Level monitoring of conductive liquids

E3LM10

Monitoring relays - ENYA series

Multifunction

Secure isolation of the measuring circuit

1 change over contacts

Width 35mm

Installation design



Technical data

1. Functions
Level monitoring of conductive liquid, timing for tripping delay and turn-off delay seperatly adjustable and the following functions which are selectable by means of rotary switch:

Pump up	pump up or minimum monitoring
Pump down	pump down or maximum monitoring

2. Time ranges

	Adjustment range
Tripping delay (Delay ON):	0.5s to 10s
Turn-off delay (Delay OFF):	0.5s to 10s

3. Indicators

Green LED ON:	indication of supply voltage
Yellow LED ON/OFF:	indication of output relay

4. Mechanical design
Self-extinguishing plastic housing, IP rating IP40
Mounted on DIN-rail TS 35 according to EN 60715
Mounting position: any
Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20
Tightening torque: max. 1Nm
Terminal capacity:
- 1 x 0.5 to 2.5mm² with/without multicore cable end
- 1 x 4mm² without multicore cable end
- 2 x 0.5 to 1.5mm² with/without multicore cable end
- 2 x 2.5mm² flexible without multicore cable end

5. Input circuit

Terminals:	A1-A2
Rated voltage U_N:	see table ordering information or printing on the unit
Tolerance:	-15% of +10% of U_N
Rated consumption:	2VA (1.0W)
Rated frequency:	AC 48 to 63Hz
Duty cycle:	100%
Reset time:	500ms
Hold-up time:	-
Drop-out voltage:	>30% of supply voltage
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	6kV

6. Output circuit
1 potential free change over contact

Rated voltage:	250V AC
Switching capacity:	1250VA AC1 B300/P300 (in accordance with IEC 60947-5-1) therm. constant current 5A
Fusing:	5A fast acting
Mechanical life:	20 x 10^6 operations
Electrical life:	2 x 10^5 operations at 1000VA resistive load
Switching frequency:	max. 6/min at 1000VA resistive load (in accordance with IEC 60947-5-1)
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	6kV

7. Measuring circuit

Measuring input:	conductive probes (Type SK1, SK2, SK3)
Terminals:	E1-E2-E3
Sensitivity:	0.25 to 100kΩ (4mS to 10µS)
Sensor voltage:	12V AC
Sensor current:	max. 7mA
Wiring distance (capacity of cable 100nF/km):	
	max. 1000m (set value <50%)
	max. 100m (set value 100%)
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	6kV

8. Accuracy

Base accuracy:	-
Adjusting accuracy:	-
Repetition accuracy:	-
Voltage influence:	-
Temperature influence:	-

9. Ambient conditions

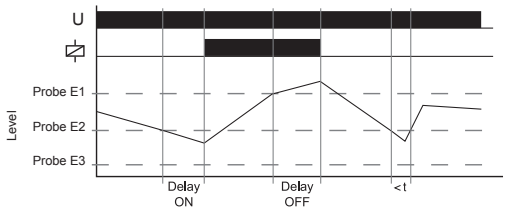
Ambient temperature:	-25 to +55°C
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85% (in accordance with IEC 60721-3-3 class 3K3)
Pollution degree:	2 (in accordance with IEC 60664-1)

10. Weight

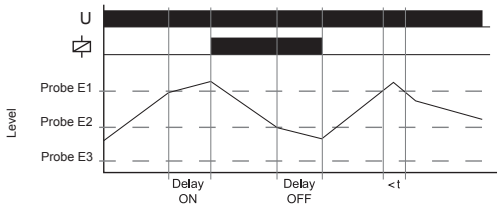
Single packing:	140g

Functions

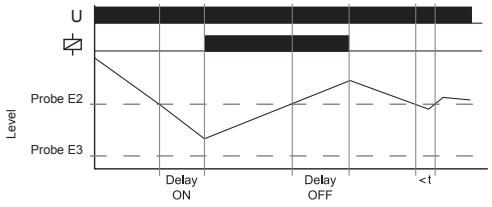
Pump up
Connection of the probe rods E1, E2 and E3. Alternatively the electrically conducting container can be connected in lieu of the test probe E3. When the air-fluid level falls below the minimum probe E2 the set interval of tripping delay (Delay ON) begins. After the expiration of the interval, the output relays R switches into on-position (yellow LED illuminated). When the air-fluid level again rises above the maximum probe E1, the set interval of turn-off delay (Delay OFF) begins. After the expiration of the interval the output relays R switches into off-position (yellow LED not illuminated).



