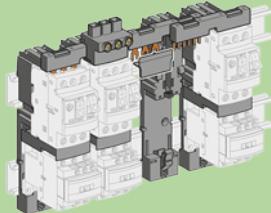
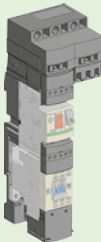
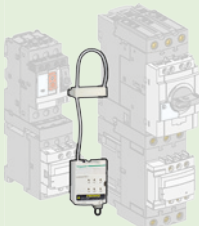
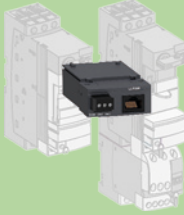
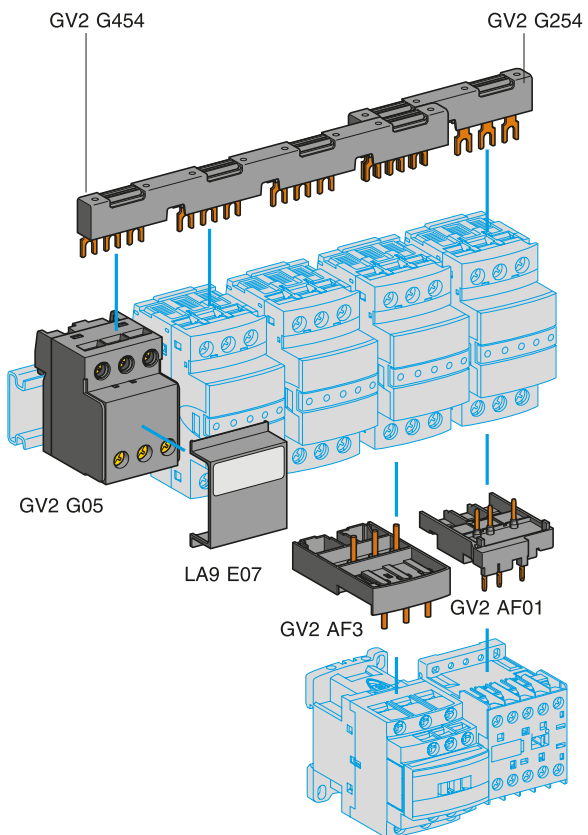
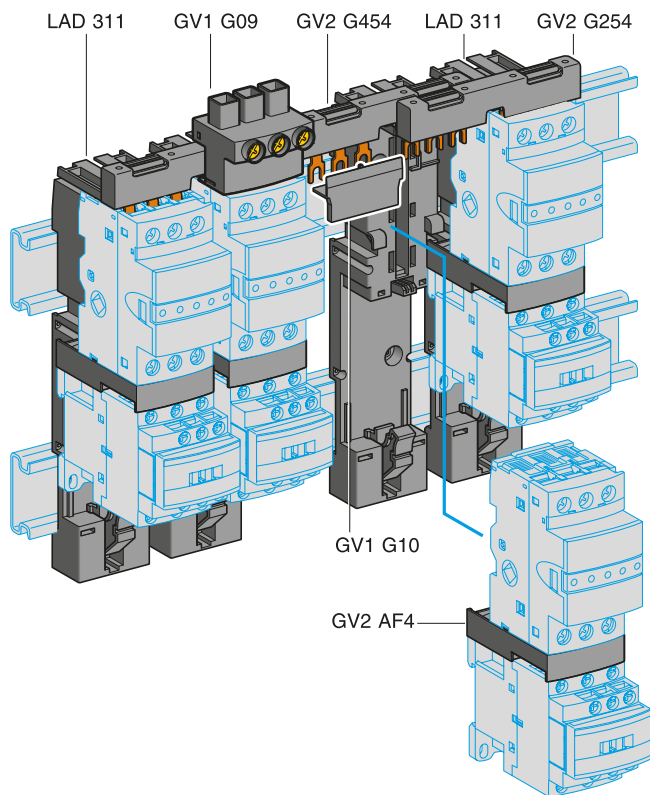


Power wiring systems for motor starters	
Type of product	Pages
Power wiring system for motor starter assemblies: screw clamp connection TeSys GV	 B2/2
Power wiring system for motor starter assemblies: spring terminals connection TeSys LAD3	 B2/4
RJ45 Control wiring systems for motor starters	
Motor starters-to-PLC Control wiring architectures Selection tables	B2/6
RJ45 connection modules for circuit breakers + contactors Spring terminals TeSys LAD9	 B2/8
RJ45 connection module for TeSys U motor starter Pluggable TeSys LUFC00	 B2/10

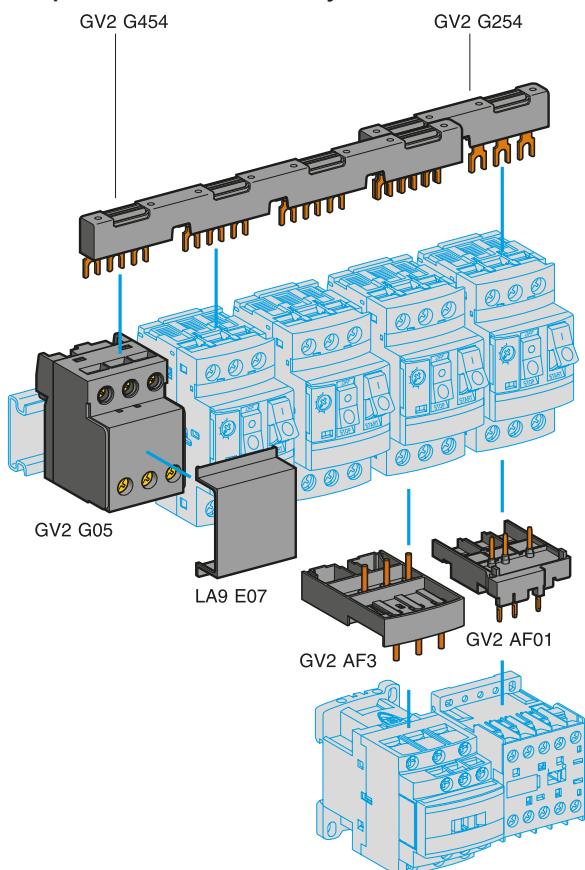
Group of fuse carriers directly mounted on DIN rail



