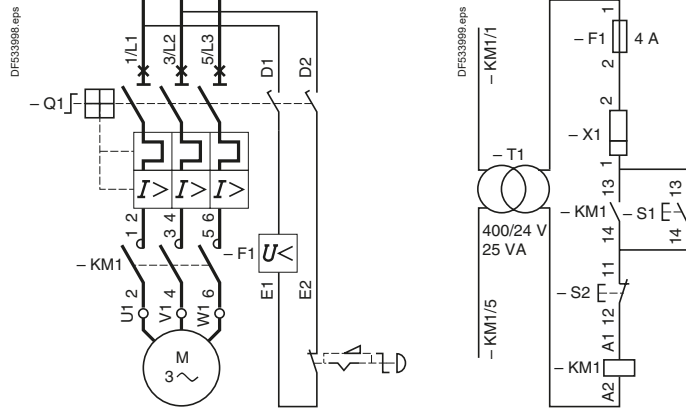
Conforming to standards: IEC 60204-1 "Safety of machinery - Electrical equipment of machines"

Schemes

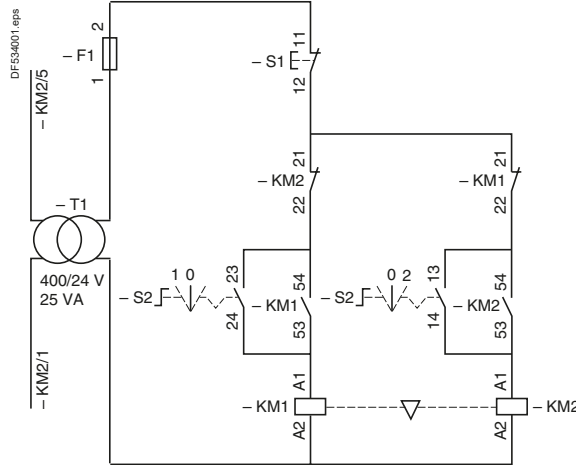
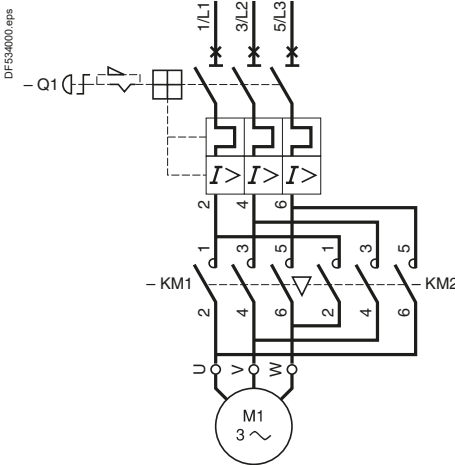
LJ7 K06



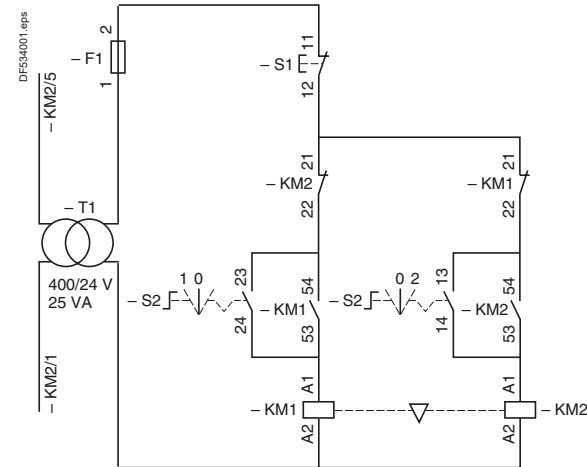
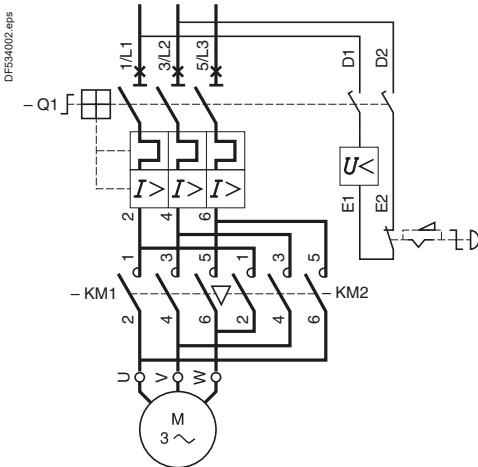
LJ7 K09



LJ8 K06



LJ8 K09



TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Presentation

Decentralised control of motors using enclosed starters which communicate on AS-Interface, drastically reduces setting-up times, thereby increasing the availability of machines.

In order to cater for different environments, these starters are sub-divided according to:

- the different power connection methods: cable gland or Harting plug-in connectors,
- the local/AS-Interface remote operating modes,
- the type of enclosure: insulated (plastic) or metal.

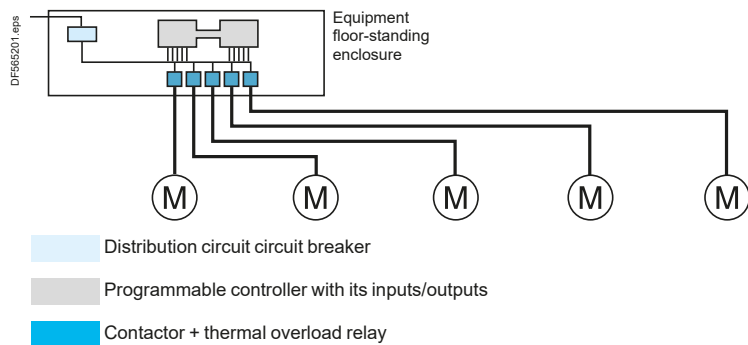
Decentralisation of machine starters

These enclosed starters which communicate on AS-Interface are pre-assembled and ready-to-use with a minimum of cabling.

