RAILWAY TECHNOLOGY

Pressure and temperature monitoring solutions



- Pressure switches
- Pressure transmitters
- Thermostats

trafag
sensors controls

Pressure and temperature monitoring solutions for railway technology applications

Air-conditioning systems

Pressure monitoring for cooling compressors, room temperature monitoring

Brake systems

Pneumatic and hydraulic brake systems, emergency brake systems

Propulsion

Monitoring of pressure and temperature in water or oil circuits of motors, gearboxes and in cooling circuits of current converters

Lubrication systems

Pressure monitoring for automatic lubrication systems

Control and safety systems

Overload control, door-closing systems, fire extinguishing systems

Pantographs

Pneumatically actuated pantographs

Diagnostic systems

Mobile units for testing pressures on rail cars, hydraulic monitoring systems on railway switches

Maintenance systems

Sanding systems, track tamping machines, rail milling machines for reprofiling the rail head



Global market leaders in railway technology put their trust in Trafag

Alstom
Bombardier
CRRC
DB Deutsche Bahn
SNCF
Siemens
Faiveley Transportation
Sigma Coachair Group
Wabtec Corporation

Overview railway products

Pressure transmitters

NAR 8258		www.trafag.com/H72307	Very compact and robust. 1st choice for all applications with electrical connector M12x1 or Industrial standard.
NAH 8253		www.trafag.com/H72300	Very compact and robust. For applications where accuracy of 0.15% is required (e.g. braking systems).
EPR 8283		www.trafag.com/H72319	Very robust, wide range of process connections. 1st choice for all applications with electrical connector DIN EN 175301-803-A.
ECR 8478		www.trafag.com/H72337	Very versatile, frontal membrane and corrosion resistant materials available. 1st choice for absolute versions, low measuring ranges and corrosive or clogging media.
EPR 8293		www.trafag.com/H72311	Very compact and robust. For applications where accuracy of 0.15% is required (e.g. braking systems).

Pressure switches

NAR 8258		www.trafag.com/H72307	Smallest electronic pressure switch for railway applications with M12x1 electrical connector. Configurable switch parameters, 1 or 2 switching outputs.
EPN-S 8320		www.trafag.com/H72333	Robust electronic pressure switch for applications with electrical connector DIN EN 175301-803-A or cable. 1 switching output, configurable with SC in case of DIN EN connector.
PST4B 9B4		www.trafag.com/H72367	Mechanical pressure switch for railway applications.

Thermostats

I/IS 404/414		www.trafag.com/H72110	Capillary tube thermostat with extra robust housing for applications in rough environment.
IA/IAS 409/419		www.trafag.com/H72116	Ambient temperature thermostat with robust housing for applications in rough environment.
MST 624/634		www.trafag.com/H72174	Thermostat with a wide range of options and versions. 1st choice as it covers most applications.
MS...R 630/632		www.trafag.com/H72173	Thermostat with limiter functionality. Used in applications where manual reset to original status is required.

Accessories

SMI Sensor Master Interface		www.trafag.com/H72618	To configure the NAR 8258 electronic pressure switch
SC Sensor communicator		www.trafag.com/H70654	To configure the EPN-S 8320 electronic pressure switch with DIN EN-connector

trafag sensors controls

EPR 8283

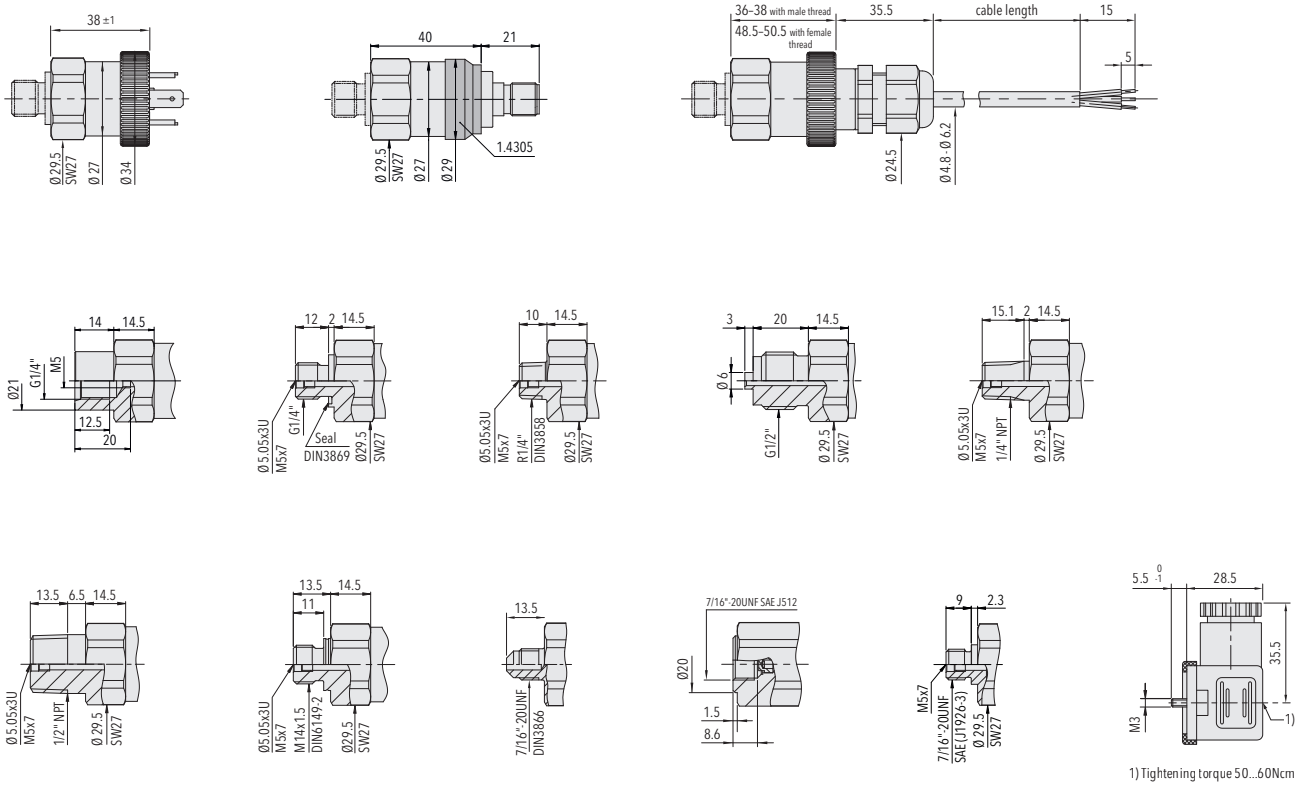
Railway Pressure Transmitter



Features

- Dielectrical strength: 710 VDC, meets EN 50155 (Railways)
- Compact design
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

