Power busbar systems
Linergy BZ and HK

Busbar systems for electrical distribution and motors starters

All Schneider Electric **distribution and connection systems** are brought together into a single brand name: **Linergy**

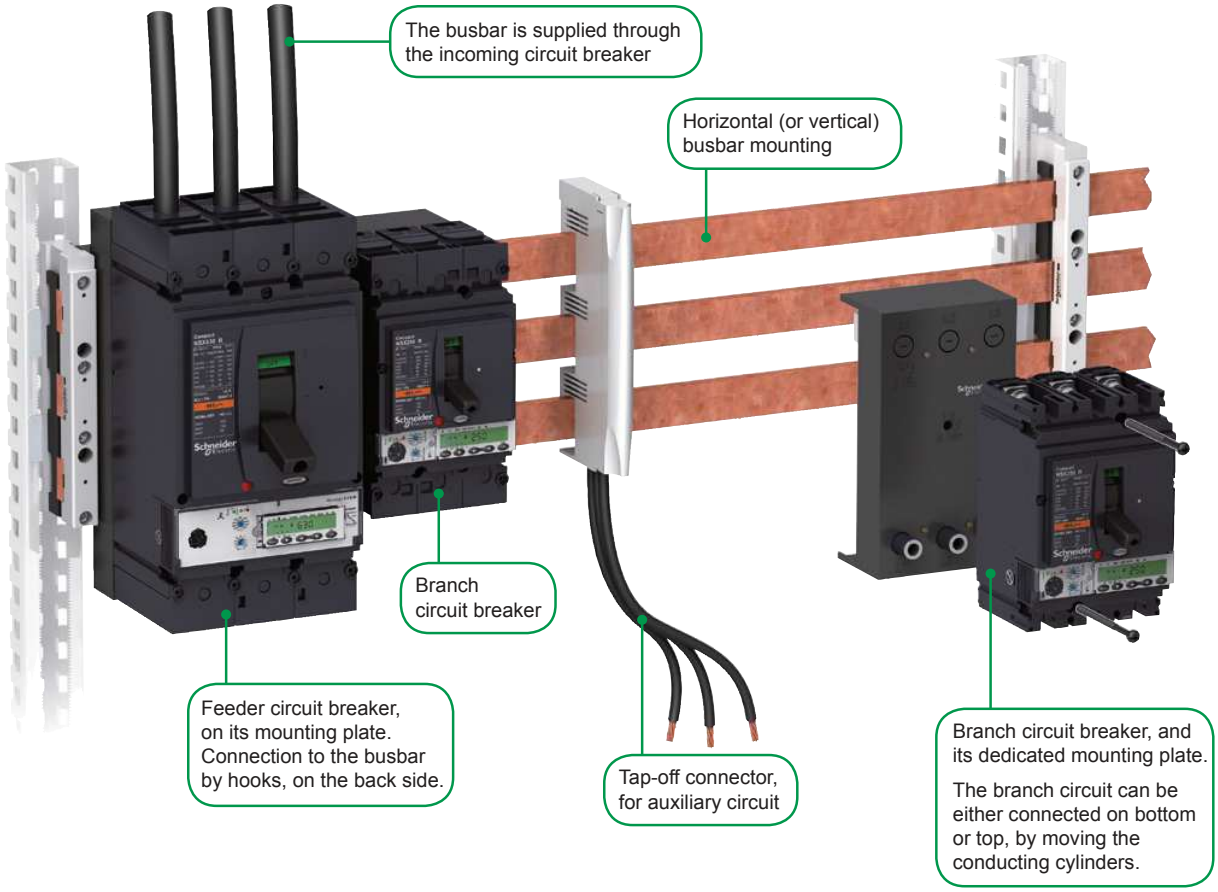
- Distribution blocks
- Device feeders
- Power busbars
- Hot plug busbar system
- Terminal blocks and bars.

Catalogue reference: **LVYED13001EN**

Linergy BZ, Multistandard power busbar system

Application: electrical distribution, up to 630 A

In enclosures, when space saving and fast connection are a strong requirement



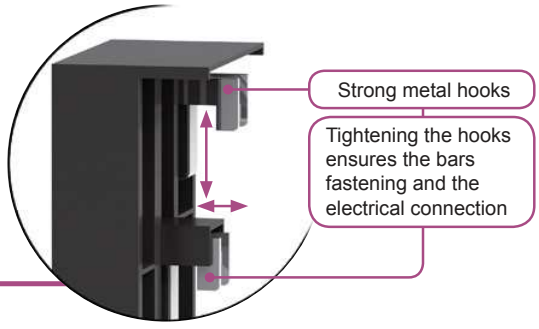
Ideal for industrial process application

Advantages

- Considerable space saving: components are directly mounted on the busbar
- Quick connection, deconnection: a metal hook combines mechanical fastening and electrical connection
- Multi standard: conform to IEC and UL standards

Detailed view: back face of a mounting plate

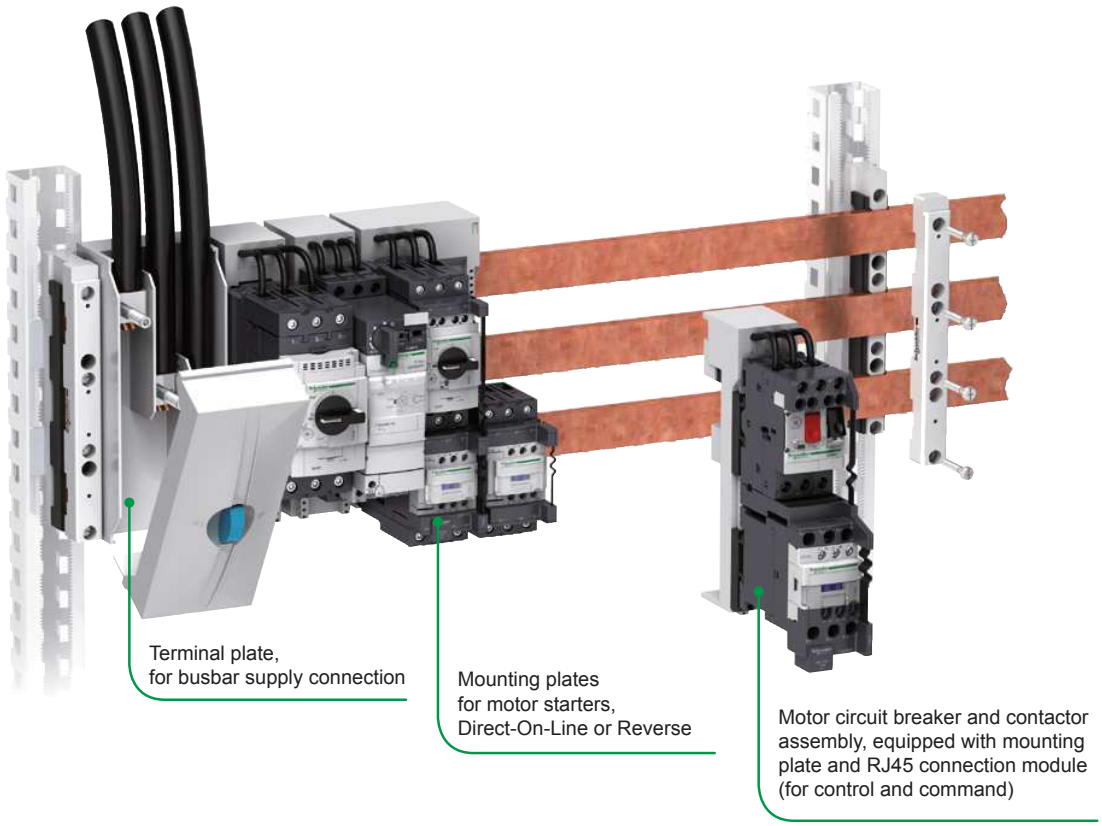
- Mounting plates, for Compact NSX, Powerpact and GV7 circuit breakers
- Compatible with bars:
  - Height 12, 15, 20, 25 or 30 mm,
  - Width 5 or 10 mm



Linergy BZ, Multistandard power busbar system

Application: power distribution to motor starters

In control switchboards, when space saving, quick mounting and replacement are required

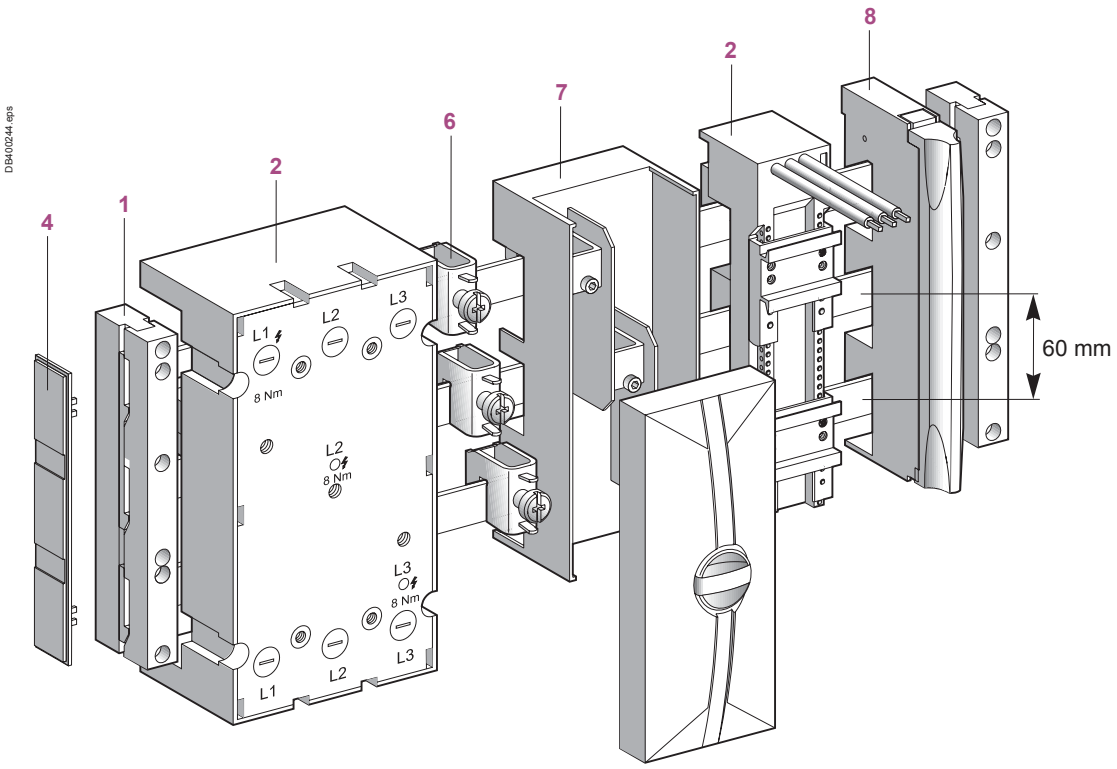


Advantages

- Considerable space saving: components are directly mounted on the busbar
- Large choice of mounting plates (for GV2, GV3 motor circuit breakers and assemblies, GV7, TeSys U)
- Quick connection, deconnection (power off): clip-on mounting plates
- Vibration resistant busbar connections: no periodical re-tightening required

Detailed view: back face of a motor starter mounting plate

- A reliable electrical contact is ensured by copper blades
- The blue part locks the mounting plate on the busbar, compatibility is provided with the standard profiles:
  - Height 12, 15, 20, 25 or 30 mm,
  - Width 5 or 10 mm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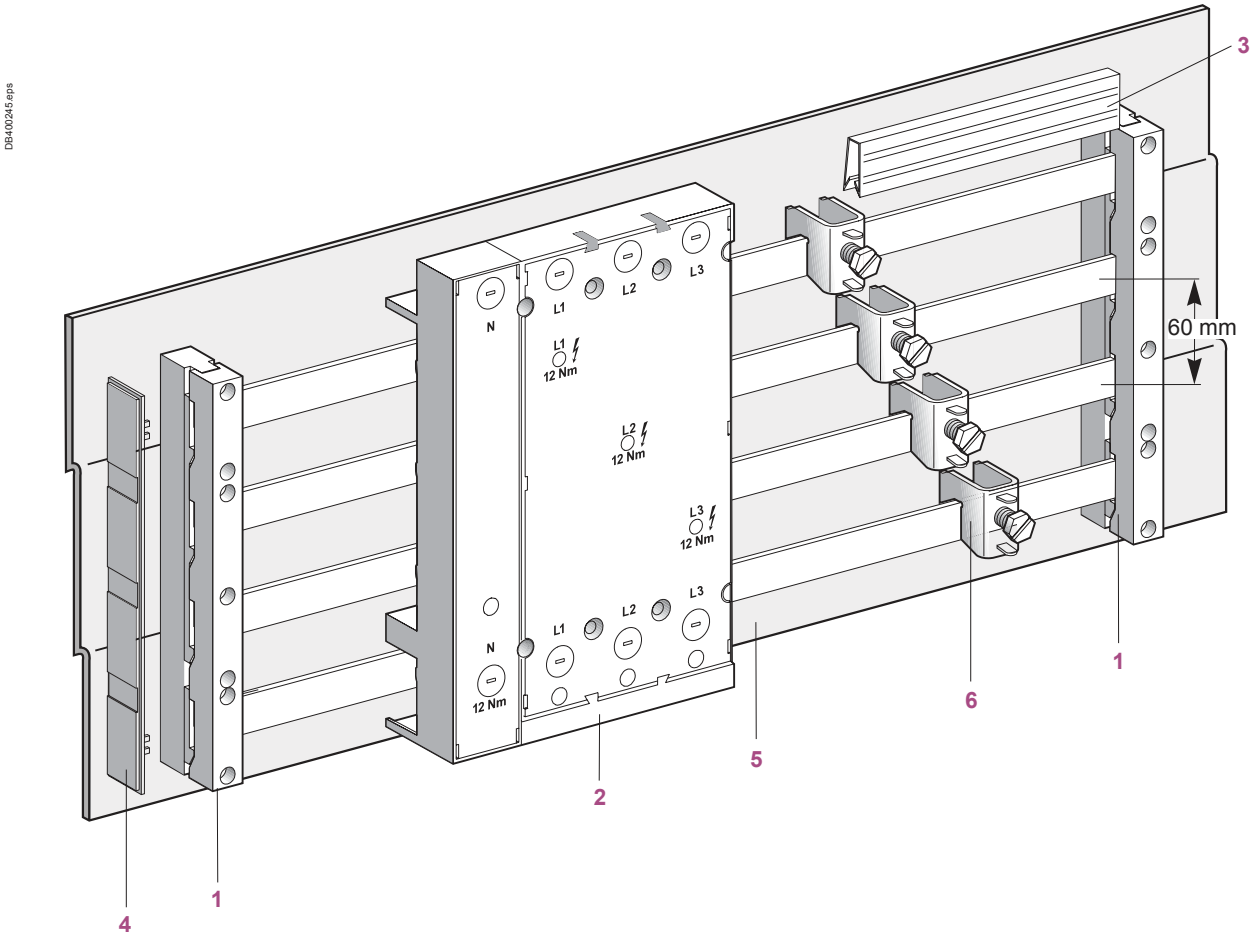
4
L1
L2
L3
8 Nm
60 mm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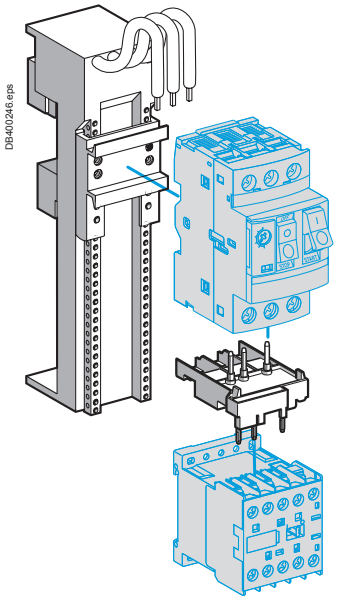
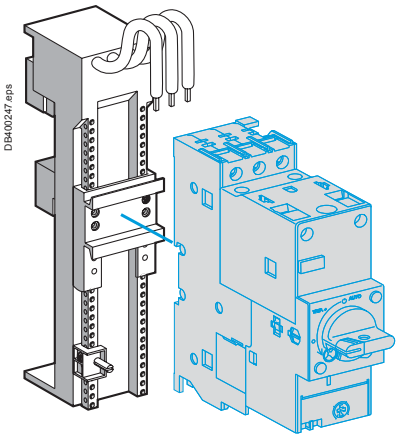
TeSys starters and bare devices
Plates for mounting on 60 mm busbar

Linergy BZ





Installation examples.

Description

The TeSys mounting plate system for busbars simplifies the installation of motor feeder components used in your electrical installations.
Power distribution is performed by a busbar.

The mounting plates are fitted directly on this busbar, by snap-on mounting, thus implementing mechanical and electrical connection.