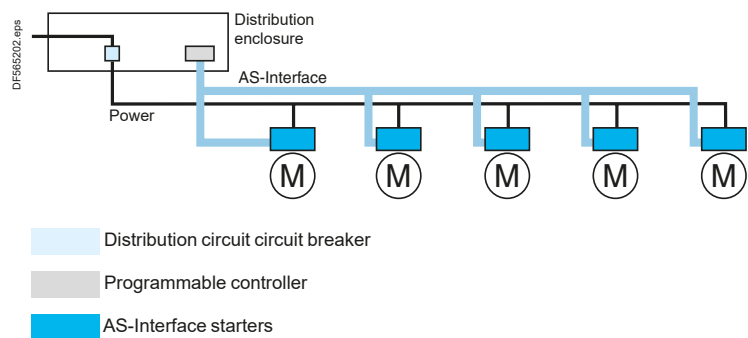
They are designed for building decentralised electrical installations:

i.e. the starters are installed as near as possible to the motors they are to control. The decentralisation of the starters provides obvious advantages regarding power distribution to machines not grouped together, for example: motors driving a conveyor system.

Traditional installation



Decentralised installation



Power is distributed either by prefabricated trunking or by cable. These starters incorporate all the functions necessary for the management of motors (control, protection, isolation, etc.), and comprise:

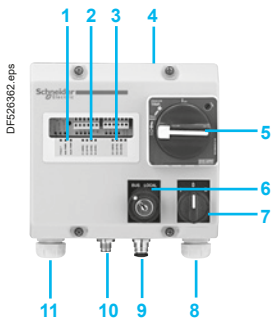
- a thermal-magnetic circuit breaker,
- a low consumption contactor (non reversing) or contactor pair (reversing),
- an I/O module ASI 20MT●●.

Designed primarily for use with 3-phase a.c. motors, they can nevertheless be used with single-phase or d.c. motors. In these applications, the 3 phases of the internal circuit breaker should be wired in series (each phase sensing the same current) in order to avoid tripping due to an assumed phase failure.

Description - Starters for AS-interface bus

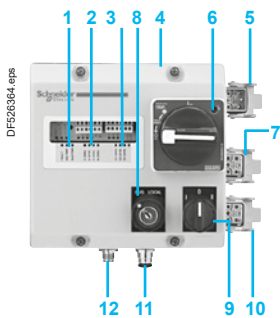
TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system



Connection by cable gland

- 1 Product diagnostics via 3 LEDs.
- 2 Input state.
- 3 Output state.
- 4 Knock-out for cable gland (not included for any power extension or output control relay cabling).
- 5 Disconnect rotary control knob.
Indicates "Trip" when switch-disconnector tripped.
- 6 Local/AS-Interface key switch (variant A79).
- 7 For variant A79: 3-position, spring return to zero selector switch for reversing starter (LF4). Function:
 - position 1 = forward running,
 - position 0 = Stop,
 - position 2 = reverse running.Pushbutton for non-reversing starter (LF3).
Function: Pulsed operation.
- 8 Cable gland for power supply cable.
- 9 M12 female connector for cable connection to a sensor (supplied with protective cap).
- 10 M12 male connector for connection to AS-Interface ⁽¹⁾ and auxiliary supply.
- 11 Cable gland for motor cabling.



- 1 Product diagnostics via 3 LEDs.
- 2 Input state.
- 3 Output state.
- 4 Knock-out for cable gland (not included for output control relay cabling).
- 5 Male connector for incoming power supply to motor starter ⁽²⁾.
- 6 Disconnect rotary control knob.
Indicates "Trip" when switch-disconnector tripped.
- 7 Female connector for power supply to the next motor starter ⁽²⁾.
- 8 Local/AS-Interface key switch.
- 9 For variant A79: 3-position, spring return to zero selector switch for reversing starter (LF4). Function:
 - position 1 = forward running,
 - position 0 = Stop,
 - position 2 = reverse running.Pushbutton: for non-reversing starters (LF3).
Function: Pulsed operation.
- 10 Female connector for power supply to motor ⁽²⁾.
- 11 M12 female connector for cable connection to a sensor (supplied with protective cap).
- 12 M12 male connector for connection to AS-Interface ⁽¹⁾ and auxiliary supply.

⁽¹⁾ Extension cables: please consult your Regional Sales Office.

⁽²⁾ HARTING plug-in connector to be fitted to cable (not included, see page A1-51).

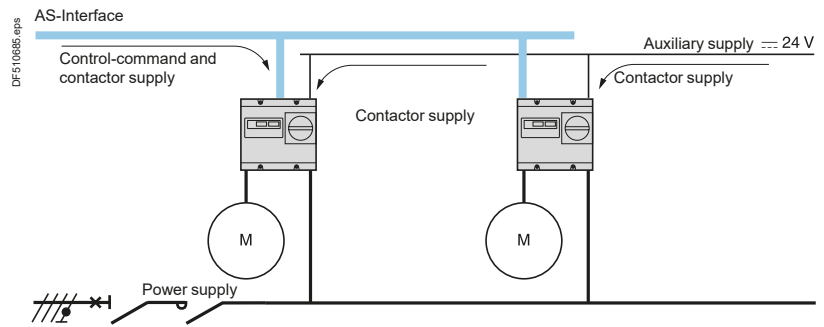
TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

PB11222_L30R.eps



Auxiliary supply



A \sim 24 V supply is necessary for LF3 and LF4 starters.

Prospective current consumptions are listed on page page A1-52.

Motor command-control

The functions provided by this range of starters are:

- motor control and status monitoring via AS-Interface,
- D.O.L. starting (non-reversing or reversing),
- overload protection of the motor,
- short-circuit protection of the motor and its power supply cabling.
- load break switch-disconnector with padlockable control knob,
- IP 54 degree of protection, double insulation.

Opening of the enclosure is mechanically inhibited whilst the starter is switched on or whilst in the off position and padlocked.

The rotary control knob has 3 positions:
 0: switch-disconnector opened manually,
 I: switch-disconnector closed,
 Trip: switch-disconnector tripped.

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Local control

Stop and reset functions are possible from the front of the enclosure.

The stop command is achieved by actuating the internal circuit breaker, which provides the switch-disconnector function.

Stopping is controlled by a rotary control knob.

In the event of an overload, resetting of the internal thermal-magnetic circuit breaker is possible after the motor has cooled down.

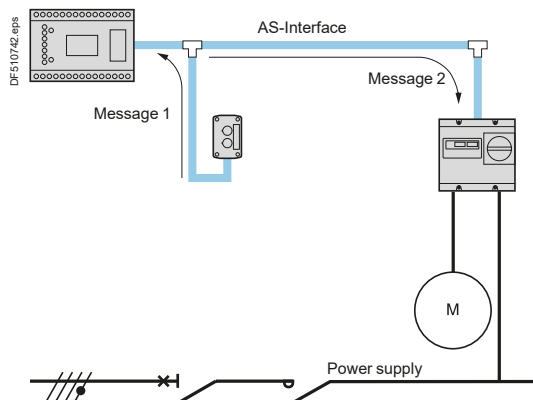
Resetting is controlled by a rotary control knob.

