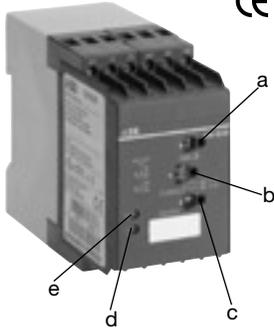


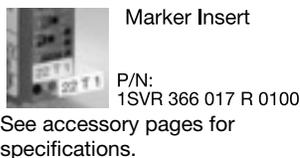
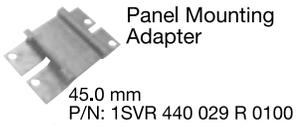
# AC/DC Over or Under Voltage Monitors, Single-Phase CM-ESN Relay Output



- a Hysteresis adjustment
- b Threshold value adjustment
- c Function selection: UV/OV
- d U: green LED - supply voltage
- e R: yellow LED - relay status
- Monitoring of AC or DC voltages from 50 mV...500 V in 8 ranges
- Up to 3 measuring ranges covered by one unit
- Selectable function: Undervoltage or overvoltage monitoring
- Switching hysteresis adjustable from 5...30 %
- With or without time delay from 0.05...30 s
- 2 SPDT contacts
- 2 LEDs for status indication

Approvals: c us

### Accessories



### Description

The CM-ESN is a switch selectable, single phase, overvoltage or undervoltage monitor. The isolated DPDT output relay is de-energized until the voltage is outside the acceptable range selected by the trip point (threshold value). The voltage being monitored is applied to the terminals B1, B2, B3, and C. The supply voltage is applied to A1-A2.

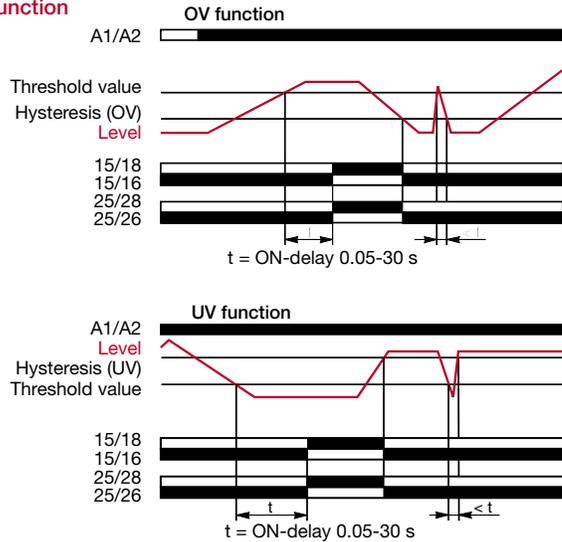
OV position: The output relay is energized if the monitored voltage exceeds the adjusted threshold voltage.  
UV position: The output relay is energized if the monitored voltage falls below the adjusted threshold voltage.

The output relay de-energizes, (resets) when the voltage returns to the acceptable range. The reset voltage is the trip point plus an adjustable hysteresis of 5 to 30%.

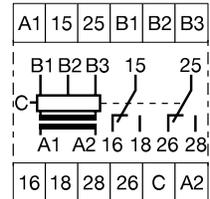
The trip delay (time delay) is adjustable between 0.05 and 30 seconds.

The measuring, output and supply voltage circuits are electrically isolated to prevent mutual interference. As one measuring cycle takes only 80 ms, voltage changes can be quickly detected.

### Function



### Connection



- A1-A2 Supply voltage
- B1/C Measuring voltage: 0.05-0.5 V, 1-10 V
- B2/C Measuring voltage: 0.3-3 V, 5-50 V, 30-300 V
- B3/C Measuring voltage: 0.05-5 V, 10-100 V, 50-500 V
- 15-16/18 Output contacts - 25-26/28

### Ordering Table

Type	Supply voltage 50/60 Hz	Part Number
<b>Voltage Measuring Ranges: 0.05-0.5 V; 0.3-3 V; 0.5-5 V, no time delay</b>		
CM-ESN	24-240 V AC/DC	1SVR 450 215 R 0000
	110...130 V AC	1SVR 450 210 R 0000
	220...240 V AC	1SVR 450 211 R 0000
<b>Voltage Measuring Ranges: 0.05-0.5 V; 0.3-3 V; 0.5-5 V, with ON-delay</b>		
CM-ESN	24-240 V AC/DC	1SVR 450 225 R 0000
	110...130 V AC	1SVR 450 220 R 0000
	220...240 V AC	1SVR 450 221 R 0000
<b>Voltage Measuring Ranges: 1-10 V; 5-50 V; 10-100 V, no time delay</b>		
CM-ESN	24-240 V AC/DC	1SVR 450 215 R 0100
	110...130 V AC	1SVR 450 210 R 0100
	220...240 V AC	1SVR 450 211 R 0100
<b>Voltage Measuring Ranges: 1-10 V; 5-50 V; 10-100 V, with ON-delay</b>		
CM-ESN	24-240 V AC/DC	1SVR 450 225 R 0100
	110...130 V AC	1SVR 450 220 R 0100
	220...240 V AC	1SVR 450 221 R 0100
<b>Voltage Measuring Ranges: 30-300 V; 50-500 V, no time delay</b>		
CM-ESN	24-240 V AC/DC	1SVR 450 215 R 0200
	110...130 V AC	1SVR 450 210 R 0200
	220...240 V AC	1SVR 450 211 R 0200
<b>Voltage Measuring Ranges: 30-300 V; 50-500 V, with ON-delay</b>		
CM-ESN	24-240 V AC/DC	1SVR 450 225 R 0200
	110...130 V AC	1SVR 450 220 R 0200
	220...240 V AC	1SVR 450 221 R 0200

