

PRESSURE TRANSMITTERS

Electronic pressure switches 

Mechanical pressure switches 

Temperature monitoring 



YACHT



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Pressure transmitters and accessories



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Trafag product lines

Pressure transmitters



The technically sophisticated pressure transmitters guarantee flawless pressure measurement. They meet the high requirements for long-term stability, vibration resistance, electromagnetic compatibility, shock resistance and temperature insensitivity. As a result, they have proven themselves for decades in a multitude of demanding applications under harsh environmental conditions. Trafag pressure transmitters are available in a wide variety of versions: various pressure and electrical connections, measuring processes, electrical output signals, approvals for explosion protection and shipboard use. Railway-compliant versions are also available.

Pressure transmitters



Electronic pressure switches



The electronic pressure switches from Trafag are based on the million-times proven, in-house developed transmitter sensor technology. The superior technology and precise production guarantee a faultless functioning even where vibration resistance, electromagnetic compatibility, shock resistance or temperature insensitivity are a prerequisite. The robust pressure switches from Trafag monitor the pressure behavior of liquid and gaseous media, e.g. in plant construction and mechanical engineering, hydraulic systems, process engineering, rail vehicles, shipbuilding or in water treatment.

Electronic pressure switches



Mechanical pressure switches



Trafag's electromechanical pressure switches provide high vibration resistance and switch point precision in combination with an extremely robust and durable design. This results in switches that can be operated for decades without requiring maintenance, even under harsh conditions. Various designs with bellows, membrane and piston sensors cover a wide variety of pressure ranges, media and load profiles for many different applications. Pressostats are available with Ex- and ship approvals as well as with railway conformity.

[Mechanical pressure switches](#)

Temperature monitoring



For 70 years Trafag thermostats have proven their robustness in order to withstand the most adverse environmental conditions. Industry usage ranges from air conditioning applications to engine and ship manufacturing and even to offshore oil and gas platform production. The appeal of Trafag thermostats lies in their high switching point precision even after decades of operation under harsh conditions without maintenance. Trafag thermostats are available in various sensor and housing versions, with various Ex and ship approvals as well as in railway-compliant versions.

[Temperature monitoring](#)

Our products are at home where you are



Shipbuilding



- Propulsion
- Pumps
- Ballast water treatment
- Steering
- Separators
- Tank level



Hydraulics



- Construction machinery
- Agricultural machinery
- Injection molding machines
- Community vehicles
- Elevators



Engines



- Common rail injection
- Cooling water
- Oil pressure
- Fuel pressure
- Turbo charger



Railways



- Brake systems
- Pantograph
- Air compressors



Water treatment



- Drinking water
- Waste water
- Desalination
- Pools
- Sluice steering
- Level control



Various



- Chemical industry
- Mining
- Process technology
- Oil and gas
- Machine building industry
- HVAC



Pressure transmitters

The technically sophisticated pressure transmitters guarantee flawless pressure measurement. They meet the high requirements for long-term stability, vibration resistance, electromagnetic compatibility, shock resistance and temperature insensitivity. As a result, they have proven themselves for decades in a multitude of demanding applications under harsh environmental conditions. Trafag pressure transmitters are available in a wide variety of versions: various pressure and electrical connections, measuring processes, electrical output signals, approvals for explosion protection and shipboard use. Railway-compliant versions are also available.

Sensor technology

Key components of Trafag pressure transmitters are pressure sensors based on thin-film-on-steel technology (welded design without O-ring) or thick-film-on-ceramic technology. Both sensor technologies come from Trafag's own production and were developed in-house together with the ASIC (application-specific microchip). As a result, pressure sensors and electronics work in perfect partnership and achieve a unique level of long-term stability and reliability, even under the most adverse environmental conditions.



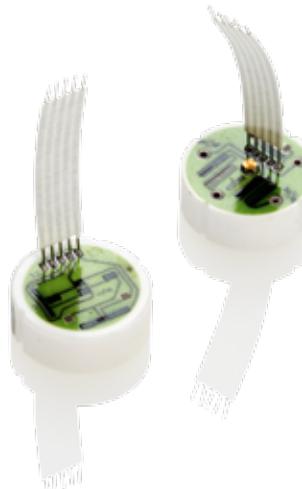
Thin-film-on-steel sensor technology

- Very good long term stability
- Resistant to high media temperatures
- Completely welded stainless steel sensor system without O-rings
- Resistant to very high over pressures and ideal for nominal pressures up to 3000 bar



Thick-film-on-ceramic sensor technology

- Resistant to aggressive media
- Ideal for low measuring ranges
- Relative and absolute pressure measurement



Accessories

Trafag offers a wide range of original accessories which are ideally matched to our products. They include devices for monitoring or configuring transmitters, such as hand pumps with precision pressure gauge or the Sensor Communicator, a handheld device which provides direct access to the transmitter calibration values in the Trafag ASIC. Trafag also offers a wide range of accessories, which can be adapted to meet specific application requirements and also make installation easier. They include diagnostic valve manifolds, snubbers and pressure peak damping elements as well as ventilation boxes, cable tension clamps or separation barriers for explosion-protection applications.

Accessories for pressure transmitters

- SMI Sensor Master Interface
- SC Sensor Communicator
- CAN2USB CANopen Configuration Tool
- DVB Diagnostic valve block
- Hand pump with precision manometer
- Switch amplifier
- Venting box
- Cable hanger
- Pressure peak damping element
- Snubber
- Adapters for different pressure connections
- Stop valve



Pressure transmitters

NAT 8252	NAH 8253	NAH 8254	NAE 8256
page 23	page 35	page 41	page 53



Measuring principle	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 0.2 to 0 ... 600 bar 0 ... 3 to 0 ... 7500 psi	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi
Output signal	4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC, 0.5 ... 5 VDC, 1 ... 5 VDC, 0.5 ... 5.5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 1 ... 10 VDC, 0.1 ... 10.1 VDC, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors	4 ... 20 mA, 0 ... 5 VDC, 0.5 ... 5.5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC, 0.5 ... 5 VDC, 1 ... 5 VDC, 0.5 ... 5.5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 1 ... 10 VDC, 0.1 ... 10.1 VDC, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.5 % FS typ.	± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	± 0.3 % FS typ.	0.5 %: ± 0.5 % FS typ. 0.3 %: ± 0.3 % FS typ.
Ambient temperature	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C
Media temperature	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C
Protection	IP65, IP67, IP68	Min. IP65	IP65, IP67, IP68	IP65, IP67
Sensor (wetted parts)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
Pressure connection (wetted parts)	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4542 (AISI630)
Housing	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)
Pressure connections	G1/4" m, G1/4" m (Manometer); 1/4"NPT m, 1/8"NPT m; 7/16"-20UNF f, SAE J512; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858; R1/4" m, DIN2999; R1/8" m, DIN3858; M10x1 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2; M14x1.5 m, DIN EN ISO 6149-2	G1/4" m; 1/4"NPT m; 7/16"-20UNF m; 7/16"-20UNF f (valve opener); 7/16"-20UNF m, SAE4 (J1926); 1/4"NPT f; R1/4" m, DIN2999; M14x1.5 m, DIN EN ISO 6149-2; 3/8"-24UNF m, SAE J514	G1/4" m, G1/4" m (Manometer); 1/4"NPT m, 1/8"NPT m; 7/16"-20UNF f, SAE J512; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858; R1/4" m, DIN2999; R1/8" m, DIN3858; M10x1 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2; M14x1.5 m, DIN EN ISO 6149-2	G1/4" m, G1/4" m (Manometer EN 837), 1/4"NPT m, M10x1 m
Electrical connections	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; Deutsch DT04-4P; cable	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; cable IP67	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; Deutsch DT04-4P; cable	Industrial standard, contact distance 9.4 mm; M12x1
Applications	Machine tools Hydraulics HVAC Refrigeration Process technology	Test benches Railways Machine tools Hydraulics Process technology	Machine tools Hydraulics Process technology Measuring and test bench technology	Shipbuilding Engine manufacturing Hydraulics
Approval / conformity	ABS, BV, DNV-GL, KRS, LRS, NKK, RINA, RMRS			

Data sheet	www.trafag.com/H72303	www.trafag.com/H72300	www.trafag.com/H72304	www.trafag.com/H72305
Instructions	www.trafag.com/H73303	www.trafag.com/H73250	www.trafag.com/H73303	www.trafag.com/H73303