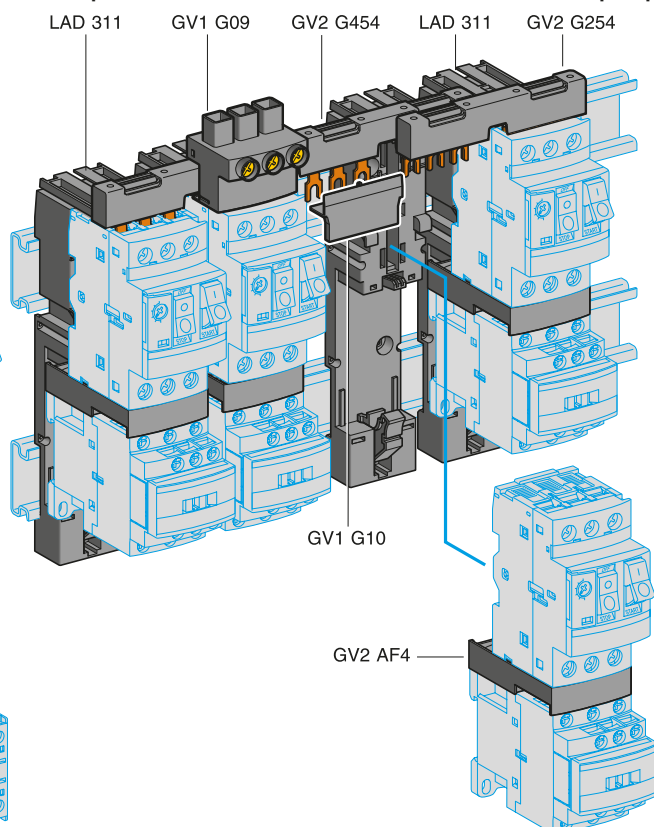
Group of fuse carriers + contactors mounted on adapter plates



Group of circuit breakers directly mounted on DIN rail



Group of circuit breakers + contactors mounted on adapter plates



This system is convenient when time and space savings are required.

The motor starter can be composed of:

- LS1D323 fuse carrier + LC1D contactor
- GV2 circuit breaker + LC1D contactor.

Upstream busbars and terminals

Description	Application	Pitch (mm)	Unit reference
Sets of 3-pole 63 A busbars	2 tap-offs	45	GV2G245
		54	GV2G254
		72	GV2G272
	3 tap-offs	45	GV2G345
		54	GV2G354
	4 tap-offs	45	GV2G445
		54	GV2G454
		72	GV2G472
	5 tap-offs	54	GV2G554
Description	Application	Sold in lots of	Unit reference
Terminal block for supply to one or more GV2G busbar sets	Connection from the top	1	GV1G09
	Can be fitted with current limiter GV1L3 (GV2ME and GV2P)	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 LC1K or LP1K ⁽¹⁾	10	GV2AF01
	Between GV2 and contactor LC1D09...D38 ⁽¹⁾	10	GV2AF3
	Between GV2 mounted on LAD311 and contactor LC1D09...D38	10	GV2AF4
Adapter plates	For mounting a GV2ME and contactor LC1D09...D38 with front faces aligned	1	LAD311
Height compensation plate	7.5 mm	10	GV1F03

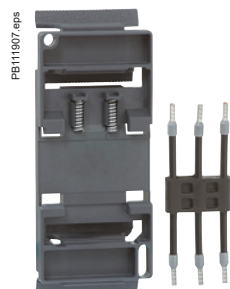
⁽¹⁾ Ensures both the connection and a rigid support to the contactor. No extra fixing mean required.

Accessories

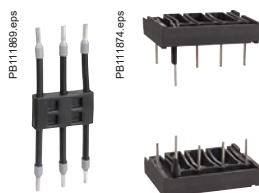
Description	Application	Sold in lots of	Unit reference
Adapter plates	For mounting a GV2 by screw fixing	10	GV2AF02
Motor starter adapter plate	For mounting a GV2 and a contactor LC1D09...D25. Item delivered with a GV1G02 flexible connection	1	GK2AF01
Flexible 3-pole connection for connecting a GV2 to a contactor LC1-D09...D25	Centre distance between mounting rails: 100...120 mm	10	GV1G02
Set of connections upstream/downstream	For connecting GV2ME to a printed circuit board	10	GV2GA01
Incoming line spacer for UL 508 Type E applications	For GV2P (except 32 A)	1	GV2GH7
Clip-in marker holders (supplied with each circuit breaker)	For GV2 P, GV2L, GV2LE and GV2RT (8 x 22 mm)	100	LA9D92



