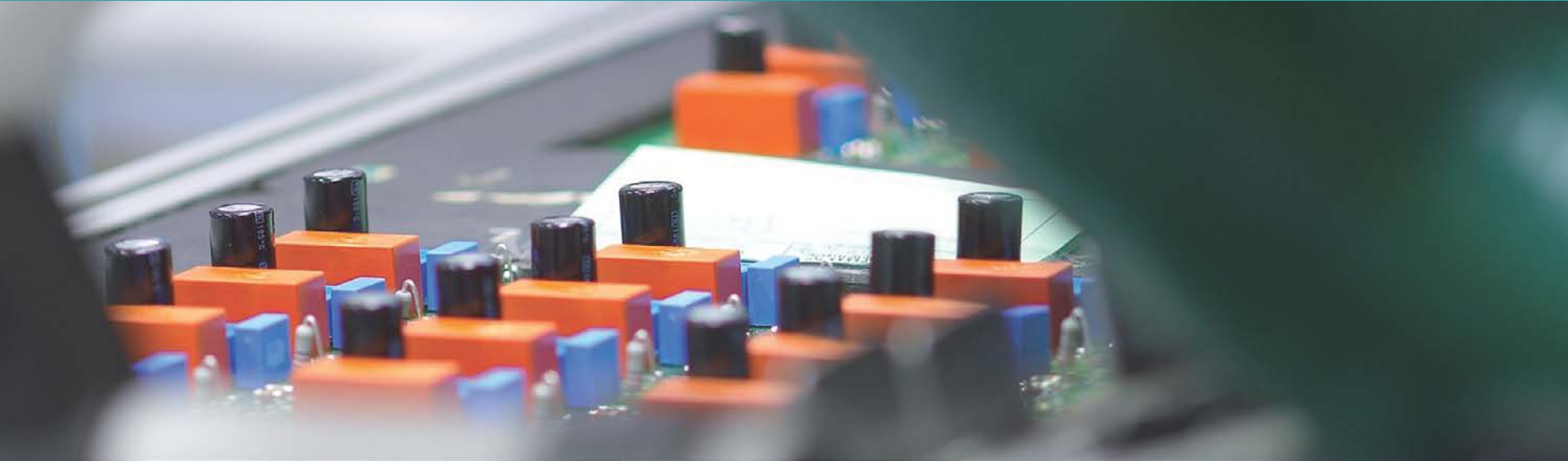


02 / 26 / 2014

LAUNCH NOTE

NEW LEVEL & PHASE CONTROL RELAYS



Level Control

Part Number	Type	Probe	Emptying / Filling	Level / Measurement Range	Timing	Output Relay Changeover	Housing Width (mm)	Supply
84 870 200	ENR	Resistive	Yes / Yes	1 or 2 / 5 to 100 K Ω	No	1 x 8 A	22.5	24 to 240 VAC / VDC
84 870 210	ENRM	Resistive	Yes / Yes	2 / 250 to 1 M Ω	0.1 s to 5 s	1 x 8 A	22.5	24 to 240 VAC / VDC

Phase Control

Part Number	Type	Regeneration	Sequence / Asymmetry	Overvoltage / Undervoltage	Timing	Output(s) Changeover	Housing Width (mm)	Meas. Range (Self-powered) 50 / 60 Hz
84 873 029	MWS	No	Yes / No	No / No	No	1 x 8 A	17.5	208 to 480 VAC
84 873 034	EWS2	No	Yes / No	No / No	No	2 x 8 A	22.5	200 to 460 VAC

ENR & ENRM- 22.5 mm

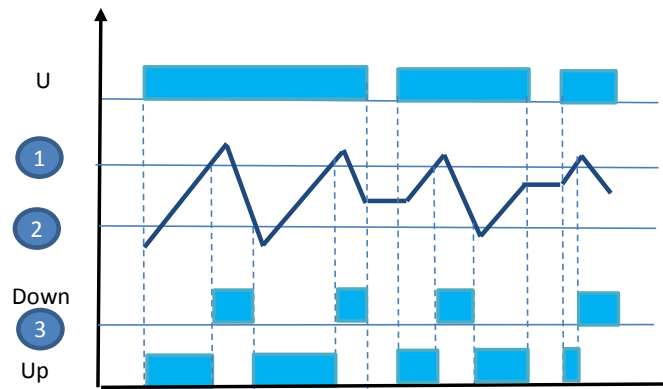


- 2 New part numbers will replace 8 existing part numbers featuring:
 - Filling or emptying function: ENR
 - Filling or emptying with adjustable time delay: ENRM
 - Multi-voltage (24 to 240 VAC/DC)
 - Screw terminals
 - LED status indicators

