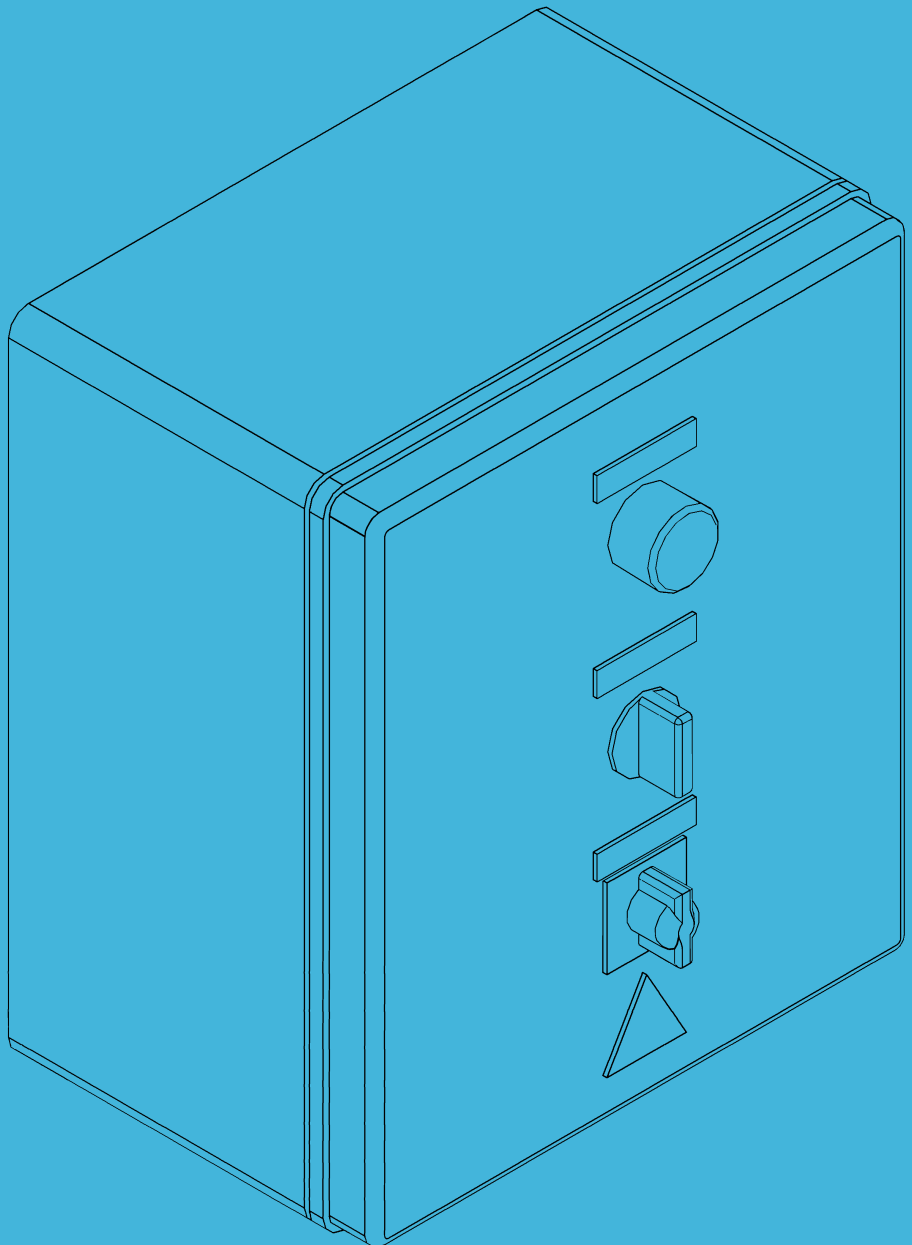


UNIVERSAL PUMP SWITCHBOARD

USER MANUAL



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Use of symbols

The symbols used in this manual refer to the following:



WARNING

The following text contains instructions aimed at preventing injury or direct damage to the crops, the product and/or the infrastructure.



CAUTION

The following text contains instructions aimed at preventing unwanted system operation, installation or conditions that, if not followed, might void the warranty.



ATTENTION

The following text contains instructions aimed at enhancing the efficiency of usage of the instructions in the manual.



NOTE

The following text contains instructions aimed at emphasizing certain aspect of the operation of the system or installation.



ELECTRICAL HAZARD

The following text contains instructions aimed at preventing death or injury by electrocution or direct damage to the product and/or the infrastructure.



SAFETY FOOTWEAR

The following text contains instructions aimed at preventing foot injury.

Safety instructions



WARNING

In agricultural environment - always wear protective footwear.



DANGER

Hazard of electric shock, explosion, or arc flash. Disconnect all power before servicing equipment.
Failure to follow these instructions will result in death or serious injury.



CAUTION

Only qualified electricians are permitted to perform electrical installations and repairs!



WARNING

The Universal Pump Switchboard does NOT provide protection against electrocution since it does not include an earth-leakage circuit breaker.

The following items must be provided in the infrastructure:

- A readily accessible circuit breaker, rated according to the total rated power of the load, certified as branch circuit over current protector compliant with the national code and requirements,
 - Grounding connection: $\leq 10 \Omega$.
-
- All safety regulations must be applied.
 - The electrical installation must comply with the local safety standards and regulations.
 - Protection provided by the equipment may be impaired if the equipment is used in a manner other than that specified by the manufacturer.

IP code: IP54

DESCRIPTION

Functionality

The Universal Pump Switchboard is designed to activate the pump at a command from the controller, provided there is sufficient water pressure in the mainline.

If the water pressure in the mainline is too low, a low-pressure signal is transmitted to the controller. The controller may deactivate the pump.

The pump can be activated/deactivated manually via a manual override.



ATTENTION

If the pump is activated manually via a manual override, low-pressure protection is not active, since it is also overridden.

It is also possible to disconnect the pump manually.

The Universal Pump Switchboard is equipped with 6 double-level terminals enabling the connection of the command lines to the solenoides of the dosing channels in addition to the pump command line.

When connecting an external controller, use an 8-wire cable between the switchboard and the controller.

Modularity and flexibility

The switchboard is designed to operate with a large variety of:

Pumps:

- Single-phase pumps (0.5 kW to 2.2 kW)
- Three-phase pumps (0.75 kW to 15 kW)

Mains

- 1 x 100-250V
- 3 x 200-480V

Controllers

- 100-250V connected between phase and neutral
- 100-250V connected between two phases
- 100-250V from an external source

Reliability

- The switchboard is built of high quality components from internationally recognized manufacturers.
- The core of the switchboard is the TELEMECANIQUE's universal breaker TeSys U starter-controller, also known as "LU".