GV2AF02



GK2AF01



GV1G02

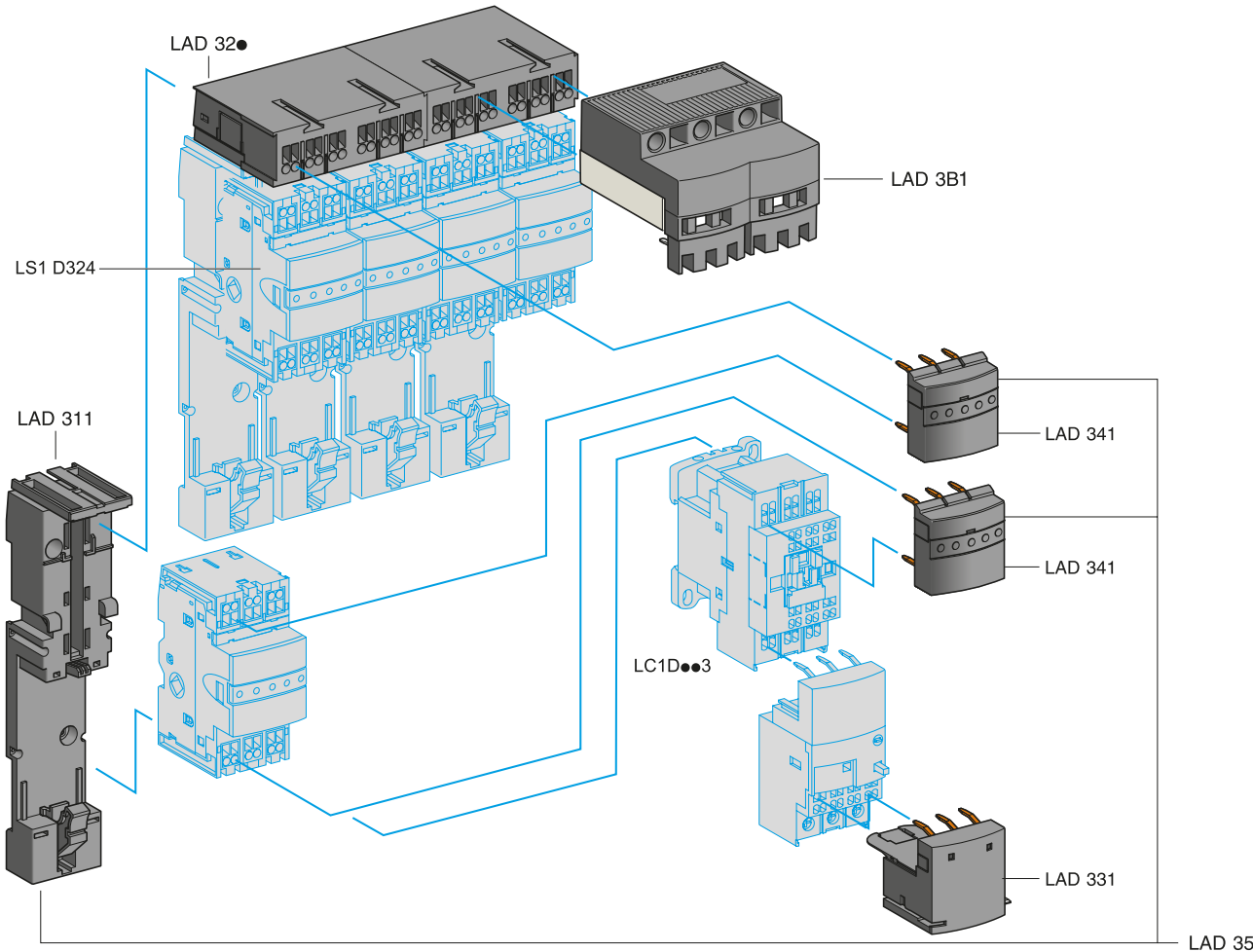
GV2GA01



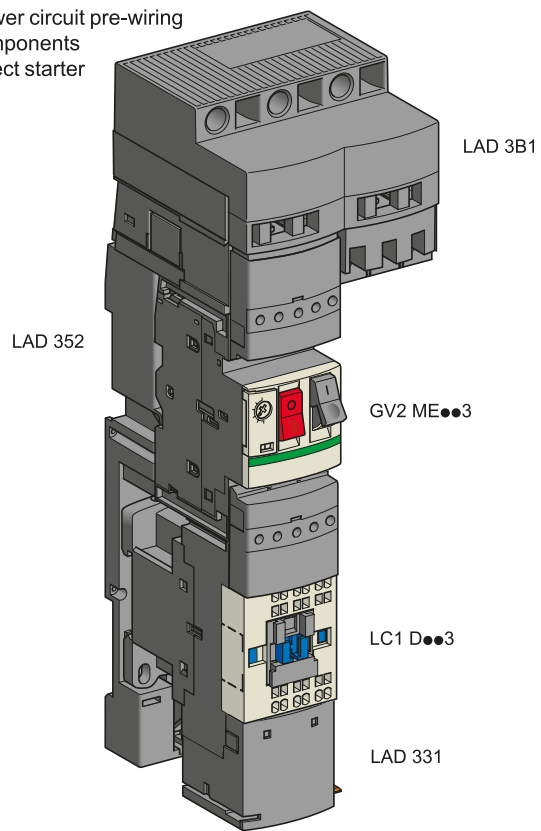
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Wiring systems

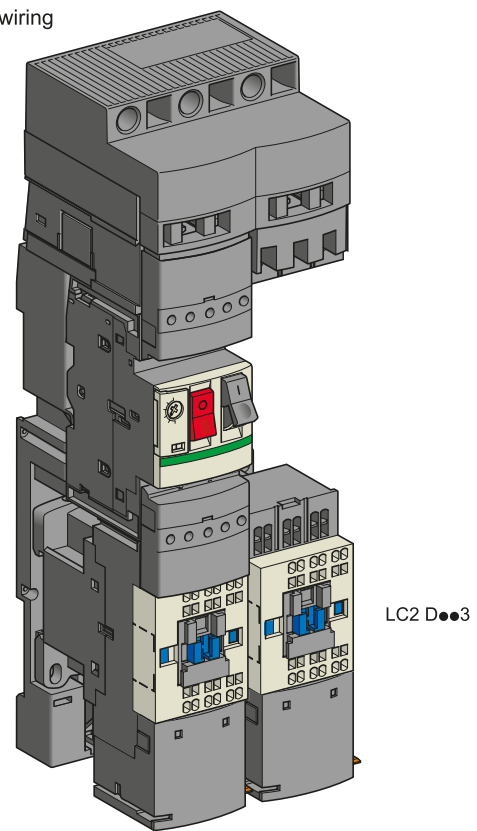
Group of fuse carriers + contactors mounted on adapter plates



Power circuit pre-wiring components
Direct starter



Power circuit pre-wiring components
Reversing starter





LAD3B1



LAD324



LAD311



LAD341



LAD331

This system is convenient when time and space savings are required.

The motor starter can be composed of:

- LS1D323 fuse carrier + LC1D contactor.
- GV2 circuit breaker + LC1D contactor

Upstream terminal and splitter blocks

Description	Maximum connection c.s.a.	Application	Sold in lots of	Reference
Upstream terminal block	16 mm ² ⁽¹⁾	Power supply of 1 or 2 power splitter boxes	1	LAD3B1
Description	Extension by	Number of starters		Reference
Power splitter box, 60 A	LAD32●	2	1	LAD322
		4	1	LAD324

Assembling components

Description	Composition	Sold in lots of	Reference
Plate for mounting a GV2ME circuit breaker and a contactor	For 1 starter	10	LAD311
Power connection module	For 1 starter	10	LAD341
Power connection kit for direct starter ⁽²⁾	1 plate LAD311 for GV2ME and 2 power connection modules LAD341		LAD352

