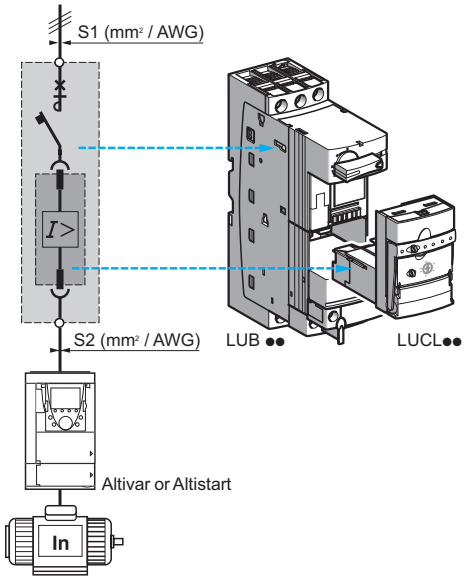
TeSys motor starters - open version

Magnetic control unit for the protection of variable speed controllers and soft start units



Presentation

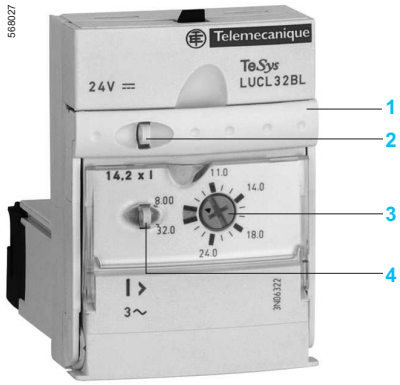
When installed upstream of a variable speed controller or soft start unit, control unit LUCL●●, used in conjunction with an LUB 12 or LUB 32 power base, provides:
- isolation,
- short-circuit protection of the motor starter.

(variable speed controller-based or soft start unit-based motor starters).

***Note**: control unit LUCL, when used in conjunction with power base LUB 12 or LUB 32, conforms to standard IEC 60947-2.*

Installation regulations

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



Description

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

References

Description	Line current of the variable speed controller or soft start unit	Reference *(1)*	Weight
	A		kg
Magnetic control unit	0.15…0.6	**LUCL6X●●**	0.135
	0.35…1.4	**LUCL1X●●**	0.135
	1.25…5	**LUCL05●●**	0.135
	3…12	**LUCL12●●**	0.135
	4.5…18	**LUCL18●●**	0.135
	8…32	**LUCL32●●**	0.135

(1) Standard control circuit voltage:

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.

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Magnetic control unit for the protection of variable speed controllers and soft start stop units

Control unit and associated power base selection

Functions provided	Maximum motor power ratings 50/60 Hz			Power base reference	Control unit reference	Line current
	< 400/415 V	500 V	690 V			
	KW	KW	KW			A
■ Short-circuit protection ■ Manual reset	0.09	–	–	**LUB 12 or LUB 32**	**LUCL6X●●**	0.15…0.6
	0.25	–	–	**LUB 12 or LUB 32**	**LUCL1X●●**	0.35…1.4
	1.5	2.2	3	**LUB 12 or LUB 32**	**LUCL05●●**	1.25…5
	5.5	5.5	9	**LUB 12 or LUB 32**	**LUCL12●●**	3…12
	7.5	9	15	**LUB 32**	**LUCL18●●**	4.5…18
	15	15	18.5	**LUB 32**	**LUCL32●●**	8…32

Operating characteristics

Control units		Standard	Advanced				Multifunction
		LUCA	LUCB	LUCC	LUCD	LUCL	LUCM
Thermal overload protection							
Over current protection		14.2 x the setting current					3 to 17 x the setting current
Short-circuit protection		14.2 x the max. current					
Protection against phase loss							
Protection against phase imbalance							
Earth fault protection (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 time							
Reset method	**Manual**						Parameters can be set
	Automatic or remote		With function module, or parameters can be set via the bus with a communication module (see page 18).				Parameters can be set Parameters can be set via the bus with a communication module (see page 18).