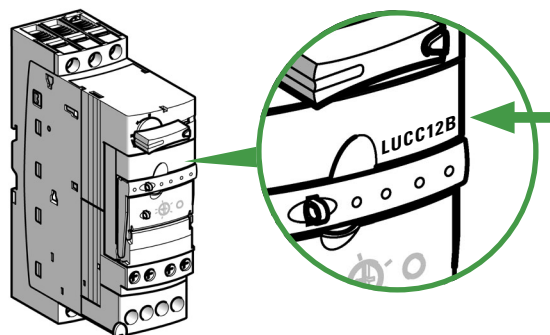
Easy and accessible maintenance

- The switchboard's straightforward design enables easy and accessible maintenance.
- All its components are available locally in almost any place on the globe.

DESCRIPTION

How to identify your switchboard

To identify the type of your switchboard check the imprint on the LU control unit.



Switchboard assortment

Control unit inscription	Combination string	Switchboard Cat. No.
LUCC12B	FSA-SWITCHBOARD-LUB12+LUCC12B-1PHASE	33230-500000
LUCB18B	FSA-SWITCHBOARD-LUB32+LUCB18B-3PHASE	33230-500100
LUCB12B	FSA-SWITCHBOARD-LUB12+LUCB12B-3PHASE	33230-500200
LUCB32B	FSA-SWITCHBOARD-LUB32+LUCB32B-3PHASE	33230-500300

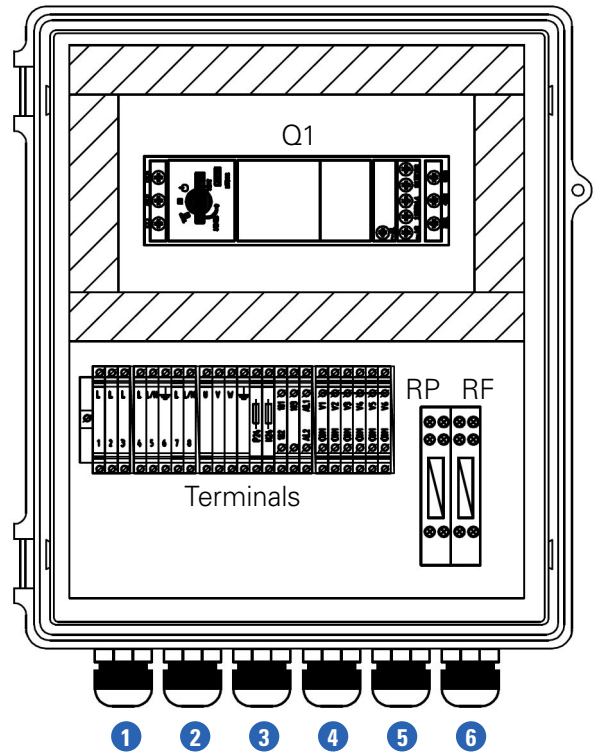
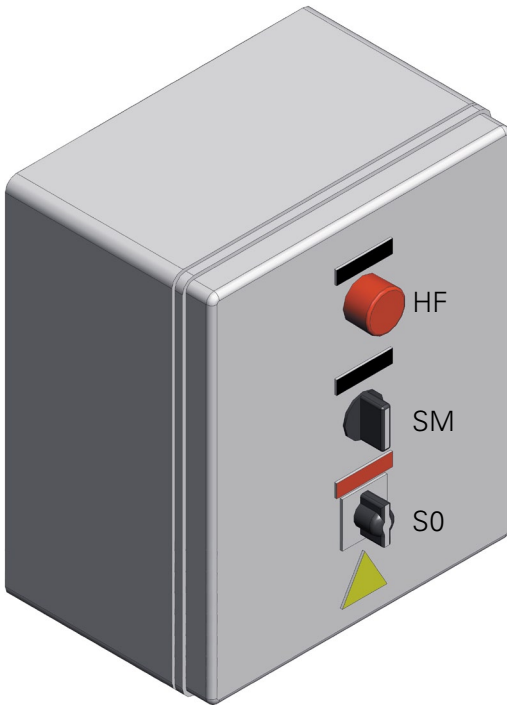
Data sheet

General features

Outputs	
Feed to the controller voltage range	1 X 100V to 1 X 250V (Jumper selection)
Feed to the controller current range	up to 1A
Fault signal	Dry contact N.O. when low water pressure or trip signal occurs
Dosing channel command	Up to 6 channels 24VAC
Inputs	
Pump command	1 pump command 24VAC from the controller
Dosing channel command	Up to 6 channels 24VAC from the controller
Low-pressure signal	Dry contact N.C. from an external pressure switch
Low-voltage supply	24VAC 400mA from the controller for the control circuit
Safety / Protection	
IP54	
Short circuit or overload in the controller feed	2 fuses of 1A each. There are 2 fuses in order to allow connection of the controller between two phases
Short circuit or overload in the pump feed	Overload protection setting is adjustable in the LU control unit within the current range
Phase imbalance	Applicable for 3-phase units
Red indication lamp	Lights in case of too low pressure or trip
General features	
Dimensions wxdxh	27.6 x 18.1 x 32.5 cm (10.9" x 7.13" x 12.8")
Weight	4.5 kg (10 lb)

