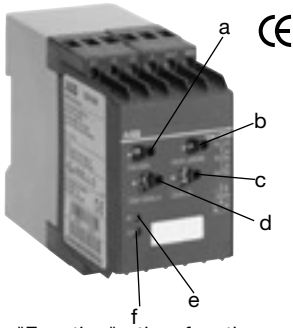


Liquid Level Controls

CM-ENN

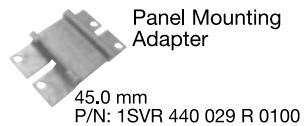
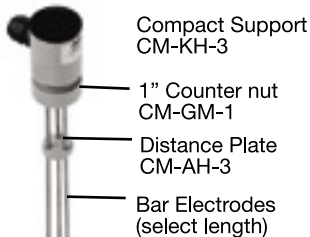
Single or Dual Level With DPDT Output



- a "Function" - time function selector:
 ON-delay OFF-delay
 - b "Sens.-sector" sensitivity range
 - c "Sens. -" sensitivity adjustment
 - d "Time value" - time delay adjustment
 - e R: yellow LED - relay status
 - f U: green LED - supply voltage
- Monitoring and control of conductive liquid levels
 - Monitoring and control of mixture ratios (conductivity of liquids)
 - 3 response sensitivities from 250 Ω...500 kΩ in one unit
 - ON- or OFF-delay 0.1...10 s
 - DPDT contacts
 - 2 LEDs for status indication

Approvals: c us LISTED

Accessories



See accessory pages for specifications.

Description

The CM-ENN monitors levels of conductive liquids in pumping control systems, dry-running protection of submersible pumps or overflow monitoring of tanks. It is also suitable for conductivity monitoring of liquids.

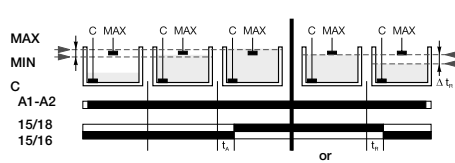
The measuring principle is based on the resistance change sensed by wet or dry single-pole electrodes.

Instead of electrodes, other sensors or transducers can also be used if their output is different resistance values. The measuring, output and supply circuits are electrically isolated to prevent electrical interference.

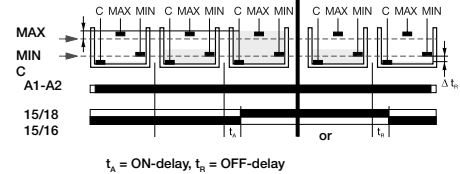
Due to the integrated ON- or OFF-delay, it is possible to set up time-dependent liquid controls using only two electrodes (C, MAX). Different liquid levels in one tank can be controlled by up to 5 CM-ENN (AC versions) without interference.

Function

Circuit with 2 electrodes

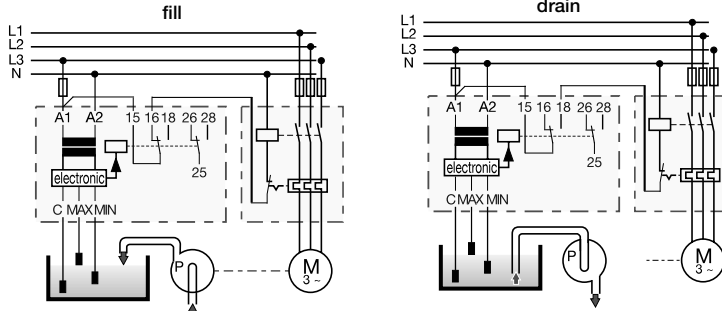


Circuit with 3 electrodes



When using a metal tank the C electrode is not required. The cable can be connected directly to the metal surface of the tank.

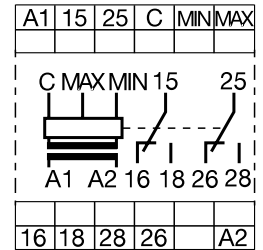
Application Examples



Installation: Set both potentiometers (response sensitivity = R value and ON-delay = time value) to the minimum value (5) and select a suitable resistance range (sector). After all electrodes have been wetted by the liquid being monitored, turn the sensitivity potentiometer towards maximum value (100) until the relay energizes. If the relay does not energize, select a higher Ω value or range on the device and proceed as before. Then it has to be checked if the relay de-energizes properly as soon as the electrodes C and MIN are no longer wet. Liquid levels higher than the maximum level electrode can be obtained by setting an ON-delay (TA = 0.1...10 s).

Liquid levels lower than the minimum level electrode can be obtained by setting an OFF-delay time (TR = 0.1...10 s), for emptying tanks.

