

Telemecanique

TeSys® Model U – the ultimate starter-controller

Catalogue

06










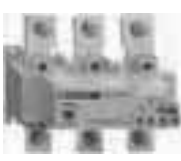



TeSys Model U

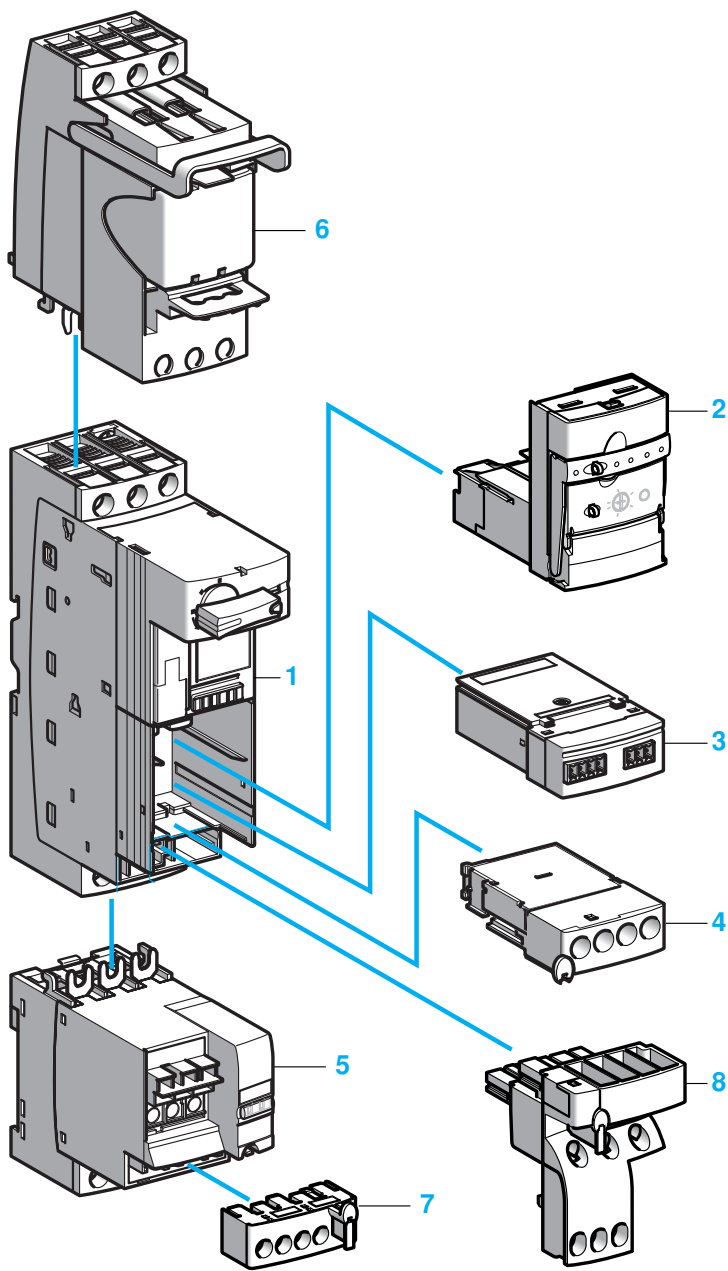
Starter-controllers

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	Function performed	Function not performed	Function not performed	Function not performed
Selectable overload class				
Detection of overtorque, no-load running, long starting times				
Earth fault protection (equipment protection only)				
Protection against phase imbalance				
Protection against phase loss				
Fault differentiation				With contact block
Reset on thermal overload	Manual or automatic	Manual	Manual or automatic	Manual
Alarms (thermal overload, overcurrent, ...)				
Indication of motor load				
Protection function parameter entry				
"Log" function, monitoring				
Remote motor starter status and commands via serial or parallel link				
Motor starter management via serial link (status, commands, selection and parameter entry for alarms, log, monitoring)			Modbus port built-in	
Isolation function				
Protection against overloads and short-circuits				
Power at 400 V	With circuit-breaker	With circuit-breaker	With circuit-breaker	With circuit-breaker
	With fuses	With fuses	With fuses	With fuses
	0.06...75 kW	30...450 kW	0.06...450 kW	0.06...110 kW
	0.06...75 kW	30...450 kW	0.06...450 kW	
	Magnetic circuit-breaker or fuses	Magnetic circuit-breaker or fuses	Magnetic circuit-breaker or fuses	Thermal magnetic circuit-breaker
				
	Contactor	Contactor	Contactor	Contactor
				
	Thermal overload relay	Electronic thermal overload relay	Multifunction protection relay	
				

TeSys Model U Starter-controllers



Presentation

The TeSys model U starter-controller is a D.O.L. starter (1) which performs the following functions :

- protection and control of single-phase or 3-phase motors:
 - breaking function,
 - overload and short-circuit protection,
 - thermal overload protection,
 - power switching,
- control of the application:
 - protection function alarms,
 - application monitoring (running time, number of faults, motor current values, ...),
 - logs (last 5 faults saved, together with motor parameter values).

These functions can be added by selecting control units and function modules which simply clip into the power base. The product can therefore be customised at the last moment. Setting-up accessories simplify or completely eliminate wiring between components.

Basic starter-controller

Consists of a power base and a control unit.

Power base 1

Is independent of the control voltage and of the motor power.

It incorporates the breaking function with a breaking capacity of 50 kA at 400 V, total coordination (continuity of service) and the switching function.

- 2 ratings are available: 0...12 A and 0...32 A.
- Non-reversing (LUB) and reversing (LU2B).

Control units 2

These must be selected according to the control voltage, the power of the motor to be protected and the type of protection required.

■ **Standard** control unit (LUCA) : satisfies the basic protection requirements for motor starters: thermal overload and short-circuit (for details see page 5).

■ **Advanced** control unit (LUCB, LUCC or LUCD) : allows additional advanced functions such as alarm, fault differentiation, ... (for details see page 6).

■ **Multifunction** control unit (LUCM) : suitable for the most sophisticated control and protection requirements (for details see page 7).

The control units are interchangeable without rewiring and without using tools. They have a wide range of adjustment (0.25 - 1.0 x I_n) and low heat dissipation.

Control options

Function modules can be used to increase the functions of the starter-controller.

Function modules 3

Must be used with advanced control units.

4 types are available:

- thermal overload alarm (LUF W10),
- fault differentiation and manual reset (LUF DH11),
- fault differentiation and automatic or remote reset (LUF DA10 + LUF DA01),
- indication of motor load (LUF V), which can also be used with the multifunction control unit.

All information processed by these modules is available on digital contacts.

Communication modules 3

The information processed is exchanged:

- via a parallel bus:
 - parallel wiring module (LUF C00),
- via a serial bus:
 - AS-Interface module (ASILUF C5),
 - Modbus module (LUL C033).

They must be used in conjunction with a **24 V control unit and require a 24 V control voltage**. Connection to other protocols such as FIPIO, Profibus-DP and DeviceNet is possible via gateway modules (LUIFP).

Auxiliary contact modules (LUFN) 3

3 possible configurations 2 N/O, 1 N/O + 1 N/C or 2 N/C.

Add-on contact blocks 4

Indicate the following status of power base : ready, fault and pole status.

Power options

Reverser block 5

Allows a non-reversing power base to be converted to reversing operation.

The reverser block (LU2M) is mounted directly beneath the power base without modifying the width of the product (45 mm). The reverser block LU6M is mounted separately from the power base when the height available is limited.

Limiter-disconnector LUA LB 6

This unit is mounted directly on the power base. It allows the breaking capacity to be increased up to 130 kA at 400 V.

Setting-up accessories

Plug-in terminal blocks 7

The control terminal blocks are of the plug-in type, so allowing wiring to be prepared away from the machine or the replacement of products without rewiring.

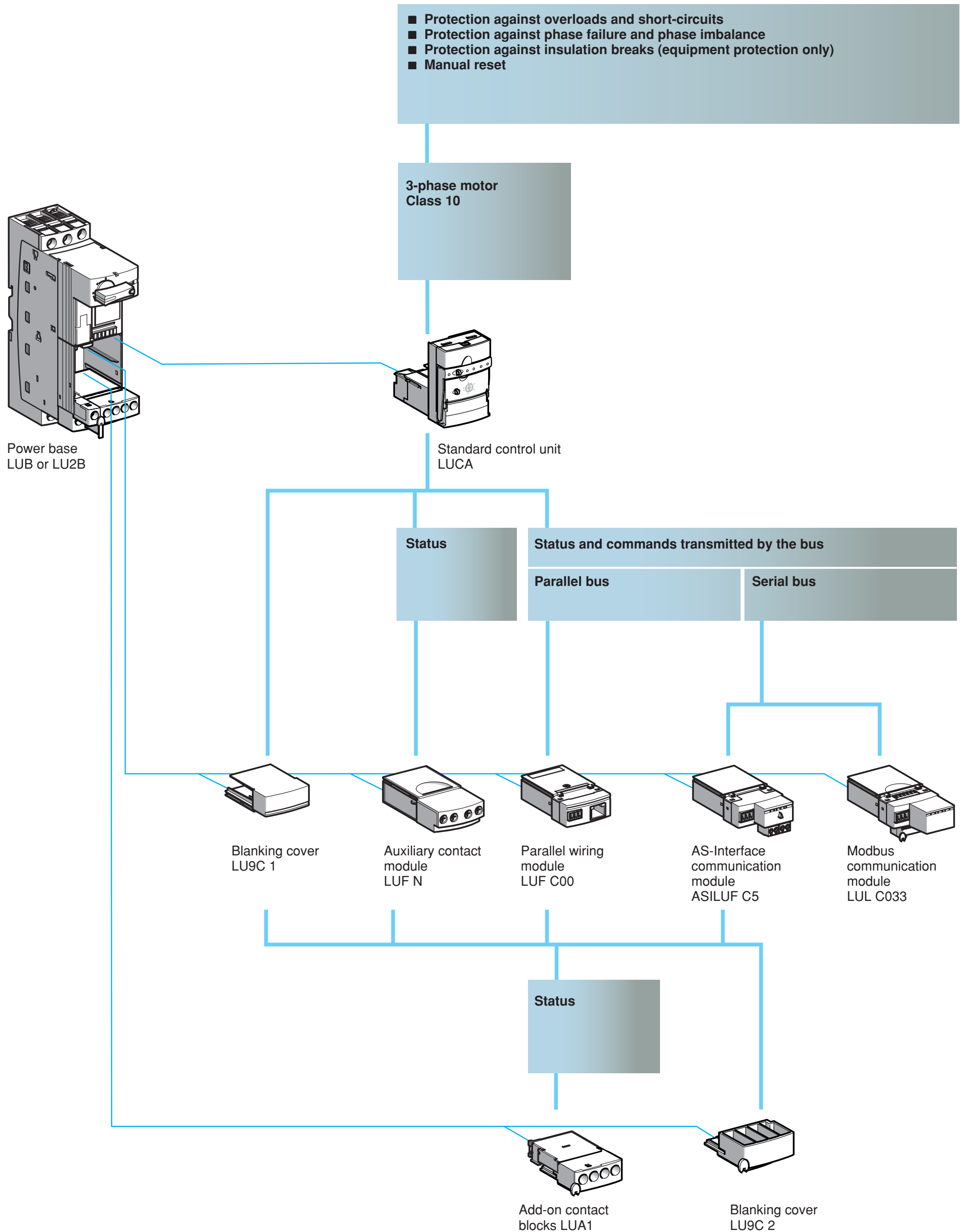
Control circuit wiring system 8

Numerous pre-wired accessories provide simple, clip-in connections (e.g. connection of reverser control terminals, ...

(1) For use with resistive and inductive loads. Control of d.c. or capacitive loads is not possible.

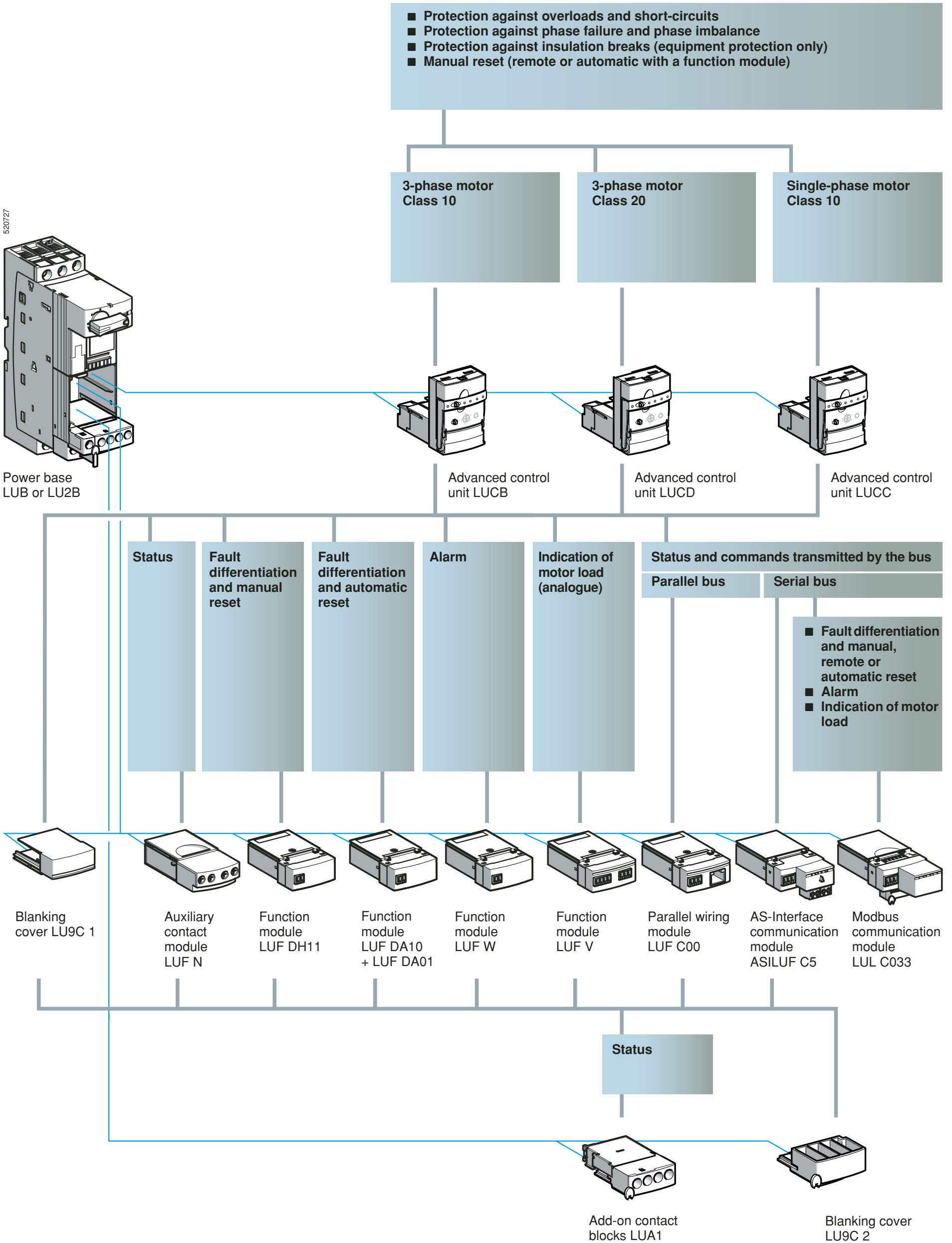
TeSys Model U

Starter-controllers with standard control unit



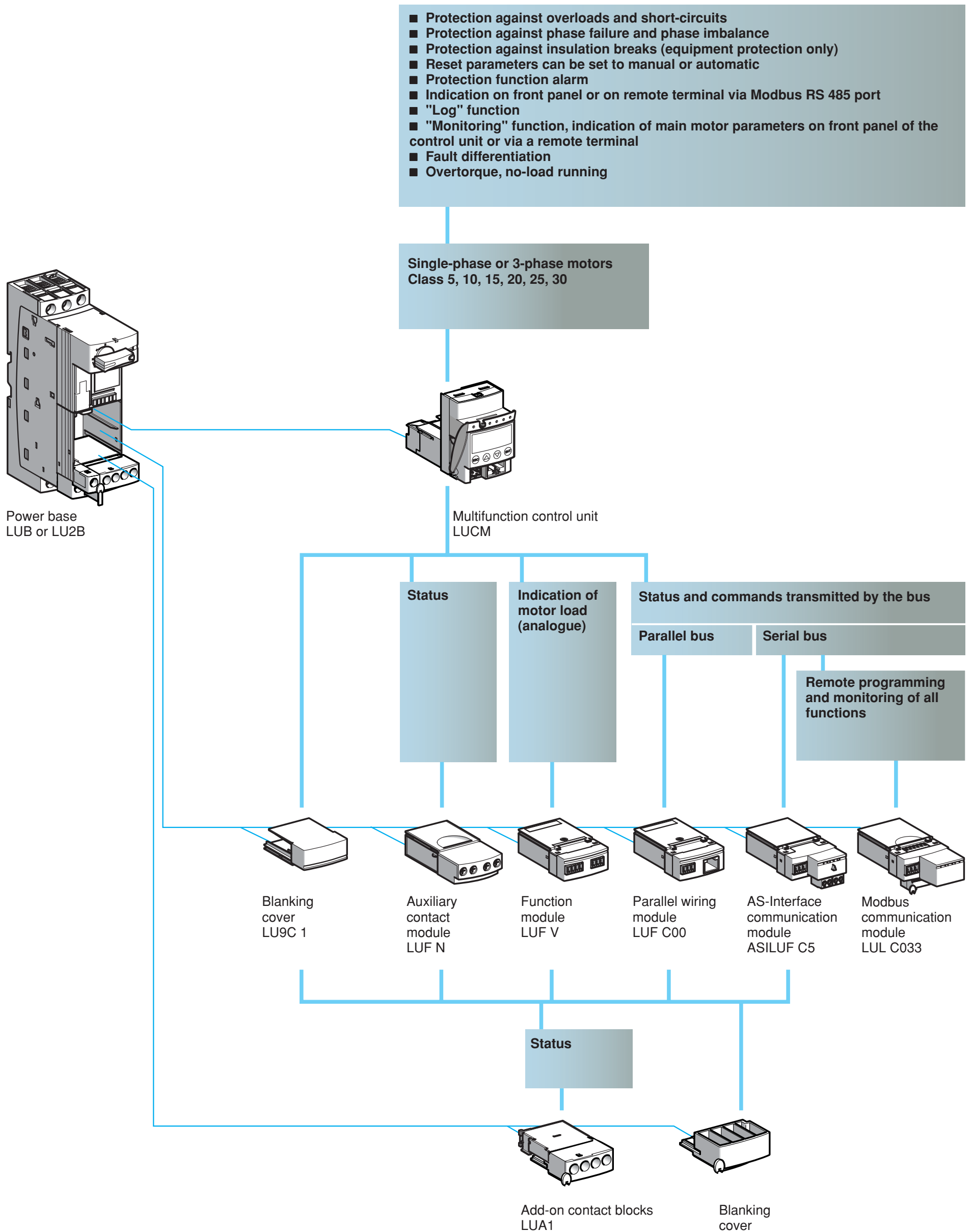
TeSys Model U

Starter-controllers with advanced control unit



TeSys Model U

Starter-controllers with multifunction control unit



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Application

Starting and protection of a pump.

Operating conditions

- Power : 4 kW at 400 V.
- In : 9 A
- Maximum of 10 class 10 starts per hour.
- Duty class S3.
- 3-wire control :
 - Start button (S2),
 - Stop button (S1),
- Control circuit voltage : \sim 230 V.

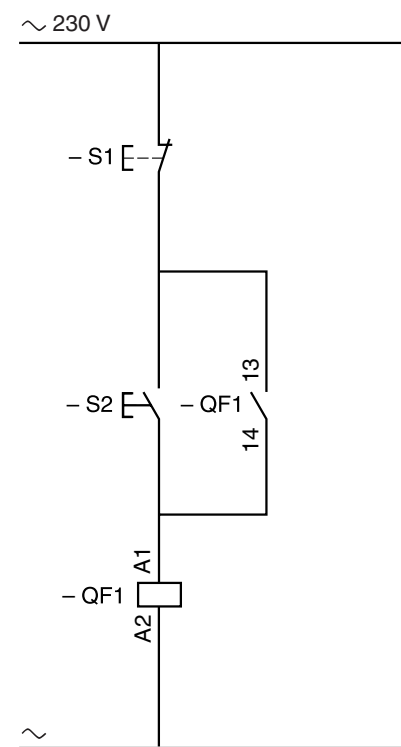
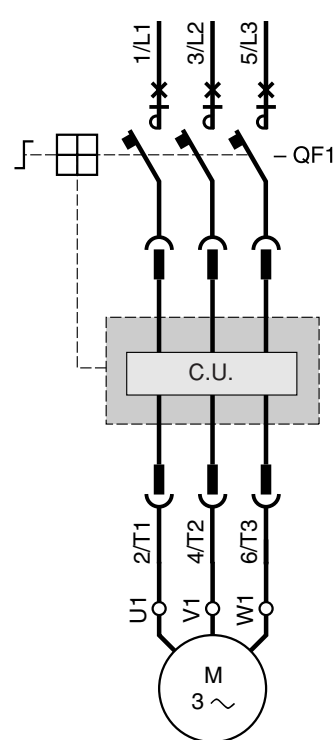
Products used

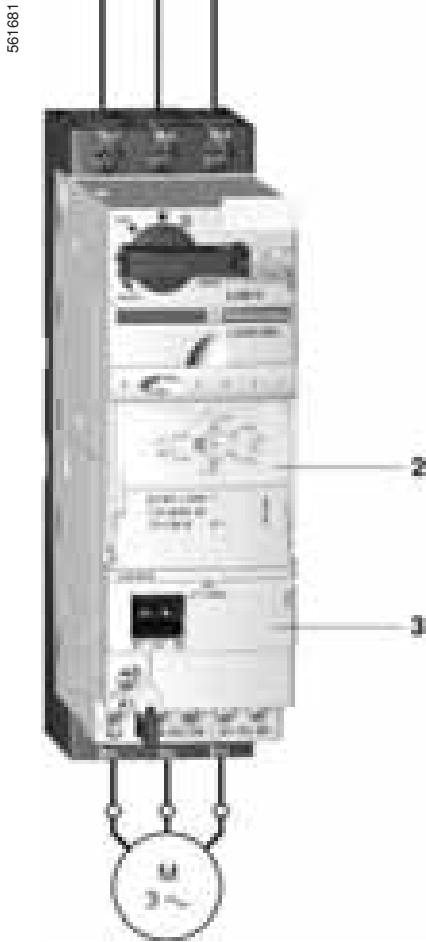
Products used	Item	Quantity	Reference	Page
Power base 12 A with screw clamp connections	1	1	LUB 12	14
Standard control unit	2	1	LUCA 12FU	19

Functions performed

- Short-circuit protection with level of protection of 50 kA at 400 V.
- Total coordination of protection devices conforming to EN 60947-6-2 (continuity of service) in case of a short-circuit.
- Electronic protection against thermal overloads with an adjustment range of 0.25 - 1.0 x In.
- Load switching (2 million operating cycles in category AC-43 at In).
- Indication of motor status by N/C or N/O contact.
- Interlock between the motor starter control and the selector switch position; not possible to start the motor when the switch is in the OFF position.

Scheme





Application

Expansion of an existing installation to meet the operating conditions described below.

Operating conditions

Monitor the status of the motor and obtain alarm signalling by a digital contact in order to improve operation of the pump and anticipate a complete stoppage due to thermal overload.

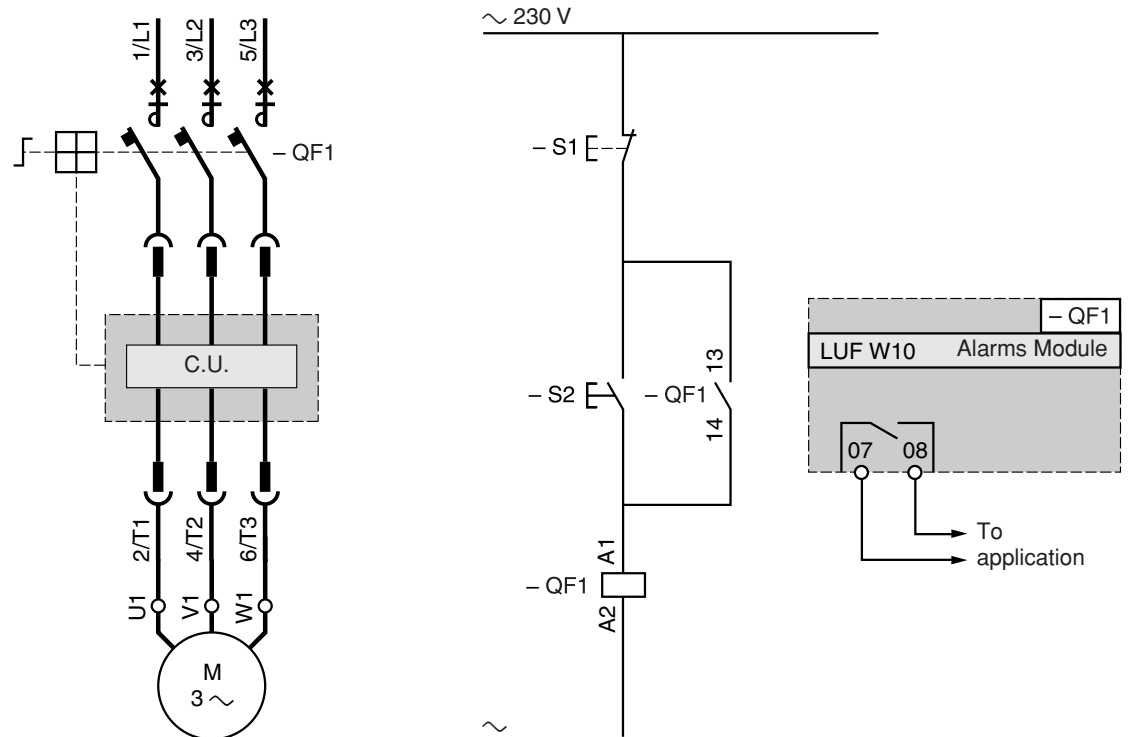
Additional products used

Products used	Item	Quantity	Reference	Page
Replace the standard control unit with an advanced control unit and insert a thermal overload alarm function module.				
Advanced control unit	2	1	LUCB 12FU	19
Alarm function module	3	1	LUF W10	21

Functions performed

- Alarm information is generated by the advanced control unit and is processed by the thermal overload alarm function module to make it usable.
- The advanced control unit includes a thermal trip Test button on its front panel.

Scheme



Other versions

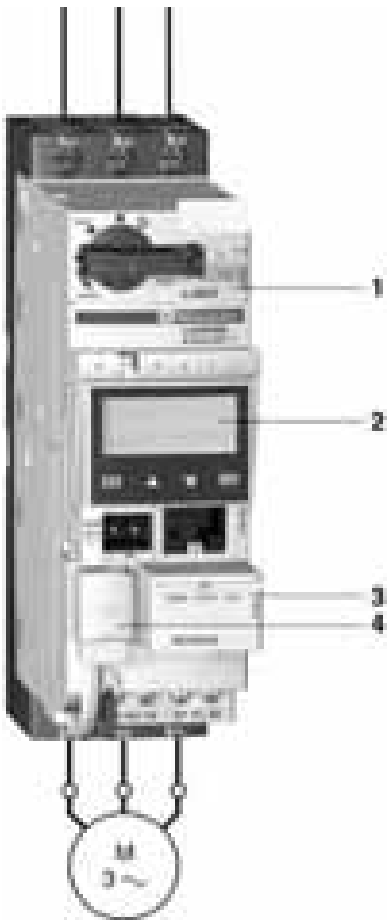
The advanced control unit can provide other functions, depending on the type of function modules used (instead of the LUF W module described above) :

- fault differentiation with function module LUF DA10, LUF DA01 or LUF DH11,
- indication of motor load with function module LUF V2. This module delivers a 4-20 mA, analogue signal which is proportional to the average 3-phase current drawn by the motor. This allows the load current to be monitored and provides access to other application functions using this value, or to predictive or preventive maintenance possibilities (replacement of the motor before it breaks down).

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Application

Monitoring operation of a surface pump in a water treatment plant to avoid running empty, which could lead to destruction of the pump.

Operating conditions

- Power : 15 kW at 400 V.
- In : 28.5 A
- Duty class S1.
- Control circuit voltage : \approx 24 V.
- Control-command by PLC and serial link using the Modbus protocol.

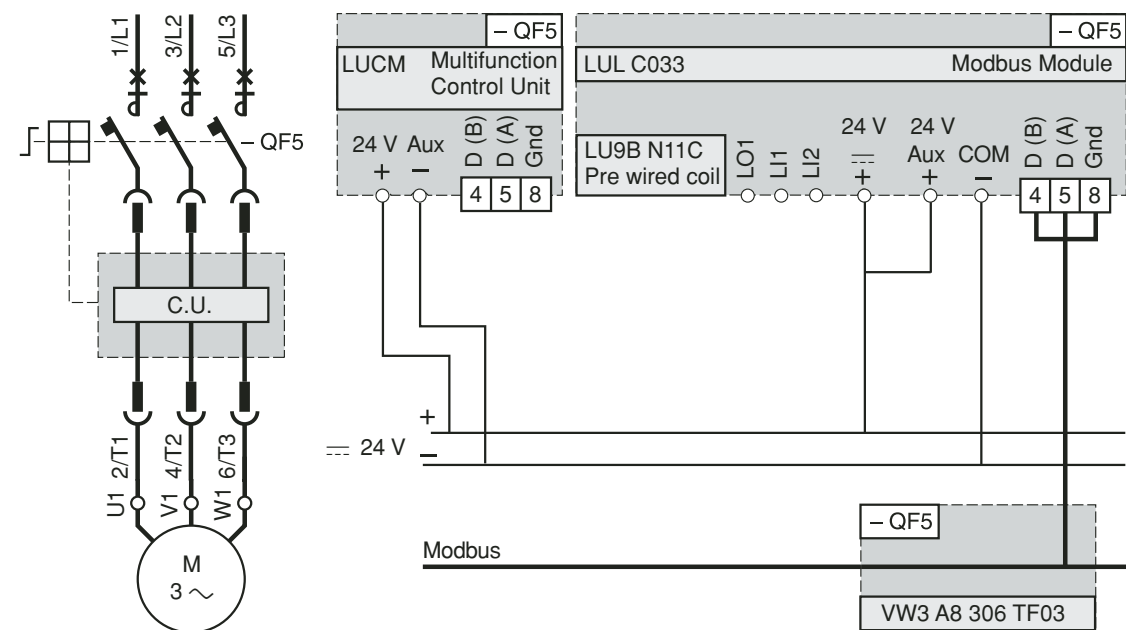
Products used

Products used	Item	Quantity	Reference	Page
Power base 32 A without connections	1	1	LUB 320	14
Multifunction control unit	2	1	LUCM 32BL	20
Modbus communication module	3	1	LUL C033	30
Pre-wired coil connection Connection of communication module output terminals to the coil terminals	4	1	LU9B N11C	31
Connection cable for connecting the communication module to the serial bus	-	1	VW3 A8 306 R●●	31
T-junction	-	1	VW3 A8 306 TF03	31

Functions performed

- Short-circuit protection with level of protection of 50 kA at 400V.
- Total coordination of protection devices conforming to EN 60947-6-2 (continuity of service) in case of a short-circuit.
- Electronic protection against thermal overloads with an adjustment range of 0.25 - 1.0 xIn.
- Load switching (1.5 million operating cycles in category AC-43 at In).
- Measurement of load current and detection of no-load running by the multifunction control unit.
- Interlock between the motor starter control and the selector switch position; not possible to start the motor when the switch is in the OFF position.
- No-load running or operation under load. To use this function, the following parameters must be entered :
 - trip : the answer yes/no enables or disables the function,
 - time before tripping : the time period during which the value of the current must be below the tripping threshold in order to cause tripping (adjustable from 1 to 200 s).
 - tripping threshold : value as a % of the load current ratio in relation to the setting current. If the ratio remains below this threshold for the time specified in the previous parameter, the product trips (adjustable from 30 to 100 %).
- Indication of the various motor starter status and currents.

Schemes



Modbus profile IEC 64915		
Commands (Register 704)		Status (Register 455)
Forward running	Bit 0	Ready (available)
Reverse running	Bit 1	Poles closed
Reserved	Bit 2	Fault
Reset	Bit 3	Alarms
Reserved	Bit 4	Reserved
Connection test	Bit 5	Reserved
Reserved	Bit 6	Reserved
Reserved	Bit 7	Motor running
Reserved	Bit 8	Motor current % (bit 0)
Reserved	Bit 9	Motor current % (bit 1)
Reserved	Bit 10	Motor current % (bit 2)
Reserved	Bit 11	Motor current % (bit 3)
Reserved	Bit 12	Motor current % (bit 4)
Reserved	Bit 13	Motor current % (bit 5)
Reserved	Bit 14	Reserved
Reserved	Bit 15	Motor starting

Other functions

The multifunction control unit incorporates other control and protection functions, such as : monitoring and control of phase current, alarm, ...
Module LUL C033 also provides a programmable output.

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Application

Starting and control of a packing machine conveyor belt.

Operating conditions

- Power : 0.37 kW at 400 V.
- In : 0.98 A
- Duty class S1.
- Control circuit voltage : \sim 24 V
- Control and command by the AS-Interface wiring system.

Products used

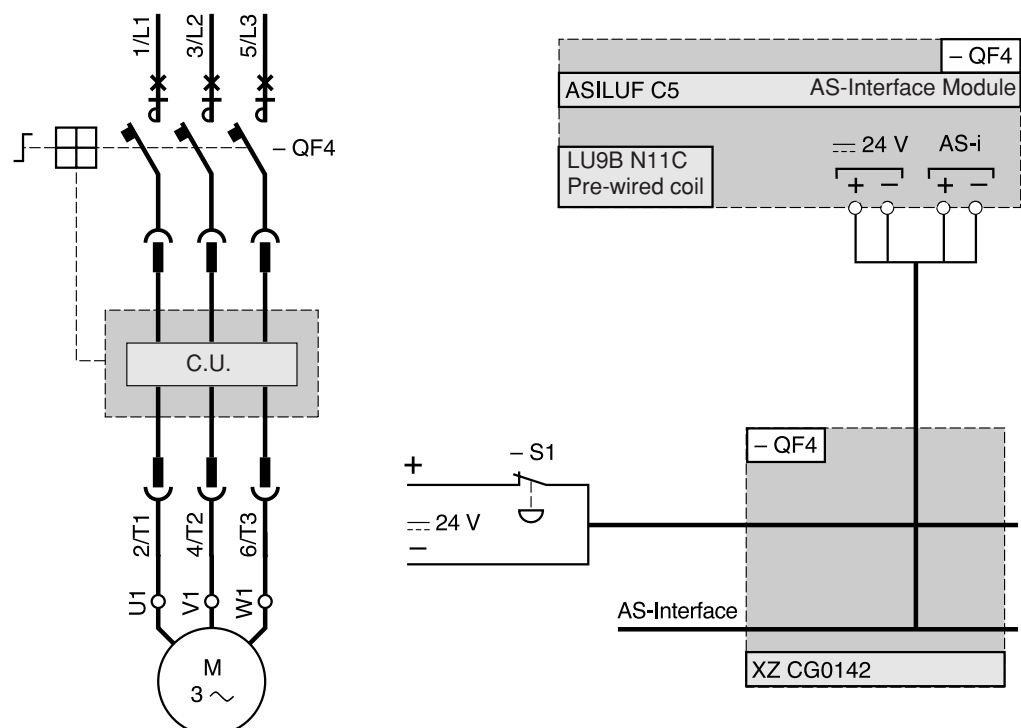
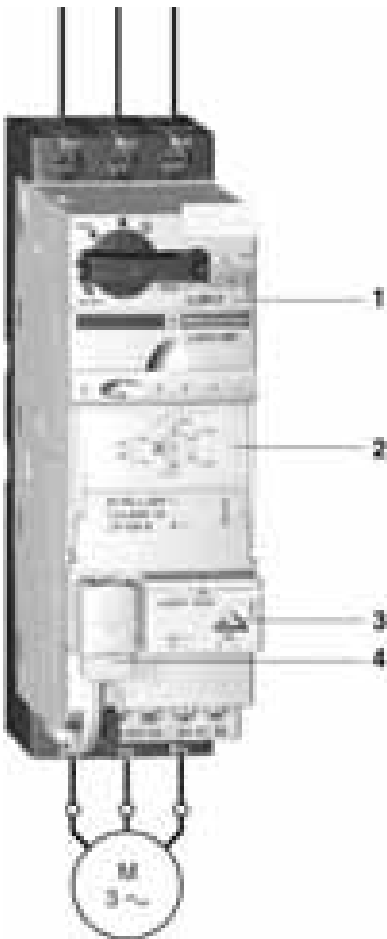
Products used	Item	Quantity	Reference	Page
Power base 12 A without connections	1	1	LUB 120	14
Standard control unit	2	1	LUCA 1XBL	19
AS-Interface communication module	3	1	ASILUF C5	28
Tap-off for connecting the communication module to the serial bus	–	1	XZ CG0142	29
Pre-wired coil connection Connection of communication module output terminals to the coil terminals	4	1	LU9B N11C	29

Functions performed

- Short-circuit protection with level of protection of 50 kA at 400 V.
- Total coordination of protection devices conforming to EN 60947-6-2 (continuity of service) in case of a short-circuit.
- Electronic protection against thermal overloads with an adjustment range of 4.
- Load switching (2 million operating cycles in category AC-43 at In).
- Indication of motor status by N/C or N/O contact.
- Interlock between the motor starter control and the selector switch position; not possible to start the motor when the switch is in the OFF position.
- Start/Stop commands and Ready, Running and Stopped motor status are transmitted by the bus. The AS-Interface 7.D.F.O profile of the new AS-Interface V2 protocol, implemented in the starter-controller, ensures total compatibility with that of the LF enclosed starter range.
- Indication of module operation and communication status by 2 LEDs on the front panel of the communication module.
- Addressing of the module is achieved, using adjustment console ASI Terv2 or console XZ MC11. Using pre-wired coil connector LU9B N11C avoids having to wire the control connections. However, easy access to the control connector on the front panel of the starter allows any control schemes required by the user to be included in the line (local controls, emergency stop, safety contact,)

Scheme

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Application

Manual control of a 2-position turntable.