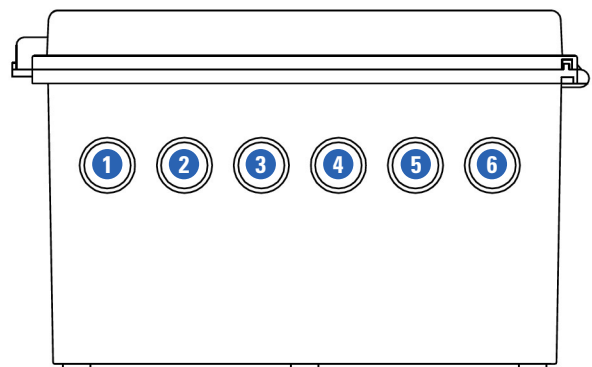
DESCRIPTION

General description



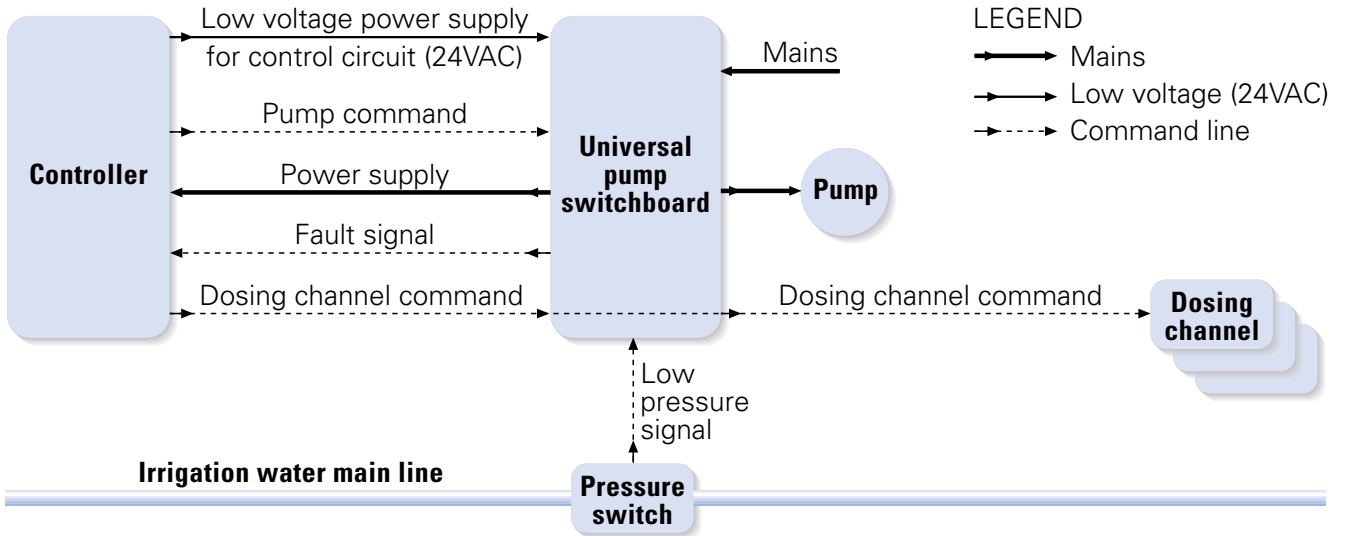
PG list

PG	Cables
1	Mains
2	Mains to controller
3	Feed to pump and dosing channels
4	Dosing channel solenoide command cables
5	+ multi-wire command cable
6	+ pressure switch cable



DESCRIPTION

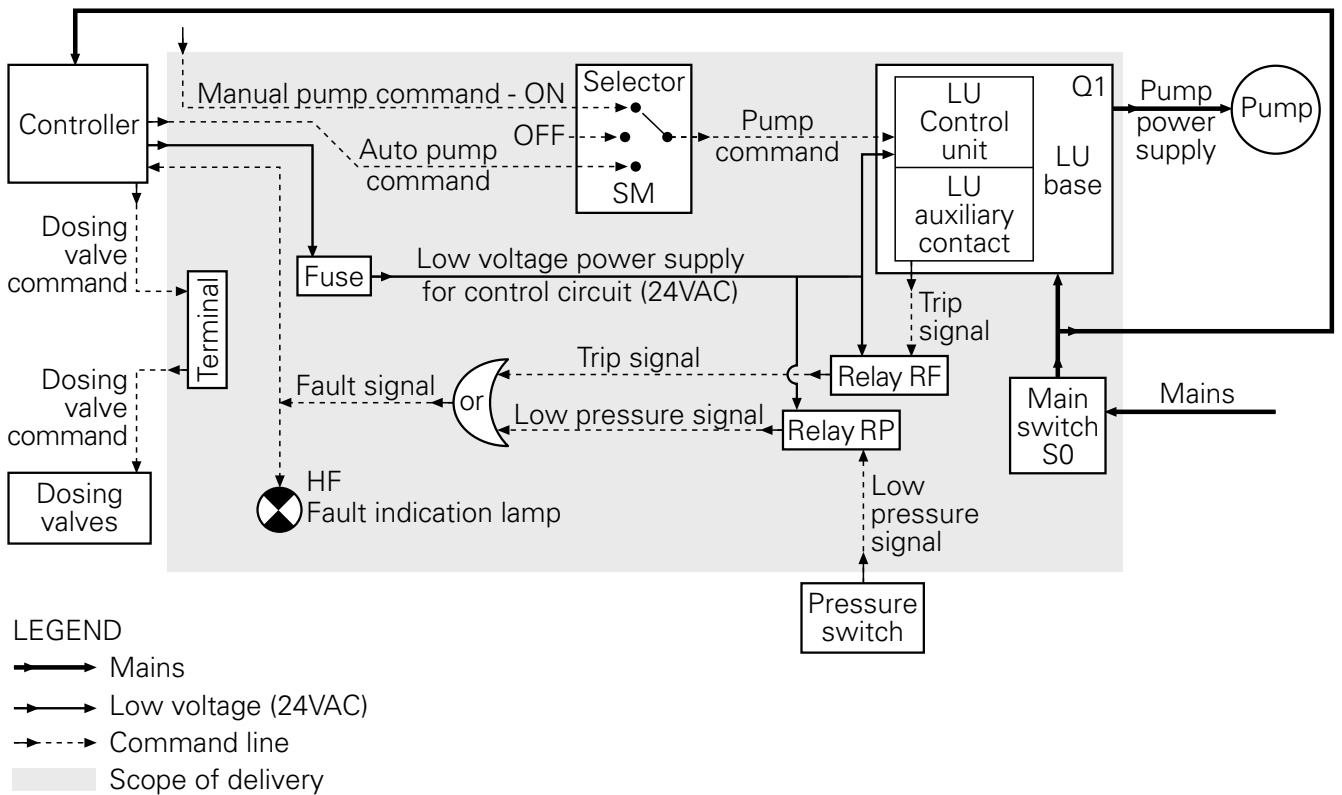
Switchboard environment of operation



NOTE

If there is no controller, an external 24 VAC power supply must be provided.

Switchboard block diagram

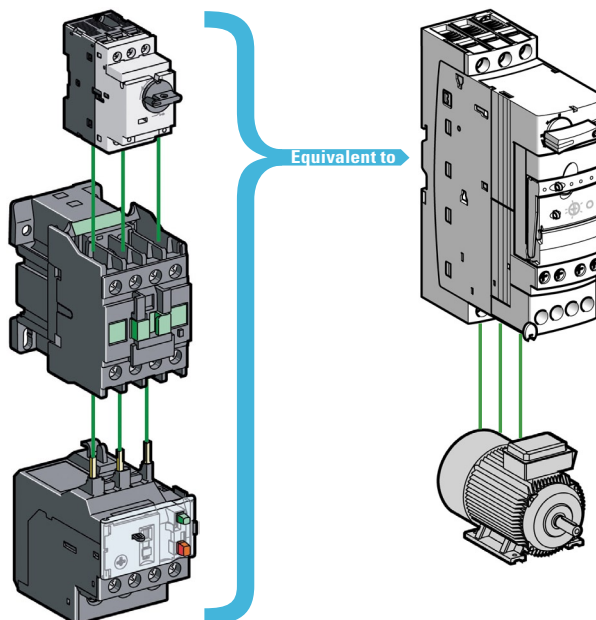


DESCRIPTION

The TeSys LU

The TeSys U at the heart of the Universal Pump Switchboard replaces conventional components in a smaller space

- The TeSys U starter-controller incorporates all the conventionally associated functions: circuit breaker + contactor + thermal relay.
- It considerably reduces wiring time.
- The electrical coordination of the components is intrinsically ensured.

