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[SM125230VAC4V](#)

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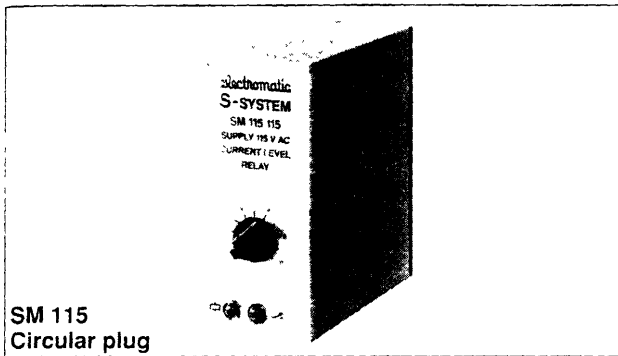
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# † 1-Phase AC/DC Voltage - AC Current Control Types SM 115, SM 125

CARLO GAVAZZI



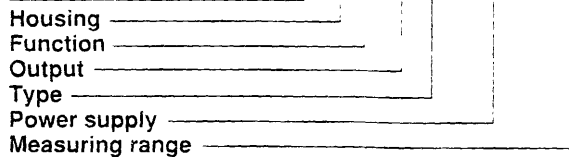
- AC/DC voltage/current control relay
- Current measuring range: 0.1 - 500 AAC through current metering transformer
- Voltage measuring range: 0.1 - 500 VAC/DC, divided into 5 ranges
- Knob-adjustable set point
- Latching at set level possible
- Output: 10 A SPDT relay
- Plug-in type module
- S-housing
- LED-indication for power supply and output ON
- AC or DC power supply

## Product Description

An AC/DC voltage and current measuring plug-in relay. Often used where heating elements are wanted to be controlled for break or short-circuit to avoid damage to the equipment.

## Ordering Key

SM 125 024 200



## Type Selection

Plug	Output	Measuring ranges	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC	Supply: 24 VDC
<b>Current measuring</b>						
Circ. <input type="radio"/>	SPDT	0.1 - 500 AAC	SM 115 024	SM 115 115	SM 115 230	SM 115 724
<b>Voltage measuring</b>						
Circ. <input type="radio"/>	SPDT	0.1 - 4 VAC/DC	SM 125 024 4	SM 125 115 4	SM 125 230 4	SM 125 724 4
		2 - 20 VAC/DC	SM 125 024 20	SM 125 115 20	SM 125 230 20	SM 125 724 20
		5 - 50 VAC/DC	SM 125 024 50	SM 125 115 50	SM 125 230 50	SM 125 724 50
		20 - 200 VAC/DC	SM 125 024 200	SM 125 115 200	SM 125 230 200	SM 125 724 200
		50 - 500 VAC/DC	SM 125 024 500	SM 125 115 500	SM 125 230 500	SM 125 724 500

## Input Specifications

Input	Types		Ranges	Internal resist.	Max. volt. VAC/DC
Pins 5 & 7	voltage or current through current transformer				
	SM 115		0.1 - 4*	8 kΩ	20
<b>Measuring ranges</b>	<b>Ranges AAC RMS</b>	<b>Max. current RMS</b>			
MI 5	0.5 - 5	20 AAC	SM 125 4	8 kΩ	50
MI 20	2 - 20	50 AAC	SM 125 .. 20	50 kΩ	100
MI 100	10 - 100	250 AAC	SM 125 .. 50	100 kΩ	200
MI 500	50 - 500	700 AAC	SM 125 .. 200	450 kΩ	350
			SM 125 500	1 MΩ	500
				SM 125 at AC voltages peak value is measured	
				* only VAC	
				interconnect pins 8 & 9	
				<b>Latching</b> latching at set level	

† Three phase current monitoring possible by using SM115 with MP Series current transformers.

## Output Specifications

		SM 115, SM 125
<b>Output</b>		SPDT relay
Rated insulation voltage		250 VAC (RMS) (cont./elect.)
<b>Contact ratings (AgCdO)</b>		$\mu$ (micro gap)
Resistive loads	AC 1	10 A/250 VAC (2500 VA)
	DC 1	1 A/250 VDC (250 W)
	or	10 A/25 VDC (250 W)
Small inductive loads	AC 11	2.5 A/230 VAC
	DC 11	5 A/24 VDC
<b>Mechanical life</b>		$\geq 30 \times 10^6$ operations
<b>Electrical life (at max. load)</b>	AC 1	$\geq 2.5 \times 10^5$ operations
<b>Operating frequency</b>		$\leq 7200$ operations/h
<b>Dielectric strength</b>		
Dielectric voltage		$\geq 2$ kVAC (RMS) (cont./elect.)
Rated impulse withstand volt.		4 kV (1.2/50 $\mu$ s) (cont./elect.) (IEC 664)

## General Specifications

<b>Hysteresis</b>		$10\% \pm 6\%$
<b>Reaction time</b>		Relay operates: $\tau = 12$ ms Relay releases: $\tau = 64$ ms. worst case reaction time may be up to $5 \times \tau$
<b>Indication for</b>		
Power supply ON		LED, green
Output ON		LED, red
<b>Environment</b>		(IEC 947-1)
Degree of protection		IP 20 B (IEC 529)
Pollution degree		2 (IEC 664)
Operating temperature		-20 to +50°C (-4 to +122°F)
Storage temperature		-50 to +85°C (-58 to +185°F)
<b>Weight</b>	AC supply	200 g
	DC supply	125 g
<b>Approvals</b>		UL, CSA, SEV