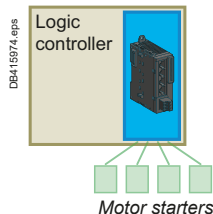
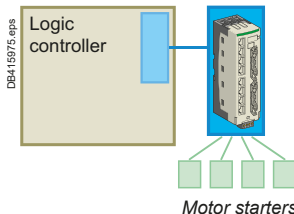
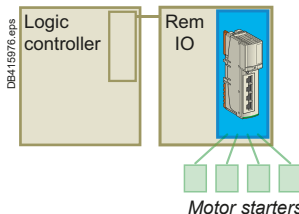
Downstream terminal and accessory

Description	Maximum connection c.s.a.	Application	Sold in lots of	Reference
Downstream terminal block	6 mm ²	Connection of motor cables	10	LAD331
Cable end reducer	-	For connection of conductors from 1 to 1.5 mm ²	20	LAD99

⁽¹⁾ Cables with one end pre-crimped are available to allow fast connection. References:

1 set of 3 x 6 mm² cables (length 1 m: LAD3B061, length 2 m: LAD3B062 and length 3 m: LAD3B063),
1 set of 3 x 10 mm² cables (length 1 m: LAD3B101, length 2 m: LAD3B102 and length 3 m: LAD3B103),
1 set of 3 x 16 mm² cables (length 1 m: LAD3B161, length 2 m: LAD3B162 and length 3 m: LAD3B163).

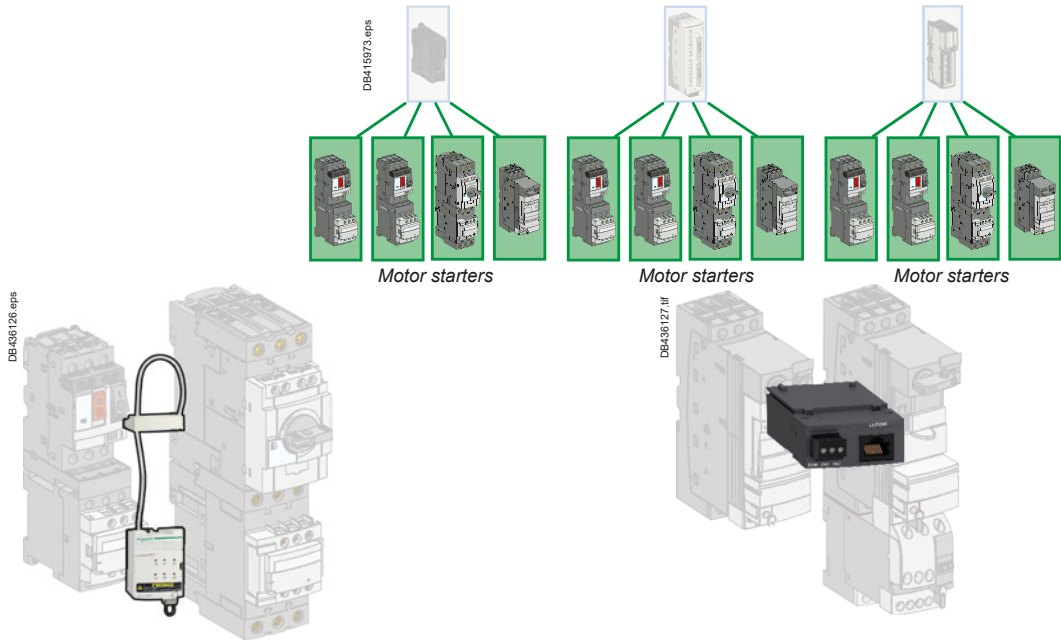
⁽²⁾ To build a reversing starter, order 2 kits LAD352.

Product type	Connection interfaces for a group of motor starters		
IO system name	Modicon TM3	Modicon Telefast	Modicon STB
Architecture	 DB415974 eps Logic controller Motor starters  PFI30380C eps	 DB415975 eps Logic controller Motor starters  PB121281 eps	 DB415976 eps Logic controller Rem IO Motor starters  PB121282 eps
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	All types of motor starters equipped with RJ45 connection system		
Motor control	Reversing / Non reversing		
Number of motor starters	4	8	4
Downstream connector type	RJ45		
Reference	TM3XTYS4	LU9G02 / LU9G03	STBEPI2145K *
Pages	Refer to Modicon M221/M241/ M251 catalogue	TeSys U - page B2/10 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



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 / STBEP12145K

RJ45

GV2ME / GV3P

TeSys D: 9 to 32 A (GV2ME), 40 to 65 A (GV3P)

Spring

Non reversing

Reversing

TeSys U
12 to 38 A

Screw-clamp

Reversing or Non reversing

Plugin modules

LAD9AP3●●

B2/8

Plugin module

LUFC00

B2/10

Wiring
systems

TeSys

TeSys LAD9 Control wiring system

RJ45 wiring architecture

Description

DB4179 14R eps

Wiring systems



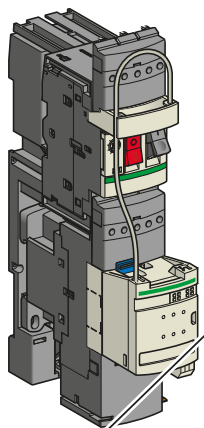
Logic controller:
Modicon
M221, M241, M251

IO module :
TM3XTYS4

IO module :
TM3XTYS4

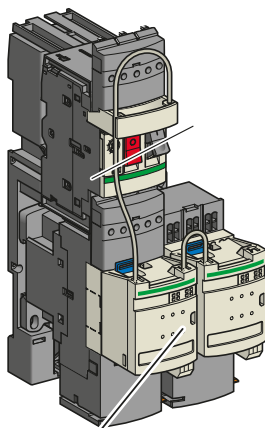
RJ45 cables :
LU9R●●

GV2ME●●3
+ LC1D●●3



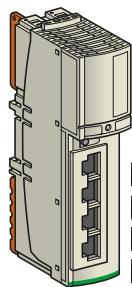
LAD9AP3D1

GV2ME●●3
+ LC2D●●3

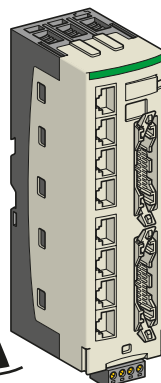


LAD9AP3D2

Also compatible with :