Technical Data			
Measuring principle	Thin film on steel	Media temperature	–40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 600 bar	Ambient temperature	–40°C ... +125°C
Output signal	4 ... 20 mA	Approval / conformity	EN 50155 (Railway) EN 45545-2 (Fire protection)
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		



Data sheet www.trafag.com/H72319
Instructions www.trafag.com/H73317

Ordering information/type code

														8283 .	XX	XX	XX	XX	XX	XX				
Measuring range [1]	**Pressure measurement range [bar]**		**Over pressure [bar]**		**Burst pressure [bar]**			**Pressure measurement range [psi]**		**Over pressure [psi]**		**Burst pressure [psi]**												
	0 ... 2.5		7.5		50		**75**	0 ... 30		90		700		**G5**										
	0 ... 4		12		60		**76**	0 ... 50		150		850		**G6**										
	0 ... 6		18		100		**77**	0 ... 100		300		1450		**G7**										
	0 ... 10		30		200		**78**	0 ... 150		450		2500		**G8**										
	0 ... 16		48		200		**79**	0 ... 200		600		2500		**GA**										
	0 ... 25		75		300		**80**	0 ... 250		750		2500		**G9**										
	0 ... 40		120		300		**81**	0 ... 300		900		4000		**HA**										
	0 ... 60		180		400		**82**	0 ... 400		1200		4000		**H0**										
	0 ... 100		300		500		**83**	0 ... 500		1500		4000		**H1**										
	0 ... 160		480		750		**85**	0 ... 1000		3000		5000		**H2**										
	0 ... 250		750		1000		**74**	0 ... 1500		4500		7000		**H3**										
	0 ... 400		1000		2000		**84**	0 ... 2000		6000		10000		**H5**										
	0 ... 600		1500		2500		**86**	0 ... 3000		9000		14500		**G4**										
								0 ... 5000		12500		21750		**H4**										
								0 ... 7500		18750		29000		**H6**										
Sensor	Relative pressure, accuracy: 0.5 %; Material pressure connection and housing: 1.4542 (AISI630)														**25**									
	Relative pressure, accuracy: 0.3 %; Material pressure connection and housing: 1.4542 (AISI630)														**23**									
Pressure connection	G1/4" female [2]															**10**								
	G1/4" male (Seal)															**17**								
	R1/4" male, DIN3858 [2]															**19**								
	G1/2" male (Manometer) [2]															**11**								
	1/4" NPT male															**30**								
	1/2" NPT male [2]															**51**								
	M14x1.5 male DIN6149-2 [2]															**31**								
	7/16"-20UNF male, DIN3866 [2] [4]															**18**								
	7/16"-20UNF male SAE (J1926-3) [2] [5]															**42**								
	7/16"-20UNF female SAE J512 with valve opener [4]															**24**								
Electrical connection	Male electrical plug EN 175301-803-A, Mat. PA																	**05**						
	Male electrical plug M12x1, 5-pole, Mat. PBT																	**35**						
	Cable PUR, IP68 (Screwed cable gland PA 6-3), -20°C … +70°C [6] [7] [9]																	**24**						
	Cable PVC, IP68 (Screwed cable gland PA 6-3), -5°C … +60°C [6] [7] [8] [9]																	**22**						
	Cable Raychem, IP68 (Screwed cable gland PA 6-3), -20°C … +100°C [6] [7] [8] [9]																	**08**						
Output signal	**Signal output**		**Load resistance**					**I (supply)**				**U (supply)**												
	4 ... 20 mA		(Usupply-9 V) / 20 mA									9 ... 32 VDC												**19**
Accessories	Seal FPM, -18°C ... +125°C [3]																							**61**
	Seal EPDM, -40°C ... +125°C [3]																							**63**
	Seal NBR, -25°C ... +100°C [3]																							**83**
	Pressure peak damping element ø 1.0 mm (for pressure connections 17, 19, 30, 31, 51)																							**40**
	Pressure peak damping element ø 0.4 mm (for pressure connections 17, 19, 30, 31, 51)																							**44**
	Female electrical connector EN 175301-803-A (DIN43650-A)																							**58**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)																							**92**
	Housing nut for electrical connection EN175301-803-A (DIN43650-A) secured with Loctite (max. 85°C)																							**L9**

[1] Customized pressure ranges upon request
[2] Upon request
[3] Only with pressure connection 17 (G1/4")
[4] Max. allowable pressure range 60 bar at 120 bar overpressure
[5] According to norm SAE J1926-3, max. 35 MPa
[6] Cable length see accessories (max. length 50 m, in 5-meter sections)
[7] IP68, max. 3 m, Media +10°C … +35°C
[8] Cable length max. 3 m, for pressure ranges ≤ 16 bar
[9] Not according to standard EN 45545-2

trafag sensors controls

EPR 8293

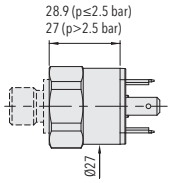
Railway Pressure Transmitter

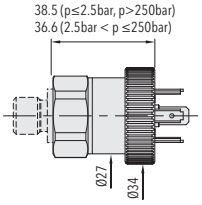


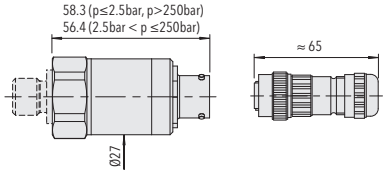
Features

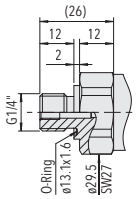
- Dielectrical strength: 500 VAC, 50 Hz, meets EN 50155 (Railways)
- Compact design
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

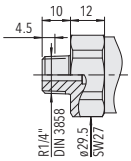
Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 600 bar	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA	Approval / conformity	EN 50155 (Railways)
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

