EMD-SL-LL-110

Electronic monitoring relay for level monitoring of conductive liquids

INTERFACE

Data sheet 104375_en_00

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1 Description

Error-free and therefore cost-effective operation can only be achieved through continuous monitoring of important network and system parameters. Electronic monitoring relays in the EMD series are available for a wide range of monitoring tasks to avoid the consequences of errors or to keep them within limits.

The operating states are indicated using colored LEDs, errors that may occur can be sent to a control system via a floating contact or can shut down a part of the system. Some device versions are equipped with startup and response delays in order to briefly tolerate measured values outside the set monitoring range.

Features

- Filling level monitoring
- Pump up (minimum monitoring)
- Pump down (maximum monitoring)
- Adjustable switch-on delay
- Adjustable release delay
- Supply voltage 110 V AC
- Two PDTs



WARNING: Risk of electric shock

Never carry out work when voltage is present.



Make sure you always use the latest documentation. It can be downloaded at <u>www.phoenixcontact.net/catalog</u>.





2 Ordering data

Description	Туре	Order No.	Pcs. / Pkt.
Electronic monitoring relay for level monitoring of conductive liquids	EMD-SL-LL-110	2901137	1

3 Technical data

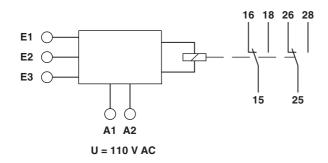
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Width 22.5 mm Height 113 mm	Assembly	on TS 35 profile rail acc. to EN 60715	
Height 113 mm	Mounting position	Any	
·	Width	22.5 mm	
Length 90 mm	Height		
	Length	90 mm	

General data	
Type of housing	Polyamide PA, self-extinguishing
Color	green
Weight	160 g
Connection data	
Conductor cross section, solid	$0.5 \text{ mm}^2 \dots 2.5 \text{ mm}^2$
Conductor cross section, stranded	0.25 mm ² 2.5 mm ²
Stripping length	8 mm
Type of connection	Screw connection
Tightening torque	1 Nm
Ambient conditions	
Ambient temperature (operation)	-25 °C 55 °C -25 °C 40 °C (corresponds to UL 508)
Ambient temperature (storage/transport)	-25 °C 70 °C
Permissible humidity (operation)	15 % 85 %
Climatic class	3K3 (in acc. with EN 60721)
Conformance / approvals	
Conformity	CE compliant
UL, USA / Canada	UL/C-UL listed UL 508
Conformance with EMC directive 2004/108/EC	
Immunity to interference according to	EN 61000-6-2
Emitted interference according to	EN 61000-6-3
Conformance with LV directive 2006/95/EC	

Electronic equipm. for electrical power installations according to

EN 50178

4 Block diagram



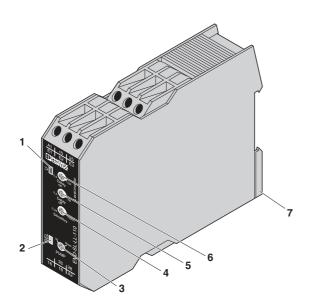
5 Safety notes



WARNING: Risk of electric shock

Never carry out work when voltage is present.

6 Structure



- 1 "U" LED: Supply voltage
- 2 "REL" LED: Output relay
- 3 "FUNCTION" rotary switch: Function selection
- 4 "SENSITIVITY" potentiometer: Sensitivity control
- 5 "DELAY OFF" potentiometer: Release delay
- 6 "DELAY ON" potentiometer: Switch-on delay
- 7 Universal snap-on foot for EN DIN rails

7 Installation



WARNING: Risk of electric shock Never carry out work when voltage is present.

The module can be snapped onto all 35 mm DIN rails according to EN 60715.

8 Diagnostics

The LEDs indicate the following error states:

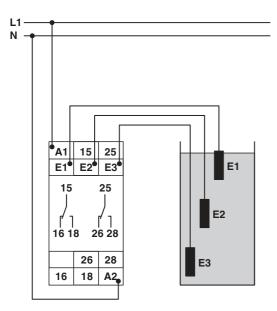
"U" LED (Green)

- LED ON: Supply voltage present

"REL" LED (Yellow)

- LED ON: Output relay has picked up
- LED OFF: Output relay has dropped out

9 Connection example



10 Function

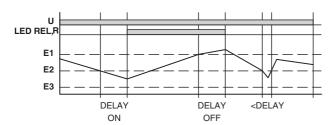


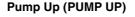
The "FUNCTION" rotary switch is used to set the desired function:

- PUMP UP = Pump up or minimum monitoring
- PUMP DOWN = Pump down or maximum monitoring

Setting the Monitoring Relay Prior to Startup

- Set the time delays ("DELAY ON" and "DELAY OFF" potentiometers) to 0.5 s, minimum.
- Set the rotary switch to the "PUMP DOWN" function.
- With probes submersed slowly turn the "SENSITIVITY" potentiometer clockwise from 0.25 k Ω towards 100 k Ω until the relay switches.
- Remove the probes from the liquid and check whether output relay "R" drops out. If the relay does not drop out when the probes are removed, slowly turn the "SENSITIVITY" potentiometer back counter-clockwise.
- Set the desired function ("PUMP UP" or "PUMP DOWN") and set the time delays to the desired values.





Connection of probe rods E1, E2, and E3. Instead of weight probe E3, the electrically conductive container can be connected as an alternative.

If the liquid level falls below minimum probe E2, the switch-on delay (DELAY ON) starts. After the delay time has elapsed, output relay "R" picks up again (yellow "REL" LED is ON). If the liquid level rises above maximum probe E1, the release delay (DELAY OFF) starts. After the delay time has elapsed, output relay "R" drops out again (yellow "REL" LED is OFF).

Minimum Monitoring (PUMP UP)

Connection of probe rods E2 and E3 (bridge E1-E3). Instead of weight probe E3, the electrically conductive container can be connected as an alternative.

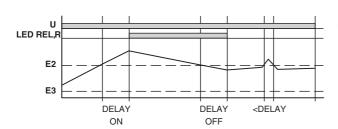
If the liquid level falls below probe E2, the switch-on delay (DELAY ON) starts. After the delay time has elapsed, output relay "R" picks up again (yellow "REL" LED is ON). If the liquid level rises above probe E2, the release delay (DELAY OFF) starts. After the delay time has elapsed, output relay "R" drops out again (yellow "REL" LED is OFF).

LED REL,R E1 E2 E3 DELAY ON OFF

DELAY

OFF

<DELAY



Pump Down (PUMP DOWN)

Connection of probe rods E1, E2, and E3. Probe rod E3 does not have to be connected if the container wall is made of metal.

If the liquid level rises above maximum probe E1, the switch-on delay (DELAY ON) starts. After the delay time has

elapsed, output relay "R" picks up again (yellow "REL" LED is ON).

If the liquid level falls below minimum probe E2, the release delay (DELAY OFF) starts. After the delay time has elapsed, output relay "R" drops out again (yellow "REL" LED is OFF).

Maximum Monitoring (PUMP DOWN)

Connection of probe rods E2 and E3 (bridge E1-E3). Instead of weight probe E3, the electrically conductive container can be connected as an alternative.

If the liquid level rises above probe E2, the switch-on delay (DELAY ON) starts. After the delay time has elapsed, output relay "R" picks up again (yellow "REL" LED is ON).

If the liquid level falls below probe E2, the release delay (DELAY OFF) starts. After the delay time has elapsed, output relay "R" drops out again (yellow "REL" LED is OFF).

U

E2

E3

DELA

ON

LED REL