This starter variant is fitted with a 2-position "local/AS-Interface" switch which, depending on the position of the switch, allows the following functions:

- AS-Interface: the PLC controls the motor starter.
- Local: local Start/Stop commands override instructions from the PLC.
- 3-position, spring return to zero selector switch for reversing starter (LF4).
Function:
 - position 1 = forward running,
 - position 0 = Stop,
 - position 2 = reverse running.
- Pushbutton for non-reversing starter (LF3) .
Function:
 - Pulsed operation.



Control via a control station



It is possible to achieve manual local start control from pushbutton control stations connected to AS-Interface. Please consult your Regional Sales Office.

Actuation of a pushbutton is transmitted to the programmable controller (message 1) which passes it on to the starter (message 2).

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Local signalling

Indication of all the operating states (diagnostic, inputs and outputs) is visible without having to open the enclosure (transparent window in the enclosure cover).

Safety

The starter features continual self-checking to ensure correct operation.

External safety functions are not processed by the starter.

Emergency stop and machine safety wiring must follow standard safety practice and be hard-wired, using electromechanical devices in the approved way. These functions must not be handled by communication bus systems (EN 60204 §9.2.5.4).

Protection against unexpected restarting, after an accidental power supply failure, must be provided by a safety device separate from the starter.

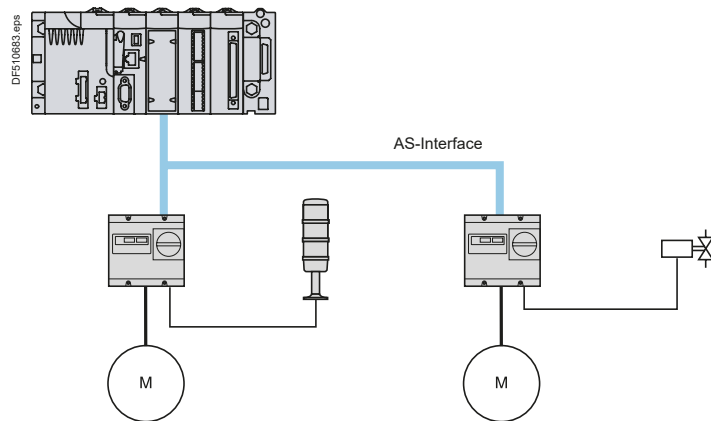
The starter control (rotary knob) does not provide the Emergency Stop function if the machine is fitted with other actuators. The control operators on the starter are therefore coloured black, in accordance with standard EN 60204 §10.2.1. Starters with rotary control knob may be padlocked in the ON position, since this control does not provide an Emergency Stop function.

Assume fallback condition

When communication is interrupted, the starter is no longer controlled by the PLC. The fallback condition of the starter is "motor stopped" (outputs at 0).

Output control relay

This relay incorporates a C/O contact, which may be used to control an indicator lamp, solenoid valve, etc. (250 V, 5 A), via AS-Interface.



TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Starters with sensors connected ⁽¹⁾

Two 3-wire PNP sensors (50 mA max) or 2-wire limit switches can be connected directly to the starter.

The information supplied by the sensor/limit switch is fed back via the AS-Interface line.

(1) For "Reflex Stop" function, please consult your Regional Sales Office.

Characteristics - Starters for AS-interface bus

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Enclosed starters

Environment			
Starter type			LF3, LF4
Conforming to standards			IEC 60204-1, EN 60204-1, IEC 60439-1, IEC 60947-4-1, EN 60947-4-1, UL 508, CSA C22-2 n° 14 ⁽¹⁾
Product certifications			–
Protective treatment	Standard version		“TC”
Degree of protection conforming to IEC 60529			IP54
Ambient air temperature around the device conforming to IEC 60439-1	Storage	°C	-40...+80
	Operation	°C	-5...+40
Maximum operating altitude	Without derating	m	2000
Operating position without derating	In relation to normal vertical mounting plane		
Flame resistance of equipment	Conforming to IEC 60695-2-1	°C	960
Shock resistance (1/2 sine wave, 11ms) conforming to IEC 60068-2-27	Contact open		10 gn
	Contact closed		15 gn
Vibration resistance 5...150 Hz conforming to IEC 60068-2-6	Contact open		2 gn
	Contact closed		4 gn
Safe separation of circuits	Conforming to VDE 0106 and IEC 60536		SELV (Safety Extra Low Voltage), up to 400 V
Immunity to non-dissipating shock wave (Uimp)	Conforming to IEC 60947-1	kV	6: power 2.5: AS-Interface, 24 V and sensor
Material and colour of enclosure base	Insulated enclosures		Polycarbonate impregnated with 20 % glass fibre, black throughout
	Metal enclosures		Sheet steel RAL 9001
Material and colour of enclosure cover	Insulated enclosures		Polycarbonate impregnated with 20 % glass fibre, RAL 9001 throughout
	Metal enclosures		Sheet steel RAL 9001
Resistance to chemical agents	Insulated enclosures		Avoid allowing this material to come into contact with: strong bases (certain detergents), aromatic hydrocarbons, alcohol, chlorine solvents, ketones.
Electromagnetic compatibility			
Immunity to electrostatic discharge	Conforming to IEC 61000-4-2 EN 61000-4-2	kV	8: in open air (level 3) 4: in indirect mode (level 2)
Immunity to fast transient currents	Conforming to IEC 61000-4-4 EN 61000-4-4	kV	2: power, AS-Interface, 24 V and sensor (level 3)
Immunity to dissipated shock wave	Conforming to IEC 61000-4-5 EN 61000-4-5	kV	4/2: power (level 4)
			2/0.5: power, AS-Interface, 24 V and sensor (level 2)
Immunity to conducted radio-frequency interference	Conforming to IEC 61000-4-6 ENV 50 141	V/m	10
Immunity to radiated radio-frequency interference	Conforming to IEC 61000-4-3 ENV 50 140 and ENV 50 204 (GSM)	V/m	10
Radio-conducted and radio-radiated rejection	ENV 55 011/CISPR11 (G1)		Class B

⁽¹⁾ Only for metal enclosures with letter **U** at the end of the reference. Certification pending.