- Monitoring filling or emptying



- Rated supply voltage: **24 to 240 VAC/DC**
- Output: 1 relay 250 VAC/ 8 A resistive - 250 VDC / 0.3 A resistive
- CE, C-UL-US, CSA



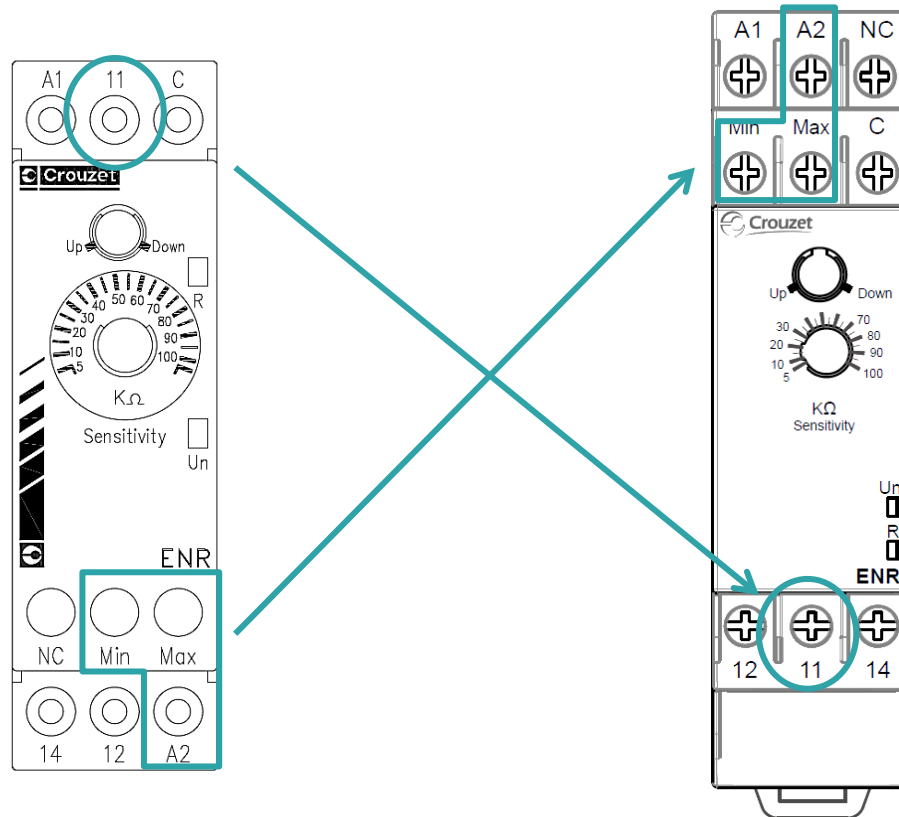
- Maximum level
- Minimum level
- Output relay : Down or Up

Product Specifications: ENR

- LEDs & connections are at different places

Old P/N 84 870 20X

New P/N 84 870 200



New ENR has increased height and decreased depth

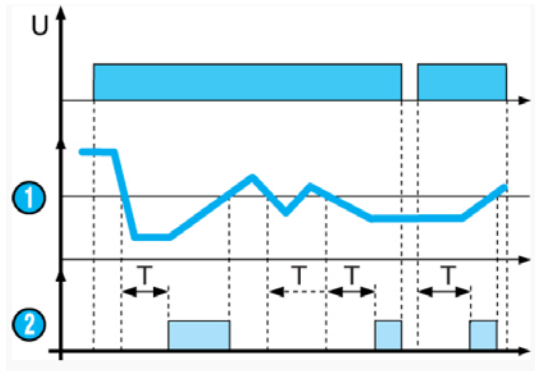
- **Monitoring filling or emptying with adjustable time delay**