NSL 8257	NAR 8258		CMP 8270	CAN2USB
page 59	page 64		page 73	page 225



Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel	CANopen Configuration Tool
0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi	0 ... 0.2 to 0 ... 600 bar 0 ... 3 to 0 ... 7500 psi	
4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA, Switching output: 1 or 2 PNP transistors	Bus protocol CANopen DS404	
0.15 ... 0.8 % FS typ.	± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	
-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C	
-40°C ... +125°C	-40°C ... +125°C	-50°C ... +135°C	
Min. IP65	IP65, IP67, IP68	Min. IP67	
1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	
1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630) 1.4301 (AISI304)	
1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	
G1/4" m, 1/4"NPT m	G1/4" m; G1/4" m (Manometer); 1/4"NPT m; 7/16"-20UNF m, SAE4 (J1926); R1/4" m, DIN2999; M10x1 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2	G1/4" m, 1/4"NPT m, 7/16"-20UNF m, 7/16"-20UNF f (valve opener), M10x1 m	
Industrial standard, contact distance 9.4 mm; M12x1	Industrial standard, contact distance 9.4 mm; M12x1; cable IP67, IP68	M12x1	
Shipbuilding Engine manufacturing Machine tools Process technology Water treatment Test benches	Railways	Engine manufacturing Railways Machine tools Hydraulics Process technology Test benches	Configuration of the CANopen pressure transmitter CMP 8270
DNV-GL, RINA	EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 50121-3-2 (EMC)		
www.trafag.com/H72302	www.trafag.com/H72307	www.trafag.com/H72614	www.trafag.com/H70696
www.trafag.com/H73250	www.trafag.com/H73303	www.trafag.com/H73614	www.trafag.com/H73617

Pressure transmitters

	FPT 8235	EPR 8283	EPI 8287	EPN 8288	
	page 78	page 83	page 88	page 96	
					
Measuring principle	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel	
Measuring range	0 ... 1 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	0 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC	4 ... 20 mA	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA, 0 ... 10 VDC	
Accuracy @ 25°C typ.	± 0.4 % FS	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	
Ambient temperature	-40°C ... +85°C	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C	
Media temperature	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C	
Protection	IP65, IP67, IP68	IP65, IP67, IP68	IP65, IP67, IP68	IP65	
Sensor (wetted parts)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	
Pressure connection (wetted parts)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630) or 1.4404 (AISI316L)	1.4542 (AISI630) or 1.4404 (AISI316L)	
Housing	1.4301 (AISI304)	1.4542 (AISI630)	1.4542 (AISI630) or 1.4404 (AISI316L)	1.4542 (AISI630) or 1.4404 (AISI316L)	
Pressure connections	G1/2" m, flush membrane	G1/4" f; G1/4" m Seal; G1/2" m (Manometer); 1/4"NPT m; 1/4"-18 NPT f; 1/2"NPT m; R1/4" m DIN3858; M14x1.5 m DIN6149-2; 7/16"-20UNF m, DIN3866; 7/16"-20UNF m SAE4 (J1926); 7/16"-20UNF f SAE J512, valve opener	G1/4" f; G1/4" m Seal; G1/2" m (Manometer); 1/4"NPT m; 1/4"-18 NPT f; 1/2"NPT m; R1/4" m DIN3858; M14x1.5 m DIN6149-2; 7/16"-20UNF m, DIN3866; 7/16"-20UNF m SAE4 (J1926); 7/16"-20UNF f SAE J512, valve opener	G1/4" m, R1/4" m DIN3858, G1/2" m (Manom.), 1/4" NPT a, 1/2" NPT a, M14x1.5 a	
Electrical connections	EN175301-803-A(DIN43650-A); Industrial standard, contact distance 9.4 mm; M12x1; Packard Metri Pack; Cable	Industrial standard EN 175301-803-A; M12x1; MIL-C 26482, cable	EN175301-803-A (DIN43650-A); Industrial standard, contact distance 9.4 mm; M12x1; Packard Metri Pack; MIL-C 26482; cable	Industrial standard EN175301-803A	
Applications	Engine manufacturing Machine tools Hydraulics Process technology	Railways	Machine tools Hydraulics Industrial applications	Shipbuilding Engine manufacturing Machine tools	
Approval / conformity		EN 50155 (Railway) EN 45545-2 (Fire protection)		DNV-GL EU RO Mutual Recognition Type Approval Certificate	
Data sheet	www.trafag.com/H72316	www.trafag.com/H72319	www.trafag.com/H72317	www.trafag.com/H72318	
Instructions	www.trafag.com/H73316	www.trafag.com/H73317	www.trafag.com/H73317	www.trafag.com/H73317	

EPR 8293	EPN/EPNCR 8298	NAP 8842/8843
page 102	page 107	page 112



Thin-film-on-steel	Thin-film-on-steel	Piezoresistive
0 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 2500 bar	0 ... 0.1 to 0 ... 1000 bar
4 ... 20 mA	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA 0 ... 10 VDC
± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	
-40°C ... +125°C	-40°C ... +125°C	0°C ... +70°C (opt. -25 ... +85°C)
-40°C ... +125°C	-40°C ... +125°C	0°C ... +80°C (opt. -25 ... +100°C/-25 ... +150°C)
IP65, IP67	IP65, IP67, IP69K	Min. IP65
1.4542 (AISI630)	1.4542 (AISI630)	1.4435 (AISI316L)
1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4435 (AISI316L)
1.4301 (AISI304)	1.4301 (AISI304) 1.4542 (AISI630)	1.4435 (AISI316L)
G1/4" m, R1/4" m, 1/4" NPT m, 1/2" NPT m	G1/4" m, R1/4" m, G1/2" m (Manom.), 1/4" NPT m, 1/2" NPT m, M14x1.5 m, M18x1.5 m	G1/4" f, G1/4" m, G1/4" m (Manom.), G1/2" m, G1/2" m frontal membrane, G1/2" m flush membrane, G1/2" m (Manom.)
EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A); DIN72585; Cable	
Railways	Shipbuilding Engine manufacturing	Shipbuilding Machine tools
EN 50155 (Railways)	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS	GL, KRS
www.trafag.com/H72311	www.trafag.com/H72312	www.trafag.com/H72230
www.trafag.com/H73311	www.trafag.com/H73311	www.trafag.com/H73208

Pressure transmitters

	ECT 8472	ECT 0.3 % (0.5 %, 1.0 %) 8473	ECTN 8477	ECR 8478	
	page 118	page 126	page 134	page 140	
					
Measuring principle	Thick-film-on-ceramic	Thick-film-on-ceramic	Thick-film-on-ceramic	Thick-film-on-ceramic	
Measuring range	0 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	0 ... 0.1 to 0 ... 40 bar 0 ... 1.5 to 0 ... 500 psi	0 ... 0.1 to 0 ... 250 bar 0 ... 1.5 to 0 ... 3000 psi	0 ... 0.1 to 0 ... 60 bar 0 ... 1.5 to 0 ... 1000 psi	
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA	4 ... 20 mA	
Accuracy @ 25°C typ.	± 0.5 % FS typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	
Ambient temperature	-25°C ... +125°C	-25°C ... +125°C	Max. -25°C ... +125°C	-25°C ... +125°C	
Media temperature	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	
Protection	IP65, IP67, IP68	IP65, IP67, IP68	IP65, IP67, IP68	IP65, IP67	
Sensor (wetted parts)	Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96 %)	
Pressure connection (wetted parts)	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4404 (AISI316L)	
Housing	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4404/1.4435 (AISI316L)	
Pressure connections	G1/4" f, G1/4" m, G1/2" m DIN3852-A, G1/2" m DIN3852-E, 1/4"NPT m ANSI B1.20.1, 1/8"NPT m ANSI B1.20.1, 7/16"-20UNF m SAE4, 7/16"-20UNF m, DIN3866, 7/16"-20UNF f SAE J512 with valve opener, R1/4" m DIN3858, G3/4" frontal membrane	G1/4" f, G1/4" m, G1/2" m DIN3852-A, G1/2" m DIN3852-E, 1/4"NPT m ANSI B1.20.1, 1/8"NPT m ANSI B1.20.1, 7/16"-20UNF m SAE4, 7/16"-20UNF m SAE4 (J1926), R1/4" m DIN3858, G3/4" frontal membrane	G1/4" f, G1/4" m, G1/2" m, 1/4"NPT m, 7/16"-20UNF m SAE4, R1/4" m DIN3858, G3/4" frontal membrane	G1/4" m, G3/4" frontal membrane	
Electrical connections	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); M12x1; Cable	EN175301-803-A (DIN43650-A); M12x1; Packard Metri Pack	
Applications	Machine tools Hydraulics Water treatment	Machine tools Hydraulics Water treatment	Shipbuilding Engine manufacturing	Railways	
Approval / conformity			DNV-GL, KRS, RINA	EN 50155 (Railway) EN 45545-2 (Fire protection)	
Data sheet	www.trafag.com/H72324	www.trafag.com/H72326	www.trafag.com/H72322	www.trafag.com/H72337	
Instructions	www.trafag.com/H73324	www.trafag.com/H73324	www.trafag.com/H73324	www.trafag.com/H73324	