Operating conditions

- Power : 2.2 kW at 400 V.
- In : 6 A
- 30 starts per hour
- Duty class S4.
- 3-wire control :
 - Pushbutton for Position 1 (S1),
 - Pushbutton for Position 2 (S2),
 - Stop button (S5),
- Stopping at the positions is achieved by limit switches S3 and S4.
- Control circuit voltage : ~ 115 V.

Products used

Products used	Item	Quantity	Reference	Page
Power base reversing, 12 A with screw clamp connections	1	1	LU2B 12FU	15
Standard control unit	2	1	LUCA 12FU	19

Functions performed

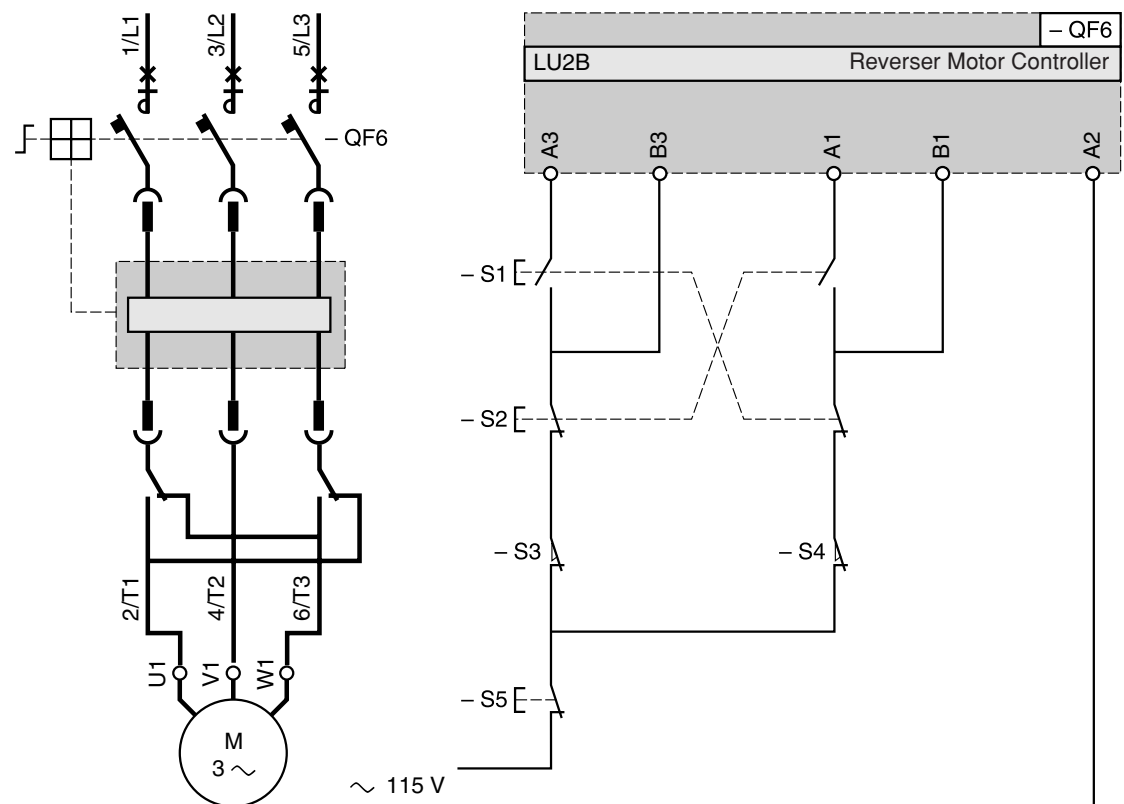
- Short-circuit protection with level of protection of 50 kA at 400V.
- Total coordination of protection devices conforming to EN 60947-6-2 (continuity of service) in case of a short-circuit.
- Electronic protection against thermal overloads with an adjustment range of 0.25 - 1.0 x In.
- Load switching (2 million operating cycles in category AC-43 at In).
- Interlock between the motor starter control and the selector switch position; not possible to start the motor when the switch is in the OFF position.

Electrical interlocking is ensured by pre-wired connector LU9M R1C (item 3) included on base LU2B 12. The design of the reversing power block makes mechanical interlocking unnecessary.

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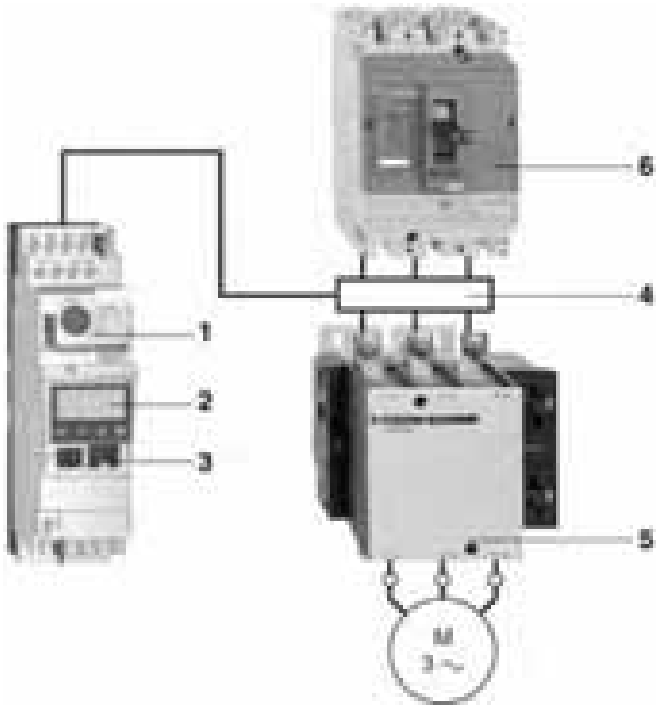
Scheme (manual control)



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Application

Monitoring blockage of a rock crusher by monitoring the motor current.

Operating conditions

- Power : 90 kW at 400 V.
- In : 185 A
- Duty class S1.
- Control circuit voltage : \sim 230 V
- Control-command by PLC and serial link using the Modbus protocol.

Products used

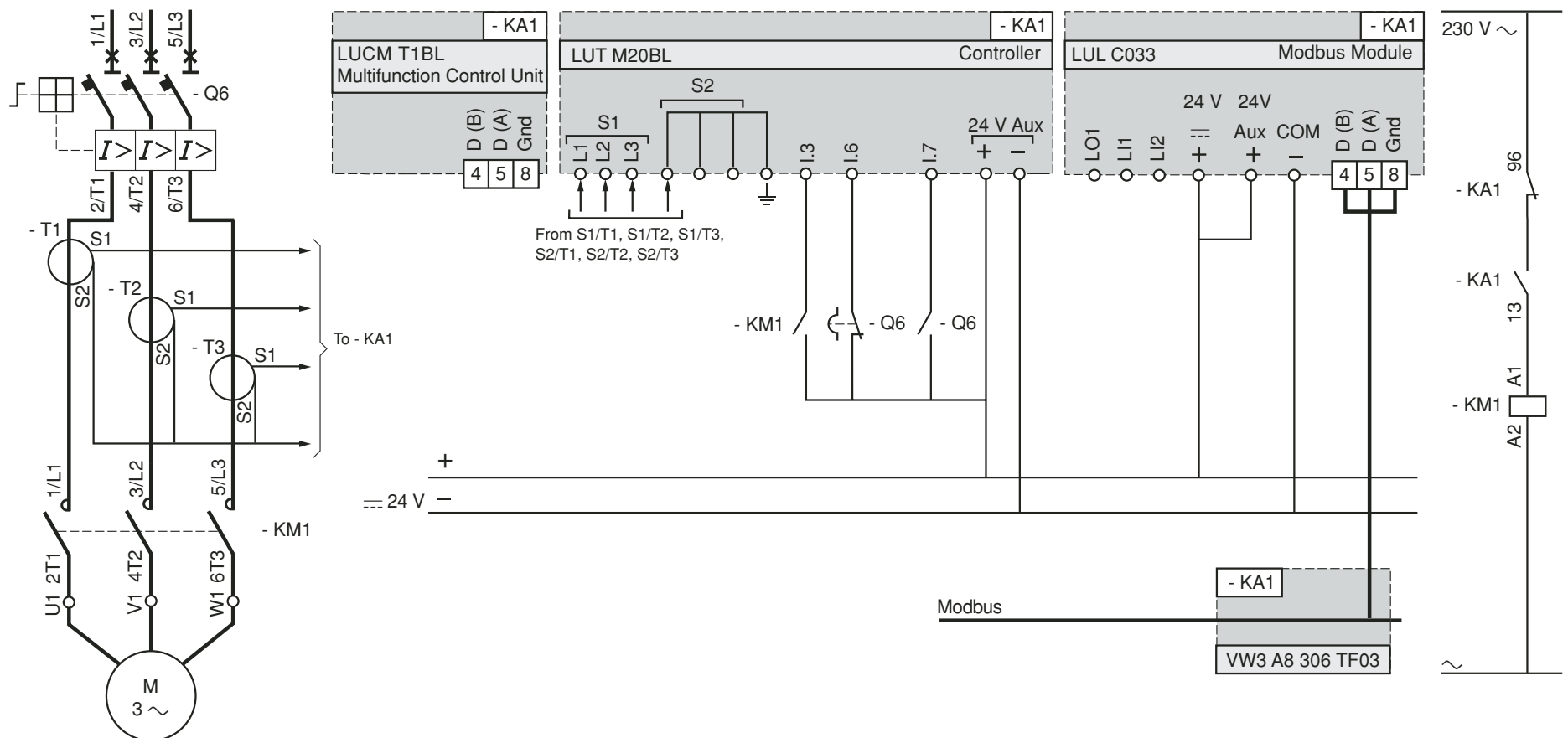
Products used	Item	Quantity	Reference	Page
Controller	1	1	LUT M	25
Multifunction control unit	2	1	LUCM T1BL	25
Modbus communication module	3	1	LUL C033	30
Current transformers	4	3	LUT C4001	25
Contactor	5	1	LC1 F185P7	-
Circuit-breaker	6	1	NS 250HMA	-

Functions performed

- Short-circuit protection with level of protection of 70 kA at 400V.
- Electronic protection against thermal overloads with an adjustment range of 0.25 - 1.0 x In
- Detection of crusher blockage by monitoring the induced overcurrent. To use the "overtorque or jam" function, the following parameters must be entered :
 - trip : the answer yes/no enables or disables the function,
 - time before tripping : the time period during which the value of the current must be above the tripping threshold in order to cause tripping (adjustable from 1 to 30 s).
 - tripping threshold : value as a % of the load current ratio in relation to the setting current. If the ratio remains above this threshold for the time specified in the previous parameter, the product trips (adjustable from 100 to 800 %).

It is possible to set the parameter for an alarm at a preset threshold under the same conditions as above.

Scheme



Other functions

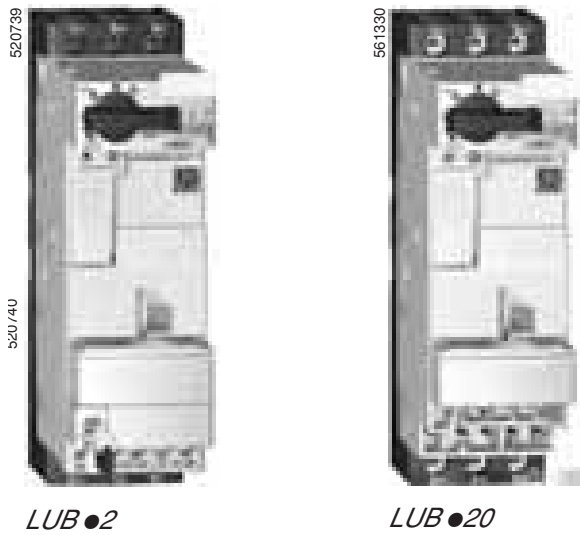
The multifunction control unit incorporates other control and protection functions, such as : monitoring and control of phase currents, alarm, ...

Communication module LUL C033 also provides a programmable output and two programmable inputs.

TeSys Model U

Starter-controllers

Non-reversing power bases



Two versions of control connection are available:

- **connection by screw terminals**, plug-in control terminal block,
- **without connection**. This version enables wiring to be prepared in advance and is recommended when a communication module is required (allowing the use of control connection prewiring accessories) or when a reverser block is to be mounted by the customer.

Power bases for non-reversing D.O.L. starting ⁽¹⁾

Connection	Item ⁽²⁾	Rating			Reference	Weight
		≤ 440 V	500 V	690 V		
Power	Control	A	A	A		kg

These bases have 2 auxiliary contacts: 1 N/O (13-14) and 1 N/C (21-22) which indicate the closed or open position of the power poles.

They must be used in conjunction with a control unit, see pages 18 to 20.

Screw terminals	Screw terminals	1 + 2 + 3 + 4	12	12	9	LUB 12	0.900
			32	23	21	LUB 32	0.900
Without connections	Without connections	1 + 2	12	12	9	LUB 120	0.865
			32	23	21	LUB 320	0.865

Terminal blocks for power bases without connections

Connection	For base	Item ⁽²⁾	Reference	Weight
Screw terminals	LUB 120 or 320	3 + 4	LU9B N11	0.045

⁽¹⁾ Rated breaking capacity for operation on short-circuit (Ics), see table below.
For higher values, use current limiters, see page 17.

Volts	230	440	500	690 ⁽³⁾
kA	50	50	10	4

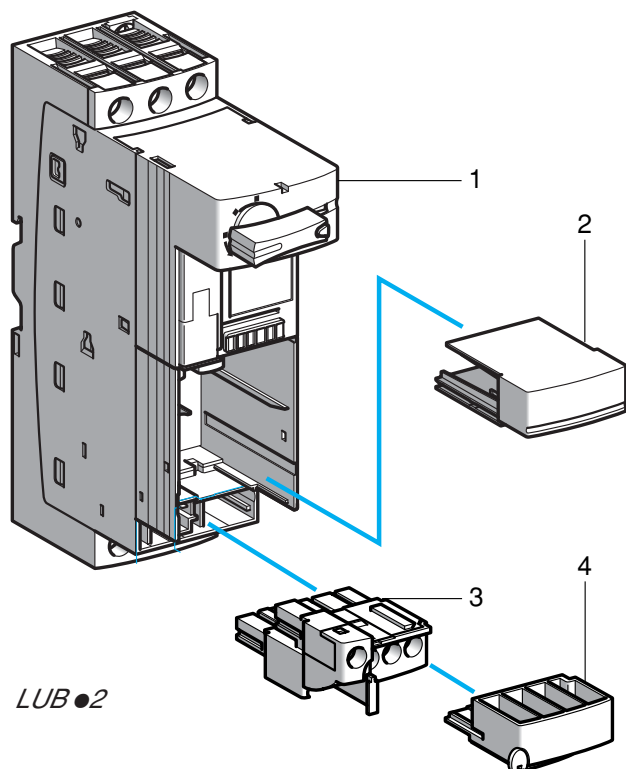
⁽²⁾ The various sub-assemblies are supplied assembled but they are easy to separate, as shown in the illustration.

⁽³⁾ For 690 V, use phase barrier LU9 SP0.

Other versions

Power bases without built-in short-circuit protection device (short-circuit protection by circuit-breaker or separate fuses).

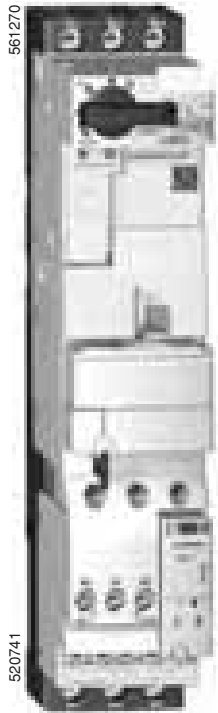
Please call our Customer Information Centre on 0870 608 8 608.



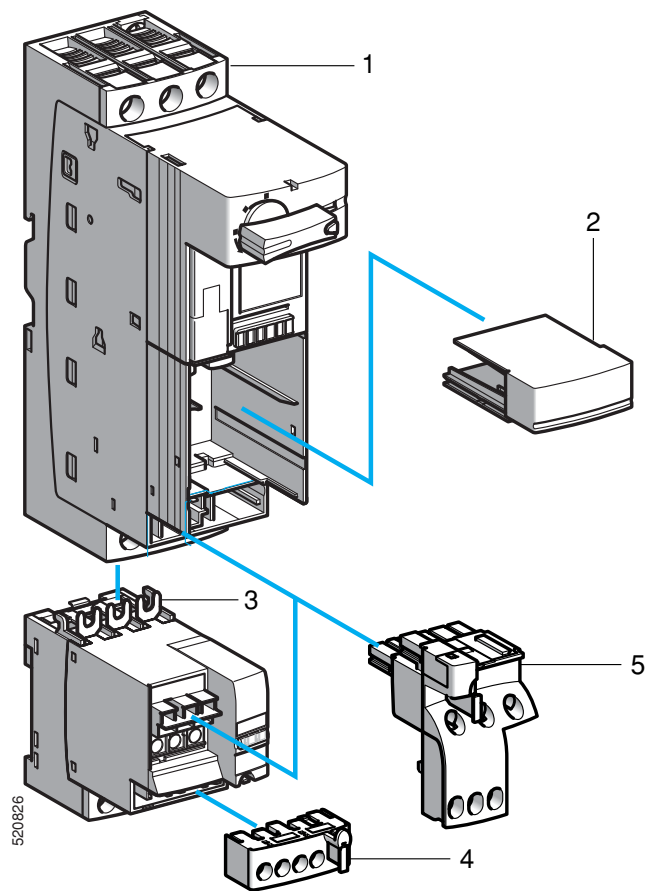
TeSys Model U

Starter-controllers

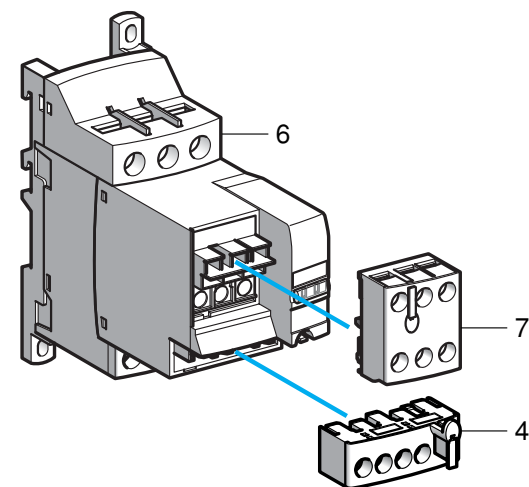
Reversing power bases



LU2B ●2



LU2B ●2



LU6M + LU9 M1 + LU9M R1

Two versions of control connection are available:

- **connection by screw terminals**, plug-in control terminal block,
- **without connection**. This version enables wiring to be prepared in advance and is recommended when a communication module is required, allowing the use of control connection pre-wiring accessories.

Power bases for reversing D.O.L. starting, pre-assembled

Connection	Item (1)	Rating			Reference to be completed (2)	Weight kg
		≤ 440 V	500 V	690 V		
Power	Control	A	A	A		

These bases have two N/O common point contacts (81-82-84) which indicate non-reversing and reversing operating status.

Screw terminals	Screw terminals	1 + 2 + 3	12	12	9	LU2B 12●●	1.270
		+ 4 + 5	32	23	21	LU2B 32●●	1.270
	Without connections	1 + 2 + 3	12	12	9	LU2B A0●●	1.270
		+ 5	32	23	21	LU2B B0●●	1.250

Power bases for reversing D.O.L. starting, mounted by the customer

A reverser block should preferably be combined with a non-reversing power base without connections to create a reversing starter-controller.

The built-in N/O (13-14) and N/C (21-22) contacts are used for electrical interlocking between the reverser block and the base; they are therefore no longer available as output contacts.

The reverser block has a C/O common point contact (81-82-84) which indicates non-reversing and reversing operating status.

32 A reverser block	Connection		Item (1)	Reference to be completed (2)	Weight kg
	Power	Control			
For mounting directly beneath the power base	Screw terminals	Without connections	3	LU2M B0●●	0.400
	Screw terminals	Without connections	6	LU6M B0●●	0.425

(screw or rail fixing)

Accessories

Description	Item	Application	Reference	Weight kg
Control block 4	4	Non-reversing power base without connections LU2B A0●● or B0●●	LU9 M1	0.025
		Reverser block LU2M B0●● for direct mounting beneath power base	LU9 M1	0.025
		Reverser block LU6M B0●● for mounting separately from power base	LU9 M1	0.025
		Reverser block LU6M B0●● for mounting separately from power base	LU9M R1	0.030

Control circuit pre-wiring components

Description	Item	Reference	Weight kg
Pre-wired connector (3)	5	LU9M R1C	0.035

(1) The various sub-assemblies are supplied assembled but they are easy to separate, as shown in the illustration.

(2) Select the same control voltage as that of the control unit.
Standard control circuit voltages :

Volts	24	48...72	110...240
—	BL	—	—
~	B	—	—
— or ~	—	ES (4)	FU (5)

(3) For control connection between a power base and a reverser block, for direct mounting.

(4) — : 48...72 V, ~ : 48 V.

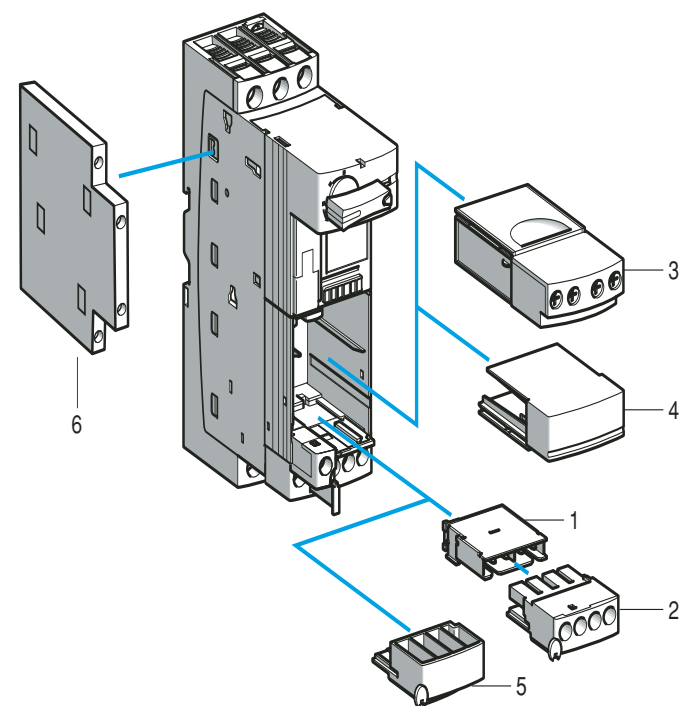
(5) — : 110...220 V, ~ : 110...240 V.

Other versions Power bases without built-in short-circuit protection device (short-circuit protection by circuit-breaker or separate fuses). Please call our Customer Information Centre on 0870 608 8 608.

Contact states							
Product status	Position of control handle	Indication on front panel	N/O pole contact	N/C pole contact	N/O contact any fault	N/C contact any fault	⊕ N/O contact product ready
References of add-on contact blocks and auxiliary contact modules Terminal referencing	–	–	–	LUF N11 31-32	LUA1 C20 97-98	LUA1 C11 95-96	LUA1 C20 17-18
	or	–	–	LUF N02 31-32 41-42	–	LUA1 C110 no terminal block	LUA1 C200 no terminal block
	or	–	–	LUF N20 33-34 43-44	LU9B N11 21-22	–	LUA1 C11 17-18
	or	–	–	LUF N11 43-44	–	–	LUA1 C110 no terminal block
	or	–	–	LU9B N11 13-14	–	–	–
Off	OFF	0					
Ready to operate		0					
Running		1					
Tripped on short-circuit	TRIP	I >>					
Tripped on thermal overload	Manual reset mode	TRIP	0				
	Automatic reset on thermal overload mode		0				
	Remote reset mode		0				

N/O contact in closed position
N/C contact in open position

References



LUB + LUA1 + LUF N

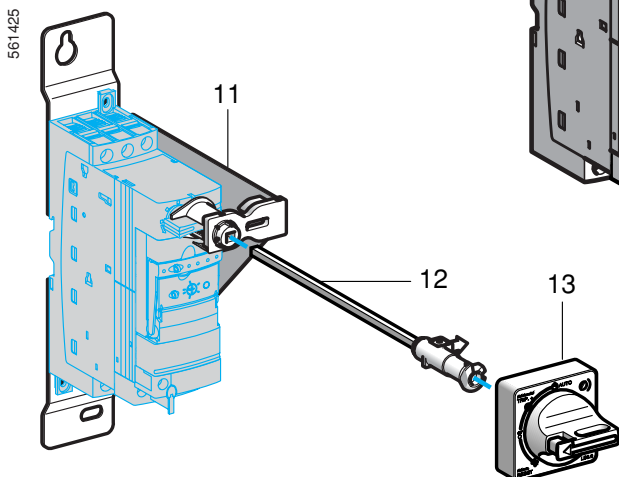
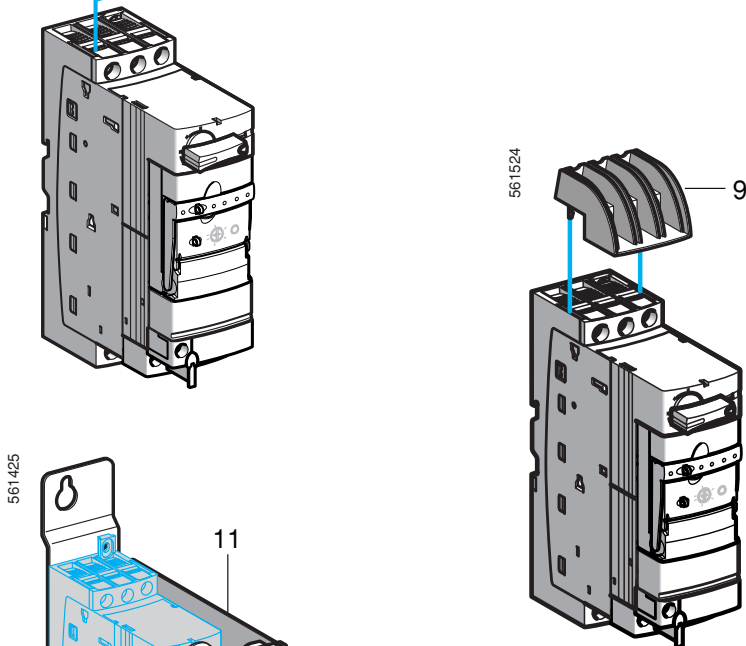
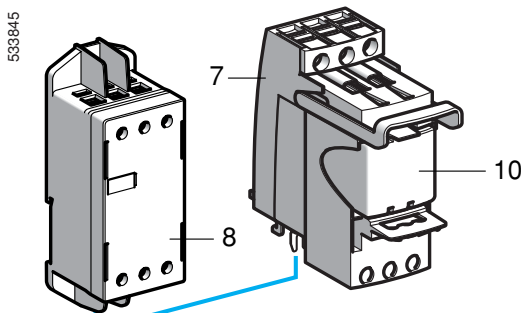
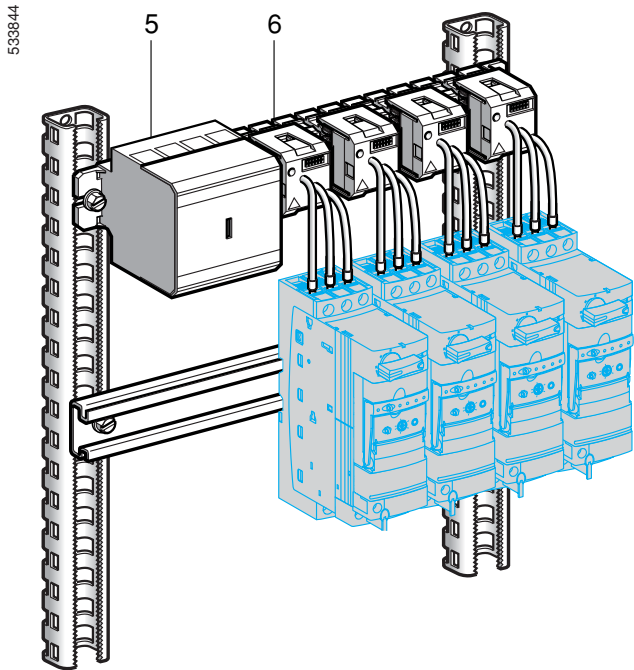
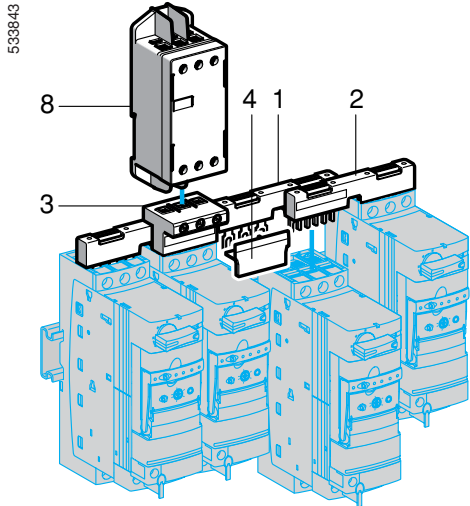
Add-on contact blocks					
Signalling and composition	Connection	Item	Reference	Weight	kg
1 N/C fault signalling contact (95-96) and 1 N/O contact (17-18) indicating control handle in "ready" position	Screw terminals	1 + 2	LUA1 C11	0.030	
1 N/O fault signalling contact (97-98) and 1 N/O contact (17-18) indicating control handle in "ready" position	Without connections	1	LUA1 C110	0.012	
1 N/O fault signalling contact (97-98) and 1 N/O contact (17-18) indicating control handle in "ready" position	Screw terminals	1 + 2	LUA1 C20	0.030	
1 N/O fault signalling contact (97-98) and 1 N/O contact (17-18) indicating control handle in "ready" position	Without connections	1	LUA1 C200	0.012	
Auxiliary contact modules for connection by screw clamp terminals					
Module with 2 contacts indicating the state of the starter-controller power poles Application : ~ or = 24...250 V, I _{th} : 5 A					
Composition	Item	Reference	Weight	kg	
2 NO contacts (33-34 and 43-44)	3	LUF N20	0.050		
1 NC contact (31-32) and 1 NO contact (43-44)	3	LUF N11	0.050		
2 NC contacts (31-32 and 41-42)	3	LUF N02	0.050		
Accessories					
Description	For use on	Item	Reference	Weight	kg
Screw clamp terminal blocks	LUA1 C110	2	LU9B C11	0.022	
	LUA1 C200	2	LU9B C20	0.022	
Blanking covers	Location for auxiliary contact, communication or function module	4	LU9C 1	0.020	
	Location for add-on contact blocks	5	LU9C 2	0.010	
Side mounted auxiliary contacts (2 N/O) ⁽¹⁾	LUB●●	6	LUA8 E20	0.010	

(1) For disconnection of motor control circuits

TeSys Model U

Starter-controllers

Power connection pre-wired system, limiter blocks and accessories



Pre-wired system for power connections up to 63 A

Description	Application	Pitch mm	Item	Sold in lots of	Unit reference	Weight kg
Sets of 3-pole 63 A busbars	2 tap-offs	45	2	1	GV2 G245	0.036
		54	-	1	GV2 G254	0.038
	3 tap-offs	45	-	1	GV2 G345	0.058
		54	-	1	GV2 G354	0.060
	4 tap-offs	45	1	1	GV2 G445	0.077
54		-	1	GV2 G454	0.085	
5 tap-offs		54	-	1	GV2 G554	0.100
Protective end cover	For unused busbar outlets	-	4	5	GV1 G10	0.005
Terminal block for supply to one or more busbar sets	Connection from the top	-	3	1	GV1 G09	0.040

Pre-wired system for power connections up to 160 A

The busbar system can be screw-mounted onto any type of support.

Set of 4-pole busbars: 3-phase + neutral or 3-phase + common

Number of tap-offs at 18 mm intervals	Item	Length mm	For mounting in enclosure width mm	Reference	Weight kg
18	5	452	800	AK5 JB144	0.900

Removable 3-phase power sockets

Number of points used on the busbar system	Thermal current	Item	Cable lengths	Sold in lots of	Unit reference	Weight kg
2	16	6	200	6	AK5 PC13 (1)	0.040
	32	6	250	6	AK5 PC33 (1)	0.045
			1000	6	AK5 PC33L (1)	0.060

Limiter blocks and accessories

Application	Item	Breaking capacity Iq		Mounting	Unit reference	Weight kg
		≤ 440 V	690 V			
Limiter-disconnector (3) (6)	7 + 10	130	70	Direct on power base	LUA LB1 (2)	0.310
Current limiters (3)	8	100	35	Separate	LA9 LB920	0.320
Limiter cartridge	10	130	70	Limiter-disconnector	LUA LF1	0.135
Clip-in marker holder	-	-	-	On power base, on reverser block, on parallel link splitter box	LAD 90 (4)	0.001

Phase barrier

Phase barrier LU9 SP0 must be used:

- To build a UL 508 **type E** certified starter (Self Protected Starter). Without the phase barrier, the starter-controller is certified UL 508.
- If the starter-controller is to be used on an operational voltage of 690 V.

Description	Item	Application	Mounting	Reference	Weight kg
Phase barrier	9	LUB or LU2B 12 or 120 LUB or LU2B 32 or 320 LUA LB1	Direct on terminals L1, L2, L3	LU9 SP0	0.030

Door interlock mechanisms

Description	Item	Reference	Weight kg
Fixing kit (5) (7)	11 + 12	LU9 AP00	0.490
Door-mounted black handle/blue front plate, IP54	13	LU9 AP11	0.150
Door-mounted red handle/yellow front plate, IP54	13	LU9 AP12	0.150

(1) The maximum permissible peak current for power sockets AK5 PC●● is 6 kA.

When used in association with power bases LUB●●, the prospective short-circuit current must not exceed 7 kA

(2) Supplied with limiter cartridge.

(3) These devices make it possible to increase the breaking capacity of the power base.

(4) Sold in lots of 100.

(5) The fixing kit includes a shaft extension (maximum depth 508 mm).

(6) The limiter must be mounted on an LUB or LU2B power base. The limiter can therefore not be common to several motor starters.

(7) To use the fixing kit with a D.O.L. reversing power base, only reverser block LU6 M must be used.



Function characteristics					
Control units	Standard		Advanced		Multifunction
	LUCA	LUCB	LUCC	LUCD	LUCM
Thermal overload protection	14.2 x the setting current				3 to 17 x the setting current
Overcurrent protection	14.2 x the max. current				
Short-circuit protection					
Protection against phase loss					
Protection against phase imbalance					
Earth fault detection (equipment protection only)					
Tripping class	10		10	20	5...30
Motor type	3-phase		Single-phase	3-phase	Single-phase and 3-phase
Thermal overload test function					
Overtorque					
No-load running					
Long starting times					
Reset mode	Manual				Parameters can be set
	Automatic or remote	With function module or parameters can be set via the bus with a communication module, see chart below.			Parameters can be set Parameters can be set via the bus with a communication module (see below).
Alarm	Thermal overload alarm only with function module or communication module, see below.1			Possible for each type of fault. Indication on front panel of the control unit, via remote terminal, via PC or via PDA (1). With communication modules to make use of these alarms via a bus, see below.	
"Log" function					Log of the last 5 trips. Number of starts, number of trips, number of operating hours.
"Monitoring" function					Indication on front panel of the control unit via remote terminal, via PC or via PDA (1).

With function modules (2)

Thermal overload alarm		With module LUF W	
Fault differentiation and manual reset		With module LUF DH20	
Fault differentiation and automatic reset		With module LUF DA10	
Indication of motor load (analogue)		With module LUF V	

With communication module or via Modbus port on control unit LUCM (2)

Starter status (ready, running, fault)	With any communication module		
Reset mode	Parameters can be set via the bus		
Alarm		With module Modbus LUL C032 (thermal overload alarm only).	With Modbus module LUL C032 and Modbus port on the control unit (alarm possible for all types of fault).
Remote reset via the bus			
Indication of motor load			
Fault differentiation			
Remote programming and monitoring of all functions	With Modbus module LUL C032 and Modbus port on the control unit.		
"Log" function			
"Monitoring" function			

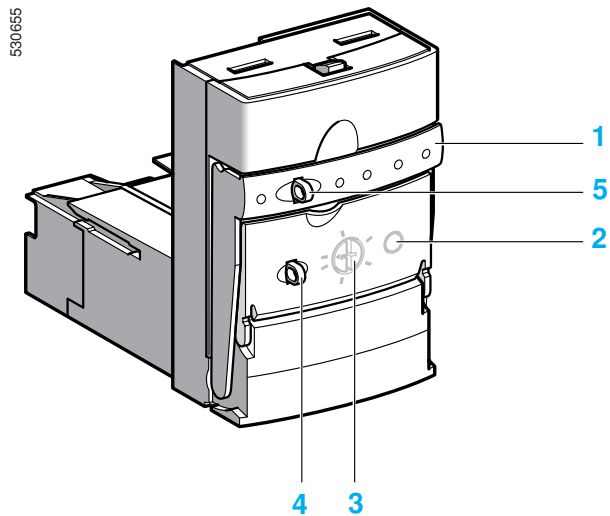
 Built-in function  Function provided with accessory

(1) PDA : Personal Digital Assistant.
(2) Mounting possibilities: 1 function module or 1 communication module.