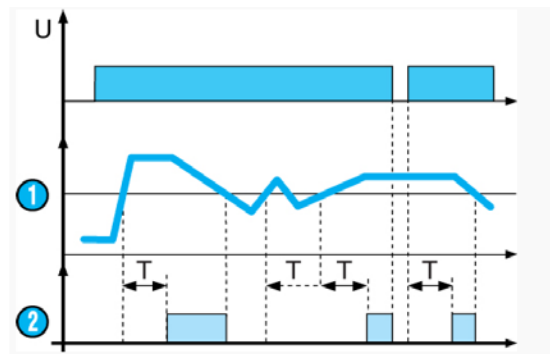
- Casing width: 22.5mm
- Rated supply voltage: **24 to 240 VAC/DC**
- Output: 1 relay 250 VAC/ 8 A resistive - 250 VDC / 0.3 A resistive
- CE, C-UL-US, CSA

ENRM Functions

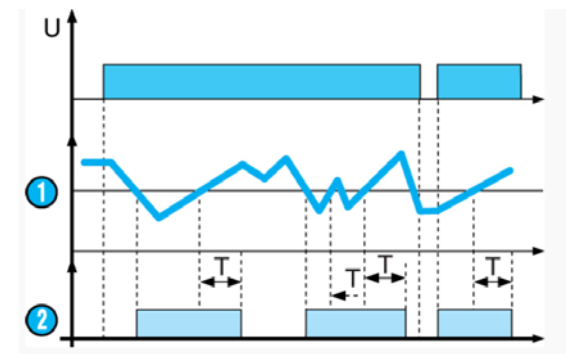
Monitoring filling or emptying with adjustable time delay



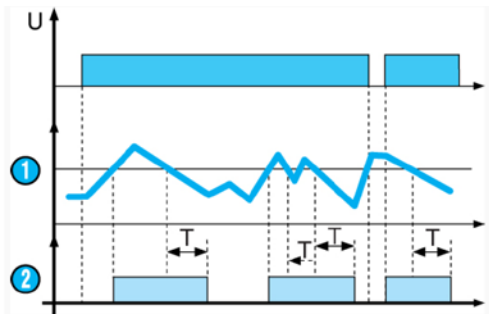
Monitoring a level, emptying function, activation time



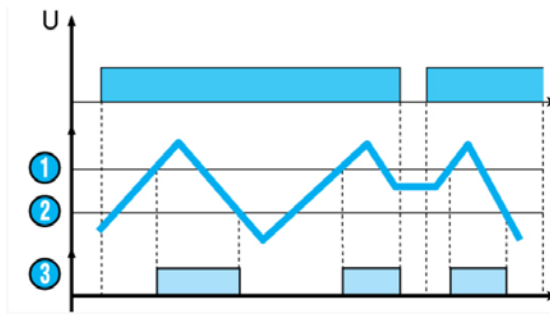
Monitoring a level, filling function, deactivation time



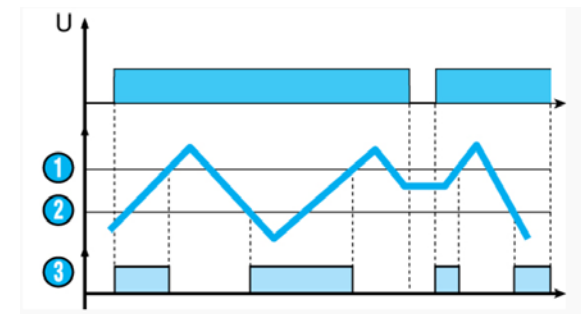
Monitoring a level, emptying function, deactivation time