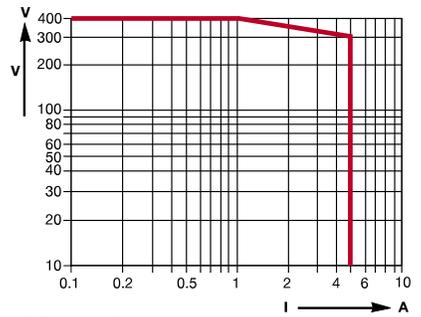
# AC/DC Over or Under Voltage Monitors, Single-Phase CM-ESN Relay Output

## Technical Data

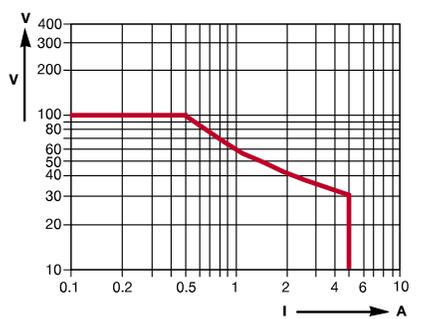
<b>Input</b>		
Supply voltage - power consumption	A1-A2	24...240 V AC/DC - 2 VA / W
	A1-A2	110...130 V AC - 2 VA
	A1-A2	220...240 V AC - 2 VA
	A1-A2	380...415 V AC - 2 VA
Tolerance of supply voltage		-15 % ... +10 %
Supply voltage frequency		50...60 Hz
<b>Time Delay</b>		Message of error, overvoltage, undervoltage
Delay on operate time adjustable		0.05...1 s and 1.5...30 s
Timing error over supply voltage range		≤ 0.5 %
Timing error over the temperature range		≤ 0.06 % / °C
<b>Measuring Circuit</b>		
Measuring voltage inputs	B1/C	0.05...0.5 V, 1...10 V
	B2/C	0.3...3 V, 5...50 V, 30...300 V
	B3/C	0.5...5 V, 10...100 V, 50...500 V
Hysteresis (ref. to the trip point) adjustable		5...30 %
Measuring cycle max.		80 ms
Temperature error		≤ 0.06 % / °C
Error over the supply voltage range		≤ 0.5 %
<b>Display of Operational Status</b>		
Supply voltage		LED, green
Output relay energized		LED, yellow
<b>Output</b>		Relay, 2 SPDT contacts, open circuit principle
Rated voltage	15-16/18, 25-26/28	400 V
Rated switching voltage max.	VDE0100, IEC 947-1	400 V AC
Rated switching current	AC 12 (resistive)	5 A (at 230 V)
	AC 15 (inductive)	3 A (at 230 V)
	DC 12 (resistive)	5 A (at 24 V)
	DC 13 (inductive)	2.5 A (at 24 V)
Maximum mechanical life		30 x 10 <sup>6</sup> operations
Maximum electrical life (to AC 12 / 230 V / 5 A)		1 x 10 <sup>5</sup> operations
Short-circuit proof, max. fuse rating		5 A / fast acting
<b>General Data</b>		
Rated impulse withstand voltage V <sub>imp</sub>		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 by adapter
Cable size stranded with wire end ferrule		2 x 14 AWG (2 x 2.5 mm <sup>2</sup> )
Weight		Approx. 0.66 lb (300 g)

## Load Limit Curves

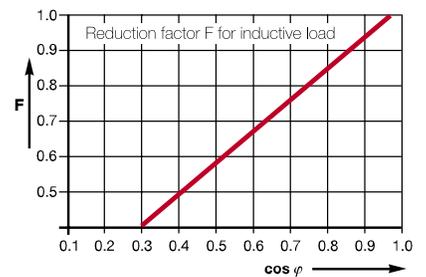
AC Load (Resistive)



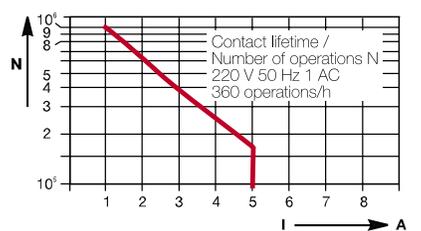
DC Load (Resistive)



Reduction Factor for Inductive AC Load



Contact Lifetime



## Mechanical View