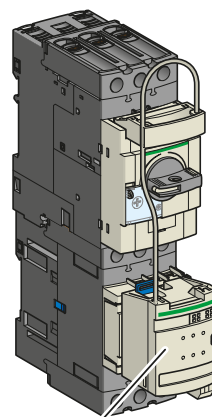


STB EPI 2145



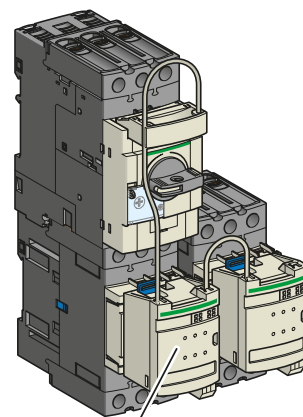
LU9 G02

GV3P●● + LC1D●●A3



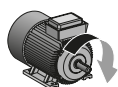
LAD9AP3D1

GV3P●● + LC2D●●A3

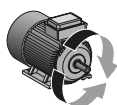


LAD9AP3D2

Medium power motor up to 15 kW

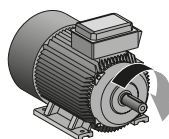


Non reversing control

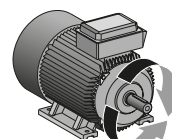


Reversing

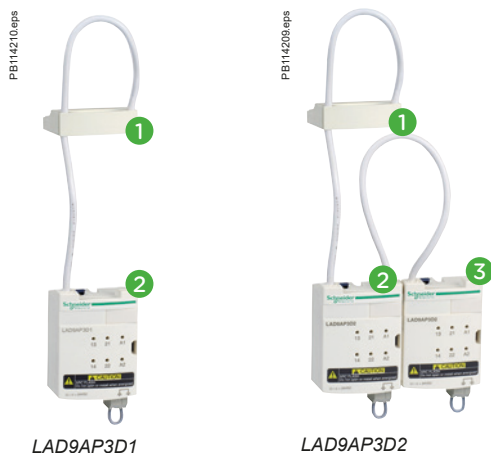
High power motor up to 30 kW



Non reversing control



Reversing



- ① Plug connected to circuit breaker auxiliary contacts
② ③ Plug connected to contactor, to RJ45 and Aux. supply
1-3: 24 V DC control signal to the internal relay. Its 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 ① + ② 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 LAD9AP3D● "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 + LAD341 power connection module.
- TeSys GV3P circuit breaker + LC1D●●● contactors up to 65 A with spring type control terminals.

① Circuit breaker plug:

- plugs directly into the auxiliary contacts terminals of a TeSys GV2ME or TeSys GV3P motor circuit breaker, in the location provided for the front-mounting block.

② and ③ 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

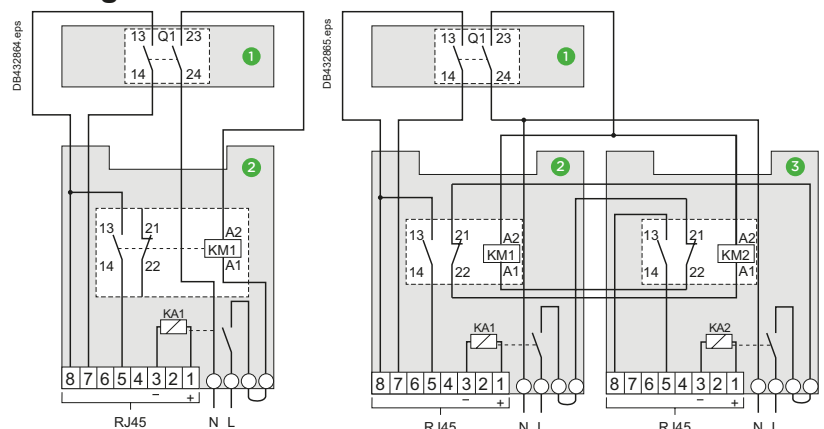
Description	TeSys D coil voltage	Type of coil control relay	Type of starter	Reference
Control connection modules	~ 12...250 V or ~ 5...130 V	Electromechanical	Direct	LAD9AP31
			Reversing	LAD9AP32
	~ 24 V	Without relay	Direct	LAD9AP3D1
			Reversing	LAD9AP3D2