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Cabling							
Starter type			LF3		LF4		
			Min.	Max.	Min.	Max.	
Power supply cabling	Screw clamp terminals	Solid cable	mm ²	1 x 1.5	2 x 6	1 x 1.5	2 x 6
		Flexible cable without cable end	mm ²	1 x 1.5	2 x 6	1 x 1.5	2 x 6
		Flexible cable with cable end	mm ²	1 x 1.5	2 x 4	1 x 1.5	2 x 4
		Tightening torque ⁽¹⁾	N.m	1.7	1.7	1.7	1.7
	Cable Gland (Pg 16)	Clamping capacity	mm	10	15	10	15
			Min.	Max.	Min.	Max.	
Motor cabling	Screw clamp terminals	Solid cable	mm ²	1 x 1.5	2 x 4	1 x 1.5	1 x 4
		Flexible cable without cable end	mm ²	1 x 1.5	2 x 4	1 x 1.5	1 x 4
		Flexible cable with cable end	mm ²	1 x 1.5	1 x 1.5 + 1 x 2.5	1 x 1.5	1 x 2.5
		Tightening torque ⁽¹⁾	N.m	0.8	0.8	0.8	0.8
	Cable Gland (Pg 16)	Clamping capacity	mm	10	15	10	15
			Min.	Max.	Min.	Max.	
Output control relay cabling	Terminal block	Solid cable	mm ²	0.5	1.5	0.5	1.5
		Flexible cable without cable end	mm ²	0.5	1.5	0.5	1.5
		Flexible cable with cable end	mm ²	0.5	1.5	0.5	1.5
		Tightening torque ⁽²⁾	N.m	0.7	0.7	0.7	0.7
	Cable gland	Clamping capacity Pg 13 Pg 16	mm	8	13	8	13
mm			10	15	10	15	

Pole electrical characteristics

Utilisation category	Conforming to IEC 60947-2 (circuit breaker)		A
	Conforming to 947-4-1 (motor starter)		AC-3
Rated operational voltage (Ue)	Conforming to IEC 60947	V	415
Rated insulation voltage (Ui)	Conforming to IEC 60947	V	415
Rated operational frequency	Conforming to IEC 60947	Hz	50/60
Breaking capacity (Ics and Icu)	Conforming to IEC 60947-2 230/240 V	kA	> 100
	400/415 V	kA	> 100
Sensitivity to phase failure	Conforming to IEC 60947-4-1 § 7-2-1-5-2		Yes

Circuit breaker characteristics (manual operation)

Mechanical durability	C.O.: closing, opening	C.O.	100 000
Electrical durability	For AC-3 duty	C.O.	100 000
Duty class	Maximum operating rate	C.O./h	25

Circuit breaker characteristics (automatic operation)

Maximum operating rate	In operating cycles per hour		3600
Mechanical durability	In millions of operating cycles	30	5
Electrical durability	In category AC-3 at 8.5 A		800 000

Other characteristics

Starters with rotary control knob	Circuit breaker type GV2 P		See pages B6/49 to B6/82
Non-reversing starters	Contactors LP4 K0901BW3 ⁽³⁾		See pages B8/95 to B8/100
Reversing starters	Reversing contactors LP5 K0901BW3 ⁽⁴⁾		See pages B8/95 to B8/102

⁽¹⁾ Philips n° 2 or flat screwdriver Ø5.5.

⁽²⁾ Flat screwdriver Ø3.5.

⁽³⁾ LP4 K1201BW3 for circuit breaker ratings 00 and 16.

⁽⁴⁾ LP5 K1201BW3 for circuit breaker ratings 00 and 16.

Characteristics - Starters for AS-interface bus

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Enclosed starters

Sensor inputs				
Starter type				LF3, LF4
Cabling				M12
Nominal input values	Voltage		V	~ 24
	Maximum current available per sensor		mA	50
	Sensor supply (including ripple)		V	19...30
Input voltage range	At state 1	Voltage	V	~ > 11
		Current	mA	> 6
	At state 0	Voltage	V	~ < 5
		Current	mA	< 2
Maximum number of sensors				2
Proximity sensor compatibility				2-wire/3-wire
Isolation with respect to the AS-Interface line				Yes
Input type				Resistive for PNP type sensor
Output control relay				
Operating voltage limit	a.c. supply		V	250
	d.c. supply		V	30
Thermal current at 40 °C (I _{th})			A	5
Service life on an ~ 24 V load	Resistive load AC-12	Millions of operating cycles		0.1 ⁽¹⁾ in 5 A current, 1 ⁽²⁾ in 1 A current.
	Inductive load AC-14	Millions of operating cycles		0.5 ⁽²⁾ in 1 A current, 1 ⁽²⁾ in 0.5 A current, 5 ⁽³⁾ in 0.25 A current.
Service life on a ~ 24 V load	Resistive load DC-12	Millions of operating cycles		0.1 ⁽¹⁾ in 5 A current, 0.2 ⁽¹⁾ in 2 A current.
	Resistive load DC-3	Millions of operating cycles		0.5 ⁽²⁾ in 1 A current, > 1 ⁽³⁾ in 0.25 A current.
Response time	Latching		ms	< 10
	Unlatching		ms	< 15
Contact type				C/O
Built-in protection	Against overload and short-circuits			None, a quick-blow fuse must be fitted
	Against a.c. or d.c. inductive overloads			Protected against overvoltages generated by switching the coils of preactuators
Isolation	rms voltage between output and earth or between output and internal logic		V	1500, 50/60 Hz for 60 s
	Insulation resistance between output terminals and AS-Interface		μΩ	> 1000

⁽¹⁾ 0.2 of an operation (C/O) per second.

⁽²⁾ 0.5 of an operation (C/O) per second.

⁽³⁾ 1 operation (C/O) per second.