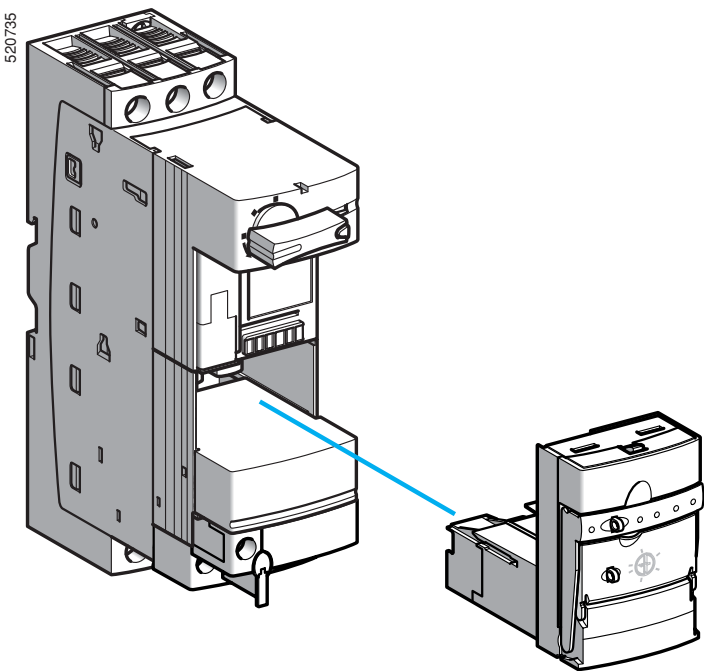
TeSys Model U

Starter-controllers

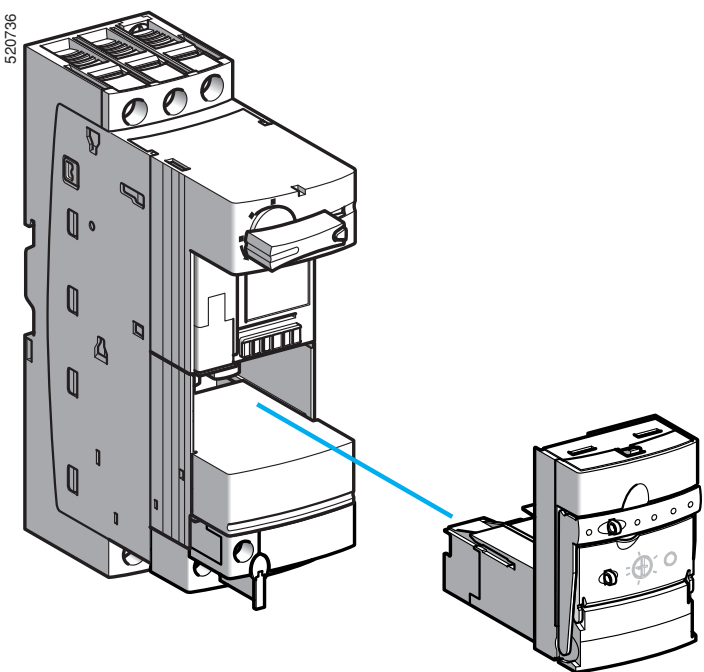
Standard and advanced control units



LUCA ●●●●
LUCB ●●●●



LUB ●2 + LUCA ●●●●



LUB ●2 + LUCB ●●●●

Description

- 1 Extraction and locking handle
- 2 Test button (on advanced control unit only)
- 3 Ir adjustment dial
- 4 Locking of settings by sealing the transparent cover
- 5 Sealing of locking handle

Standard control units

Maximum power ratings of standard 3-phase motors 50/60 Hz			Setting range	Clip-in mounting on power base Rating	Reference to be completed by adding the voltage code (1)	Weight
400/ 415 V	500 V	690 V				
kW	kW	kW	A	A		kg
0.09	–	–	0.15...0.6	12 and 32	LUCA X6●●	0.135
0.25	–	–	0.35...1.4	12 and 32	LUCA 1X●●	0.135
1.5	2.2	3	1.25...5	12 and 32	LUCA 05●●	0.135
5.5	5.5	9	3...12	12 and 32	LUCA 12●●	0.135
7.5	9	15	4.5...18	32	LUCA 18●●	0.135
15	15	18.5	8...32	32	LUCA 32●●	0.135

Advanced control units

Pressing the Test button on the front panel simulates tripping on thermal overload.

Class 10 for 3-phase motors

0.09	–	–	0.15...0.6	12 and 32	LUCB X6●●	0.140
0.25	–	–	0.35...1.4	12 and 32	LUCB 1X●●	0.140
1.5	2.2	3	1.25...5	12 and 32	LUCB 05●●	0.140
5.5	5.5	9	3...12	12 and 32	LUCB 12●●	0.140
7.5	9	15	4.5...18	32	LUCB 18●●	0.140
15	15	18.5	8...32	32	LUCB 32●●	0.140

Class 10 for single-phase motors

–	–	–	0.15...0.6	12 and 32	LUCB X6●●	0.140
0.09	–	–	0.35...1.4	12 and 32	LUCB 1X●●	0.140
0.55	–	–	1.25...5	12 and 32	LUCB 05●●	0.140
2.2	–	–	3...12	12 and 32	LUCB 12●●	0.140
4	–	–	4.5...18	32	LUCB 18●●	0.140
7.5	–	–	8...32	32	LUCB 32●●	0.140

Class 20 for 3-phase motors

0.09	–	–	0.15...0.6	12 and 32	LUCD X6●●	0.140
0.25	–	–	0.35...1.4	12 and 32	LUCD 1X●●	0.140
1.5	2.2	3	1.25...5	12 and 32	LUCD 05●●	0.140
5.5	5.5	9	3...12	12 and 32	LUCD 12●●	0.140
7.5	9	15	4.5...18	32	LUCD 18●●	0.140
15	15	18.5	8...32	32	LUCD 32●●	0.140

(1) Standard control circuit voltages :

Volts	24	48...72	110...240
–	BL (2), (3)	–	–
~	B	–	–
– or ~	–	ES (4)	FU (5)

(2) Voltage code to be used for a starter-controller with communication module.

(3) d.c. voltage with maximum ripple of ± 10 %.

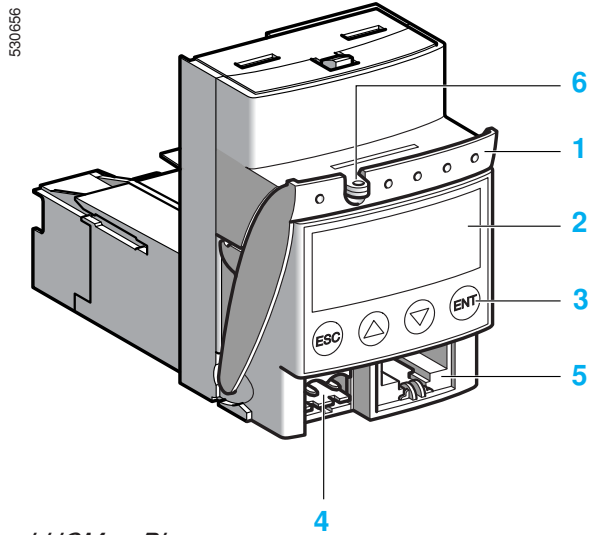
(4) – : 48...72 V, ~ : 48 V.

(5) – : 110...220 V, ~ : 110...240 V.

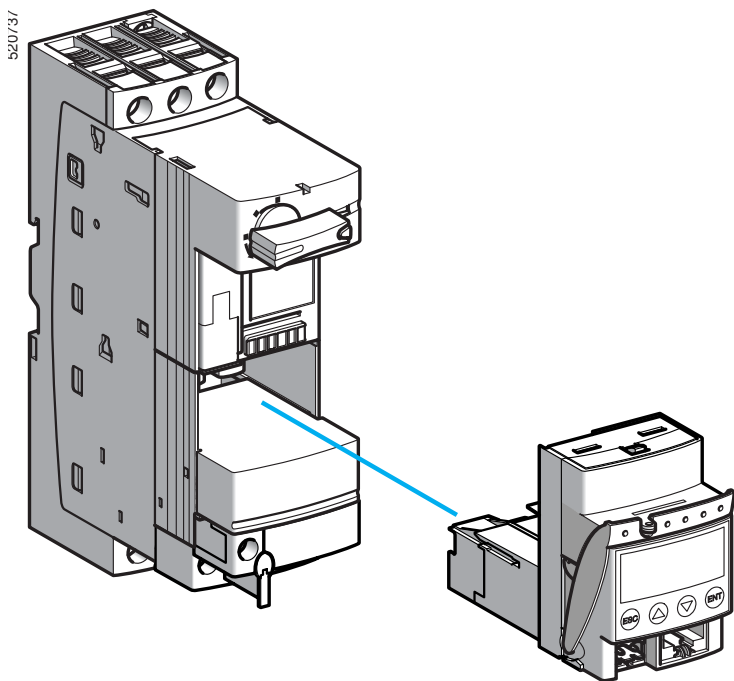
TeSys Model U

Starter-controllers

Multifunction control units



LUCM●●BL



LUB●2 + LUCM●●BL



XBT NU400

Description

- 1 Extraction and locking handle
- 2 Built-in display window (2 lines, 12 characters)
- 3 4-button keypad
- 4 --- 24 V auxiliary power supply
- 5 Modbus RS485 communication port. Connection by RJ45 connector.
- 6 Sealing of locking handle

The display window 2 and keypad 3 allow :

- in configuration mode: local configuration of protection functions and alarms,
- in run mode: display of parameter values and events.

The Modbus communication port 5 is used to connect :

- an operator terminal,
- a PC,
- a Personal Digital Assistant (PDA).

Multifunction control units

Parameter entry, monitoring of parameter values and consultation of logs are carried out :

- either on the front panel, using the built-in display window/keypad,
- or via an operator terminal,
- or via a PC or a PDA with PowerSuite software,
- or remotely, via a Modbus communication bus.

Programming of the product via the keypad requires a --- 24 V auxiliary power supply.

Maximum power ratings of standard 3-phase motors 50/60 Hz			Setting range	Clip-in mounting on power base Rating	Reference (1)	Weight
400/ 415 V		690 V	A	A		kg
0.09	—	—	0.15...0.6	12 and 32	LUCM X6BL	0.175
0.25	—	—	0.35...1.4	12 and 32	LUCM 1XBL	0.175
1.5	2.2	3	1.25...5	12 and 32	LUCM 05BL	0.175
5.5	5.5	9	3...12	12 and 32	LUCM 12BL	0.175
7.5	9	15	4.5...18	32	LUCM 18BL	0.175
15	15	18.5	8...32	32	LUCM 32BL	0.175

TeSys model U user's manual (2)

Application	Language	Reference	Weight kg
On CD-Rom	Multi-language (3)	LU9 CD1	0.022

Operator terminal

This compact Magelis terminal enables the parameters of multifunction control unit LUCM to be read and modified.

It is supplied pre-configured to provide dialogue with 8 model U starter-controllers (Modbus protocol, application pages and alarm pages loaded).

Starter-controller alarm and fault management takes priority.

Language	Display window	Supply voltage	Reference	Weight kg
Multi-language (3)	4 lines of 20 characters	--- 24 V	XBT NU400	0.150

Connecting cable (4)

Function	Length	Type	Reference	Weight kg
Connects terminal XBT NU400 to a multifunction control unit.	2.5 m	SUB-D 25-way female - RJ45	XBT Z938	0.200

(1) Input voltage --- 24 V with maximum ripple of $\pm 10\%$.

(2) The CD-Rom contains user's manuals for the AS-i and Modbus communication modules, multifunction control units and gateway modules, as well as the gateway programming software.

(3) English, French, German, Italian, Spanish

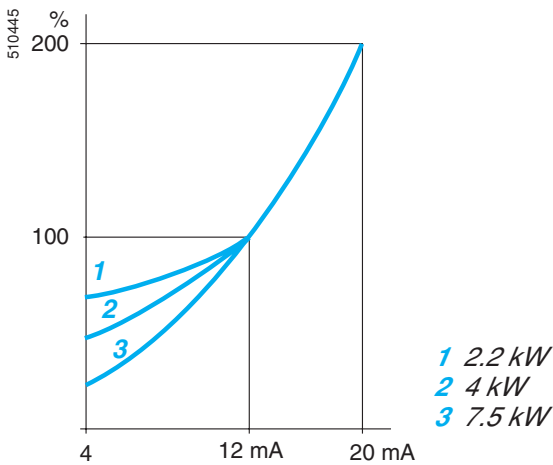
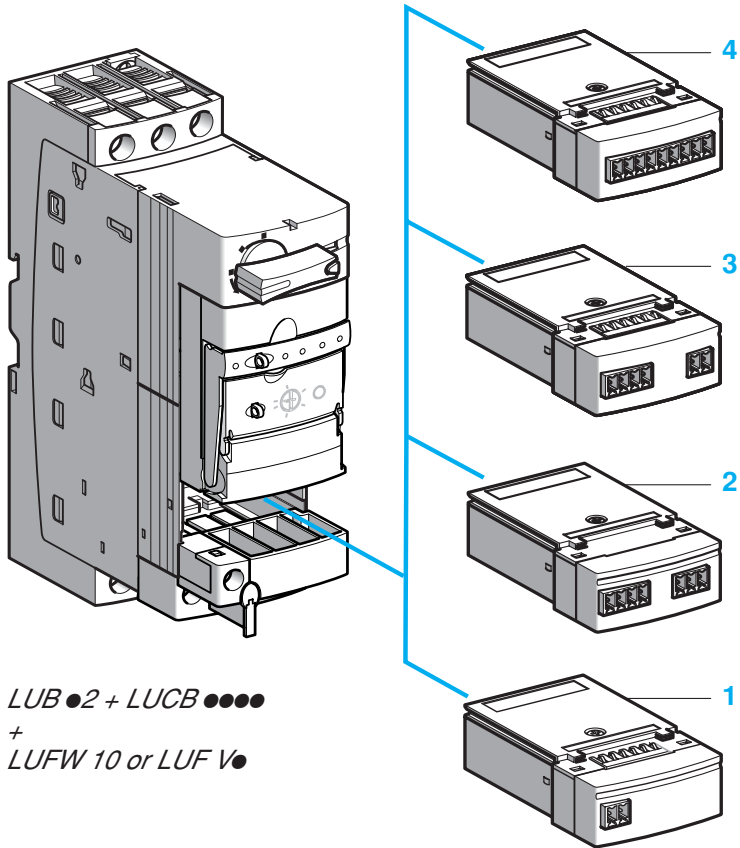
(4) If a terminal is used with several control units, this cable can be connected to a Modbus hub or to T-junctions (see page 31).

TeSys Model U

Starter-controllers

Function modules

533846



Function modules

Output	Item	Application	Reference	Weight kg
Thermal overload signalling and manual reset				
Module LUF DH11 makes it possible to differentiate thermal overload and short-circuit faults. (The short-circuit fault can then be signalled via add-on contact blocks LUA1 C). The module includes two contacts for thermal overload signalling, as well as an LED on the front panel. To reset the motor starter, the operator must use the rotary knob on the power base. The module can only be used with an advanced control unit and requires an $\sim/\text{---} 24\text{...}240\text{ V}$ external power supply.				
1 N/O + 1 N/C	3	\sim or $\text{---} 24\text{...}250\text{ V}$	LUF DH11	0.060

Thermal overload signalling and automatic or remote reset

These modules make it possible to differentiate thermal overload and short-circuit faults. (The short-circuit fault can then be signalled via add-on contact blocks LUA1 C). The modules include one contact for thermal overload signalling, as well as an LED on the front panel. A second contact (terminals Z1-Z2) must be wired in series with terminal A1 of the motor starter. In the event of a thermal overload fault, this wiring allows motor control to be switched off. The rotary knob on the power base will then stay in the "ready position" \odot . Resetting of the motor starter is automatic after the required motor cooling time if terminals X1-X2 are linked by a strap, or remote by pulsed closing of a volt-free contact connected to terminals X1-X2. These modules can only be used with an advanced control unit and require an $\sim/\text{---} 24\text{...}240\text{ V}$ external power supply.

Note : Terminals X1-X2 are not isolated from the signalling module power supply.

1 N/C	4	\sim or $\text{---} 24\text{...}250\text{ V}$	LUF DA01	0.055
1 NO	4	\sim or $\text{---} 24\text{...}250\text{ V}$	LUF DA10	0.055

Thermal overload alarm

Through load shedding, this module makes it possible to avoid stoppages in operation due to overload tripping. Imminent thermal overload tripping is displayed as soon as the thermal state exceeds the threshold of 105 % (hysteresis = 5 %). Signalling is possible via an LED on the front panel of the module and externally by an N/O relay output. It can only be used with an advanced control unit, from which it takes its power.

1 N/O	1	\sim or $\text{---} 24\text{...}250\text{ V}$	LUF W10	0.055
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Indication of motor load

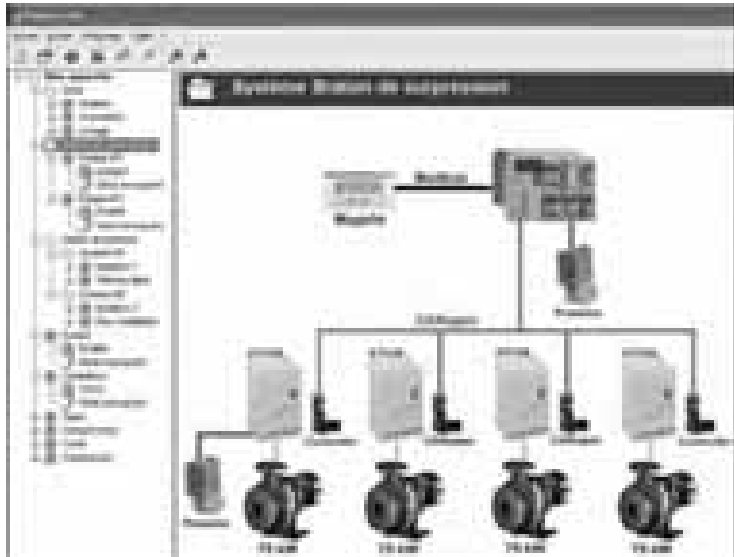
This module provides a signal which is representative of the motor load status (I_{average}/I_r).
 ■ I_{average} = average value of the rms currents in the 3 phases,
 ■ I_r = value of the setting current.
 The value of the signal (4-20 mA) corresponds to a load status of 0 to 200 % (0 to 300 % for a single-phase load).
 It can be used with an advanced or multifunction control unit.
 Module LUF V2 requires a $\text{---} 24\text{ V}$ external power supply.

4 - 20 mA	2	–	LUF V2	0.050
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TeSys Model U

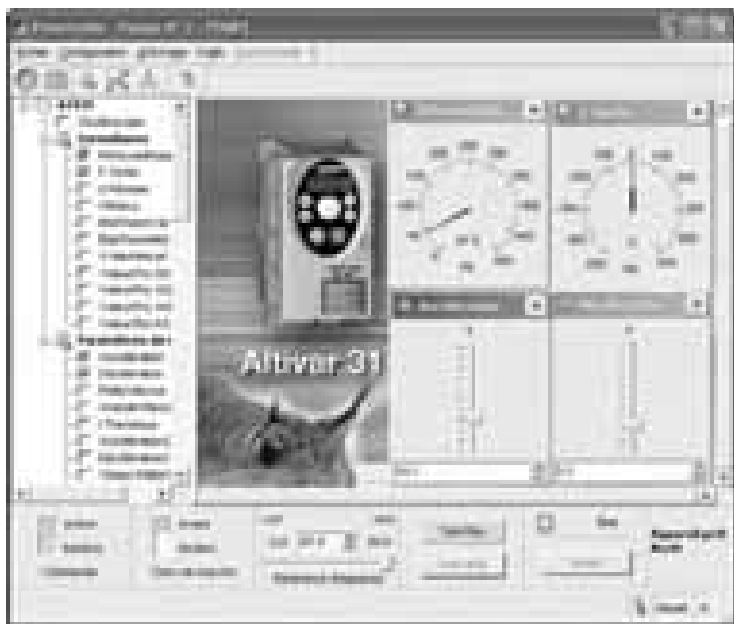
PowerSuite software workshop advanced dialogue solutions

531819



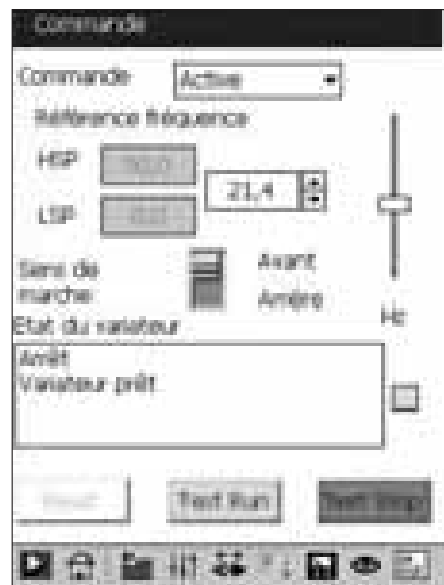
PowerSuite with PC screen
Installation management

531820



PowerSuite with PC screen
Monitoring screen

531440



PowerSuite with Pocket PC screen

Presentation

The PowerSuite software workshop, for PC or Pocket PC, is designed for setting up Telemecanique starters and variable speed drives.

This single program is an easy-to-use interface for configuring Altistart and Tesys model U starters as well as all Altivar drives in a Microsoft Windows® environment, in five languages (English, French, German, Italian and Spanish).

Functions

The PowerSuite software workshop can be used for preparing, programming, setting up and maintaining Telemecanique starters and variable speed drives.

The PowerSuite software workshop can be used:

- stand alone to prepare and store starter or drive configuration files,
- connected to the starter or drive to:
 - configure,
 - adjust,
 - monitor (except for Altivar 11 drives),
 - control (except for Altivar 11 drives),
 - transfer and compare configuration files between PowerSuite and the starter or drive.

The configuration files generated by the PowerSuite software workshop can be:

- saved to hard disk, CD-Rom, floppy disk, etc...
- printed,
- exported to office automation software applications,
- exchanged between a PC and a Pocket PC using standard synchronization software. PowerSuite PC and Pocket PC configuration files have the same format,
- they are password protected.

The software associated with the Altivar 31 has been enhanced to include: oscilloscope function, parameter name customisation, creation of a user menu, creation of monitoring screens, searching and sorting on different parameters. The PowerSuite software workshop has on-line contextual help.

Connections

- The PowerSuite software workshop can be connected directly to the terminal port on the starter or variable speed drives, via the serial port on the PC or Pocket PC. Two types of connection are possible:
 - either with a single starter or drive (point to point connection)
 - or with a group of starters or drives (multi-point connection).

- The PowerSuite software workshop for PC can be connected to an Ethernet network. In this case the starters and drives can be accessed using:
 - either an Ethernet-Modbus 174 bridge CEV 300 20,
 - or a communication option card VW3 A58310 (for Altivar 38, 58 and 58F drives only).

Hardware and software environment

■ The PowerSuite for PC software workshop can operate in the following PC environments and configurations:

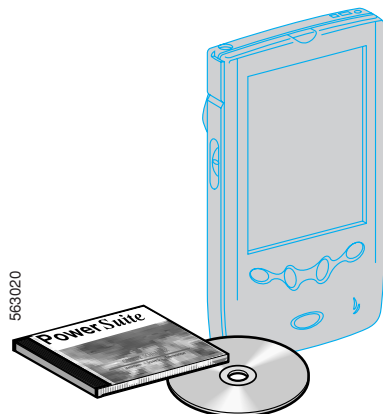
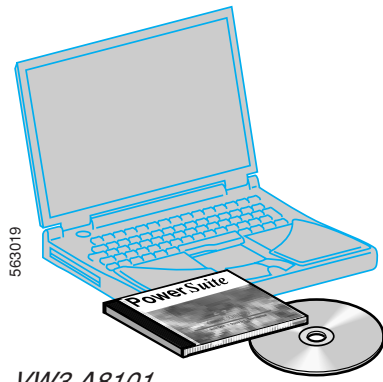
- Microsoft Windows® 95 OSR2, Microsoft Windows® 98 SE, Microsoft Windows® NT4 X SP5, Microsoft Windows® Me, Microsoft Windows® 2000, Microsoft Windows® XP,
- Pentium III, 800 MHz, hard disk with 300 Mb available, 128 Mb RAM,
- SVGA or higher definition monitor

■ The PowerSuite for Pocket PC software workshop, version V2.0.0, is compatible with Pocket PCs equipped with Windows for Pocket PC 2002 or 2003 operating system and an ARM or XSCALE processor.

Performance tests for version V2.00 of the PowerSuite software workshop have been carried out on the following Pocket PCs:

- Hewlett Packard® IPAQ 2210,
- Compaq® IPAQ series 3800 and 3900,
- Hewlett Packard® Jornada series 560.

References



PowerSuite software workshop for PC or Pocket PC (1)

Description	Composition	Reference	Weight kg
PowerSuite for PC kit	<ul style="list-style-type: none"> 1 PowerSuite CD-Rom 1 PC connection kit. 	VW3 A8101	0.400
PowerSuite for Pocket PC kit (2)	<ul style="list-style-type: none"> 1 PowerSuite CD-Rom, 1 Pocket PC connection kit. 	VW3 A8102	0.400
PowerSuite CD-Rom	<ul style="list-style-type: none"> Software for PC and Pocket PC in English, French, German, Italian and Spanish, technical documentation and ABC configurator program. 	VW3 A8104	0.100
PowerSuite upgrade CD	<ul style="list-style-type: none"> Software for PC and Pocket PC in English, French, German, Italian and Spanish, technical documentation and ABC configurator program. 	VW3 A8105	0.100
PC connection kit	<ul style="list-style-type: none"> 2 x 3 m connection cables with 2 x RJ 45 connectors, 1 RJ 45/9-way SUB-D adapter for connecting ATV 58/58F/38 drives, 1 RJ 45/9-way SUB-D adapter for connecting ATV 68 drives, 1 converter marked "RS 232/RS 485 PC" with one 9-way female SUB-D connector and one RJ 45 connector, 1 converter for ATV 11 drives, with one 4-way male connector and one RJ 45 connector. 	VW3 A8106	0.350
Pocket PC connection kit (2)	<ul style="list-style-type: none"> 2 x 0.6 m connection cables with 2 x RJ 45 connectors, 1 RJ 45/9-way SUB-D adapter for connecting ATV 58/58F/38 drives, 1 converter marked "RS 232/RS 485 PPC" with one 9-way male SUB-D connector and one RJ 45 connector, 1 converter for ATV 11 drives, with one 4-way male connector and one RJ 45 connector. 	VW3 A8111	0.300

(1) To find out about the latest available version, please call our Customer Information Centre on 0870 608 8 608.

(2) These kits connect to the synchronization cable, which must be ordered separately from your Pocket PC supplier.

Compatibility

Compatibility of the PowerSuite software workshop with starters and variable speed drives		Starter-controller	Soft start/soft stop unit	Variable speed drives					
		TeSys model U	ATS 48	ATV 11	ATV 28	ATV 31	ATV 38	ATV 58 ATV 58F	ATV 68
PowerSuite software workshop with serial link for PC									
Kit and CD-Rom	VW3 A8101 VW3 A8104 VW3 A8105	≥ V 1.40	≥ V 1.30	≥ V 1.40	≥ V 1.0	≥ V 2.0.0	≥ V 1.40	≥ V 1.0	≥ V 1.50
PowerSuite software workshop with Ethernet link for PC									
Kit and CD-Rom	VW3 A8101 VW3 A8104 VW3 A8105	—	≥ V 1.50 and Ethernet-Modbus bridge	—	≥ V 1.50 and Ethernet-Modbus bridge	≥ V 2.0.0 and Ethernet-Modbus bridge	≥ V 1.50 and Ethernet V2 communication card or bridge	—	—
PowerSuite software workshop for Pocket PC									
Kit and CD-Rom	VW3 A8102 VW3 A8104 VW3 A8105	≥ V 1.50	≥ V 1.30	≥ V 1.40	≥ V 1.20	≥ V 2.0.0	≥ V 1.40	≥ V 1.20	—

Compatible products and software versions.

Non compatible products.

Compatibility of the PowerSuite software workshops with Pocket PCs

Operating system	Performance tests carried out on models	PowerSuite software version			
		V 1.30	V 1.40	V 1.50	V 2.0.0
Windows for Pocket PC 2003	Hewlett Packard® IPAQ 2210	no	no	no	yes
Windows for Pocket PC 2002	Compaq® IPAQ series 3800, 3900	no	no	yes	yes
	Hewlett Packard® Jornada series 560	no	yes	yes	yes
Windows for Pocket PC 2000	Hewlett Packard® Jornada series 525	yes	yes	yes	no
Windows CE	Hewlett Packard® Jornada 420	yes	no	no	no

Presentation

The TeSys model U starter-controller provides **Total Coordination** to IEC/EN 60947-6-2 under overcurrent conditions up to 50kA at 400V for motor loads up to 32A. This standard provides for continuity of service with no welding of the main poles being permitted under short circuit conditions.

Above 32 A, the model U controller provides a motor starter management solution identical to that provided by TeSys model U starter-controllers.

Used in conjunction with a short-circuit protection device and a contactor, it provides a motor starter whose functions are the same as those of a TeSys model U starter-controller and, in particular, provides motor starter overload protection and control functions.

The following starter combinations provide **Type 2 Coordination** to IEC/EN 60947-4-1 under overcurrent conditions up to 50kA at 400V. This standard provides for continuity of service where only light tack welding of the contactor poles (easily broken) is permitted under short circuit conditions..

Composition

A TeSys model U controller consists of a control unit whose adjustment range is compatible with the secondary of current transformers, plus a control base which also allows fitment of a function module or a communication module.
It requires a \sim 24 V external power supply.

Combinations providing Type 2 Coordination at 50kA

With circuit-breaker

Standard power ratings of 3-phase motors 50-60 Hz Category AC-3 400/415 V		Circuit-breaker ⁽¹⁾			Contactor	Model U controller	Current transformers
P kW	I _e A	Reference	Rating A	I _{rm} ⁽²⁾ A	Reference ⁽³⁾	Reference	Reference
18,5	35	NS80H MA50	50	500	LC1 D40	LUTM + LUC●	3 x LUT C1001
22	42	NS80H MA50	50	650	LC1 D50	LUTM + LUC●	3 x LUT C1001
30	57	NS80H MA80	80	880	LC1 D65	LUTM + LUC●	3 x LUT C1001
37	69	NS80H MA80	80	1040	LC1 D80	LUTM + LUC●	3 x LUT C1001
45	81	NS100H MA100	100	1300	LC1 D115	LUTM + LUC●	3 x LUT C1001
55	100	NS160H MA150	150	1350	LC1 D115	LUTM + LUC●	3 x LUT C1001
75	135	NS160H MA150	150	1800	LC1 D150	LUTM + LUC●	3 x LUT C4001
90	165	NS250H MA220	220	2200	LC1 F185	LUTM + LUC●	3 x LUT C4001
110	200	NS250H MA220	220	2640	LC1 F225	LUTM + LUC●	3 x LUT C4001
132	240	NS400H MA320	320	3200	LC1 F265	LUTM + LUC●	3 x LUT C4001
160	285	NS400H MA320	320	4160	LC1 F330	LUTM + LUC●	3 x LUT C4001
200	352	NS630H MA500	500	5000	LC1 F400	LUTM + LUC●	3 x LUT C4001
220	388	NS630H MA500	500	5500	LC1 F400	LUTM + LUC●	3 x LUT C4001
250	437	NS630H MA500	500	6000	LC1 F500	LUTM + LUC●	3 x LUT C8001

With fuses

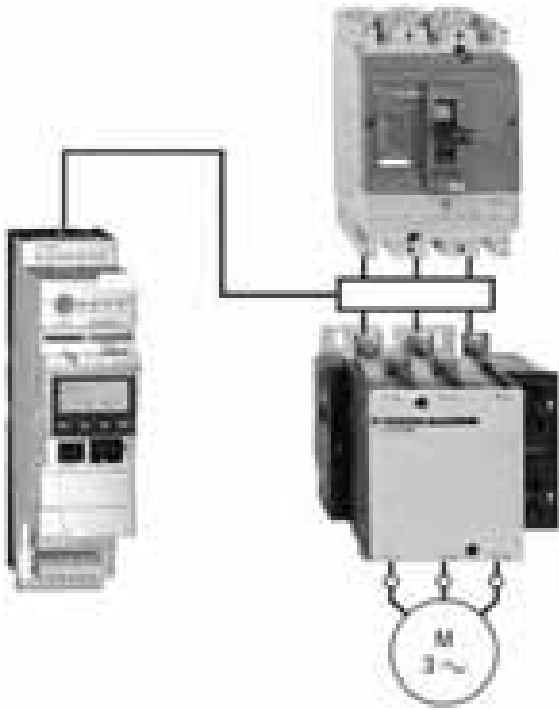
Standard power ratings of 3-phase motors 50-60 Hz Category AC-3 400/415 V		Switch disconnector-fuse	gG fuses GE Power Controls 'RED SPOT'		Contactor	Model U controller	Current transformers
P kW	I _e A	Reference	Size	Reference A	Reference ⁽³⁾	Reference	Reference
18,5	35	GS1 GB30	A3	TIS63M80	LC1 D40	LUTM + LUC●	3 x LUT C1001
22	42	GS1 GB30	A3	TIS63M80	LC1 D50	LUTM + LUC●	3 x LUT C1001
30	57	GS1 GB30	A3	TIS63M100	LC1 D65	LUTM + LUC●	3 x LUT C1001
37	69	GS1 LLB30	A4	TCP100M125	LC1 D80	LUTM + LUC●	3 x LUT C1001
45	81	GS1 LLB30	A4	TCP100M125	LC1 D95	LUTM + LUC●	3 x LUT C1001
55	100	GS1 LLB30	A4	TCP100M160	LC1 D115	LUTM + LUC●	3 x LUT C1001
75	135	GS1 LB30	B2	TF200M250	LC1 D150	LUTM + LUC●	3 x LUT C4001
90	165	GS1 MMB30	B2	TF200M250	LC1 F185	LUTM + LUC●	3 x LUT C4001
110	200	GS1 MMB30	B2	TF200M315	LC1 F225	LUTM + LUC●	3 x LUT C4001
132	240	GS1 NB30	B3	TKF315M355	LC1 F265	LUTM + LUC●	3 x LUT C4001
160	285	GS1 PPB30	B3	TKF315M355	LC1 F330	LUTM + LUC●	3 x LUT C4001
200	352	GS1 QQB30	B4	TMF400M450	LC1 F400	LUTM + LUC●	3 x LUT C4001
220	388	GS1 QQB30	B4	TMF400M450	LC1 F400	LUTM + LUC●	3 x LUT C4001
250	437	GS1 SB30	C2	TTM500	LC1 F500	LUTM + LUC●	3 x LUT C8001
315	555	GS1 SB30	C2	TTM500	LC1 F630	LUTM + LUC●	3 x LUT C8001

(1) Product marketed under the Merlin Gerin brand.

(2) I_{rm} : setting current of the magnetic trip

(3) For reversing operation, replace the prefix LC1 with LC2.

532083



LUT M + LUCM T1BL

References

Control bases (control circuit voltage $\bar{=}$ 24 V)

Connection	Control	For use with contactor	Reference	Weight kg
Screw	Screw	LC1 D●●	LUT M10BL	0.800
		LC1 F●●●	LUT M20BL	0.800

Control units

Description	Class	For motor type	Setting range	Reference	Weight kg
Advanced	10	3-phase	0.35...1.05	LUCB T1BL	0.140
	20	3-phase	0.35...1.05	LUCD T1BL	0.140
Multifunction	5 to 30	3-phase	0.35...1.05	LUCM T1BL	0.175

Current transformers

Operating current		Reference	Weight kg
Primary	Secondary		
30	1	LUT C0301	0.200
50	1	LUT C0501	0.200
100	1	LUT C1001	0.200
200	1	LUT C2001	0.200
400	1	LUT C4001	0.430
800	1	LUT C8001	0.600

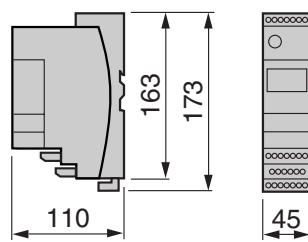
Function modules and communication modules

The TeSys model U controller is fully compatible with the modules listed below.

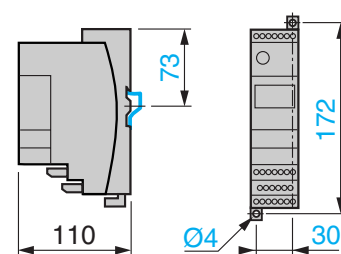
- Thermal overload alarm module LUF W10, see page 21.⁽²⁾
- Motor load indication module LUF V2, see page 21.
- Modbus communication module LUL C033, see page 30.

Dimensions, mounting

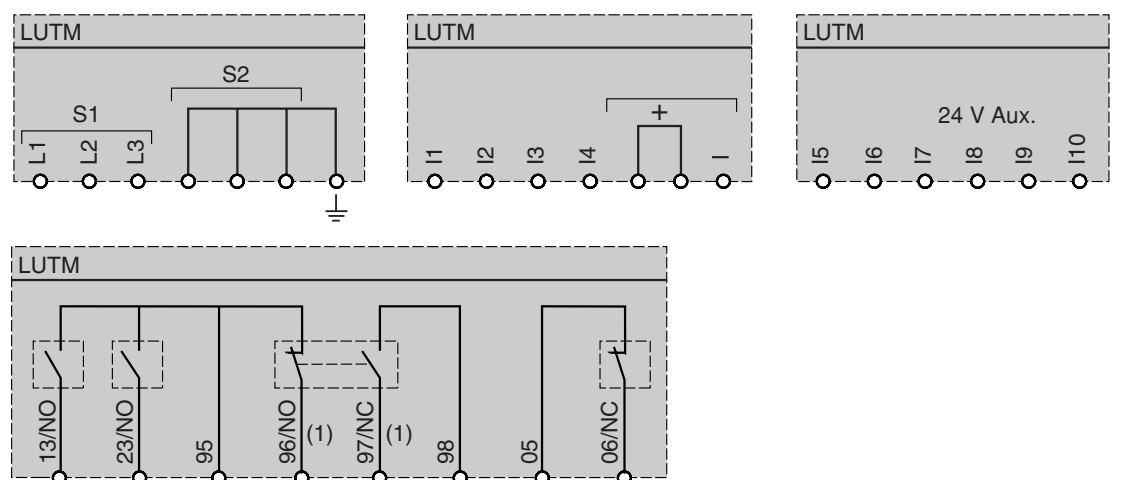
Dimensions



Mounting



Schemes



(1) The contacts are represented with controller powered up and not in a fault condition.
(2) Module LUF W10 is only compatible with control units LUCB T1BL and LUCD T1BL.