Ex Pressure transmitters

EXNT 8292	EXNA 8852/8853	EXNA 8854	ZEN...
page 146	page 152	page 158	page 231
 	 	 	 
Thin-film-on-steel	Piezoresistive	Piezoresistive	Switch amplifier
0 ... 0.4 to 0 ... 2000 bar 0 ... 5 to 0 ... 30000 psi	0 ... 0.1 to 0 ... 1000 bar	0 ... 0.1 to 0 ... 1000 bar	
4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	Signal, Relays
± 0.5 % FS typ. ± 0.3 % FS typ.			
Max. -40°C ... +120°C	T3/T4: -25°C ... +85°C T6: -25°C ... +55°C	T3: -40°C ... +125°C T4: -40°C ... +85°C T6: -40°C ... +50°C	-20°C ... +60°C
Max. -40°C ... +120°C	T3: -25°C ... +150°C T4: -25°C ... +100°C T6: -25°C ... +55°C	T3: -40°C ... +150°C T4: -40°C ... +100°C T6: -40°C ... +50°C	
IP65, IP67	Min. IP65	Min. IP65	IP20
1.4542 (AISI630), optional hydrogen-compatible steel	1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	
1.4542 (AISI630) 1.4301 (AISI304) Optional hydrogen-compatible steel	1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	
1.4301 (AISI304)	1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	
G1/4" m, G1/4" m (Manom.), G1/4" f, G1/2" m, G1/2" m (Manom.), R1/4" m, 1/4"NPT m, M18x1.5 m	G1/4" f, G1/4" m, G1/4" m (Manom.), G1/2" m, G1/2" m frontal membrane, G1/2" m flush membrane, G1/2" m (Manom.)	1/4" NPT m, 1/2"NPT m, G1/4" f, G1/4" m, G1/2" m, G1/2" m frontal membrane, G1/2" m flush membrane	
EN175301-803-A; M12x1; MIL-C 26482; Binder 723; Cable	EN175301-803-A; MIL-C 26482; Binder 723; Cable	EN175301-803-A; M12x1; MIL-C 26482; Binder 723; Cable	
Shipbuilding Ex Zones 0, 1, 2 (gas); 20, 21, 22 (dust) and mining Hydrogen	Ex Zone 0, 1, 2 / Gas Ex Zone 20, 21, 22 / Dust	Ex Zone 0, 1, 2 / Gas Ex Zone 20, 21, 22 / Dust	
GL, KRS, RMRS ATEX / IECEx, according to the norm EN/IEC 60079-0/EN 60079-11/ EN 60079-26/ EN 50303	GL, KRS	DNV-GL Ex according to standards, IEC/EN 60079-0 /-11/-26, EN 50303	
www.trafag.com/H72329	www.trafag.com/H72227	www.trafag.com/H72334	
www.trafag.com/H73329	H73227	H73227	

Pressure transmitters

	N 8202	ND 8204	NPN 8264
	page 164	page 168	page 172
			
Measuring principle	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel
Measuring range	0 ... 1.0 to 0 ... 600 bar	0 ... 1 to 0 ... 16 bar	0 ... 2.5 to 0 ... 250 bar
Output signal	4 ... 20 mA	4 ... 20 mA (P1-P2)	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.5 % FS typ.	± 0.8 % FS typ	± 0.5 % FS typ. ± 0.3 % FS typ.
Ambient temperature	-25°C ... +85°C	-25°C ... +85°C	-40°C ... +100°C
Media temperature	-25°C ... +125°C	-25°C ... +125°C	-40°C ... +100°C
Protection	Min. IP65	Min. IP65	IP65, IP69K
Sensor (wetted parts)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
Pressure connection (wetted parts)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
Housing	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	1.4301 (AISI304)
Pressure connections	G1/4" f, G1/2" m	G1/4" f	G1/4" f, M10x1 f, G1/8" f
Electrical connections	Terminal screw 0.75 ... 2.5 mm²	Terminal screw 0.75 ... 2.5 mm²	EN175301-803-A(DIN43650-A); Cable
Applications	Shipbuilding Engine manufacturing	Shipbuilding Engine manufacturing	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics
Approval / conformity	ABS, BV, CCS, DNV-GL, KRS, LRS	BV	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS
Data sheet	www.trafag.com/H72206	www.trafag.com/H72218	www.trafag.com/H72313
Instructions	www.trafag.com/H70722	www.trafag.com/H73218	www.trafag.com/H73313

Pressure transmitters with display

DPC 8380	DPS 8381
page 178	page 187



Measuring principle	Thick-film-on-ceramic	Thin-film-on-steel
Measuring range	0 ... 0.2 to 0 ... 100 bar 0 ... 2.5 to 0 ... 1500 psi adjustable	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi adjustable
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V
Accuracy @ 25°C typ.	± 0.5 % FS typ.	± 0.5 % FS typ.
Ambient temperature	-25°C ... +85°C	-25°C ... +85°C
Media temperature	-25°C ... +85°C	-25°C ... +85°C
Protection	IP67	IP67
Sensor (wetted parts)	Ceramic, Al ₂ O ₃ (96 %)	1.4542 (AISI630)
Pressure connection (wetted parts)	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4542 (AISI630)
Housing	Zinc based die-casting alloy, nickel plated display housing plastic	Zinc based die-casting alloy, nickel plated display housing plastic
Pressure connections	G1/4" f, G1/4" m, G1/2" m DIN3852-E, 1/4"NPT m, R1/4" m DIN3858, 7/16"-20UNF m DIN 3866, 7/16"-20UNF f SAE J512 valve opener, 7/16"-20UNF f SAE4 (J1926), G3/4" frontal membrane	G1/4" f; G1/4" m Seal; G1/2" m (Manometer); 1/4"NPT m; 1/2"NPT m; R1/4" m DIN3858; M14x1.5 m DIN6149-2; 7/16"-20UNF m, DIN3866; 7/16"-20UNF m SAE4 (J1926); 7/16"-20UNF f SAE J512, valve opener
Electrical connections	Male electrical plug M12x1, 5-pole; Male electrical plug M12x1, 4-pole	Male electrical plug M12x1, 5-pole; Male electrical plug M12x1, 4-pole
Applications	Machine tools HVAC Refrigeration Water treatment Process technology	Machine tools Hydraulics Process technology Industrial applications

Approval / conformity

Data sheet	www.trafag.com/H72320	www.trafag.com/H72321
Instructions	www.trafag.com/H73320	www.trafag.com/H73320

Submersible pressure transmitters

	ECL 8439	ECL 8438	NAL 8838	EXL 8432	8858
	page 196	page 202	page 206	page 211	page 216
					