Connection



- A1-A2 Supply voltage
- C Ground reference electrode
- MIN Min. level electrode
- MAX Max. level electrode
- 15-16/18 Output contacts - 25-26/28

Ordering Table

Supply voltage	Part Number
24...240 V AC/DC	1SVR 450 055 R 0000
24 V AC	1SVR 450 059 R 0000
110...130 V AC	1SVR 450 050 R 0000
220...240 V AC	1SVR 450 051 R 0000
380...415 V AC	1SVR 450 052 R 0000

Response sensitivity	Max. electrode current	Max. cable capacity	Max. cable length
250 Ω - 5 kΩ	8 mA	200 nF	1000 m
2.5 kΩ - 50 kΩ	2 mA	20 nF	100 m
25 kΩ - 500 kΩ	0.5 mA	4 nF	20 m

Liquid Level Controls

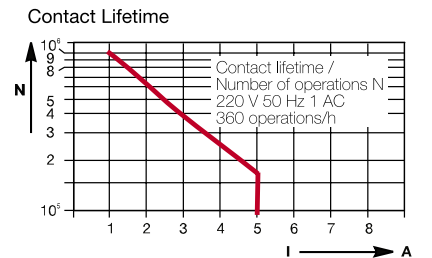
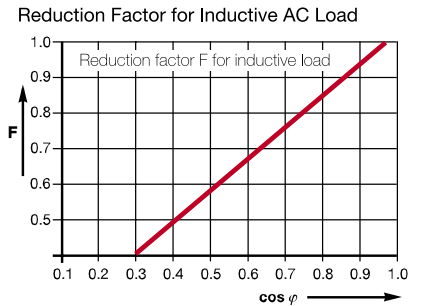
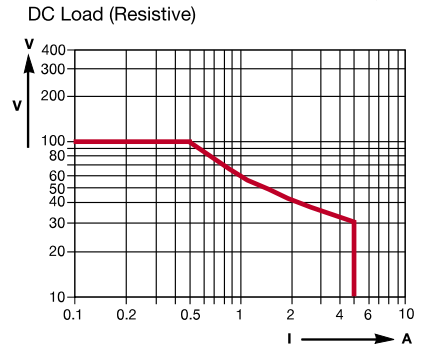
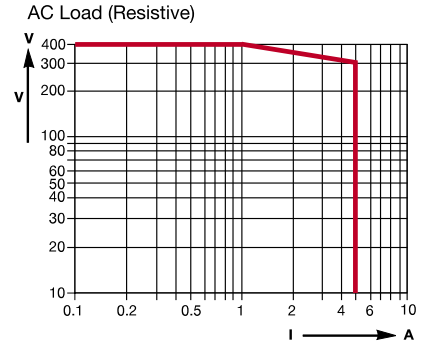
CM-ENN

Single or Dual Level With DPDT Output

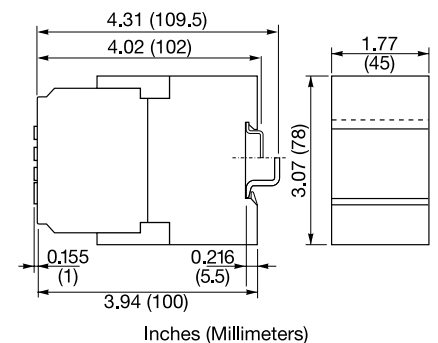
Technical Data

Input		
Supply voltage - power consumption	A1-A2	24...240 V AC/DC - 2 VA/W
	A1-A2	110...130 V AC - 2.5 VA
	A1-A2	220...240 V AC - 3 VA
	A1-A2	380...415 V AC - 4 VA
Tolerance of supply voltage		-15 % ... +10 %
Supply voltage frequency		50...60 Hz or DC
Duty time		100 %
Measuring Circuit		
Electrode inputs	C	Ground-referring electrode (common)
	MAX	Maximum level
	MIN	Minimum level
Response sensitivity		250 Ω ... 500 kΩ
Electrode voltage max.		20 V AC
Time Delay		
Delay on make or on break time		Selectable 0.1...10 s
Display of Operational Status		
Supply voltage		LED green
Output relay energized		LED yellow
Output		
	15-16/18, 25-26/28	relay DPDT contacts
Rated operating voltage		400 V AC
Rated operating current	AC 12 (resistive)	5 A (230 V)
	AC 15 (inductive)	3 A (230 V)
	DC 12 (resistive)	5 A (24 V)
	DC 13 (inductive)	2.5 A (24 V)
Maximum mechanical life		30 x 10 ⁶ operations
Maximum electrical life (acc. to AC 12/230V/4A)		1 x 10 ⁵ operations
Short-circuit proof, maximum fuse rating		5 A / fast acting
General Data		
Rated impulse withstand voltage V _{imp}		4 kV
Operating temperature		-25° C ... +65° 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 14 AWG (2 x 2.5 mm ²)
Weight		Approx. 0.66 lb (300 g)

Load Limit Curves



Mechanical View



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