

# Current and Voltage Controls

## 1-Phase AC Current Control

### Type SJ 175



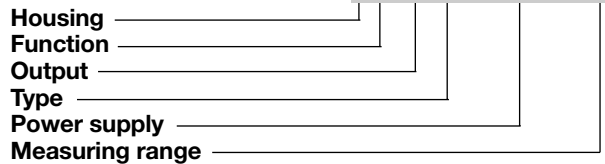
- AC current control relay
- For AC standard current transformers
- Current measuring range: .. A/1 AAC or .. A/5 AAC
- Knob-adjustable current level
- Latching at set level possible
- Output: 10 A SPDT relay
- Plug-in type module
- S-housing
- LED-indication for output ON
- AC or DC power supply

### Product Description

AC plug-in current metering relay. This relay is operating with commonly available standard current transformers, ..A/ 1A - .. A/5 A. Often used to detect over and underloads. The relay features built-in latch function which can be used e.g. to hold an alarm ON.

### Ordering Key

**SJ 175 024 1A**



### Type Selection

Plug	Output	Measuring ranges	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC	Supply: 24 VDC
Circ.	SPDT	0.2 - 1 AAC 1 - 5 AAC	<b>SJ 175 024 1A</b> <b>SJ 175 024 5A</b>	<b>SJ 175 115 1A</b> <b>SJ 175 115 5A</b>	<b>SJ 175 230 1A</b> <b>SJ 175 230 5A</b>	<b>SJ 175 724 1A</b> <b>SJ 175 724 5A</b>

### Input Specifications

<b>Input</b> Pins 5 & 7	AC current	
<b>Measuring ranges</b> <b>Types</b>	<b>Ranges</b>	<b>Internal resist.</b>
SJ 175 ... 1A	0.2 - 1 AAC	0.1 Ω
SJ 175 ... 5A	1 - 5 AAC	0.02 Ω
<b>Max. overload current</b>	1 A: 5 A:	8 AAC (30 sec.) 40 AAC (10 sec.) 25 AAC (30 sec.)
<b>Latching</b>	Interconnect pins 8 & 9 latching at set level, no latching at DC supply	

### Supply Specifications

<b>Power supply AC types</b>	Overvoltage cat. III (IEC 60664) (IEC 60038)
Rated operational voltage	24 VAC ± 15%, 45 to 65 Hz
Through pins 2 & 10	024 115 230
Voltage interruption	≤ 40 ms
Dielectric voltage	2 kVAC (rms) (supply/elect.)
Rated impulse withstand volt.	4 kV (1.2/50 μs) (line/neutral, line/line), no direct connection to electronics
<b>Power supply DC types</b>	Overvoltage cat. III (IEC 60664) (IEC 60038)
Rated operational voltage	24 VDC ± 15%
Through pins 2 & 10	724
Dielectric voltage	None (supply/elect.)
Rated impulse withstand volt.	800 V (1.2/50 μs)
<b>Rated operational power</b>	
AC supply	2.5 VA
DC supply	1.5 W



## Output Specifications

<b>Output</b> Rated insulation voltage	SPDT relay 250 VAC (rms) (cont./elect.)
<b>Contact ratings</b> (AgCdO) Resistive loads AC 1 DC 1 or Small inductive loads AC 15 DC 13	μ (micro gap) 10 A/250 VAC (2500 VA) 1 A/250 VDC (250 W) 10 A/25 VDC (250 W) 2.5 A/230 VAC 5 A/24 VDC
<b>Mechanical life</b>	≥ 30 x 10 <sup>6</sup> operations
<b>Electrical life</b> AC 1	≥ 2.5 x 10 <sup>5</sup> operations (at max. load)
<b>Operating frequency</b>	≤ 7200 operations/h
<b>Dielectric strength</b> Dielectric voltage Rated impulse withstand volt.	≥ 2.0 kVAC (rms) (cont./elect.) 4 kV (1.2/50 μs) (cont./elect.) (IEC 60664)

## General Specifications

<b>Reaction time</b>	Relay operates: τ = 22 ms Relay releases: τ = 2.2 s worst case reaction time may be up to 5 x τ
<b>Accuracy</b>	0 to +10% on max. Min. actual level ≤ set level
<b>Indication for Output ON</b>	LED, yellow
<b>Environment</b> Degree of protection Pollution degree Operating temperature Storage temperature	(IEC 60947-1) IP 20 B (IEC 60529) 2 (IEC 60664) -20° to +50°C (-4° to +122°F) -50° to +85°C (-58° to +185°F)
<b>Weight</b> AC supply DC supply	200 g 125 g
<b>Approvals</b>	UL, CSA

## Mode of Operation

The SJ 175 measures the average of a sinusoidal current. The set point, calibrated to rms-value, is set on the built-in potentiometer.