Measuring principle	Thick-film-on-ceramic	Thick-film-on-ceramic	Piezoresistive	Thick-film-on-ceramic	Piezoresistive
Measuring range	0 ... 0.1 to 0 ... 2.0 bar 0 ... 1.5 to 0 ... 30 psi	0 ... 0.1 to 0 ... 10 bar	0 ... 0.1 to 0 ... 25 bar	0 ... 0.2 to 0 ... 10 bar	0 ... 0.1 to 0 ... 25 bar
Output signal	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA 0 ... 10 VDC	4 ... 20 mA	4 ... 20 mA
Accuracy @ 25°C typ.	± 0.3 % FS typ. ± 0.5 % FS typ.	± 0.3 % FS typ. ± 0.5 % FS typ.		± 0.3 % FS typ. ± 0.5 % FS typ.	
Ambient temperature	max. -25°C ... +70°C	-25°C ... +80°C (+70°C)	-5°C ... +50°C	T4: -20°C ... +70°C T6: -20°C ... +65°C	T4/T6: -5°C ... +50°C
Media temperature	max. -25°C ... +70°C	-25°C ... +80°C (+70°C)	-5°C ... +50°C	T4: -20°C ... +70°C T6: -20°C ... +65°C	T4/T6: -5°C ... +50°C
Protection	IP68 (2.0 bar/20 m)	IP68 (25 bar; 250m)	Min. IP68	IP68 (25 bar; 250m)	Min. IP68
Sensor (wetted parts)	Ceramic, Al ₂ O ₃ (96%)	Ceramic, Al ₂ O ₃ (96 %)	1.4435 (AISI316L) or titanium	Ceramic, Al ₂ O ₃ (96 %)	1.4435 (AISI316L)
Pressure connection (wetted parts)	1.4404 (AISI316L) or 1.4462 (AISI318LN)	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium
Housing	1.4404 (AISI316L) or 1.4462 (AISI318LN) OEM-version: Screwed cable gland brass nickel plated	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	1.4404/1.4435 (AISI316L)	1.4404 (AISI316L) or titanium
Pressure connections		Type 1 f, M 10x1, Type 2 m, M 22x1	Open, Closed, G1/4" m	Type 1 f, M 10x1, Type 2 m, M 22x1	Open; Closed; G1/4" m
Electrical connections	Cable PUR/Radox/PE	Cable PUR/FEP/PE	Cable PUR/Teflon/PE	Cable PUR/FEP/PE	Cable PUR or FEP
Applications	Process technology Water treatment (wastewater, grey-water, drinking water) Seawater Level of oils and fuels	Process technology Water treatment	Shipbuilding Process technology Water treatment	Ex Zone 0, 1, 2 / Gas Ex Underground Mining	Shipbuilding Ex SEV 11 ATEX 0145 X
Approval / conformity		GL, KRS	GL, KRS	Ex ATEX/IECEx, EN 60079-0/ EN 60079-11/EN 60079-26/ EN 50303	GL, KRS
Data sheet	www.trafag.com/H72336	www.trafag.com/H72328	www.trafag.com/H72228	www.trafag.com/H72330	www.trafag.com/H72231
Instructions	www.trafag.com/H73336	www.trafag.com/H73328		www.trafag.com/H73329	

Pressure sensors

Pressure sensors provide the basis for the outstanding reliability and durability of Trafag pressure transmitters. Developed and produced by Trafag, these pressure sensors are also available to third parties for special OEM solutions. Trafag pressure sensors lend themselves extremely well to adaptation, providing the basis for seamless integration into OEM applications. Trafag's specialists work together with customers to develop tailor-made solutions. Success is assured by combining professional project management – from drafting the requirements specification right through to start of production – with a team of experienced application engineers.



OEM Pressure sensor 8810

Features

- Thin-film-on-steel sensor technology
- Excellent long-term stability
- Further versions available

Technical Data

Sensor material	1.4542/630
Output signal (10 VDC supply)	1.2 ... 2.8 mV/V
Media temperature	-25°C ... +125°C
Ambient temperature	-25°C ... +100°C

Product description

Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % FS typ.]	Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % FS typ.]
0 ... 40	80	10 ... 15	0.07	0 ... 400	800	10 ... 15	0.07
0 ... 100	200	10 ... 15	0.07	0 ... 600	1000	10 ... 15	0.07
0 ... 250	500	10 ... 15	0.07				



Data sheet

www.trafag.com/H72205

OEM Pressure sensor 8421



Features

- Thick film on ceramic sensor technology
- Excellent long-term stability

Technical Data

Sensor material	Al_2O_3 , 316L(1.4435, 1.4404)
Output signal (10 VDC supply)	2.3 ... 3.5 mV/V
Media temperature	-25°C ... +125°C
Ambient temperature	-25°C ... +100°C

Product description

Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % FS typ.]	Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % FS typ.]
0 ... 1.6	3.2	20	0.25	0 ... 25	50	20	0.25
0 ... 4	10	20	0.25	0 ... 40	80	20	0.25
0 ... 6	12	20	0.25	0 ... 60	120	20	0.25
0 ... 10	20	20	0.25	0 ... 100	200	20	0.25
0 ... 16	32	20	0.25				

 Data sheet

www.trafag.com/H72233

Transducer 8822



Features

- Thin-film-on-steel sensor technology
- Smallest design
- Excellent long-term stability

Technical Data

Sensor material	1.4542/630
Output signal (ratiometric)	1.7 ... 2 mV/V
Media temperature	-25°C ... +125°C
Ambient temperature	-25°C ... +125°C

Product description

Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % d.S. typ.]	Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % d.S. typ.]
0 ... 2.5	5	10 ... 15	0.5	0 ... 60	120	10 ... 15	0.5
0 ... 6	12	10 ... 15	0.5	0 ... 100	200	10 ... 15	0.5
0 ... 10	20	10 ... 15	0.5	0 ... 160	320	10 ... 15	0.5
0 ... 16	32	10 ... 15	0.5	0 ... 250	500	10 ... 15	0.5
0 ... 25	50	10 ... 15	0.5	0 ... 400	800	10 ... 15	0.5
0 ... 40	80	10 ... 15	0.5	0 ... 600	1000	10 ... 15	0.5

 Data sheet

www.trafag.com/H72315

Customer specific design for OEMs

If the requirements of an application cannot be met with an existing product, Trafag is able to efficiently adapt its standard products to the specific needs of customers and to develop special OEM solutions. Thanks to their modular design, Trafag products can be efficiently customized to fit seamless into the targeted environment, providing the high performance and reliability of all Trafag products which are based on the proprietary sensor technologies. A team of experienced and highly skilled engineers in development and production guarantees excellent products. An efficient project management minimizes risks and ensures a short time to market.

Tank pressure transmitter with temperature sensor



Features

- For fuel density measurement
- Based on established thick-film-on-ceramic technology

Technical Data

Pressure range	-100 ... 900 mbar
Output signal	Digital signal
Electrical connection	PCB connector
Media temperature	-25°C ... +85°C

To determine the fuel density in petrol tanks, the pressure signal from a ceramics sensor element and the signal from an integrated PTC temperature sensor are processed in the Trafag ASIC electronics to calculate the density. The digital output signal used in a chip-to-chip communication with the control unit. The key advantages of this cost-effective solution are the very compact design and the low project risk due to the use of well-proven sensing elements.

Crank case pressure transmitter



Features

- For low pressure measurement
- Crank case on large diesel engines

Technical Data

Pressure range (relative)	0 ... 124 mbar
Output signal (ratiometric)	0.5 ... 4.5 VDC
Electrical connection	DIN72585
Ambient temperature	-25°C ... +105°C

In large diesel engines the crank case pressure is important indicator for the condition (wear) of the piston rings of diesel engines. Alternative technologies to detect the wear of piston rings only react after the piston ring is already defective while the small pressure changes give early indication of possible increased wear. A pressure transmitter in this application must withstand harsh conditions in terms of vibration and temperature and must maintain a high accuracy over a long lifetime. Trafag developed a new transmitter based on the well-tried EPN series, but extending the measurement range the thin-film-on-steel technology way beyond state-of-the-art towards low pressure down to 0...124 mbar. Due to the experience and expertise of Trafag in this field, the accuracy of the transmitter is high and stable over a long time in operational conditions.

Transmitter 8 x overpressure safety, 0.3 % accuracy



Features

- For low pressure measurement
- Overpressure max. 80 bar

Technical Data

Temperature range	-40°C ... +125°C
Pressure range (relative)	0 ... 10 bar
Burst pressure min.	300 bar
Accuracy @ +25°C	± 0.3 % FS typ.

In water pump applications extreme pressure peaks often occur and can damage pressure transmitters. To avoid failures due to these pressure peaks, Trafag developed a transmitter with 8x overpressure safety and an accuracy of 0.3 % through extended calibration, selection of sensor elements and using high-performance electronics.

On-board pressure transmitter OPT



Features

- Miniatur pressure transmitter
- Completely welded sensor system
- Stainless steel

Technical Data

Sensor material	1.4542/630
Ambient temperature	-25°C ... +100°C
Sensor temperature max.	-25°C ... +100°C
Output signal (ratiometric)	0.5 ... 4.5 VDC

The on-board transmitter for applications requiring a very compact solution directly applied to the pcb offers a wide media temperature and the excellent long-term stability of the thin-film-on-steel sensor technology. The high overpressure safety and the fully welded design allow the use in critical and very demanding applications.

INDUSTRIAL PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The industrial pressure transmitter NAT 8252 features an exceptionally long-term stable thin-film-on-steel sensor cell with triple (optionally 5-fold) overpressure safety. Optionally, the NAT 8252 is available as a pressure switch with 1 or 2 switching outputs. The robust design and the wide temperature range from -40°C to +125°C qualify the NAT 8252 as the ideal solution for a wide range of demanding applications.