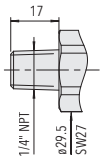


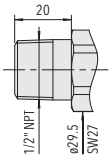


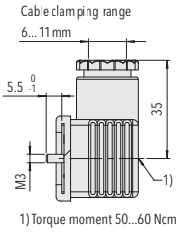












Data sheet www.trafag.com/H72311
Instructions www.trafag.com/H73311

Ordering information/type code

					8293 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**							
	0 ... 2.5	5	100	**75**						
	0 ... 4	8	100	**76**						
	0 ... 6	12	100	**77**						
	0 ... 10	20	200	**78**						
	0 ... 16	32	200	**79**						
	0 ... 25	50	300	**80**						
	0 ... 40	80	300	**81**						
	0 ... 60	120	500	**82**						
	0 ... 100	200	500	**83**						
	0 ... 160	320	1000	**85**						
	0 ... 250	500	1000	**74**						
	0 ... 400	800	1500	**84**						
	0 ... 600	1000	2000	**86**						
Sensor	Relative pressure, accuracy: 0.3 %					**23**				
	Relative pressure, accuracy: 0.5 %					**25**				
Pressure connection	G1/4" male (Seal)						**17**			
	R1/4" male [2]						**19**			
	1/4" NPT male [3]						**30**			
	1/2" NPT male [3]						**51**			
Electrical connection	Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA							**04**		
	Male electrical plug EN 175301-803-A, Mat. PA, Extended vibration resistance							**05**		
	Male electrical plug MIL-C 26482, 6-pole, metal [4]							**02**		
Output signal	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**						
	4... 20 mA	(Usupply-9 V) / 20 mA		9 ... 32 VDC					**19**	
Accessories	Pressure peak damping element ø 1.0 mm									**40**
	Pressure peak damping element ø 0.3 mm									**43**
	Pressure peak damping element ø 0.5 mm									**45**
	Female electrical connector EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C									**56**
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C									**58**
	Female electrical connector MIL-C 26482, 6-pole, metal									**32**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)									**92**

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Only with electrical connection 04
[3] Please ask us
[4] For pressure ranges < 40 bar upon request

trafag sensors controls

NAR 8258

Railway Pressure Transmitter



Features

- Measuring accuracy 0.3 %
- Optional: Switching output 1 or 2 PNP transistors
- Excellent long-term stability
- Dielectrical strength: 710 VDC, meets EN 50155 (Railways)

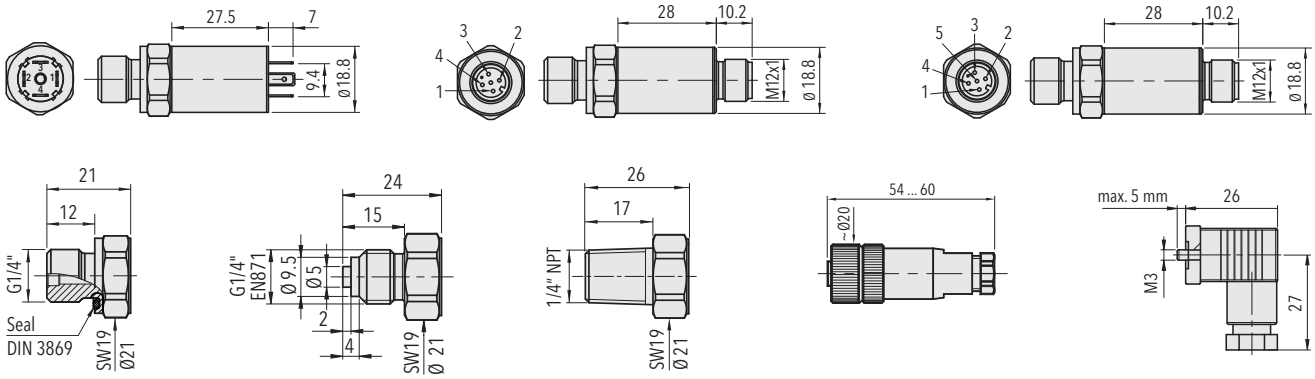
Technical Data			
Measuring principle	Thin film on steel	Media temperature	–40°C ... +125°C
Measuring range	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi	Ambient temperature	–40°C ... +125°C
Output signal	4 ... 20 mA, Switching output: 1 or 2 PNP transistors	Approval / conformity	EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 50121-3-2 (EMC)
Accuracy @ 25°C typ.	± 0.3 % FS typ.		

Parameterization of switching points

The switching points, delay times and output functions can be parameterized via Smartphone app (Android). The SMI Sensor Master Interface required for the parameterization as well as the Smartphone are not part of the delivery. The Android App is available for free in the Google Play Store.

- Ordering No. SMI Sensor Master Interface: F90170
- Data sheet SMI Sensor Master Interface: H72618





Data sheet www.trafag.com/H72307
Instructions www.trafag.com/H73303

Additional dimensions see data sheet

Ordering information/type code

		8258 .	XX	XX	XX	XX	XX	XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 6	18	100	**77**	0 ... 100	300	1450	**G7**
0 ... 10	30	200	**78**	0 ... 150	450	2500	**G8**
0 ... 16	48	200	**79**	0 ... 200	600	2500	**GA**
0 ... 25 [8]	75	300	**80**	0 ... 250	750	2500	**G9**
0 ... 40 [8]	120	300	**81**	0 ... 300 [8]	900	4000	**HA**
0 ... 60 [8]	180	400	**82**	0 ... 400 [8]	1200	4000	**H0**
0 ... 100 [8]	300	500	**83**	0 ... 1000 [8]	3000	5000	**H2**
0 ... 160 [8]	480	750	**85**	0 ... 1500 [8]	4500	7000	**H3**
0 ... 250	750	1000	**74**	0 ... 2000 [8]	6000	10000	**H5**
0 ... 400	1000	2000	**84**	0 ... 3000	9000	14500	**G4**
0 ... 600	1500	2500	**86**	0 ... 5000	12500	21750	**H4**
				0 ... 7500	18750	29000	**H6**

Sensor

Relative pressure, accuracy: 0.3 %	**23**

Pressure connection

G1/4" male, seal: DIN 3869 (accessory 61/63/83)	**17**	7/16"-20UNF SAE4 male, seal: accessory 61 [7]	**42**
G1/4" male (Manometer) EN 871 [8]	**53**	M10x1 male, DIN EN ISO 6149-2, seal: accessory 61	**32**
1/4" NPT male	**30**	M12x1.5 male, DIN EN ISO 9974-2, seal: accessory 61 [8]	**49**

Electrical connection

Male electrical plug, industrial standard, contact distance 9.4 mm, Mat. PA	**01**
Male electrical plug M12x1, 4-pole, Mat. PA, IEC 61076-2-101	**32**
Male electrical plug M12x1, 5-pole, Mat. PA, IEC 61076-2-101	**35**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	See graphic		24 (9 ... 32) VDC	**19**
2 PNP transistors [3]		≤ 10 mA	24 (9 ... 32) VDC	**PS**
1 PNP transistor [3]		≤ 10 mA	24 (9 ... 32) VDC	**T1**