This system offers numerous benefits:
- space saving in cabinets
- fast, safe and reliable electrical and mechanical connection
- easy connection
- protection for users against electric shocks by direct contacts (IP20) by using busbars end covers
- equipment flexibility and modularity
- increased equipment availability: easier maintenance
- power supply without drilling (connectors) from 1.5 to 120 mm^2.

Busbars system
The busbar interaxis is 60 mm. Depending on the cross section of the bars, the busbar can withstand a maximum current of 630 A.

Note: *The bars forming the busbar are not part of the TeSys LA9Z offer. They are not supplied by us. Their selection depends on the maximum current needed for your installation (see next page).*

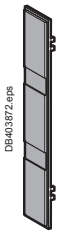
Support for 3P and 4P busbar (1)
These are available in 2 versions: three-pole and four-pole.
For applications having to comply with the UL standard, use the LA9ZX01508 support (3P only).

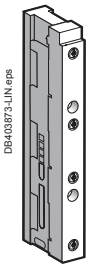
The mounting plates (2)
These allow mounting of the power feeder components consisting of:
- a GV2 motor circuit breaker, mounted alone or in conjunction with a TeSys K or TeSys D contactor
- a GV3 motor circuit breaker, mounted alone or in conjunction with a TeSys D contactor
- a TeSys U starter-controller
- a TeSys GV7 motor circuit breaker
- an LD63 integral contactor-circuit breaker
- a NSX100-250 or NSX400-630 A circuit breaker
- H/J/L PowerPact circuit breaker frame.

Accessories
Accessories complete the offer:
- covers (3) for 5 and 10 mm bars
- end covers (4)
- a base plate (5)
- 1P connectors (6)
- 3P connectors on mounting plate (7)
- a spring terminal 3P connection module (8).

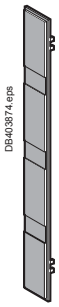
TeSys starters and bare devices
Busbar support

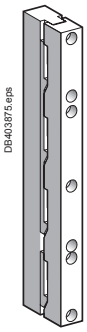
Linergy BZ



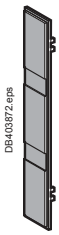


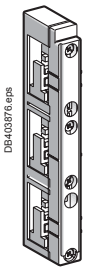
LA9ZX01573 *LA9ZX01495*





LA9ZX01131 *LA9ZX01485*





LA9ZX01573 *LA9ZX01508*

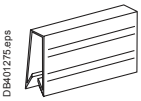
IEC busbar supports and accessories

		Min. order qty	Unit reference
3-pole	For 12, 15, 20, 25, 30 x 5/10 mm busbars	10	LA9ZX01495
	End covers for 3-pole busbar support	10	LA9ZX01573
4-pole	For 12, 15, 20, 25, 30 x 5/10 mm busbars	10	LA9ZX01485
	End covers for 4-pole busbar support (5 left, 5 right)	10	LA9ZX01131

UL busbar supports and accessories

		Min. order qty	Unit reference
3-pole	For 12, 20, 30 x 5/10 mm busbars	10	LA9ZX01508
	Base plate 240 x 700	2	LA9ZX01515
	End covers for busbar support	10	LA9ZX01573

Other accessories

		Min. order qty	Unit reference
Covers, length 1 m			
	For 12-30 x 5 mm busbars	10	LA9ZX01244
	For 12-30 x 10 mm busbars	10	LA9ZX01245

TeSys starters and bare devices
Choice of mounting plates

Linergy BZ

LA9ZA32627

LV429372

LA9ZA32600

LV432624

For TeSys integral contactor-circuit breakers

Operating current AC-3 440 V	Protection by contactor-circuit breaker	Mounting plate l x h x d	Min. order qty	Unit reference
Mounting plate, 1-way				
63 A	LD1, LD4 LD●	108 x 260 x 63	1	**LA9ZA32627**

For TeSys GV7 motor circuit breakers

Operating current AC-3 440 V	Protection by contactor-circuit breaker	Mounting plate l x h x d	Min. order qty	Unit reference
Mounting plate, 1-way				
80 A	GV7	104 x 190 x 63	1	**LV429372**

For Compact NSX circuit breakers

Ratings		Mounting plate l x h x d	Min. order qty	Unit reference
100-250 A	Mounting plate for 3P circuit breakers	104 x 190 x 63	1	**LV429372**
	Mounting plate for 4P circuit breakers	139 x 251 x 63	1	**LV429373**
400-630 A	Mounting plate for 3P circuit breakers	139 x 270 x 63	1	**LV432623**
	Mounting plate for 4P circuit breakers	184 x 284 x 63	1	**LV432624**

For PowerPact 3P circuit breakers

Ratings		Mounting plate l x h x d	Min. order qty	Unit reference
60-100-150 A	Mounting plate for H frame circuit breakers	104 x 190 x 63	1	**LA9ZA32600**
250 A	Mounting plate for J frame circuit breakers	104 x 190 x 63	1	**LV429372**
250-400-600 A	Mounting plate for L frame circuit breakers	139 x 270 x 63	1	**LV432623**

Characteristics of busbar mounting plates

Type of mounting plate		**LA9ZA32621 LA9ZA32622**	**LA9ZA32427 LA9ZA32428 LA9ZA32434 LA9ZA32623 LA9ZA32442 LA9ZA32443**	**LA9ZA32624 LA9ZA32625 LA9ZA32626 LA9ZA32627**	**LV429372 LV429373**	**LV432623 LV432624**	**LA9ZA32600**
Degree of protection as per IEC 60529	IP	20					
Rated insulation voltage	V	690					
Permissible current	A	25	32	63	80-100-250	400-630	60-100-150
Peak rated current	kA	50	50 (1)	50	50	50	50
SCCR (UL) with Compact NSX circuit breaker protection	mm²	The reinforced breaking capacity due to cascading in circuit breaker combination is maintained					
Conductor cross section (color: black)	mm²	4	6	10	NA		
	AWG	12	10	8	NA		
Type of conductor insulating material	PVC	105°			NA		

(1) 35 kA with LUB12 for LA9ZA32427 and LA9ZA32428.

TeSys starters and bare devices
Choice of mounting plates

Linergy BZ

LA9ZA32443, LA9ZA32621

LA9ZA32434, LA9ZA32442

LA9ZA32622

LA9ZA32623

LA9ZA32427

LA9ZA32428

LA9ZA32624

LA9ZA32625

LA9ZA32626

For TeSys GV2 motor circuit breakers

Operating current AC-3 440 V	Protection by motor circuit breaker	For contactor	Mounting plate l x h x d	Min. order qty	Unit reference
Mounting plate, 1-way					
25 A	GV2 ME GV2 P GV2 LE	LC1 D LC1 K LP4 K06-K12	45 x 200 x 63	4	**LA9ZA32621**
32 A	GV2 LE		63 x 200 x 63	4	**LA9ZA32443**
Mounting plate, 2-way (3)					
25 A	GV2 ME GV2 P GV2 LE	LC1 D LC1 K LP4 K06-K12	90 x 200 x 63	2	**LA9ZA32622**
32 A	GV2 ME GV2 P GV2 LE	LC1 D	45 x 200 x 63	4	**LA9ZA32434**
			54 x 200 x 63	4	**LA9ZA32442**
			90 x 200 x 63	2	**LA9ZA32623**

TeSys U starter-controllers

Operating current AC-3 440 V	Protection by power base	Mounting plate l x h x d	Min. order qty	Unit reference
Mounting plate, 1-way				
32 A	LUB12, LUB32	45 x 200 x 63	4	**LA9ZA32427**
Mounting plate, 2-way				
32 A	LUB12, LUB32	45 x 260 x 63	4	**LA9ZA32428**

For TeSys GV3 motor circuit breakers

Operating current AC-3 440 V	Protection by power base	For contactor	Mounting plate l x h x d	Min. order qty	Unit reference
Mounting plate, 1-way (1)					
63 A	GV3 P	–	54 x 200 x 63	4	**LA9ZA32624**
	GV3 P	LC1 D40A…65 A	54 x 260 x 63	4	**LA9ZA32625**
Mounting plate, 2-way (1) (2)					
63 A	GV3 P	LC2 D40A…65 A	117 x 260 x 63	4	**LA9ZA32626**

(1) Contactor-circuit breaker combination without additional part.
(2) Use the LAD 9R3 kit for the execution of changeover contactors.
(3) Use the LAD 9R1 or LAD 9R1V kit for the execution of changeover contactors.

***Note:** the mounting plate rails can be shifted vertically in 1.25 mm increments.*

TeSys starters and bare devices
Terminals, connection module

Linergy BZ

LA9ZX01285

LA9ZX01287

Terminals

	I max		Set of	Unit reference
One-pole for flat bars, 5 mm	270 A	Capacity 4-35 mm²	50	LA9ZX01285
	400 A	Capacity 16-70 mm²	25	LA9ZX01287
3P cover, width 84 mm			10	LA9ZX01413

LA9ZX01413

LA9ZX01243

Terminals on mounting plate

	I max		Min. order qty	Unit reference
3P, on mounting plate + cover, for 12 x 5 to 30 x 10 busbars, width 81 mm	440 A	Capacity 35-120 mm²	1	LA9ZX01243
3P, on mounting plate + cover, for 20 x 5 to 30 x 10 busbars, width 135 mm	560 A	Capacity 120-300 mm²	1	LA9ZX01754

LA9ZX01563

Connection module

	I max		Min. order qty	Unit reference
3P, spring terminal connection + cover, for 12 x 5 to 30 x 10 busbars, width 20 mm	80 A	Capacity 1.5-16 mm²	8	LA9ZX01563

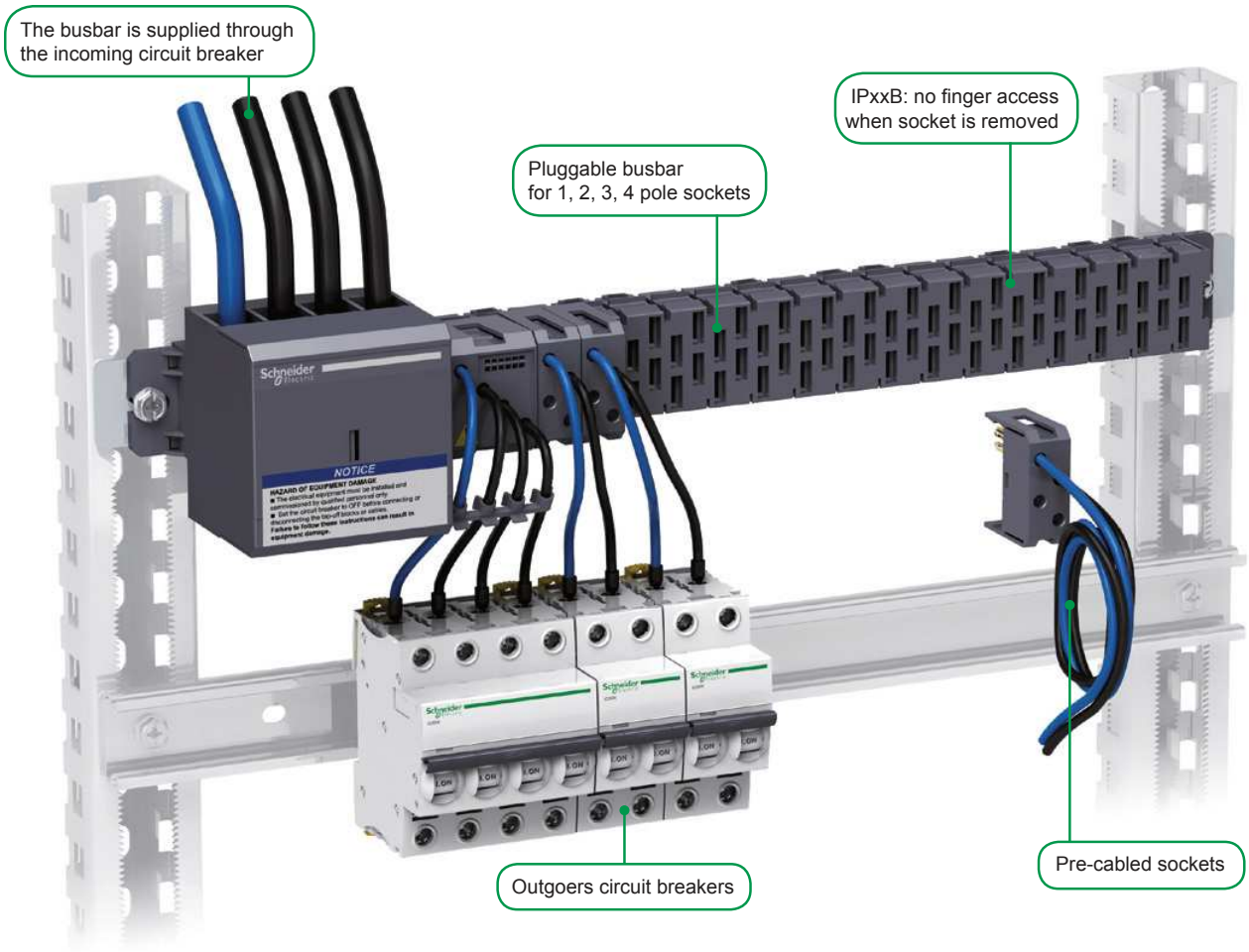
Connection by connectors

		LA9ZX01285		LA9ZX01287		LA9ZX01243		LA9ZX01563		LA9ZX01754	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Flexible wire	mm²	4	35	16	70	35	120	1.5	16	120	300
Multi-strand wire	mm²	4	35	16	70	35	120	1.5	16	120	300
Rigid wire	mm²	4	35	–	–	–	–	1.5	16	-	-
Tightening torque	N.m	... x 5		... x 5		... x 5-10		... x 5-10		... x 5-10	
Cover		LA9ZX01413		LA9ZX01413		Supplied without cover		Supplied without cover		Supplied without cover	

Linergy HK, Multistandard hot-plug busbar system

Application: electrical distribution, up to 160 A

Hot-plug distribution: when continuity of service is required



Advantages

- Considerable time saving: stand alone busbar, fixed to the chassis with 2 screws
- Preserved continuity of service during modification: live connection, disconnection (off load)
- Wide adaptability: 6 busbar lengths from 344 to 1100 mm, 12 models of sockets
- Multi standard: conform to IEC and UL standards

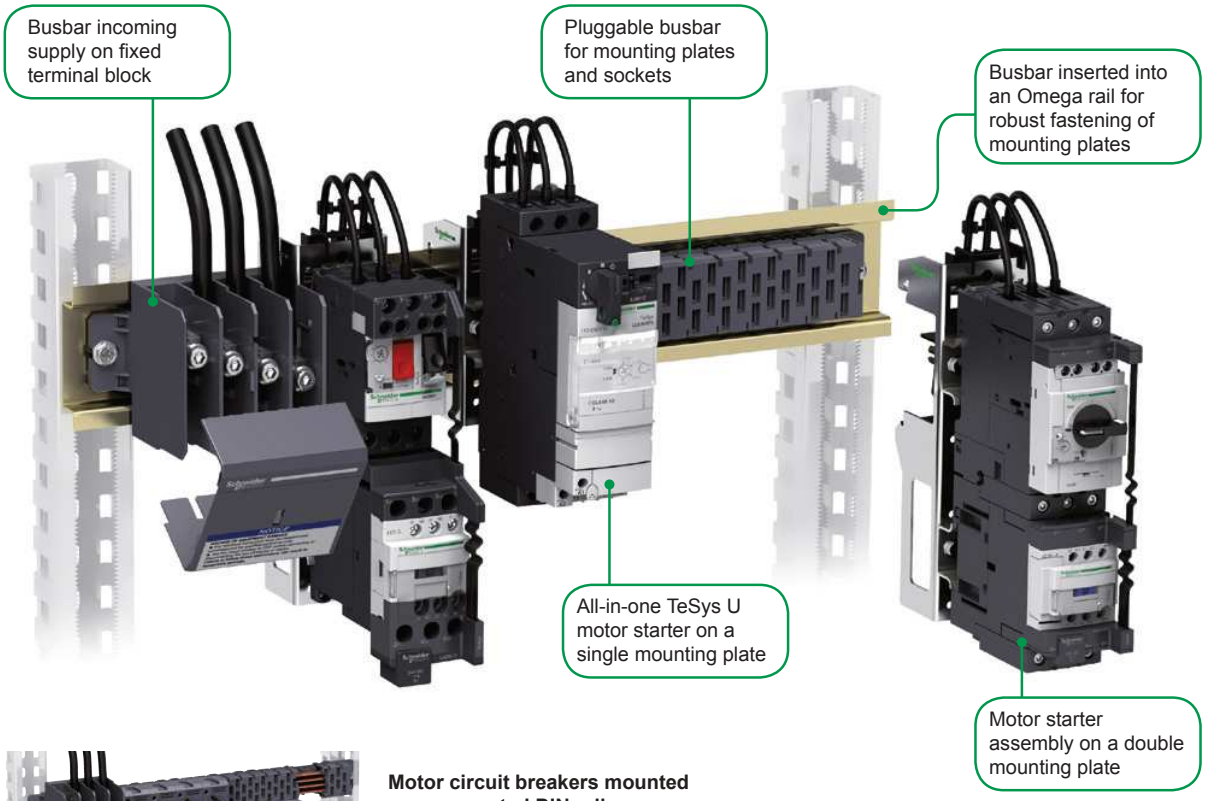
Detailed view: pre cabled socket

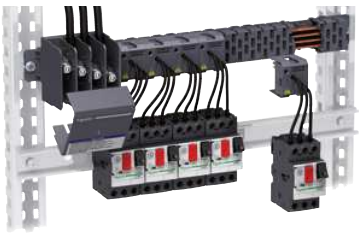
- The assembling process and the technological choices ensure a long-lasting reliability
- Each wire is welded on a spring clip providing robustness to the socket and vibration resistant contacts

Linergy HK, Multistandard hot-plug busbar system

Application: electrical distribution to motor starters

When compactness and continuity of service are required





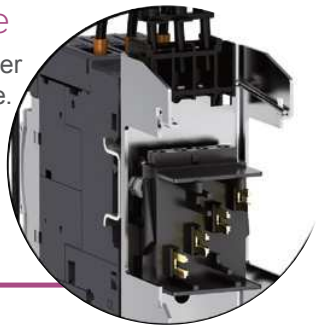
Motor circuit breakers mounted on a separated DIN rail.