Applications

- Machine tools
- Hydraulics
- HVAC
- Refrigeration
- Process technology
- Water treatment

Features

- Smallest design
- Completely welded steel sensor system without additional seals
- Excellent long-term stability
- Optional: 5-fold overpressure resistance
- Optional: Switching output 1 or 2 PNP transistors

Technical Data

Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.5 % 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 ... 4.5 VDC, 0 ... 5 VDC, 0.5 ... 5 VDC, 1 ... 5 VDC, 0.5 ... 5.5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 1 ... 10 VDC, 0.1 ... 10.1 VDC, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors	Ambient temperature	-40°C ... +125°C (Cable PVC 22: -5°C ... +60°C) (Cable PUR 24: -40°C ... +70°C) (Cable Radox Tenuis 88: -40°C ... +120°C)

Subject to change

Ordering information/type code

				8252 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	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		
Option 5P:	Fivefold overpressure			0 ... 5000	12500	21750	H4		
				0 ... 7500	18750	29000	H6		
Sensor	Relative pressure						25		
Pressure connection	G1/4" male, seal: DIN 3869 (accessories 61/63/83)	17	9/16"-18UNF SAE6 male (J1926), seal: accessory 61				61		
	G1/4" male (Manometer) EN 837 ⁹⁾	53	R1/4" male, DIN3858 ⁵⁾				19		
	1/4" NPT male	30	R1/4" male, DIN2999 ⁹⁾				20		
	1/8" NPT male ^{5) 9)}	43	R1/8" male, DIN3858 ⁵⁾				16		
	7/16"-20UNF female SAE J512 with valve opener ⁴⁾	24	M10x1 male, DIN EN ISO 6149-2, seal: accessory 61				32		
	7/16"-20UNF female SAE J512 without valve opener ⁴⁾	44	M12x1.5 male, DIN EN ISO 9974-2, seal: accessory 61 ⁹⁾				49		
	7/16"-20UNF male, DIN3866 ⁴⁾	18	M14x1.5 male DIN EN ISO 6149-2, seal: accessory 61 ⁹⁾				31		
	7/16"-20UNF SAE4 male (J1926), seal: accessory 61	42							
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		
	Male electrical plug MIL-C 26482, 6-pole, metal						02		
	Male electrical plug Deutsch DT04-3P, 3-pole						D3		
	Male electrical plug Deutsch DT04-4P, 4-pole						D4		
	Cable Mat. PVC, IP67/IP68, 2 x 2 x 0.14 mm ² ⁷⁾						22		
	Cable Mat. PUR, IP67/IP68, 4 x 0.25 mm ² ⁷⁾						24		
	Cable Mat. EPD Raychem FDR25, IP67, 4 x 0.2 mm ² ⁷⁾						08		
	Cable Mat. Radox Tenuis, IP67/IP68, 4 x 0.5 mm ² ⁷⁾						88		

			8252 . XX	XX	XX	XX	XX	XX
Output signal	Signal output	Load resistance	I (supply)	U (supply)				
	4 ... 20 mA	See graphic		24 (9 ... 32) VDC				19
	0.5 ... 4.5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				20
	0 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				14
	0.5 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				22
	1 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				25
	0.5 ... 5.5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				24
	1 ... 6 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				16
	0 ... 10 VDC	≥ 5.0 kΩ to Us-	≤ 15 mA	24 (15 ... 32) VDC				17
	1 ... 10 VDC	≥ 5.0 kΩ to Us-	≤ 15 mA	24 (15 ... 32) VDC				26
	0.1 ... 10.1 VDC	≥ 5.0 kΩ to Us-	≤ 15 mA	24 (15 ... 32) VDC				13
	0.5 ... 4.5 VDC ratiometric	≥ 5.0 kΩ to Us-	≤ 10 mA	5 (4.75 ... 5.25) VDC				23
	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 Out, Pin 2 +, Pin 3 Ground, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 01, industrial standard)							91
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 3 Out, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)							95
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 3 -, Pin 4 Out (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)							96
	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
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 Out, Pin 4 Ground (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)							E2
	Special electrical connection: Pin 1 Out, Pin 2 -, Pin 3 +, Pin 4 Ground (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 01, industrial standard)							E3
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 4 - (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)							E6
	Special electrical connection: Pin A +, Pin C - (only for output signal 19 and male electrical plug Deutsch DT04-3P, 3-pole)							F0
	Special electrical connection: Pin A +, Pin B Out, Pin C - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug Deutsch DT04-3P, 3-pole)							F1
	Cable length 0.5 m							EM
	Cable length 1.0 m							1M
	Cable length 2.0 m							2M
	Parameterization according to customer specification for output signal PS, T1 (see table "Parameters")							ZC
	Parameterization standard for output signal PS, T1 (see table "Parameters")							ZS
	Multiple packaging ⁸⁾							VM

¹⁾ Customized pressure ranges upon request²⁾ For electrical connections 32 and 35³⁾ Only with electrical connections 32, 22, 24, 08, 88⁴⁾ Max. allowable pressure range 60 bar at 180 bar overpressure⁵⁾ Max. allowable pressure range 160 bar at 480 bar overpressure⁶⁾ Not for pressure connections 53, 24, 44, 18⁷⁾ Cable length see accessories⁸⁾ The order quantity must be a multiple of 50, only for electrical connections 01, 32, 35, 02, D3, D4, not for pressure connection 30 with electrical connections 02, D3, D4⁹⁾ Upon request

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
NAT2.5A	8252 75 2517 01 0000 0000 19 34 44 61	0 ... 2.5	7.5	9 ... 32	±0.5
NAT4.0A	8252 76 2517 01 0000 0000 19 34 44 61	0 ... 4	12	9 ... 32	±0.5
NAT6.0A	8252 77 2517 01 0000 0000 19 34 44 61	0 ... 6	18	9 ... 32	±0.5
NAT10.0A	8252 78 2517 01 0000 0000 19 34 44 61	0 ... 10	30	9 ... 32	±0.5
NAT16.0A	8252 79 2517 01 0000 0000 19 34 44 61	0 ... 16	48	9 ... 32	±0.5
NAT25.0A	8252 80 2517 01 0000 0000 19 34 44 61	0 ... 25	75	9 ... 32	±0.5
NAT40.0A	8252 81 2517 01 0000 0000 19 34 44 61	0 ... 40	120	9 ... 32	±0.5
NAT100.0A	8252 83 2517 01 0000 0000 19 34 44 61	0 ... 100	300	9 ... 32	±0.5
NAT250.0A	8252 74 2517 01 0000 0000 19 34 44 61	0 ... 250	750	9 ... 32	±0.5
NAT400.0A	8252 84 2517 01 0000 0000 19 34 44 61	0 ... 400	1000	9 ... 32	±0.5
NAT600.0A	8252 86 2517 01 0000 0000 19 34 44 61	0 ... 600	1500	9 ... 32	±0.5
NAT2.5V	8252 75 2517 01 0000 0000 17 34 44 61	0 ... 2.5	7.5	15 ... 32	±0.5
NAT4.0V	8252 76 2517 01 0000 0000 17 34 44 61	0 ... 4	12	15 ... 32	±0.5
NAT6.0V	8252 77 2517 01 0000 0000 17 34 44 61	0 ... 6	18	15 ... 32	±0.5
NAT10.0V	8252 78 2517 01 0000 0000 17 34 44 61	0 ... 10	30	15 ... 32	±0.5
NAT16.0V	8252 79 2517 01 0000 0000 17 34 44 61	0 ... 16	48	15 ... 32	±0.5
NAT25.0V	8252 80 2517 01 0000 0000 17 34 44 61	0 ... 25	75	15 ... 32	±0.5
NAT40.0V	8252 81 2517 01 0000 0000 17 34 44 61	0 ... 40	120	15 ... 32	±0.5
NAT100.0V	8252 83 2517 01 0000 0000 17 34 44 61	0 ... 100	300	15 ... 32	±0.5
NAT250.0V	8252 74 2517 01 0000 0000 17 34 44 61	0 ... 250	750	15 ... 32	±0.5
NAT400.0V	8252 84 2517 01 0000 0000 17 34 44 61	0 ... 400	1000	15 ... 32	±0.5
NAT600.0V	8252 86 2517 01 0000 0000 17 34 44 61	0 ... 600	1500	15 ... 32	±0.5
NAT2.5PS	8252 75 2517 32 0000 0000 PS 44 61 ZS	0 ... 2.5	7.5	9 ... 32	±0.5
NAT4.0PS	8252 76 2517 32 0000 0000 PS 44 61 ZS	0 ... 4	12	9 ... 32	±0.5
NAT6.0PS	8252 77 2517 32 0000 0000 PS 44 61 ZS	0 ... 6	18	9 ... 32	±0.5
NAT10.0PS	8252 78 2517 32 0000 0000 PS 44 61 ZS	0 ... 10	30	9 ... 32	±0.5
NAT16.0PS	8252 79 2517 32 0000 0000 PS 44 61 ZS	0 ... 16	48	9 ... 32	±0.5
NAT25.0PS	8252 80 2517 32 0000 0000 PS 44 61 ZS	0 ... 25	75	9 ... 32	±0.5
NAT40.0PS	8252 81 2517 32 0000 0000 PS 44 61 ZS	0 ... 40	120	9 ... 32	±0.5
NAT60.0PS	8252 82 2517 32 0000 0000 PS 44 61 ZS	0 ... 60	180	9 ... 32	±0.5
NAT100.0PS	8252 83 2517 32 0000 0000 PS 44 61 ZS	0 ... 100	300	9 ... 32	±0.5
NAT160.0PS	8252 85 2517 32 0000 0000 PS 44 61 ZS	0 ... 160	480	9 ... 32	±0.5
NAT250.0PS	8252 74 2517 32 0000 0000 PS 44 61 ZS	0 ... 250	750	9 ... 32	±0.5
NAT400.0PS	8252 84 2517 32 0000 0000 PS 44 61 ZS	0 ... 400	1000	9 ... 32	±0.5
NAT600.0PS	8252 86 2517 32 0000 0000 PS 44 61 ZS	0 ... 600	1500	9 ... 32	±0.5