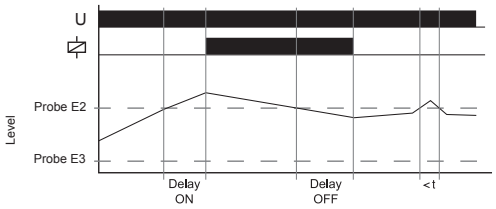
Pump down
Connection of the probe rods E1, E2 and E3. Alternatively the electrically conducting container can be connected in lieu of the test probe E3.
When the maximum probe E1 gets moistened the set interval of tripping delay (Delay ON) begins. After the expiration of the interval the output relays R switches into on-position (yellow LED illuminated). When the air-fluid level falls below the minimum probe E2, the set interval of turn-off delay (Delay OFF) begins. After the expiration of the interval, the output relays R switches into off-position (yellow LED not illuminated).



Minimum monitoring (Pump up)
Connection the probe rods E2 and E3 (bridge E1-E3). Alternatively the electrically conducting container can be connected in lieu of the test probe E3. When the air-fluid level falls below the probe E2 the set interval of tripping delay (Delay ON) begins. After the expiration of the interval, the output relays R switches into on-position (yellow LED illuminated). When the air-fluid level again rises above the probe E2, the set interval of turn-off delay (Delay OFF) begins. After the expiration of the interval the output relays R switches into off-position (yellow LED not illuminated).



Maximum monitoring (Pump down)
Connection of probe rods E2 and E3 (bridge E1-E3). Alternatively the electrically conducting container can be connected in lieu of the test probe E3. When the probe E2 gets moistened the set interval of tripping delay (Delay ON) begins. After the expiration of the interval the output relays R switches into on-position (yellow LED illuminated). When the air-fluid level sinks below the probe E2, the set interval of turn-off delay (Delay OFF) begins. After the expiration of the interval the output relays R switches into off-position (yellow LED not illuminated).



Note

Use cables with low capacity for wiring the probes especially with extended wiring length.

Following processes are suggested for the adjustment:

The existent time delay should be to minimum (0,5s).

The function selector switch must be in position pump down.

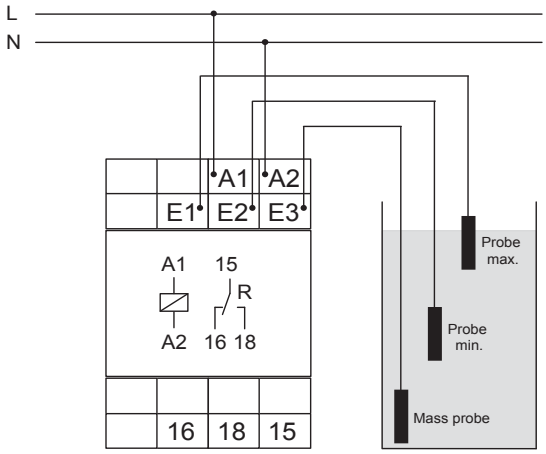
Turn the sensitivity controller slowly clockwise from min to max until the relais switches into on-position. (probes must be in dipped state)

The moistened probes should be taken out of the liquid to control if the relais switches into off-position. If the relais doesn‘t switch into off-position, turn the sensitivity controller slightly back to min. (counter clockwise)

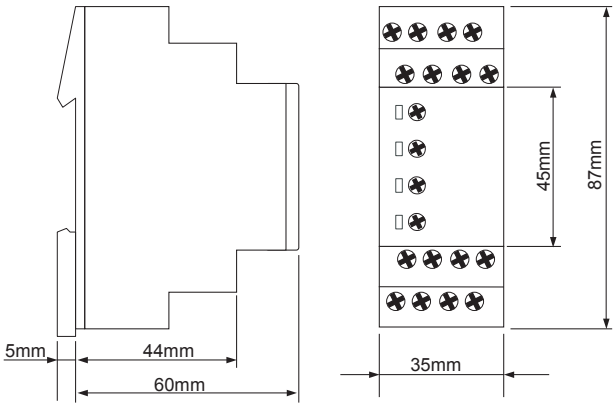
Set the existent time delay to desired value to fade out a short term moisten the probes by waves in the liquid.

Set the function selector switch to desired position.
(either pump up or pump down)

Connections



Dimensions



Ordering information

Types	Rated voltage U_N	Delay ON	Delay OFF	Part. No.
E3LM10	230V	0.5s to 10s	0.5s to 10s	1341500