Monitoring two levels, emptying function



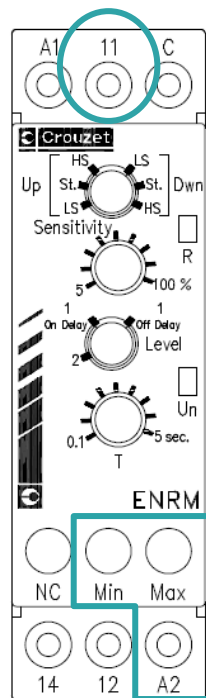
Monitoring two levels, filling function



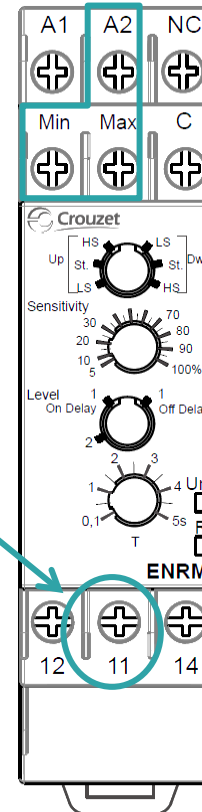
Product Specifications : ENRM

- LEDs & connections are at different places

Old P/N 84 870 21X



New P/N 84 870 210



New ENRM has increased height and decreased depth

MWS - 17.5 mm

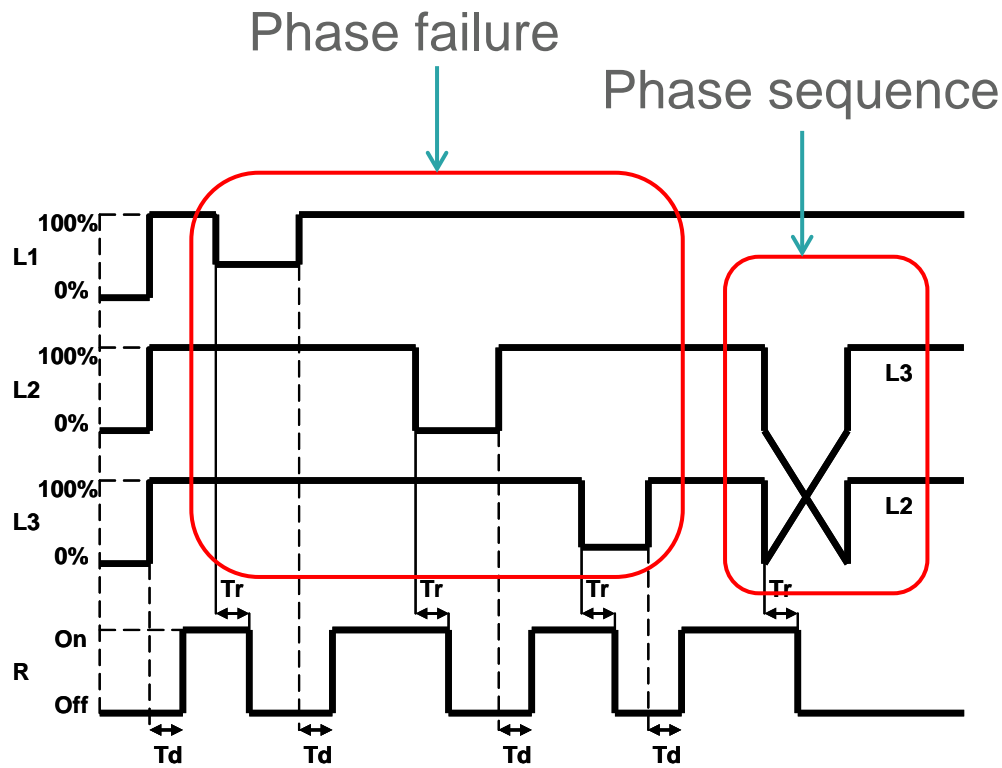


- The new **MWS** features:
 - **8A** changeover output relay
 - Multi-voltage
 - Screw terminals
 - LED status indicators
- The new **MWS** will replace existing:
 - 17.5mm Phase sequence or phase failure MWS (5A)
 - 22.5mm Phase sequence or phase failure EWS (8A)

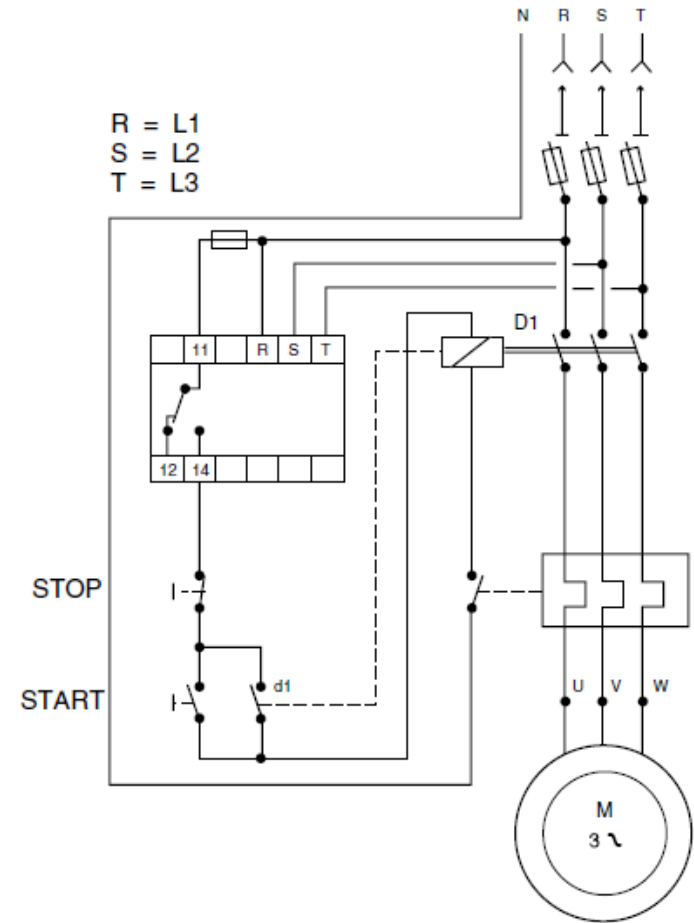
Monitoring phase sequence and phase failure