Parameters				
Name	Standard setting (accessory ZS)	Value range	Short name	Customer adjustment (accessory ZC)
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75 % Measuring range	> RP1, FL1 (2 ... 99 %) Hysteresis ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 (1 ... 98 %) Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 (2 ... 99 %) Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 (1 ... 98 %) Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	0; approx. 2^x [ms], $x = 3, 4 \dots 16$	dS1	
Switch point delay time SP2 / RP2 (hysteresis mode) Switch point delay time FH2 / FL2 (window mode)	0	0; approx. 2^x [ms], $x = 3, 4 \dots 16$	dS2	
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou1	
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc) Device ready	ou2	

i 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



Specifications			
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 0.5 ... 4.5 VDC: 24 (9...32) VDC 0 ... 5 VDC: 24 (9...32) VDC 0.5 ... 5 VDC: 24 (9...32) VDC 1 ... 5 VDC: 24 (9...32) VDC 0.5 ... 5.5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 10 VDC: 24 (15...32) VDC 1 ... 10 VDC: 24 (15...32) VDC 0.1 ... 10.1 VDC: 24 (15...32) VDC 0.5 ... 4.5 VDC ratiom., 10 ... 90% U_{supply} : 5 ± 0.25 VDC 1 or 2 PNP transistors: 24 (9...32) VDC	
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure	
	Switch-on-delay pressure transmitters	100 ms	
	Switch-on-delay pressure switches	50 ms + switching delay time	
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4...20 mA: to $U_s = 32$ VDC 0.5...4.5 VDC, 0...5 VDC, 0.5...5 VDC, 1...5 VDC, 0.5...5.5 VDC, 1...6 VDC, 0...10 VDC, 1...10 VDC, 0.1...10.1 VDC: to $U_s = 28$ VDC 0.5...4.5 VDC ratiometric: to $U_s = 14$ VDC 1 or 2 PNP transistors: to $U_s = 32$ VDC	
Environmental conditions	Media temperature	-40°C ... +125°C	
	Ambient temperature	-40°C ... +125°C (Cable PVC 22: -5°C ... +60°C) (Cable PUR 24: -40°C ... +70°C) (Cable Radox Tenuis 88: -40°C ... +120°C)	
	Protection ¹⁾	IP65, IP67, IP68	
	Humidity	Max. 95 % relative	
	Vibration	15 g RMS (20...2000 Hz) (EN60068-2-64) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) (EN60068-2-6)	
	Shock	50 g / 11 ms 100 g / 6 ms Male electrical plug M12x1 (EN60068-2-27) ²⁾	
	Emission	EN/IEC 61000-6-3	
EMC Protection	Immunity	EN/IEC 61000-6-2	
	Sensor (wetted parts)	1.4542 (AISI630)	
Mechanical Data	Pressure connection (wetted parts)	1.4542 (AISI630)	
	Housing	1.4301 (AISI304)	
	Sealing	FPM/EPDM/NBR	
	Male electrical plug	See ordering information	
	Weight	appr. 50 g	
	Mounting torque	25 Nm	

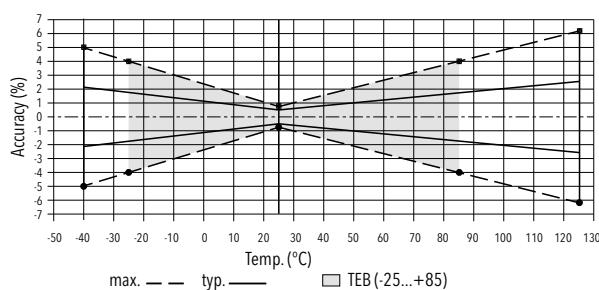
¹⁾ See electrical connection²⁾ For electrical connections 32 and 35

Analogue output

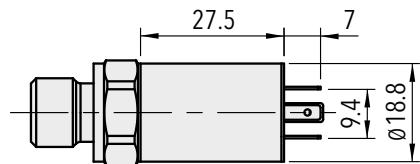
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03
	Long term stability 1 year	[% FS typ.]	± 0.1
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure		

Switching output

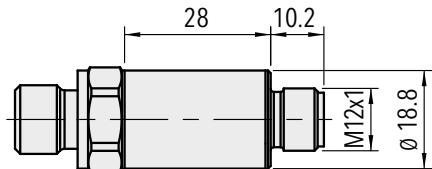
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	Long term stability 1 year	[% FS typ.]	± 0.1
Adjustment range of switchpoints	1 ... 99 % FS		
Distance switch point	$\geq 1.0\% \text{ FS}$		
Switch point > reset point	Switchpoint > reset point		
Switching resistance	$\leq 3 \Omega$		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	-40°C ... +85°C +85°C ... +125°C	(Ambient and media temperature) (Ambient and media temperature)	$\leq 400 \text{ mA, total of both switching outputs}$ $\leq 200 \text{ mA, total of both switching outputs}$
Current limiting	integrated		
Delay time	0; approx. $2^x [\text{ms}]$, $x = 3, 4 \dots 16$		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

Measuring accuracy

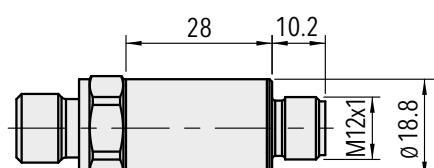
Dimensions



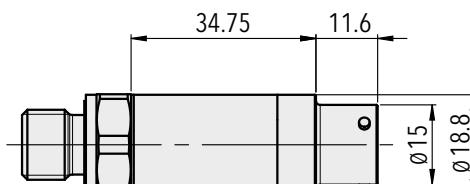
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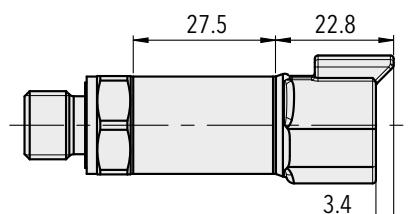
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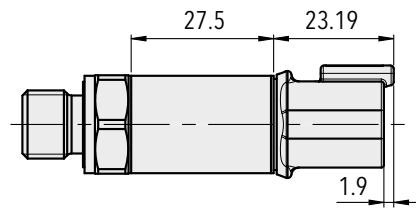
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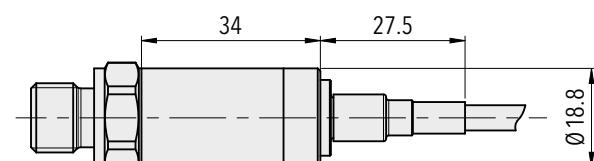
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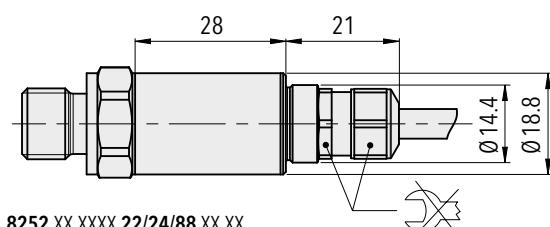
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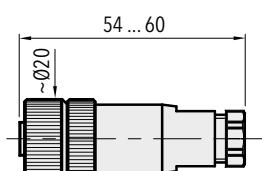
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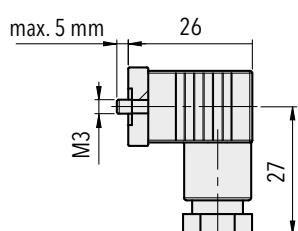
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8252.XX.XXXX.22/24/88.XX.XX