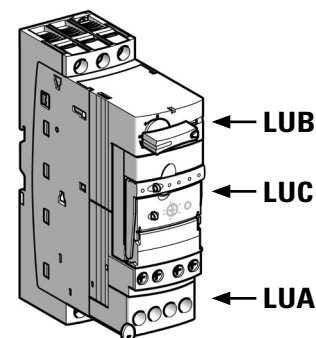


Advantages

- Space-saving
- Time-saving
- Safety

The TeSys LU is composed of the following modules:

- LUB power base
This power base incorporates the power components: thermal blocks, switching mechanism and power contacts. It also incorporates the auxiliary contacts (terminal block not included).
- LUC supervisable control unit
Detection / tripping / measurement.
- LUA signalling contacts
Indicates that the protective device has tripped.



The TeSys LU - Combinations for the operation of the pump

Power base	Control unit	Command voltage	Current range	Voltage range	Overload motor protection	
LUB 12 (Up to 12A)	1-phase LUCC12B	24VAC	3–12A	1 X 100V to 1 X 250V	1.1kW at 1 X 100-115V	2.2kW at 1 X 200-250V
	3-phase LUCB12B	24VAC	3–12A	3 X 200V to 3 X 480V	3.5kW at 3 X 200-220V	7kW at 3 X 400-480V
LUB 32 (Up to 32A)	3-phase LUCB18B	24VAC	4.5–18A	3 X 200V to 3 X 480V	5kW at 3 X 200-220V	9kW at 3 X 400-480V
	3-phase LUCB32B	24VAC	8–32A	3 X 200V to 3 X 480V	9kW at 3 X 200-220V	15kW at 3 X 400-480V

*For other combinations, call Netafim.

DESCRIPTION

Control and diagnostic unit

- LUCB - Class 10 - 3-phase
- LUCC - Class 10 - 1-phase
- Protection against overloads and short-circuits.
- Protection against phase failure and phase imbalance.
- Earth fault protection (equipment protection only).



WARNING

The Universal Pump Switchboard does NOT provide protection against electrocution since it does not include an earth-leakage circuit breaker.

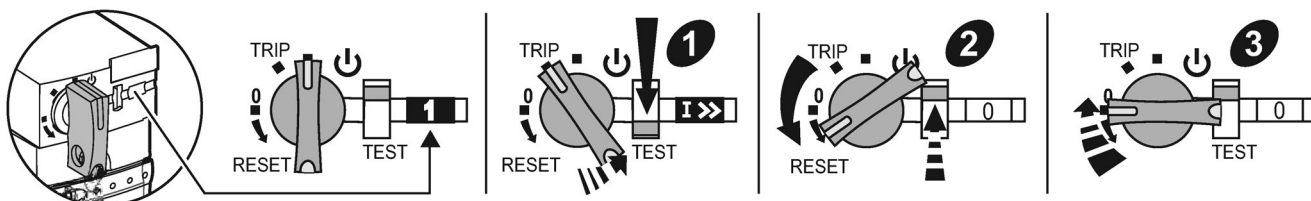
The following items must be provided in the infrastructure:

- A readily accessible circuit breaker, rated according to the total rated power of the load, certified as branch circuit over current protector compliant with the national code and requirements,
- Grounding connection: $\leq 10 \Omega$.

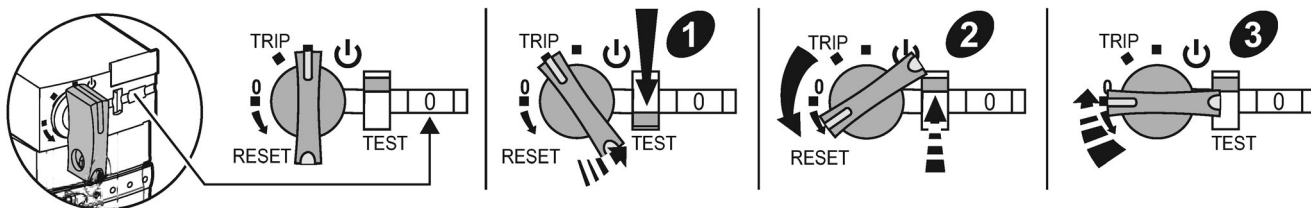
- Manual reset.
- Fault differentiation with manual reset.
- Thermal overload alarm.