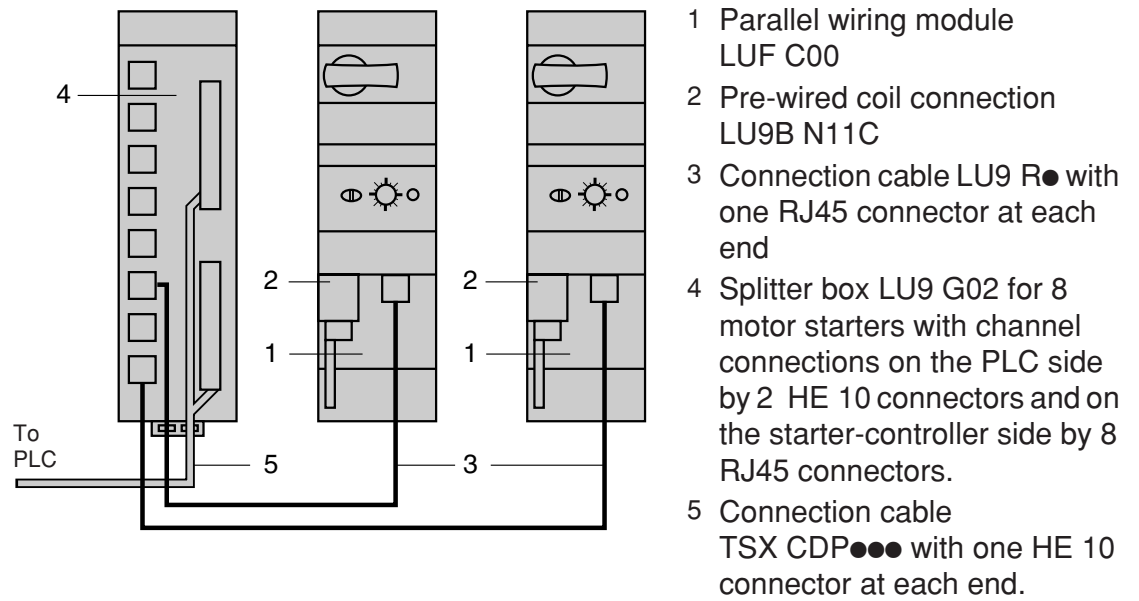
TeSys Model U

Starter-controllers

Parallel wiring module and pre-wired coil connection components

Parallel type connection

Architecture



Parallel wiring module

The parallel wiring system makes it possible to connect starter-controllers to the PLC I/O modules quickly and without any need for tools. It replaces traditional screw terminal and single wire connections. It is used with the Telefast pre-wired system. The parallel wiring module provides the status and command information for each starter-controller. It must be used with a 24 V control unit, LUC BL. Splitter box LUF GO2 distributes information from the PLC I/O modules to each of the starter-controllers connected to it.

This splitter box is optimised for use with card TSX DMZ28DTK.

When used in conjunction with the Advantys STB distributed I/O solution, the model U starter-controller is ideal in decentralised automation architecture (1).

The use of dedicated parallel interface module STB EPI 2145 allows remote connection of 4 starter-controllers.

Each of the dedicated module's 4 channels has:

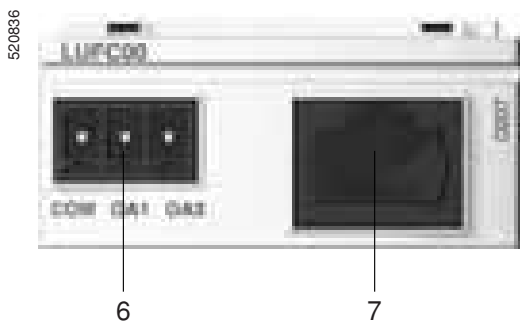
- 2 outputs: control of starter forward and reverse running,
- 3 inputs: position of the knob, fault indication and position of the poles.

Connection to the dedicated module is by means of the following cables:

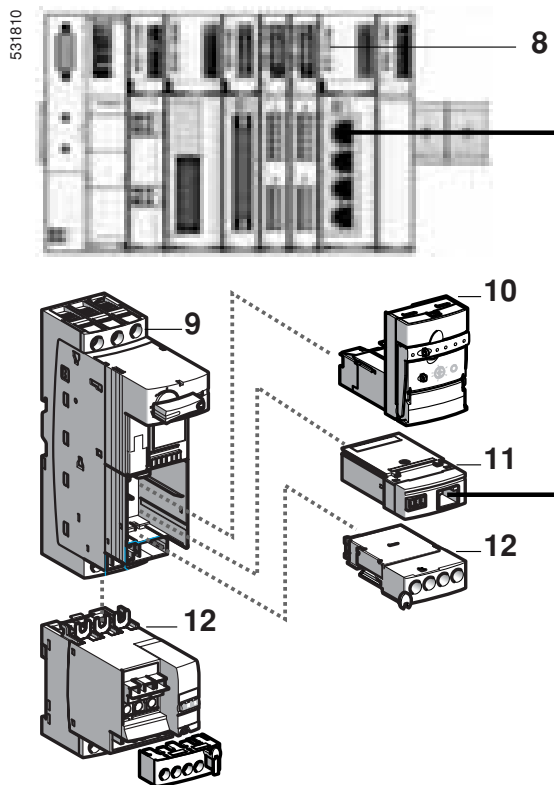
- RJ45 LU9R, for lengths less than 3 metres,
- 490 NTW 000, for lengths greater than 3 metres

Description	Item	Reference	Weight kg
Parallel wiring module	1	LUF C00	0.045

(1) Please consult our "Distributed I/O Advantys STB, the open device integration I/O system" catalogue



- 6 Outputs for starter commands
- 7 RJ45 connector for connecting to splitter box

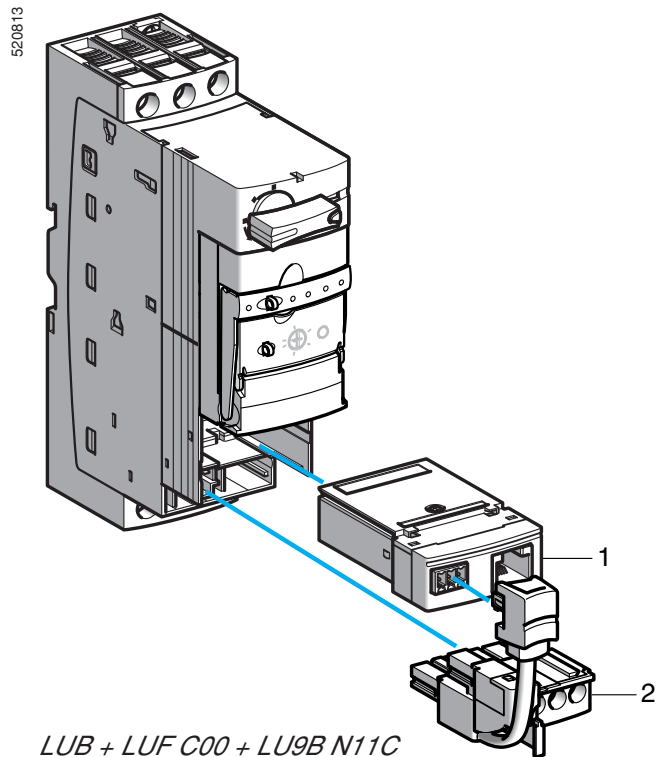


- 8 Dedicated parallel interface module (STB EPI 2145)
- 9 Power base
- 10 24 V control unit (LUC B/D/C/M BL)
- 11 Parallel wiring module (LUF C00)
- 12 Options: add-on contact blocks, reverser blocks

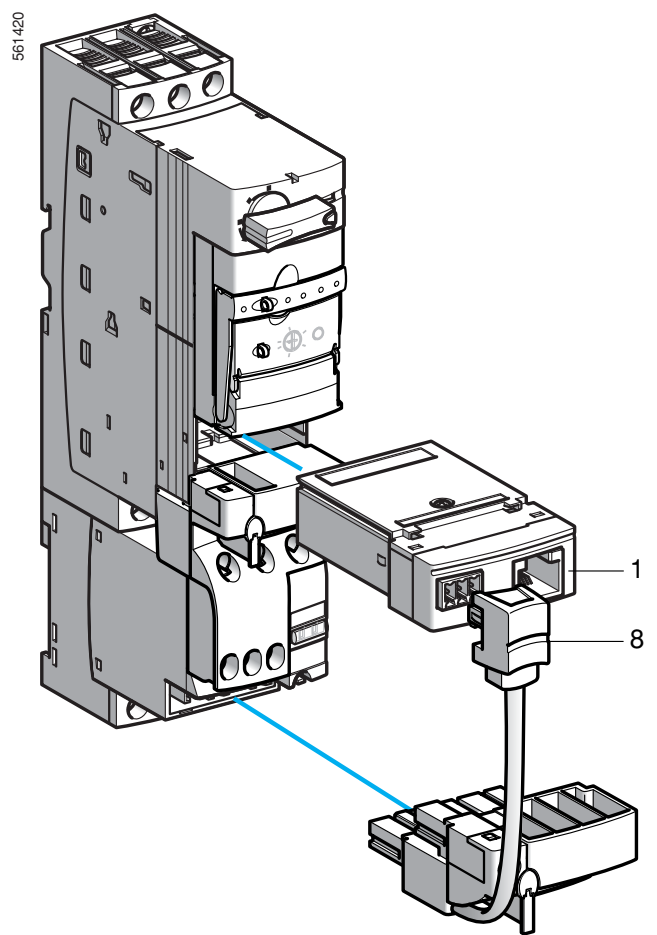
TeSys Model U

Starter-controllers

Parallel wiring module and pre-wired coil connection components



LUB + LUF C00 + LU9B N11C



LU2B + LUFC00 + LU9MRC

Pre-wired components simplify wiring and reduce wiring errors.

Connection of communication module output terminals to the coil terminals

By pre-wired connector or wire link.

■ Pre-wired connector : pre-wired coil connection

The use of a power base without pre-wired connections is recommended.

Description	For use with power base	Item	Reference	Weight kg
Pre-wired coil connection	LUB ●●	2	LU9B N11C	0.045
	LU2B ●●	8	LU9M RC	0.030

■ Wire link :

Allows insertion, for example, of an emergency stop control or a voltage interface. This type of connection must be used for a reversing starter-controller assembled using an LU6M reverser block for separate mounting. When reverser block LU6M and the power base are mounted side-by-side, a pre-wired connector LU9M RC may be used.

Connection of parallel wiring module to the PLC

No tools are required to connect the parallel wiring module to the PLC. Connection is via a splitter box which allows up to 8 starter-controllers to be connected; a maximum of 4 reversing starters per splitter box is allowed.

The splitter box requires a \approx 24 V power supply.

Splitter box

Connectors	Item	Reference	Weight kg
PLC side (16I/12O)	Starter-controller side		
2 x HE 10 20-way	8 x RJ45	4	LU9 G02 (1)
			0.260

Connection cables to the splitter box

Connectors	Item	Length m	Reference	Weight kg
2 x RJ45 connectors	3	0.3	LU9 R03	0.045
		1	LU9 R10	0.065
		3	LU9 R30	0.125

Connection cables from splitter box to PLC

Type of connection	Gauge	C.s.a.	Length	Reference	Weight					
PLC side	Splitter box side									
HE 10 20-way	HE 10 20-way	22	0.324	0.5	TSX CDP 053	0.085				
				1	TSX CDP 103	0.150				
				2	TSX CDP 203	0.280				
				3	TSX CDP 303	0.410				
				5	TSX CDP 503	0.670				
		28	0.080	1	ABF H20 H100	0.080				
				2	ABF H20 H200	0.140				
				3	ABF H20 H300	0.210				
				Bare wires	HE 10 20-way	22	0.324	3	TSX CDP 301	0.400
				5				TSX CDP 501	0.660	

(1) Allows "run" and "fault" status of each starter-controller to be fed back to the PLC and transmits commands.

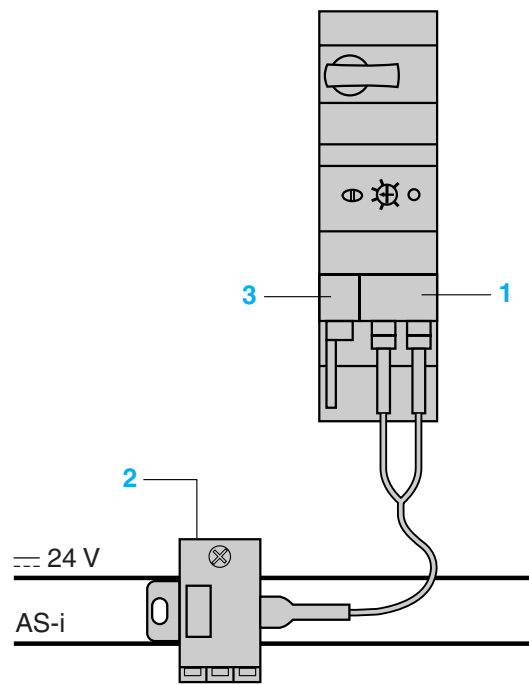
TeSys Model U

Starter-controllers

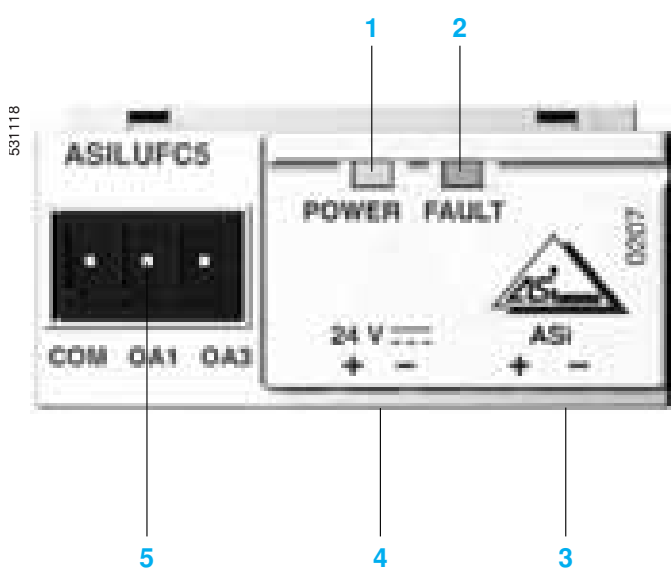
AS-Interface cabling system

Series type connection

Architecture



- 1 Communication module ASILUF C5
- 2 Tap-off XZ CG0142
- 3 Pre-wired coil connection LU9B N11C



- 1 Green LED: AS-Interface voltage present
- 2 Red LED: AS-Interface or module fault
- 3 Yellow connector for connection to the AS-Interface system
- 4 Black connector for connection to a 24 V auxiliary power supply
- 5 Outputs for starter commands

Information transmitted by the AS-Interface system

AS-Interface profile		7.D.F.0	
Data bits (command)	Bit value	= 0	= 1
	Command D0 (O)	Stop forward	Forward running
	Command D1 (O)	Stop reverse	Reverse running
	Command D2 (O)	Not used	Not used
	Command D3 (O)	Not used	Not used
Data bits (status)	Bit value	= 0	= 1
	Status D0 (I)	Not ready or fault	Ready
	Status D1 (I)	Stopped	Running
	Status D2 (I)	Not used	Not used
	Status D3 (I)	Not used	Not used

AS-Interface communication module

The AS-Interface communication module makes it easy to connect starter-controllers to the AS-Interface cabling system, and therefore allows remote control and command of these starter-controllers.

The various operating states of the module (AS-Interface voltage present, communication fault, addressing fault,...) are indicated on the front panel by 2 LEDs (green and red).

Operation of the module is continuously monitored by auto-testing, in a way that is totally transparent to the user.

The incorporation of AS-Interface V.2.1 functions allows diagnostics to be performed on the module, either remotely via the bus or locally via the ASI TERV2 addressing terminal.

The communication module must be connected to a 24 V auxiliary power supply and must be used in conjunction with a 24 V control unit, LUC● ●●BL.

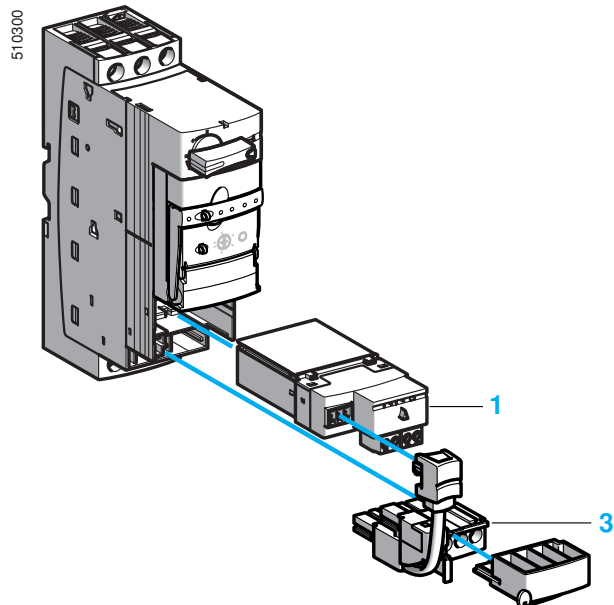
The product is supplied with a yellow connector 6 for connection to the AS-Interface system, a black connector 7 for connection to the 24 V auxiliary supply and a black connector 8 for connection of the outputs.

Description	Item	Reference	Weight kg
Communication module	1	ASILUF C5	0.065

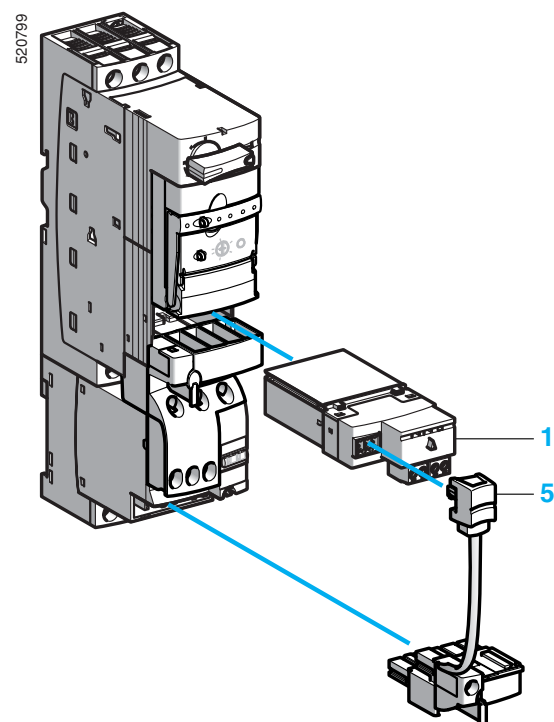
TeSys Model U

Starter-controllers

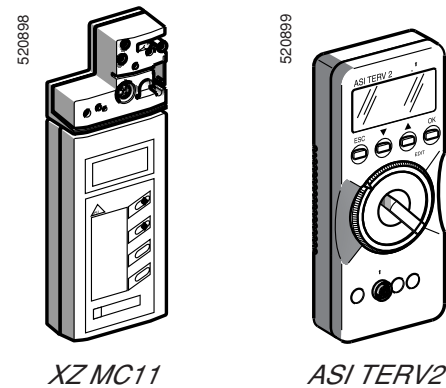
AS-Interface cabling system



LUB + ASILUF C5 + LU9B



LU2B + ASILUF C5 + LU9M



XZ MC11

ASI Terv2

Pre-wired components simplify wiring and reduce wiring errors.

Connection of communication module output terminals to the coil terminals

By pre-wired connector or wire link.

■ Pre-wired connector: pre-wired coil connection

The use of a power base without pre-wired control circuit connections is recommended.

Description	For use with power base	Item	Reference	Weight kg
Pre-wired coil connection	LUB ●●	3	LU9B N11C	0.045
	LU2B ●●	5	LU9M RC	0.030

■ Wire link

Allows insertion, for example, of an emergency stop control or a voltage interface. This type of connection must be used for a reversing starter-controller assembled using an LU6M reverser block for separate mounting. When reverser block LU6M and the power base are mounted side-by-side, a pre-wired connector LU9M RC may be used.

Connection of the communication module on the serial bus (1)

Achieved by using a tap-off for connection to 2 ribbon cables:

- 1 for AS-Interface (yellow).
- 1 for separate \pm 24 V supply (black).

Description	Length m	Reference	Weight kg
Tap-off	2	XZ CG0142	0.265

Consoles and cable adaptors

Description	Reference	Weight kg
Addressing console Battery operated. Battery charger supplied AS-Interface V.1 and V.2.1 compatible	XZ MC11	0.550
Adjustment and diagnostics console Runs on LR6 batteries Allows addressing of AS-Interface V.2.1 interfaces and diagnostics	ASI Terv2	0.500
Cable adaptor For console XZ MC11	XZ MG12	0.070

Software set-up

AS-Interface configuration is carried out using PL7 Micro/Junior/Pro software. From the module declaration screen, it is possible to configure all the slave devices corresponding to all the AS-Interface I/O.

Configuration is carried out by following the instructions on the screen.

TeSys model U user's manual (2)

Application	Language	Reference	Weight kg
On CD-Rom	Multi-language (3)	LU9 CD1	0.022

(1) Degree of protection IP 54. Connection by 4 x 0.34 mm² wires.

Black wire: +24 V.

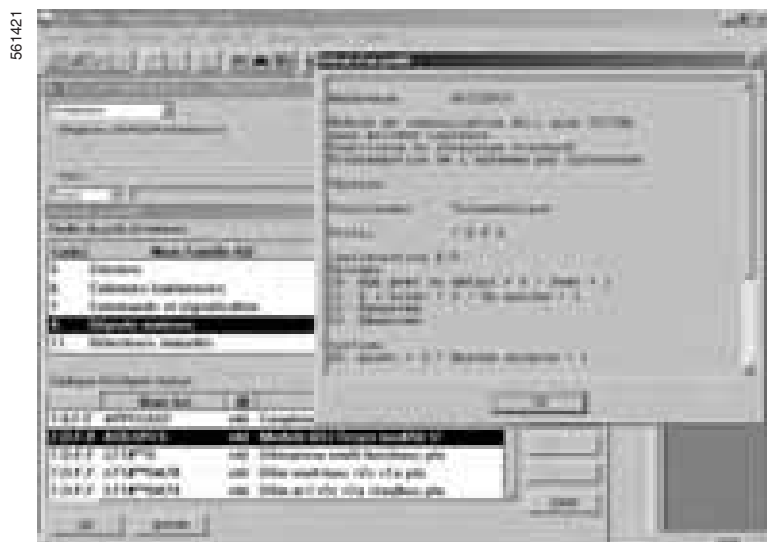
White wire: 0 V.

Blue wire: AS-Interface (-).

Brown wire: AS-Interface (+).

(2) The CD-Rom contains user's manuals for the AS-Interface and Modbus communication modules, multifunction control units and gateway modules, as well as the gateway programming software.

(3) English, French, German, Italian, Spanish



Configuration example with Premium TSX SAY 100/1000 module

TeSys Model U

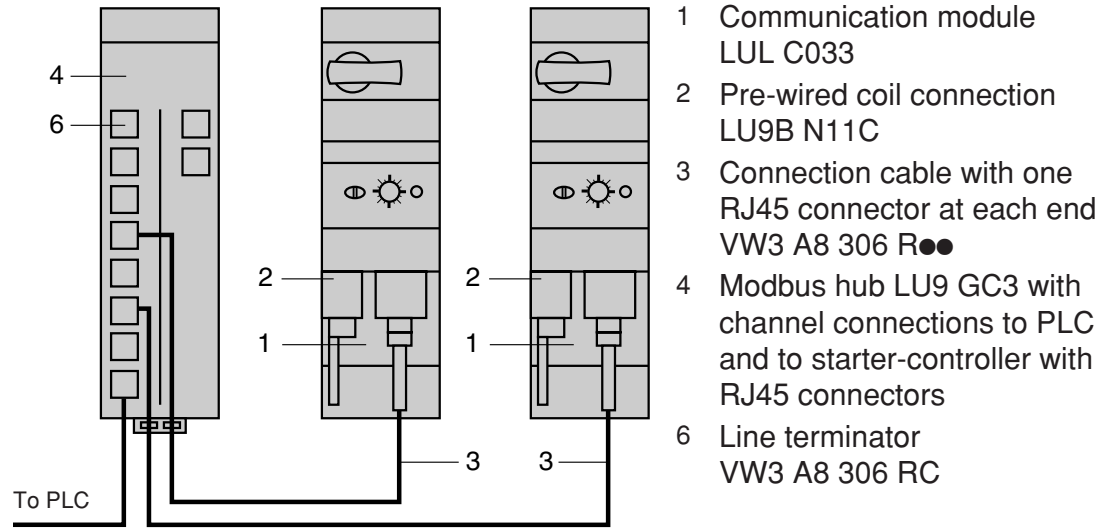
Starter-controllers

Modbus communication module and pre-wired coil connection components

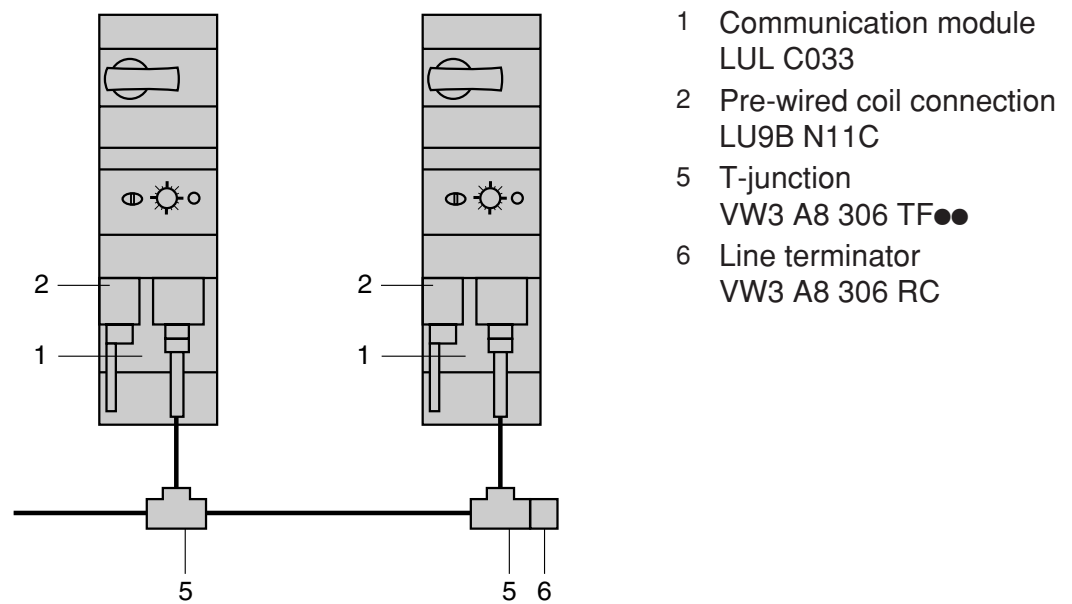
Series type connection

Architecture

■ Star topology



■ Bus topology



Information carried by the bus

Depends on the type of control unit used.

Control unit	Standard	Advanced	Multifunction
Starter status (ready, running, fault)			
Alarms (overcurrent, ...)			
Thermal overload alarm			
Remote reset via the bus			
Indication of motor load			
Fault differentiation			
Remote programming and monitoring of all functions			
"Log" function			
"Monitoring" function			
Start and Stop commands			

Functions performed

For more detailed information, please refer to User's Manual LU9 CD1, see page opposite.

Modbus communication module

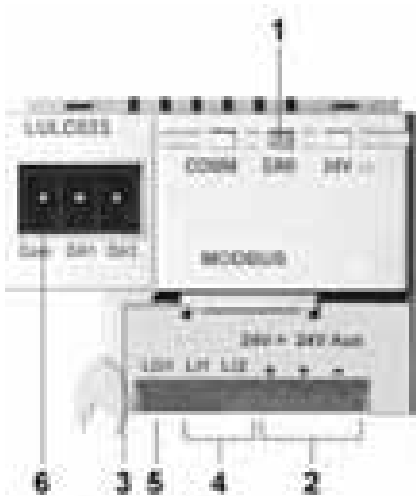
Communication module LUL C033 enables the model U starter-controller to be connected to the Modbus network.

It must have a 24 V supply and must be used in conjunction with a 24 V control unit, LUC● ●●BL.

It incorporates a 0.5 A, 24 V digital output for local command requirements and two configurable digital inputs.

Description	Item	Reference	Weight kg
Communication module	1	LUL C033 ▲	0.080

510377

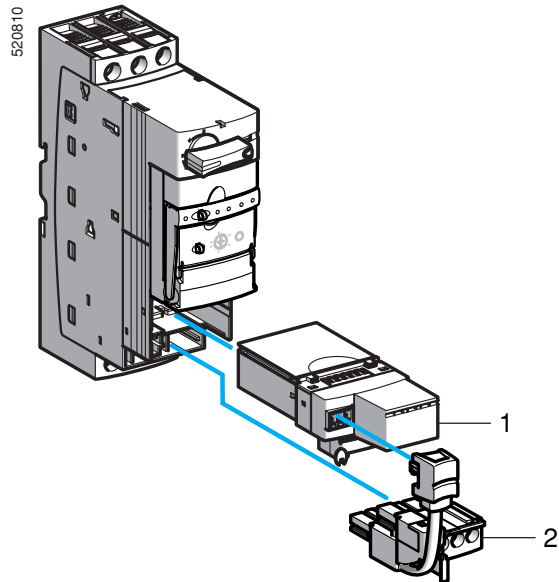


- 1 Module status signalling LED
- 2 24 V supply connection
- 3 RJ45 connector RS485 for Modbus link
- 4 2 digital inputs
- 5 1 digital output
- 6 Outputs for starter commands

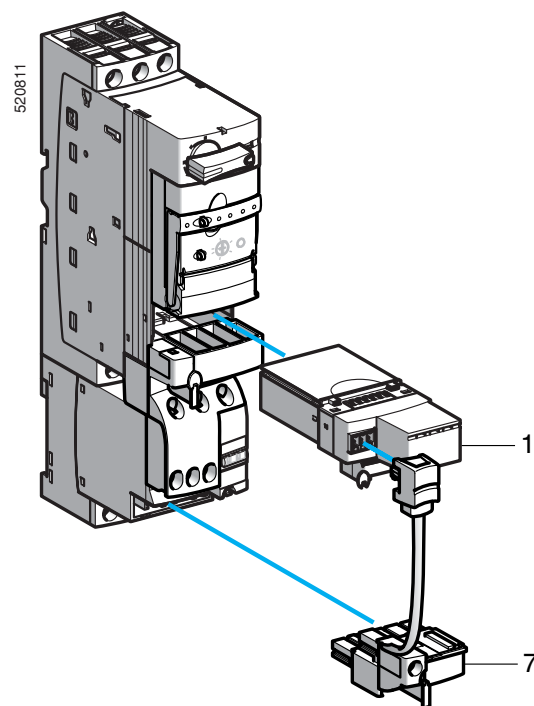
TeSys Model U

Starter-controllers

Modbus communication module and pre-wired coil connection components



LUB + LUL C033 + LU9B



LU2B + LUL C033 + LU9M

Pre-wired components simplify wiring and reduce wiring errors.

Connection of communication module output terminals to the coil terminals

By pre-wired connector or wire link.

■ Pre-wired connector : pre-wired coil connection

The use of a power base without pre-wired control circuit connections is recommended.

Description	For use with power base	Item	Reference	Weight kg
Pre-wired coil connection	LUB ●●	2	LU9B N11C	0.045
	LU2B ●●	7	LU9M RC	0.030

■ Wire link :

Allows insertion, for example, of an emergency stop control or a voltage interface. This type of connection must be used for a reversing starter-controller assembled using an LU6M reverser block for separate mounting. When reverser block LU6M and the power base are mounted side-by-side, a pre-wired connector LU9M RC may be used.

Connection of the communication module on the serial bus

Achieved either by means of a Modbus hub or using T-junctions.

Description	Length m	Item	Reference	Weight kg
Modbus hub 8 slaves	–	4	LU9 GC3	0.260
Cables fitted with two RJ45 connectors	0.3	3	VW3 A8 306 R03	0.045
	1	3	VW3 A8 306 R10	0.065
	3	3	VW3 A8 306 R30	0.125
T-junctions (1)	0.3	5	VW3 A8 306 TF03	0.032
	1	5	VW3 A8 306 TF10	0.032
RS 485 line terminator	–	6	VW3 A8 306 RC	0.012

TeSys model U user's manual (2)

Application	Language	Reference	Weight kg
On CD-Rom	Multi-language (3)	LU9 CD1	0.022

(1) Fitted with 2 RJ45 female connectors (bus side) and a 0.3 m or 1 m length cable supplied with an RJ45 male connector (station side).

(2) The CD-Rom contains user's manuals for the AS-Interface and Modbus communication modules, multifunction control units and gateway modules, as well as the gateway programming software.

(3) English, French, German, Italian, Spanish.

TeSys Model U

Starter-controllers

Starters, drives and communication

Communication gateways LUF P

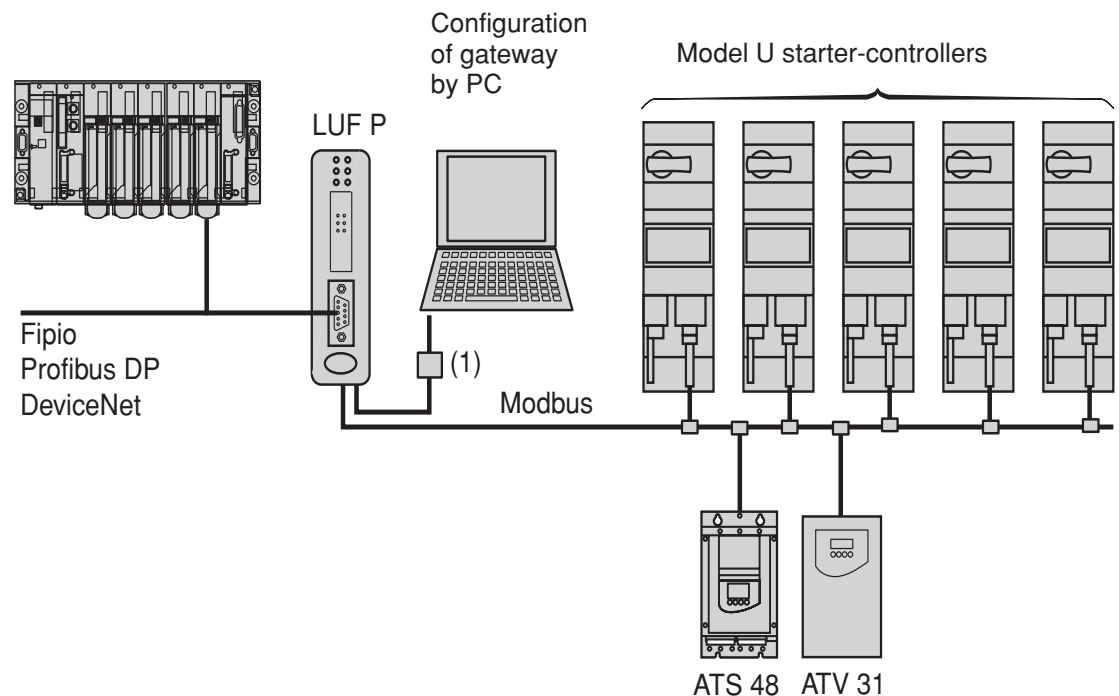
Presentation

Communication gateways LUF P allow connection between Modbus and field buses such as Fipio, Profibus DP or DeviceNet.

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

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

Example of architecture



(1) Connection kit for PowerSuite software workshop.

Description

Front panel of the product

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

Underside of product

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

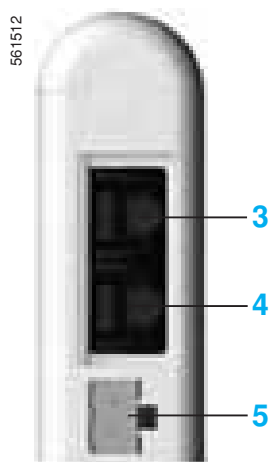
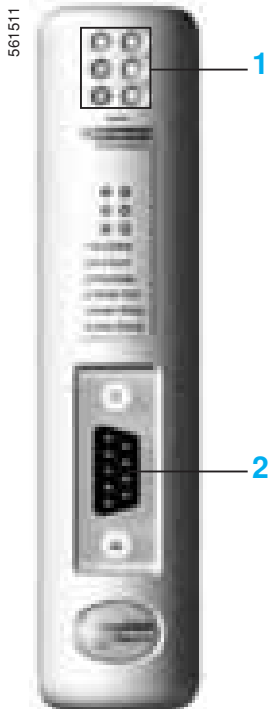
Software set-up

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

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

This software is included:

- in the PowerSuite software workshop for PC (see page 23),
- in the TeSys model U user's manual



Characteristics



Bus type		Fipio	Profibus DP	DeviceNet
Environment	Conforming to IEC 664	Degree of pollution : 2		
Ambient air temperature	Around the device	°C	+ 5...+ 50	
Degree of protection		IP 20		
Electromagnetic compatibility	Emission	Conforming to IEC 50081-2 : 1993		
	Immunity	Conforming to IEC 61000-6-2 : 1999		
Number of Modbus slaves which can be connected		≤ 8		
Connection	Modbus	By RJ45 connector conforming to Schneider Electric RS485 standard		
	To a PC	By RJ45 connector, with PowerSuite connection kit		
	Field bus	By SUB D9 female connector	By SUB D9 female connector	By 5-way removable screw connector
Supply		V	External supply, $\pm 24 \pm 10 \%$	
Consumption	Max.	mA	280	
	Typical	mA	100	
Indication/diagnostics		By LED on front panel		
Services	Profile	FED C32 or FED C32P	–	–
	Command	26 configurable words (1)	122 configurable words	256 configurable words
	Monitoring	26 configurable words (1)	122 configurable words	256 configurable words
	Configuration and adjustment	By gateway mini messaging facility (PKW)		

(1) If the gateway is configured using PL7 and not ABC Configurator, the I/O capacity is limited to a total of 26 words.