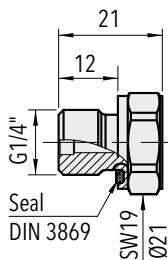


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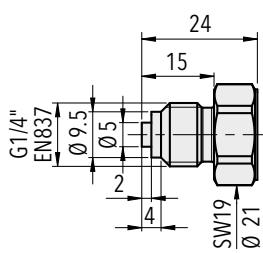


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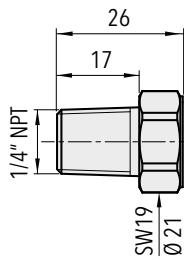
Dimensions



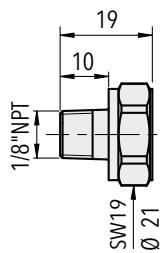
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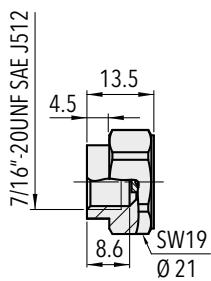
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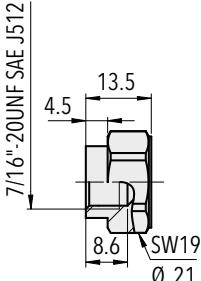
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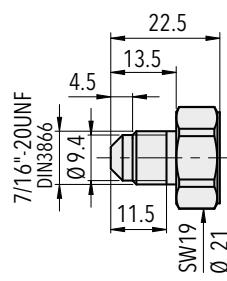
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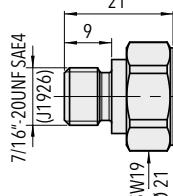
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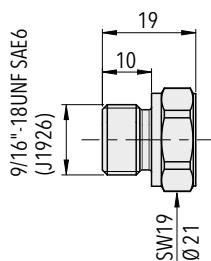
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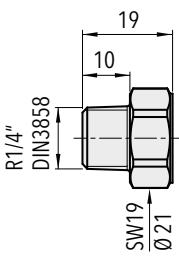
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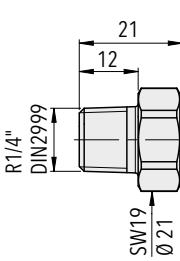
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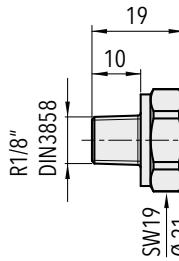
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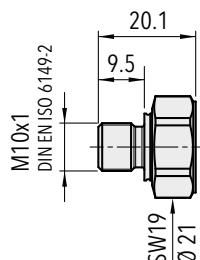
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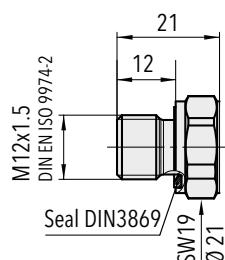
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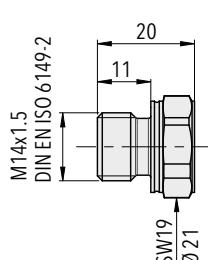
8252.XX.XX16.XX.XX.XX



8252.XX.XX32.XX.XX.XX



8252.XX.XX49.XX.XX.XX



8252.XX.XX31.XX.XX.XX

Electrical connection

Protection / electrical connection										
	IP65 ^{1) 2)}		IP67 ^{1) 2)}			IP67 ^{1) 2)}		IP67, IP68 ^{1) 4)}		IP67, IP68 ^{1) 4)}
	Industrial standard Contact distance 9.4 mm		M12x1 4-pole			5-pole		MIL-C 26482	DT04-3P 3-pole	DT04-4P 4-pole
	01	32	35	02	D3	D4				
Output signal		90	92	E1	E6		A	F0		2
		1	2	1	1	4		A	A	
		4	3	4	4	5		B	C	1
Output signal		91	E3	95	96	E2		F1		
		1	2	3	1	1	2	A	A	2
		2	1	1	2	3	4	B	B	4
		3	4	2	3	4	3	C/D	C	1
		4	3	4	2	2	5	E		3
	8252.XX.XXXX.13/14/16/17/20/22/23/24/25/26									

Protection / electrical connection										
	IP67, IP68 ^{2) 3)}		IP67 ²⁾			IP67, IP68 ^{2) 3)}				
	Cable		Cable			Cable				
	22/24		08		88					
Output signal										
Output signal			white		red		brown			
			brown	yellow	black	green	black	yellow / green		
Output signal			white		red		brown			
			green		white		blue			
			brown		black		black			
			yellow		green		yellow / green			
	8252.XX.XXXX.13/14/16/17/20/22/23/24/25/26									

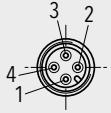
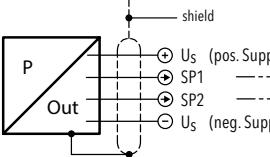
¹⁾ Provided female connector is mounted according to instructions

²⁾ Ventilation via male electric plug/cable end

³⁾ IP68, 20 bar, 30 min.

⁴⁾ IP68, 100 mbar, 4h

Electrical connection

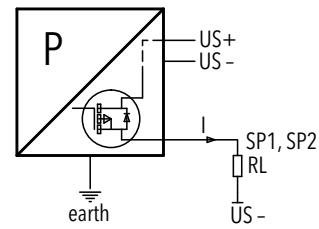
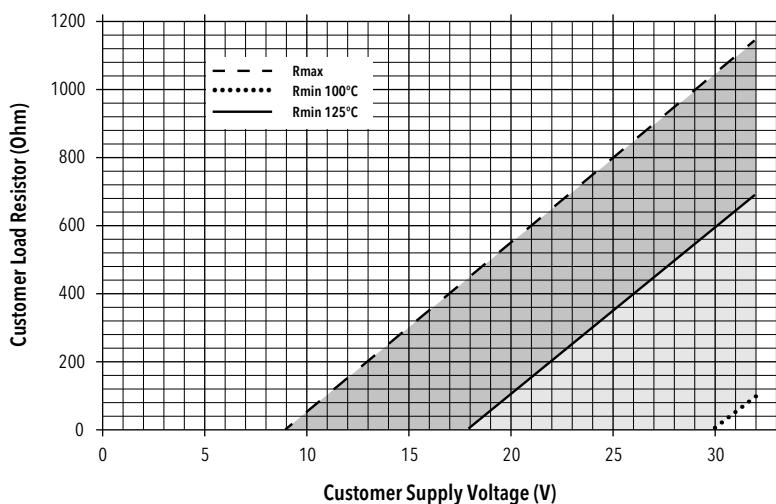
Protection / electrical connection							
	IP67 ^{1) 2)}	IP67, IP68 ^{2) 3)}	IP67 ²⁾	IP67, IP68 ^{2) 3)}			
M12x1 4-pole 32	Cable	Cable	Cable	Cable			
	22/24	08	88				
Output signal  8252.xx.xxxx.xx.PS/T1	PS	T1	PS	T1	PS	T1	PS
	1 4 2 3	1 4 - 3	white green yellow brown	white green - brown	red white green black	red white - black	brown blue yellow / green black

