

PICOSTAT RAILWAY PRESSURE SWITCH

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The 9R5 of the Picostat series is based on our long lasting experience in the railway sector. The new Picostat generation with improved performance and new design meets the demanding requirements of rail vehicle applications.



Applications

- Railway

Features

- Stainless steel housing
- Stainless steel bellows sensor, welded
- Compact design
- Rugged housing
- Meets EN 50155 (Railway)

Technical Data

Measuring principle	Steel bellows welded	Media temperature	-40°C ... +85°C
Setting range	-0.8 ... 2 to 7 ... 12 bar -11 ... 29 to 102 ... 174 psi	Ambient temperature	-40°C ... +85°C (EN 50155: OT6)
Output signal	1 Floating change-over contact (SPDT)	Approval / conformity	EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 60730-1/ EN 60730-2-6: Type 2.B.H
Switching differential	Not adjustable		

08/2023

Data sheet H72370f

Subject to change

Ordering information/type code

							9R5 .	XX	XX	XXX	XX	XX	XX	XX	XX			
Microswitch	Standard, silver contacts ¹⁾						3A											
	Standard with gold plated contacts ¹⁾						8A											
Range ⁴⁾	Setting range [bar]	Operating pressure [bar]	Over pressure [bar]	Burst pressure [bar]	Sensor	Sensor type												
	-0.8 ... 2	-1 ... 14	14	45	B10	Bellows	10											
	1 ... 5	-1 ... 14	14	45	B10	Bellows	11											
	4 ... 8	-1 ... 14	14	45	B10	Bellows	12											
	7 ... 12	-1 ... 23	23	45	B10	Bellows	13											
Sensor	Sensor type			Sensor material														
	Bellows			Stainless steel 1.4571			B10											
Pressure connection	Flange connection with O-Ring ²⁾											11						
	G1/4" female with flange mounting holes ³⁾											04						
Electrical connection	Male electrical connector EN 175301-803-A (DIN 43650-A)													05				
Pressure units	bar rel.														UB			
	MPa rel.														UM			
	kPa rel.														UK			
	psi rel.														UP			
	kg/cm² rel.														UC			
Accessories	Fixing set for flange mounting holes, M5x40, stainless steel A4-70															V2		
	Fixing set for flange mounting holes, M5x40, galvanised steel, grade 8.8															V3		
	Female electrical plug EN 175301-803-A (DIN 43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 ... 9 mm, 4 x 1.5 mm²/AWG16, flammability standard UL94-V0															46		
	Seal NBR, -25°C ... +125°C																83	
	Seal FPM, -18°C ... +125°C																61	
	Seal EPDM, -40°C ... +125°C																63	
	Switching points preset according to customer requirements. Please indicate when ordering:																	
	- Switchpoint including measurement unit, relative (bar, MPa, kPa, psi, kg/cm²)																87	
	- Increasing or decreasing																	
	Fixed switching point adjustment according to customer requirements, manipulation protection with seal sticker. Please indicate when ordering:																	
	- Switchpoint including measurement unit, relative (bar, MPa, kPa, psi, kg/cm²)																	88
	- Increasing or decreasing																	
	Damping elements and snubber see data sheet H72258																	

¹⁾ Switching differential not adjustable²⁾ Sealing NBR, FPM EPDM selectable³⁾ Without sealing⁴⁾ For further pressure units see table "Range"

Range						
[psi, MPa, kPa, kg/cm ²]						
Pressure unit Code	Pressure unit	Pressure range Code	Setting range	Operating pressure	Overpressure	Burst pressure
UP	psi	10	-11 ... 29	-14 ... 200	200	650
		11	15 ... 72	-14 ... 200	200	650
		12	58 ... 116	-14 ... 200	200	650
		13	102 ... 174	-14 ... 330	330	650
UM	MPa	10	-0.08 ... 0.2	-0.1 ... 1.4	1.4	4.5
		11	0.1 ... 0.5	-0.1 ... 1.4	1.4	4.5
		12	0.4 ... 0.8	-0.1 ... 1.4	1.4	4.5
		13	0.7 ... 1.2	-0.1 ... 2.3	2.3	4.5
UK	kPa	10	-80 ... 200	-100 ... 1400	1400	4500
		11	100 ... 500	-100 ... 1400	1400	4500
		12	400 ... 800	-100 ... 1400	1400	4500
		13	700 ... 1200	-100 ... 2300	2300	4500
UC	kg/cm ²	10	-0.8 ... 2	-1 ... 14	14	45
		11	1 ... 5	-1 ... 14	14	45
		12	4 ... 8	-1 ... 14	14	45
		13	7 ... 12	-1 ... 23	23	45