Accessories

Female electrical plug M12x1, 5-pole [2]	**33**
Female electrical connector industrial standard (for electrical connection 01)	**34**
Pressure peak damping element ø 1.0 mm [6]	**40**
Pressure peak damping element ø 0.4 mm [6]	**44**
Seal FPM, -18°C ... +125°C	**61**
Seal EPDM, -40°C ... +125°C	**63**
Seal NBR, -25°C ... +100°C	**83**
Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 - (only for output signal 19 and male electrical plug 01, industrial standard)	**90**
Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground (only for output signal 19 and male electrical plug 01, industrial standard)	**92**
Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)	**E1**
Parameterisation according to customer specification for output signal PS, T1 (see table parameter)	**ZC**

[1] Customized pressure ranges upon request
[2] For electrical connections 32 and 35
[3] Only with electrical connection 32
[4] Max. allowable pressure range 60 bar at 120 bar overpressure
[5] Max. allowable pressure range 160 bar at 500 bar overpressure
[6] Only for pressure connections 17, 30, 32
[7] According to norm J1926, max. 35 MPa
[8] Upon request

NAH 8253

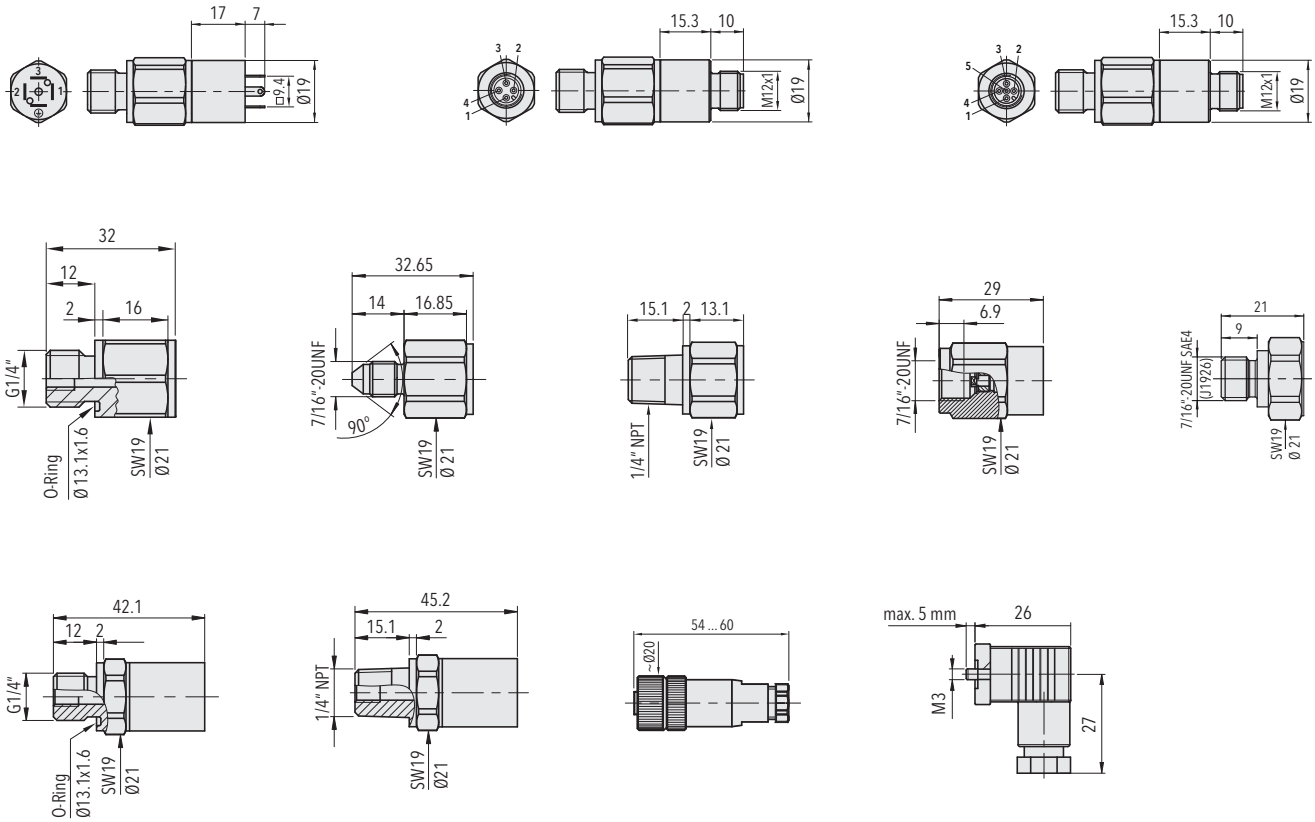
Hydraulic Pressure Transmitter



Features

- Smallest design
- Accuracy classes 0.1%, 0.3%
- Excellent temperature resistance
- Improved vibration resistance
- Completely welded steel sensor system without additional seals

Technical Data			
Measuring principle	Thin film on steel	Accuracy @ 25°C typ.	± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	Ambient temperature	-40°C ... +125°C



Data sheet www.trafag.com/H72300
Instructions www.trafag.com/H73250

Ordering information/type code

8253 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 2.5 [2]	5	50	**75**	0 ... 30	60	700	**G5**
0 ... 4	8	60	**76**	0 ... 50	100	850	**G6**
0 ... 6	12	100	**77**	0 ... 100	200	1450	**G7**
0 ... 10	20	200	**78**	0 ... 150	300	2500	**G8**
0 ... 16	32	200	**79**	0 ... 200	400	2500	**GA**
0 ... 25	50	300	**80**	0 ... 250	500	2500	**G9**
0 ... 40	80	300	**81**	0 ... 300	600	4000	**HA**
0 ... 60	120	400	**82**	0 ... 400	800	4000	**H0**
0 ... 100	200	500	**83**	0 ... 500	1000	4000	**H1**
0 ... 160	320	750	**85**	0 ... 1000	2000	5000	**H2**
0 ... 250	500	1000	**74**	0 ... 1500	3000	7000	**H3**
0 ... 400	800	1500	**84**	0 ... 2000	4000	10000	**H5**
0 ... 600	1000	2000	**86**	0 ... 3000	6000	14500	**G4**
				0 ... 5000	10000	21750	**H4**
				0 ... 7500	15000	29000	**H6**

Sensor

Relative pressure, accuracy: 0.3 %	**23**
Relative pressure, accuracy: 0.15 %	**21**
Relative pressure, accuracy: 0.1 %	**24**
Absolute pressure, accuracy: 0.3 % [4]	**43**
Absolute pressure, accuracy: 0.15 % [4]	**41**
Absolute pressure, accuracy: 0.1 % [4]	**44**