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Consumption				
Starter type		Product configured for supply from an auxiliary --- 24 V supply		
		LF3	LF4	
Current consumption	From the AS-Interface line ⁽¹⁾	De-energised	20 mA	20 mA
		Inrush	20 mA	20 mA
		Sealed	20 mA	20 mA
		Per sensor	Sensor consumption (50 mA max) + 10 mA (signal = 1)	
		Relays	20 mA	
	From the auxiliary --- 24 V supply	De-energised	0	0
		Inrush	110 mA	110 mA
		Energised	30 mA	30 mA

Data exchange characteristics			
AS-Interface profile		7.D.F.F (standard addressing) 7.A.7.0 (extended addressing A/B)	
Data bits (commands)	Bit value	= 0	= 1
	Command D0 (O)	Stop - forward running	Start - forward running
	Command D1 (O)	Stop - reverse running	Start - reverse running ⁽²⁾
	Command D2 (O)	Deactivation of control relay	Activation of control relay
	Command D3 (O)	Not Used	Not Used
Data bits (status)	Bit value	= 0	= 1
	Status D0 (I)	Not ready or fault	Ready
	Status D1 (I)	Stopped	Running
	Status D2 (I)	Sensor 1 signal absent ⁽³⁾	Sensor 1 signal present ⁽³⁾
	Status D3 (I)	Sensor 2 signal absent ⁽⁴⁾	Sensor 2 signal present ⁽⁴⁾

⁽¹⁾ 30 mA maximum + sensor consumption.

⁽²⁾ Only on LF4.

⁽³⁾ Sensor 1 or circuit breaker fault signal, depending on configuration.

⁽⁴⁾ Sensor 1 or sensor 2 signal or control/local mode, depending on configuration.

Dimensions - Starters for AS-interface bus

TeSys enclosed starters

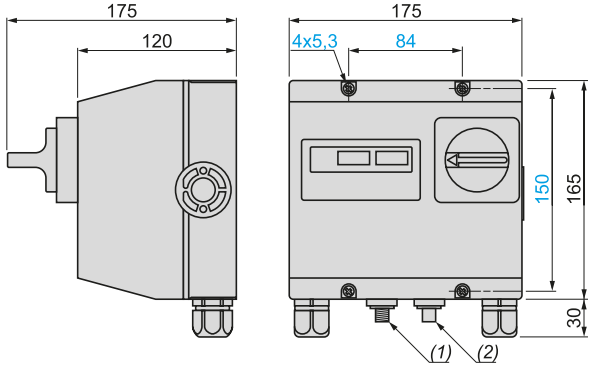
D.O.L. starters for AS-Interface cabling system

Enclosed starters

Non-reversing and reversing starters in insulated (plastic) enclosure

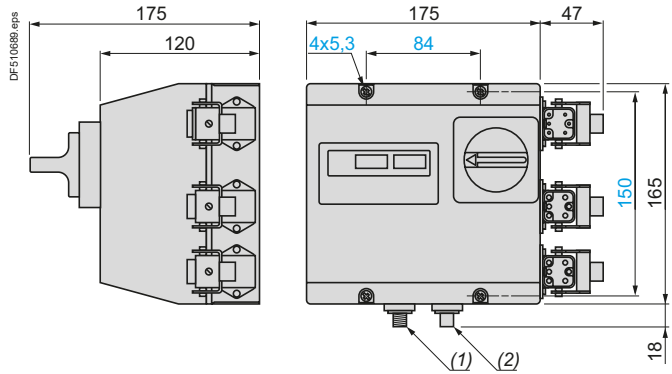
With cable glands

LF P ●●●



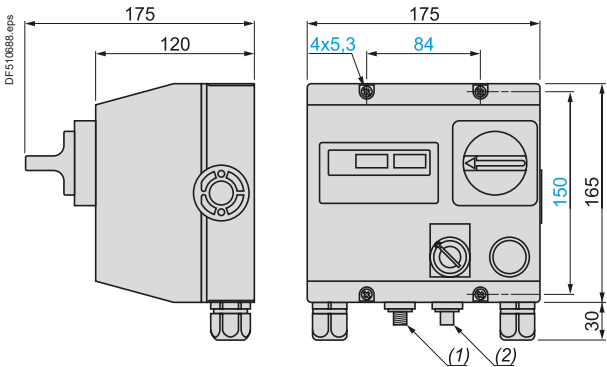
With HARTING plug-in connectors (A74)

LF P ●●●A74



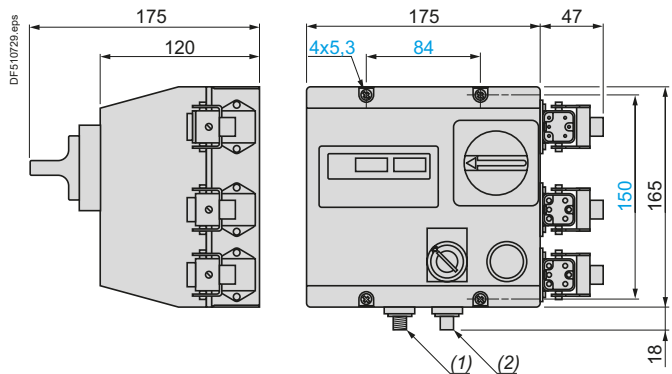
With cable glands
Incorporating sensor and local/AS-Interface control variant (A79)

LF P ●●●A79



With HARTING plug-in connectors (A74)
Incorporating sensor and local/AS-Interface control variant (A79)

LF P ●●●A79A74



Knock-outs for cable gland

From above	2 x Pg16 and 2 x Pg13
From below	2 x Pg16 (cable glands supplied)

- (1) M12 male connector for connection to AS-Interface and auxiliary 24 V supply.
- (2) M12 female connector for connection to sensor.

Dimensions - Starters for AS-interface bus

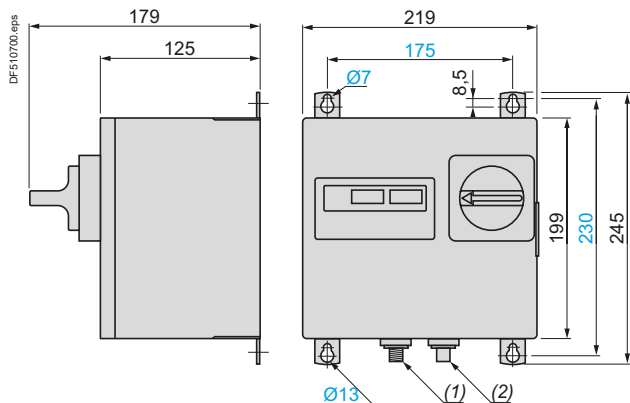
TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Non-reversing and reversing starters in metal enclosure