Specifications		
Environmental conditions	Ambient temperature	-40°C ... +85°C (EN 50155: OT6)
	Media temperature	-40°C ... +85°C
	Storage temperature	-40°C ... +85°C
	Protection ¹⁾	IP65 / IP66/ IP67 ²⁾
	Humidity	Max. 95 % relative
	Vibration	EN61373, category 2
	Shock	EN61373, category 2
Mechanical data	Sensor	Steel bellows welded 1.4571
	Pressure connection (wetted parts)	1.4301, 1.4306, 1.4307
	Housing	1.4301, 1.4306, 1.4307 PA66 A3X2G5 UL94-V0
	Sealing	See ordering information
	Housing seal	NBR
	Mounting torque	G 1/4" female: $M_A = 32 \dots 40 \text{ Nm}$ Flange: M5x40; $M_A 4.5 \dots 6 \text{ Nm}$
	Installation	any position
	Weight	~ 270 g
Microswitch	Rating	See table "Microswitch rating"
	Resistance of insulation	500 VDC > 10 MΩ
	Dielectric strength	1.5 kV AC/60 s terminal ground 500 VAC/60 s via open contacts
Electrical connection	Electrical connections	EN 175301-803-A (DIN 43650-A)

¹⁾ Provided female electrical plug is mounted according to instructions

²⁾ Ingress Protection IP65/ IP66/ IP67 only in combination with a counterpart with female plug that meets same IP protection class. Ingress Protection IP65 / IP67 in combination with Trafag accessory code 46.

Lifetime			
Sensor	Bellows B10	mechanical	10 x 10 ⁶ cycles ³⁾
Microswitch	3A	mechanical	2 x 10 ⁶ cycles
	8A	mechanical	2 x 10 ⁶ cycles

³⁾ Max. switching frequency 3.5 Hz @ 25°C, up to 10 bar operating pressure



The 9R5 with bellows sensor is suitable for gaseous and liquid media.
Specification of compressed air quality according to ISO 8573-1:

- Particle class: 4
- Oil class: 4
- Dew point: dew point must be at least 15°C below inlet air temperature

Accuracy

Setting range		Code [bar] [psi]	10 -0.8 ... 2 -11 ... 29	11 1 ... 5 14 ... 72	12 4 ... 8 58 ... 116	13 7 ... 12 102 ... 174
Switching differential @ 25°C		[bar] [psi]	≤ 0.3 ≤ 4.4	≤ 0.3 ≤ 4.4	≤ 0.4 ≤ 5.8	≤ 0.6 ≤ 8.7
Switch point setting tolerance ²⁾ @ 25°C		[bar] [psi]	± 0.1 ± 1.45	± 0.1 ± 1.45	± 0.15 ± 2.17	± 0.15 ± 2.17
Longterm stability ³⁾ @ 1 x 10 ⁶ cycles		[bar] [psi]	± 0.15 ± 2.18	± 0.15 ± 2.18	± 0.25 ± 3.63	± 0.25 ± 3.63
Repeatability			± 0.2 % operating range			
Temperature dependence switch point	-40°C ... +85°C		-0.03 % operating range/°C			

²⁾ With accessory 87, 88³⁾ Max. switching frequency 3.5 Hz, up to 10 bar operating pressure

Detail railway specifications

Environmental conditions	Cold	EN 60068-2-1	Ab: -40°C, 96 h
	Dry heat	EN 60068-2-2	Bb: 85°C, 96 h
	Damp heat, cyclic	EN 60068-2-30	Db: 55°C, 95 % @ 25°C (2 x 24 h)
	Thermal shock	EN 60068-2-14	240 h, -40°C/+85°C
	Salt mist	EN 60068-2-52	672 h
	Rapid temperature variations	EN 50155	Class H1
	Vibration and shock	EN 61373 EN 60068-2-64	Vibration: category 2 Shock: category 2 Simulated long-life testing category 2
	Behavior in case of fire, hazard level (electrical connection 05)	EN 45545-2	HL1, HL2, HL3
	External mechanical impacts	EN 62262	IK07