Pressure connection

G1/4" male (Seal)	**17**
1/4" NPT male	**30**
7/16"-20UNF male [3] [4]	**18**
7/16"-20UNF female, DIN3866 (valve opener) [3] [4]	**24**
7/16" -20UNF male SAE4 [7]	**42**

Electrical connection

Male electrical plug, industrial standard (contact distance 9.4 mm), Mat. PBT	**01**
Male electrical plug M12x1, 4-pole, Mat. PBT	**32**
Male electrical plug M12x1, 5-pole, Mat. PBT	**35**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-9 V) / 20 mA		24 (9 ... 32) VDC	**19**
0 ... 5 VDC	≥ 2.0 kΩ	≤ 10 mA	24 (9 ... 32) VDC	**14**
1 ... 6 VDC	≥ 2.0 kΩ	≤ 10 mA	24 (9 ... 32) VDC	**16**
0 ... 10 VDC	≥ 5.0 kΩ	≤ 10 mA	24 (15 ... 32) VDC	**17**
0.5 ... 4.5 VDC	≥ 2.0 kΩ	≤ 10 mA	5 (4.5 ... 5.5) VDC ratiom.	**23**

Accessories

Female electrical plug M12x1, 5-pole, for electrical connections 32 and 35	**33**
Female electrical connector industrial standard	**34**
Meets EN 50155 (railways) dielectrical strength: 500 VAC, 50 Hz [5]	**11**
Pressure peak damping element ø 1.0 mm [6]	**40**
Pressure peak damping element ø 0.3 mm [6]	**43**
Pressure peak damping element ø 0.5 mm [6]	**45**
Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 3 -, Pin 4 Out (only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)	**96**

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Measuring accuracy 0.3 %
[3] Relative pressure only
[4] Max. allowable pressure range 40 bar
[5] Only with output 19
[6] Only for pressure connections 17 and 30
[7] According to norm J1926, max. 35 MPa

Identical construction with higher/lower specifications:
Data sheet No. H72250, H72301

trafag sensors controls

ECR 8478

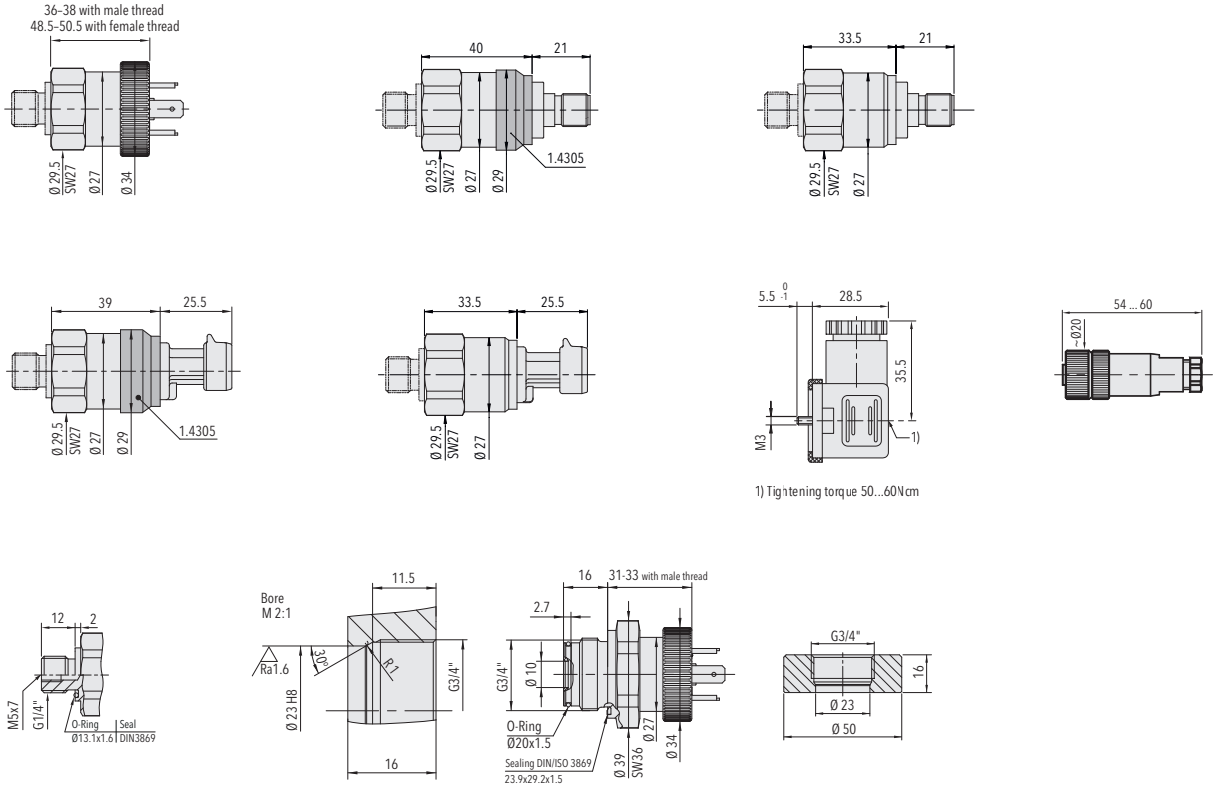
Railway Pressure Transmitter



Features

- Dielectrical strength: 710 VDC, meets EN 50155 (Railways)
- Measuring ranges from 100 mbar
- Relative or absolute pressure measurement
- Frontal membrane optional

Technical Data			
Measuring principle	Thick film on ceramic	Media temperature	-25°C ... +125°C
Measuring range	0 ... 0.1 to 0 ... 60 bar 0 ... 1.5 to 0 ... 1000 psi	Ambient temperature	-25°C ... +125°C
Output signal	4 ... 20 mA	Approval / conformity	EN 50155 (Railway) EN 45545-2 (Fire protection)
Accuracy @ 25°C typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)		



Data sheet www.trafag.com/H72337
Instructions www.trafag.com/H73324

Additional dimensions see data sheet

Ordering information/type code

8478 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 0.1	1.2	2	**66**	0 ... 1.5	15	30	**F6**
0 ... 0.16	1.2	2	**67**	0 ... 2	15	30	**F7**
0 ... 0.2	1.2	2	**68**	0 ... 2.5	15	30	**F8**
0 ... 0.4	1.2	2	**69**	0 ... 5	15	30	**F9**
0 ... 0.6	2	3	**70**	0 ... 7.5	30	45	**G0**
0 ... 1.0	2	3	**71**	0 ... 15	30	45	**G1**
0 ... 1.6	3.2	4.8	**73**	0 ... 20	40	70	**G3**
0 ... 2.5	5	7.5	**75**	0 ... 30	60	90	**G5**
0 ... 4	8	12	**76**	0 ... 50	100	150	**G6**
0 ... 6	12	15	**77**	0 ... 100	200	250	**G7**
0 ... 10	20	25	**78**	0 ... 150	300	375	**G8**
0 ... 16	32	40	**79**	0 ... 250	500	625	**G9**
0 ... 25	50	75	**80**	0 ... 400	800	1200	**H0**
0 ... 40	80	100	**81**	0 ... 500	1000	1250	**H1**
0 ... 60	120	180	**82**	0 ... 1000	2000	3000	**H2**