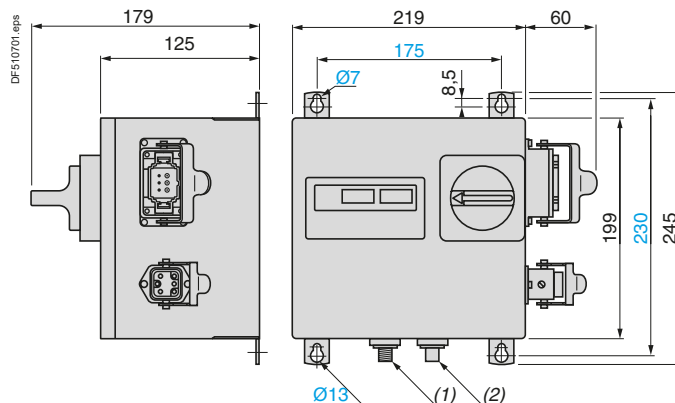
With cable glands

LF● MP●●●



With HARTING plug-in connectors (A74)

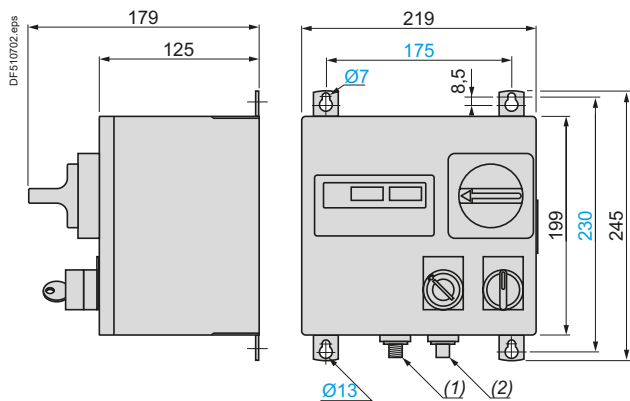
LF● MP●●●A74



With cable glands

Incorporating sensor and local/AS-Interface control variant (A79)

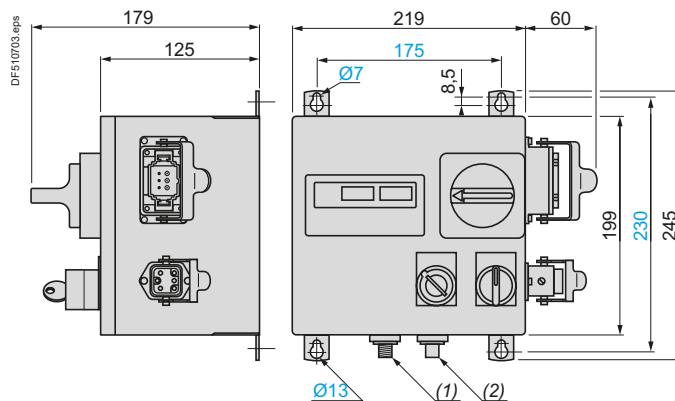
LF● MP●●●A79



With HARTING plug-in connectors (A74)

Incorporating sensor and local/AS-Interface control variant (A79)

LF● MP●●●A79A74



Knock-outs for cable gland	Standard enclosure	Enclosure with variant A74
From above	3 x Pg16	1 x Pg16
From below	2 x Pg16	1 x Pg16

(1) M12 male connector for connection to AS-Interface and auxiliary 24 V supply.
 (2) M12 female connector for connection to sensor.

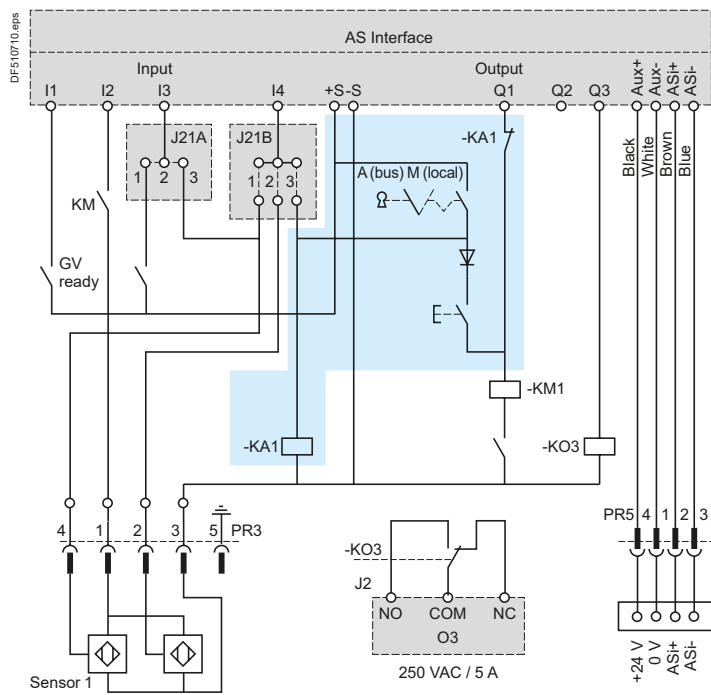
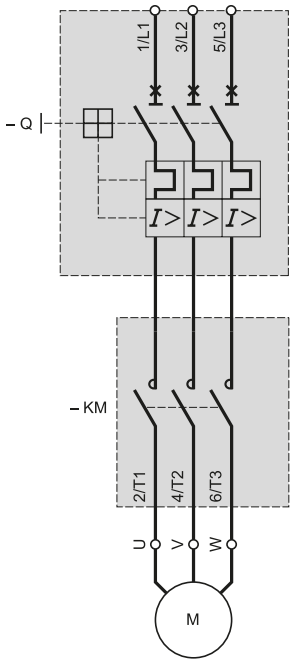
Schemes - Starters for AS-interface bus