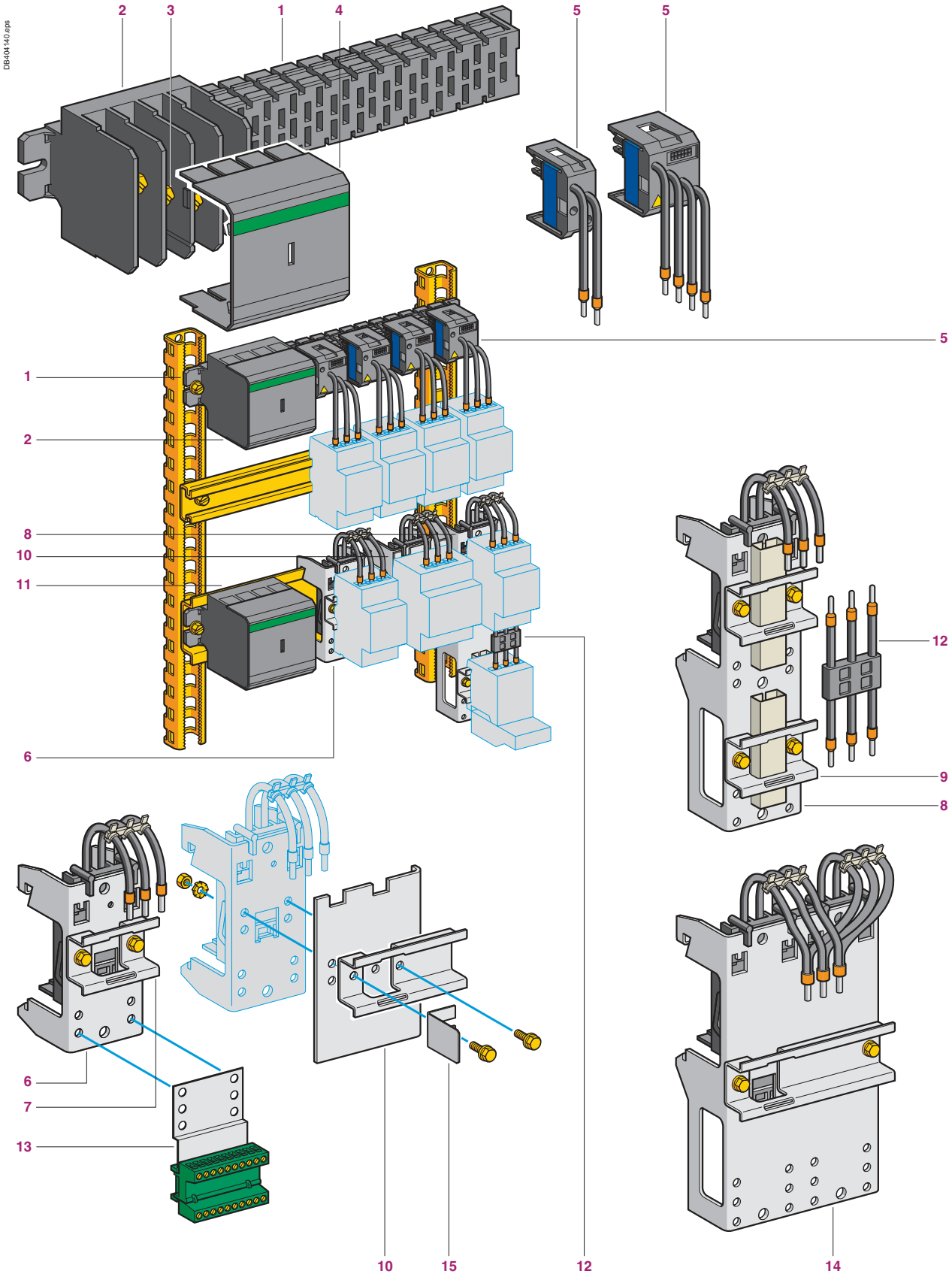
Advantages

- Space saving in compact enclosures: the total volume is reduced to that of the motor starter assemblies
- Preserved continuity of service during modification and maintenance: live connection, disconnection (off load)
- Wide adaptability: 6 busbar lengths from 344 to 1100 mm, 12 models of sockets, 23 mounting plates for motor starters up to 25 or 50 A

Detailed view: mounting plate back face

- Thanks to the plug and its pre-cabled wires the motor starter is safely assembled in the workshop, for immediate or later use.
- A piece of DIN profile rail is attached on the front face of the mounting plate for fastening the components.
- The metal mounting plate ensures a rigid and robust fastening on the omega rail.

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Power distribution in control panels

Pre-assembled busbar system

The assembly of automated control and distribution panels requires the use of products that are not only safe but also simple and quick to mount and cable.

The Linergy HK pre-assembled busbar system meets all these criteria by incorporating prefabricated components which cater for 3 principal functions:

Carrying of electric current

By the pre-assembled 4-pole busbar system **1**, 160 A at 35 °C.

4-pole busbars can be used for 3-phase + Neutral or 3-phase + Common.

The busbars are available in 6 lengths: 344, 452, 560, 668, 992, 1100 mm.

An incoming supply terminal block **2** is located at the extreme left of the busbar.

"Knock-out" partitions allow connection of the power supply from above or below to connectors **3** which are protected by a removable cover **4**.
Upstream protection of the busbar is shown on page B1/20.

Current distribution

Tap-off units **5** (factory assembled) are available in 4 versions:
- 2-pole,
- 3-pole,
- 4-pole (3-phase + Neutral),
- 4-pole (3-phase + Common).

The tap-offs clip onto the busbar with instantaneous mechanical and electrical connection to the busbars.
2 ratings are available: 16 and 32 A.
The tap-off units ensure not only rapid mounting, but also a neat appearance for the power distribution system and complete safety when accessing under live circuit conditions.

Component mounting

Component mounting plates with incorporated tap-off allow mounting of and supply of power to components.
They are available in 25 A or 50 A ratings.

These mounting plates clip onto the mounting rail **11**, which also supports the busbar, and at the same time make electrical connection via the incorporated tap-off.

2 types of mounting plate are available:
- single plates **6** (height 105 mm), with bolt-on 35 mm wide ⎽ rail **7**, which may be bolted on in one of two positions, allowing height adjustment of 10 mm.
- double plates **8** and **14** (height 190 mm), with two bolt-on, 35 mm wide ⎽ rails **9** mounted on 100 mm fixing centres; each rail may be bolted on in one of 4 positions, allowing height adjustment in 10 mm steps. These plates are supplied with connectors **12** to allow wiring between control and protection devices.

Single mounting plates enable the following types of distribution:
- 2-pole (Ph + N) and (Ph + Ph)
- 3-pole,
- 4-pole (3 Ph + N or 3 Ph + common).

Double mounting plates enable the following types of distribution: 2-pole (Ph + N, Ph + Ph), 3-pole or 4-pole (3Ph+N and 3Ph + common).

Extension plates **10** can be bolted onto single and double mounting plates to enable mounting of wider components. Using a side stop **15** in conjunction with these extension plates also supports the Linergy HK busbar when used vertically.

A control terminal block **13** comprising a support plate bolted onto the single or double mounting plates and a 10-pole plug-in block, enables connection of the control circuit wires (c.s.a. 1.5 mm^2 max).

Characteristics: pages B1/20 and B1/21 | References: pages B1/14 and B1/15 | Dimensions: pages B1/22 and B1/23 | Mounting possibilities: page B1/14

Power distribution in control panels

Pre-assembled busbar system

Linergy HK

AK5 JB1●●

Busbars

The busbars can be screw-mounted onto any type of support. However. if it is to be used in conjunction with component mounting plates incorporating a tap-off, it is essential that it is mounted on the AM1 DL201 rail.
When mounting tap-offs, the rated operational current of the busbar should be taken into account: 160 A at 35 °C.

Number of conductors	Number of tap-offs at 18 mm intervals	Length	Suitable for mounting in enclosure width	Reference	Weight
		mm	mm		kg
4 (1)	12	344	600	**AK5JB143**	0.700
	18	452	800	**AK5JB144**	0.900
	24	560	800	**AK5JB145**	1.100
	30	668	800	**AK5JB146**	1.300
	48	992	1200	**AK5JB149**	1.900
	54	1100	1200	**AK5JB1410**	2.100

Removable power sockets

Use	Number of points used on the busbar system		Thermal current	Cable lengths	Min. order qty	Unit reference
		Width	A	mm		
Single-phase + Neutral	1	9 mm	16	200	6 (2)	**AK5PC12**
			32	1000	6 (2)	**AK5PC32L**
2-phase	1		16	200	6 (3)	**AK5PC12PH**
			32	1000	6 (3)	**AK5PC32LPH**
3-phase	2	18 mm	16	200	6	**AK5PC13**
			32	250	6	**AK5PC33**
				1000	6	**AK5PC33L**
3-phase + Neutral	2		16	200	6	**AK5PC14**
			32	250	6	**AK5PC34**
				1000	6	**AK5PC34L**
3-phase + common	2		16 10 (common)	200	6	**AK5PC131**
			32 10 (common)	250	6	**AK5PC331**

AK5 PC12

AK5 PC14

AK5 GF1

Accessories

Description	Maximum no. of connections	C.s.a. mm²	Sold in lots of	Unit reference
Cable guide	4	2.5 or 4	20	**AK5GF1**

(1) 4-pole: 3-phase + Neutral or 3-phase + Common.
(2) Total of 6 sockets supplied: 2 sockets (N + L1), 2 sockets (N + L2). 2 sockets (N + L3).
(3) Total of 6 sockets supplied: 2 sockets (L1 + L2), 2 sockets (L1 + L3). 2 sockets (L2 + L3).
(4) Cut and drill to suit use.

Presentation: pages B1/10 and B1/11
Characteristics: pages B1/20 and B1/21
Dimensions: pages B1/22 and B1/23
Mounting possibilities: page B1/14

Power distribution in control panels

Pre-assembled busbar system

PB112407_R.eps

AK5 PA231

PB112408_R.eps

AK5 PA232

PB500864_R.eps

AM1DL201

Component mounting plates incorporating tap-off

Single plate (height 105 mm)

Use	No. of 18 mm points used on the busbar system	Phase	Thermal currentA	Number of ⊔ rails for com-ponent support	Min. order qty	Reference
Single-phase + neutral	3 (54 mm width)	Ph1+N	25	1	1	**AK5PA211N1**
		Ph2+N	25	1	1	**AK5PA211N2**
		Ph3+N	25	1	1	**AK5PA211N3**
2-phase	3	Ph1+Ph2	25	1	1	**AK5PA211PH12**
		Ph1+Ph3	25	1	1	**AK5PA211PH13**
		Ph2+Ph3	25	1	1	**AK5PA211PH23**
3-phase	3	–	25	1	1	**AK5PA231**
3-phase + common	3	–	25	1	1	**AK5PA2311**
3-phase + neutral	3	–	25	1	1	**AK5PA241**

Double plate (height 190 mm)

Prefabricated 25 A connectors are supplied for connecting the 2 protection and control devices.

Single-phase + neutral	3	Ph1+N	25	2	1	**AK5PA212N1**
		Ph2+N	25	2	1	**AK5PA212N2**
		Ph3+N	25	2	1	**AK5PA212N3**
2-phase	3	Ph1+Ph2	25	2	1	**AK5PA212PH12**
		Ph1+Ph3	25	2	1	**AK5PA212PH13**
		Ph2+Ph3	25	2	1	**AK5PA212PH23**
3-phase	3	–	25	2	1	**AK5PA232**
	6 (108 mm width)	–	25	2	1	**AK5PA232S**
			50	1	1	**AK5PA532**
3-phase + neutral	3	–	25	2	1	**AK5PA242**
3-phase + common	3	–	25 (10 common)	2	1	**AK5PA2312**
	6	–	25 (10 common)	2	1	**AK5PA2312S**
			50 (10 common)	1	1	**AK5PA5312**
3-phase + neutral	6	–	50	1	1	**AK5PA542**

Omega rail, width 75 mm

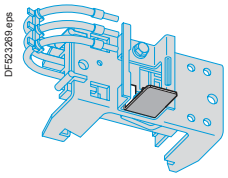
This rail is designed to accommodate the busbar system when it is used with Linergy HK mounting plates incorporating tap-offs. It supportsthe busbar system. The plates simply clip onto the rail.

Material and surface treatment	Depth	Length	Min. order qty	Reference	Weight
	mm	mm			kg
2 mm sheet steel	15	2000 (4)	6	**AM1DL201**	3.000

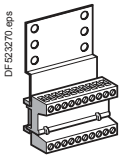
Presentation: pages B1/10 and B1/11 | Characteristics: pages B1/20 and B1/21 | Dimensions: pages B1/22 and B1/23 | Mounting possibilities: page B1/14

Power distribution in control panels

Pre-assembled busbar system



AK5 BT01



AK5 SB1

Extension plates

These plates bolt onto the equipment support plates, after having removed them from the rails, to be able to mount wider components.

Use		Number of tap-offs at 18 mm intervals	Reference
For mounting plates incorporating tap-off	Single	4	**AK5PE17**
	Double	4	**AK5PE27**

Side stop (AK5 JB mounted vertically)

Use	Set of	Reference
For extension plate (for AK5PA●●●)	50	**AK5BT01**

Control terminal blocks

Description	Thermal current A	Set of	Reference
10-pole terminal blocks, for screwing onto plate AK5 PA●●●			
	10	10	**AK5SB1**

Accessories

Description	Marking	Set of	Reference
Strips of clip-in markers 10 identical numbers, signs or capital letters per strip	0…9	25	**AB1R●** (1)
	+	25	**AB1R12**
	–	25	**AB1R13**
	A…Z	25	**AB1G●** (1)

*(1) Replace the ● in the selected reference with the number or letter required. Example: **AB1R1** or **AB1GA**.*

Note:

■ *if the equipment is wider than the mounting plate, an extension plate can be used to increase the width of the support plate.*

■ *for upstream protection, see page B1/20.*

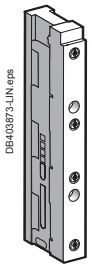
Linergy BZ and HK

Technical Data for Designers

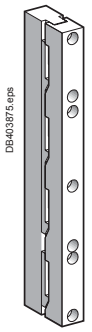
Contents

TeSys starters and bare devices
Busbar support

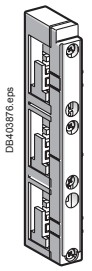
Linergy BZ



LA9ZX01495



LA9ZX01485



LA9ZX01508

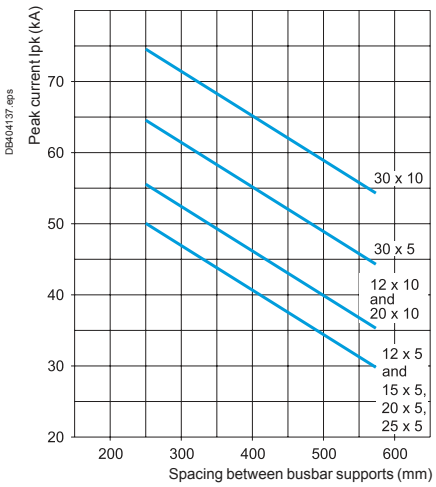
General characteristics

		LA9ZX01495 and LA9ZX01485 (IEC 6.439-1)						
Bar dimensions compatibility	mm	12 x 5	15 x 5	20 x 5	25 x 5	30 x 5	12 x 10	20 x 10	30 x 10
Max. rated operating current	A	200	250	320	400	450	360	520	630
Min. peak permissible rated current	kA	30	30	30	30	45	35	35	53
Distance max. between 2 busbars supports	mm	570	570	570	570	570	570	570	570
Degree of protection	IP	20 (with cover LA9ZX01244 or LA9ZX01245)							
Thermal resistance	°C	125							
Rated current frequency	Hz	50/60							
Rated insulation voltage	V	690							
Rated operating voltage	V	690							

