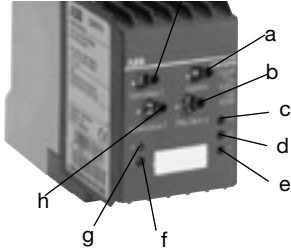


# AC Over- And Under Voltage Monitor, Single-Phase CM-EFN Relay Output

Discontinued Design  
Replacement Design Available



- a Time function ☒ / ■
- b Time adjustment
- c >U: red LED - overvoltage
- d <U: red LED - undervoltage
- e P: red LED - phase loss
- f U: green LED - supply voltage
- g R: yellow LED - relay status
- h Threshold value undervoltage
- i Threshold value overvoltage
- Monitoring of single-phase supply voltage for phase loss as well as overvoltage and undervoltage
- 2 voltage monitoring ranges: 80...160 V and 160...300 V
- Single-phase under- and overvoltage monitoring, adjustable  $V_{min}$  and  $V_{max}$
- Adjustable ON- or OFF-delay 0.1...10 s
- 2 SPDT contacts
- 5 LEDs for status indication

Approvals: c us

### Accessories

Panel Mounting Adapter  
45.0 mm  
P/N: 1SVR 440 029 R 0100

Transparent Cover  
45.0 mm  
P/N: 1SVR 440 005 R 0100

Marker Insert  
P/N: 1SVR 366 017 R 0100

See accessory pages for specifications.

### Description

The CM-EFN monitors single phase supply voltages for phase loss as well as for overvoltage and undervoltage conditions. The output relay is de-energized if one of the fault conditions occurs. The fault type is indicated by an LED.

The output relay is energized if the phase is present and the voltage value is correct. The relay is de-energized if the voltage exceeds the set  $V_{max}$  value or drops below the set  $V_{min}$  value. It is re-energized automatically once the voltage returns into the adjusted voltage frame taking into account the fixed hysteresis of 5 %.

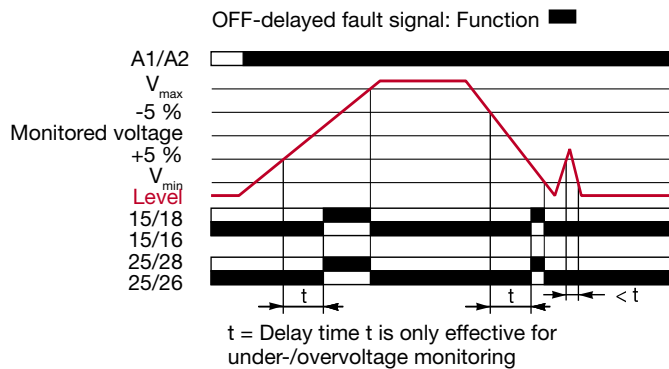
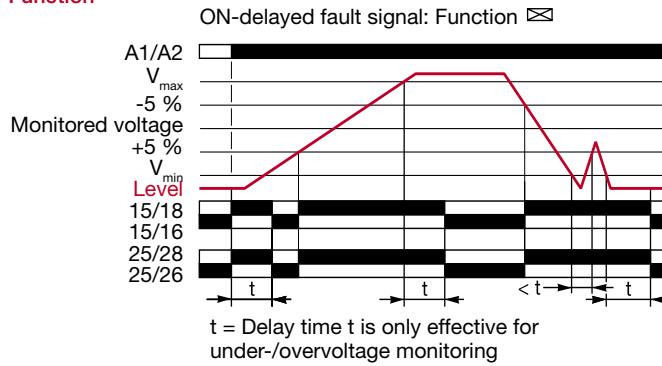
### Time Delay

The selection switch ☒/■ is used to set the delay time of the CM-EFN as required by the specific service conditions.

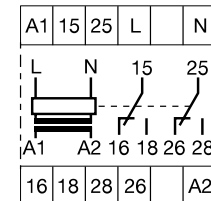
Switch position (☒): The fault signal indicating that the voltage has exceeded or dropped below the adjusted threshold values is suppressed during the delay time. Momentary voltage fluctuations will thus not initiate alarm tripping.

Switch position (■): The fault signal is issued immediately and stored during the time delay. Momentary undervoltage conditions are recognized but the unit does not trip until the delay is complete.