Test trip

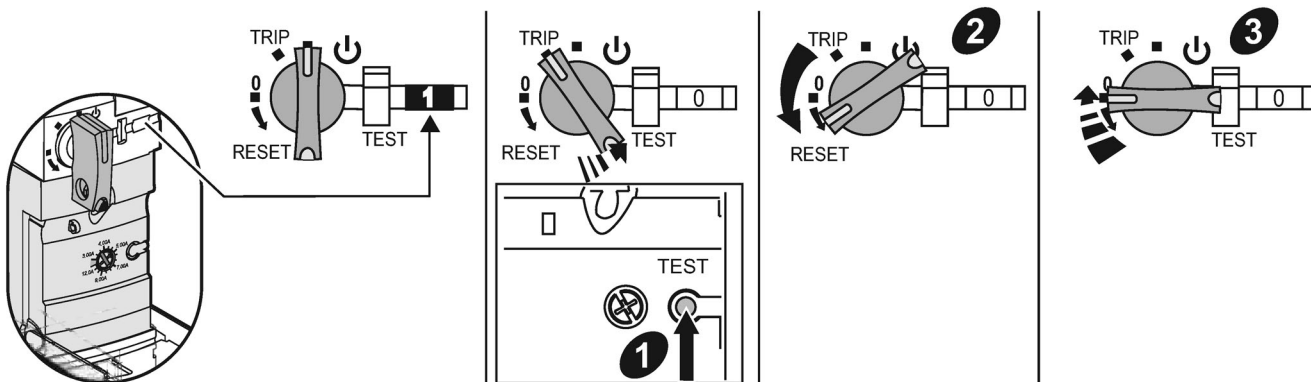
Test trip magnetic fault



Test trip thermal overload fault



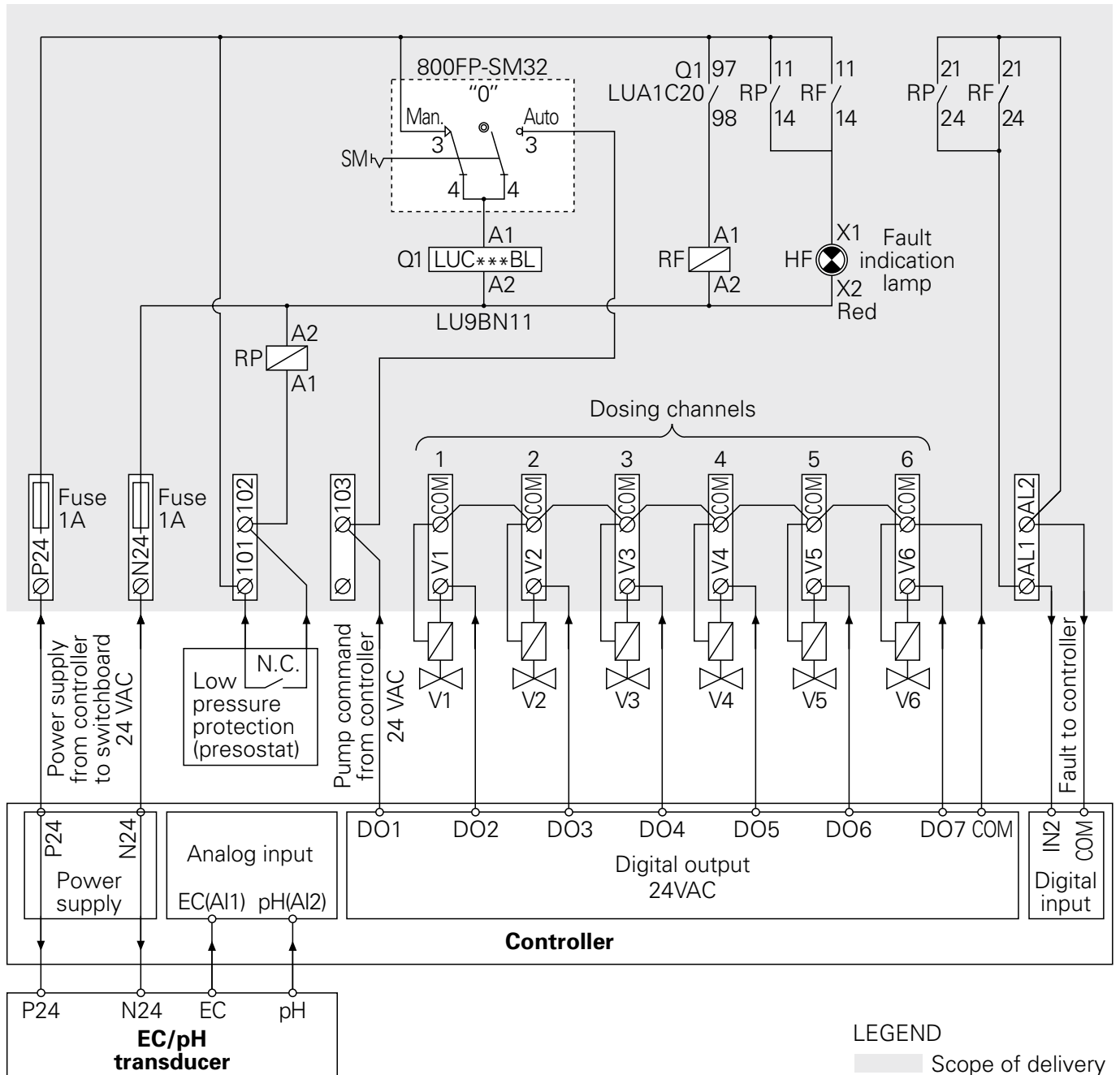
Test trip thermal overload fault by energized LUC



For full documentation on the TeSys LU, see www.schneider-electric.com

ELECTRICAL CIRCUITS

Control diagram



WARNING

The low voltage lines (24 VAC) must come from the same controller that issues the command for the pump.



WARNING

The polarity of the low voltage lines (24 VAC) must be observed - N24 = common from controller.

ELECTRICAL CIRCUITS

Guidelines for connections

All the commands to the switchboard are 24 VAC

If the Universal Pump Switchboard is supplied factory-installed in a dosing unit, the dosing channels are already connected.

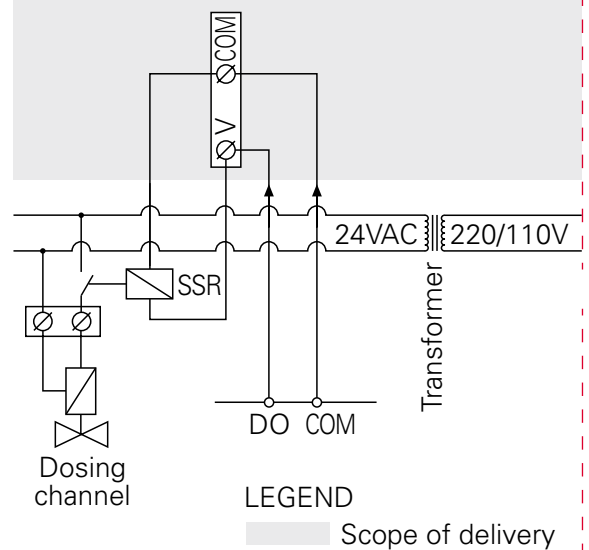
If the Universal Pump Switchboard is supplied separately, connect the dosing channels as shown in the [Control Diagram](#), page 11.

When connecting the "Fault to controller" command line, make sure to program in the controller so that upon receiving a pump deactivation command from the switchboard, the controller deactivates the pump with a delay of a few seconds (see the [Controller Manual](#)).



NOTE

When multiple dosing units are operated by a single controller (as typical of the NMC XL), the dosing channel solenoides are connected via a relay, as shown.



