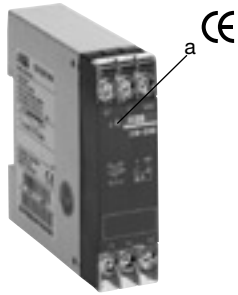


# Liquid Level Controls

## CM-ENE MIN, CM-ENE MAX

### Single Level, Relay Output



- a R: yellow LED - relay status
- Monitoring of pumping systems for dry running (ENE MIN) and overflow (ENE MAX)
  - Connection of 2 electrodes possible at C and MIN/MAX
  - 3 supply voltage versions
  - Optimal price to performance ratio
  - 1 SPST n.o. contact
  - LED for status indication

Approvals: us

#### Description

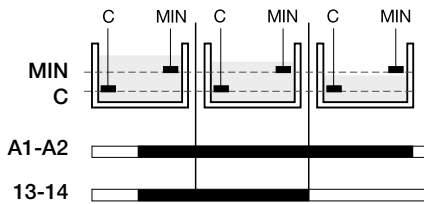
The liquid level relays CM-ENE MIN and CM-ENE MAX are used to monitor levels of conductive liquids in pumping control systems.

The measuring principle is based on resistance change sensed by wet or dry single-pole electrodes. The single-pole electrodes are connected to the terminals C and MIN or MAX.

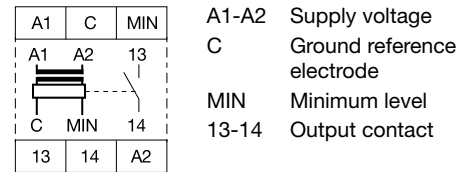
When the supply voltage is applied to A1-A2 and the electrodes are wet, the output relay of the CM-ENE MIN is energized and the output relay of the CM-ENE MAX is de-energized.

The output relay of the CM-ENE MIN de-energizes if the electrodes are no longer wet. The output relay of the CM-ENE MAX energizes if the electrodes are no longer wet.

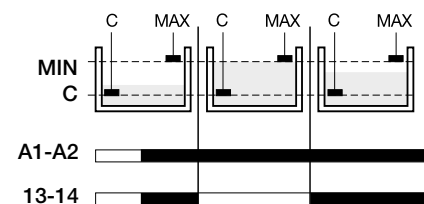
#### Function CM-ENE MIN



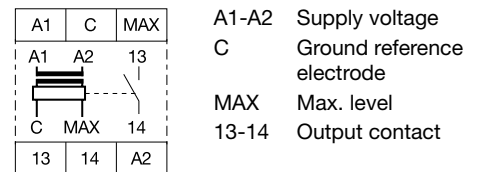
#### Connection CM-ENE MIN



#### Function CM-ENE MAX



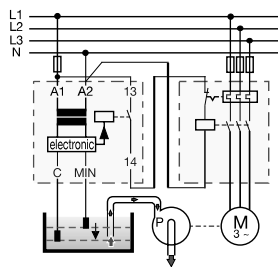
#### Connection CM-ENE MAX



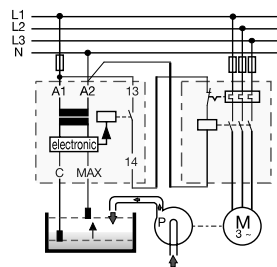
If a metal tank is used, the ground reference electrode C is not required. The cable can be connected directly to the metal surface of the tank.

#### Application Examples

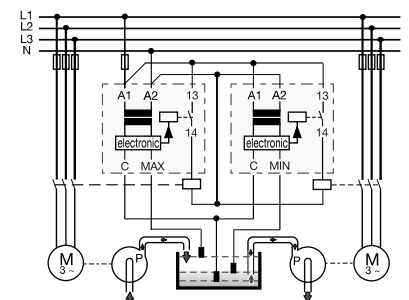
##### CM-ENE MIN



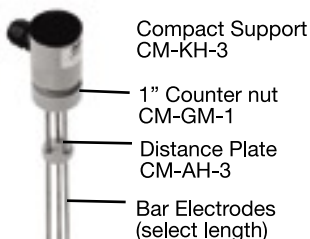
##### CM-ENE MAX



##### CM-ENE MIN and CM-ENE MAX



#### Accessories



See accessory pages for specifications.