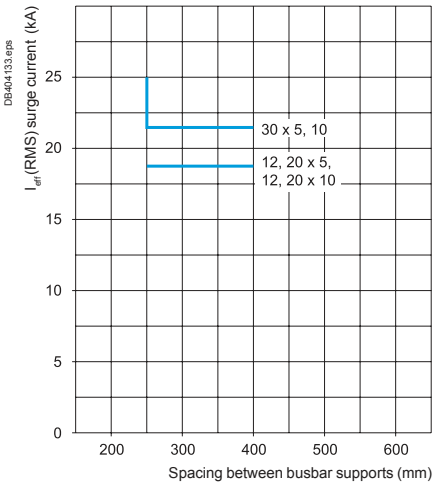
			LA9ZX01508 (UL) 508 A					
Bar dimensions compatibility		mm	12 x 5	20 x 5	30 x 5	12 x 10	20 x 10	30 x 10
Rated operating current		A	150	362	500	300	564	630
I_{eff} (RMS) surge current		kA	18	18	22 - 25	18	18	22 - 25
SCCR (protected by Compact NSX circuit breaker)	250 A 480 V AC	kA	65	-	-	65	-	-
	250 A 600 V AC		25	-	-	25	-	-
	400 A 480 V AC		-	65	65	-	65	65
	400 A 600 V AC		-	35	35	-	35	35
	500 A 480 V AC		-	-	65	-	-	65
	600 A 600 V AC		-	-	35	-	-	
	600 A 480 V AC		-	-	50	-	-	50
	600 A 600 V AC		-	-	25	-	-	25
SCCR (protected by fuses Class J or T ...)	400 A 480 V AC		100	100	100	100	100	100
	500 A 480 V AC		-	-	100	-	-	100
	500 A 600 V AC		-	-	100	-	-	100
Distance max. between 2 busbars supports (busbar protected)		mm	400	800	800	400	800	800
Degree of protection		IP	20 (with cover LA9ZX01244 or LA9ZX01245)					
Thermal resistance		°C	125					
Rated current frequency		Hz	50/60					
Rated operating voltage		V	600					

TeSys starters and bare devices
Plates for mounting on busbars
Short-circuit withstand capability

Determining the spacing between busbar supports (LA9ZX01495 and LA9ZX01485), according to IEC 61439-1 (1)



Short-circuit strength diagram according to UL845 (LA9ZX01508)



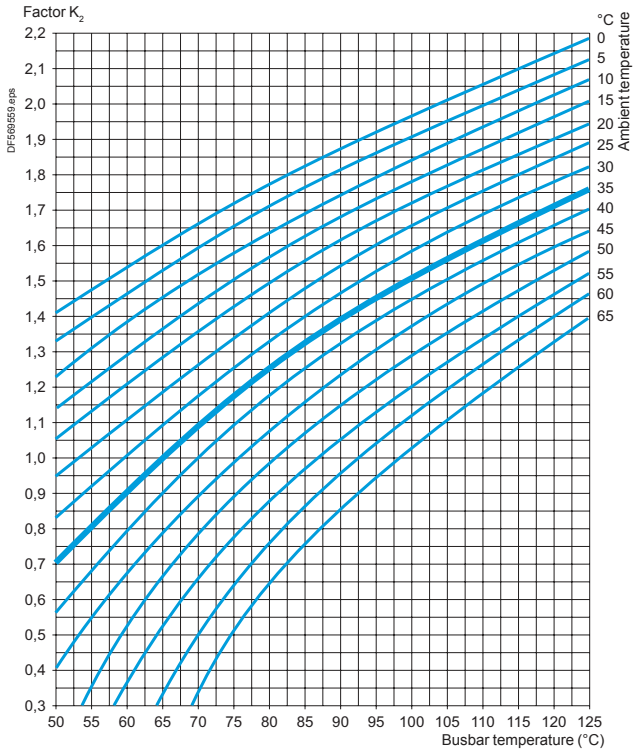
(1) Depending on the short-circuit current.

Load resistance of busbar assemblies in IEC applications

For an ambient temperature of 35 °C and a busbar temperature of 65 °C

Cross section	mm²	12 x 5	15 x 5	20 x 5	25 x 5	30 x 5	12 x 10	20 x 10	30 x 10
Permissible current	**A**	200	250	320	400	450	360	520	630

In the event of changes in climatic conditions, the following curve indicates the correction factor K_2 to be applied.



Example: In normal operating conditions, a tinned busbar of 30 x 10 can permanently withstand 630 A.

For a load of 800 A, the correction factor K_2 to be applied will be 1.3 ($\frac{800\ A}{630\ A}$). As a result, the temperature rise in the busbars will reach 82.5 °C.

Power distribution in control panels

Pre-assembled busbar system

Linergy HK

Busbar system characteristics

Conforming to standards			IEC 60439					
Product certifications			UL, CSA, DNV, LROS					
Degree of protection	Against access to live parts		IP XXB conforming to IEC 60529					
Flame resistance	Conforming to IEC 60695	**°C**	850 (incandescent wire)					
	Conforming to standard UL 94		V0					
Number of conductors	AK5 JB14●		4					
Supply current			~					
Rated operational frequency		**Hz**	50 or 60					
Rated operational current	Ambient temperature 35 °C	**A**	160					
	Coefficient K to be applied according to the ambient temperature	**°C**	35	40	45	50	55	60
		K	1	0.96	0.92	0.88	0.83	0.78
Rated insulation voltage	Conforming to IEC 60439-1	**V**	690					
	Conforming to UL and CSA	**V**	600					
Operational voltage			Off-load plugging-in and unplugging, with supply switched on					
	Conforming to IEC 60439-1	**V**	400					
	Conforming to UL, CSA	**V**	480					
			Plugging-in and unplugging, with supply switched off					
	Conforming to IEC 60439-1	**V**	690					
	Conforming to UL, CSA	**V**	600					
Maximum permissible peak current		**kA**	25					
Maximum let-through energy		**A^2s**	1 x 10^7					
Upstream short-circuit (1) and overload protection	Type of protection		Schneider Electric circuit-breaker			Fuses		
			NSX 160 N	NSX 160 H		aM		gF
	Rating	**A**	160	160		160		160
	Prospective short-circuit current	**kA**	36	70		100		100
	Operational current	**A**	160	160		160		160
Cabling			Maximum c.s.a.			Minimum c.s.a.		
	Flexible cable with cable end	**mm^2**	70			2.5		
	Solid cable	**mm^2**	70			2.5		
	Tightening torque	**Nm**	10					
Mounting position	Horizontal or vertical (2)		Fixing with screws provided					

(1) For conditions where conditional short-circuit current exceeds 25 kA.
(2) Using side stop **AK5 BT01** *on mounting plates* **AK5 PA**.

Presentation: pages B1/10 and B1/11 | References: pages B1/14 and B1/15 | Dimensions: pages B1/22 and B1/23 | Mounting possibilities: page B1/14

Power distribution in control panels
Pre-assembled busbar system

Linergy HK

Tap-off characteristics

Type		AK5 PC12	AK5 PC12PH	AK5 PC13	AK5 PC14	AK5 PC131	AK5 PC32L	AK5 PC32LPH	AK5 PC33 PC33L	AK5 PC34 PC34L	AK5 PC331
Conforming to standards		IEC 60439									
Product certifications		UL, LROS, CSA, DNV									
Degree of protection		Against access to live parts: IP XXB conforming to IEC 529									
Polarity		Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common	Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common
Conductor c.s.a. (UL cables)	**mm²**	2 x 2.5	2 x 2.5	3 x 2.5	4 x 2.5	3 x 2.5 1 x 1.5	2 x 4	2 x 4	3 x 4	4 x 4	3 x 4 1 x 1.5
Conductor colours		Black Blue (Neutral)	Black	Black	Black Blue (Neutral)	Black White	Black Blue (Neutral)	Black	Black	Black Blue (Neutral)	Black White (Common)
Permissible current	**A**	16	16	16	16	16 10 (Common)	32	32	32	32	32 10 (Common)
Rated insulation voltage	**V**	690 conforming to IEC 60439-1									
Rated peak current	**kA**	6									
Maximum let-through energy	**A²s**	100 000					200 000				
Type of conductor insulation		PVC 105 °C									

Tap-off characteristics

Type		AK5 PA211N1 PA211N2 PA211N3 PA212N1 PA212N2 PA212N3	AK5 PA211PH12 PA211PH13 PA211PH23 PA212PH12 PA212PH13 PA212PH23	AK5 PA231 PA232 PA232S	AK5 PA241 PA242	AK5 PA2311 PA2312 PA2312S	AK5 PA532	AK5 PA542	AK5 PA5312
Conforming to standards		IEC 60439							
Product certifications		UL, LROS, CSA, DNV							
Degree of protection		Against access to live parts: IP XXB conforming to IEC 60529							
Polarity		Phase + Neutral	Phase + Phase	3-phase	3-phase + Neutral	3-phase + Common	3-phase	3-phase + Neutral	3-phase + Common
Conductor c.s.a. (UL cables)	**mm²**	2 x 4	2 x 4	3 x 4	4 x 4	3 x 4 1 x 1.5	2 x (3 x 4)	2 x (4 x 4)	2 x (3 x 4) 1 x 1.5
Permissible current	**A**	25	25	25	25	25 10 (Common)	50	50	50 10 (Common)
Rated insulation voltage	**V**	690 conforming to IEC 60439-1							
Rated peak current	**kA**	6							
Maximum let-through energy	**A²s**	200 000							
Type of conductor insulation		PVC 105 °C							

Characteristics of mounting rails AM1 DL201 and AM1 DL2017

Type		Omega ⎽⎽ (width 75 mm, depth 15 mm)
Material		2 mm sheet steel
Surface treatment		Galvanized

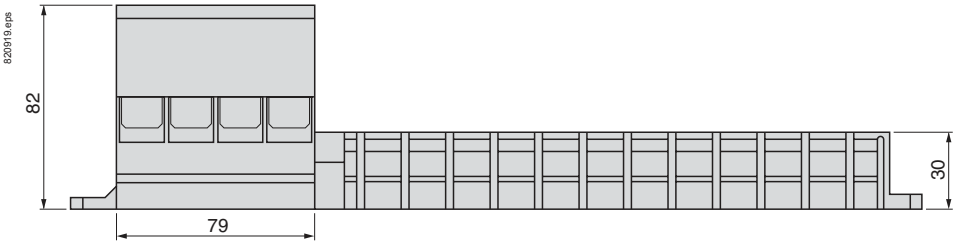
Presentation: pages B1/10 and B1/11 | References: pages B1/14 and B1/15 | Dimensions: pages B1/22 and B1/23 | Mounting possibilities: page B1/14

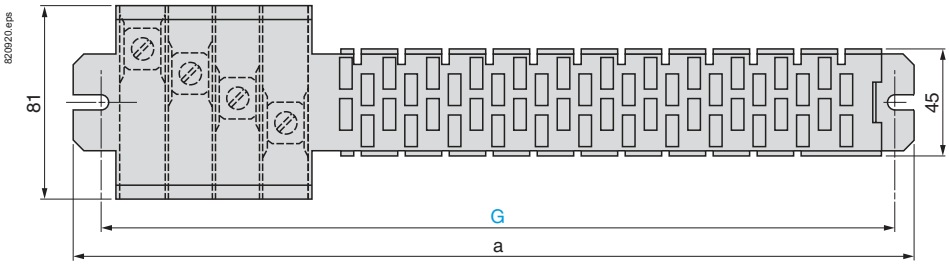
Power distribution in control panels
Pre-assembled busbar system

Linergy HK

Busbars

AK5 JB●●●

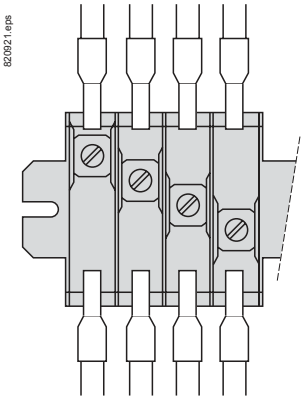




AK5	a	G	No. of 18 mm points
JB143	344	330	12
JB144	452	438	18
JB145	560	546	24
JB146	668	654	30
JB149	992	978	48
JB1410	1100	1086	54

Busbar feed units

AK5 JB●●●



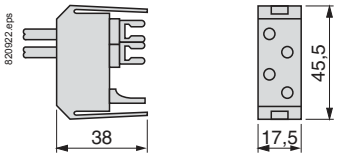
Installation of AK5 JB●●● busbar systems

Connection			C.s.a. in mm² min	C.s.a. in mm² max
Flexible cable with or without cable end			1 x 2.5 2 x 2.5	1 x 70 (1) 2 x 35
Flexible bar			–	2 x (9 x 4)
Flexible bar + flexible cable with or without cable end			9 x 4 + 1 x 2.5	9 x 4 + 1 x 35

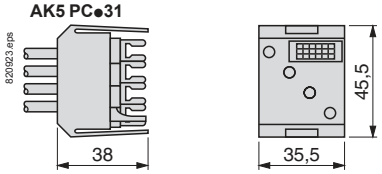
(1) Maximum c.s.a. or connection of conductor without cable end.

Removable power sockets 16 and 32 A

AK5 PC12●. AK5 PC32L●

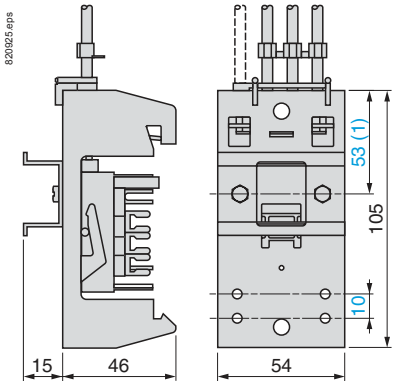


AK5 PC●3. AK5 PC33L
AK5 PC●4. AK5 PC34L
AK5 PC●31



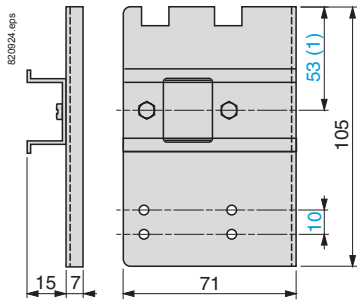
Mounting plates incorporating tap-offs, 25 A

AK5 PA2●1. AK5 PA2311. AK5 PA211●●●●



Single width extension plates

AK5 PE17



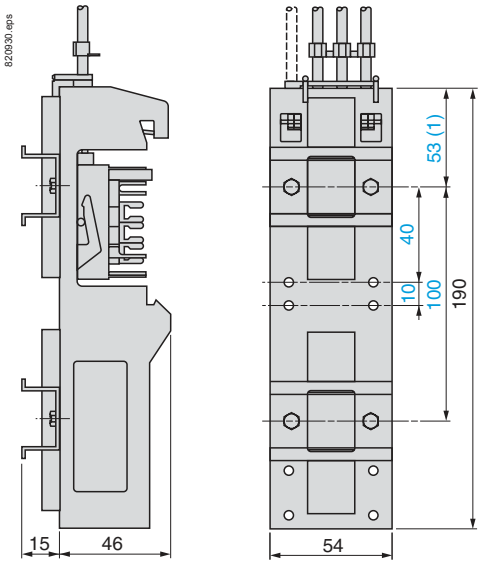
Note: *It is recommended that the power sockets or the removable plates are connected as close as possible to the busbar feed unit.*

(1) Can be fixed at 43 mm.