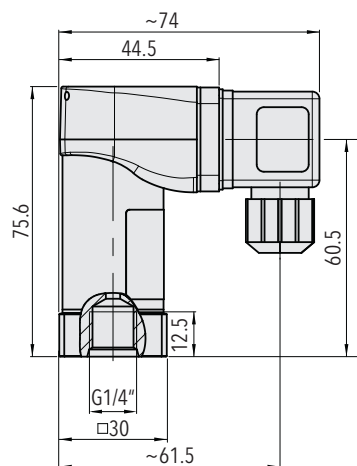
Microswitch rating

		Rating Resistive Load (Inductive Load)	
Type	Features	AC	DC
3A (Standard)	Silver contacts	250 V, 6 (1.5) A 220 V, 6 (1.5) A 110 V, 6 (2) A 48 V, 6 (2) A 24 V, 6 (2) A min. 10 V, min. 0.1 A	220 V, 0.2 (0.1) A 110 V, 0.4 (0.2) A 48 V, 2 (0.75) A 24 V, 6 (2) A 12 V, 6 (6) A min. 10 V, min. 0.1 A
8A	Gold plated contacts If the Micro switch is only switched sporadically, e.g. once every six months, gold contacts should be used.	250 V, 6 (1) A 220 V, 6 (1) A 110 V, 6 (1) A 48 V, 6 (1.5) A 24 V, 6 (2) A min. 4 V, min. 1 mA	220 V, 0.2 (0.1) A 110 V, 0.4 (0.2) A 48 V, 2 (0.75) A 24 V, 6 (2) A min. 4 V, min. 1 mA

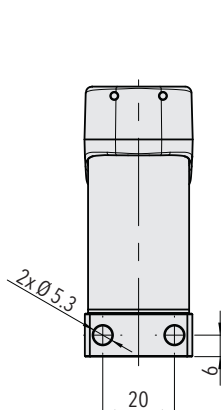
Additional information

Documents	Data sheet	www.trafag.com/H72370
	Instructions	www.trafag.com/H73370
	Flyer	www.trafag.com/H70370

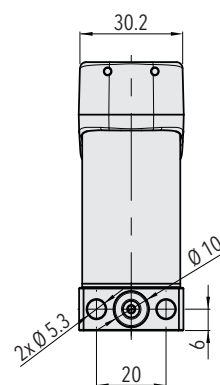
Dimensions



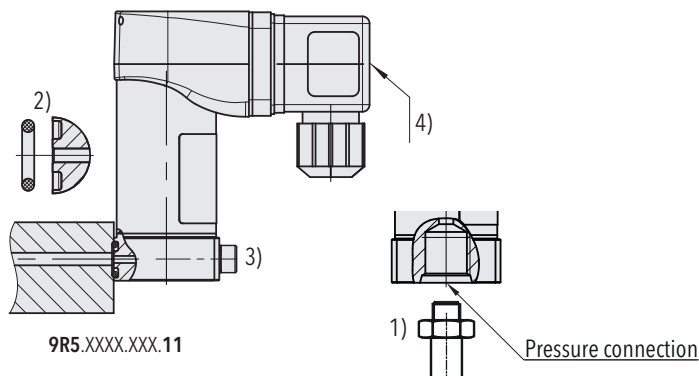
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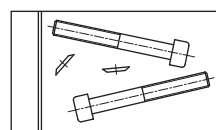
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Mounting instructions, accessories

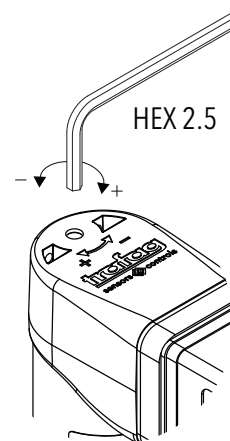


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M5x40 ISO4762

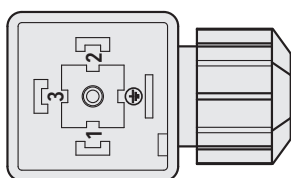
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Switching point adjustment

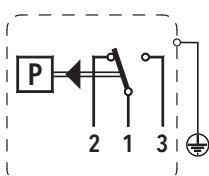
- 1) Torque: G 1/4" female: $M_A = 32 \dots 40 \text{ Nm}$
- 2) O-Ring: $\varnothing 6.75 \times 1.78$
- 3) Fixing screw: M5x40; torque: $4.5 \dots 6 \text{ Nm}$
- 4) Torque connector center screw: max. 0.6 Nm

Electrical connection



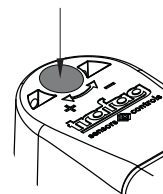
EN175301-803-A

Conductor size range:
Minimum 0.75 mm^2 - Maximum 1.5 mm^2 ,
Terminal tightening torque: 0.4 Nm



Manipulation protection

Manipulation protection with seal sticker.
Do not remove.



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