### Function



### Connection



- A1-A2 Supply voltage
- L, N Monitored voltage adjustable pick-up values
- $V_{min}$  80-160 V AC
- $V_{max}$  160-300 V AC
- 15-16/18 Output contacts -
- 25-26/28

### Ordering Table

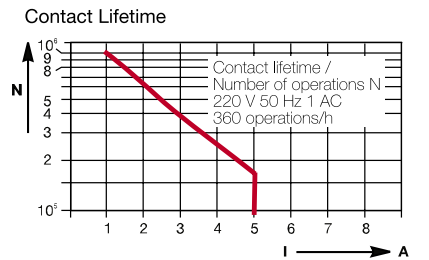
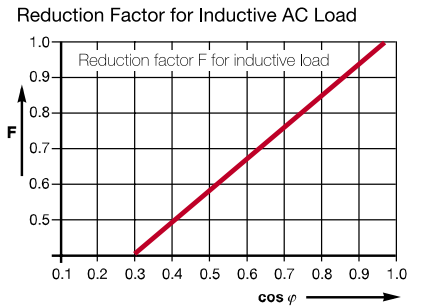
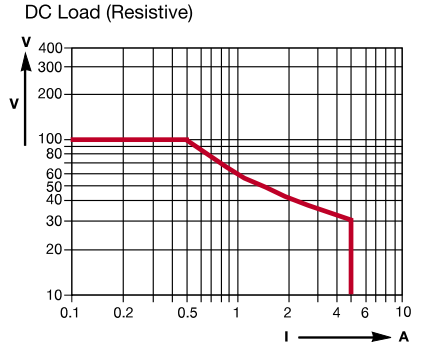
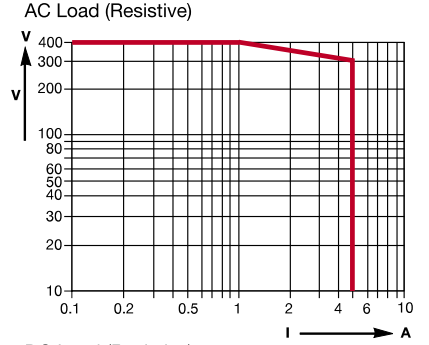
Type	Supply voltage 50/60 Hz	Part Number
$V_{min}$ : 80...120 V AC 50/60 Hz; $V_{max}$ 120...160 V AC 50/60 Hz		
CM-EFN	80...160 V AC 50/60 Hz	1SVR 450 200 R 1100
$V_{min}$ : 160...220 V AC 50/60 Hz; $V_{max}$ 220...300 V AC 50/60 Hz		
CM-EFN	160...300 V AC 50/60 Hz	1SVR 450 201 R 1200

# AC Over- And Under Voltage Monitor, Single-Phase CM-EFN Relay Output

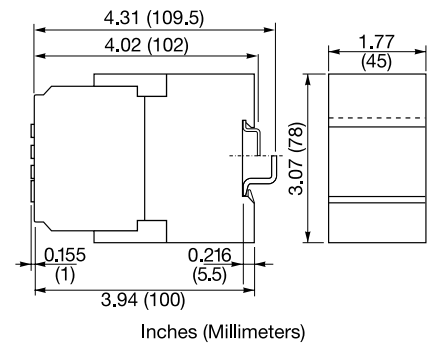
## Technical Data

<b>Input</b>		
Supply voltage - power consumption	A1-A2	80...160 V AC - 3 VA
	A1-A2	160...300 V AC - 3 VA
Tolerance of supply voltage		-15 % ... +10 %
Supply voltage frequency		50...60 Hz
Duty time		100 %
<b>Time Delay</b>		
ON delay time		0.1...10 s
OFF delay time settable		0.1...10 s
Timing error over the supply voltage range		≤ 0.5 %
Timing error over the temperature range		≤ 0.06 % / °C
<b>Measuring Circuit</b>		L, N
Response value adjustable for overvoltage and undervoltage	V <sub>min</sub> / V <sub>max</sub>	Monitoring voltage adjustable 80...160 V AC / 160...300 V AC
Frequency		50...60 Hz
Hysteresis (re. to the set response value)		5 %
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		V = LED, green
Output relay energized		R = LED, yellow
Overvoltage		> V = LED, red
Undervoltage		< V = LED, red
Phase failure		P = LED, red
<b>Output</b>		Relay, 2 SPDT contacts, closed circuit principle
Rated voltage	15-16/18, 25-26/28 VDE 0110, IEC 947-1	400 V
Rated switching voltage max.		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 (at 24 V)
	DC 13 (inductive)	2.5 (at 24 V)
Maximum mechanical life/ operations		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 with an 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



## Mechanical View



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