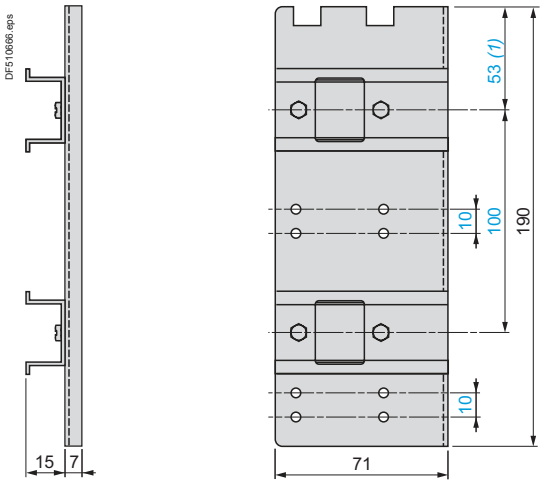
Presentation: pages B1/10 and B1/11
Characteristics: pages B1/20 and B1/21
References: pages B1/14 and B1/15
Mounting possibilities: page B1/14

Linergy HK

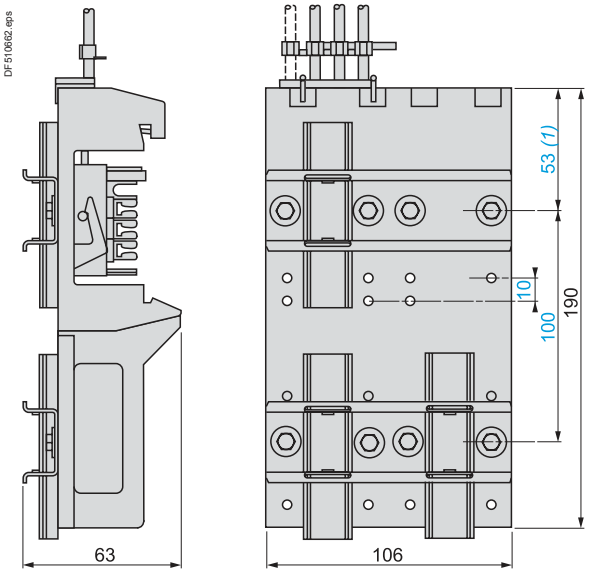
Component mounting plates incorporating tap-off
AK5 PA232. AK5 PA2312. AK5 PA242



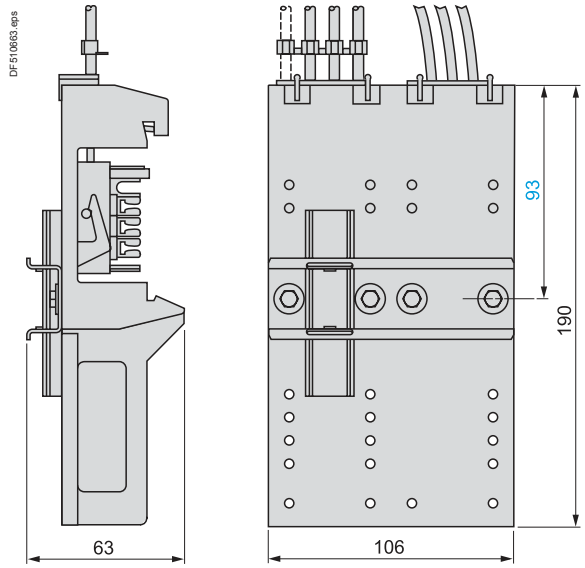
Double extension plate
AK5 PE27



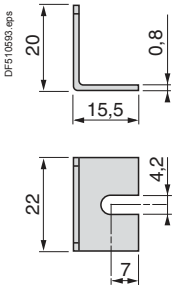
Component mounting plates incorporating tap-off
AK5 PA232S. AK5 PA2312S



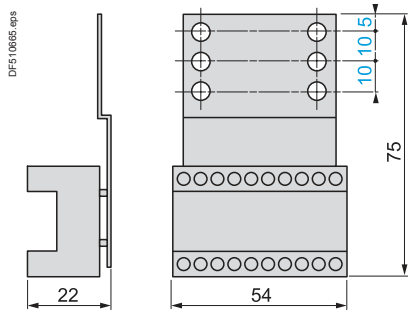
AK5 PA532. AK5 PA5312. AK5 PA542



Side stop
AK5 BT01



Control terminal block
AK5 SB1



(1) Can be fixed at 43 mm.

Presentation: pages B1/10 and B1/11
Characteristics: pages B1/20 and B1/21
References: pages B1/14 and B1/15
Mounting possibilities: page B1/14

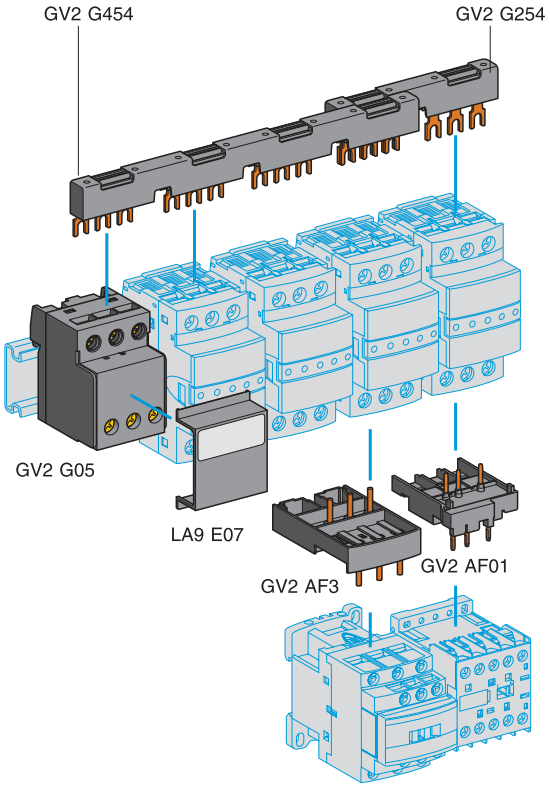
Motor starter wiring systems
TeSys

Motor starter power circuit wiring - Connection systems

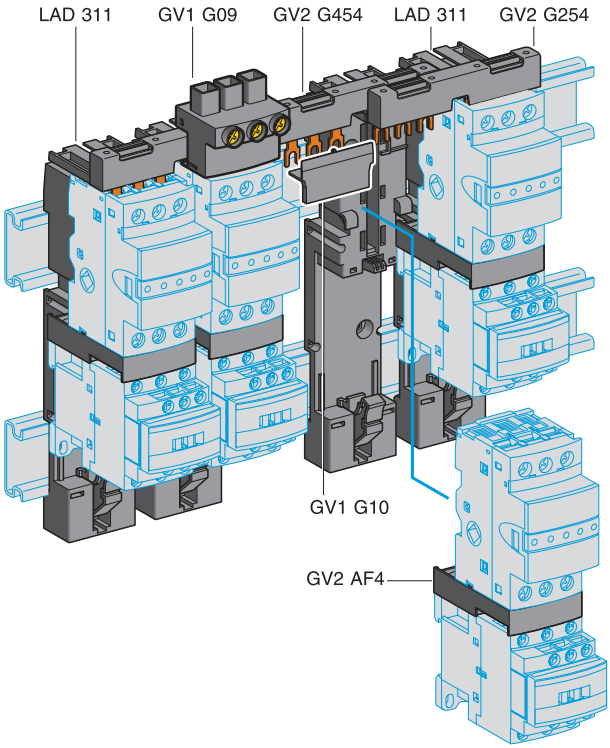
Motor starter control circuit wiring - RJ45 connection

DB417847.eps

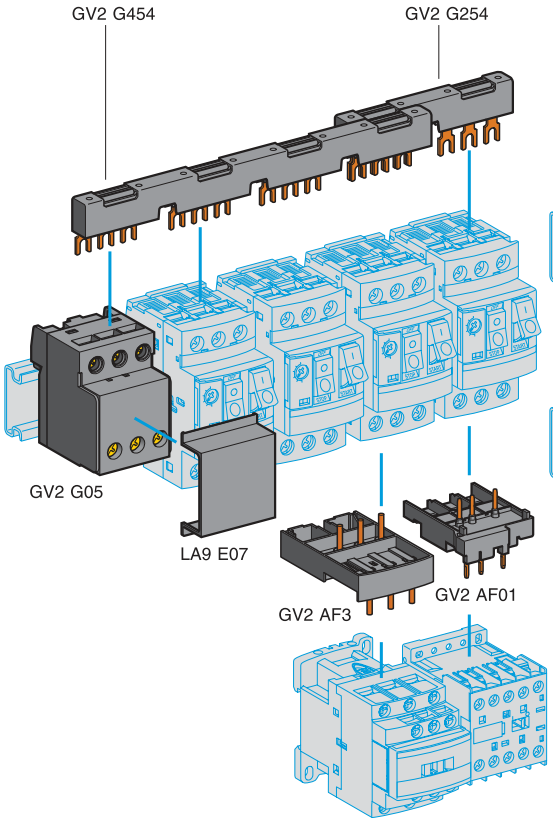
Group of fuse carriers directly mounted on DIN rail



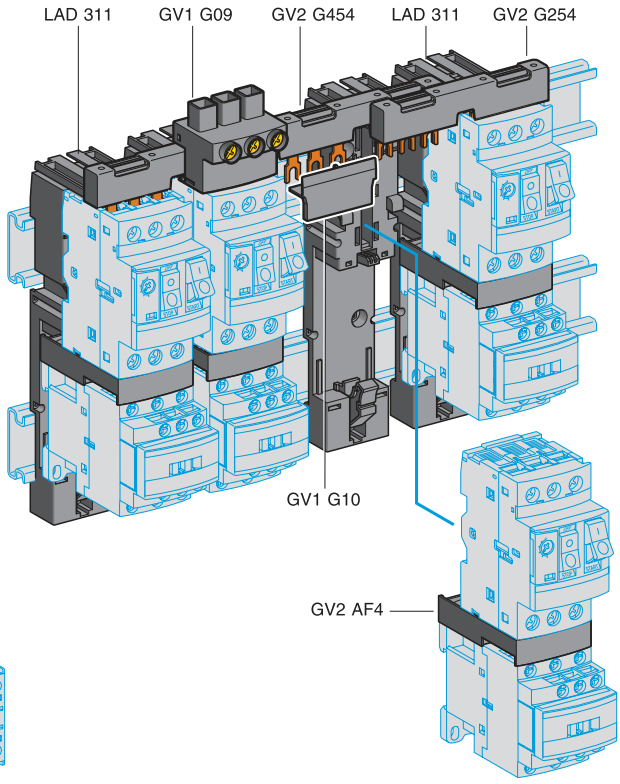
Group of fuse carriers + contactors mounted on adapter plates



Group of circuit breakers directly mounted on DIN rail



Group of circuit breakers + contactors mounted on adapter plates



Motor starter power circuit wiring
Connection systems
With screw clamps connection

This system is convenient when time and space savings are required.
The motor starter can be composed of:
- LS1 D323 fuse carrier + LC1 D contactor
- GV2 circuit breaker + LC1 D contactor.

Upstream busbars and terminals

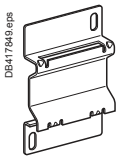
Description	Application	Pitch (mm)	Unit reference
Sets of 3-pole 63 A busbars	2 tap-offs	45	**GV2G245**
		54	**GV2G254**
		72	**GV2G272**
	3 tap-offs	45	**GV2G345**
		54	**GV2G354**
	4 tap-offs	45	**GV2G445**
		54	**GV2G454**
		72	**GV2G472**
	5 tap-offs	54	**GV2G554**

Description	Application	Sold in lots of	Unit reference
Terminal block for supply to one or more GV2 G busbar sets	Connection from the top	1	**GV1G09**
	Can be fitted with current limiter GV1 L3 (GV2 ME and GV2 P)	1	**GV2G05**
Cover for terminal block	For mounting in modular panels	10	**LA9E07**
Protective end cover	For unused busbar outlets	5	**GV1G10**

Assembling components

Description	Application	Sold in lots of	Unit reference
Combination blocks	Between GV2 and contactor LC1 K or LP1 K (1)	10	**GV2AF01**
	Between GV2 and contactor LC1 D09…D38 (1)	10	**GV2AF3**
	Between GV2 mounted on LAD 311 and contactor LC1 D09…D38	10	**GV2AF4**
Adapter plates	For mounting a GV2 ME and contactor LC1 D09…D38 with front faces aligned	1	**LAD311**
Height compensation plate	7,5 mm	10	**GV1F03**

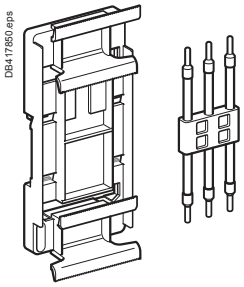
(1) Ensures both the connection and a rigid support to the contactor. No extra fixing mean required.



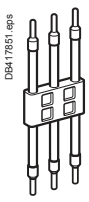
GV2 AF02

Accessories

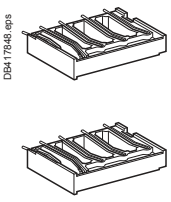
Description	Application	Sold in lots of	Unit reference
Adapter plates	For mounting a GV2 ME or GV2 LE by screw fixing	10	**GV2AF02**
Motor starter adapter plate	For mounting a GV2 and a contactor LC1 D09…D25. Item delivered with a GV1G02 flexible connection	1	**GK2AF01**
Flexible 3-pole connection for connecting a GV2 to a contactor LC1-D09…D25	Centre distance between mounting rails: 100…120 mm	10	**GV1G02**
Set of connections upstream/downstream	For connecting GV2 ME to a printed circuit board	10	**GV2GA01**
"Large Spacing" adapter UL 508 type E	For GV2 P●●H7 (except 32 A)	1	**GV2GH7**
Clip-in marker holders (supplied with each circuit breaker)	For GV2 P, GV2 L, GV2 LE and GV2 RT (8 x 22 mm)	100	**LA9D92**



GK2 AF01



GV1 G02



GV2 GA01

Group of fuse carriers + contactors mounted on adapter plates

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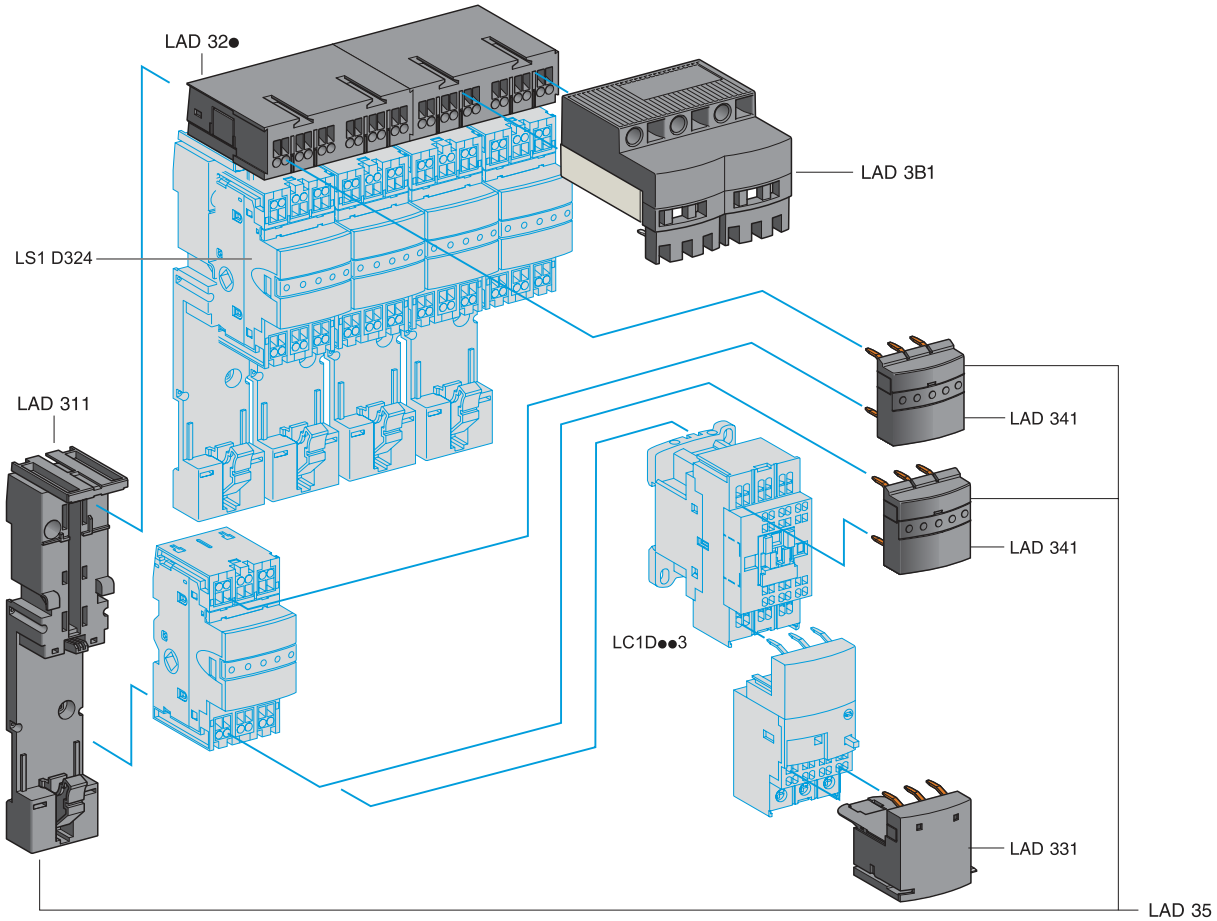
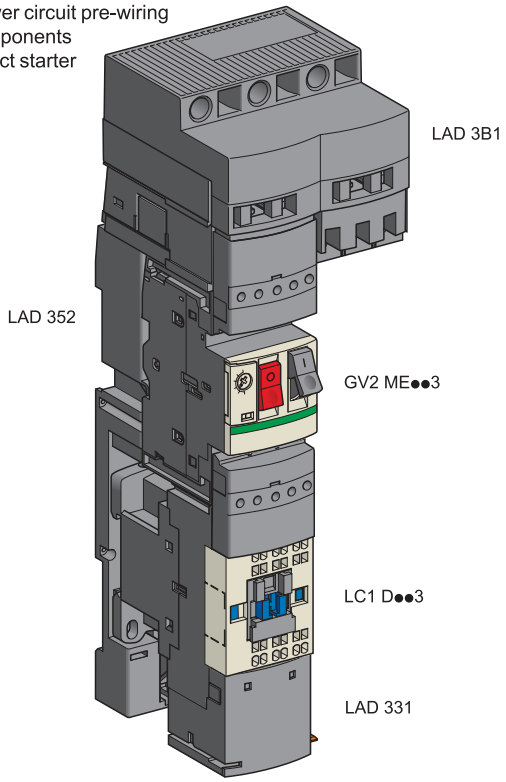
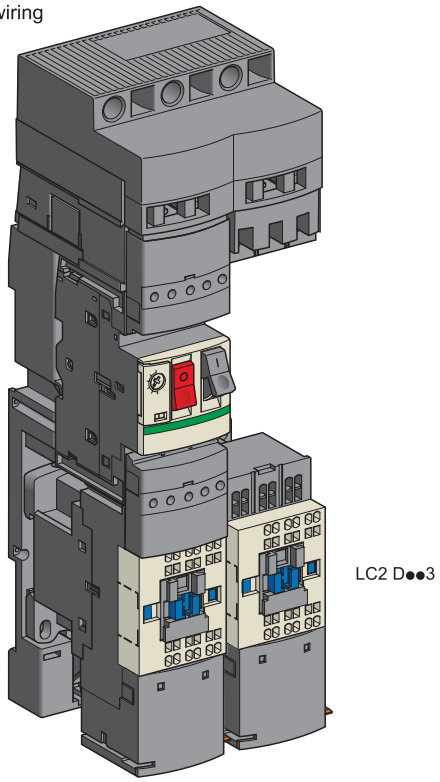