Sensor

with temperature compensation		without temperature compensation	
Relative pressure, Material pressure connection and housing: 1.4305 (AISI303) [3] [5]	**54**	Relative pressure, Material pressure connection and housing: 1.4305 (AISI303) [4] [5]	**57**
Relative pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [3]	**56**	Relative pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [4]	**59**
Absolute pressure, Material pressure connection and housing: 1.4305 (AISI303) [3] [5]	**84**	Absolute pressure, Material pressure connection and housing: 1.4305 (AISI303) [4] [5]	**87**
Absolute pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [3]	**86**	Absolute pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [4]	**89**

Pressure connection

G1/4" male	**17**
G3/4" frontal membrane [2] [6]	**52**

Electrical connection

Male electrical plug EN 175301-803-A, Mat. PA	**05**
Male electrical plug M12x1, 5-pole, Mat. PBT	**35**
Male electrical plug Packard Metri Pack, Mat. PBT	**51**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 30 VDC	**19**

Accessories

Seal FKM (-20°C ... +125°C)	**61**
Seal CR (-25°C ... +100°C)	**62**
Seal EPDM (-25°C ... +125°C)	**63**
Pressure peak damping element ø 1.0 mm (for pressure connection 17)	**41**
Pressure peak damping element ø 0.4 mm (for pressure connection 17)	**44**
Female electrical connector EN 175301-803-A (DIN43650-A)	**58**
Female electrical plug M12x1, 5-pole	**33**
Special electrical connection: Pin 1 +, Pin 2 - (for male electrical plug EN175301-803-A / DIN43650-A)	**92**
Special electrical connection: Pin 1 +, Pin 3 -, Pin 5 Ground (for male electrical plug 35, M12x1, 5-pole)	**94**
Special electrical connection: Pin 1 + , Pin 3 - (only for male electrical plug Packard Metri Pack 3-poles)	**E4**
Housing nut for electrical connection EN175301-803-A (DIN43650-A) secured with Loctite (max. 85°C)	**L9**

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Upon request
[3] Max. 40 bar or 500 psi
[4] ≥ 1 bar
[5] Only with pressure connection 17 (1.4305)
[6] Only for pressure ranges ≤ 10 bar or 150 psi

EPN-S 8320

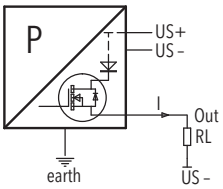
Electronic Pressure Switch



Features

- Rugged design for harsh environments
- Wide temperature range
- Excellent long-term stability
- Very compact design
- Switchpoint factory set or programmable on site with Trafag Sensor Communicator SC

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	Ambient temperature	Standard: -25°C ... +85°C Option accessory 67: -40°C ... +125°C
Output signal	Transistor (open source)	Approval / conformity	DNV-GL
Accuracy @ 25°C typ.	± 0.5 % FS typ. (Switchpoint)		



Connection of loads
to switch contacts

Switching output	
Output signal	1 Transistor (open source)
Switchpoint setting	Switchpoint factory set or programmable on site with Trafag Sensor Communicator SC
Adjustment range	0 … 100 % FS
Switching hysteresis	≥ 1 % FS
Switching current	≤ 0.5 A @ -40°C ... +85°C ≤ 0.4 A @ +85°C ... +125°C (only with accessory 67: higher operating temperature -40°C ... +125°C)
Switching resistance	≤ 3Ω
Delay time	Standard adjustment: 5 ms Adjustable with Trafag Sensor Communicator (only electrical connection 04): 5 ms ... 10 s

Programming device Sensor Communicator SC

Ordering No.

- Sensor Communicator SC: F88030
- Programming cable with connector EN 175301-803A: F88049

Manual see

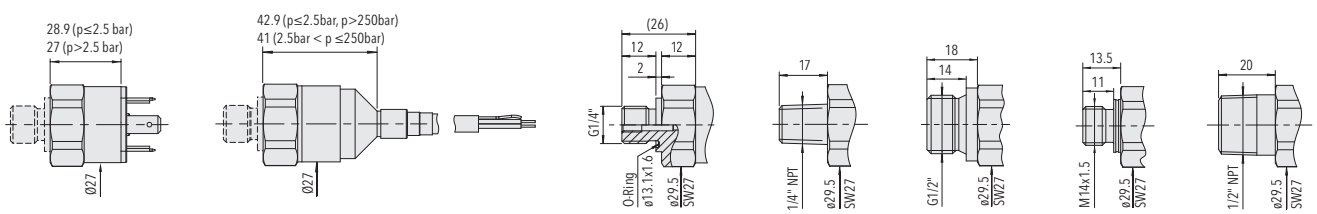
- Sensor Communicator SC: www.trafag.com/H73699 (English)
  www.trafag.com/H73698 (German)



Ordering information/type code

												8320 .	XX		XX		XX		XX		XX		XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**		**Pressure measurement range [psi]**	**Over pressure [psi]**	**Burst pressure [psi]**																
	0 ... 2.5	5	100	**75**	0 ... 30	30	720	**G5**															
	0 ... 4	8	100	**76**	0 ... 50	115	860	**G6**															
	0 ... 6	12	100	**77**	0 ... 100	170	1450	**G7**															
	0 ... 10	20	200	**78**	0 ... 150	290	2900	**G8**															
	0 ... 16	32	200	**79**	0 ... 250	464	2900	**G9**															
	0 ... 25	50	300	**80**	0 ... 400	725	4350	**H0**															
	0 ... 40	80	300	**81**	0 ... 500	1160	4350	**H1**															
	0 ... 60	120	500	**82**	0 ... 1000	1740	5800	**H2**															
	0 ... 100	200	500	**83**	0 ... 1500	2900	7250	**H3**															
	0 ... 160	320	1000	**85**	0 ... 2000	4640	10850	**H5**															
	0 ... 250	500	1000	**74**	0 ... 3000	7250	14500	**G4**															
	0 ... 400	800	1500	**84**	0 ... 5000	11600	21750	**H4**															
	0 ... 600	1000	2000	**86**	0 ... 7500	14500	29000	**H6**															
Sensor	Relative pressure												**23**										
Pressure connection	G1/4" male (Seal)														**17**								
	1/4" NPT male														**30**								
	G1/2" male (DIN3852-A) [2]														**21**								
	M14x1.5 male (DIN3852-A) [2]														**22**								
	1/2" NPT male [2]														**51**								
Electrical connection	Male electrical plug: EN 175301-803-A (DIN43650-A)															**04**							
	Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm², -40°C ... +125°C, (Cable lenght see "Accessories")															**78**							
	Cable with shield: Material: Radox Tenuis-TW 600V MM S (EN45545), 4 x 0.5mm², -40°C ... +120°C, (Cable lenght see "Accessories")															**88**							
Output signal	1 Transistor out: switchpoint "ON": ... (bar); switchpoint "OFF": ... (bar); delay time: standard 5 (ms), ... (ms) range: 5...10000 (ms)																**T1**						
Accessories	Pressure peak damping element ø 0.4 mm																						**44**
	Pressure peak damping element ø 1.0 mm																						**40**
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C																						**58**
	Railways version (500 VAC/DC), with shielded cable only																						**11**
	Higher operating temperature: -40°C ... +125°C																						**67**
	Cable length 1.5 m																						**1M**
	Cable length 3.0 m																						**3M**
	Cable length 5.0 m																						**5M**