Integrated function

Function provided with accessory

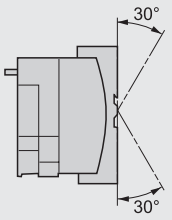
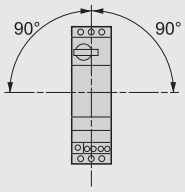
Compatibility

Compatibility of control unit LUCL●● with		References	Functions
The starter-controller	Yes	LUB 12/LUB 32	Starter-controller (magnetic protection)
The starter	No	LUS 12/LUS 32	Starter without either magnetic or thermal overload protection)
The controller	No	LUT M	Controller (without thermal overload protection)
Add-on contact blocks with fault signalling and auxiliary contacts	Yes	LUA 1C11	Add-on contact blocks with fault signalling (1 N/O + 1 N/C)
		LUA 1C20	Add-on contact blocks with fault signalling (2 N/O)
		LUF N20	Auxiliary contacts (2 N/O)
		LUF N11	Auxiliary contacts (1 N/O + 1 N/C)
		LUF N02	Auxiliary contacts (2 N/C)
Communication modules	Yes	ASILUF C5 and ASILUF C51	AS-Interface communication modules
		LUF C00	Parallel wiring module
		LUL C033	Modbus communication module (1 output/2 inputs)
		LUL C031	Modbus communication module (1 output)
		LUL C15	Advantys STB communication module (1 output/2 inputs)
		LUL C08	CANopen communication module (1 output/2 inputs)
		LUL C09	DeviceNet communication module (1 output/2 inputs)
		LUL C07	Profibus DP communication module (1 output/2 inputs)
Function modules	No	LUF W10	Alarm function module
		LUF DH11	Thermal overload signalling module with manual reset
		LUF DA01	Thermal overload signalling module with automatic or remote reset (1 N/C)
		LUF DA10	Thermal overload signalling module with automatic or remote reset (1 N/O)
		LUF V2	Motor load indication module

Characteristics of magnetic control unit LUCL

Protection	Motor type		3-phase
	Conforming to standard		When used in conjunction with an LUB 12 or LUB 32 power base, magnetic control unit LUCL conforms to standard IEC 60947-2.
Short-circuit protection	Tripping threshold		14.2 x In (max. setting current)
	Tripping tolerance		± 20 %

Environment

Product certifications			CE
Conforming to standards			When used in conjunction an LUB power base, control unit LUCL conforms to standard 60947-2.
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution: 3	**V**	690
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-2	**kV**	6
Safety separation of circuits SELV	Conforming to IEC/EN 60947-1 appendix N	**V**	Between the control or auxiliary circuit and the main circuit: 400
			Between the control and auxiliary circuits: 40
Degree of protection Conforming to IEC/EN 60947-1 (protection against direct finger contact)	Front panel outside connection zone		IP 40
	Front panel and wired terminals		IP 20
	Other faces		IP 20
Protective treatment	Conforming to IEC/EN 60068		"TH"
	Conforming to/EN 60068-2-30	**Cycles**	12
	Conforming to IEC/EN 60068-2-11	**h**	48
Ambient air temperature around the device	Storage	**°C**	- 40…+ 85
	Operation	**°C**	Power bases and standard and advanced control units: - 25… + 70. (At temperatures above 60°C and up to 70°C, for Ie = 32 A, leave a minimum gap of 9 mm between products).
			Power bases and multifunction control units: - 25…+ 60. (At temperatures above 45 °C, leave a minimum gap of 9 mm between products. At temperatures above 55 °C up to 60 °C, leave a gap of 20 mm between products.)
Maximum operating altitude		**m**	2000
Operating positions	In relation to normal vertical mounting plane		 
Flame resistance	Conforming to UL 94		V2
	Conforming to IEC/EN 60695-2-12	**°C**	960 (parts supporting live components)
		°C	650
Environmental restrictions			Cadmium and silicone-free, recyclable
Shock resistance 1/2 sine wave = 11 ms	Conforming to IEC/EN60068-2-27 *(1)*		Power poles open: 10 gn
			Power poles closed: 15 gn
Vibration resistance 5…300 Hz	Conforming to IEC/EN 60068-2-6 *(1)*		Power poles open: 2 gn
			Power poles closed: 4 gn *(2)*
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	**kV**	In open air: 8 - Level 3
		kV	On contact: 8 - Level 4
Immunity to radiated high-frequency disturbance	Conforming to IEC/EN 61000-4-3	**V/m**	10 - Level 3
Immunity to fast transient currents	Conforming to IEC/EN 61000-4-4	**kV**	All circuits except for serial link: 4 - Level 4
		kV	Serial link: 2 - Level 3
Immunity to dissipated shock waves	Conforming to IEC/EN 60947-2		**Common mode** / **Serial mode**
	Uc ∿ 24…240 V, Uc ⎓ 48…220 V	**kV**	2 / 1
	Uc = 24 V ⎓		Not applicable
Immunity to conducted high-frequency disturbance	Conforming to IEC/EN 61000-4-6	**V**	10

(1) Without modifying the contact states, in the most unfavourable direction.
(2) 2 gn with Advantys STB or CANopen communication modules.