Power circuit pre-wiring components
Direct starter

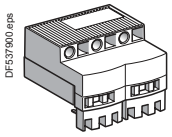


Power circuit pre-wiring components
Reversing starter

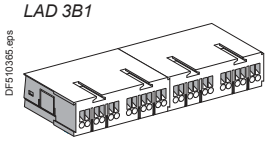


Motor starter power circuit wiring
Connection systems
With spring terminals connection

This system is convenient when time and space savings are required.
The motor starter can be composed of:
- LS1 D323 fuse carrier + LC1 D contactor.
- GV2 circuit breaker + LC1 D contactor



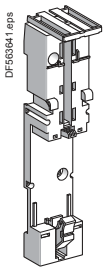
LAD 3B1



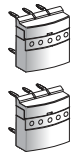
LAD 324

Upstream terminal and splitter blocks

Description	Maximum connection c.s.a.	Application	Sold in lots of	Reference
Upstream terminal block	16 mm² (1)	Power supply of 1 or 2 power splitter boxes	1	**LAD3B1**
Description	**Extension by**	**Number of starters**		**Reference**
Power splitter box, 60 A	LAD 32●	2	1	**LAD322**
		4	1	**LAD324**



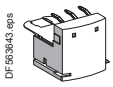
LAD 311



LAD 341

Assembling components

Description	Composition	Sold in lots of	Reference
Plate for mounting a GV2 ME circuit breaker and a contactor	For 1 starter	10	**LAD311**
Power connection module	For 1 starter	10	**LAD341**
Power connection kit for direct starter (2)	1 plate LAD 311 for GV2 ME and 2 power connection modules LAD 341		**LAD352**



LAD 331

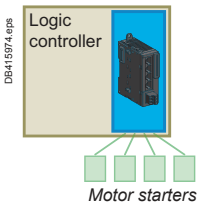
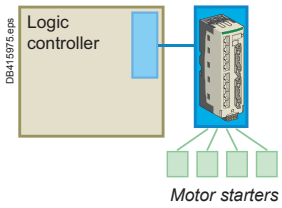
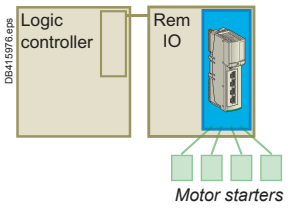
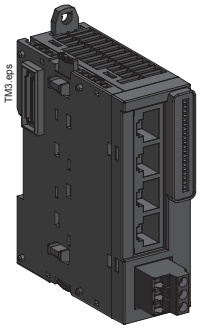
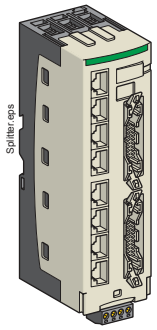
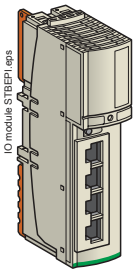
Downstream terminal and accessory

Description	Maximum connection c.s.a.	Application	Sold in lots of	Reference
Downstream terminal block	6 mm²	Connection of motor cables	10	**LAD331**
Cable end reducer	-	For connection of conductors from 1 to 1.5 mm²	20	**LAD99**

(1) Cables with one end pre-crimped are available to allow fast connection. References:
*1 set of 3 x 6 mm² cables (length 1 m: **LAD 3B061**, length 2 m: **LAD 3B062** and length 3 m: **LAD 3B063**),*
*1 set of 3 x 10 mm² cables (length 1 m: **LAD 3B101**, length 2 m: **LAD 3B102** and length 3 m: **LAD 3B103**),*
*1 set of 3 x 16 mm² cables (length 1 m: **LAD 3B161**, length 2 m: **LAD 3B162** and length 3 m: **LAD 3B163**).*
*(2) To build a reversing starter, order 2 kits **LAD 352**.*

Motor starters-to-PLC wiring architectures

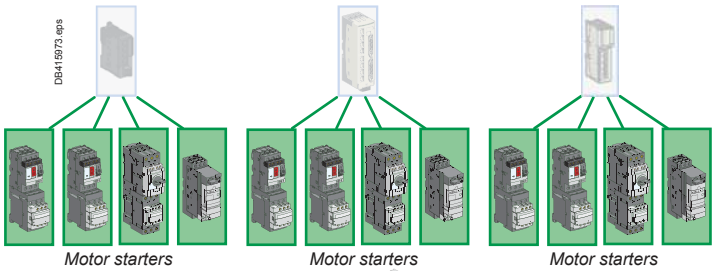
Automated control of multiple motor starters

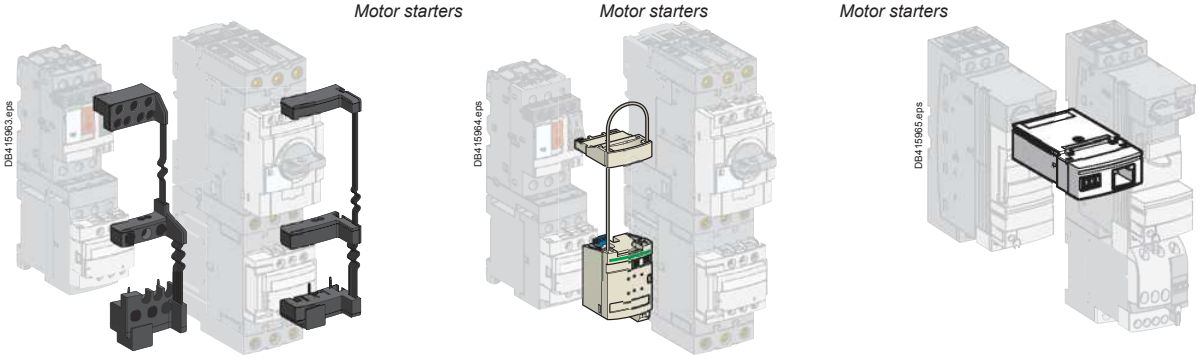
Product type	Connection interfaces for a group of motor starters		
IO system name	**Modicon TM3**	**Modicon Telefast**	**Modicon STB**
Architecture			
			
Application	Control of single or multiple motor-starters assemblies by mean of a logic controller. Machines or processes requiring easy, fast cabling and replacement of motor starters.		
Function	**IO module:** Ensures the direct connection of up to **4 motor starters** to logic controller (Modicon M221, M241, M251)	**Splitter box:** Ensures the connection of up to **8 motor starters** to a logic controller via Modicon Telefast multiwire cable	**IO module:** Ensures the connection of up to **4 motor starters** to a logic controller via an automation island (Modicon STB distributed IO architecture)
Upstream compatibility	With Modicon M221, M241, M251 logic controller, via logic controller internal bus	With any logic controller equipped with HE10 inputs/ outputs module	With Modicon STB automation island, via automation island internal bus
Upstream connectors	Backplane bus connector	HE10 connector	Backplane bus connector
Compatibility – **Motor circuit breaker - Type** **Contactor - Type / Amp** **Motor circuit breaker + Contactor - terminals**	All types of motor starters equiped with RJ45 connection system		
Motor control	Reversing / Non reversing		
Number of motor starters	**4**	**8**	**4**
Downstream connector type	RJ45		
Reference	**TM3XTYS4**	**LU9G02 / LU9G03**	**STBEPI2145K ***
Pages	Refer to Modicon M221/M241/ M251 catalogue	TeSys U - page B2/12 and A3/32	Refer to IP20 distributed IO Modicon STB catalogue

** STBEPI2145K: GV2 + contactor D09 to D32, TeSys U only.*

RJ45 connection components for motor starter

Common components for Modicon TM3, Modicon Telefast, Modicon STB systems

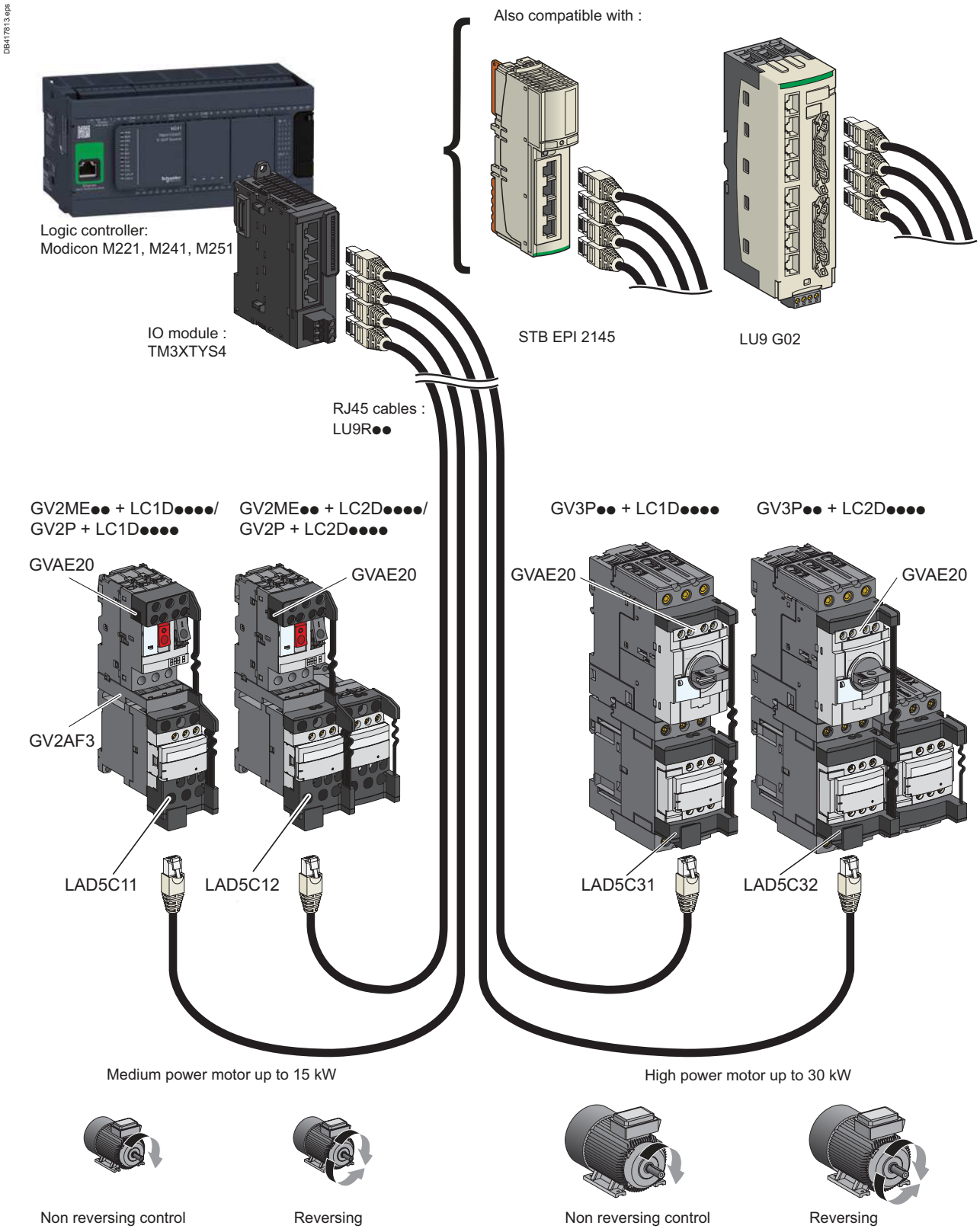




TeSys SoLink connection module: ensures the compatibility of circuit breaker + contactor assemblies with screw-clamp terminals to the RJ45 connection system				**Connection module:** ensures the compatibility of circuit breaker + contactor assemblies with spring terminals to the RJ45 connection system		**Connection module:** ensures the compatibility TeSys U motor starters to the RJ45 connection system
TM3XTYS4 / LU9G02 / LU9G03 / STBEPI2145K						
RJ45						
GV2ME / GV2P		GV3P		GV2ME / GV3P		TeSys U 12 to 32 A
TeSys D / 9 to 32 A		TeSys D / 40 to 65 A		TeSys D: 9 to 32 A (GV2ME), 40 to 65 A (GV3P)		
Screw-clamp				Spring		Screw-clamp
Non reversing	Reversing	Non reversing	Reversing	Non reversing	Reversing	Reversing or Non reversing
1						
Clamped pins				Plugin modules		Plugin module
LAD5C11	**LAD5C12**	**LAD5C31**	**LAD5C32**	**LAD9AP3●●**		**LUFC00**
B2/8				B2/10		B2/12

Motor starter control circuit wiring - RJ45 connection

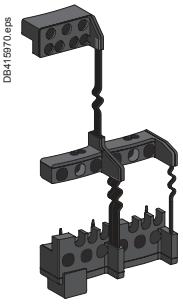
Architecture for motor starters with screw clamp terminals



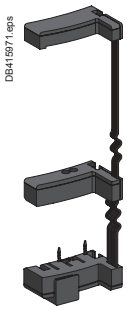
Motor starter control circuit wiring

RJ45 connection modules for circuit breakers + contactors with screw clamp terminals

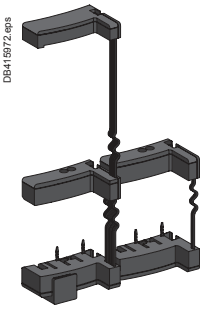
LAD5C11



LAD5C12



LAD5C31



LAD5C32

Automated control of motor starters

Logic controller

Evolution makes motor control easier thanks to logic controller with specific IO modules or remote IO and programming with dedicated function blocks.
This possibility is acheivable with motor starters composed of conventional components such as motor-circuit breaker and contactor.

Complete solution

Based on Modicon M221/241/251 logic controller, it composed of:
- TM3XTYS4 logic controller I/O module for motor starters
- LU9R●● precabled RJ45 cables (different lengths)
- TeSys SoLink connection module for conventional motor components.

Control command functions

For each port of the TM3XTYS4 logic controller I/O module (4 ports):
- Monitoring of 2 inputs: Ready, Running
- Control of 2 outputs: ON/OFF, Foward/Reverse

Inputs are connected to the auxiliary contacts of the motor starter.
Outputs feed 24 V DC control coils.

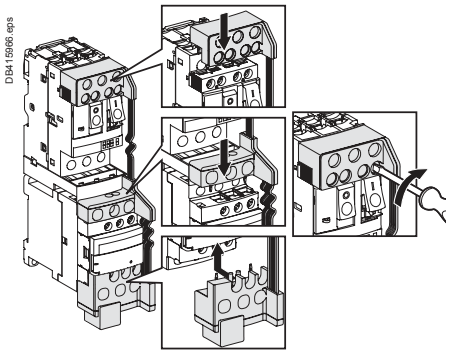
TeSys SoLink connection module for circuit breaker + contactor assemblies with screw clamp terminals

Simplified and error free wiring

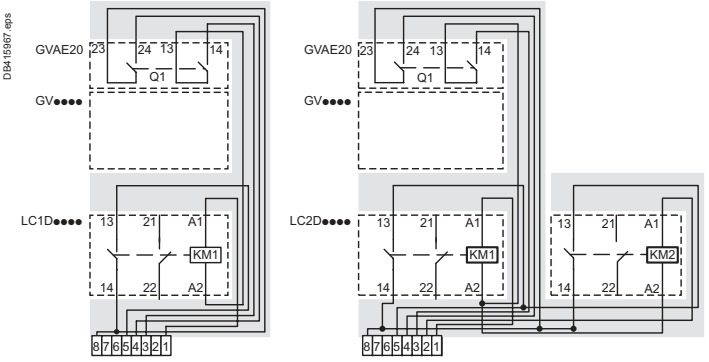
All the control and command terminals of the motor circuit breaker and contactor assembly are individually connected to the adaptor by mean of pre-shaped pins. Once the pins inserted, the screw-clamp terminals must be normally tightened. The upstream liaison is carried out with a simple RJ45 pre-connectorized cable. The use of integrated NC contact of the contactor and 2 auxiliary contacts front blocks is preserved.

