

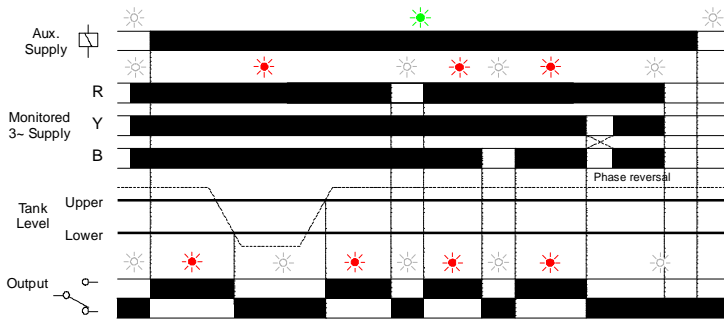
# Type: E-HLD/PM

## Combined Liquid Level and 3-Phase Monitoring Relay

- ❑ Designed to control the level of conductive liquids and monitor a 3-Phase, 3-wire supply
- ❑ 415V Auxiliary supply
- ❑ Liquid level detection - Suitable for 1 or 2 level operation with fixed sensitivity
- ❑ 3-Phase monitoring - Detects under voltage, phase loss and incorrect sequence
- ❑ Relay operates when 3-phase supply is healthy and both probes are covered
- ❑ SPDT relay output
- ❑ LED indication of output relay status, 3-Phase supply condition and Aux. supply



### FUNCTION DIAGRAM



### INSTALLATION AND SETTING



Installation work must be carried out by qualified personnel.

- BEFORE INSTALLATION, ISOLATE THE SUPPLY.
- Probe installation and wiring should be carried with the Auxiliary and Monitored supplies disconnected.
- Connect the unit as shown in the diagram below (Note: for single probe operation, terminals 5 and 7 should be linked and the probe connected to these terminals). Set the trip level " $< U$ " to min.

#### Monitoring separate supply

- Apply power. The green "Aux. supply" LED will illuminate.
- The relay will energise (contacts 4 and 8 close) and the red "output" LED illuminate if:
  - All phases are present, the phase to phase voltage is above the set trip level " $< U$ " and the sequence is correct (the red " $\Delta$ " LED illuminates).
  - The level of the tank is above the upper probe.

#### Monitoring own supply

- To monitor the units own supply, connect terminals 1 and 2 across the desired two phases.
- Note:
- The monitored supply must not exceed the operating limits of the Auxiliary supply range.
  - During phase loss, all LED's may extinguish.

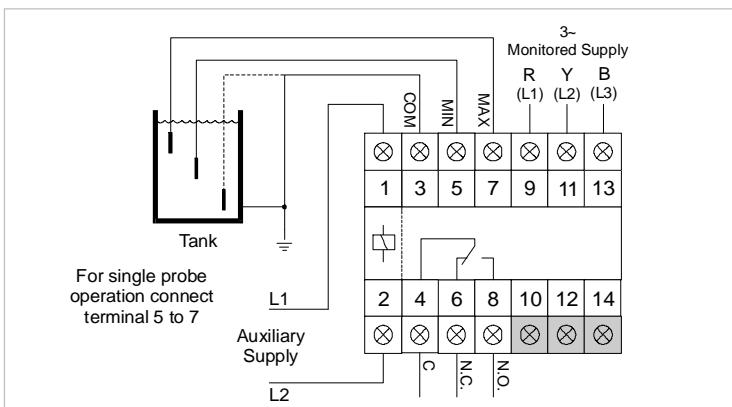
#### To set the unit:

- Increase the under voltage trip level adjustment " $< U$ " until the relay de-energises. Reduce the trip level until the relay re-energises. Accurate setting such as this will allow the unit to detect phase loss even when there is a high percentage of regenerative voltage present on the missing phase.
- If large supply variations are anticipated, the adjustment should be set further from the nominal to avoid nuisance tripping.

#### Troubleshooting.

- If the unit fails to operate as described:
  - check the wiring and voltage present on the supply and monitored input terminals.
  - reverse any two of the monitored phase inputs.
  - check that both probes are immersed in the liquid and for non-metallic tanks, the COM probe is below the lower and upper probes.

### CONNECTION DIAGRAM



### TECHNICAL SPECIFICATION

Auxiliary supply Un:	415V AC 48 - 63Hz
Supply variation:	85 - 110% of Un
Isolation:	Over voltage cat. III (IEC 60664)
Rated impulse withstand voltage:	4kV (1.2/50µs)
Power consumption	≈ 6 VA (@ 1.1 x Un supply)
Supply/monitored voltage U:	300 - 500V AC 48 - 63Hz
3-Phase monitoring:	
Under voltage trip level:	300 - 500V (user adjustable). Hysteresis: ≥ 2%
Time delay (t):	≈ 1S (from phase loss). worst case 2 x t
Liquid Level detection:	
Operate resistance:	≤ 28KΩ (Aux. supply @ Un)
Release resistance:	≥ 55KΩ (Aux. supply @ Un)
Electrode voltage:	≈ 24V AC (Aux. supply @ Un)
Distance between probes and relay:	100 metres (max.)
Ambient temp:	-20 to +60°C
Relative humidity:	+ 95%
Output:	SPDT relay
Output rating:	AC 1 250V AC 8A (2000VA) AC 15 250V AC 5A (no), 3A (nc) DC 1 25V DC 8A (200W)
Electrical life:	≥ 150,000 ops at rated load
LED indication:	
Auxiliary supply:	Green LED
3-Phase monitoring:	Red LED illuminated in healthy state
Output relay:	Red LED
Housing:	Grey flame retardant Lexan UL94 VO
Weight:	≈ 290g
Mounting option:	On to 35mm symmetric DIN rail to BS5584:1978 (EN50 002, DIN 46277-3)
Terminal conductor size:	≤ 2.5mm <sup>2</sup> stranded. ≤ 4mm <sup>2</sup> solid

Approvals: Conforms to IEC 60664. CE and Compliant

### ACCESSORIES

- Probes:
- Type LP01 - Single probe and holder
  - CP1 - Stainless Steel Probe
  - CP1-C - Probe extension connector
  - CP1-S - Probe separator
  - CPH3 - Triple probe holder
- (See main catalogue for more information)

### OPTIONS

A separate unit is available which provides two output relays. One relay is controlled by the liquid level detection and the other relay by the 3~ monitoring.

Order Code:

E-HLD/PM-2

See separate data sheet

### MOUNTING DETAILS