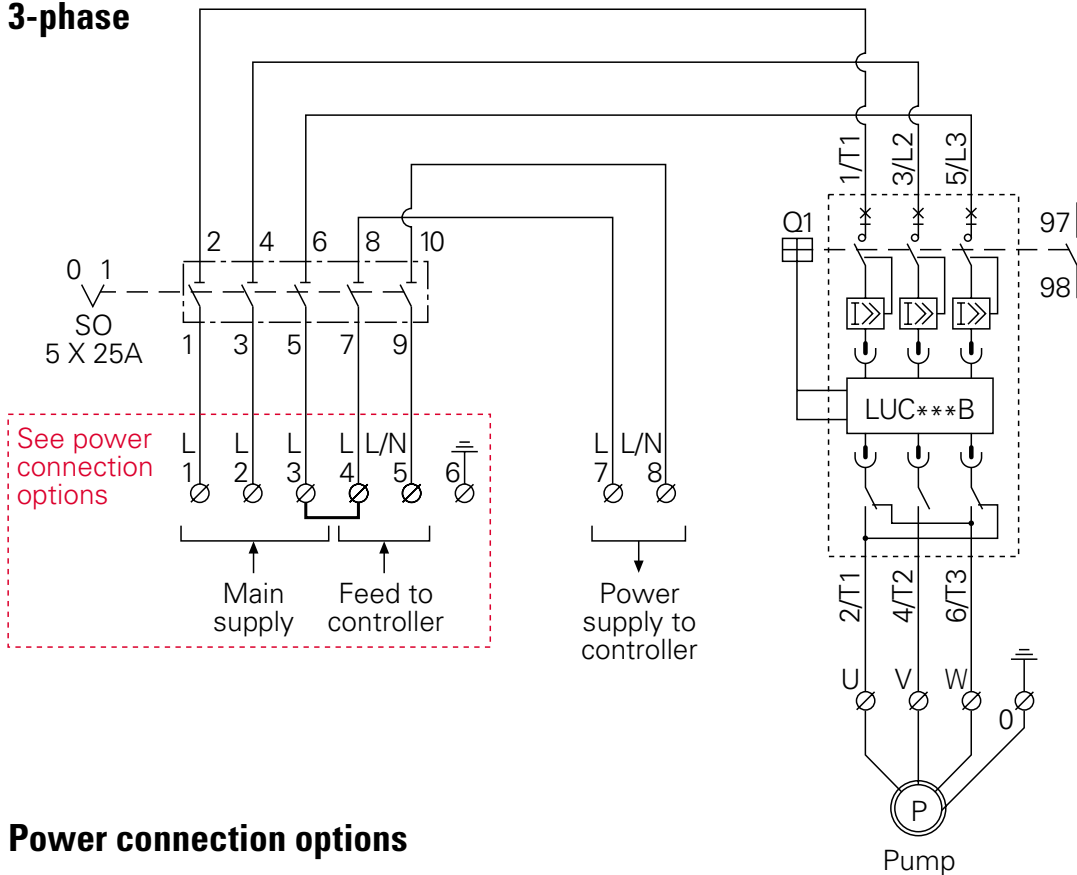
Electrical symbols - Legend

<p>LUB unit</p>	<p>Relay</p>	<p>Main switch</p>	<p>Fuse terminal</p>
	<p>Dosing solenoid</p>	<p>Selector</p>	<p>Modular terminal</p>
	<p>Booster pump</p>	<p>Terminal</p>	<p>Double level terminal</p>
		<p>Internal wire</p>	<p>Terminal</p>
		<p>External wire</p>	<p>Terminal</p>
		<p>Related contact</p>	<p>Terminal</p>

ELECTRICAL CIRCUITS

Power connection

3-phase



Power connection options



WARNING

When connecting the mains and the controller to the switchboard power terminals, make sure the jumpers are placed correctly according to the mains and the controller voltage. A jumper incorrectly connected might damage the controller!

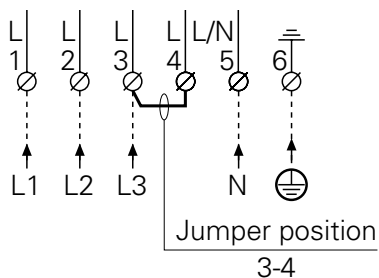


NOTE

The switchboard exits the factory with a jumper connecting L3 to L4, as in option A.

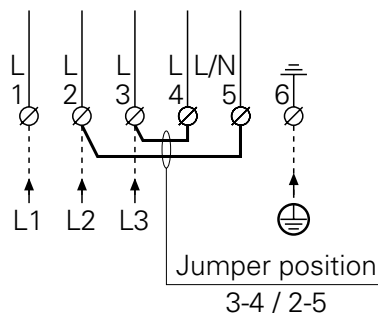
Option A

	Mains	Controller
<input type="checkbox"/>	3 X 400-480 V	230 V
<input type="checkbox"/>	3 X 200-240 V	115 V



Option B

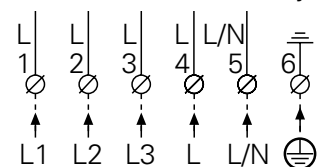
	Mains	Controller
<input type="checkbox"/>	3 X 200-240 V	230 V



Option C

	Mains	Controller
<input type="checkbox"/>	3 X 400-480 V	230 V Or
<input type="checkbox"/>	3 X 200-240 V	115 V

External controller - No jumper



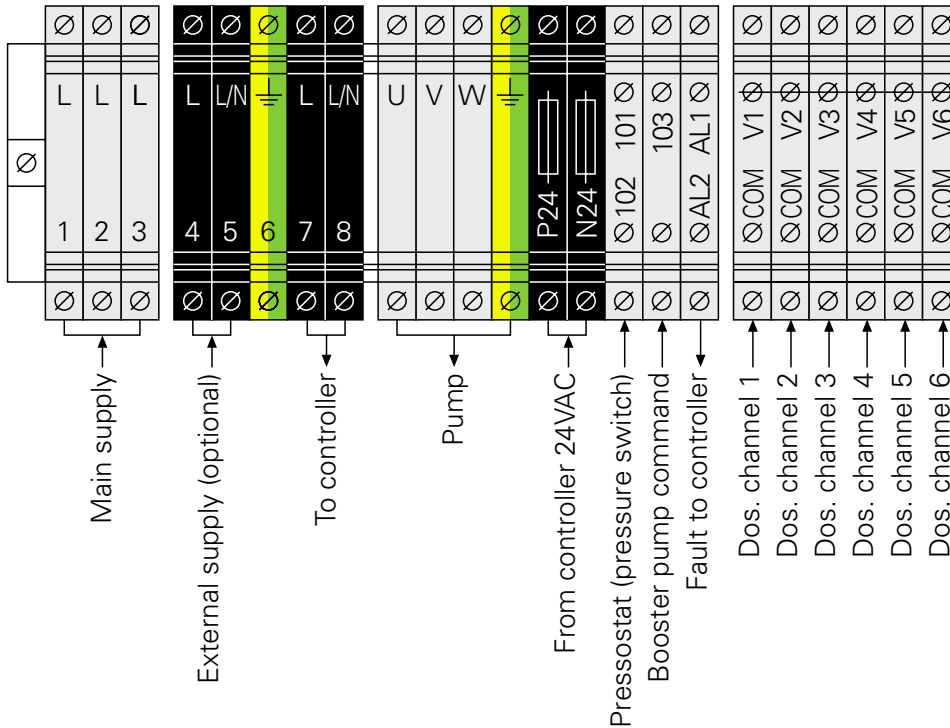
NOTE

Option C - In some cases the controller is fed by an external source, usually in the USA, Mexico, Central America (some areas), and India (some areas).