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



TeSys

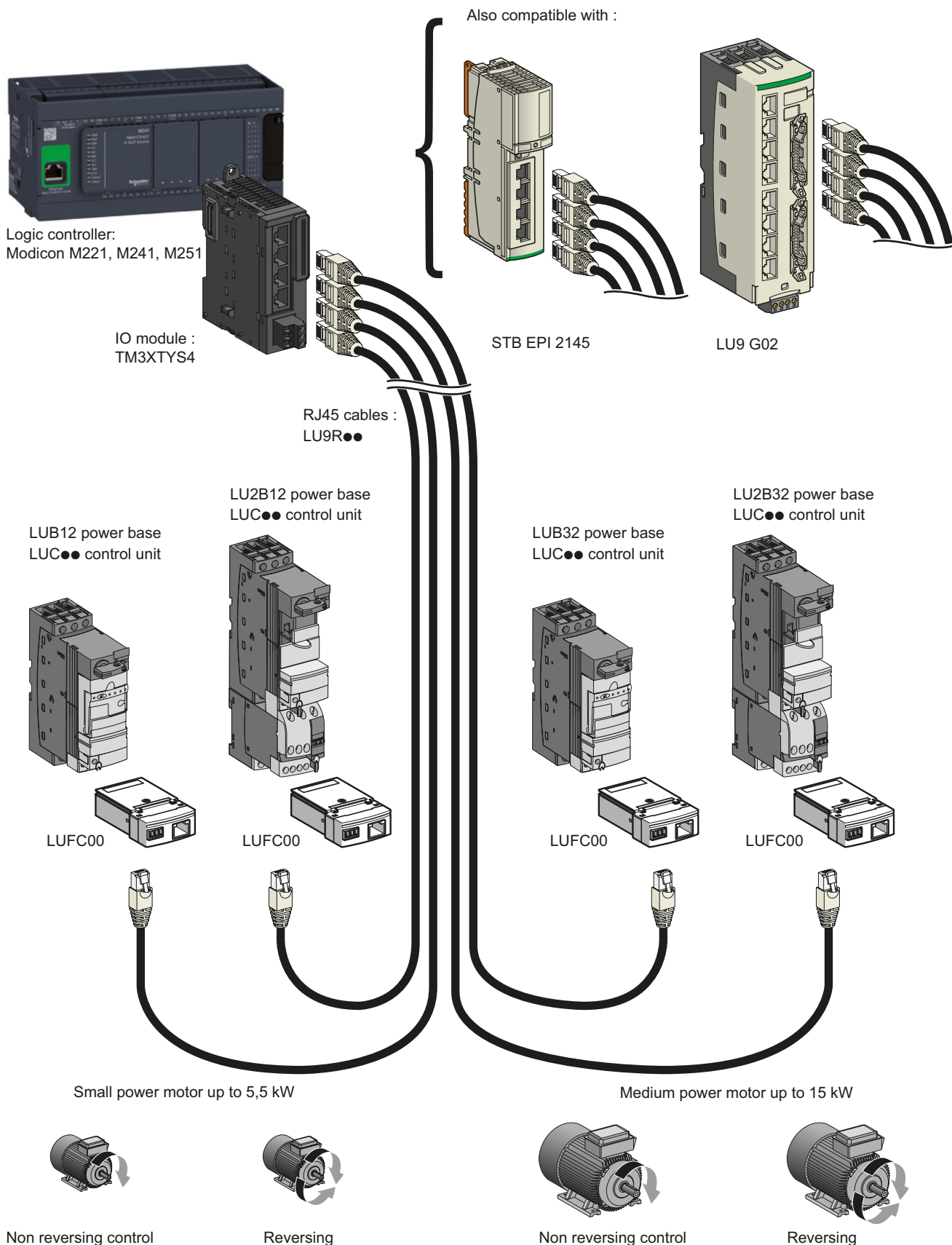
TeSys U Control wiring system

RJ45 wiring architecture

Description

DB417615.epa

Wiring
systems



"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.

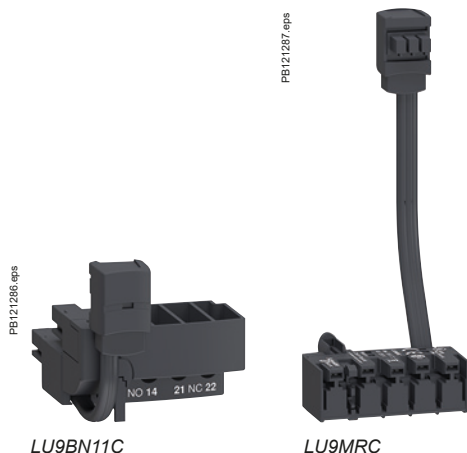
Features

- On / OFF / Reverse control (functions non provided with LUB12, 32, 38 power bases).
- Handle position, power contacts position monitoring (function provided with all power bases).

Compatibility

12, 32 or 38 A direct motor starters: LUB12, LUB32 or LUB38 power base + LUC●● control unit (coil code BL),
 LUB120, LUB320 or LUB380 power base + LU9N11C connector + LUC●● control unit (coil code BL)

12, 32 or 38 A reversing motor starters: LU2B12, LU2B32 or LU2B38 power base + LU9MRC connector + LUC●● control unit (coil code BL).



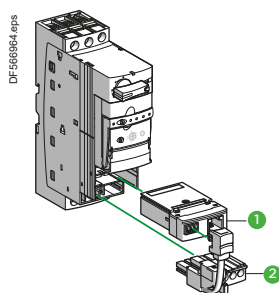
TeSys U RJ45 connection module	
Designation	Commercial ref
1 Parallel wiring module	LUFC00
TeSys U coil connector	
Designation	Commercial ref
2 Pre wired coil connector for LUB120, LUB320 or LUB380 power base	LU9BN11C
3 Pre wired coil connector for LU2B12, LU2B32 or LU2B38 power base	LU9MRC

Design / Installation

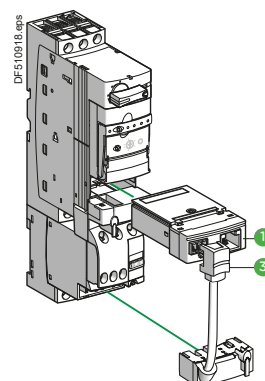
The LUFC00 parallel (RJ45) connection module acts as a connection interface for controlling the coil (except with LUB12, 32, 38) and the monitoring of the auxiliary contacts. As a necessary complement, a pre wired connector is needed for carrying the signal to the coil and collecting:

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

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



Direct motor starter
 (LUB120, 320, 380 power base).



Reversing motor starter
 (LU2B12, 32, 38 power base).

Technical Data for Designers

Contents

Power wiring systems for motor starter assemblies:

- > Dimensions (GV2 + LAD311 assembly).....B2/14
- > Dimensions (GV2G●●● busbars) B2/15

Power + Control wiring systems for motor starter assemblies:

