

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

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

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.	SM 155 024 300	SM 155 115 300	SM 155 230 300	SM 155 724 300
	SPDT	20 - 2000 R.P.M.	SM 155 024 2K	SM 155 115 2K	SM 155 230 2K	SM 155 724 2K
	SPDT	1000 - 10000 R.P.M.	SM 155 024 10K	SM 155 115 10K	SM 155 230 10K	SM 155 724 10K

Input Specifications

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

Output Specifications

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

Supply Specifications

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

General Specifications

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

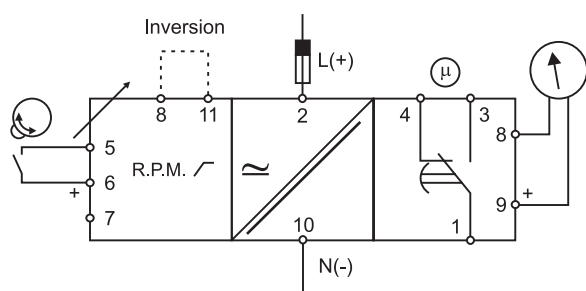
resistance of the instrument is $110\ \Omega$. A deviation in the internal resistance of $\pm 100\ \Omega$ results in an error of $\pm 1\%$.

Level Setting

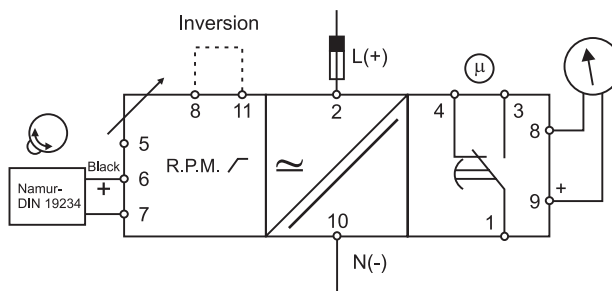
Knob adjustable on relative scale

Wiring Diagrams

Ex. 1, 2 - Mechanic triggering with metallic contact



Ex. 3, 4 - Electr. trig. with NAMUR/DIN 19234 sensor





Operation Diagram

