

LIVE LINE MONITOR LLM3



USER'S MANUAL



1. APPLICATION

Live Line Monitor is a device intended for signaling voltage presence in a three-phase network with a neutral wire. Each of the monitored phases corresponds to a set of double signal diode with the appropriate marking - according to the ordering code (e.g. L1-L2-L3). For applications in low voltage networks, intended for automation and control systems.

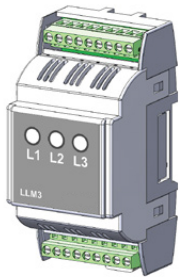


Fig.1. View of the Live Line Monitor

2. DEVICE SET

- Live Line Monitor 1 pc.
- User's manual 1 pc.
- External Live Line Indicator LLI3 (option, fig. 4) 1 pc.

3. BASIC REQUIREMENTS, OPERATIONAL SAFETY

In terms of operational safety, the device meets the requirements of EN 61010-1.

Safety instructions

- The assembly and the installation of the electrical connections may be carried out only by a duly qualified electrician.
- The device is intended for installation and use in industrial electromagnetic environments.

- A switch or a circuit-breaker should be installed in the building or facility. It should be located near the device, easily accessible to the operator and suitably marked.
- Removal of the device housing during the warranty period voids the warranty.

4. ASSEMBLY

4.1. Installation

Live Line Monitors are designed for mounting on a 35 mm rail bracket according to EN 60715. Dimensions and installation method are shown in Fig. 2.

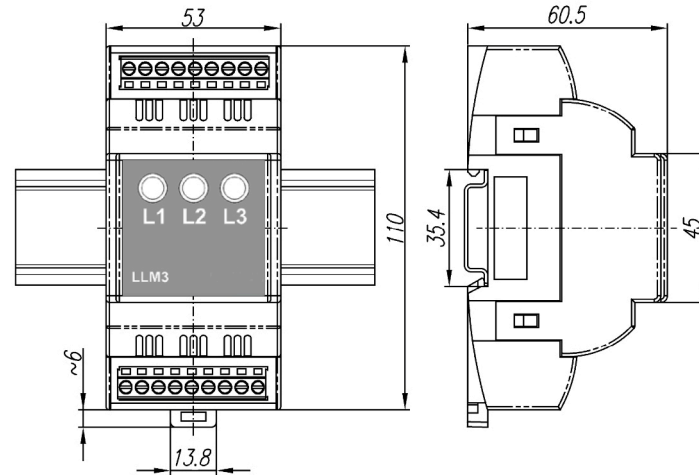


Fig.2. Dimensions and installation method of the Live Line Monitor

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4.2. External connections diagram

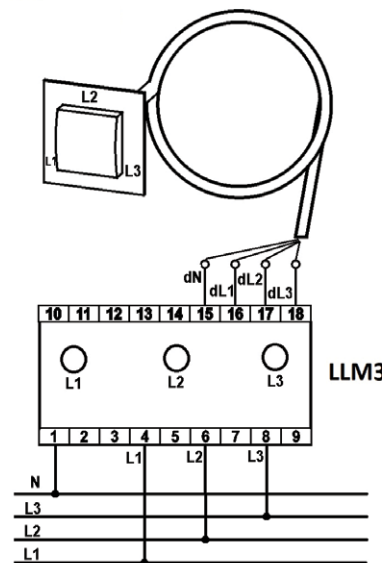


Fig.3. Electrical connections diagram

- L1, L2, L3 – monitored voltage phases
- N – neutral wire
- dN – connection of the GND signal of the Live Line Indicator LLI3 (green wire)
- dL1 – connection of the signal controlling the L1 phase diodes of the LLI3 LED indicator (white wire);
- dL2 – connection of the signal controlling the L2 phase diodes of the LLI3 LED indicator (gray wire);
- dL3 – connection of the signal controlling the L3 phase diodes of the LLI3 LED indicator (brown wire);

5. OPERATION

After connecting the signals of individual phases and the neutral wire to the monitor, the LED indicators on the front panel corresponding to each phase will be on. Each indicator is composed of two red LEDs and marked L1, L2, L3, respectively - fig. 2. In case of phase cancellation, the LEDs connected with it go out. At reduced voltage, the LEDs become weaker and go out completely when the voltage limit value j is exceeded.