- > Introduction.....B2/16
- > Characteristics.....B2/17
- > Dimensions B2/18

IO module, splitter box, for motor starters control circuits

- > Dimensions B2/19

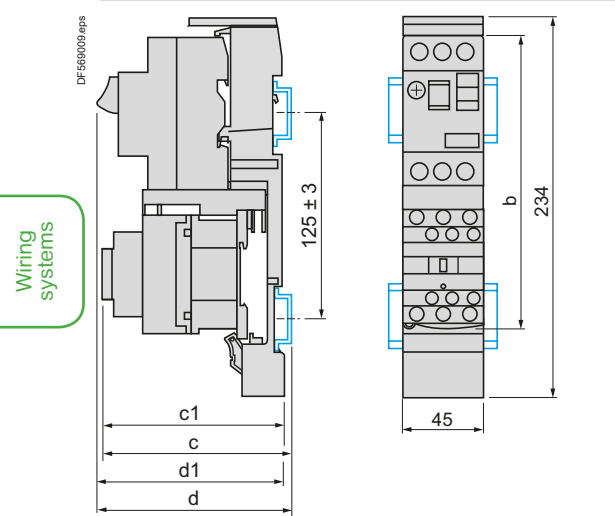
TeSys

TeSys LAD3 Power wiring system for motor starter assemblies

Dimensions

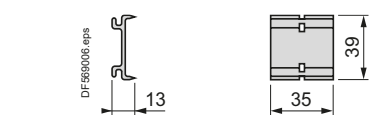
GV2AF4 + LAD311

Combination GV2ME + TeSys D contactor



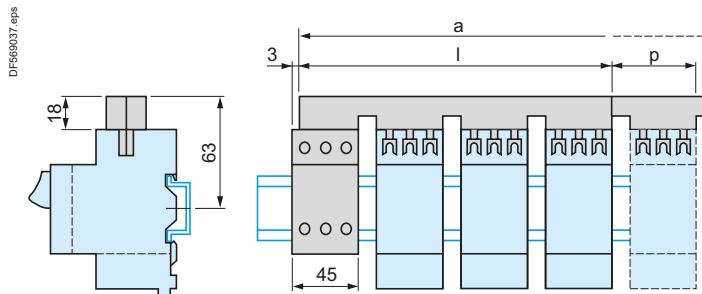
GV2ME +	LC1D09...D18	LC1D25 and D32
b	176.4	186.8
c1	103.1	136.4
c	135.6	141.9
d1	107	107
d	112.5	112.5

7.5 mm height compensation plate GV1F03



GV2ME, GV2P, GV2L and GV2LE

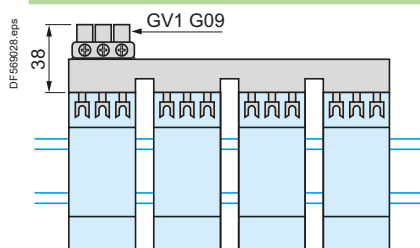
Sets of busbars GV2G445, GV2G454, GV2G472, with terminal block GV2G05



	l	p
GV2G445 (4 x 45 mm)	179	45
GV2G454 (4 x 54 mm)	206	54
GV2G472 (4 x 72 mm)	260	72

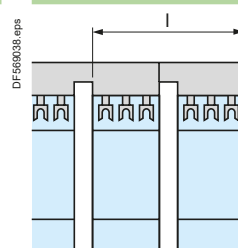
	a			
Number of tap-offs	5	6	7	8
GV2G445	224	269	314	359
GV2G454	260	314	368	422
GV2G472	332	404	476	548

Sets of busbars GV2G●●● with terminal block GV1G09

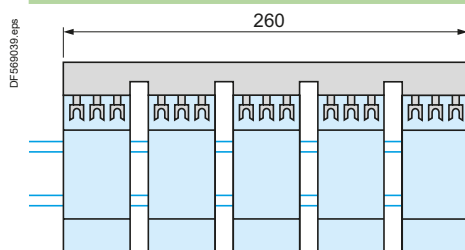


	l
GV2G245 (2 x 45 mm)	89
GV2G254 (2 x 54 mm)	98
GV2G272 (2 x 72 mm)	116

Sets of busbars GV2G245, GV2G254, GV2G272

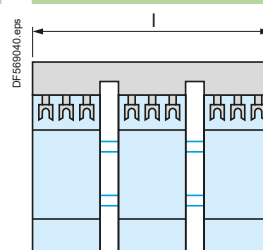


Sets of busbars GV2G554



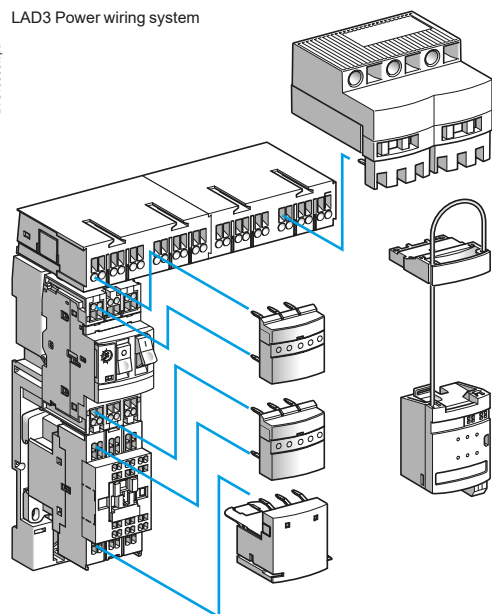
	l
GV2G345 (3 x 45 mm)	134
GV2G354 (3 x 54 mm)	152

Sets of busbars GV2G345 and GV2G354



LAD3 Power wiring system

DF510533 eps



Motor starter with GV2ME circuit breakers

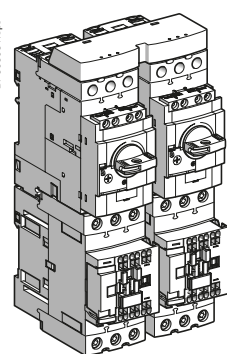
LAD9AP3D1 RJ45 control wiring module

Wiring systems

Ref.



DF503851 eps



Motor starter with GV3P circuit breakers

LAD9AP3D1 RJ45 control wiring module

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.

Wiring system for motor starters with spring terminals

Motor starters with TeSys GV2ME circuit breakers

- From 0 to 18 A max.,
- TeSys GV2ME circuit breakers combined with LC1D contactors from 9 to 25 A (spring terminal version),
- Pre-wired power and control connections.

Motor starters with TeSys GV3P circuit breakers

- From 9 to 65 A max.,
- TeSys GV3P circuit breakers combined with LC1D 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 chapter B8).

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 mm²),
- an **outgoing terminal block** for connection of the motor power supply cables and the earth cables (6 mm²).

Note: with GV3 circuit breakers, no accessories are required for pre-wiring of the power circuit. The GV3P●● outgoing terminal block can be removed.

This circuit breaker is also sold with only one terminal block (reference: GV3P●●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:
 - **HE10** 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.