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TeSys U starter-controllers
Power bases and LUCL magnetic control unit

Power base and control unit type				LUB 12 + LUCL	LUB 32 + LUCL
Power circuit connection characteristics					
Connection to Ø 4 mm screw clamp terminals					
Flexible cable without cable end	1 conductor		mm²	2.5…10	2.5…10
	2 conductors		mm²	1.5…6	1.5…6
Flexible cable with cable end	1 conductor		mm²	1…6	1…6
	2 conductors		mm²	1…6	1…6
Flexible cable without cable end	1 conductor		mm²	1…10	1…10
	2 conductors		mm²	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
Control circuit connection characteristics					
Connection to Ø 3 mm screw clamp terminals					
Flexible cable without cable end	1 conductor		mm²	0.75…1.5	0.75…1.5
	2 conductors		mm²	0.75…1.5	0.75…1.5
Flexible cable with cable end	1 conductor		mm²	0.34…1.5	0.34…1.5
	2 conductors		mm²	0.34…1.5	0.34…1.5
Flexible cable without cable end	1 conductor		mm²	0.75…1.5	0.75…1.5
	2 conductors		mm²	0.75…1.5	0.75…1.5
Screwdriver				Philips n° 2 or flat screwdriver: Ø 5 mm	
Tightening torque			N.m	0.8…1.2	0.8…1.2
Control circuit characteristics					
Rated control circuit voltage	∿ 50/60 Hz		V	24…240	24…240
	⎓		V	24…220	24…220
Voltage limits	⎓ 24 V *(1)*		V	20…27	20…27
Operation	∿ 24 V		V	20…26.5	20…26.5
	∿ or ⎓ 48…72 V		V	∿ 38.5…72. ⎓ 38.5…93	∿ 38.5…72. ⎓ 38.5…93
	∿ 110…240 V		V	∿ 88…264	∿ 88…264
	⎓ 110…240 V		V	⎓ 88…242	⎓ 88…242
Drop-out	⎓ 24 V		V	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
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	60	80
	∿ 24 V		mA	70	90
	∿ or ⎓ 48…72 V		mA	35	45
	∿ 110…240 V, ⎓ 110…220 V		mA	35	25
Heat dissipation			W	2	3
Operating time	Closing		ms	24 V: 70; 48 V: 60; ≥ 72 V: 50	24 V: 70; 48 V: 60; ≥ 72 V: 50
	Opening		ms	35	35
Resistance to micro-breaks			ms	3	3
Resistance to voltage dips	IEC/EN 61000-4-11			At least 70 % of Uc for 500 ms	
Mechanical durability	In millions of operating cycles			15	15
Maximum operating rate	In operating cycles per hour			3600	3600
Main pole characteristics					
Number of poles				3	3
Isolation conforming to IEC/EN 60947-1	Possible			Yes	Yes
	Padlocking			1 padlock with Ø 6.9 mm shank	1 padlock with Ø 6.9 mm shank
Rated thermal current			A	12	32
Rated operational current (Ue ≤ 440 V)	Conforming to IEC/ EN 60947-2	Category AC-41		θ ≤ 70 °C: 12 A	θ ≤ 70 °C: 32 A
		Category AC-43		θ ≤ 70 °C: 12 A	θ ≤ 70 °C: 32 A
Rated operational voltage			V	690 *(3)*	690 *(3)*
Frequency limits	Of the operating current		Hz	40…60	40…60
Power dissipated in the power circuits	Operational 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	230 440 500 600	
			kA	50 50 10 4	
Total breaking time			ms	2 2 2	
Thermal limit	With Isc max on 440 V		kA²s	90	120

(1) d.c. voltage with maximum ripple of ± 10 %.
(2) No consumption sealed.
(3) For 690 V, use phase barrier LU9SP0.