Caution:

For proper operation of the device, it is necessary to connect the neutral wire.

In case the neutral wire is not connected and at least 2 any phases are connected, the diodes corresponding to these phases will be on, however, less intensively.

6. EXTERNAL LIVE LINE INDICATOR LLI3

An additional accessory is an external Live Line Indicator allowing presentation of the presence of the phase on the assembly panel.

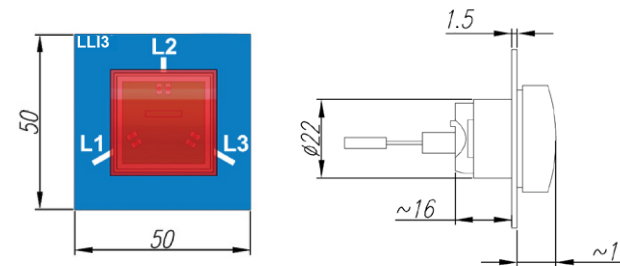


Fig.4. Dimensions and installation method of external Live Line Indicator LLI3

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The indicator is mounted in a hole with a diameter of 22.5 mm. It is delivered with a 2 m long cable terminated on one side with a detachable connector (attached to the indicator) and on the other side with wires that must be connected to the terminals (15-18) of the monitor as described below, according to Fig. 3.

Table 1

Wire colour	The monitor terminal number	Symbol	Description
green	15	dN	Indicator GND signal
white	16	dL1	Signal indicating presence of L1 phase
gray	17	dL2	Signal indicating presence of L2 phase
brown	18	dL3	Signal indicating presence of L3 phase

Caution:

The LLI3 Live Line Indicator cannot work in a stand-alone mode (do not connect LLI3 directly to the monitored phase voltages). LLI3 can only be connected to the LLM3 Live Line Monitor!

After connecting the LLI3 indicator, the phase presence indication will be available on both external LLI3 Live Line Indicator and the LLM3 Live Line Monitor.

7. TECHNICAL DATA

Basic parameters of the Live Line Monitor LLM3:

- range of indicated phase voltage (phase to neutral) 3 x 230... 400 V a.c.
- power consumption < 1.2 VA
- ambient temperature 0...23...50 °C
- relative air humidity: < 95% ^[1]
- degree of protection provided by housing
 - from the front side: IP 50
 - from the terminals side: IP20
- weight < 0.4 kg
- dimensions 57 x 110 x 60 mm
- operating voltage relative to earth 400V
- insulation between the input circuits (terminals 1-9) and the output circuit of the indicator (terminals 15 – 18) basic (60s /3.51kV a.c.)

Basic parameters of the Live Line Indicator LLI3:

- range of voltage indicated in accordance with the LLM3
- power consumption < 0.1 VA
- ambient temperature 0...23...50 °C
- air relative humidity: < 95% ^[1]
- degree of protection provided by housing IP 61
- weight < 0.2 kg
- dimensions 50 x 50 mm
- operating voltage relative to earth 24 V
- length of the attached cable 2 m

^[1] inadmissible condensation

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8. ORDERING CODE

Table 2					Table 3		
Live Line Monitor LLM3 -	X	X	X	XX	X	XX	
Input voltage: 3 x 230...400 V a.c.	1						
Phase designation: L1 - L2 - L3	L						
A - B - C	A						
R - S - T	R						
U - V - W	U						
R - Y - B	Y						
Accessories: without Live Line Indicator LLI3	0						
with Live Line Indicator LLI3	1						
Version: standard	00						
custom-made	XX						
Acceptance tests: without additional requirements	0						
with quality inspection certificate	1						
acc. to customer's requirements*	X						

Coding example:

LLM3- 1L1001 means the Live Line Monitor LLM3 in the standard version for the range 3x230 ... 400 V a.c. with phase designation L1 - L2 - L3, with an external indicator LLI3 with a quality control certificate