#### Ordering Table

Type	Supply voltage	Part Number
CM-ENE MIN	24 V AC	1SVR 550 855 R 9500
	110...130 V AC	1SVR 550 850 R 9500
	220...240 V AC	1SVR 550 851 R 9500
CM-ENE MAX	24 V AC	1SVR 550 855 R 9400
	110...130 V AC	1SVR 550 850 R 9400
	220...240 V AC	1SVR 550 851 R 9400

# Liquid Level Controls

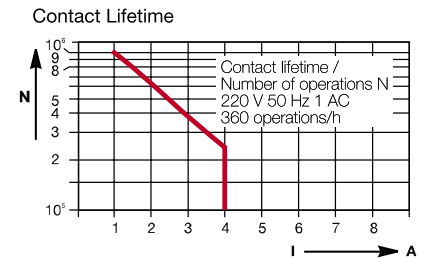
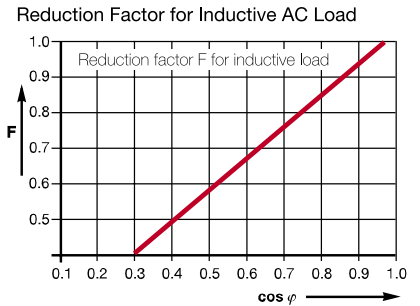
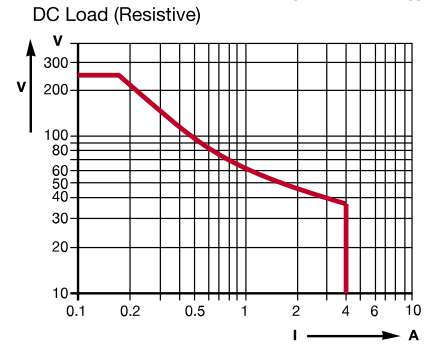
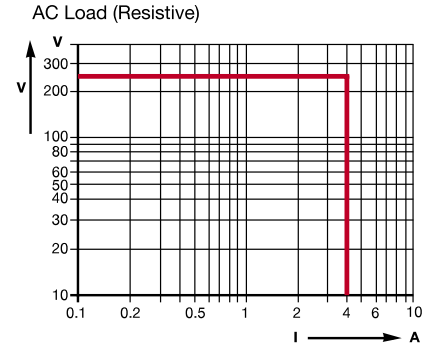
## CM-ENE MIN, CM-ENE MAX

### Single Level, Relay Output

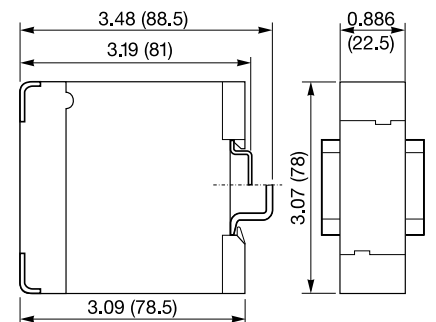
#### Technical Data

<b>Input</b>		
Supply voltage - power consumption	A1-A2	24 V AC - 1.5 VA
	A1-A2	110...130 V AC - 1.2 VA
	A1-A2	220...240 V AC - 1.4 VA
Tolerance of supply voltage		-15 % ... +10 %
Supply voltage frequency		50...60 Hz
Duty cycle		100 %
<b>Measuring Circuit</b>		
Electrode inputs	C	Ground-referring electrode (common)
	MAX/MIN	Maximum level / minimum level
Response sensitivity, fix		0...100 kΩ
Electrode voltage max.		30 V AC
Electrode current max.		1.5 mA
Electrode supply line	Cable capacity max.	3 nF
	Cable length max.	30 m
Delay on make delay		Approx. 200 ms
<b>Display of Operational Status</b>		
Output relay energized		LED yellow
<b>Output</b>		
	13-14	relay, 1 SPST n.o. contact
Rated operating voltage		250 V AC
Rated operating current	AC 12 (resistive)	4 A (230 V)
	AC 15 (inductive)	3 A (230 V)
	DC 12 (resistive)	4 A (24 V)
	DC 13 (inductive)	2 A (24 V)
Maximum mechanical life		30 x 10 <sup>6</sup> operations
Maximum electrical life (acc. to AC 12/230V/4A)		3 x 10 <sup>5</sup> operations
Short-circuit proof, maximum fuse rating		10 A / fast acting
<b>General Data</b>		
Rated impulse withstand voltage Vimp		4 kV
Operating temperature		-20° C ... +60° C
Storage temperature		-40° C ... +85° C
Mounting position		Any
Mounting to DIN rail (EN 50022)		Snap-on mounting/screw-mounting with an adapter
Cable size stranded with wire end ferrule		2 x 16 AWG (2 x 1.5 mm <sup>2</sup> )
Weight		Approx. 0.33 lb (150 g)

#### Load Limit Curves



#### Mechanical View



**Suitable for**

- spring water
- acids, bases
- drinking water
- liquid fertilizers
- sea water
- milk, beer, coffee
- sewage
- non-concentrated alcohol

**Not suitable for**

- explosive areas (liquid gas)
- lacquers
- oils
- paraffin
- fuel
- concentrated alcohol
- chemically pure water
- ethylene glycol