

# Monitoring Relays Tachometer Type SM 155

CARLO GAVAZZI



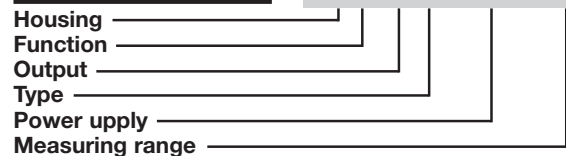
- Tachometer relay
- Measuring ranges:
  - 30 - 300 R.P.M.
  - 200 - 2000 R.P.M.
  - 1000 - 10000 R.P.M.
- Knob-adjustable set level
- Controlled by Namur/DIN 19234 sensor or metallic contact
- Connection for moving-coil instrument
- 10 A SPDT output relay
- LED indication for relay ON
- AC or DC power supply

## Product Description

SM155 monitors the actual RPMs of a motor by a Namur/DIN 19234 sensor or a metallic contact. Knob adjustable set level on relative scale.

## Ordering key

**SM 155 230 10K**



## Type Selection

Plug	Output	Measuring range	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC	Supply: 24 VDC
Circular 11 pins	SPDT	30 - 300 R.P.M.	<b>SM 155 024 300</b>	<b>SM 155 115 300</b>	<b>SM 155 230 300</b>	<b>SM 155 724 300</b>
	SPDT	20 - 2000 R.P.M.	<b>SM 155 024 2K</b>	<b>SM 155 115 2K</b>	<b>SM 155 230 2K</b>	<b>SM 155 724 2K</b>
	SPDT	1000 - 10000 R.P.M.	<b>SM 155 024 10K</b>	<b>SM 155 115 10K</b>	<b>SM 155 230 10K</b>	<b>SM 155 724 10K</b>

## Input Specifications

<b>Input</b>	Through terminals:	
	Metallic contact:	5, 6
	Namur sensor:	6, 7
<b>Measuring ranges</b>	Types:	
	300:	30 to 300 R.P.M.
	2K:	200 to 2000 R.P.M.
	10K:	1000 to 10000 R.P.M.
<b>Inversion</b>		Interconnecting pins 8, 11
<b>Short circuit current</b>		
	Pins 5, 6	5 mA
	Pins 6, 7	10 mA
<b>Connection cable</b>		Can be extended as desired
	Max resistance	100 Ω
<b>Hysteresis</b>		approx 3% of set value

## Output Specifications

<b>Output</b>	SPDT relay
<b>Instrument connection</b>	Connection for moving-coil instrument
	Through pins
	Full scale deflection
	Internal resistance
	8, 9, pin 9 positive
	1 mA
	110 Ω
<b>Rated insulation voltage</b>	250 VAC
<b>Contact ratings (AgCdO)</b>	μ
	Resistive loads
	AC 1
	DC 1
	Small inductive loads
	AC 11
	DC 11
	10A, 250 VAC
	1 A, 250 VDC
	2.5 A, 230 VAC
	5 A, 24 VDC
<b>Mechanical life</b>	≥ 30 x 10 <sup>6</sup> operations
<b>Electrical life</b>	≥ 2.5 x 10 <sup>5</sup> operations (at max load)
<b>Operating frequency</b>	≤ 7200 operations/h
<b>Dielectric strength</b>	
	Dielectric voltage
	≥ 2 kVAC (rms)



## Supply Specifications

<b>Power supply</b>	Overvoltage cat. III (IEC 60664, IEC 60038)
Rated operational voltage Through terminals 2, 10	
024:	24 VAC ± 15%, 45 to 65 Hz
115:	115 VAC ± 15%, 45 to 65 Hz
230:	230 VAC ± 15%, 45 to 65 Hz
724:	24 VDC ± 15%
Dielectric voltage	2 kV
Transient protection	> 3kV
<b>Rated operational power</b>	
AC models	4 VA
DC models	2 W

## General Specifications

<b>Reaction time</b>	Time between 2 pulses at the set value of the potentiometer
<b>Accuracy of measurement</b>	± 3%
<b>Indication for</b>	
Power supply ON	LED, green
Output relay ON	LED, red
<b>Environment</b>	
Degree of protection	IP 20
Operating temperature	-20 to +50°C
Storage temperature	-50 to +85°C
<b>Housing dimensions</b>	35 x 80 x 83 mm
<b>Weight</b>	
AC power supply	Approx. 200 g
DC power supply	Approx. 125 g
<b>Approvals</b>	UL, CSA
<b>CE Marking</b>	Yes

## Mode of Operation/Level Setting

The relay is controlled by mechanical triggering, e.g. microswitch, reed relay, limit switch etc. (examples 1 and 2), or by electronic triggering, e.g. inductive or capacitive sensors (NAMUR/DIN 19234) (examples 3 and 4).

### Examples 1 and 3

The relay operates when the number of R.P.M. exceeds the set value.

The relay releases when the number of R.P.M. is less than the set value. See hysteresis.

### Example 2 and 4

By interconnecting pins 8 and 11 the relay function is inverted, i.e. the relay releases when the number of R.P.M. exceeds the set value.

The relay operates when the number of R.P.M. is less than

the set value. See hysteresis.

### Instrument connection

A moving-coil instrument with a scale calibrated in R.P.M. can be connected to the SM 155. The instrument has 1 mA full scale deflection.

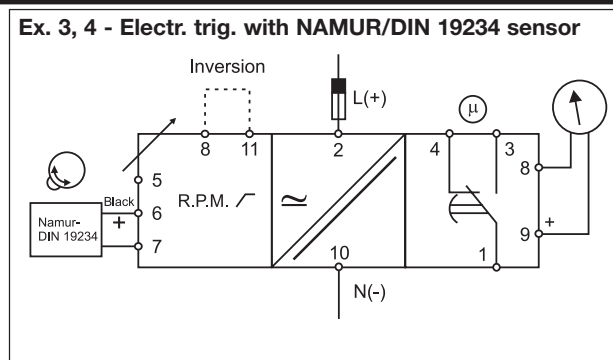
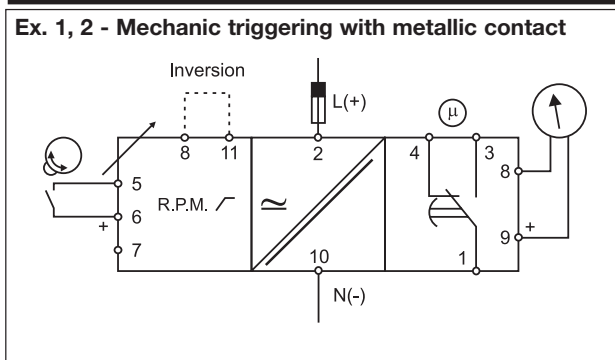
The relay generates max. 8.2 V on the instrument terminals (pins 8 and 9) across an internal resistance of 8.2 kΩ in the relay. The ideal internal

resistance of the instrument is 110 Ω. A deviation in the internal resistance of ± 100 Ω results in an error of ± 1%.

### Level Setting

Knob adjustable on relative scale

## Wiring Diagrams





# Operation Diagram