	Motor control	To be associated with circuit breaker + contactor ref.	Lots of	Reference
Connection module for control of motors up to 15 kW	Non reversing	GV2ME or GV2P LC1D09BL to LC1D32BL LC1D09BD to LC1D32BD	5	**LAD5C11**
	Reversing	GV2ME or GV2P LC2D09BL to LC2D32BL LC2D09BD to LC2D32BD	3	**LAD5C12**
Connection module for control of motors up to 30 kW	Non reversing	GV3P LC1D40ABD to LC1D65ABD	5	**LAD5C31**
	Reversing	GV3P LC2D40ABD to LC2D65ABD	3	**LAD5C32**

Design / Installation



Mounting principle.



Notes:
GV2AF3 combination block is required for GV2 circuit breaker / contactor assembling.
GVAE20 auxiliary contact block must be assembled on GV2 and GV3 circuit breaker before LAD5C.
GVAX undervoltage trip unit, GV●APN●● extended rotary handle cannot be used with LAD5C●● connection modules.
Depth of the motor starter assemblies with contactors up to 18 A, is increased by 14 mm, height is increased by 21 mm and respectively 14 and 17 mm with contactors up to 32 A.

Motor starter control circuit wiring - RJ45 connection

Architecture for motor starters with spring terminals

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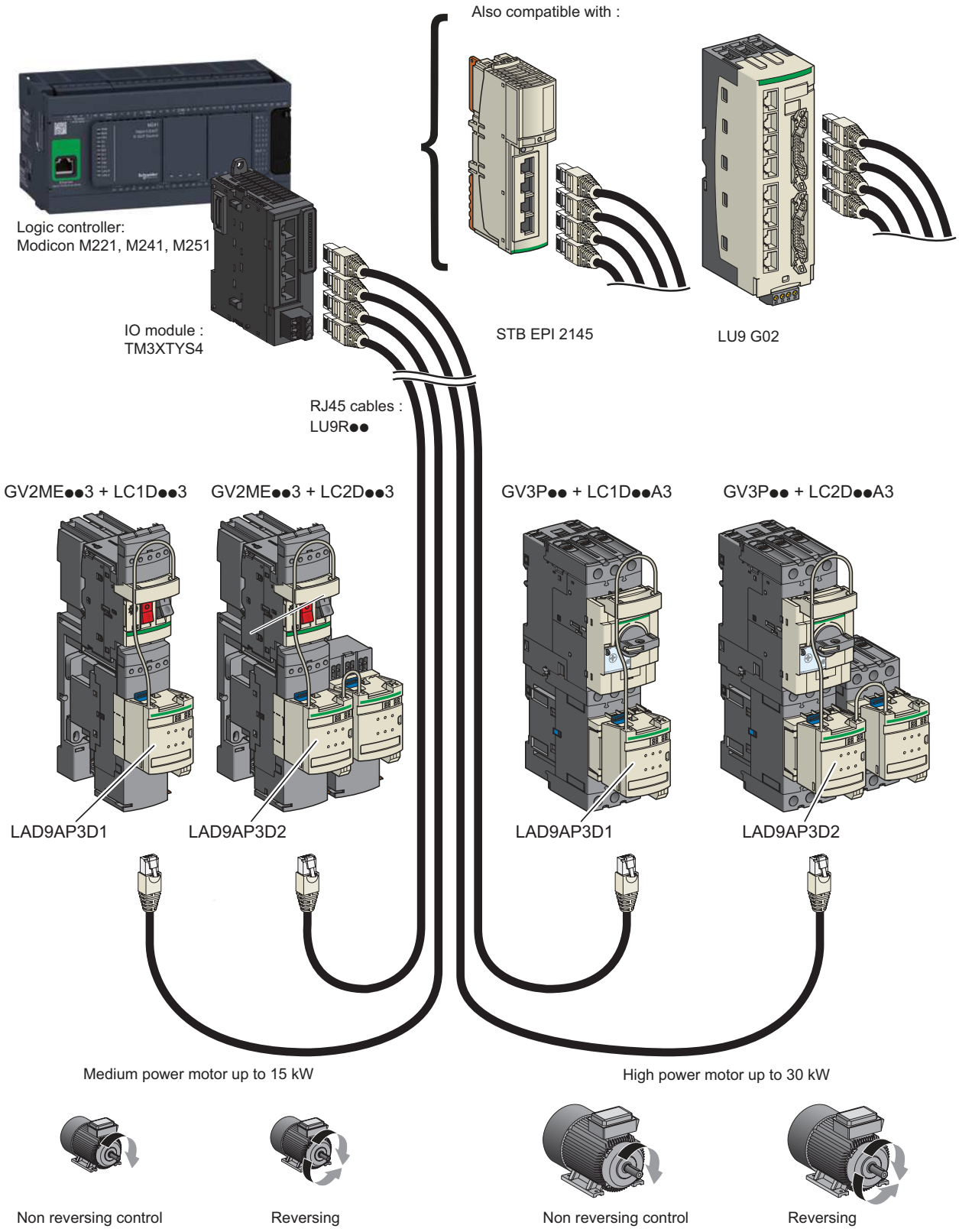
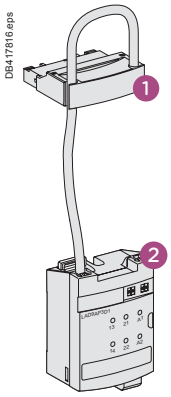
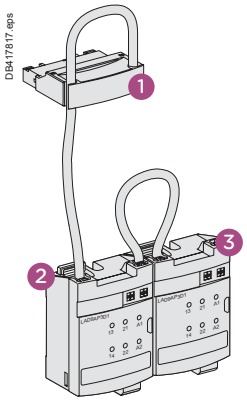


Motor starter control circuit wiring

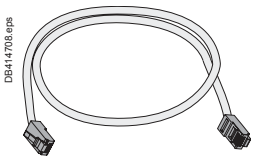
RJ45 connection modules for circuit breakers + contactors with spring terminals



LAD9AP31



LAD9AP31



LU9R●●

❶ Plug connected to circuit breaker auxiliary contacts
❷ ❸ Plug connected to contactor, to RJ45 and Aux. supply
1-3: 24 V DC control signal to the internal relay. It's contact sends the external source voltage to the contactor coil (KM1 or KM2).
7-8: circuit breaker status
5-8: contactor status
The external link (red) can be replaced by an Emergency Stop pushbutton.

Note: *GV2 circuit breaker + LC1D contactor assemblies must include the LAD311 back plate + LAD341 power connector.*

LAD9AP3●● Connection module for circuit breaker + contactors

"Plug and play", for single or reverse motor starters

The connection module ❶ + ❷ provides a simple and safe solution for wiring control and monitoring terminals of a motor starter assembly. The connections to the terminals are grouped on a single (direct starter) or double (reverse starter) RJ45 connector. Thus, liaison to an IO module or splitter box is ensured by a straight preconnectorized RJ45 cable (LU9R●●).

Remote control of contactor coil, of any voltage

■ The LAD9AP3● "Electromechanical" version is adapted for contactors with coil of any voltage, (12 to 230 V AC, or 5 to 130 V DC) thanks to an internal relay ensuring the voltage interfacing. An external control supply is needed.
■ The LAD9AP3● "without relay" version is adapted for contactors with 24 V DC coil, the output voltage of the programmable logic controller IO or of the splitter box is directly applied to it.

Compatibility

■ TeSys GV2ME circuit breaker + TeSys D contactors ratings up to 18 A with spring type control terminals + LAD311 mounting plate + LAD 341 power connection module.
■ TeSys GV3P circuit breaker + LC1D●●● contactors up to 65 A with spring type control terminals.

❶ Circuit breaker plug:
plugs directly into the auxiliary contacts terminals of a TeSys GV2 ME or TeSys GV3 P motor circuit breaker, in the location provided for the front-mounting block.

❷ and ❸ Contactor block:
The contactor block ensures the connection to the coil and auxiliary contacts of the contactor. 2 contactor blocks are linked for the reverse starter assembly. Each one is fitted with a RJ45 connector.
The mechanical locking onto the top and bottom of the contactor ensures a perfect connection, whatever the operating conditions (vibrations, knocks, etc.)

Control command pre-wiring components

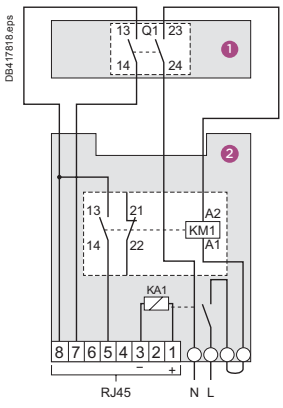
Description	TeSys D coil voltage	Type of coil control relay	Type of starter	Reference
Control connection modules	∿ 12...250 V or ⎓ 5...130 V	Electromechanical	Direct	**LAD9AP31**
			Reversing	**LAD9AP32**
	⎓ 24 V	Without relay	Direct	**LAD9AP3D1**
			Reversing	**LAD9AP3D2**

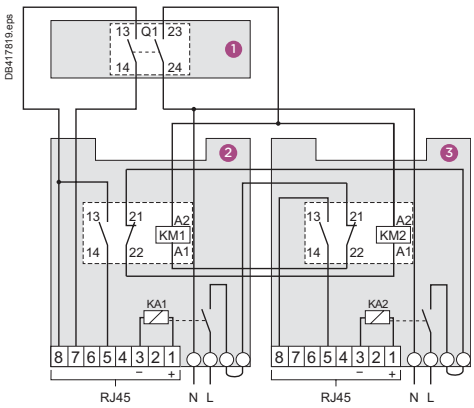
Connection cable

Between the control connection module and the splitter box LU9G02 or STBEPI2145

Connectors	Length (m)	Reference
2 x RJ45 connectors	0.3	**LU9R03**
	1	**LU9R10**
	3	**LU9R30**

Design / Installation





Motor starter control circuit wiring - RJ45 connection

Architecture for TeSys U motor starters

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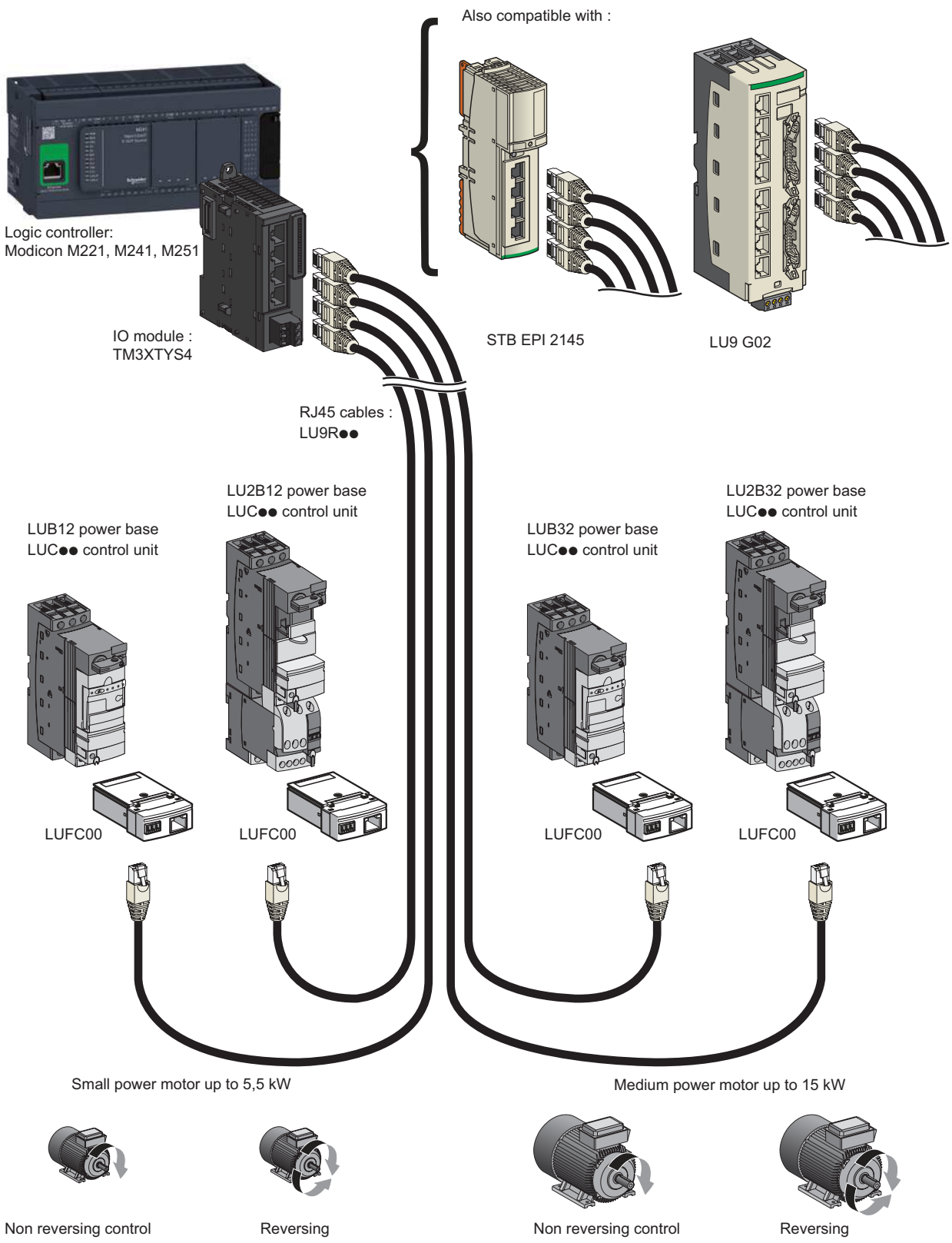

Motor starter control circuit wiring

RJ45 connection module for TeSys U motor starter

"Plug and play", for single or reversing motor starters

The LUFC00 parallel connection module provides a simple and efficient solution for control and monitoring of a TeSys U direct or reverse motor starter.

Compact, fast cabling

The connection to the TeSys U power base is simply achieved by insertion of the module into it. The status and control signals are carried by a simple pre-connectorized RJ45 cable (LU9R●●) between an IO module or splitter box and TeSys U.

Features

- On / OFF / Reverse control.
- Handle position, power contacts position monitoring.

Compatibility

- 12 or 32 A direct motor starters: LUB12 or LUB32 TeSys U power base + LU9N11C connector + LUC●● control unit (coil code B)
- 12 or 32 A reversing motor starters: LU2B12 or LU2B32 TeSys U power base + LU9MRC connector + LUC●● control unit (coil code B)

TeSys U RJ45 connection module	
Designation	**Commercial ref**
1 Parallel wiring module	**LUFC00**

TeSys U coil connector	
Designation	**Commercial ref**
2 Pre wired coil connector or LUB12 or LUB32 power base	**LU9BN11C**
3 Pre wired coil connector or LU2B12 or LU2B32 power base	**LU9MRC**

108620.eps

LUFC00

108622.eps

LU9MRC

PB108211.eps

LU9BN11C

Design / Installation

The LUFC00 parallel (RJ45) connection module acts as a connection interface for controlling the coil and the monitoring of the auxiliary contacts. As a necessary complement, a pre wired connector is needed for carrying the signal to the coil and collecting:

- the status of the protection device (OK / Alarm) with LU9BN11C,
- the electrical interlock contacts with LU9MRC.

As the "reversing" is higher than the "direct" power base, the LU9MRC link is longer than the LU9BN11C.