References

Description	For use with	With bus type	Reference	Weight kg
Communication gateways	TeSys Model U starter-controllers, Altistart 48, Altivar 28, 38, 58 and 58F	Fipio/Modbus	LUF P1	0.245
		Profibus DP/Modbus	LUF P7	0.245
		DeviceNet/Modbus	LUF P9	0.245

Connection accessories

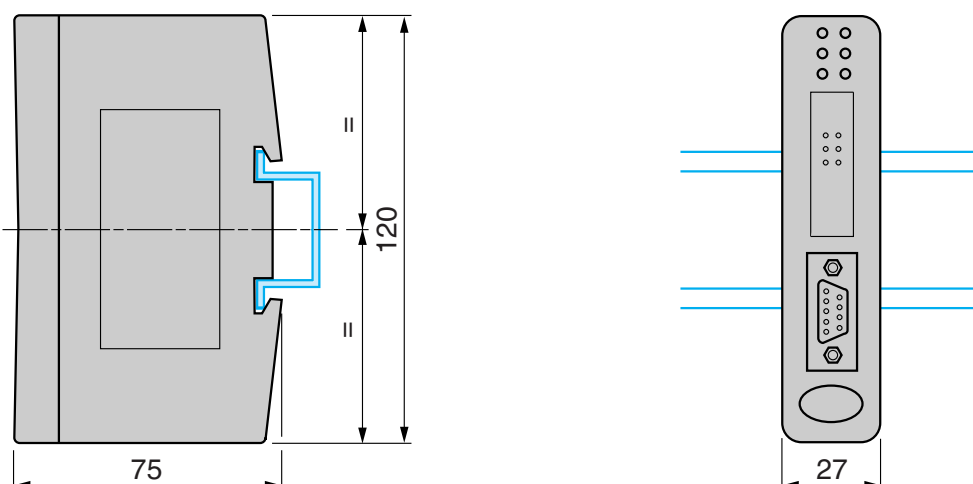
Description	For use with	Length m	Connectors	Reference	Weight kg
 TSX FP ACC 12	Modbus	3	1 RJ45 type connector and one end with stripped wires	VW3 A8 306 D30	0.150
		0.3	2 RJ45 type connectors	VW3 A8 306 R03	0.050
		1	2 RJ45 type connectors	VW3 A8 306 R10	0.050
		3	2 RJ45 type connectors	VW3 A8 306 R30	0.150
 490 NAD 911 03	Fipio	–	1 SUB-D 9 male connector	TSX FP ACC12	0.040
		–	1 SUB-D 9 male connector	490 NAD 911 04	–
		–	1 SUB-D 9 male connector	490 NAD 911 03	–

Documentation

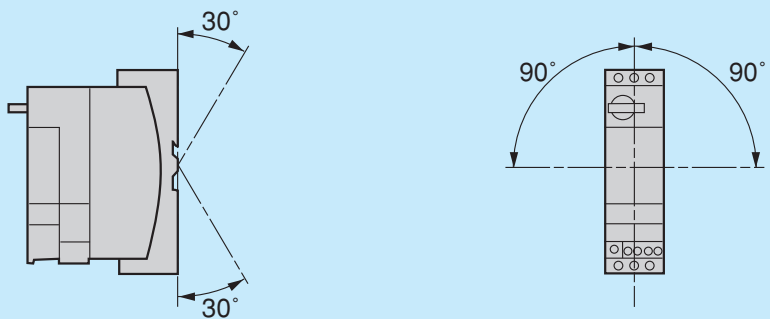
Description	Medium	Language	Reference	Weight kg
User's manual for TeSys model U range (2)	CD-Rom	Multilingual : English, French, German, Italian, Spanish	LU9 CD1	0.022

(2) This CD-Rom contains user's manuals for AS-i and Modbus communication modules, multifunction control units and gateways, as well as for the gateway programming software, ABC Configurator.

Dimensions



Environment

Approvals			UL, CSA Pending : BV, GL, LROS, DNV, PTB
Conforming to standards			IEC/EN 60947-6-2, CSA C22-2 N°14, Type E UL 508 type E : with phase barrier LU9 SP0
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution : 3	V	690
	To UL508, CSA C22-2 n°14	V	600
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-6-2	kV	6
Safety separation of circuits SELV	Conforming to IEC/EN 60947-1 appendix N	V	Between the control or auxiliary circuit and the main circuit : 400 Between the control and auxiliary circuits : 400
Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact)	Front panel outside connection zone		IP 40
	Front panel and wired terminals		IP 20
	Other faces		IP 20
Protective treatment	Conforming to IEC/EN 60068		"TH"
	Conforming to IEC/EN 60068-2-30	Cycles	12
	Conforming to IEC/EN 60068-2-11	h	48
Ambient air temperature around the device	Storage	°C	- 40...+ 85
	Operation	°C	Power bases and standard and advanced control units : - 25... + 70. (At temperatures above 60 °C and up to 70 °C, for Ie = 32 A, leave a minimum gap 9 mm between products). Power bases and multifunction control units : - 25...+ 60. (At temperatures above 45 °C, leave a minimum gap of 9 mm between products. At temperatures above 55 °C up to 60 °C, leave a gap of 20 mm between products.)
Maximum operating altitude		m	2000
Operating positions	In relation to normal vertical mounting plane		
Flame resistance	Conforming to UL 94		V2
	Conforming to IEC/EN 60695-2-12	°C	960 (parts supporting live components) °C 650
Environmental restrictions			Cadmium and silicone-free, recyclable
Shock resistance 1/2 sine wave = 11ms (1)	Conforming to IEC/EN60068-2-27		Power poles open : 10 gn Power poles closed : 15 gn
Vibration resistance 5...300 Hz (1)	Conforming to IEC/EN 60068-2-6		Power poles open : 2 gn Power poles closed : 4 gn
Immunity to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	In open air : 8 - Level 3
		kV	On contact : 8 - Level 4
Immunity to radiated high-frequency disturbance	Conforming to IEC/EN 61000-4-3	V/m	10 - Level 3
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	kV	All circuits except for serial link : 4 - Level 4
		kV	Serial link : 2 - Level 3
Immunity to dissipated shock waves	Conforming to 60947-6-2		Common mode Serial mode
	Uc ~ 110...240 V	kV	2 1
	---110...220 V		
	Uc < 100 V		Not applicable: for use on a protected supply
Immunity to conducted high-frequency disturbance	Conforming to IEC/EN 61000-4-6	V	10

(1) Without modifying the contact states, in the most unfavourable direction.

Power base and control unit type		LUB 12 + LUCA or LUCB or LUCC or LUCD	LUB 32 + LUCA or LUCB or LUCC or LUCD	LUB 12 + LUCM	LUB 32 + LUCM	LU2M LU6M
Power circuit connection characteristics						
Connection to Ø 4 mm screw clamp terminals						
Flexible cable without cable end	1 conductor	mm ²	2.5...10	2.5...10	2.5...10	2.5...10
	2 conductors	mm ²	1.5...6	1.5...6	1.5...6	1.5...6
Flexible cable with cable end	1 conductor	mm ²	1...6	1...6	1...6	1...6
	2 conductors	mm ²	1...6	1...6	1...6	1...6
Solid cable without cable end	1 conductor	mm ²	1...10	1...10	1...10	1...10
	2 conductors	mm ²	1...6	1...6	1...6	1...6
Screwdriver			Philips n° 2 or flat screwdriver : Ø 6 mm			
Tightening torque		N.m	1.9...2.5	1.9...2.5	1.9...2.5	1.9...2.5
Control circuit connection characteristics						
Connection to Ø 3 mm screw clamp terminals						
Flexible cable without cable end	1 conductor	mm ²	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5
	2 conductors	mm ²	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5
Flexible cable with cable end	1 conductor	mm ²	0.34...1.5	0.34...1.5	0.34...1.5	0.34...1.5
	2 conductors	mm ²	0.34...1.5	0.34...1.5	0.34...1.5	0.34...1.5
Solid cable without cable end	1 conductor	mm ²	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5
	2 conductors	mm ²	0.75...1.5	0.75...1.5	0.75...1.5	0.75...1.5
Screwdriver			Philips n° 1 or flat screwdriver : Ø 5 mm			
Tightening torque		N.m	0.8...1.2	0.8...1.2	0.8...1.2	0.8...1.2
Control circuit characteristics						
Rated voltage of control circuit	~ 50/60 Hz	V	24...240	24...240	–	–
	–	V	24...240	24...240	24	24
Voltage limits	– 24 V (1)	V	20...27	20...27	20...28	20...28
	Operation	~ 24 V	V	20...26.5	20...26.5	–
		~ or – 48...72 V	V	~ 38.5...72, – 38.5...93	–	–
		~ 110...240 V, – 110...220 V	V	~ and – 88...264	~ and – 88...264	–
	Drop-out	– 24 V	V	14.5	14.5	14.5
	~ 24 V	V	14.5	14.5	–	
	~ or – 48...72 V	V	29	29	–	
	~ 110...240 V, – 110...220 V	V	55	55	–	
Typical consumption	– 24 V	mA	130	220	150	200
	I max while closing	~ 24 V	mA	140	220	–
		~ or – 48...72 V	mA	280	280	–
		~ 110...240 V, – 110...220 V	mA	280	280	–
	I rms sealed	– 24 V	mA	55	70	70
	~ 24 V	mA	70	90	–	
	~ or – 48...72 V	mA	35	45	–	
	~ 110...240 V, – 110...220 V	mA	30	20	–	
Heat dissipation		W	2	3	1.7	1.8
Operating time	Closing	ms	24 V : 70/ 48 V 60; ≥ 72 V : 50		75	65
	Opening	ms	35	35	35	35
Resistance to micro-breaks		ms	3	3	3	3
Resistance to voltage drops		EC/EN 61000-4-11	At least 70 % of Uc for 500 ms			
Mechanical durability		In millions of operating cycles	15	15	15	15
Maximum operating rate		In operating cycles per hour	3600	3600	3600	3600
Main pole characteristics						
Number of poles			3	3	3	3
Isolation function		Possible	Yes	Yes	Yes	Yes
To IEC/EN 60947-1		Padlocking	1 padlock with Ø 7 mm shank			
Rated thermal current		A	12	32	12	32
Rated operating current (Ue ≤ 440V)	To IEC/EN 60947-6-2	In cat. AC-41	θ ≤ 70°C : 12A	θ ≤ 70°C : 32A	θ ≤ 55°C : 12A	θ ≤ 55°C : 32A
		In cat. AC-43	θ ≤ 70°C : 12A	θ ≤ 70°C : 32A	θ ≤ 55°C : 12A	θ ≤ 55°C : 32A
Rated operating voltage		V	690 (3)	690 (3)	690 (3)	690 (3)
Frequency limits		Of the operating current	Hz	40...60	40...60	40...60
Power dissipated in the power circuits	Operating current	A	3 6 9 12 18 25 32			
	Power dissipated in all three poles	W	0.1 0.3 0.6 1.1 2.4 4.6 7.5			
Rated breaking capacity on short-circuit		V	230 440 500 690			
		kA	50 50 10 4			
Total breaking time		ms	2 2 2			
Thermal stress limit		With Isc max on 440 V	kA ² s	90 120	90 120	

(1) Voltage with maximum ripple of ± 10 %.

(2) No consumption sealed.

(3) For 690 V, use phase barrier LU9 SP0.

Specific characteristics of power bases LU2B and reverser blocks LU2M or LU6M

Duration of inrush phase	~ 50/60 Hz	ms	25
	---	ms	15
Maximum operating time	Without change of direction	ms	75
	With change of direction	ms	150

General characteristics of auxiliary contacts

Conventional rated thermal current (I _{th})	For ambient temperature $\theta < 70\text{ }^{\circ}\text{C}$	A	5	
Frequency of the operating current		Hz	Up to 400	
Minimum switching capacity $\lambda = 10^{-8}$	U min	V	17	
	I min	mA	5	
Short-circuit protection	Conforming to IEC/EN 60947-5-1	A	gL fuse : 4	
Short-time rating	Permissible for	1 s	A	30
		500 ms	A	40
		100 ms	A	50
Insulation resistance		m Ω	10	
Non-overlap time	Guaranteed between N/C and N/O contacts	ms	2 (on energisation and on de-energisation)	

Specific characteristics of auxiliary contact built-into the power base

Linked contacts	Conforming to IEC/EN 60947-4-1		Each power base has 1 N/O contact and 1 N/C contact which are mechanically linked
Mirror contact	Conforming to draft standard IEC/EN 60947-1		The N/C contact fitted in each power base reliably represents the state of the power contacts (safety scheme)
Rated operating voltage (U _e)		V	Up to ~ 690; --- 250
Rated insulation voltage (U _i)	Conforming to IEC/EN 60947-5-1	V	690
	Conforming to UL, CSA	V	600

Specific characteristics of auxiliary contacts in modules LUF N, of auxiliary contacts LUA1 and of reverser blocks LU2M and LU6M

Rated operating voltage (U _e)		V	Up to ~ 250; --- 250
Rated insulation voltage (U _i)	Conforming to IEC/EN 60947-5-1	V	250
	Conforming to UL, CSA	V	250

Operational power of contacts

Conforming to IEC/EN 60947-5-1

a.c. supply, categories AC-14 and AC-15

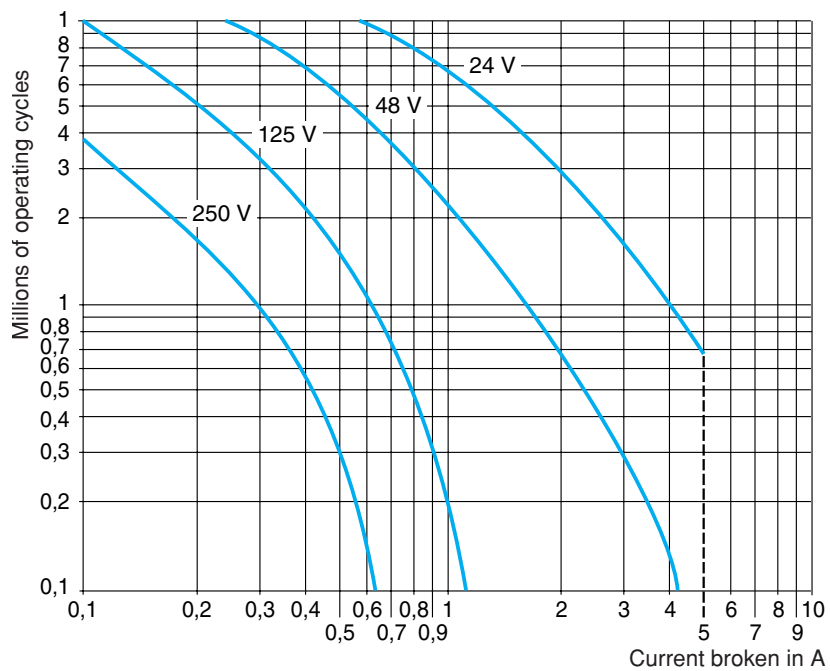
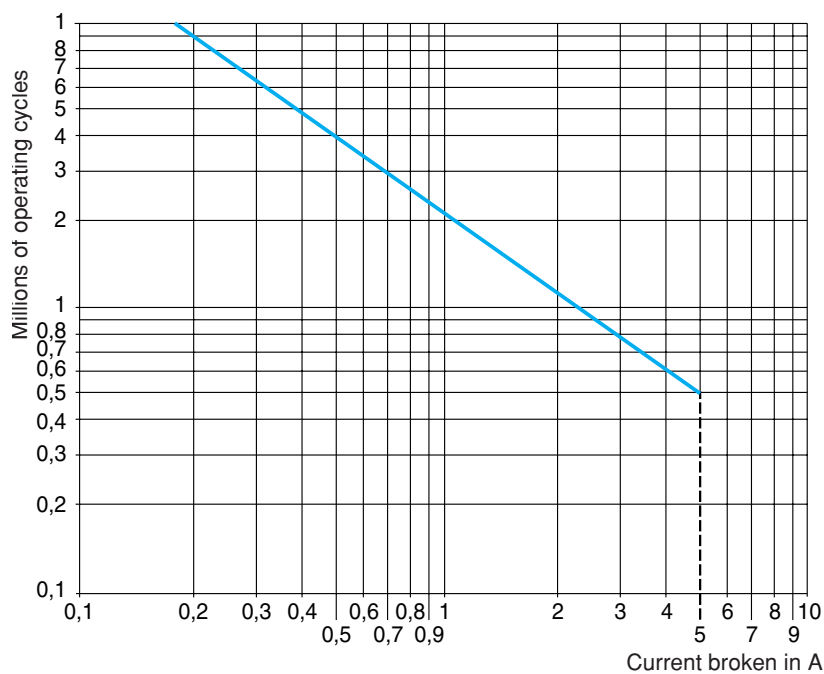
Electrical durability (up to 3600 operating cycles/hour on an inductive load such as the coil of an electromagnet : making power (cos φ 0.7) = 10 times the power broken (cos φ = 0.4)

	V	24	48	115	230	400	440	600
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100

d.c. supply, category DC-13

Electrical durability (up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

	V	24	48	125	250
W		120	90	75	68
W		70	50	38	33
W		25	18	14	12



Characteristics of standard control units LUCA

Protection	Motor type		3-phase
	Conforming to standard		IEC/EN 60947-6-2, UL 508, CSA C22-2 n°14
Overload protection	Tripping class conforming to UL 508, IEC/EN 60947-6-2		10
	Frequency limits of the operating current	Hz	40...60
	Temperature compensation	°C	- 25...+ 70
	Protection against phase imbalance		With
Short-circuit protection	Tripping threshold		14.2 x the setting current
	Tripping tolerance		± 20 %

Characteristics of advanced control units LUCB, LUCC and LUCD

Control unit type		LUCB	LUCC	LUCD
Protection	Motor type	3-phase	Single-phase	3-phase
	Conforming to standard	IEC/EN 60947-6-2, UL 508, CSA C22-2 n°14	IEC/EN 60947-6-2, UL 508, CSA C22-2 n°14	IEC/EN 60947-6-2, UL 508, CSA C22-2 n°14
Overload protection	Tripping class conforming to UL 508, IEC/EN 60947-6-2	10	10	20
	Frequency limits of the operating current	Hz	40...60	40...60
	Temperature compensation	°C	- 25...+ 70	- 25...+ 55
	Protection against phase imbalance		With	With
Short-circuit protection	Tripping threshold	14.2 x the setting current	14.2 x the setting current	14.2 x the setting current
	Tripping tolerance	± 20 %	± 20 %	± 20 %

Characteristics of multifunction control units LUCM

Protection	Motor type		Selectable : single-phase or 3-phase
	Conforming to standard		IEC/EN 60947-6-2, UL 508
Overload protection	Tripping class conforming to UL 508, IEC/EN 60947-6-2		5, 10, 15, 20, 25, 30 (selectable)
	Frequency limits of the operating current	Hz	40...60
	Temperature compensation	°C	- 25...+ 55
	Protection against phase imbalance		With
Communication interface for terminal on enclosure door	Physical interface		RS 485 multi-drop
	Connector		RJ45 on front panel
	Protocol		Modbus RTU
	Maximum transmission speed	bit/s	19 200 (self-configuration up to this value)
	Maximum return time	ms	200
Display	Type		LCD, 2 lines of 12 characters
	Language version		Multilanguage (English, French, German, Italian, Spanish)
	Accuracy		± 5 %
	Resolution		1 % of I _r
Auxiliary supply	External type	V	--- 24, with maximum ripple of ± 10 %.
	Heat dissipation	W	0.8

Configuration table for protection devices and alarms on multifunction control units LUCM

	Tripping	Alarm	Adjustment of tripping threshold		Adjustment of time before tripping		Adjustment of alarm threshold	
	Factory setting	Factory setting	Range	Default value	Range	Default value	Range	Default value
Overcurrent	Activated (1)	—	3...17 I _r	14.2	—	—	—	—
Overload	Activated (1)	Activated	0.15...32 A (2) I _r min	I _r min	Class : 5...30	5	10...100 % of the thermal state	85 %
Earth fault	Activated	Activated	0.2...5 I _r min	0.3 I _r min	0.1...1.2 s	0.1 s	0.2...5 I _r min	0.3 I _r min
Phase imbalance	Activated	Activated	10...30 %	10 %	0.2...20 s	5 s	10...30 %	10 %
Torque limitation	Deactivated	Deactivated	1...8 I _r	2 I _r	1...30 s	5 s	1...8 I _r	2 I _r
No-load running	Deactivated	Deactivated	0.3...1 I _r	0.5 I _r	1...200 s	10 s	0.3...1 I _r	0.5 I _r
Long starting times	Deactivated	Deactivated	1...8 I _r	I _r	1...200 s	10 s	1...8 I _r	I _r

Configuration of additional functions on multifunction control units LUCM

	Factory setting	Setting range
Reset	Manual	Manual, automatic or remote
Time before reset	120 s	1...1000 s
Type of load	3-phase motor	3-phase motor, single-phase motor
	Self-cooled	Self-cooled, force cooled
Language	English	English, French, German, Italian, Spanish
Display	Average current	Average current, thermal state of motor, current in phase 1 / 2 / 3, earth leakage current, phase imbalance, cause of last 5 faults

(1) This function cannot be deactivated.

(2) The setting range depends on the rating of the control unit used.

Characteristics of limiter-disconnector LUA LB1

Rated insulation voltage (Ui) conforming to standard IEC/EN 60947-1	V	690
Conventional thermal current (Ith) conforming to standard IEC/EN 60947-1	A	32
Operating threshold I rms	kA	50
Breaking capacity	V	440 690
	kA	130 70
Mounting		Directly on the upstream terminals of the starter-controller
Connection		
Solid cable	1 conductor	mm ² 1.5...10
	2 conductors	mm ² 1.5...6
Flexible cable without cable end	1 conductor	mm ² 1...10
	2 conductors	mm ² 1...6
Flexible cable with cable end	1 conductor	mm ² 1...6
	2 conductors	mm ² 1...6
Screwdriver		Phillips n°2 or flat screwdriver Ø 6 mm
Tightening torque	N.m	1.9...2.5

Characteristics of current limiter LA9 LB920

Rated insulation voltage (Ui) conforming to standard IEC/EN 60947-1	V	690
Conventional thermal current (Ith) conforming to standard IEC/EN 60947-1	A	63
Operating threshold I rms	A	1000
Breaking capacity	V	440 690
	kA	100 35
Mounting		Separate
Connection		
Solid cable	1 conductor	mm ² 1.5...25
	2 conductors	mm ² 1.5...10
Flexible cable without cable end	1 conductor	mm ² 1.5...25
	2 conductors	mm ² 2.5...10
Flexible cable with cable end	1 conductor	mm ² 1.5...16
	2 conductors	mm ² 1.5...4
Screwdriver		Phillips n°2 or flat screwdriver Ø 6 mm
Tightening torque	N.m	2.2

Characteristics of thermal overload alarm function module LUF W10

Activation threshold		Fixed at 88% of the thermal tripping state
Hysteresis between activation and switching off		5 %
Indication		By LED on front panel
Supply		Powered by the control unit
Discrete output characteristics	Type	N/O contact
	AC-15	230 V max; 400 VA 100 000 operating cycles
	DC-13	24 V; 50 W 100 000 operating cycles
Conventional thermal current (Ith)	For ambient temperature $\theta < 70\text{ }^{\circ}\text{C}$	A 2
Short-circuit protection	Conforming to IEC/EN 60947-5-1	A gG fuse: 2

Characteristics of thermal overload fault signalling and reset modules

Module type		LUF DH11	LUF DA01	LUF DA10
Fault signalling		By LED on front panel		
External power supply	V	$\sim/\text{---}$ 24...240		
Module consumption	mA	7 at --- 24 1.1 at \sim 240		
Discrete outputs	Type	1 N/C + 1 N/O	1 N/C	1 N/O
	AC-15	230 V max; 400 VA 100 000 operating cycles		
	DC-13	24 V; 50 W 100 000 operating cycles		
Conventional thermal current (Ith)	For ambient temperature $\theta < 70\text{ }^{\circ}\text{C}$	A 2		
Short-circuit protection	Conforming to IEC/EN 60947-5-1	A gG fuse: 2		
Reset input	Conductor c.s.a.	mm ² 0.2 min		
	Length	m 500 (R = 50 Ω , L = 52.8 mH, Cp = 93 pF)		

Characteristics of motor load indication function module LUF V2

Analogue output		4 - 20 mA
Signal delivered		Value of I average/I _r ratio within the range of 0 to 2 for LUCB and LUCD Value of I average/I _r ratio within the range of 0 to 3 for LUCC
Load impedance	Minimum	kΩ –
	Maximum	Ω 500
	Typical	Ω 100
Signal characteristics with advanced control unit	Precision	± 6 %
Signal characteristics with multifunction control unit	Precision	± 10 %
	Resolution	1 % of I _r
Supply		External --- 24 V

Characteristics of AS-Interface communication module ASILUF C5

Product certification		AS-Interface V2.1 n° 52901
AS-Interface profile		7.D.F.0
Ambient air temperature	°C	Operation - 25...+ 70
AS-Interface supply	V	29.5...31.5
Current consumption By the AS-Interface system	mA	Normal operation: 25
	mA	Fault condition: 30
Auxiliary supply	V	--- 24 ± 30 %
Current consumption On 24 V supply for the outputs	mA	200
Number of outputs		2 dedicated to starter-controller coil operation
Switching capacity of the solid state outputs		0.5 A/24 V (outputs protected against short-circuits)
Indication/diagnostics		By 2 LEDs on front panel

Characteristics of Modbus communication modules LUL C033

Module type		
Physical interface		RS 485 multi-drop
Connector		RJ45 on front panel
Protocol		Modbus RTU
Maximum transmission speed	bit/s	19 200 (self-configuration up to this value)
Maximum return time	ms	30
Addressing		By switches: from 0...31
Ambient air temperature	°C	Operation - 25...+55
Logic inputs	Number	2 (to be assigned according to configuration)
	Supply	--- 24
	Input current	mA 7
Nominal input values	Voltage	V --- 24 (positive logic)
	Current	mA 7
Response time	Change to state 1	ms 10 (± 30 %)
	Change to state 0	ms 10 (± 30 %)
Input type		Resistive
Solid state outputs	Number	3, of which 2 dedicated to starter-controller coil operation
	Supply	V --- 24
	Max. current	mA 500
Protection	gl fuse	A 1
Current consumption On 24 V supply for the outputs	mA	200
Switching capacity of the solid state outputs		0.5 A/24 V
Indication/diagnostics		By 3 LEDs on front panel

Connection characteristics

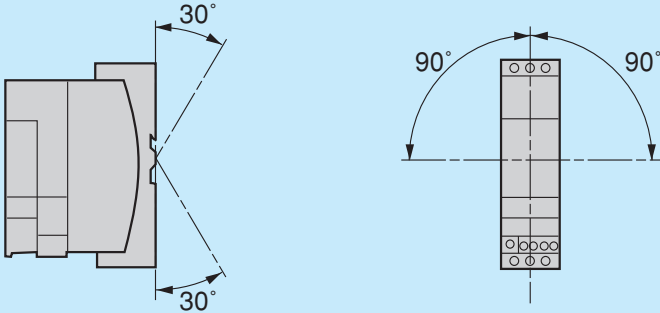
Module type		LUF W10, DH11, DA01 and DA10	LUF V2	ASILUF C5 Inputs and 24 V auxiliary	Outputs	LUL C033	LUFC 00	
Connectors	Pitch	5.08	3.81	5.08	3.81	3.81	3.81	
Flexible cable without cable end	1 conductor	mm ² 0.2...1.5	0.14...1	0.2...1.5	0.14...1	0.14...1	0.14...1	
	2 identical conductors	mm ² 0.2...1	0.14...0.75	0.2...1	0.14...0.75	0.14...0.75	0.14...0.75	
Flexible cable with cable end	Without insulated ferrule	1 conductor	mm ² 0.25...1.5	0.25...1	0.25...1.5	0.25...1	0.25...1	
		2 identical conductors	mm ² 0.25...1	0.25...0.34	0.25...1	0.25...0.34	0.25...0.34	0.25...0.34
	With insulated ferrule	1 conductor	mm ² 0.25...1.5	0.25...0.5	0.25...1.5	0.25...0.5	0.25...0.5	0.25...0.5
		2 identical conductors (1)	mm ² 0.5...1	0.5	0.5...1	0.5	0.5	0.5
Solid cable without cable end	1 conductor	mm ² 0.2...1.5	0.14...1	0.2...1.5	0.14...1	0.14...1	0.14...1	
	2 identical conductors	mm ² 0.2...1	0.14...0.5	0.2...1	0.14...0.5	0.14...0.5	0.14...0.5	
Conductor size	1 conductor		AWG 24 to AWG 16	AWG 26 to AWG 16	AWG 24 to AWG 16	AWG 26 to AWG 16	AWG 26 to AWG 16	
Tightening torque		N.m 0.5...0.6	0.22...0.25	0.5...0.6	0.22...0.25	0.22...0.25	0.22...0.25	
Flat screwdriver		mm 3.5	2.5	3.5	2.5	2.5	2.5	

(1) Use a double cable end.

References :
pages 21 to 28

Dimensions :
pages 48 to 49

Schemes :
pages 50 to 54

Environment			
Control base and control unit type		LUT M + LUCB T1BL or LUCD T1BL without LUL C	LUT M + LUCM T1BL or LUL C
Product certifications		UL, CSA Pending: BV, GL, LROS, DNV, PTB	
Conforming to standards		IEC/EN 60947-4-1, UL 508, CSA C22-2 N°14	
Rated insulation voltage of the outputs (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3	V	250
	Conforming to UL508, CSA C22-2 n°14	V	250
Rated impulse withstand voltage of the outputs (Uimp)	Conforming to IEC/EN 60947-4-1	kV	4
Degree of protection To IEC/EN 60947-1 (protection against direct finger contact)	Front panel (outside connection zone)		IP 40
	Front panel and wired terminals		IP 20
	Other faces		IP 20
Protective treatment	Conforming to IEC/EN 60068		"TH"
	Conforming to IEC/EN 60068-2-30	Cycles	12
	Conforming to IEC/EN 60068-2-11	h	48
Ambient air temperature around the device	Storage	°C	- 40...+ 85
	Operation	°C	- 25...+ 70 - 25...+ 60
Maximum operating altitude		m	2000
Operating positions Without derating	In relation to normal vertical mounting plane		
Flame resistance	Conforming to UL 94		V2
	Conforming to IEC/EN 60695-2-12	°C	960 (parts supporting live components)
		°C	650
Shock resistance 1/2 sine wave = 11 ms	Conforming to IEC/EN60068-2-27 (1)		15 gn
Vibration resistance 5...300 Hz	Conforming to IEC/EN 60068-2-6 (1)		4 gn
Immunity to electrostatic discharge	Conforming to IEC/EN 61000-4-2	kV	In open air: 8 - Level 3
		kV	On contact: 6 - Level 3
Immunity to radiated fields	Conforming to IEC/EN 61000-4-3	V/m	10 - Level 3
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	kV	CT outputs and inputs: 4 - Level 4
		kV	Inputs and supply: 2 - Level 3
Immunity to radio electrical fields	Conforming to IEC/EN 61000-4-6	V	10
Control base and control unit relays			
Immunity to dissipated shock waves	Conforming to IEC/EN 60947-4-1		Common mode Serial mode
		Output relays / power line	kV 4 2
		Inputs	kV 2 1
		Serial communication	kV 2 -

(1) Without modifying the contact states, in the most unfavourable direction.

Control supply characteristics			
Operating voltage	V	~ 20.4...28.8	
Power consumption	W	2 max	
Associated protection	A	gG fuse, 0.5	
Connection			
Connectors	Pitch	mm	5
Flexible cable without cable end	1 conductor	mm ²	0.2...2.5
	2 identical conductors	mm ²	0.2...1.5
Flexible cable with cable end	Without insulated ferrule	1 conductor	mm ² 0.25...2.5
		2 identical conductors	mm ² 0.25...1
	With insulated ferrule	1 conductor	mm ² 0.25...2.5
		2 identical conductors (1)	mm ² 0.5...1.5
Solid cable without cable end	1 conductor	mm ²	0.2...2.5
	2 identical conductors	mm ²	0.2...1
Conductor size	1 conductor		AWG 24 to AWG 12
Tightening torque		N.m	0.5...0.6
Flat screwdriver		mm	3

Input characteristics		
Operating voltage	V	~ 24
Logic inputs		Logic state 1: I ≥ 6 mA - 16 V Logic state 0: I ≤ 1.5 mA - 5 V

Discrete output characteristics				
Control base type		LUT M10BL	LUT M20BL	
Type		Single break volt-free contacts		
Load	a.c. supply	C 300	B 300	
	d.c. supply	24 V/5 A	24 V/5 A	
Permissible power in cat. AC-15	For 500 000 operating cycles	VA 180	500	
Permissible power in cat. DC-13	For 500 000 operating cycles	W 30	30	
Associated protection		A gG fuse, 4	gG fuse, 4	
For use in association with contactor (2)		Control voltage ~ 24 V: LP1K, LC1 D09...D95. Control voltage ~ 24...240 V: LC1K, LC1D.	Control voltage ~ 100...240 V: LC1K, LC1D, LC1 F185...F500	

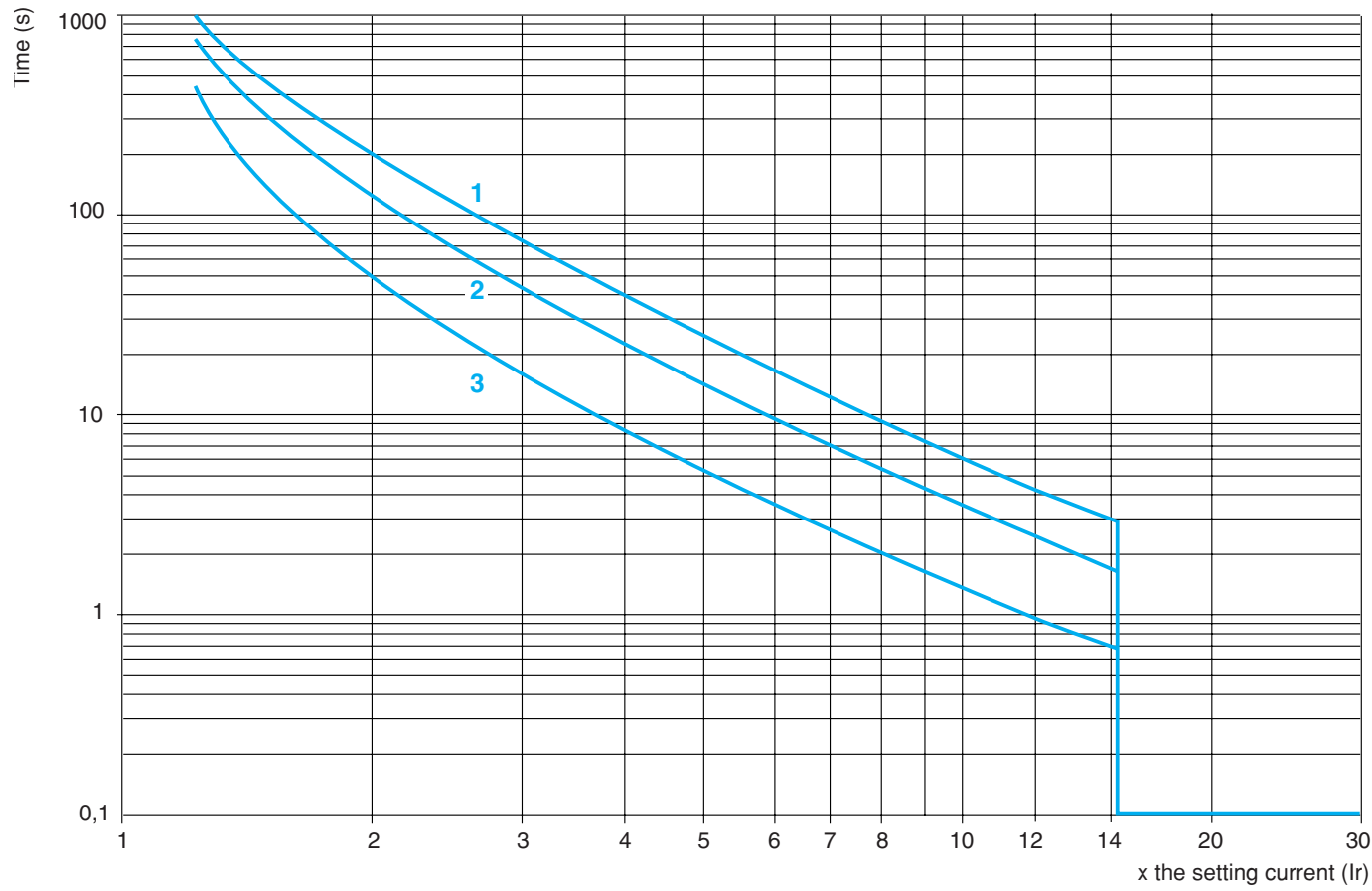
Characteristics of external current transformers							
Precision		Class 5P					
Precision limit factor		10					
Maximum operating temperature	°C	70					
Transformer ratio		30/1	50/1	100/1	200/1	400/1	800/1
Hole diameter	mm	28	22	35	32	—	—
Maximum wire c.s.a.	mm ²	30 x 10	30 x 10	40 x 10	65 x 32	38 x 127	53 x 127

(1) Use a double cable end.

(2) For other combinations, use an intermediate relay between the output of controller LUTM and the contactor coil.