- Improved Rated supply voltage: **3 x 208 to 480 VAC** (*3 x 230 to 440 VAC for old EWS*)
- Output: 1 relay 250 VAC/ **8 A** resistive - 250 VDC / 0.3 A resistive
- Agency approvals include CE, C-UL-US, CSA and GL
- Simple to install: MWS control relays use the controlled main supply for their own power supply voltage. Simply install MWS phase control relay and without any adjustment it monitors the loss or inversion of one of the phases

Operating Principle



Typical Wiring Diagram



Phase Sequence Monitoring

A change of the phase sequence during operation or an incorrect phase sequence that is applied at start-up can cause a three-phase motor to run with reverse rotation. Certain motors when operated in the reverse direction cause severe damage to connected loads such as pumps, compressors and fans. Specially for portable equipment, such as construction machinery, phase sequence detection prior to the start-up process is highly recommended.

Phase Failure Monitoring

In case of a phase loss, undefined states of the installation are likely to occur. E.g. the startup process of motors is disturbed. Crouzet phase control relays detect a phase loss as soon as the voltage of one phase drops below 100VAC.

EWS2 - 22.5 mm



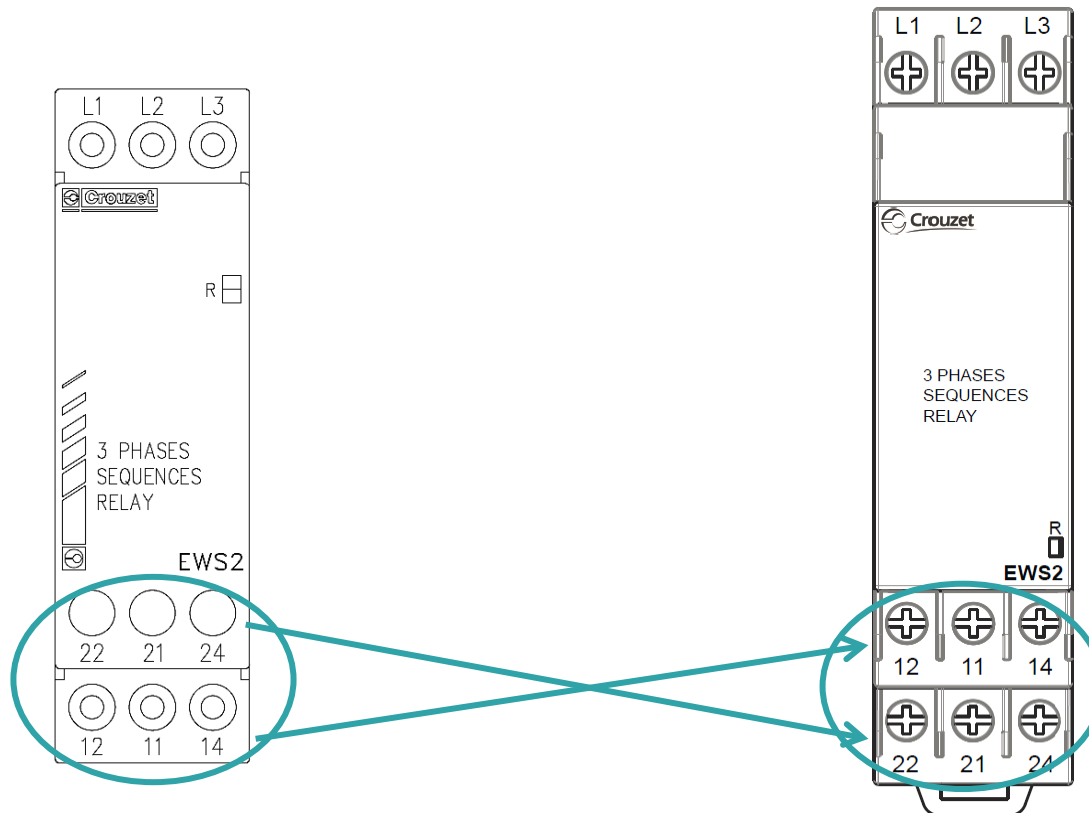
- The new phase sequence or phase failure relay **EWS2** features:
 - 2 x 8A changeover relays
 - Multi-voltage
 - Screw terminals
 - LED status indicators
- Direct replacement of existing **EWS2**