### Example 1 AC current metering

The relay operates when the measured current from the standard through-primary transformer exceeds set point.

The relay releases when the current value drops 10% (see hysteresis).

### Example 2 AC current limiter - latching

The diagram shows the relay connected to standard through-primary transformer as a current limiter with latching.

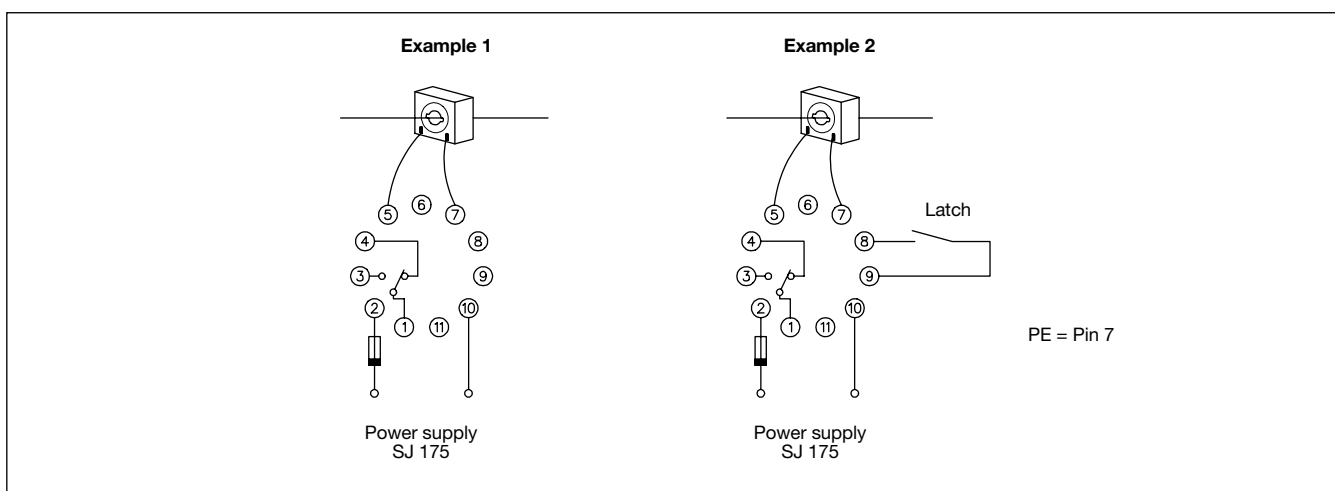
The relay operates when the measured current reaches set point. Thus a contactor can be activated either by interrupting the primary current wholly/partly, or by shortcircuiting the input (pins 5 and 7) of the relay.

The latching is reset when a new measurement is required, provided that the measuring

current is below set point less hysteresis.

**Note:**  
Internal connection between pins 7 and 10 at DC power supply. No current is to pass through this internal connection.

## Wiring Diagrams





## Range Setting

**Range setting**  
Relay set point adjustable on absolute scale.

**Hysteresis**  
Approx. 10%.  
The hysteresis may be extend-

ed to 75% by connecting a resistor between pins 8 and 9. Resistor limits are 470 kΩ and 3 kΩ (0.25 W). The hysteresis is increased by decreasing resistance.

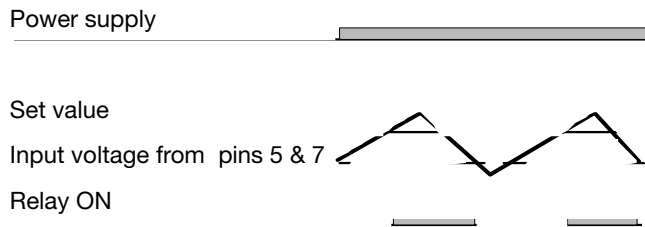
## Accessories

Sockets◇	S 411
Hold down spring◇	HF
Mounting rack	SM 13
Socket covers	BB 4
Front mounting bezel	FRS 2
Potentiometer lock	PL 1
Through-primary current transformer, 1 or 5 A, secondary output.	

For further information refer to "Accessories".

## Operation Diagrams

### Example 1



### Example 2