Tripping curves for control units LUCA, LUCB, LUCD

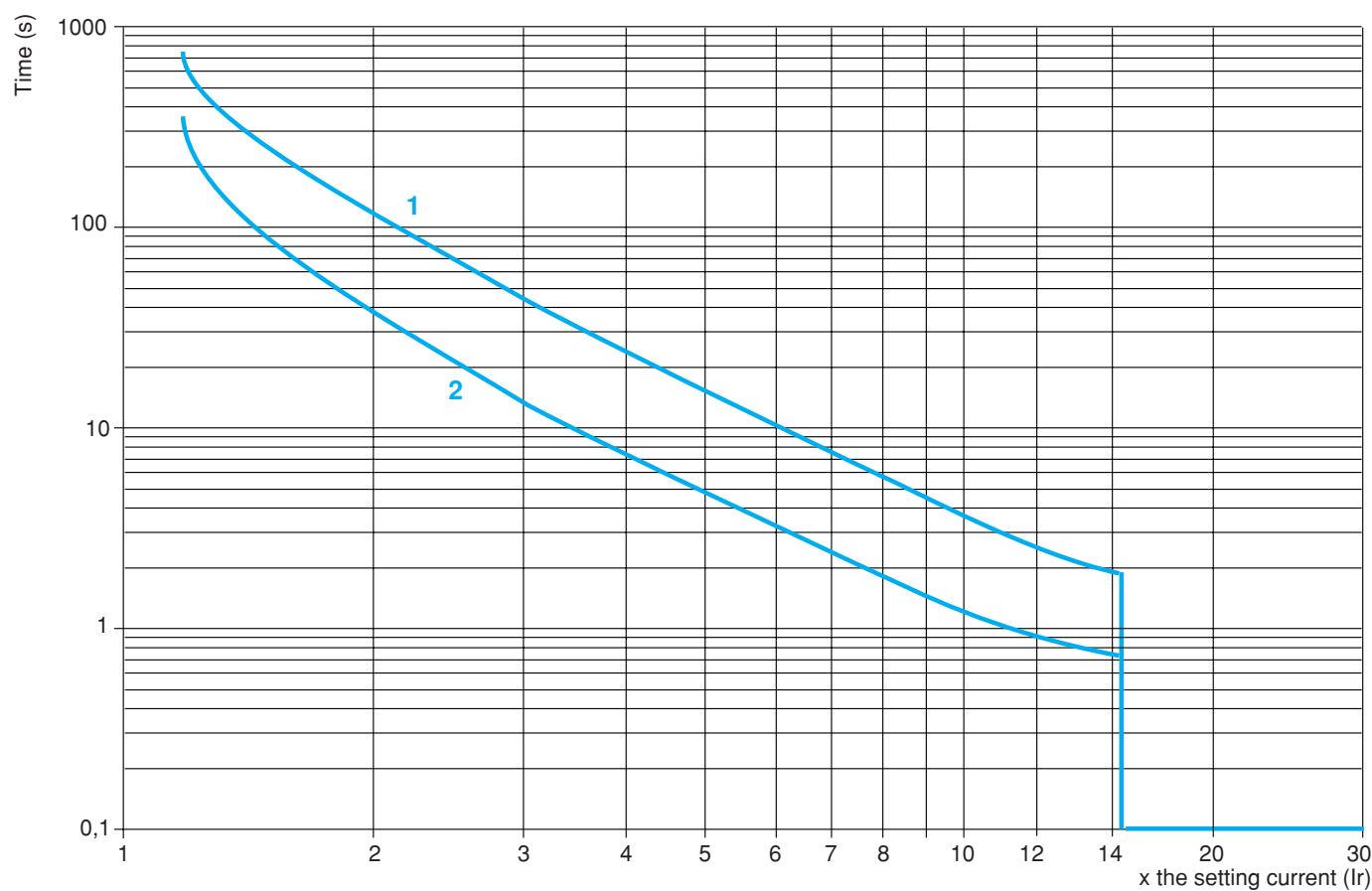
Average operating times at 20 °C according to multiples of the setting current, tolerance : ± 20 %.



- 1 LUCD, 3 poles from cold state, class 20.
- 2 LUCA, LUCB, 3 poles from cold state, class 10.
- 3 LUCA, LUCB, LUCD, 3 poles from hot state.

Tripping curves for control units LUCC

Average operating times at 20 °C according to multiples of the setting current, tolerance : ± 20 %.

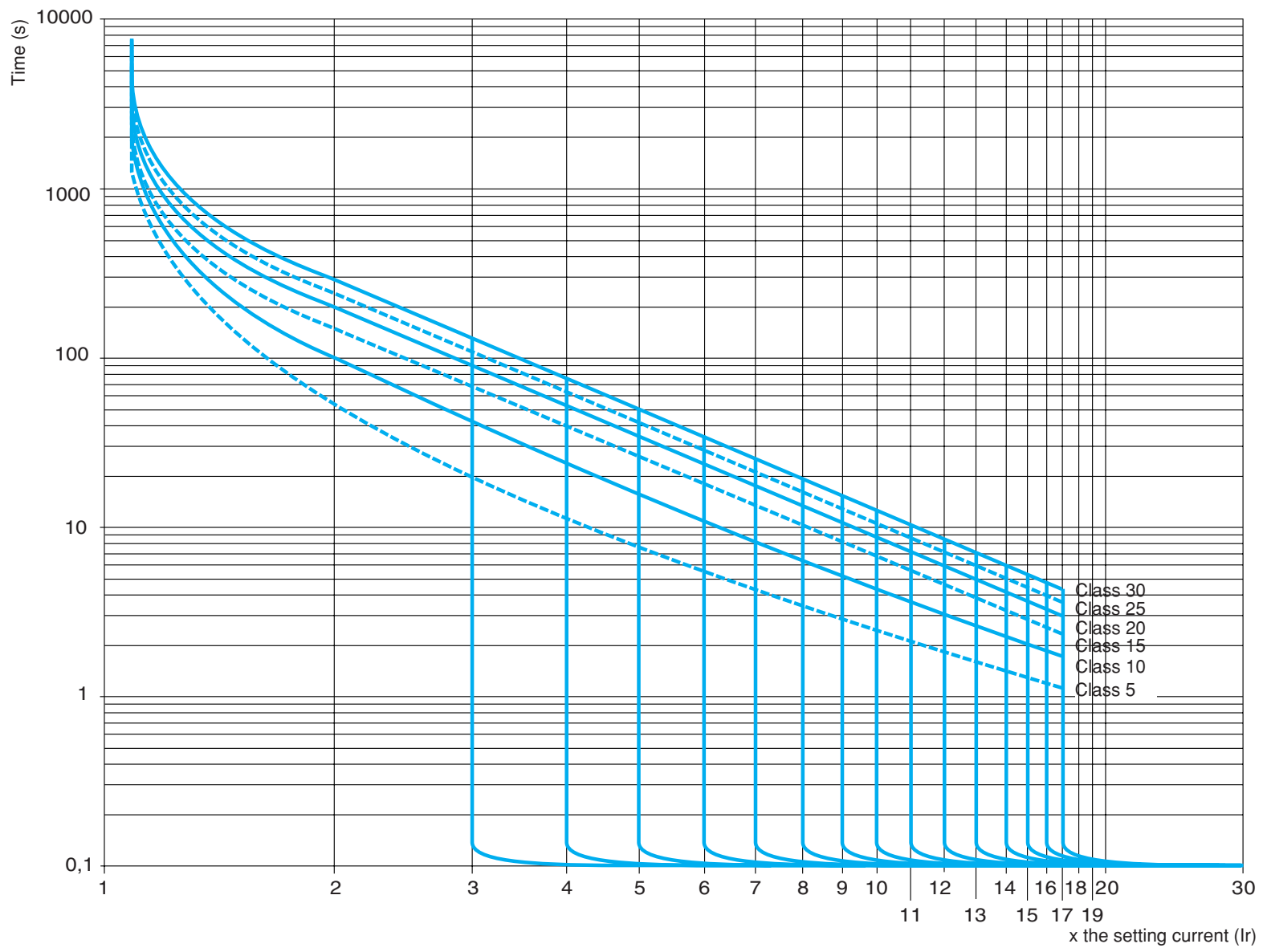


- 1 LUCC, single-phase, cold state.
- 2 LUCC, single-phase, hot state.

Tripping curves for control units LUCM

Cold state curves

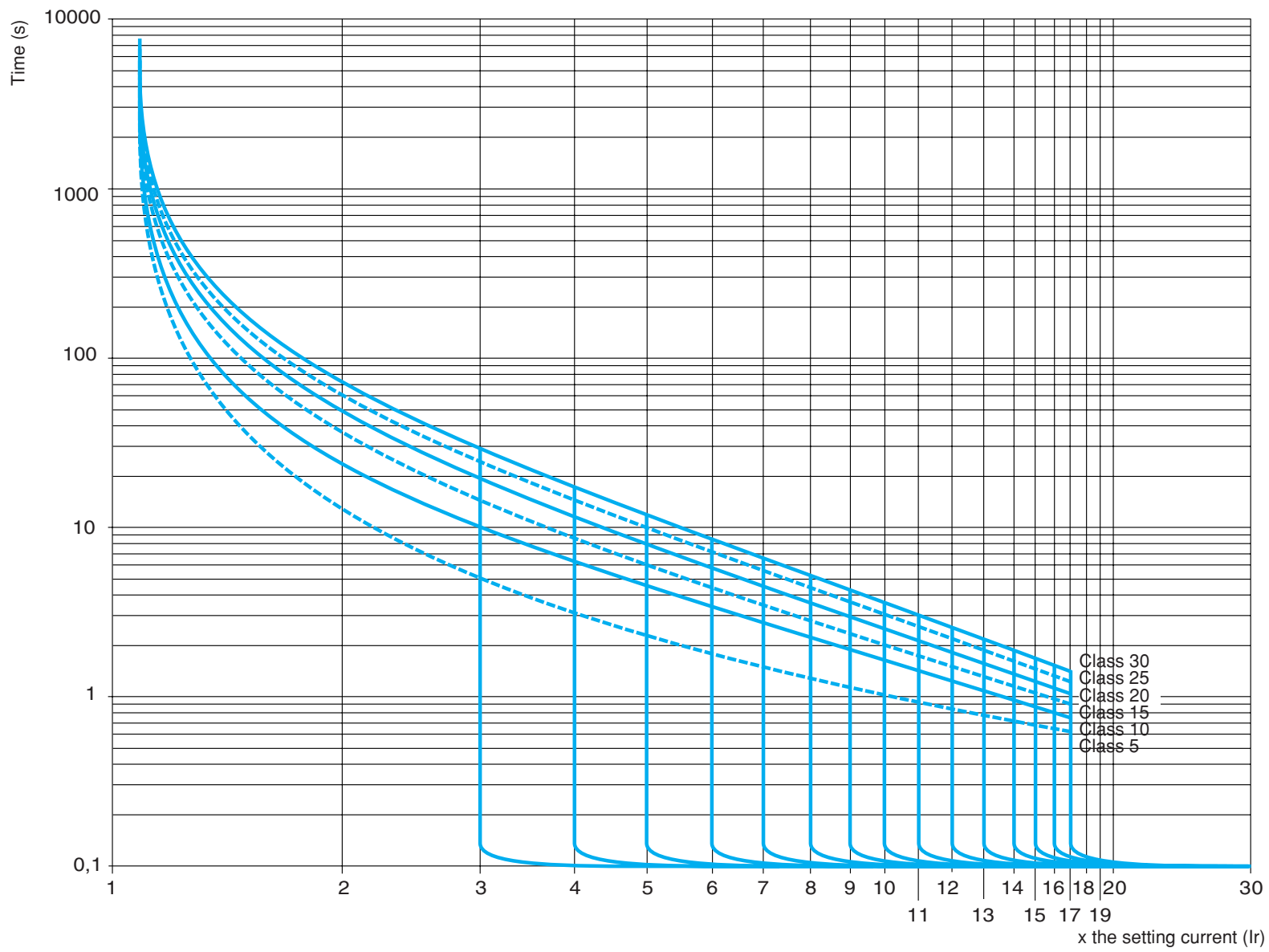
Average operating times at 20 °C according to multiples of the setting current, tolerance : ± 20 %.



Tripping curves for control units LUCM

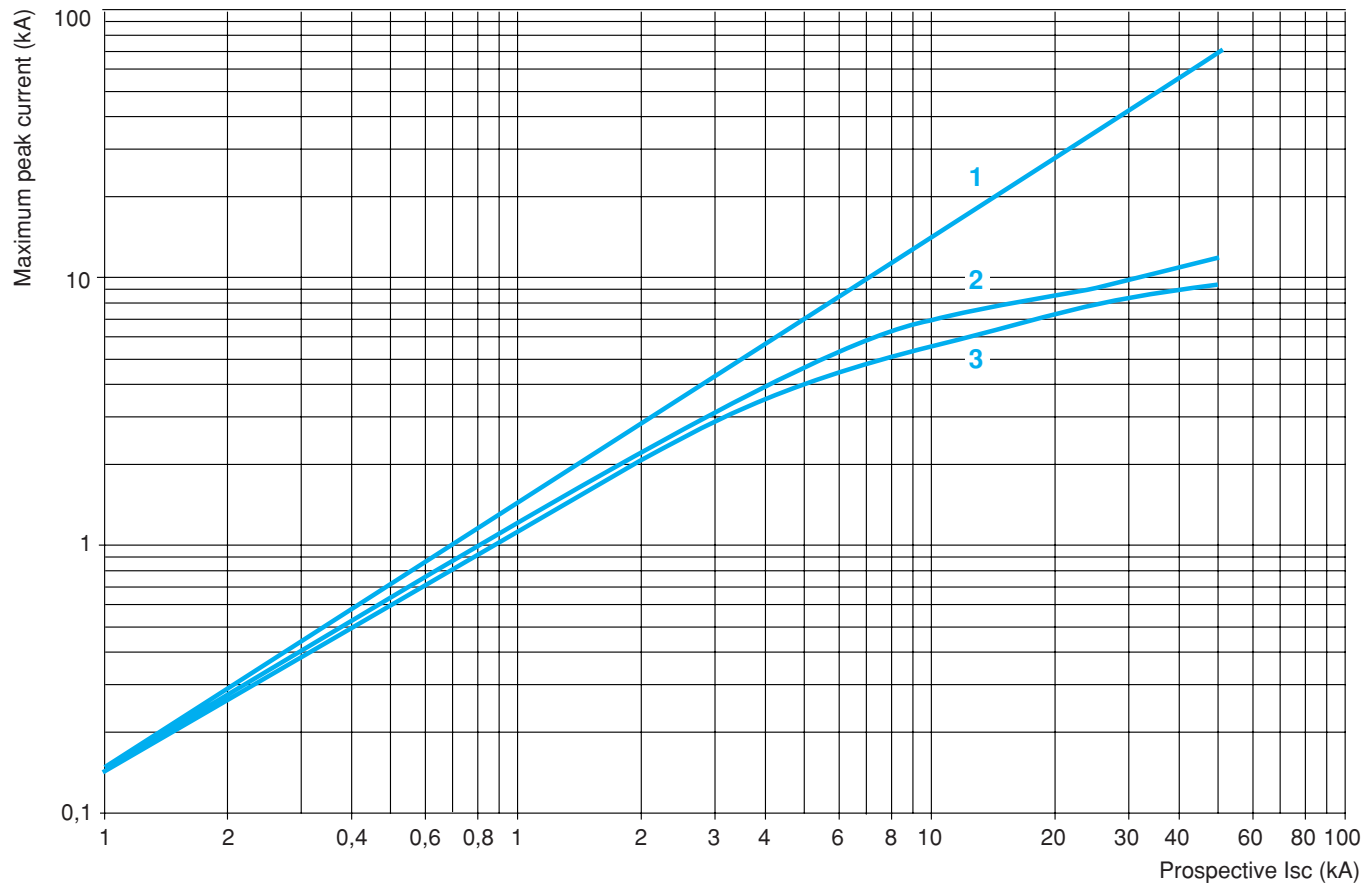
Hot state curves

Average operating times at 20 °C according to multiples of the setting current, tolerance : ± 20 %



Current limitation on short-circuit

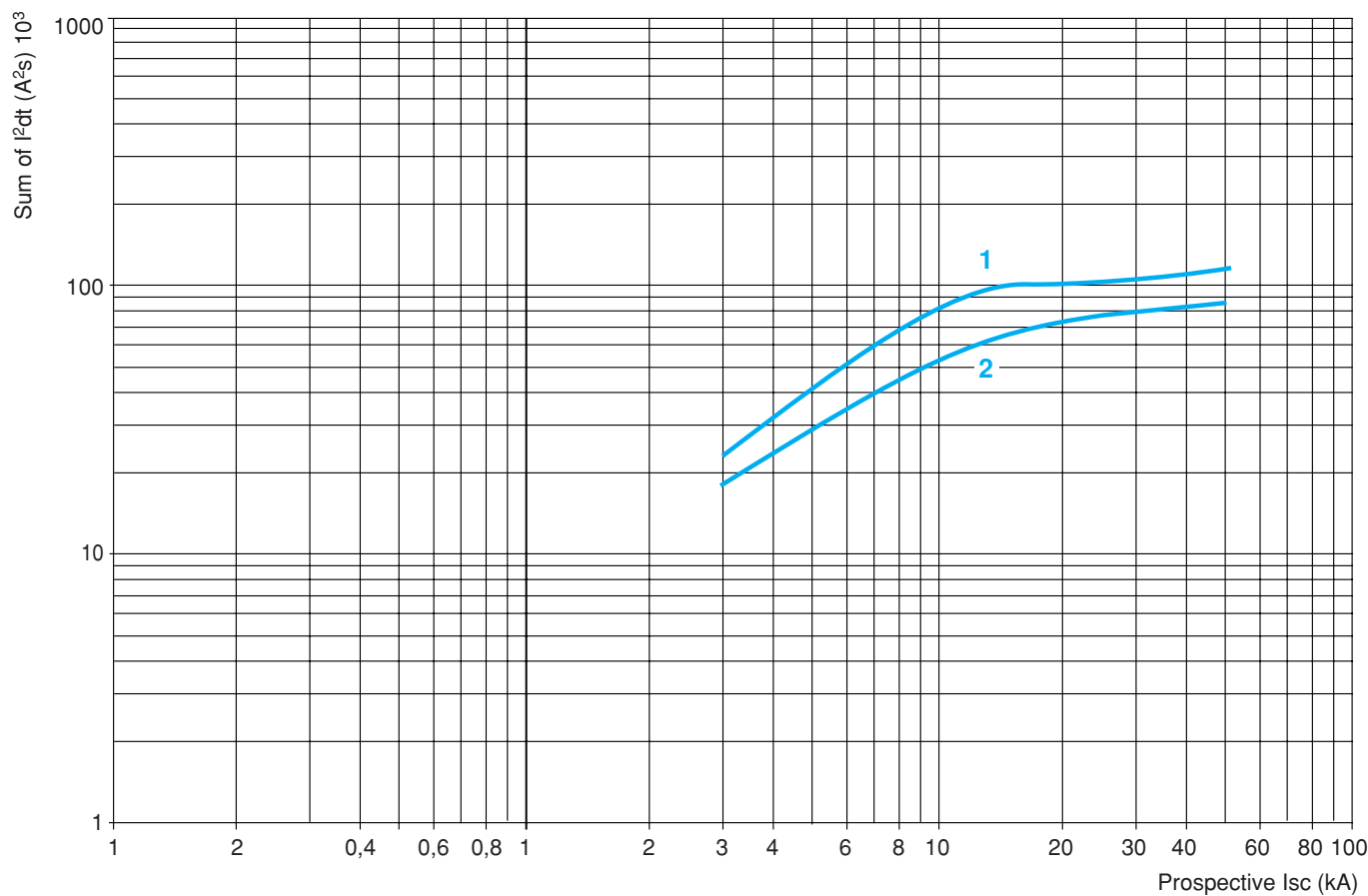
$U_e = 460\text{ V}$



- 1 Maximum peak current
- 2 32 A power base
- 3 12 A power base

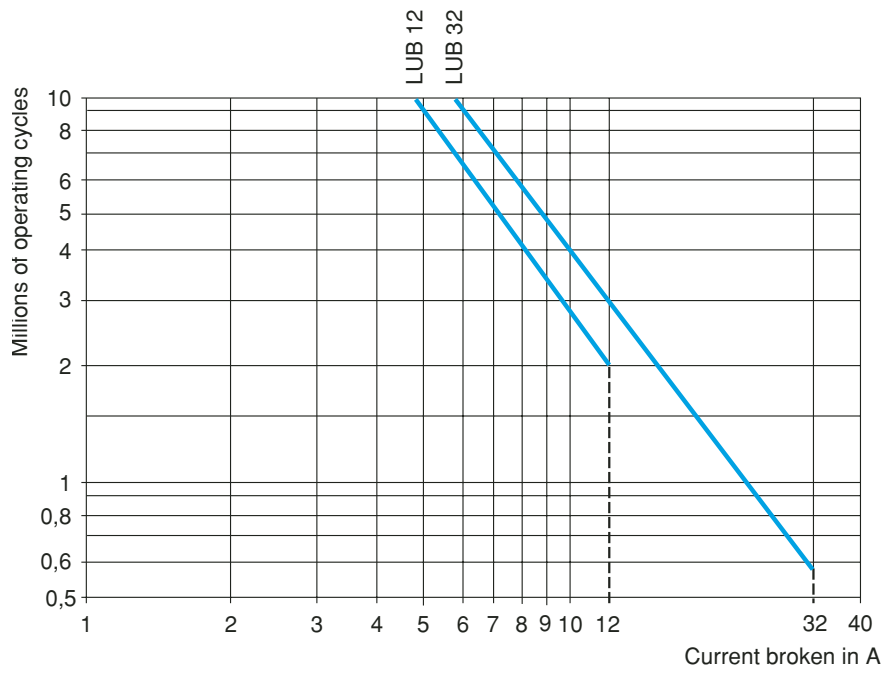
Thermal limit on short-circuit

$U_e = 460\text{ V}$



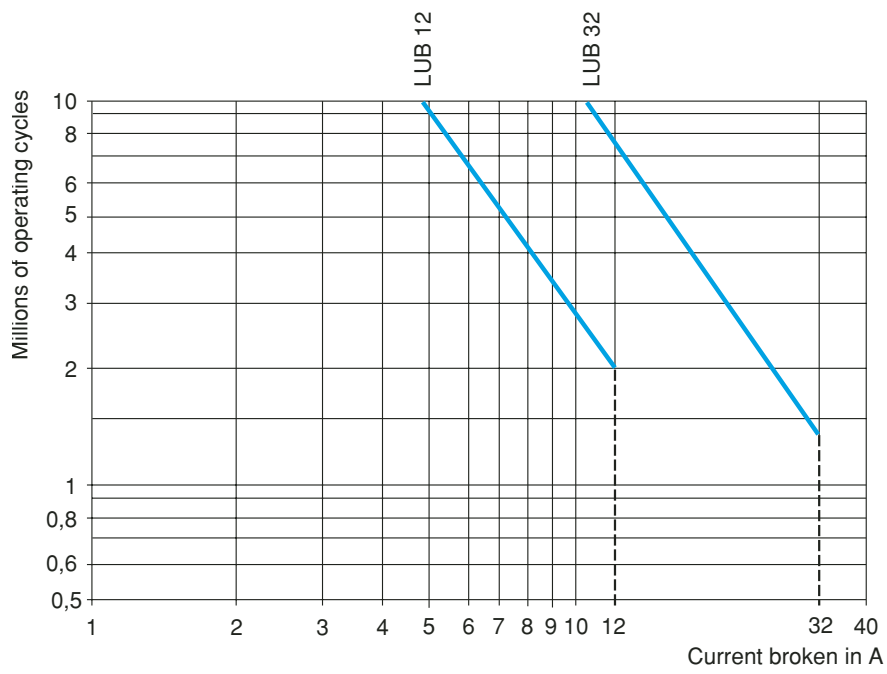
- 1 32 A power base
- 2 12 A power base

Use in category AC-41

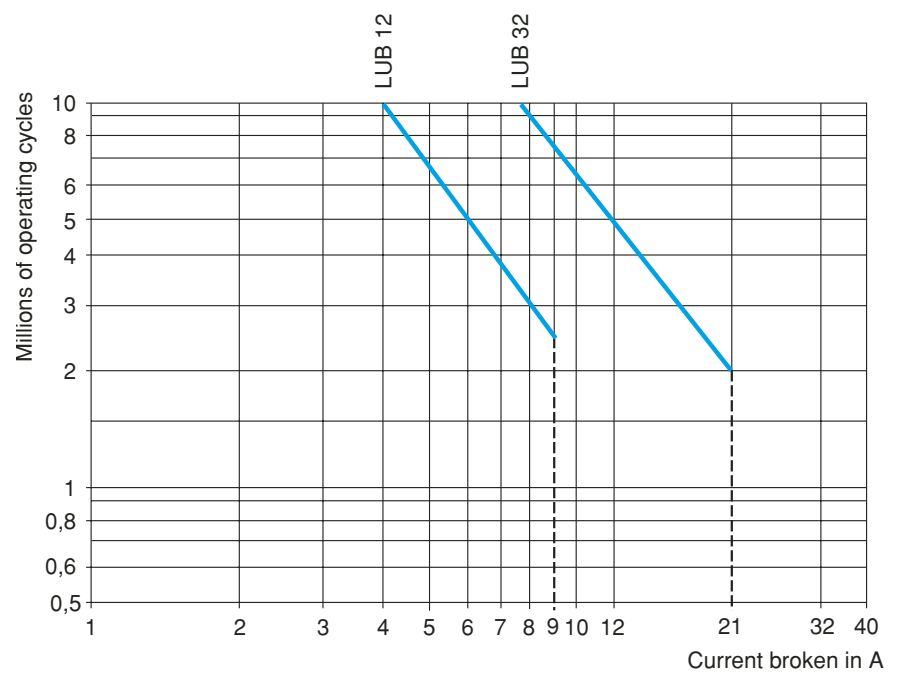


Use in category AC-43

Ue ≤ 440 V



Ue = 690 V

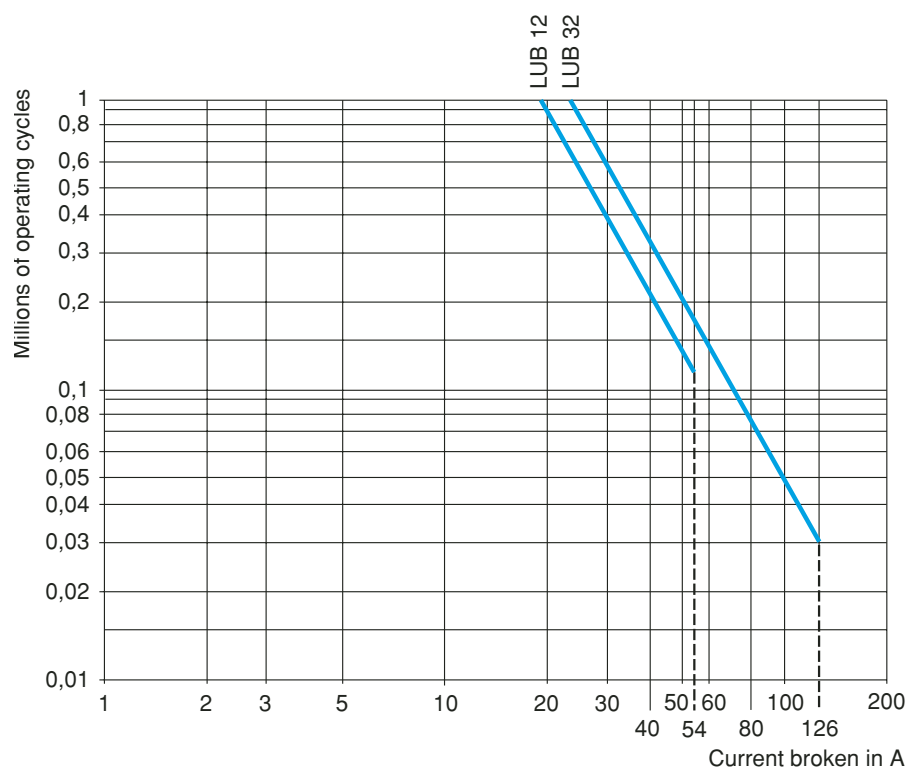
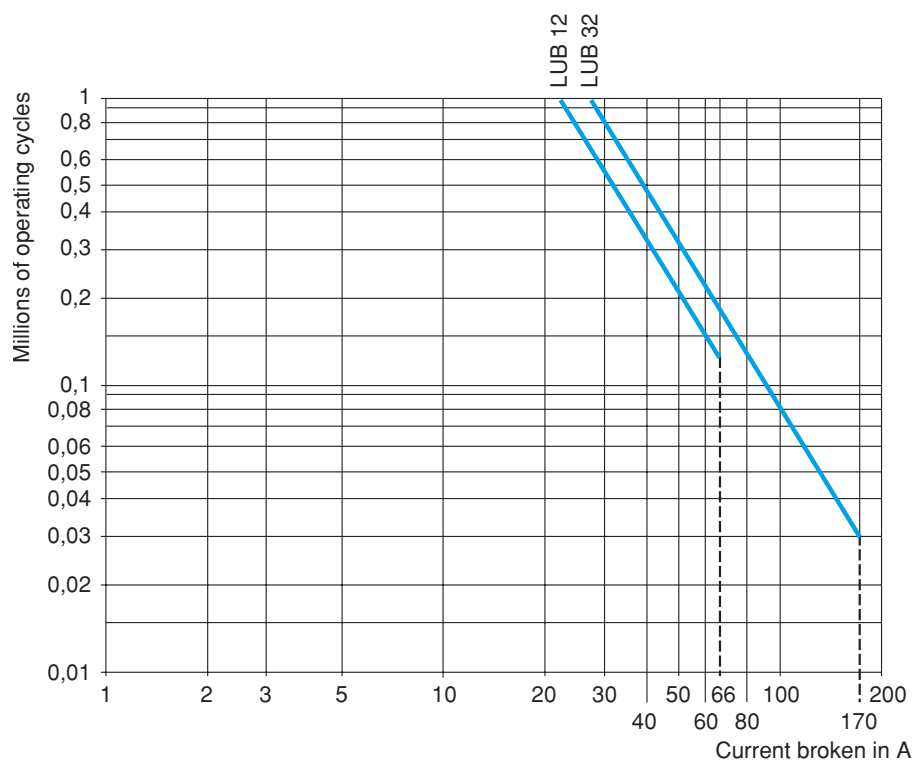


Voltage (V)	0,55	0,75	1,5	2,2	4	5,5	7,5	11	15
230 V	-	-	-	-	-	-	-	-	-
400 V	-	-	-	-	-	-	-	-	-
440 V	-	-	-	-	-	-	-	-	-

Use in category AC-44

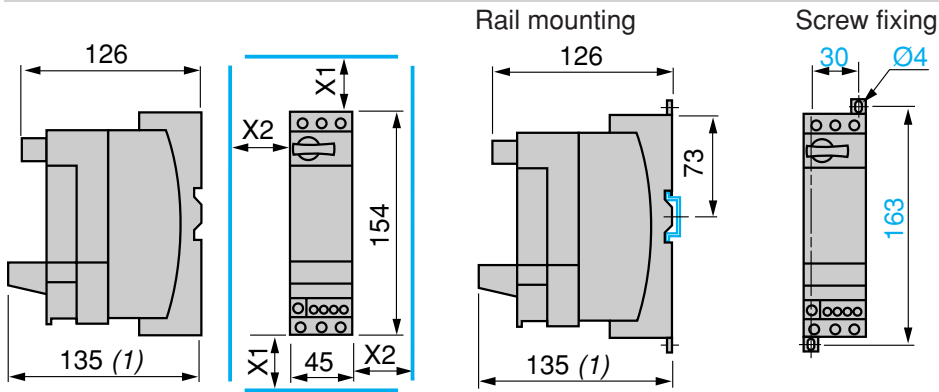
Ue ≤ 440 V

Ue = 690 V

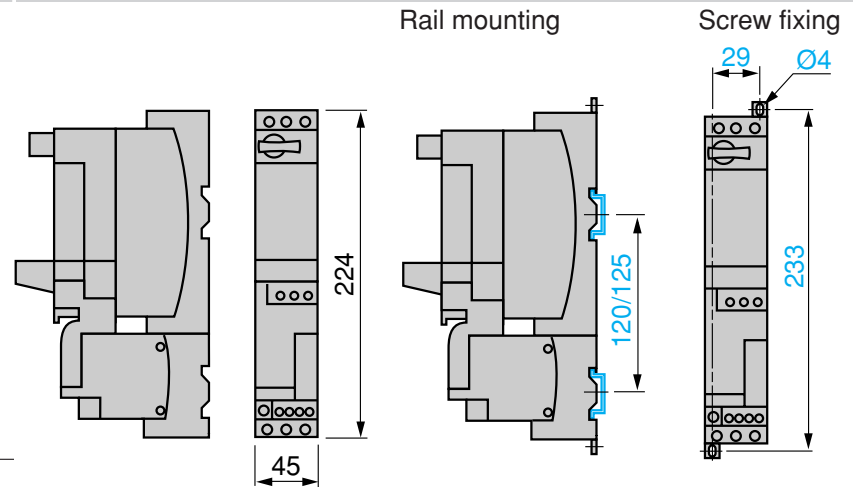


Starter-controllers

Non-reversing



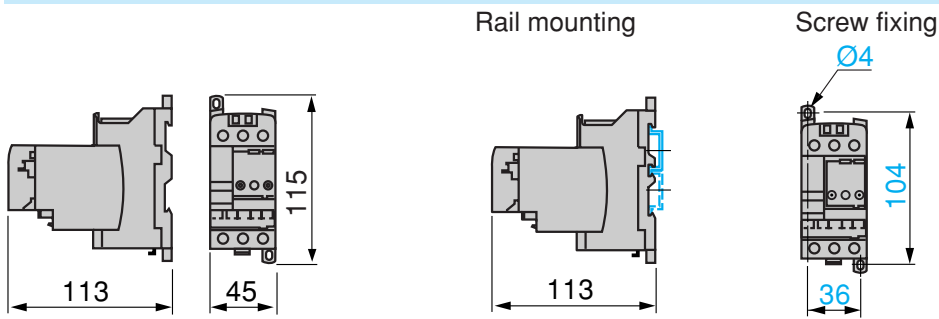
Reversing



Minimum electrical clearance :
 X1 = 50 mm for Ue = 440 V and 70 mm for Ue = 500 and 690 V,
 X2 = 0

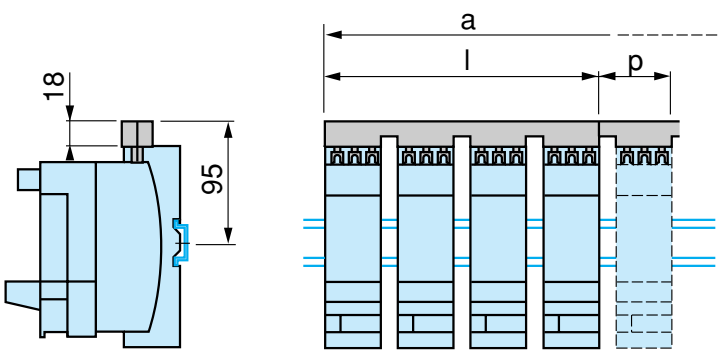
(1) Maximum depth (with Modbus communication module)

Reverser block for mounting separately from power base



Sets of busbars and plug-in power sockets

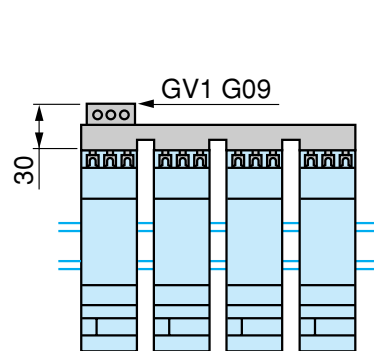
GV2 G445 and GV2 G454



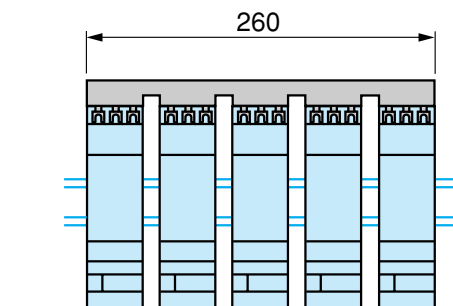
	l	P
GV2 G445 (2 x 45)	179	45
GV2 G454 (2 x 54)	206	54

	a			
Number of tap-offs	5	6	7	8
GV2 G445 (2 x 45)	224	269	314	359
GV2 G454 (2 x 54)	260	314	368	422

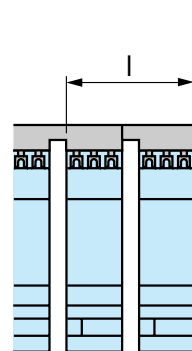
GV2 G... with terminal block GV1 G09



GV2 G554

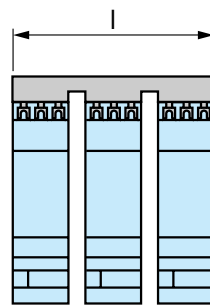


GV2 G245 and G254



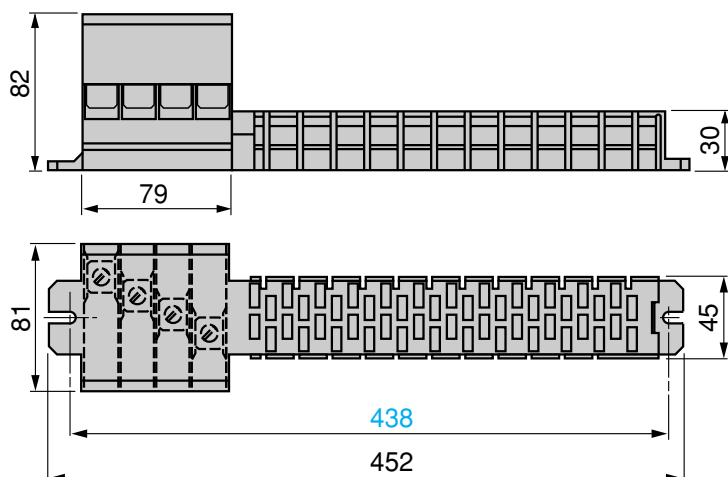
	l
GV2 G245 (2 x 45)	89
GV2 G254 (2 x 54)	98

GV2 G345 and G354

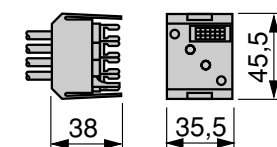


	l
GV2 G345 (2 x 45)	134
GV2 G354 (2 x 54)	152

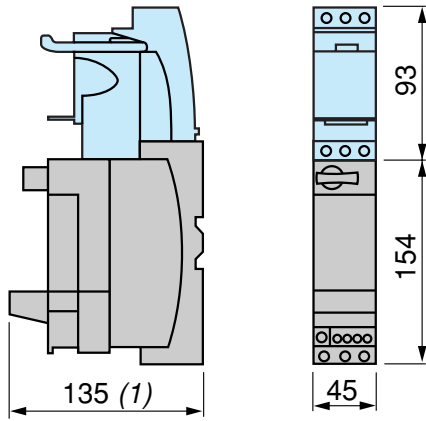
AK5 JB144



AK5 PC13, PC33, PC33L

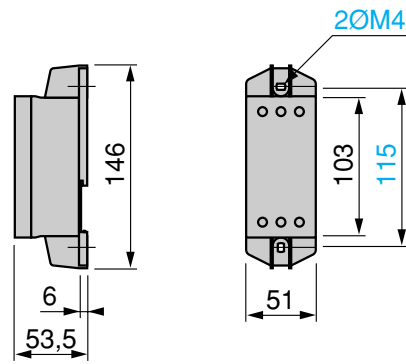


**Limiter-disconnector LUA LB1
Disconnecter LUA LB10**

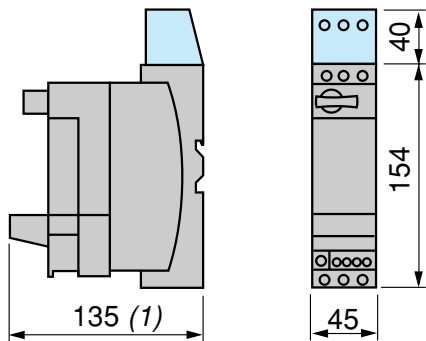


(1) Maximum depth (with Modbus communication module).