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

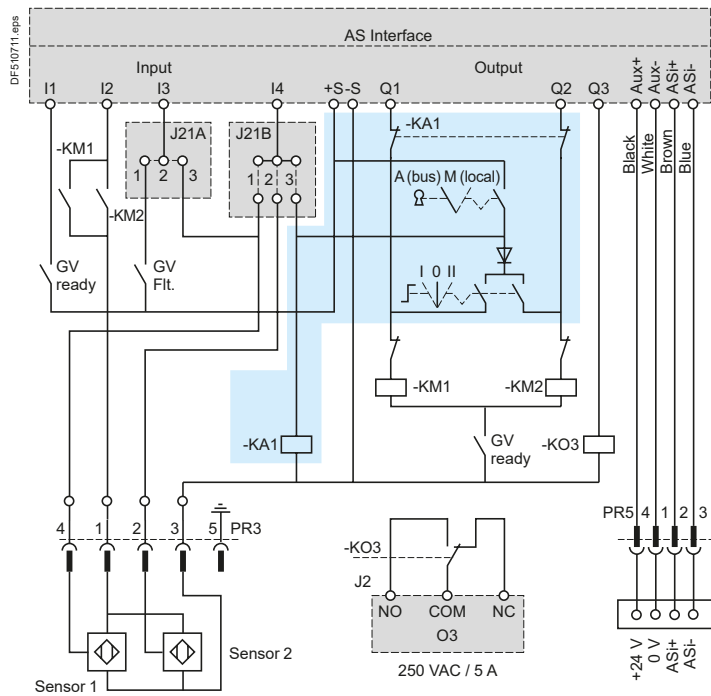
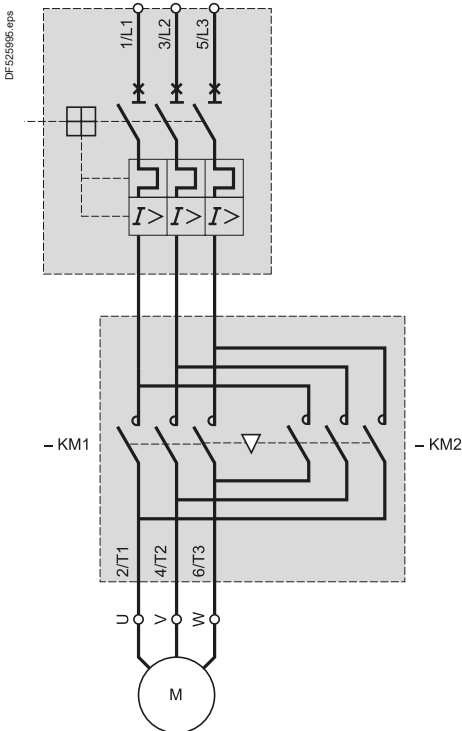
Enclosed starters

Non-reversing starters LF3



Insulated enclosure with variant A79 or metal enclosure with variant A79

Reversing starters LF4



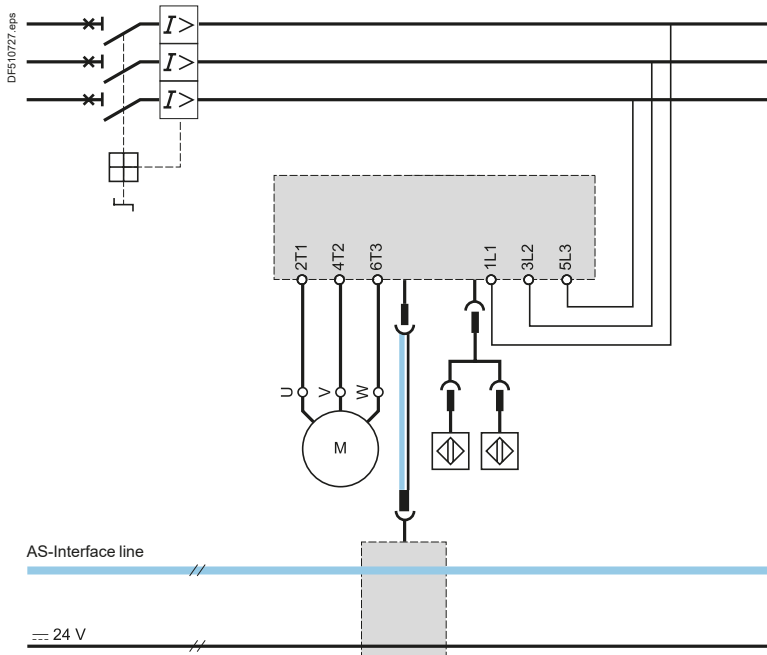
Insulated enclosure with variant A79 or metal enclosure with variant A79

Recommended application schemes - Starters for AS-interface bus

TeSys enclosed starters

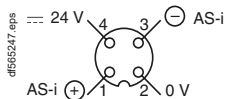
D.O.L. starters for AS-Interface cabling system

Non-reversing and reversing starters with 2 sensors, an auxiliary supply and a control relay