[1] Customized pressure ranges upon request
[2] Please ask us



Data sheet www.trafag.com/H72333
Instructions www.trafag.com/H73333

trafag sensors controls

PST4B 9B4

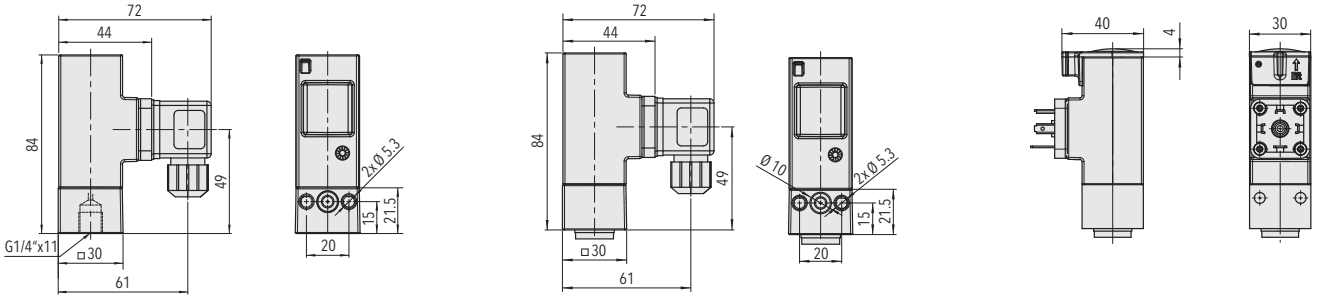
Picostat Pressure Switch

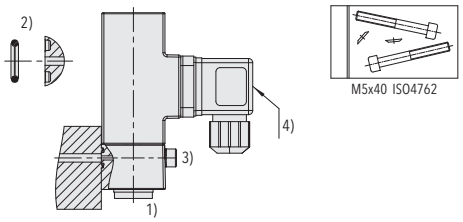


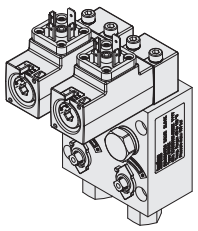
Features

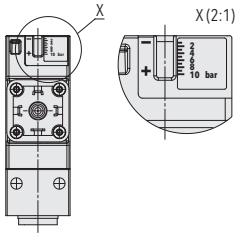
- Improved vibration resistance
- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

Technical Data			
Measuring principle	Bellow	Repeatability	± 0.5 % FS typ.
Measuring range	-0.6 ... 3.4 to 4 ... 40 bar -8 ... 45 to 60 ... 500 psi	Media temperature	Standard: –25°C ... +125°C with sensor 789/790/791: –40°C ... +125°C
Output signal	1 Floating change-over contact (SPDT)	Ambient temperature	Standard: –25°C ... +85°C with sensor 789/790/791: –40°C ... +85°C
Switching differential	Not adjustable	Approval / conformity	ABS, BV, CCS, DNV-GL, GL, KRS, LR, NKK, RINA, RMRS EN60730-1/ EN60730-2-6: Typ 2.B.H









1) Torque: G 1/4": M_A = 32 ... 40 Nm
2) O-Ring: ø 6.75x1.78 NBR 90 Sh
3) Fixing screw: M5; property class: 8.8; torque: 4.5 ... 6 Nm
4) Torque connector center screw: max. 0.4 Nm

Diagnostic Valve Bloc (DVB)
see specification sheet H72361

Data sheet www.trafag.com/H72367
Instructions www.trafag.com/H73367

Ordering information/type code

		9B4 . XX	XX	XXX	XX	XX
Microswitch	Standard [1]	42				
	Standard [1]	33				
	Gold plated contacts [1]	84				

Range	Range [bar]	Over pressure [bar]		Range [psi]	Over pressure [psi]	
	-0.6 ... 3.4	12	74	-8 ... 45	174	G4
	0 ... 4	12	76	0 ... 50	174	G6
	0 ... 6	12	77	0 ... 100	174	G7
	1 ... 10	24	78	14 ... 150	348	G8
	1 ... 16	24	79	14 ... 250	348	G9
	2 ... 25	40	80	30 ... 400	580	H0
	4 ... 40	50	81	60 ... 500	725	H1

Sensor	Sensor material	Sensor housing material	Range	
	Bronze bellow (CuSn6) [2]	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	74	769
	Bronze bellow (CuSn6) [2]	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	76, 77	770
	Bronze bellow (CuSn6) [2]	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	78, 79	771
	Bronze bellow (CuSn6) [2]	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	80, 81	772
	Bronze bellow (CuSn6) [3] [4]	Brass (CuZn39Pb3)	74	789
	Bronze bellow (CuSn6) [3] [4]	Brass (CuZn39Pb3)	76, 77	790
	Bronze bellow (CuSn6) [3] [4]	Brass (CuZn39Pb3)	78, 79	791
	Bellows stainless steel (1.4404/AISI316L) [4]	Stainless steel	76, 77	753
	Bellows stainless steel (1.4404/AISI316L) [4]	Stainless steel	78, 79	754

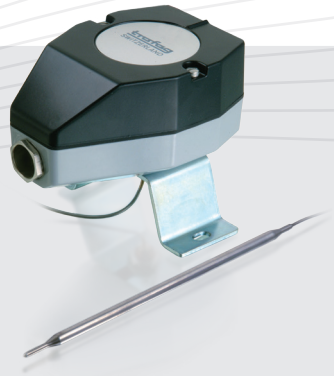
Pressure connection		
	G1/8" female	02
	G1/4" female	04
	M10x1 female [5]	03