ELECTRICAL CIRCUITS

Terminal and wire specifications

3-phase

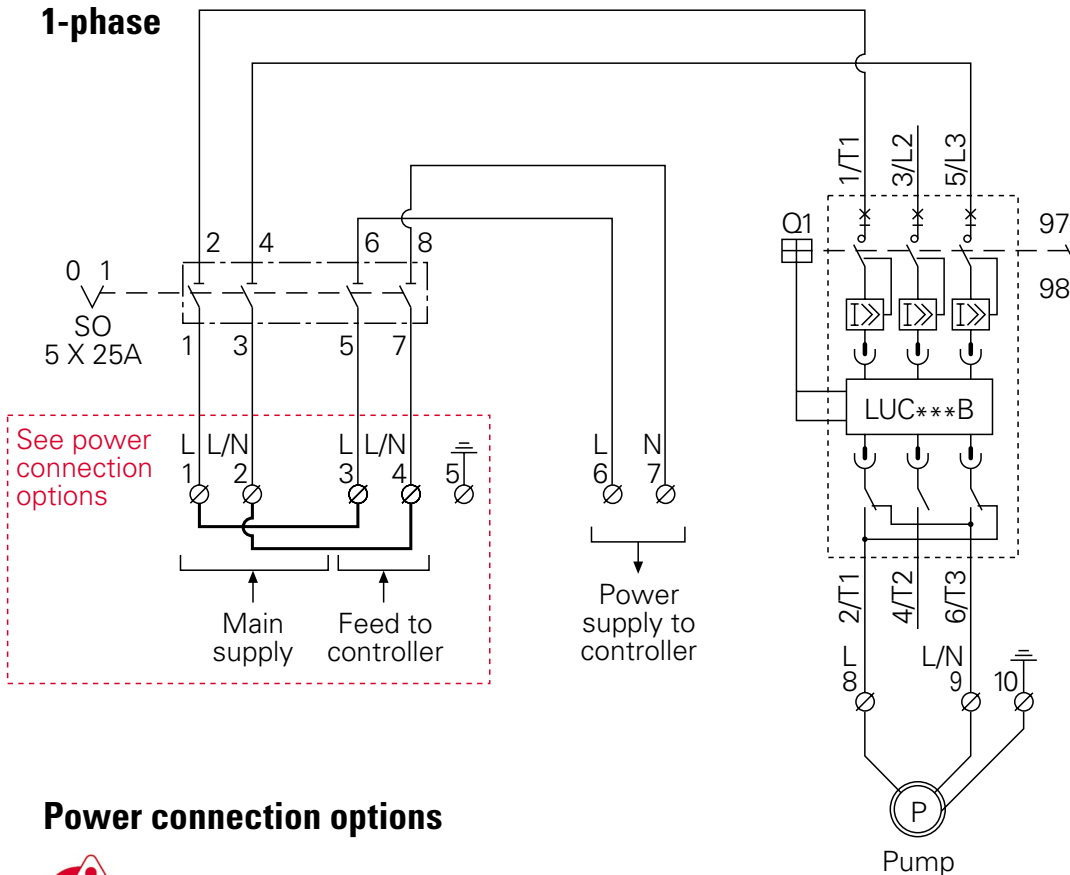


Terminal block	Voltage	Terminal symbol	Terminal color	Wire color	Terminal section
Modular	220 - 440 V	L1. L2. L3	Gray	Brown	4 mm
Modular	110 - 220 V	L4	Black	Black	
Modular	110 - 220 V	L/N	Black	Black	
Ground	GND		Yellow + green	Yellow + green	
Modular	220 - 440 V	U. V. W	Gray	Brown	
Ground	GND		Yellow + green	Yellow + green	
With LED fuse	24 VAC	P24	Black	White	
With LED fuse	24 VAC	N24	Black	Gray	
Double-level	24 VAC	101 - 103	Gray	White	
Double-level	24 VAC	AL1 - AL2	Gray	White	
Double-level	24 VAC	V1 - V6	Gray	White	
Double-level	24 VAC	COM	Gray	Gray	

ELECTRICAL CIRCUITS

Power connection

1-phase



Power connection options



WARNING

When connecting the mains and the controller to the switchboard power terminals, make sure the jumpers are placed correctly according to the mains and the controller voltage. A jumper incorrectly connected might damage the controller!

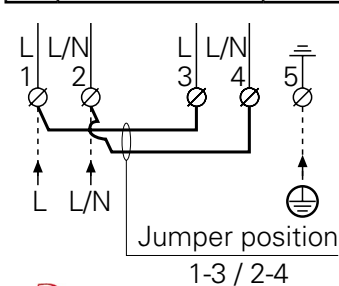


NOTE

The switchboard exits the factory with jumpers connecting L1 to L3 and L/N2 to L/N4, as in option A.

Option A

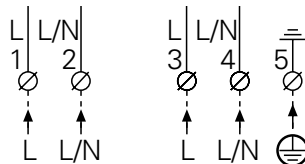
	Mains	Controller
<input type="checkbox"/>	1 X 200-250 V	230 V
<input type="checkbox"/>	2 X 200-240 V	230 V
<input type="checkbox"/>	1 X 100-115 V	115 V



Option B

	Mains	Controller
<input type="checkbox"/>	1 X 100-250 V	230 V
<input type="checkbox"/>	2 X 200-240 V	Or 115 V