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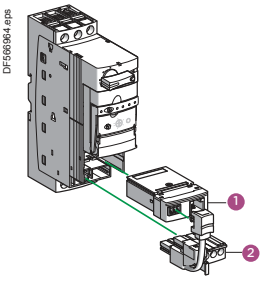

Direct motor starter (LUB power base)

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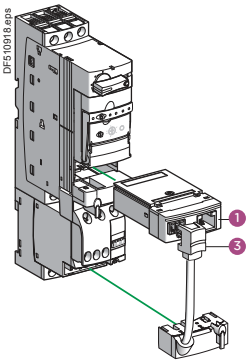


Reversing motor starter (LU2B power base)

TeSys

Technical Data for Designers

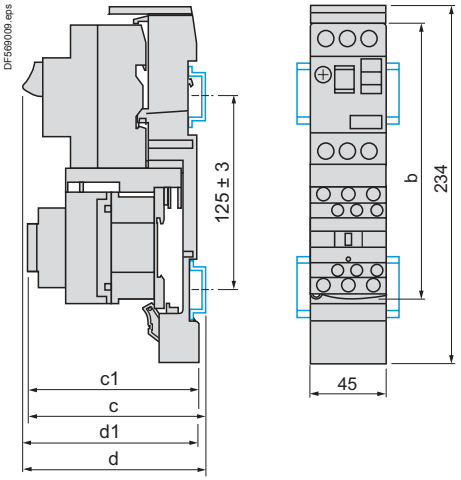
Contents

Connection systems for motor starters, power circuits
With screw clamp terminals

Dimensions

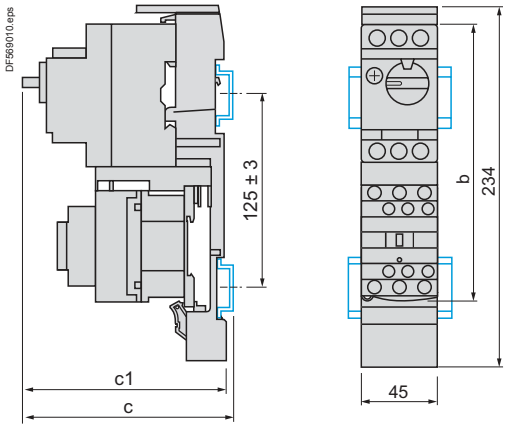
GV2 AF4 + LAD 311

Combination GV2 ME + TeSys d contactor



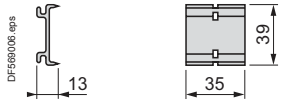
GV2 ME +	LC1 D09…D18	LC1 D25 and D32
b	176.4	186.8
c1	103.1	136.4
c	135.6	141.9
d1	107	107
d	112.5	112.5

Combination GV2 P + TeSys d contactor



GV2 P +	LC1 D09…D18	LC1 D25 and D32
b	176.4	186.8
c1	136.5	142.4
c	141.6	147.9

7.5 mm height compensation plate GV1 F03



Connection systems for motor starters, power circuits
With screw clamp terminals

GV2 ME, GV2 P, GV2 L and GV2 LE

Sets of busbars GV2 G445, GV2 G454, GV2 G472, with terminal block GV2 G05

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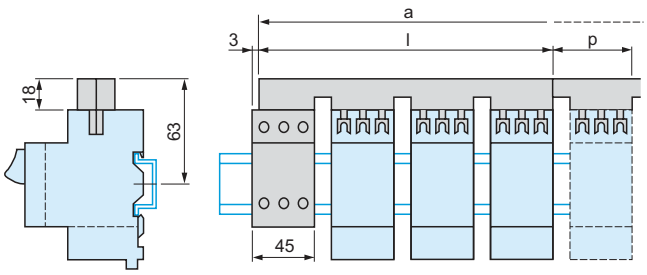

	l	p
GV2 G445 (4 x 45 mm)	179	45
GV2 G454 (4 x 54 mm)	206	54
GV2 G472 (4 x 72 mm)	260	72

	a			
Number of tap-offs	**5**	**6**	**7**	**8**
GV2 G445	224	269	314	359
GV2 G454	260	314	368	422
GV2 G472	332	404	476	548

Sets of busbars GV2 G●●● with terminal block GV1 G09

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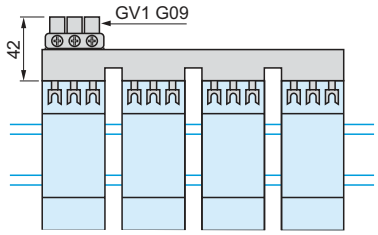

Sets of busbars GV2 G245, GV2 G254, GV2 G272

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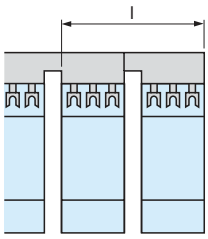

	l
GV2 G245 (2 x 45 mm)	89
GV2 G254 (2 x 54 mm)	98
GV2 G272 (2 x 72 mm)	116

Sets of busbars GV2 G554

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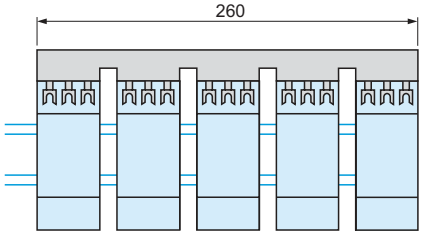

Sets of busbars GV2 G345 and GV2 G354

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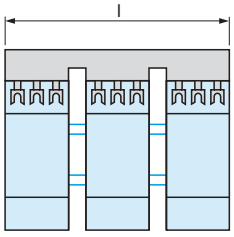

	l
GV2 G345 (3 x 45 mm)	134
GV2 G354 (3 x 54 mm)	152

Connection systems for motor starters, power and control circuits

With spring terminals

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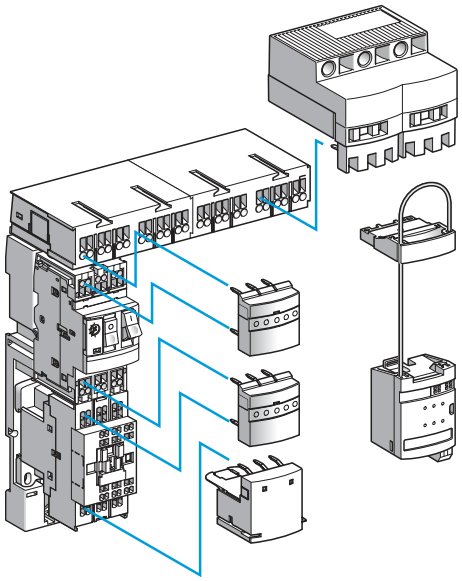

Motor starter with GV2 ME circuit breakers

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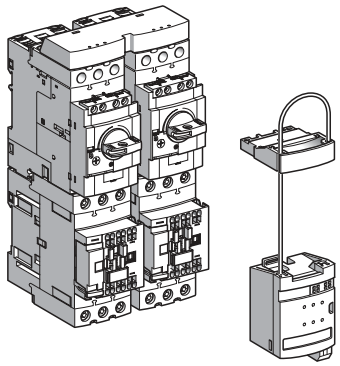

Motor starter with GV3 P circuit breakers

It is a modular system which standardises and simplifies setting up of motor starters with its pre-wired control and power circuits.
Installation of a motor starter is therefore quick, simple, safe and flexible. In addition, this system:
- enables the motor starter to be customised at a later date,
- reduces maintenance time and
- optimises panel space by reducing the number of terminals and intermediate interfaces and the amount of ducting.

System for motor starters with spring terminals

Motor starters with TeSys GV2 ME circuit breakers

- From 0 to 18 A max.,
- TeSys GV2 ME circuit breakers combined with LC1 D contactors from 9 to 25 A (spring terminal version),
- pre-wired power and control connections.

Motor starters with TeSys GV3 P circuit breakers

- From 9 to 65 A max.,
- TeSys GV3 P circuit breakers combined with LC1 D contactors from 40 to 65 A (spring terminal version),
- pre-wired control connections only,
- For pre-wired power connections, use busbar sets from the TeSys D 40 to 65 A contactor range (see page B8/21).

This range comprises pre-wiring components for:
- the power circuits,
- the control circuits.

Power circuit pre-wiring components
(motor starters with TeSys GV2 circuit breakers only)

- **a power circuit connection kit** comprising, for each starter, a plate for mounting the contactor and the circuit breaker and two power connection modules,
- **a power splitter box** for 2 or 4 starters,
- **an upstream terminal block** for a power supply up to 60 A (16 mm^2),
- **an outgoing terminal block** for connection of the motor power supply cables and the earth cables (6 mm^2).

Note: *with GV3 circuit breakers, no accessories are required for pre-wiring of the power circuit. The GV3 P●● outgoing terminal block can be removed.*
This circuit breaker is also sold with only one terminal block (reference: GV3 P●●1).

Control circuit pre-wiring components
(motor starters with TeSys GV2 and GV3 circuit breakers)

- **a control circuit connection module** which plugs directly into the contactor and the circuit breaker on each starter. This module incorporates status and control data for this motor starter.
- **a parallel wiring module** which concentrates the data of each motor starter:
  - **HE 10** connector, for centralised applications. Data is transmitted to the PLC via the Advantys Telefast pre-wired system.
  - **STB**, designed for decentralised automation architectures. This module is suitable for use in an Advantys STB configuration for connection to the PLC via a field bus.

Characteristics: page B2/19
References: page B2/11
Dimensions: pages B2/20 and B2/21

Connection systems for motor starters, power and control circuits

With spring terminals

General environment

Type of control connection module				LAD 9AP3●●
Standard				IEC 60439-1
Certifications				UL, CSA
Degree of protection		Conforming to IEC 60529		IP 40 (mounted assembly)
Resistance to incandescent wire		Conforming to IEC 60695-2-1	°C	960
Shock resistance		Conforming to IEC 60068-2-27		11 ms and 15 gn (half sine wave)
Vibration resistance		Conforming to IEC 60068-2-6 and BV/LR	gn	2…100 Hz: 4 and 3…100 Hz: 0.7
Resistance to electrostatic discharge		Conforming to IEC 61000-4-2		Level 3
Resistance to radiated fields		Conforming to IEC 61000-4-3	V/m	10 (26…1000 MHz)
Immunity to fast transient currents		Conforming to IEC 61000-4-4		Level 3
Surge withstand		Conforming to IEC 61000-4-5	kV	2 in common mode, 0.6 in differential mode Wave form: 1.2/50 µs - 8/20 µs
Immunity to radioelectric fields		Conforming to IEC 61000-4-6	V	10 (0.15...80 MHz)
Ambient air temperature		Operation in floor-standing enclosure	°C	-5…+60
		Operation in wall-mounted enclosure	°C	-5…+40
		Storage	°C	-40…+70
Space required around mounted assembly		For inserting cables and heat dissipation	mm	> 30
Degree of pollution				3
Assembly fixing (with TeSys GV2 circuit breakers only)				On 2 x 35 mm rails or with 2 x Ø5.5 mm screws on plate for GV2 ME
Suitable wire c.s.a.	Voltage supply for power	Number of wires		3
		Flexible cable with cable end	mm²	16
		Flexible cable without cable end	mm²	25
		Solid cable	mm²	25
	Voltage supply for contactor coil control	Number of wires		2
		Flexible cable with cable end (max)	mm²	1.5
		Flexible cable without cable end (max)	mm²	2.5
		Solid cable (max)	mm²	2.5

3-phase power circuit characteristics

Maximum current	Per power supply	Conforming to IEC 60439-1	A	60 (single power supply to one or more sub-bases or splitter boxes)
	Per sub-base	Conforming to IEC 60439-1	A	60
GV2 operating limit				80 % of Imax at 60 °C ambient temperature (see table on opposite page)
Maximum current per starter			A	18 (with an empty slot between two starters)
Insulation voltage			V	750
Operational voltage			V	690
U imp			kV	6
Rated operational frequency			Hz	50-60
Rated short-circuit current conditional Isc at 415 V		Conforming to IEC 60439-1	kA	50
Permissible short-time rating Icw		Conforming to IEC 60439-1	kA	9.1 (for 70 ms)

Control circuit characteristics

Contactor coil control voltage	V	∼ 12…250 (with interface relay)
	V	⎓ 5…24 (without interface relay)
	V	⎓ 5…130 (with interface relay)

Presentation: page B2/18 References: page B2/11 Dimensions: pages B2/20 and B2/21

Connection systems for motor starters, power and control circuits

With spring terminals

Dimensions

Mounted assembly, with TeSys GV2 ME circuit breakers and TeSys D contactors

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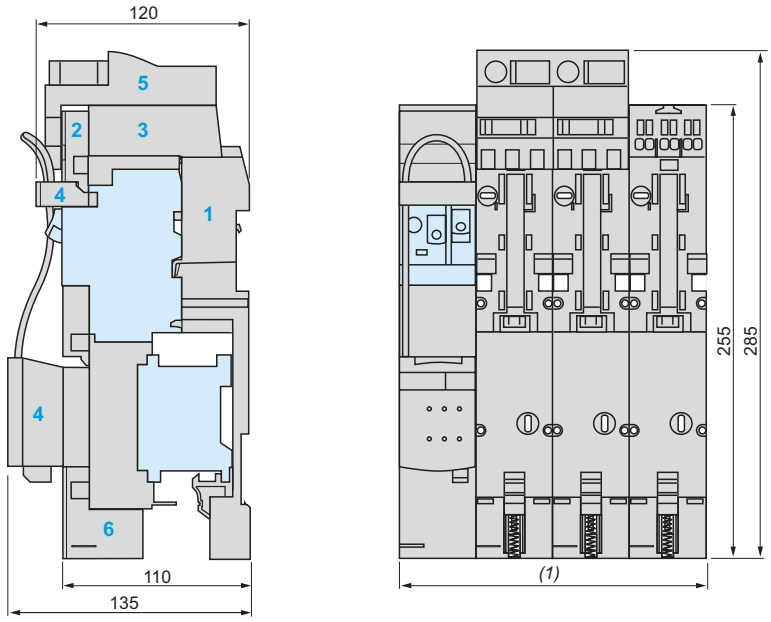

1 Circuit breaker and contactor support plate
2 Power connection module
3 Power splitter box
4 Control splitter box
5 Upstream terminal block
6 Outgoing terminal block

(1) 2 starters: 90 mm, 4 starters: 180 mm, 8 starters: 360 mm.

Mounted assembly with TeSys GV3 P circuit breakers and TeSys D contactors (LC1 D40A3… LC1 D65A3)

Vertical mounting

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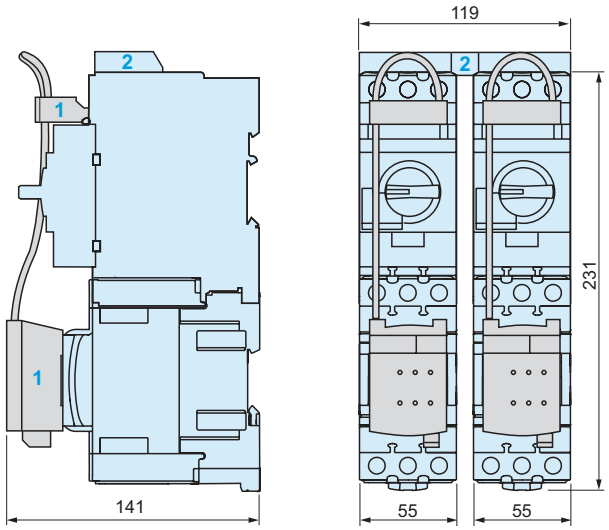

Side by side mounting

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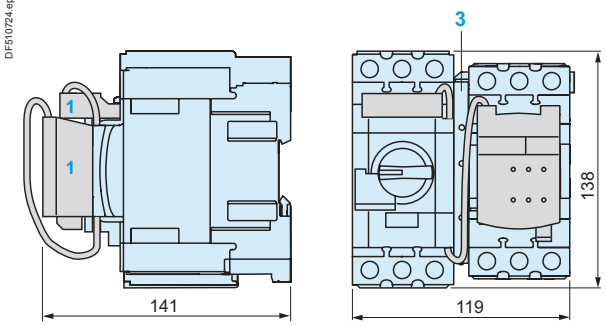


1 Control splitter box
2 Set of GV3 G264 busbars
3 Set of S-shape busbars GV3 S

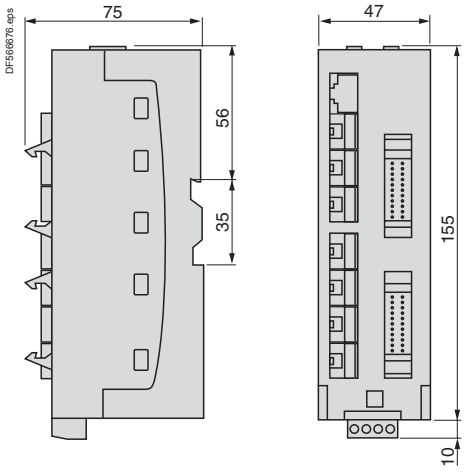
Presentation: page B2/18
Characteristics: page B2/19
References: page B2/11

IO module, splitter box, for motor starters control circuits

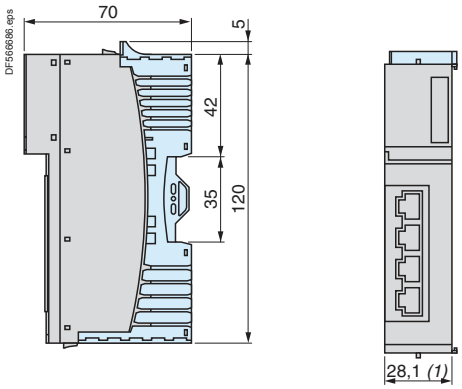
Dimensions

Parallel RJ45 wiring modules

Splitter box LU9 G02



Parallel wiring module Advantys STB EPI 2145



*(1) Dimension to be multiplied by the number of **STB EPI 2145** modules present in the configuration.*