## Supply Specifications

<b>Power supply AC types</b>		Overvoltage cat. III (IEC 664) (IEC 38)
Rated operational voltage through pins 2 & 10	024	24 VAC $\pm 15\%$ , 45 to 65 Hz
	115	115 VAC $\pm 15\%$ , 45 to 65 Hz
	230	230 VAC $\pm 15\%$ , 45 to 65 Hz
Voltage interruption		$\leq 40$ ms
Dielectric voltage		2 kVAC (RMS) (supply/elect.)
Rated impulse withstand volt		4 kV (1.2/50 $\mu$ s) (line/neutral, line/line), no direct connection to electronics
<b>Power supply DC types</b>		Overvoltage cat III (IEC 664) (IEC 38)
Rated operational voltage through pins 2 & 10	724	24 VDC $\pm 15\%$
Dielectric voltage		none (supply/elect.)
Rated impulse withstand volt.		800 V (1.2/50 $\mu$ s) +/-
<b>Rated operational power</b>	AC supply	2.5 VA
	DC supply	1.5 W

## Mode of Operation

### SM 115

#### Example 1

##### AC current metering

The relay operates when the current through the current transformer reaches set point. The relay releases when the voltage drops below set point (see hysteresis) or by interrupting power supply.

#### Example 2

##### AC current metering - latching

The relay operates when the current through the current transformer reaches set point and latches in operating position. The relay releases by removing the latch i.e. by opening the contact between pins 8 and 9, provided that the current has dropped below set point (see hysteresis), or by interrupting power supply.

### SM 125

#### Example 3

##### AC/DC voltage metering

The relay operates when the voltage (peak voltage at AC) reaches set point. The relay releases when the voltage drops below set point (see hysteresis), or by interrupting power supply.

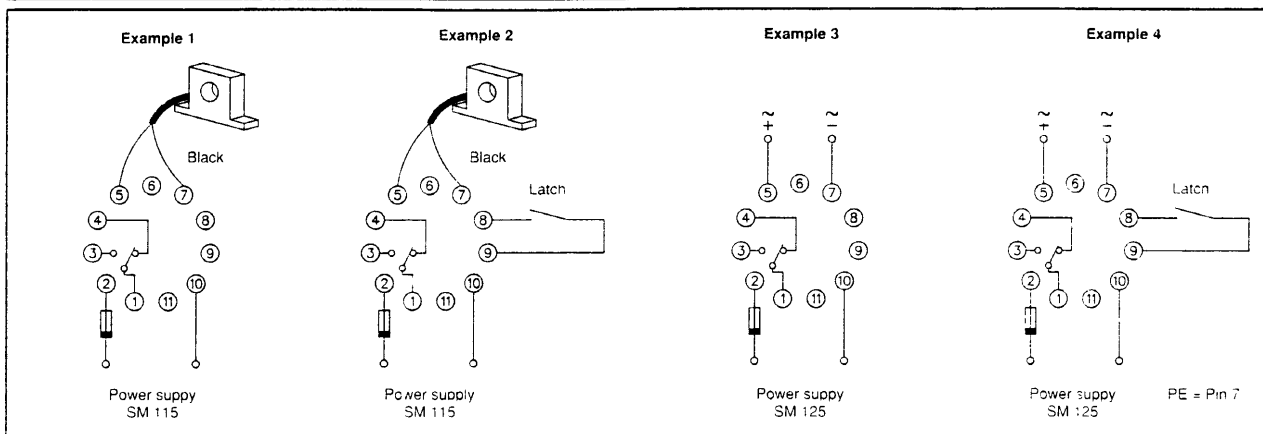
#### Example 4

##### AC/DC voltage metering - latching

The relay operates when the voltage (peak voltage at AC) reaches set point and latches in operating position. The relay releases by removing the latch i.e. by opening the contact between pins 8 and 9, provided that the voltage in all 3 phases has dropped below set point (see hysteresis), or by interrupting power supply.

**Note** At DC supply, do not connect pins 7 and 10 (3 and A2) as these pins are internally connected via a resistor of 3.9 k $\Omega$ .

## Wiring Diagrams



## Range Setting

### Range setting

Adjustment of set point on relative scale.

### Hysteresis

10% ± 6%.  
The hysteresis may be extended to 75% by connecting a resistor between pins 8 and 9. Resistor limits are 1 MΩ and 15 kΩ. The hysteresis is increased by decreasing resistance

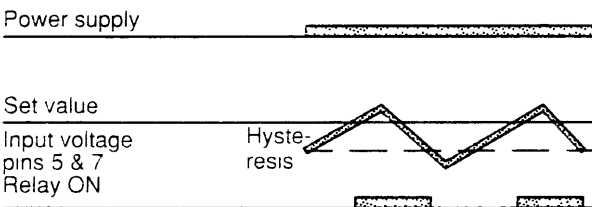
## Accessories

Sockets	S 411
Hold down spring	HF
Mounting rack	SM 13
Socket covers	BB 4
Front mounting bezel	FRS 2
Current metering transformers	MI 5, MI 20, MI 100, MI 500
Potentiometer lock	PL 1

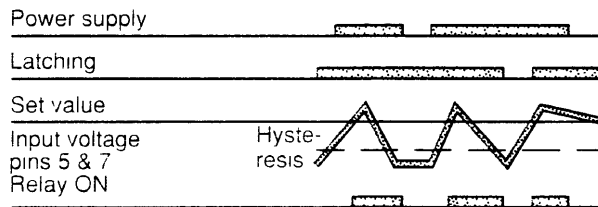
For further information refer to "Accessories."

## Operation Diagrams

### Example 1 and 3



### Example 2 and 4



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