External controller - No jumper



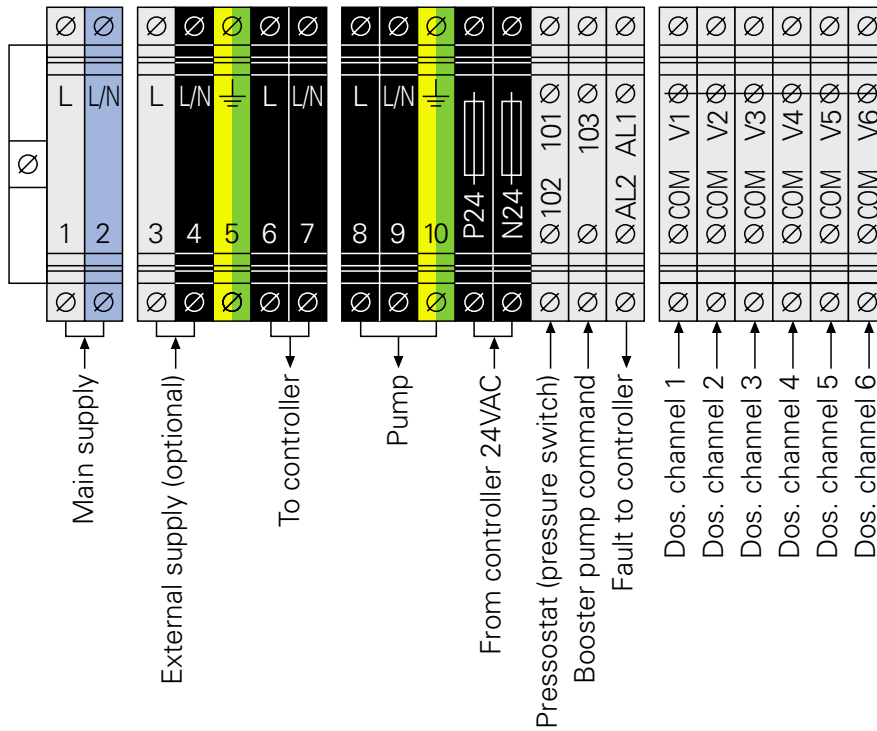
NOTE

Option B - In some cases the controller is fed by an external source, usually in the USA, Mexico, Central America (some areas), and India (some areas).

ELECTRICAL CIRCUITS

Terminal and wire specifications

1-phase



Terminal block	Voltage	Terminal symbol	Terminal color	Wire color	Terminal section
Modular	110 - 220 V	L1, L3	Gray	Brown	4 mm
Modular	110 - 220 V	L/N	Blue	Blue	
Modular	External voltage	L6, L8	Black	Black	
Modular	External voltage	L/N	Black	Black	
Ground	GND	⊕	Yellow+green	Yellow+green	
With LED fuse	24 VAC	P24	Black	White	
With LED fuse	24 VAC	N24	Black	Gray	
Double-level	24 VAC	101 - 103	Gray	White	
Double-level	24 VAC	AL1 - AL2	Gray	White	
Double-level	24 VAC	V1 - V6	Gray	White	
Double-level	24 VAC	COM	Gray	Gray	

TROUBLESHOOTING

Switchboard warning light

- The switchboard warning light is on (whether the dosing booster is running or not).

Action

- 1) Check if the pressure on the main line is too low:
If YES, restore the original main line pressure.
- 2) Check if the overload protection breaker is ON.
Toggle it OFF and ON again.
If the switchboard warning light is still on or the overload protection breaker trips (turns to OFF) again, have a qualified electrician check that the dosing booster is in working order (see the [Dosing Booster Manual](#)) and check for irregularities in the mains.
- 3) Check if the overload protection setting of the LU is set according to the pump consumption.

If after implementing all the above steps, the malfunction is still not fixed - consult your Netafim representative.

No automatic start of the pump

- Automatic activation of the pump does not function.

Action

- 1) Set the selector switch (SM) to MANUAL.
If the pump still does not function, check the fuses (See [List of Spare Parts](#), page 18) and replace if necessary.
- 2) If the pump still does not function, check whether:
 - a) The main switch (SO) is set to MANUAL.
 - b) The selector switch (SM) is not set to AUTO.
 - c) The LU circuit breaker is set to OFF.
 - d) The cable to the controller is disconnected or defective.
 - e) The low voltage (24 VAC) from the controller to the switchboard is inversely connected (N to P) - if necessary, reverse it .
 - f) There is a malfunction of the controller (see the [Controller Manual](#)).

If after implementing all the above steps the malfunction is still not fixed - consult your Netafim representative.

The controller does not turn on

- The controller does not receive power supply from the mains.

Action

- 1) Make sure the jumpers are placed correctly according to the mains and the controller voltage.
(For [3-phase installation](#) see page 13, for [1-phase installation](#) see page 15).



WARNING

A jumper incorrectly connected may damage the controller!

LU malfunction

- If after implementing all the actions regarding any of the malfunctions above, the malfunction is still not fixed, it is possible that the reason is a malfunction of the LU (for full documentation on the TeSys LU, see www.schneider-electric.com).

LIST OF SPARE PARTS

Suitable for	Type/model	Technical data	Cat. number	Manufacturer	Accessory	Symbol	
1-phase	194L-E16-1754	4 X 16A	On request	Allen Bradley	Main switch	S0	
3-phase	194L-E25-1755	5 X 25A	On request	Allen Bradley	Main switch	S0	
Both	LUB 12 or LUB 32	12 A	On request	Telemecanique	LU base	Q1	
		32 A					
Both	LUA1C20	N.O.	On request	Telemecanique	Fault aux. contact + terminal		
1-phase	LUCB 12B	3-12A, 1 X 100-250V Command 24 VAC	77100-013640	Telemecanique	LU control unit		
3-phase	LUCB 12B or LUCB 18B or LUCB 32B	3-12A, 3 X 200-480V Command 24 VAC	77100-013600	Telemecanique	LU control unit		
		4.5-18A, 3 X 200-480V Command 24 VAC	77100-013620				
		8-32A, 3 X 200-480V Command 24 VAC	On request				
Both	800 FP - SM32	6A	On request	Allen Bradley	Selector switch		SM
Both	40.52	24 VAC	77100-001460	Finder	Relay		RP
Both	40.52	24 VAC	77100-001460	Finder	Relay		RF
Both	UK5 - HESI	1A	On request	Phoenix contact	Terminal with LED fuse	Fuse	
Both	PL16-22D	LED - 24 VAC	On request		Indicator lamp	HF	
Both		276 X 154 X 181 mm	On request	Hi box	Electrical board		
Both	179 020.1	Glass 5 X 20 mm - 1AF	77100-000470	Siba	Spare fuse		

WARRANTY

Netafim warrants all the components of the switchboard to be free of defects in material and workmanship for 1 (one) year from the date of installation, provided the installation has been reported to Netafim within 30 days of installation.

If the installation was not reported or was reported later than 30 days from the date of installation, Netafim will warrant the product for a period of 18 months from the date of production, according to its serial number.

If a defect is discovered during the applicable warranty period, Netafim will repair or replace, at its discretion, the product or the defective part.

This warranty does not extend to repairs, adjustments or replacements of a switchboard or part that results from misuse, negligence, alteration, force majeure, lightning, power surge, improper installation or improper maintenance.

If a defect arises in your Netafim product during the warranty period, contact your Netafim supplier.

Limited warranty

This warranty is subject to the conditions in Netafim's official warranty statement.
(For the full text of Netafim's official warranty statement, please contact Netafim).

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