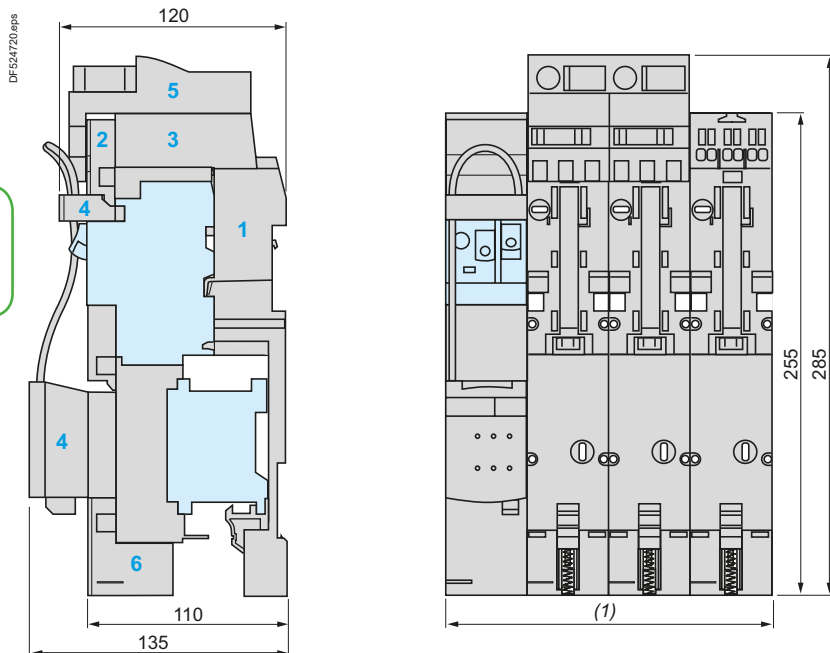
Characteristics

General environment				
Type of control connection module			LAD9AP3●●	
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 GV2ME
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 I _{max} 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 I _{sc} at 415 V		Conforming to IEC 60439-1	kA	50
Permissible short-time rating I _{cw}		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)

TeSys LAD3 Power + LAD9 Control wiring systems for spring terminals

Mounted assembly, with TeSys GV2ME circuit breakers and TeSys D contactors



Wiring systems

Ref.

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Ref.

- 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

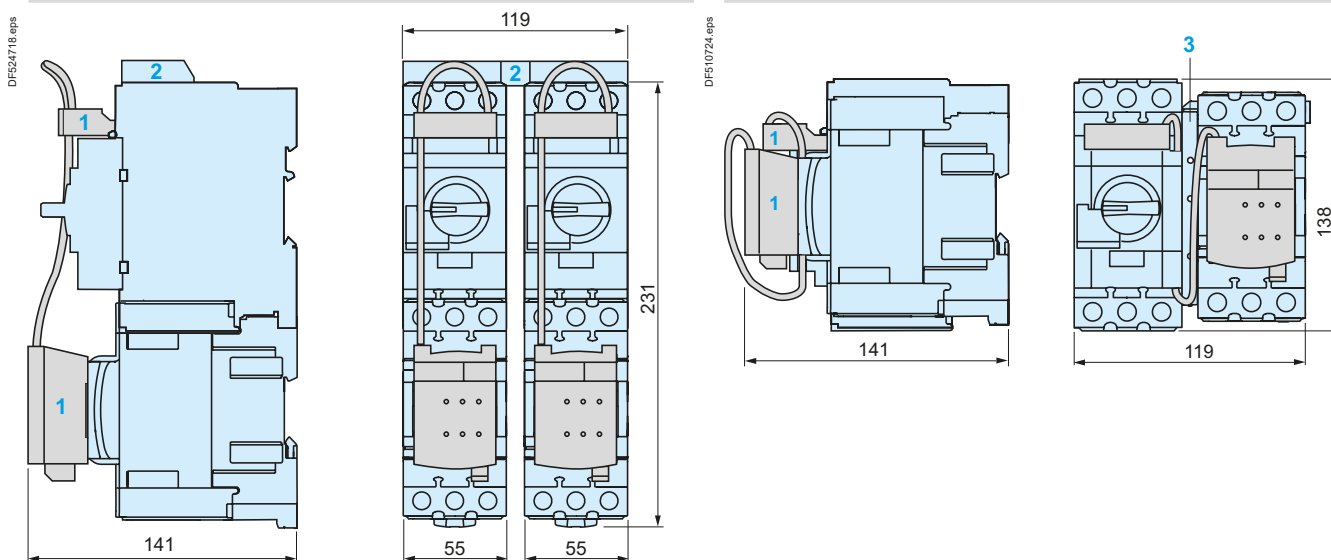
(1) 2 starters: 90 mm, 4 starters: 180 mm, 8 starters: 360 mm.

LAD9 Control wiring systems for spring terminals

Mounted assembly with TeSys GV3P circuit breakers and TeSys D contactors (LC1D40A3... LC1D65A3)

Vertical mounting

Side by side mounting



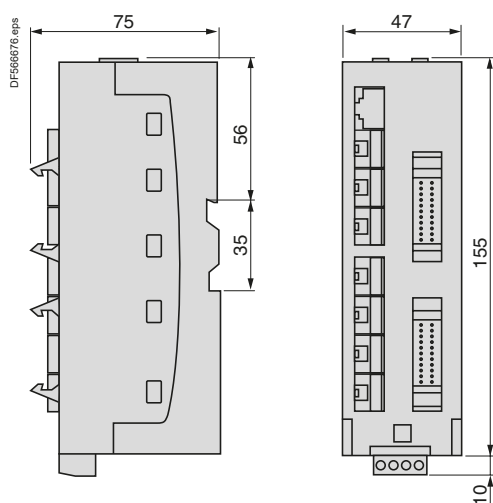
- 1 Control splitter box
- 2 Set of GV3 G264 busbars
- 3 Set of S-shape busbars GV3S

TeSys

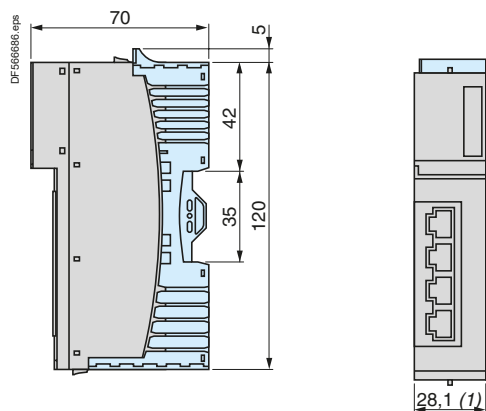
LU9G02 RJ45 splitter box

Dimensions

Parallel RJ45 wiring modules Splitter box LU9G02



Parallel wiring module Advantys STBEPI2145



(1) Dimension to be multiplied by the number of **STBEPI2145** modules present in the configuration.

Wiring
systems

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