Current limiter LA9 LB920



Current limiter GV1 L3

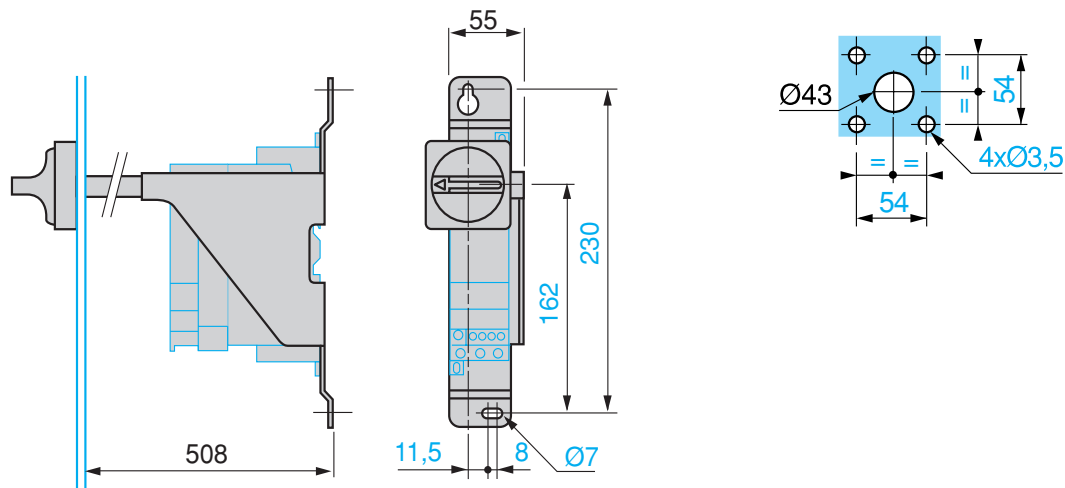


(1) Maximum depth (with Modbus communication module).

Door interlock mechanisms

LU9 AP00

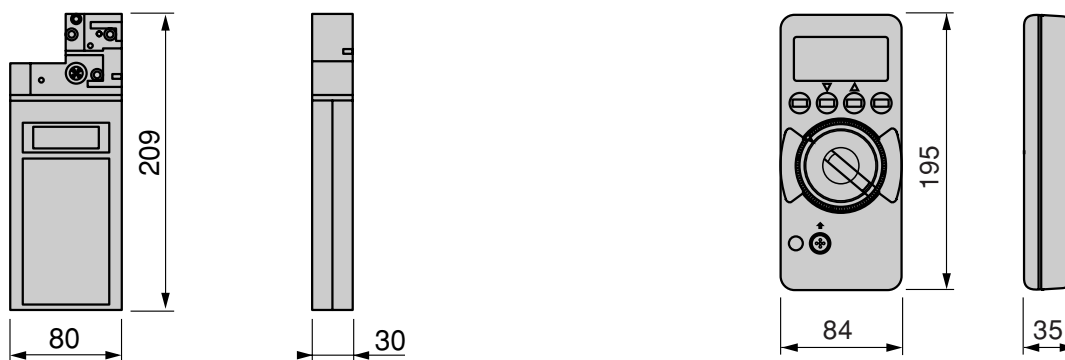
Door cut-out



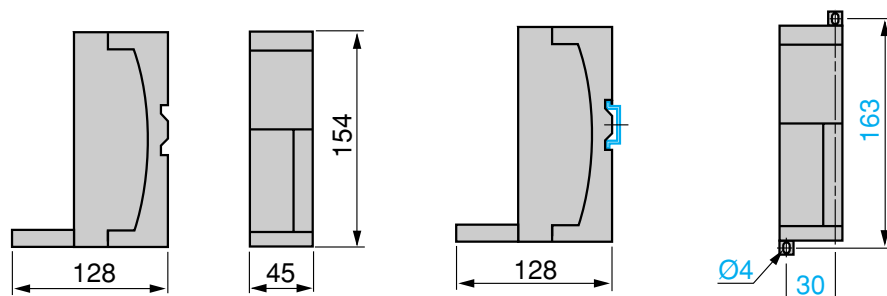
Addressing consoles

XZ MC11

ASI Terv2



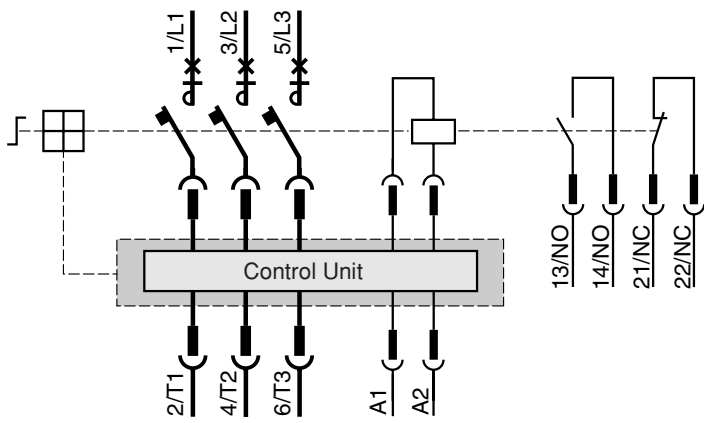
**Modbus splitter box LU9 CG3
Splitter box LU9 G02**



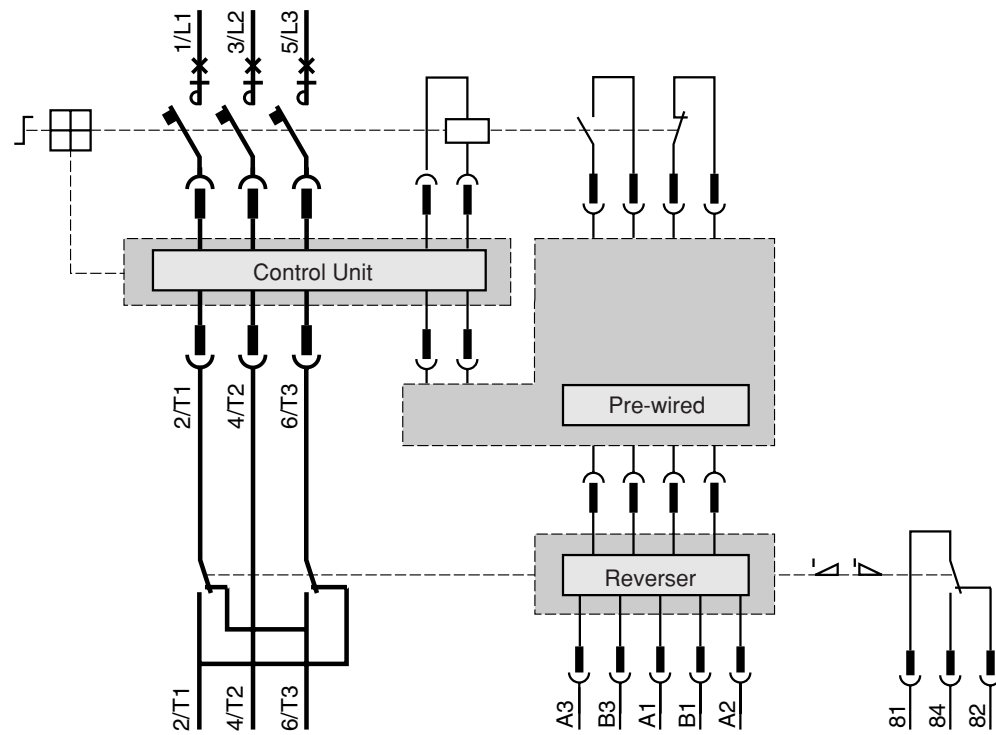
Starter-controllers, 12 or 32 A

With standard, advanced or multifunction control unit

Non-reversing

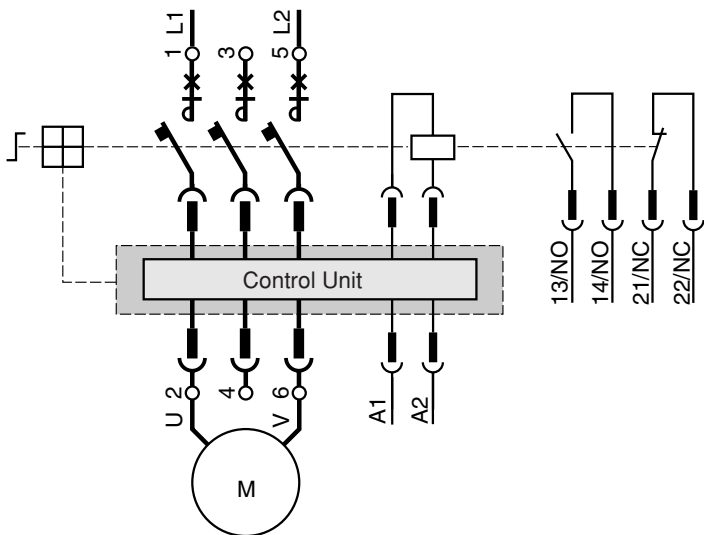


Reversing

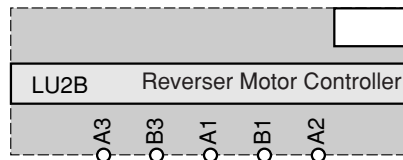


With control unit LUCC or LUCM

Connection of a single-phase motor

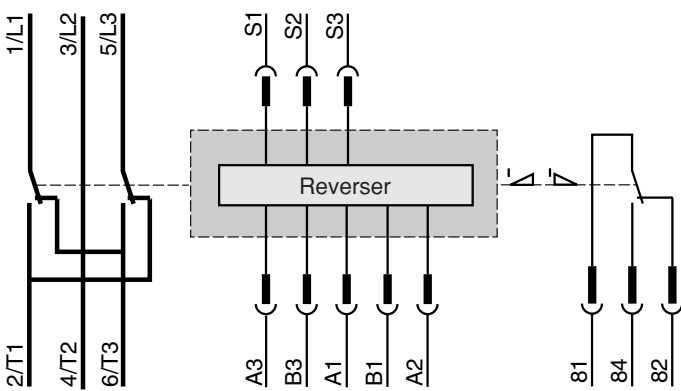


Control terminal block

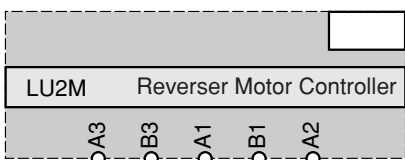


Reverser blocks

LU2M

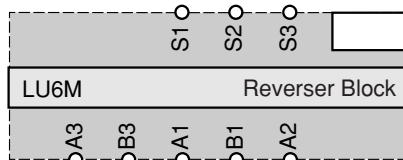


Control terminal block

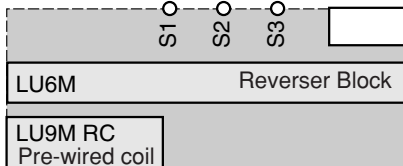


LU6M

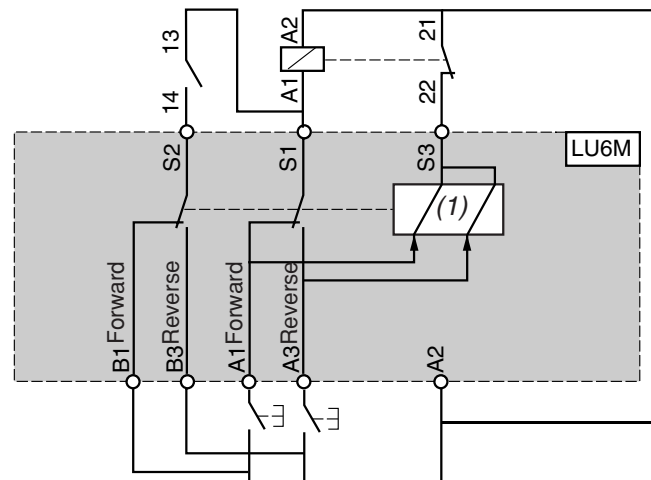
Control terminal blocks



With pre-wired connector LU9M RC



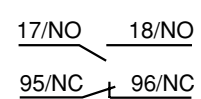
Basic scheme



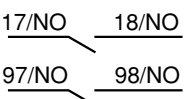
- S1 Start next stage
- S2 Electrical interlocking
- S3 Maintaining contact
- B1 Maintain forward running
- B3 Maintain reverse running
- A1 Pulse forward running
- A2 Common
- A3 Pulse reverse running
- (1) Electronically operated bistable electromagnet.

Add-on contact blocks

LUA1 C11

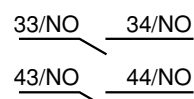


LUA1 C20

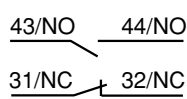


Add-on contact modules

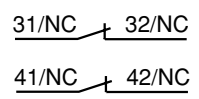
LUFN 20



LUFN 11



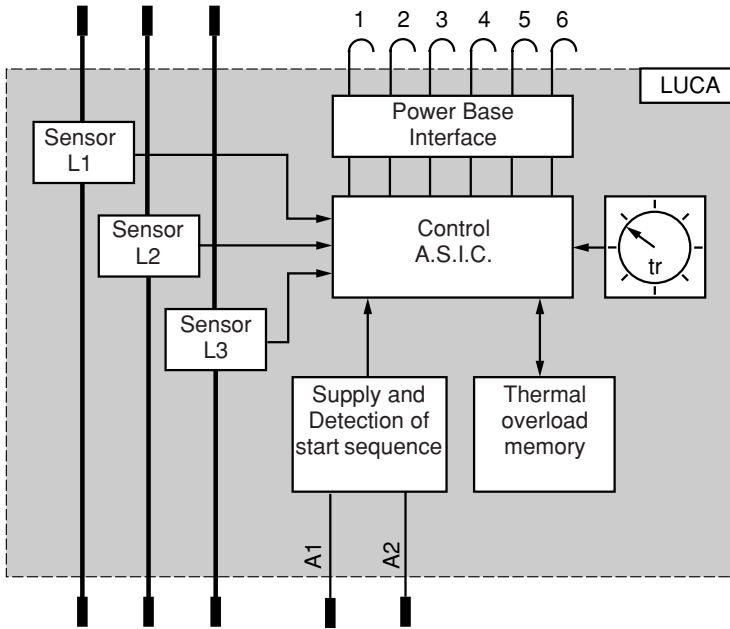
LUFN 02



Control units

Standard control unit LUCA

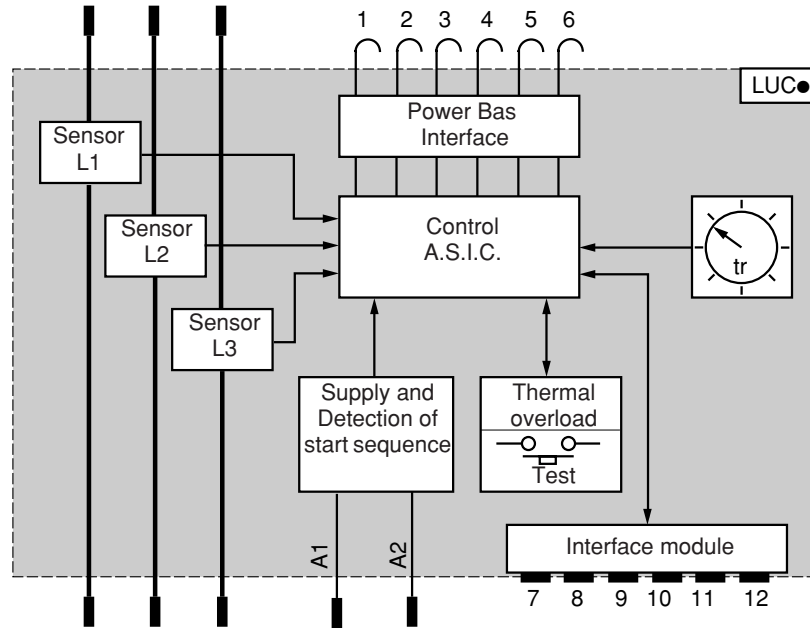
Basic scheme



- 1 and 2 Trips
- 3 and 4 Electromagnet
- 5 Power base rating
- 6 N/C

Advanced control unit LUCB, LUCC, LUCD

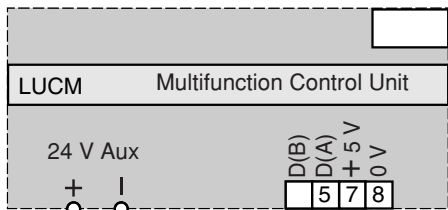
Basic scheme



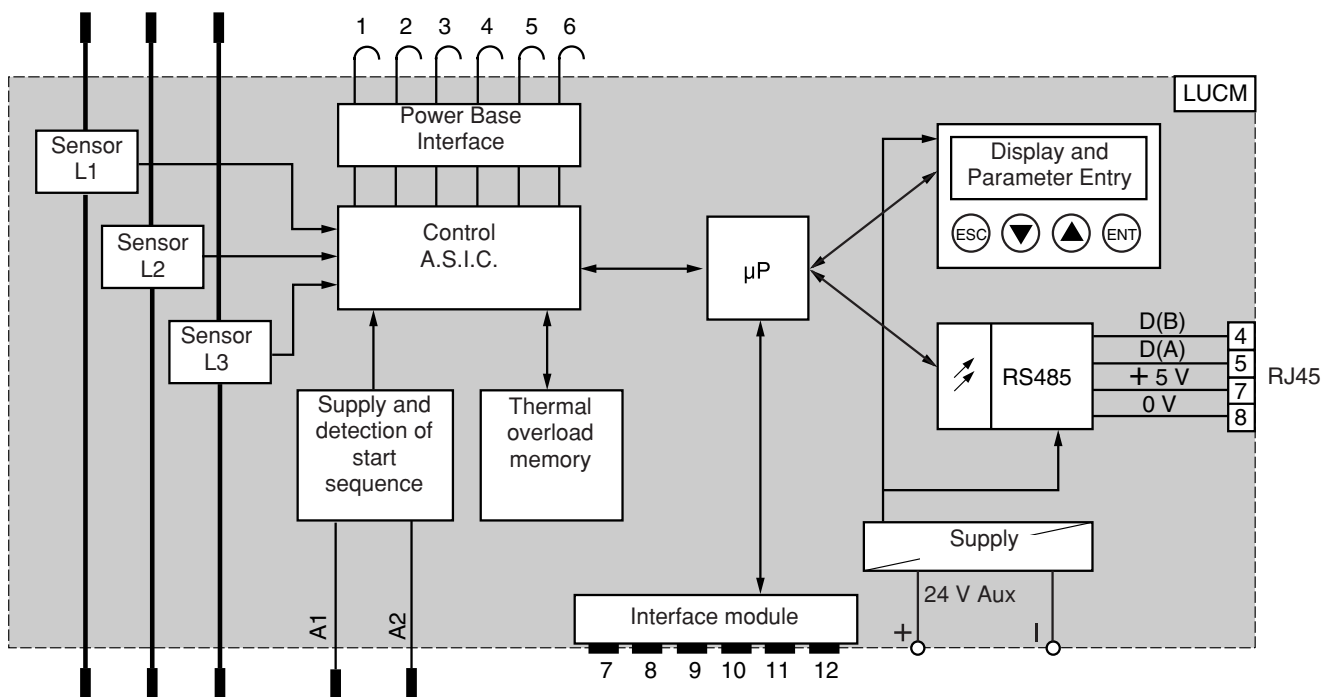
- 1 and 2 Trips
- 3 and 4 Electromagnet
- 5 Power base rating
- 6 N/C
- 7 Load
- 8 Thermal status/Set
- 9 Reset mode/Reset
- 10 (Im/Ir)
- 11 Vc2
- 12 Vc1

Multifunction control unit LUCM

Control terminal block



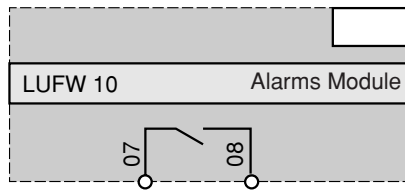
Basic scheme



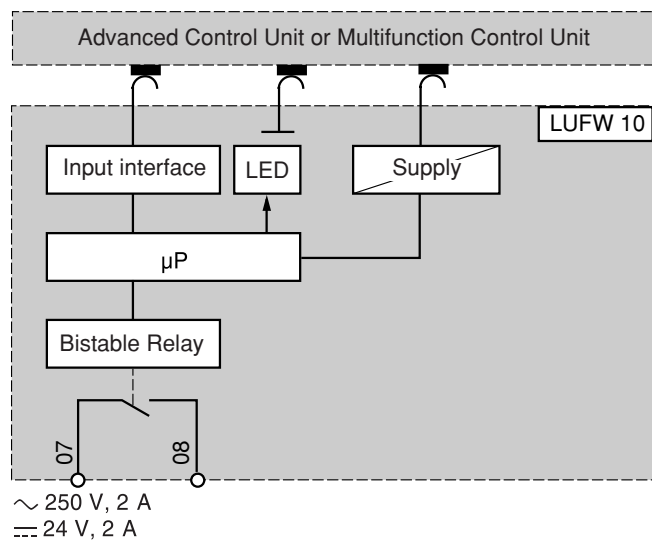
- 1 and 2 Trips
- 3 and 4 Electromagnet
- 5 Power base rating
- 6 N/C
- 7 Load
- 8 N/C
- 9 Load
- 10 (Im/Ir)
- 11 Rx/Tx
- 12 Vc1

Function modules

Alarm
LUF W10

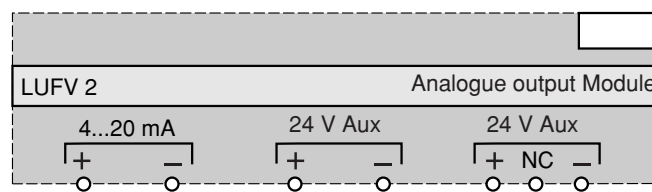


Basic scheme

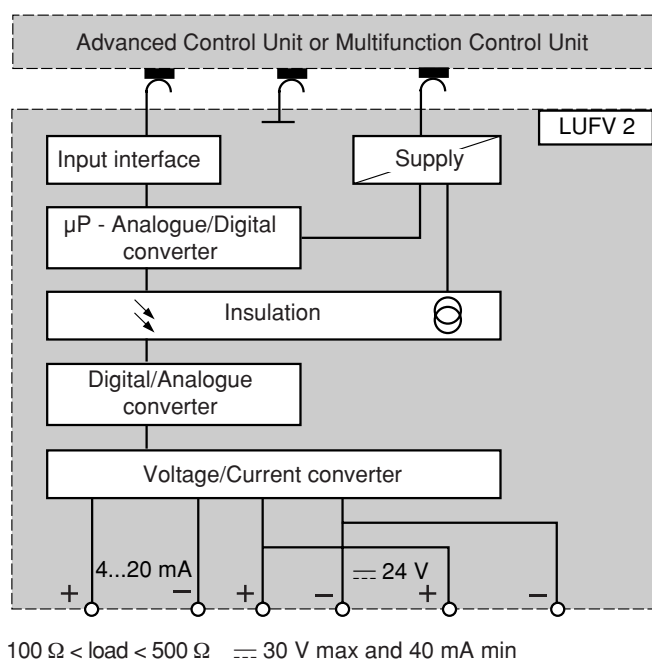


Indication of motor load

LUFV 2
4-20 mA output



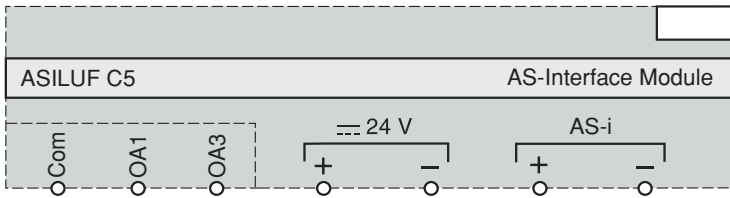
Basic scheme



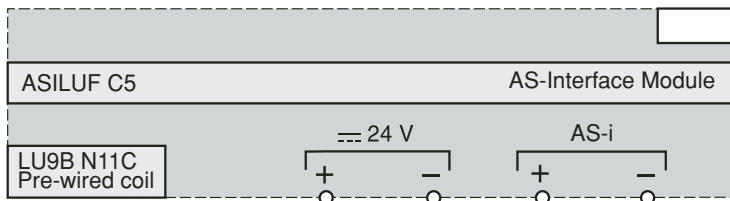
Communication modules

Communication module ASILUF C5

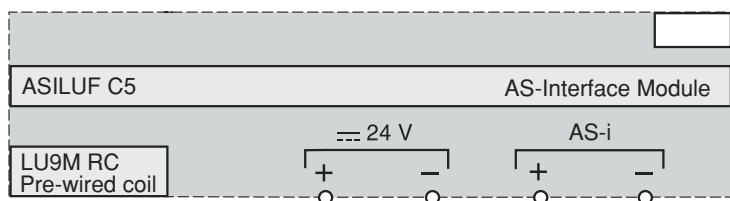
Without pre-wired coil connection



With pre-wired coil connection LU9B N11C

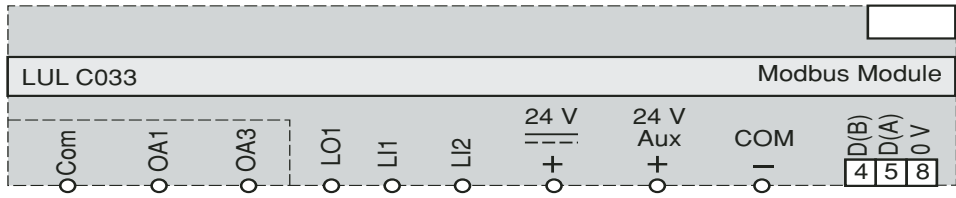


With pre-wired coil connection LU9M RC

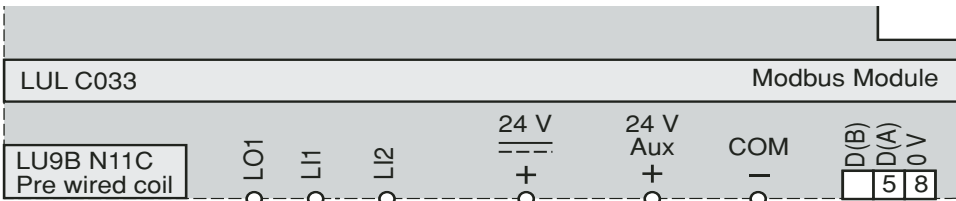


Modbus communication module LULC

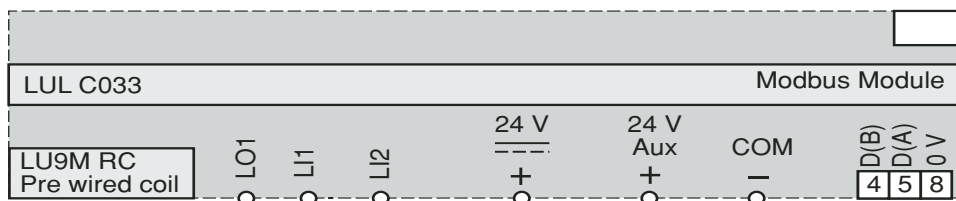
Without pre-wired coil connection



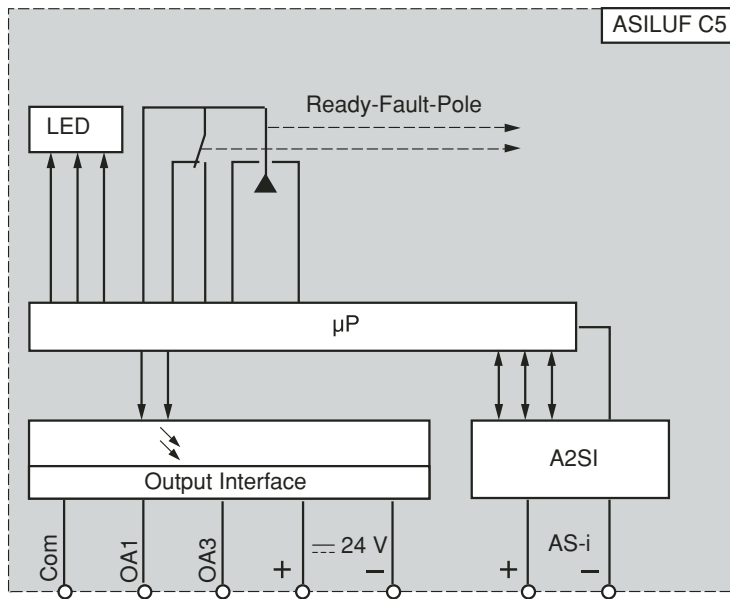
With pre-wired coil connection LU9B N11C



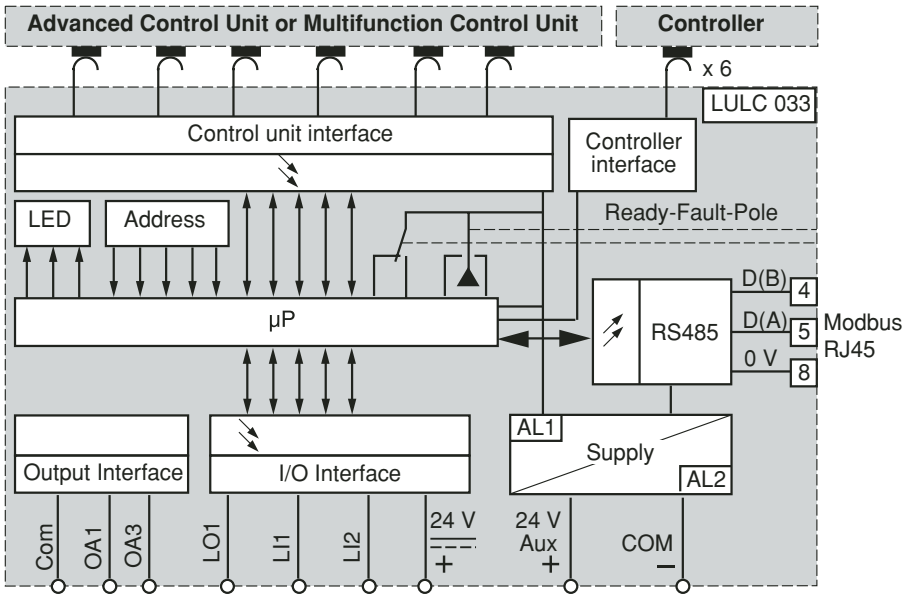
With pre-wired coil connection LU9M RC



Basic scheme

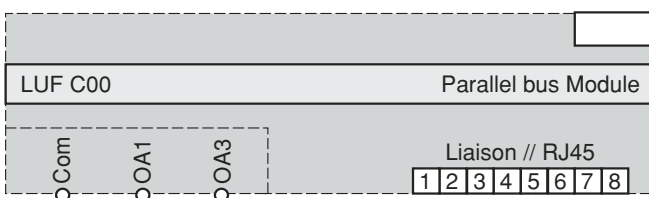


Basic scheme

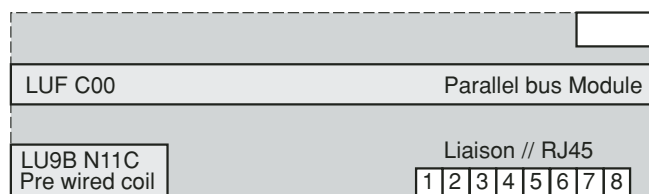


Parallel wiring module

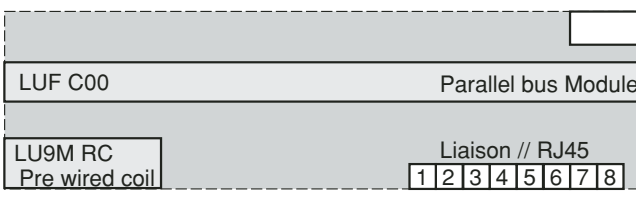
Without pre-wired coil connection



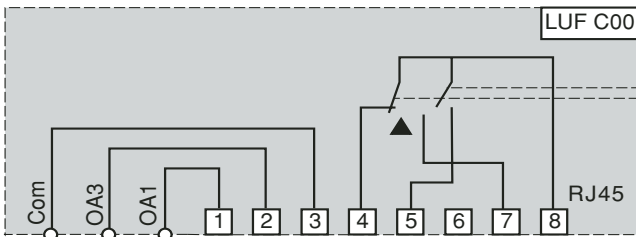
With pre-wired coil connection LU9B N11C



With pre-wired coil connection LU9M RC



Basic scheme



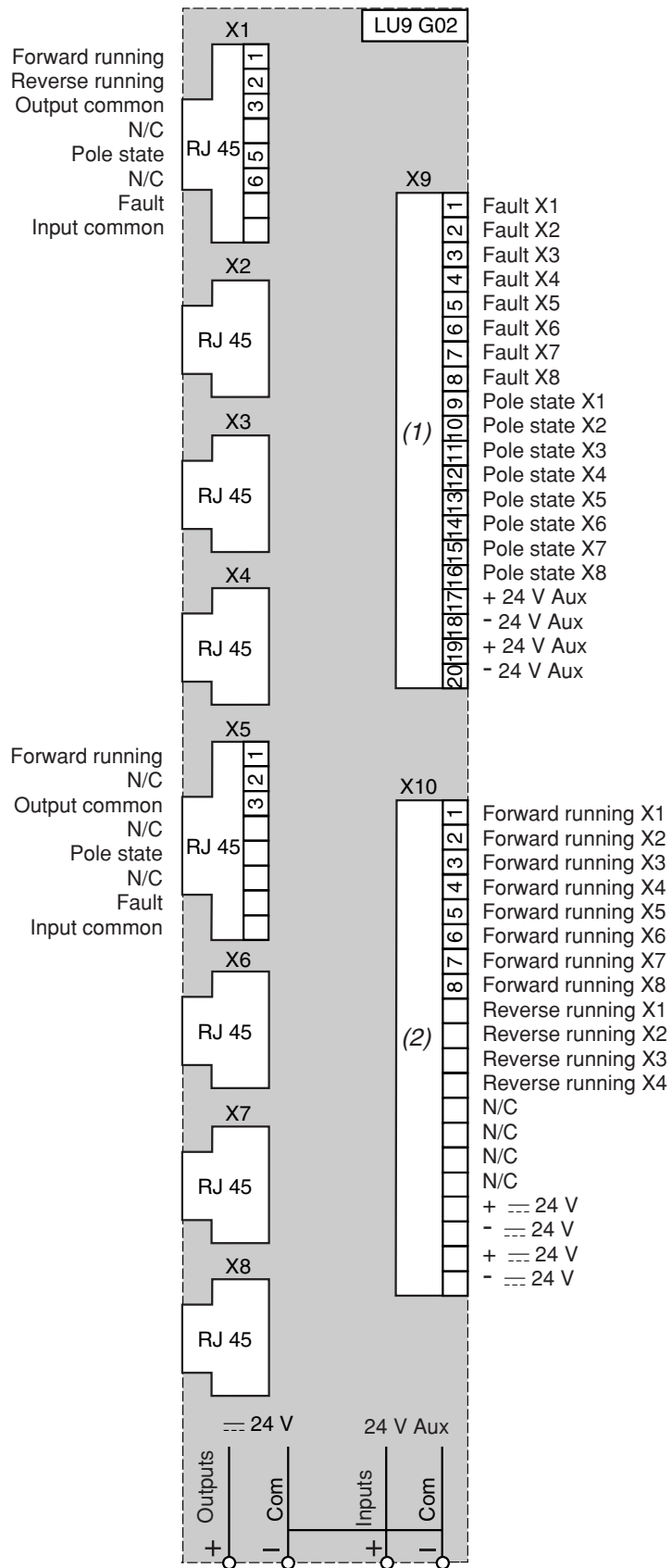
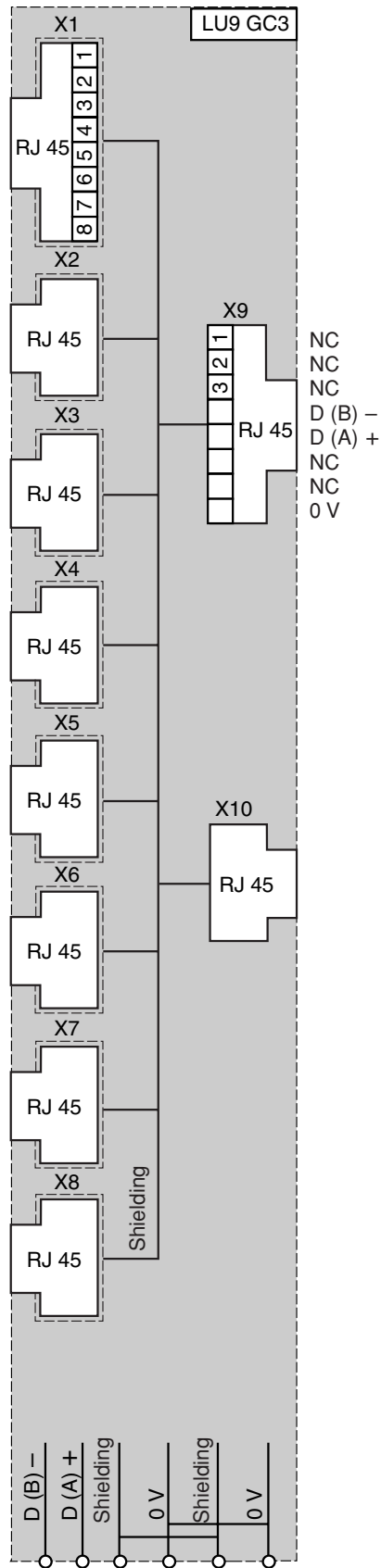
- 1 Forward running
- 2 Reverse running
- 3 Output common
- 4 Position button
- 5 Pole state
- 6 Reserved
- 7 Fault
- 8 Input common

Communication modules (continued)

Wiring hub and splitter box

Modbus hub LU9 GC3

Parallel wiring splitter box LU9 G02



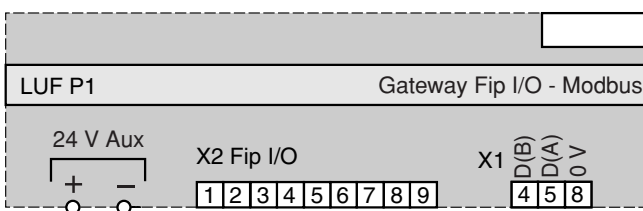
Colours of TSX CDP connection cable wires (3)

- 1 White
- 2 Brown
- 3 Green
- 4 Yellow
- 5 Grey
- 6 Pink
- 7 Blue
- 8 Red
- 9 Black
- 10 Violet
- 11 Grey-pink
- 12 Red-blue
- 13 White-green
- 14 Brown-green
- 15 White-yellow
- 16 Yellow-brown
- 17 White-grey
- 18 Grey-brown
- 19 White-pink
- 20 Pink-brown

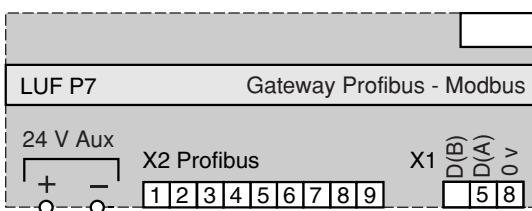
(1) 20-way HE 10 input connector.
 (2) 20-way HE 10 output connector.
 (3) Corresponding to colour of the HE 10 connector pin wires.