Accessories		
	Flange with O-Ring [4]	11
	Female electrical connector EN 175301-803-A (DIN43650-A)	46
	Welsh plug G1/4"	74
	Fixing set	V3
	Covering cap	15
	Lead seal (manipulation protection)	16
	Switch point adjustment on customers request Please indicate when ordering: - Switchpoint including measurement unit (kPa, bar, MPa, psi, abs. or rel.) - Increasing or decreasing	88
	Switch point scale	98
	Damping elements and snubber see data sheet H72258	

[1] Switching differential not adjustable
[2] Media contacting O-Ring
[3] O-Ring not media contacting
[4] Only with pressure connection 04 (G1/4") others upon request
[5] Please ask us

I/IS 404/414

Industat



Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

Technical Data	
Designation of application	Industrial thermostat with remote sensor
Measuring range	-30°C ... +40°C to +70°C ... +350°C
Output signal	Floating change-over contact
Switching differential	Adjustable / not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72110

IA/IAS 409/419

Indu Ambistat



Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

Technical Data	
Designation of application	Industrial room thermostat
Measuring range	-30°C ... +30°C to 0°C ... +60°C
Output signal	Floating change-over contact
Switching differential	Adjustable / not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72116

MST 624/634

Ministat



Features

- Short response time
- Protection IP54
- Electrical connection on terminal screw

Technical Data	
Designation of application	Direct mounting thermostat
Measuring range	-30°C ... +40°C to +70°C ... +350°C
Output signal	Floating change-over contact
Switching differential	Adjustable / not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72174

MS...R 630/632

Mini Limistat



Features

- External or internal resetting
- Short response time
- Protection IP54
- Electrical connection on terminal screw

Technical Data	
Designation of application	Remote sensing thermostat with limiter
Measuring range	-30°C ... +40°C to +70°C ... +350°C
Output signal	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72173

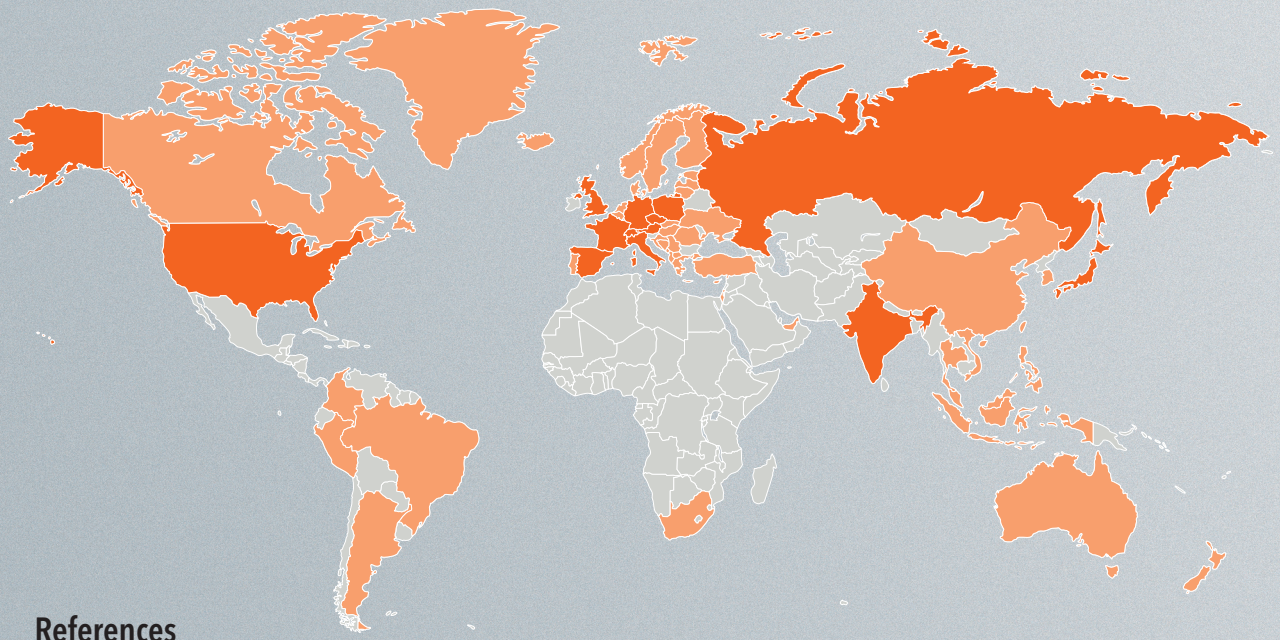
Reliable quality

Worldwide represented, globally trusted, Swiss based

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Switzerland

Subsidiaries
Austria
Czech Republic
France
Germany
Great Britain
India
Italy
Japan
Poland (Joint Venture)
Russia (Joint Venture)
Spain
USA

Representatives
Australia
Belgium
Brazil
Canada
China
Colombia
Croatia
Cyprus
Denmark
Estonia
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Sweden
Taiwan
Thailand
Turkey
Ukraine
United Arab Emirates
Vietnam



References
ABB I AIT I AKG I Alstom I Areva T&D I Atos I AVL I Benninghoven I Bharat Heavy Electrical I Blohm & Voss I Bombardier I Bosch Rexroth I BMW Rolls-Royce Bühler I Caterpillar I Charmilles I CRRC I Dalian Marine Diesel Ltd. I Detroit Diesel I Deutsche Bahn AG I Doosan Group I Dräger I Electrolux Elektrobudowa S.A. I Faiveley I Fincantieri I Flender I Goninan I Greenfield I G&W I Hermetic Pumpen I Roche I Hudong Heavy Machinery Hyundai Heavy Industries I IAV I Ingersoll Rand I Iveco I KOMA I MAN I B&W I Melag I Mitsubishi I MTU I Noske-Kaeser I Oilon I Ormat Turbines I Parker PESA I Philips I PKN Orlen S.A. I PMC I Polarteknik I Promeco I Queensland Rail I Reintjes I Renk I Rolls-Royce I Schindler I Schneider Electric I Schottel Sciteq-Hammel I Siemens I SNCF I STX Heavy Industries I Thermax Limited I Toshiba I Trumpf I Verolme Shipyard I Vesta I Viessmann I Voith Wärtsilä I Westfalia Separator I W&H I Yichang Marine Diesel Ltd I York I ZF Marine

Subject to change H70555b Trafag AG 04/2018

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