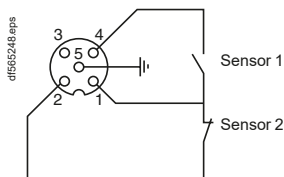
Connections on enclosure

M12 male connector for AS-Interface and 24 V auxiliary supply

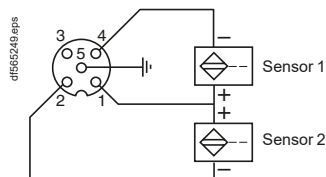


Sensor M12 female connector

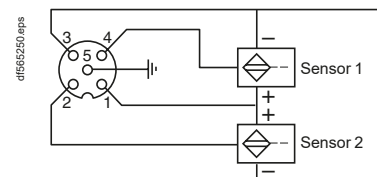
Limit switch



2-wire PNP type sensor



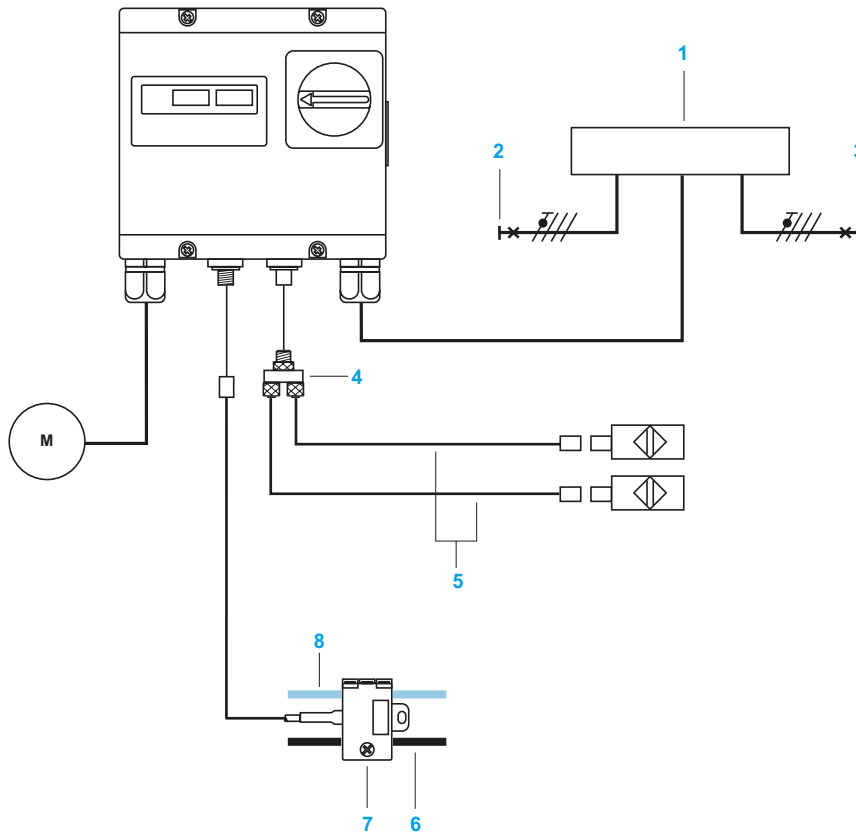
3-wire PNP type sensor



TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Starters in enclosures with cable glands

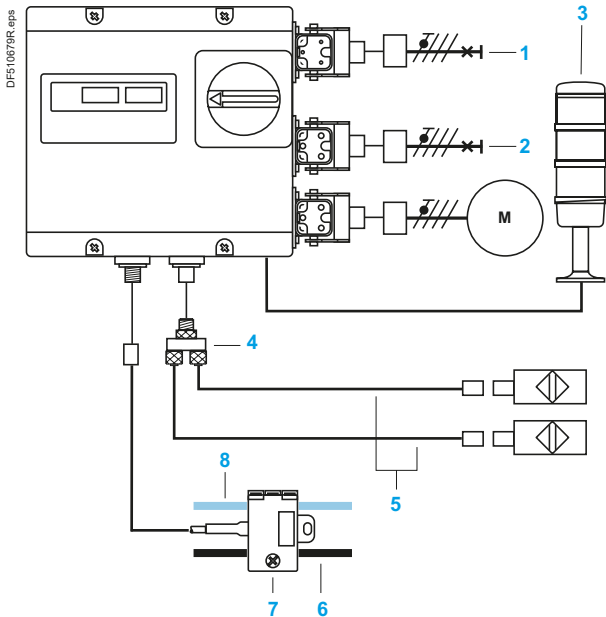


- 1 Junction box
- 2 Incoming power
- 3 Power extension
- 4 **FTX CY1212**: splitter block
- 5 **XZ CR1511040A●**: extension
- 6 **XZ CB1●●02**: flat cable (black) for auxiliary supply
- 7 **XZ CG01403D**: tap link for two cables
- 8 **XZ CB1●●01**: flat cable (yellow) for AS-Interface

TeSys enclosed starters

D.O.L. starters for AS-Interface cabling system

Starters in insulated enclosures with HARTING type plug-in power connectors

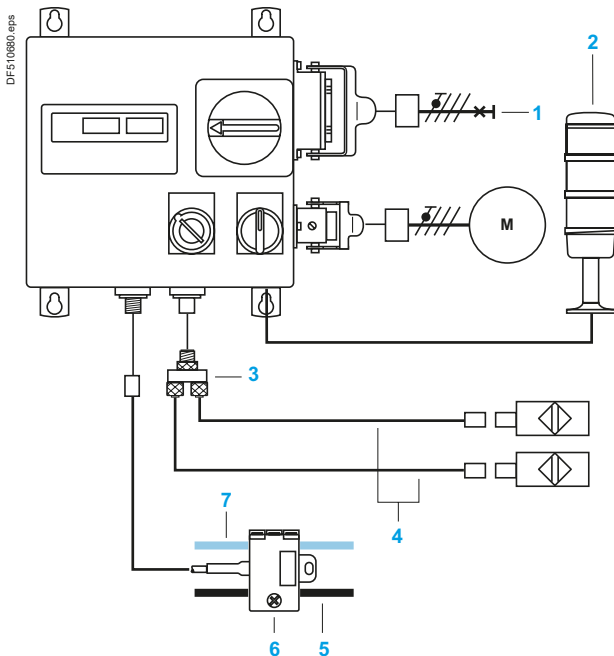


- 1 Incoming power
- 2 Power extension
- 3 Control relay (example: illuminated indicator bank)
- 4 FTX CY1212: splitter block
- 5 XZ CR1511040A: extension
- 6 XZ CB1●●02: flat cable (black) for auxiliary supply
- 7 XZ CG01403D: tap link for two cables
- 8 XZ CB1●●01: flat cable (yellow) for AS-Interface

Configuration of HARTING connectors to be fitted on cables (to be ordered separately)

	Number and HARTING reference	
	for incoming power female connector	for power extension and motor connection male connectors
Straight cover	1 x 09-20-003-0420	2 x 09-20-003-0420
Male insert 6-way, 400 V	–	2 x 09-12-005-3001
Female insert 6-way, 400 V	1 x 09-12-005-3101	–
Male contacts 2.5 mm ²	–	8 x 09-33-000-6102
Female contacts 2.5 mm ²	3 x 09-33-000-6202	–
Plug for the last socket	–	1 x 09-20-003-5408

Starters in metal enclosures with HARTING type plug-in power connectors



- 1 Incoming power
- 2 Control relay (example: illuminated indicator bank)
- 3 FTX CY1212: splitter block
- 4 XZ CR1511040A: extension
- 5 XZ CB1●●02: flat cable (black) for auxiliary supply
- 6 XZ CG1403D: tap link for two cables
- 7 XZ CB1●●01: flat cable (yellow) for AS-Interface

Configuration of HARTING connectors to be fitted on cables (to be ordered separately)

	Number and HARTING reference	
	for incoming power female connector	for power extension and motor connection male connectors
Straight cover	1 x 09-30-006-0442 ⁽¹⁾ 1 x 09-30-006-0443 ⁽²⁾	1 x 09-20-003-1440
Male insert 6-way, 400 V	–	1 x 09-12-005-3001
Female insert 6-way, 400 V	1 x 09-33-006-2702	–
Male contacts 2.5 mm ²	–	5 x 09-33-000-6102
Female contacts 2.5 mm ²	3 x 09-33-000-6207	–

⁽¹⁾ PG21.
⁽²⁾ PG29.

