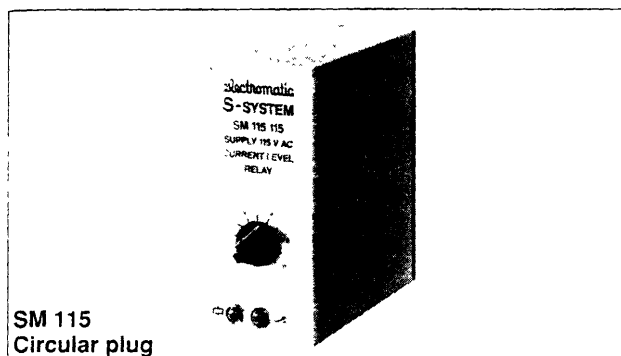


† 1-Phase AC/DC Voltage - AC Current Control Types SM 115, SM 125

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 metering 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

Housing _____
Function _____
Output _____
Type _____
Power supply _____
Measuring range _____

Type Selection

Plug	Output	Measuring ranges	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC	Supply: 24 VDC
Current measuring						
Circ. ☐	SPDT	0.1 - 500 AAC	SM 115 024	SM 115 115	SM 115 230	SM 115 724
Voltage measuring						
Circ. ☐	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	voltage or current through current transformer		Types	Ranges VAC/DC	Internal resist.	Max. volt. VAC/DC
Pins 5 & 7			SM 115	0.1 - 4*	8 kΩ	20
Measuring ranges Types	Ranges AAC RMS	Max. current RMS	SM 125 4	0.1 - 4	8 kΩ	50
			SM 125 .. 20	2 - 20	50 kΩ	100
			SM 125 50	5 - 50	100 kΩ	200
			SM 125 .. 200	20 - 200	450 kΩ	350
			SM 125 500	50 - 500	1 MΩ	500
MI 5	0.5 - 5	20 AAC		SM 125 at AC voltages peak value is measured		
MI 20	2 - 20	50 AAC		* only VAC		
MI 100	10 - 100	250 AAC				
MI 500	50 - 500	700 AAC				
Latching latching at set level				interconnect pins 8 & 9		

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

Output Specifications

SM 115, SM 125	
Output	SPDT relay
Rated insulation voltage	250 VAC (RMS) (cont./elect.)
Contact ratings (AgCdO)	μ (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
Mechanical life	$\geq 30 \times 10^6$ operations
Electrical life (at max. load) AC 1	$\geq 2.5 \times 10^5$ operations
Operating frequency	≤ 7200 operations/h
Dielectric strength	
Dielectric voltage	≥ 2 kVAC (RMS) (cont./elect.)
Rated impulse withstand volt.	4 kV (1.2/50 μ s) (cont./elect.) (IEC 664)

General Specifications

Hysteresis	10% $\pm$ 6%
Reaction time	Relay operates: $\tau = 12$ ms Relay releases: $\tau = 64$ ms. worst case reaction time may be up to $5 \times \tau$
Indication for	
Power supply ON	LED, green
Output ON	LED, red
Environment	(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)
Weight	AC supply 200 g DC supply 125 g
Approvals	UL, CSA, SEV

Supply Specifications

Power supply AC types	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	≤ 40 ms
Dielectric voltage	2 kVAC (RMS) (supply/elect.)
Rated impulse withstand volt.	4 kV (1.2/50 μ s) (line/neutral, line/line), no direct connection to electronics
Power supply DC types	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 μ s) +/-
Rated operational power	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.

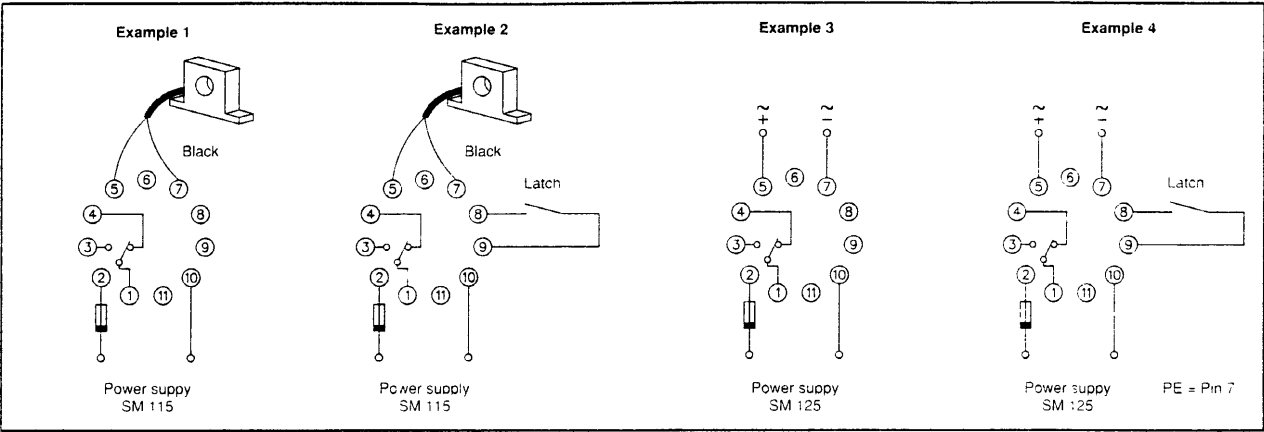
Example 4

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 Ω .

Wiring Diagrams



Range Setting

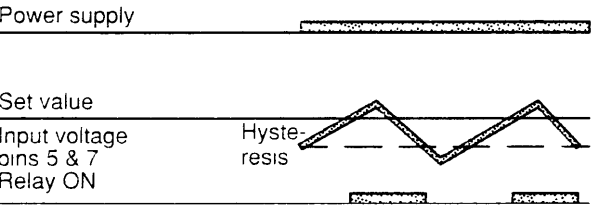
Range setting Adjustment of set point on relative scale.	Hysteresis 10% ± 6%. The hysteresis may be extended to 75% by connecting a resistor between pins 8 and 9. Resistor limits are 1 MΩ and 15 kΩ. The hysteresis is increased by decreasing resistance
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Accessories

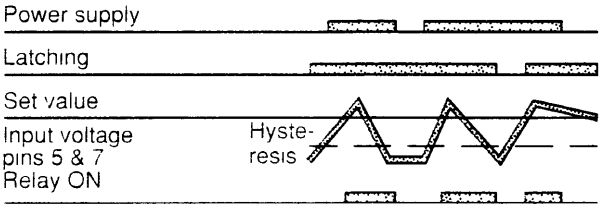
Sockets◇	S 411
Hold down spring◇	HF
Mounting rack	SM 13
Socket covers	BB 4
Front mounting bezel	FRS 2
Current metering transformers	MI 5, MI 20, MI 100, MI 500
Potentiometer lock	PL 1
For further information refer to "Accessories."	

Operation Diagrams

Example 1 and 3



Example 2 and 4



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