Gateways

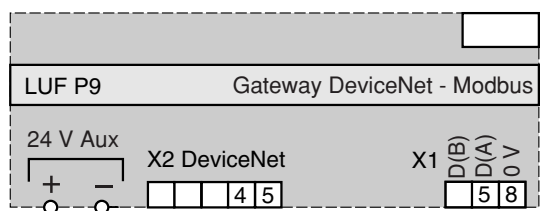
LUF P1



LUF P7



LUF P9



Data profile under AS-Interface

Control unit present in the product				Standard	Advanced	Multifunction
Status		D0	Ready (available)			
		D1	Poles closed (running)			
Commands		D0	Forward running			
		D1	Reverse running			

Register addresses accessible under Modbus

Control unit present in the product				Standard	Advanced	Multifunction
Identification	Register 0...Register 99	Words...Bits	Commercial reference, serial number, software version			
Log	Register 100...Register 450	Words...Bits	Fault log, Operating log, Log of last 5 trips			
Status	Register 451...Register 464	Words...Bits	Alarm signalling (bits), Fault signalling (bits)			
Values	Register 465...Register 473	Words	Irms phase 1, phase 2, phase 3. Motor load, thermal status Earth leakage current. Phase imbalance and phase failure			
	Register 474...Register 599	Words...Bits	Reserved			
Configuration	Register 600...Register 699	Words...Bits	Protection and alarm thresholds, fallback mode and reset mode			
Commands	Register 700...Register 714	Words...Bits	Commands			

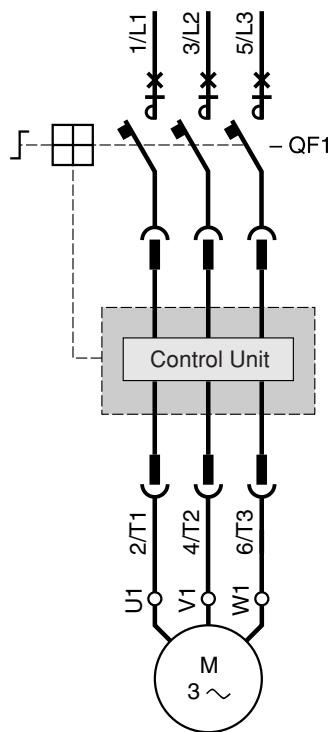
Status and values	Register 452	Bit 0	Short-circuit fault			
		Bit 1	Overcurrent fault			
		Bit 2	Thermal overload fault			
	Register 455	Bit 0	Ready (available)			
		Bit 1	Poles closed			
		Bit 2	Fault			
		Bit 3	Alarms			
		Bit 4	Tripped ("TRIP" position)			
		Bit 5	Fault acknowledgement allowed			
		Bit 6	Reserved			
		Bit 7	Motor running			
		Bit 8	Motor current % (bit 0)			
		Bit 9	Motor current % (bit 1)			
		Bit 10	Motor current % (bit 2)			
		Bit 11	Motor current % (bit 3)			
		Bit 12	Motor current % (bit 4)			
		Bit 13	Motor current % (bit 5)			
		Bit 14	Reserved			
	Bit 15	Motor starting				
	Register 461	Bit 3	Thermal overload alarm			
Register 465	Word	Thermal status value				
Register 466	Word	Motor load value (Im/Ir)				

Configuration	Register 602	Bit 0	Manual reset on thermal overload fault			
		Bit 1	Remote reset on thermal overload fault			
		Bit 2	Automatic reset on thermal overload fault			
	Register 682	Value 0	Fallback mode validation			
		Value 1	Outputs OA1 and OA3 unchanged			
		Value 2	Outputs OA1 and OA3 forced to 0			
		Value 3	Outputs OA1 and OA3 unchanged, signalling existence of communication failure			
		Value 4	Outputs OA1 forced to 1 and OA3 unchanged			
Value 5	Outputs OA3 forced to 1 and OA1 unchanged					

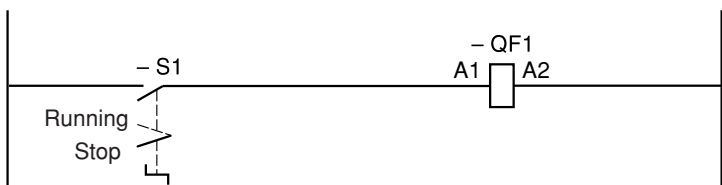
Commands	Register 700	Bit 0	LO1 output command			
	Register 704	Bit 0	OA1 output command			
		Bit 1	OA3 output command			
		Bit 2	Reserved			
		Bit 3	Fault acknowledgement			
		Bit 4	Reserved			
		Bit 5	Trip test			
Bit 6...15	Reserved					

 Data accessible

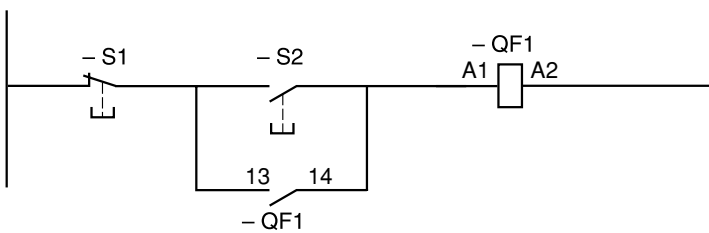
Non-reversing starter-controllers LUB



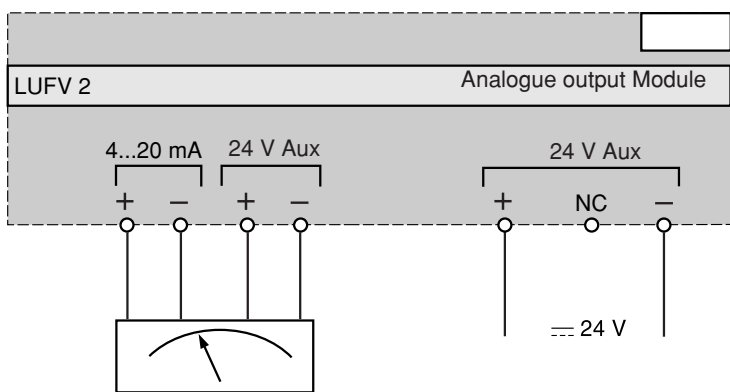
2-wire control via 2-position switch



3-wire control, pulsed start with maintaining contact

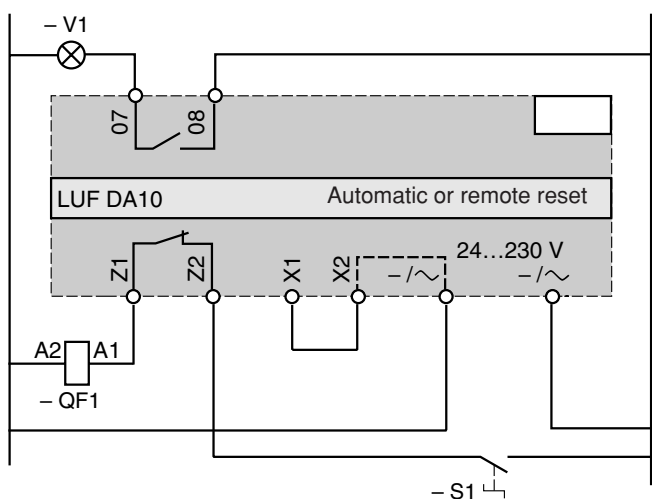


Connection of a motor load indicator module LUFV 2

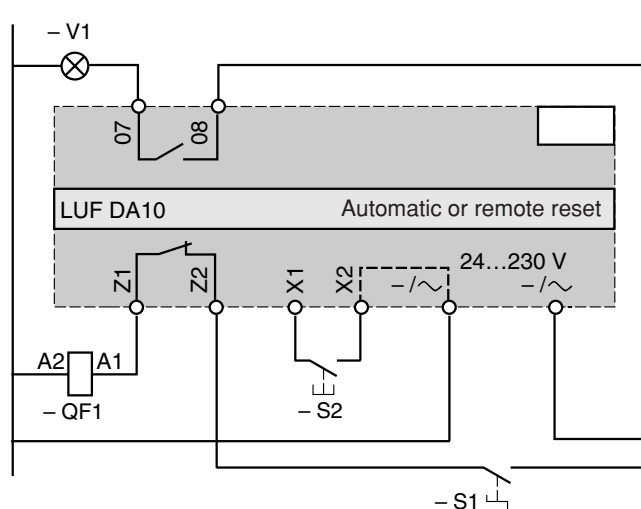


Connection of thermal overload fault signalling modules LUF DA10

Automatic reset



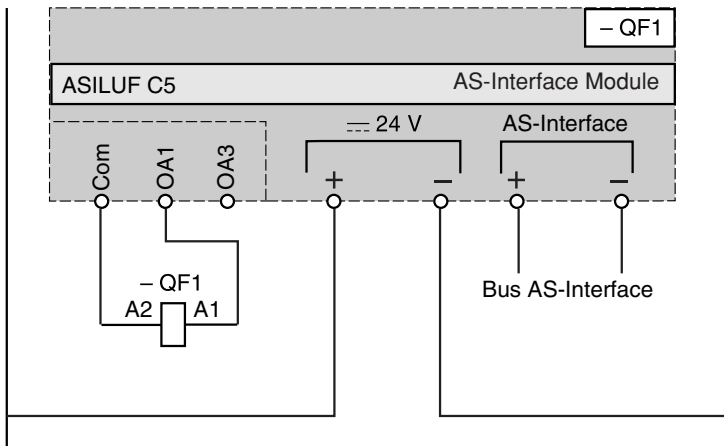
Remote reset



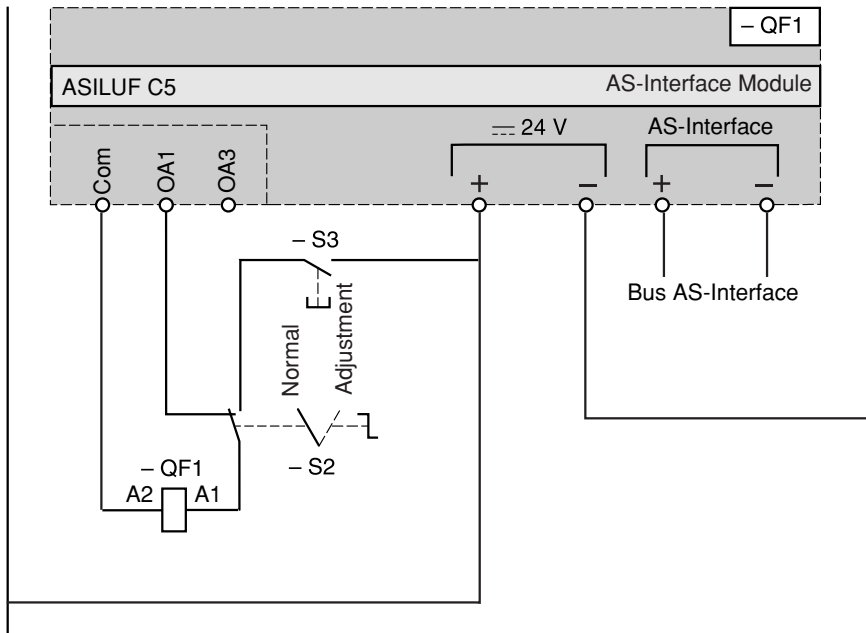
Non-reversing starter controllers LUB (continued)

Control via communication module ASIL UFC5

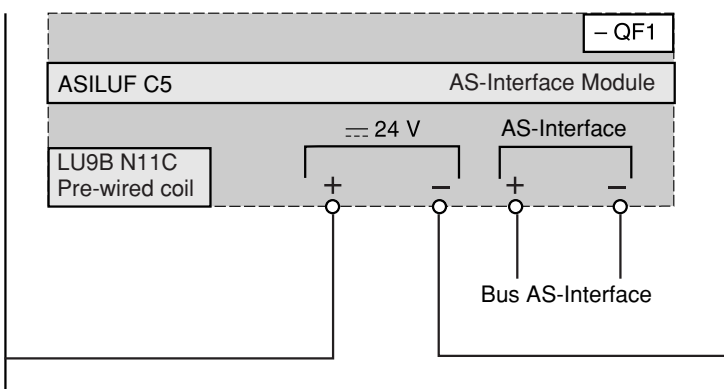
Without pre-wired coil connection



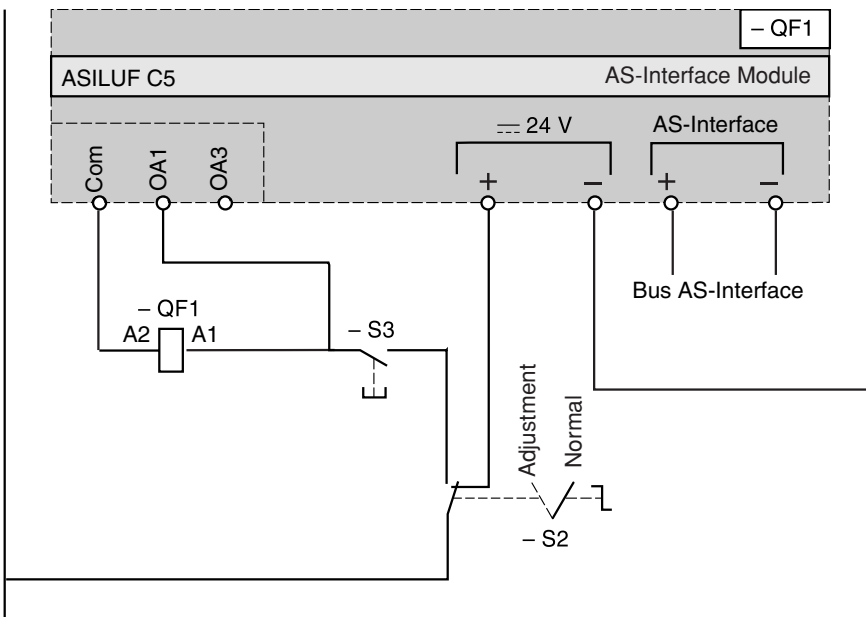
Without pre-wired coil connection
With local control



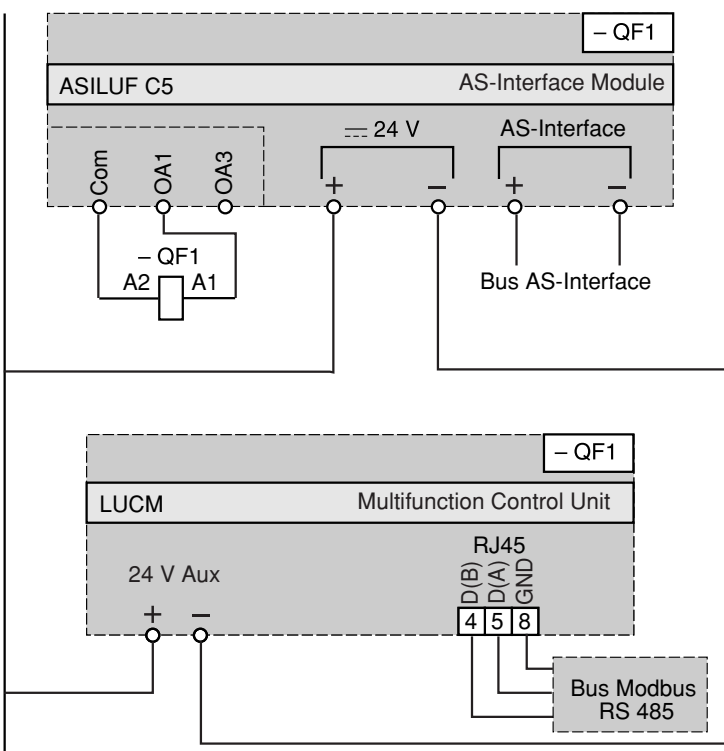
With pre-wired coil connection LU9B N11C



Without pre-wired coil connection
With local control

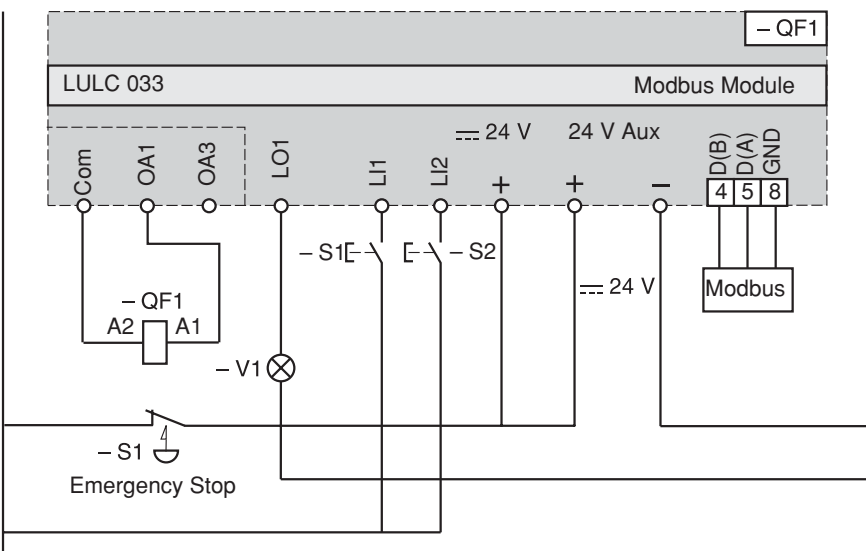


Without pre-wired coil connection
With multifunction control unit LUCM



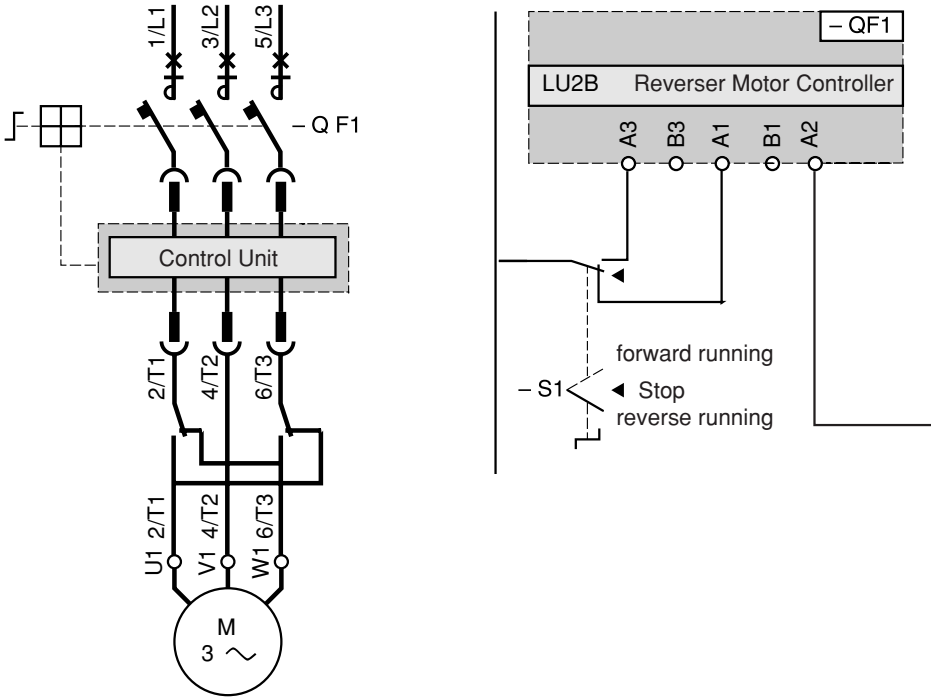
Control via Modbus communication module LULC 033

Without pre-wired coil connection

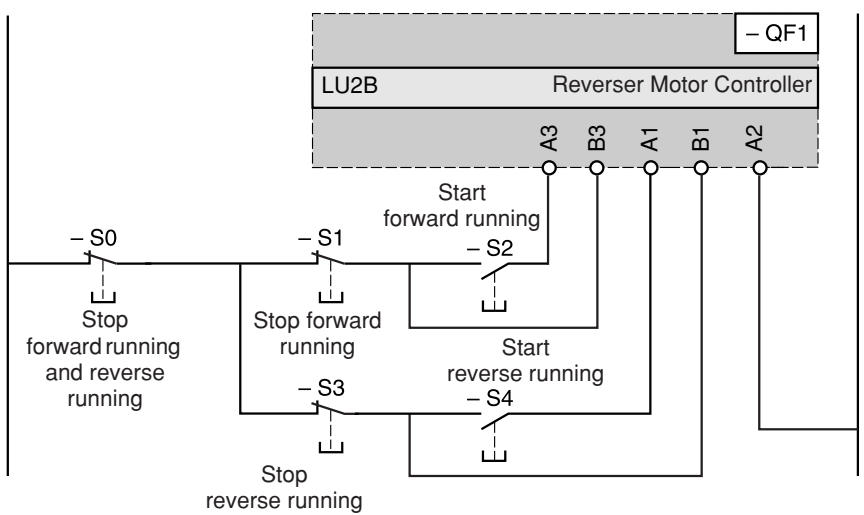


Reversing starter-controllers LUB

2-wire control via 3-position switch

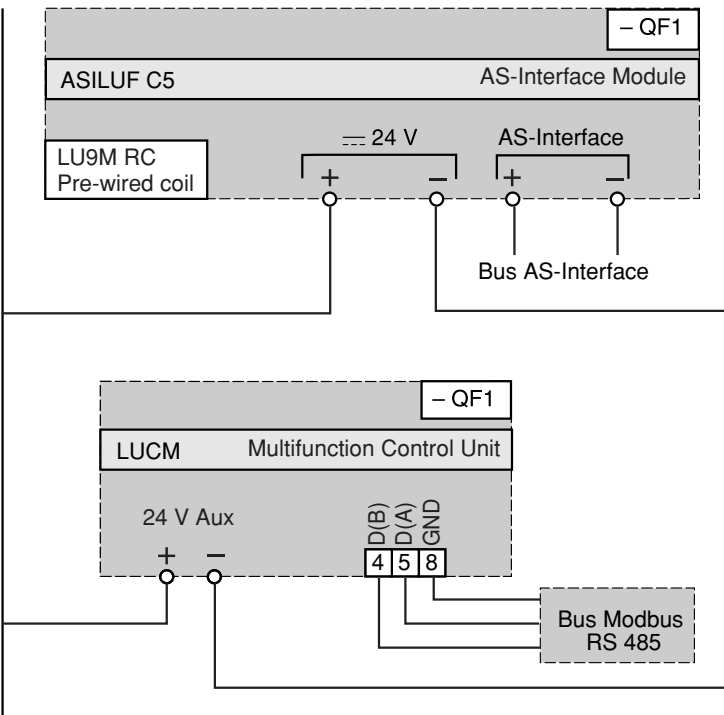


3-wire control, pulsed start with maintaining contact

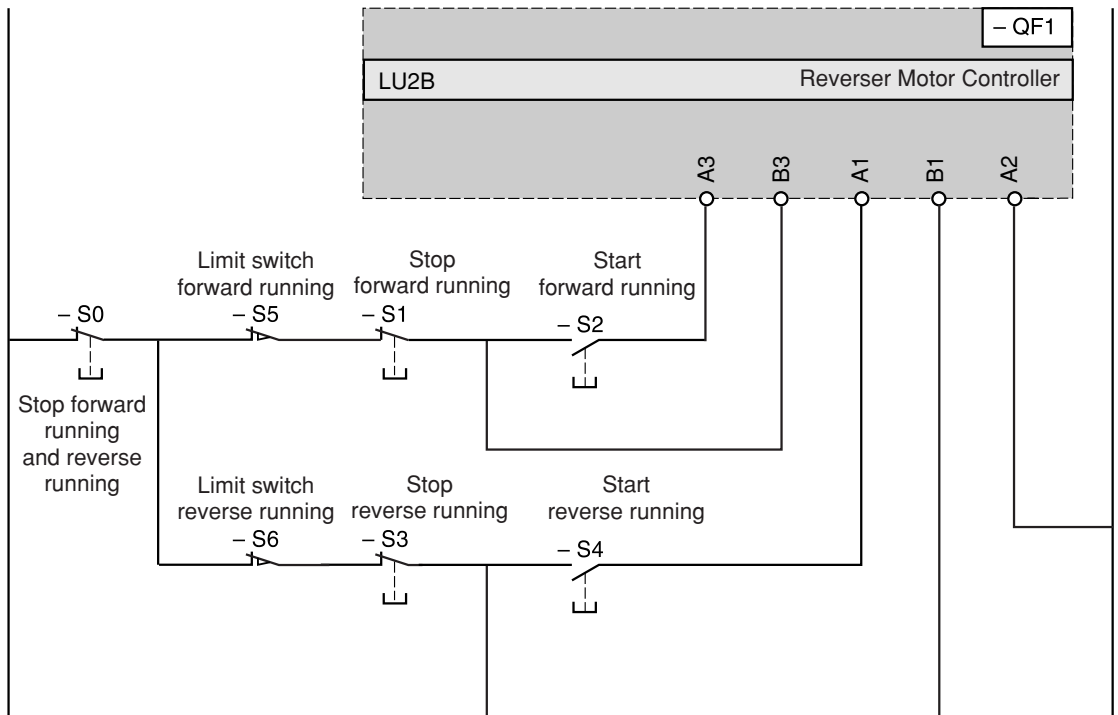


Control via communication module ASIL UFC5

With pre-wired coil connection LU9M RC
With multifunction control unit LUCM

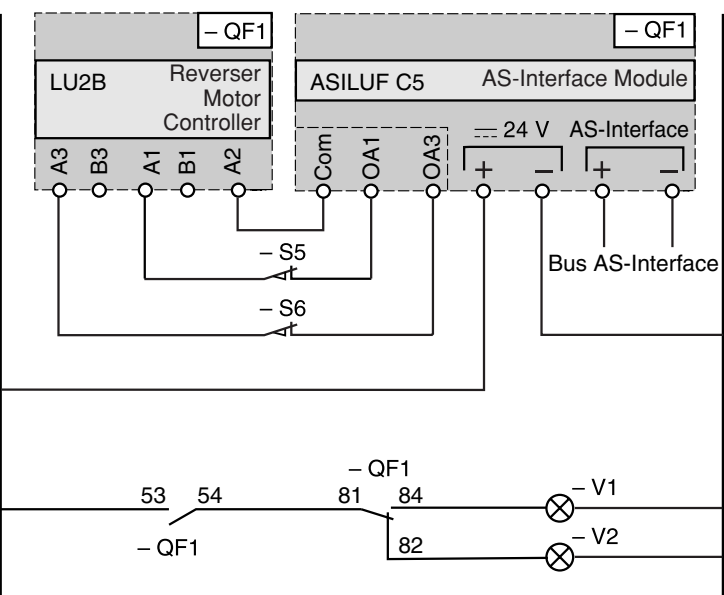


3-wire control, pulsed start with maintaining contact and limit switches



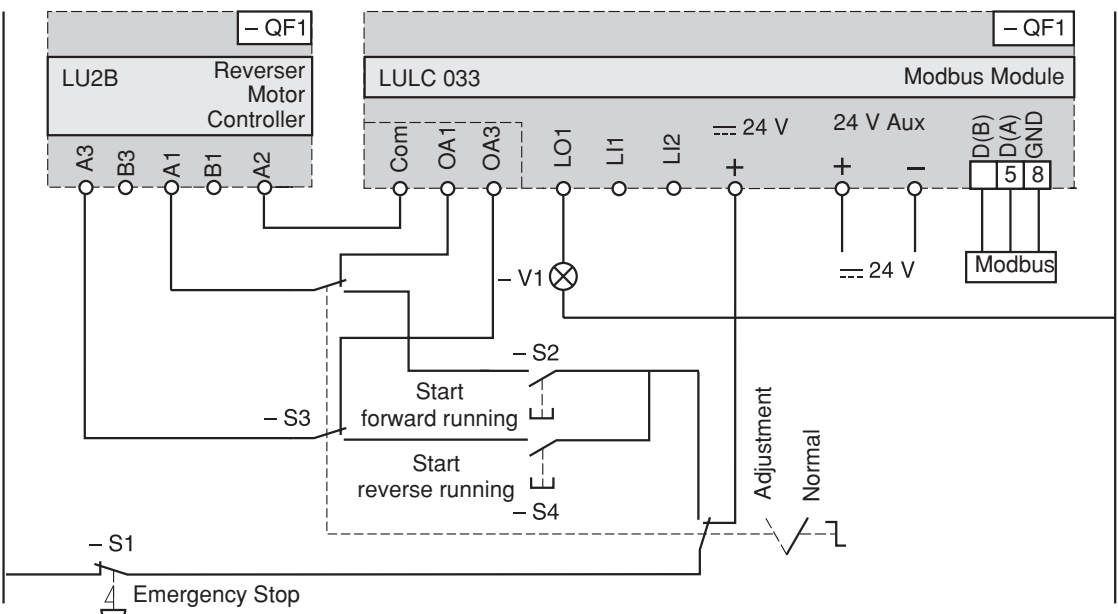
Control via communication module ASILUF C5

Without pre-wired coil connection
With running direction pilot lights and limit switches

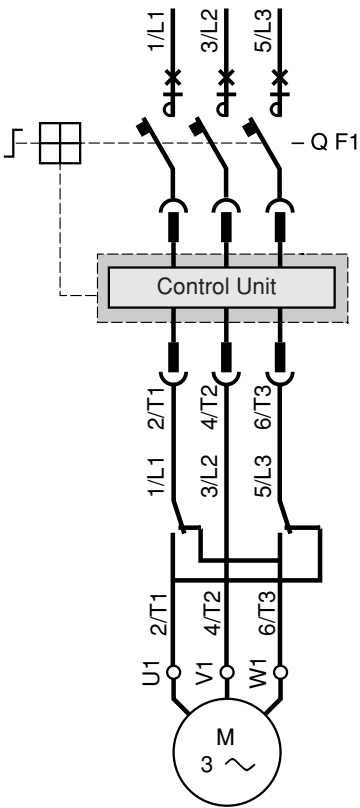


Control via Modbus communication module LULC 033

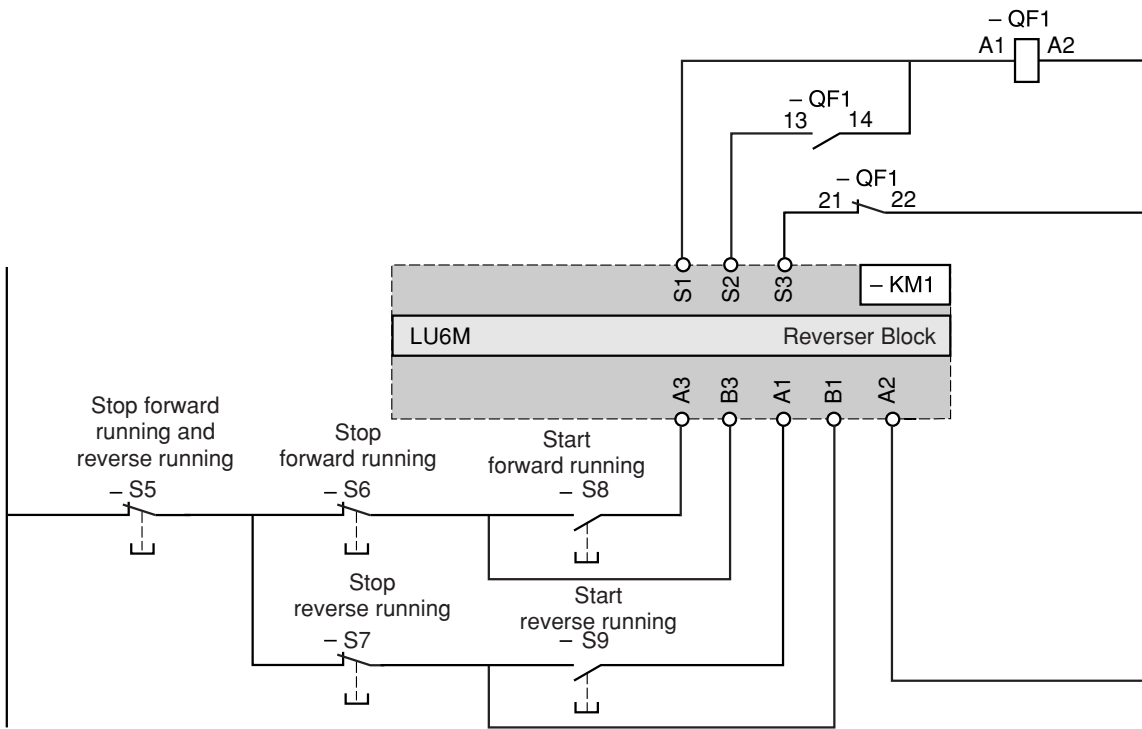
Without pre-wired coil connection
With local control



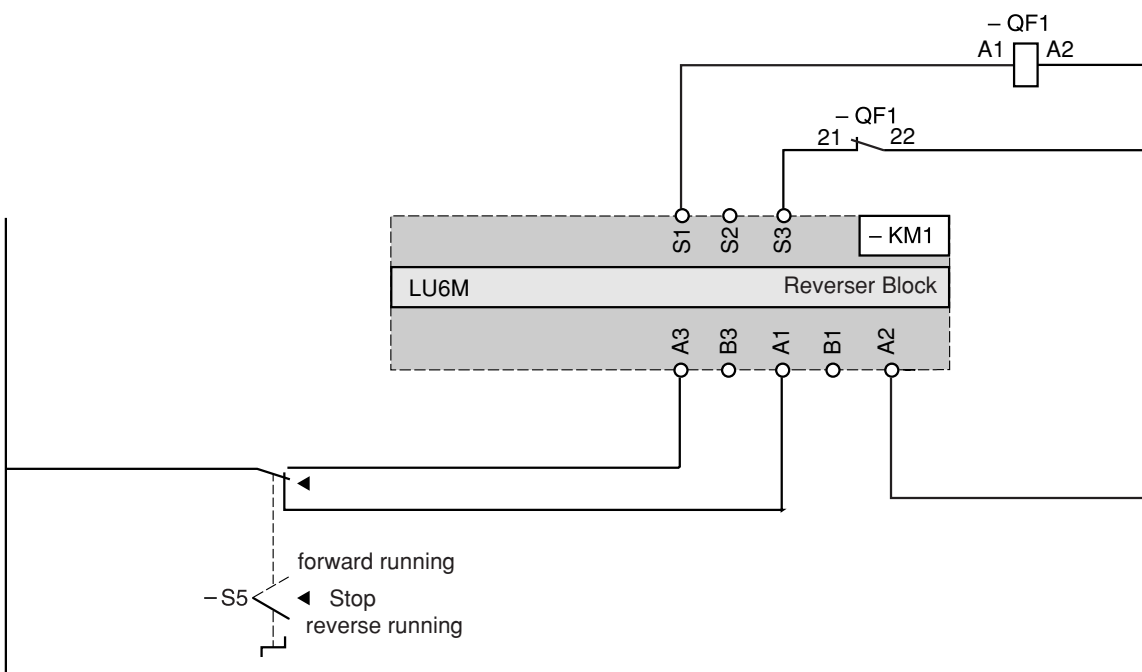
Reversing starter-controllers LUB + LU6M



3-wire control, pulsed start with maintaining contact



2-wire control via 3-position switch



Notes

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Notes

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Schneider Electric Ltd
First Floor
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Church Street
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Product showrooms

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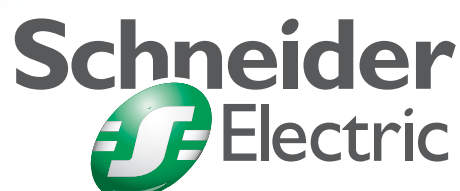
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