- **Monitoring phase sequence and phase failure**
 - Casing width: 22.5mm
 - Improved Rated supply voltage: **3 x 230 to 440 VAC** (*3 x 230 to 415 VAC for old EWS2*)
 - Output: **2** relays 250 VAC / 8 A resistive - 250 VDC / 0.3 A resistive
 - Agency approvals include CE and C-UL-US
 - Simple to install: EWS2 control relays use the controlled main supply for their own power supply voltage. Simply install EWS2 phase control relay and without any adjustment it monitors the loss or inversion of one of the phases
 - Same operative principle as the MWS phase control relay but with 2 changeover output relays

Front face & connections display only minor changes

Old P/N 84 873 004

New P/N 84 873 034



Product Comparison

Old Offer			
	EMWS (Essential)	MWS	EWS
P/N	84 903 020	84 873 020	84 892 299
Output	5 A / 3 A	5 A	8 A
Width	17.5 mm	17.5 mm	22.5 mm
Rated Supply voltage	3 x 208... 480VAC	3 x 208... 480VAC	3 x 230... 440 VAC

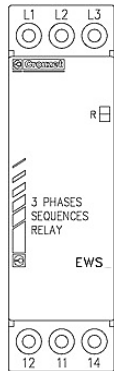


New Offer		
	EMWS (Essential)	New MWS
P/N	84 903 020	84 873 029
Output	5 A / 3 A	8 A
Width	17.5 mm	17.5 mm
Rated Supply voltage	3 x 208... 480VAC	3 x 208... 480VAC

Front face & connections display NO change

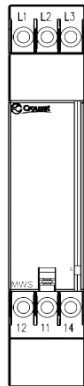
EWS

Old P/N 84 892 299



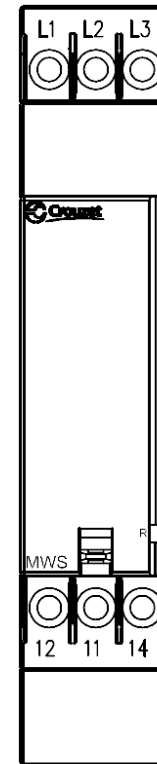
MWS

Old P/N 84 873 020



New NWS

New P/N 84 873 029



Typical Level Control Applications

- They are used to detect the presence of liquid (e.g. seal failure) or to control the liquid level between 1 or 2 levels.
- When controlling the level of liquid between 2 levels on a container there are 2 possible modes: Pump Up (filling), and Pump Down (emptying).
- The most common type uses probes to measure the apparent resistance (in $k\Omega$) of the liquid. These are for conductive, non flammable liquids only.
- Other types can use float switches or discrete sensors.

Typical applications for Liquid Level Control Relays:

- Water treatment facilities
- Pumping stations
- Beverage vending machines
- Industrial washing machines
- Milk tanks
- Fountains

Typical Phase Control Applications

- They are used to monitor 3-phase networks.
- They detect when there is a phase missing or when the sequence of the phases is incorrect.

Typical applications for Phase Control Relays:

- Protection of motors against the risk of starting in reverse (pumps, compressors, generators)
- Protection of motors against phase loss or imbalance (lifts and cranes, pumps, elevators, conveyors, etc.)
- Water and sewage lift stations
- HVAC and refrigeration

Phase control in Industrial Air Compressors and HVAC (Industrial Chillers)

- Phase Control Relays are normally integrated in control panels of medium / large size compressors.
- The function of the Phase Control Relay is to monitor the presence and correct sequence of the 3 phases before starting the compressor. If the compressor motor starts rotating in the wrong direction we have the risk of damaging the compressor.