¹⁾ Provided female connector is mounted according to instructions

²⁾ Ventilation via male electric plug/cable end

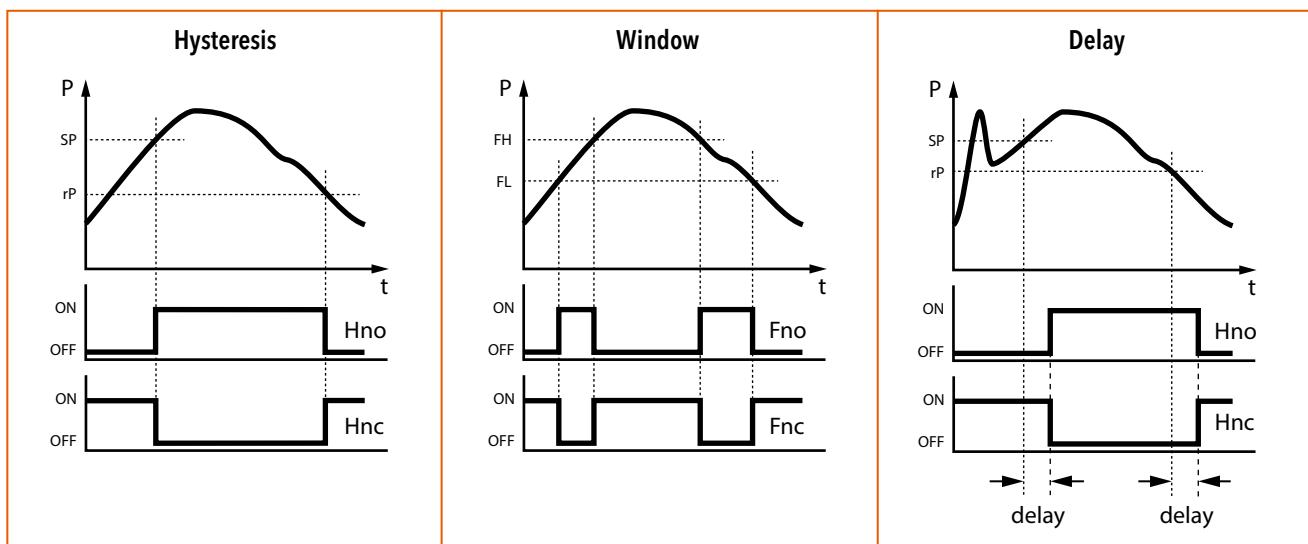
³⁾ IP68, 20 bar, 30 min.

4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



Connection of loads to switch contacts

Functions switching output



Additional information

Documents

Data sheet

www.trafag.com/H72303

Instructions

www.trafag.com/H73303

Flyer

www.trafag.com/H70666

PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature.



Applications

- Test benches
- Railways
- Machine tools
- Hydraulics
- Process technology

Features

- Smallest design
- Accuracy classes 0.1%, 0.15%, 0.3%
- Excellent temperature resistance
- Relative and absolute pressure measurement
- Optional: Dielectrical strength 500 VAC, meets EN 50155 (Railways)

Technical Data

Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	$\pm 0.3\% \text{ FS typ.}$ $\pm 0.15\% \text{ FS typ.}$ $\pm 0.1\% \text{ FS typ.}$
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

Subject to change

Ordering information/type code

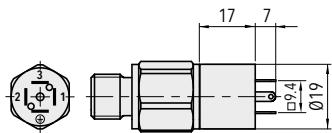
				8253 . XX	XX	XX	XX	XX	XX
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]			
	0 ... 2.5 ²⁾	5	50	75	0 ... 30	60	700	G5	
	0 ... 4	8	60	76	0 ... 50	100	850	G6	
	0 ... 6	12	100	77	0 ... 100	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	
	1/4" NPT female ⁷⁾							13	
	7/16"-20UNF male ^{3) 4)}							18	
	7/16"-20UNF female, DIN3866 (valve opener) ^{3) 4)}							24	
	7/16"-20UNF male SAE4 (J1926)							42	
	3/8"-24UNF SAE6 male (J514) ⁷⁾							62	
	R1/4" male, DIN2999 ⁷⁾							20	
	M14x1.5 male DIN EN ISO 6149-2 ⁷⁾							31	
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	
	Male electrical plug MIL-C 26482, 6-pole, metal							02	
	Cable Mat. EPD Raychem FDR25, IP67, 4 x 0.2 mm ² ⁷⁾							08	
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	

	8253 . XX	XX	XX	XX	XX	XX
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
Cable length 0.5 m						EM
Cable length 1.0 m						1M
Cable length 2.0 m						2M

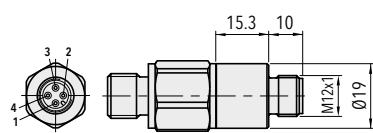
¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Measuring accuracy 0.3 %³⁾ Relative pressure only⁴⁾ Max. allowable pressure range 40 bar⁵⁾ Only with output 19⁶⁾ Only for pressure connections 17 and 30⁷⁾ Upon request

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

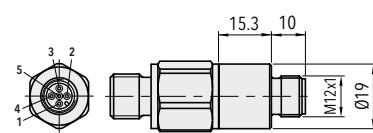
Dimensions



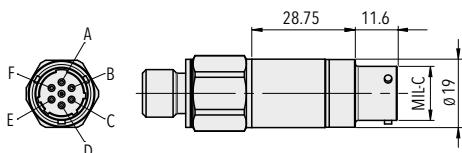
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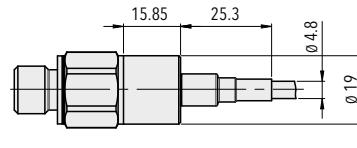
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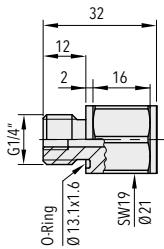
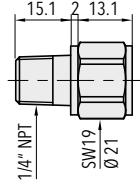
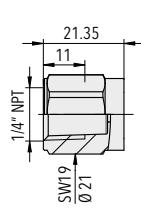
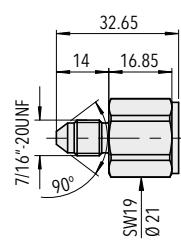
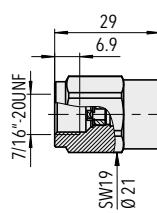
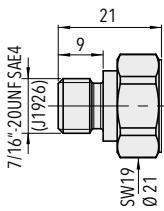
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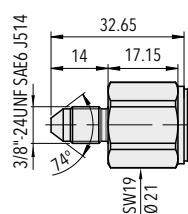
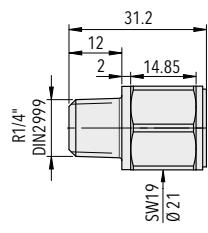
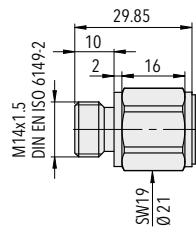
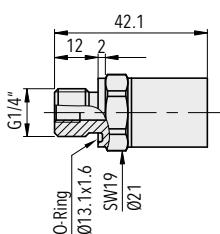
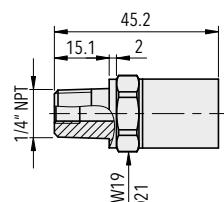
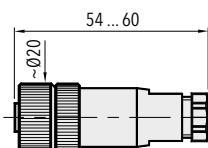
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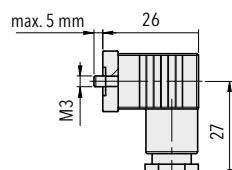
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8253.XX.2117.XX.XX.XX8253.XX.2330.XX.XX.XX
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8253.XX.2113.XX.XX.XX8253.XX.2318.XX.XX.XX
8253.XX.2118.XX.XX.XX8253.XX.2324.XX.XX.XX
8253.XX.2124.XX.XX.XX

8253.XX.XX42.XX.XX.XX

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8253.XX.XXXX.XX.XX.33



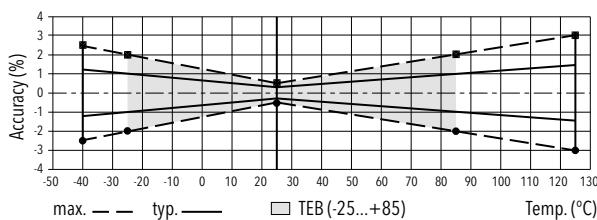
8253.XX.XXXX.XX.XX.34

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0 ... 5 VDC: 24 (9 ... 32) VDC 1 ... 6 VDC: 24 (9 ... 32) VDC 0 ... 10 VDC: 24 (15 ... 32) VDC 0.5 ... 4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	1 s
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection ¹⁾	Min. IP65
	Humidity	Max. 95 % relative
	Vibration	40 g (20...2000 Hz)
EMC Protection	Shock	100 g / 11 ms
	Emission	EN/IEC 61000-6-4
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	Pressure ranges ≤ 250 bar: 1.4542 (AISI630) Pressure ranges > 250 bar: 1.4301 (AISI304)
	Housing	1.4301 (AISI304)
	Sealing	FKM 70 Sh
	Male electrical plug	See ordering information
	Weight	~ 50 g
Mounting torque		25 Nm

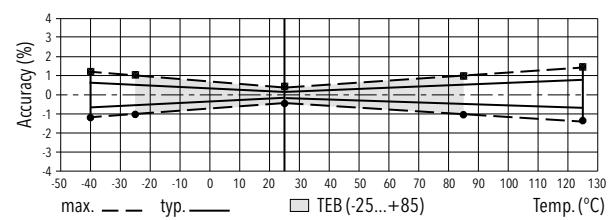
¹⁾ See electrical connection

Accuracy				
		Measuring accuracy 0.3 % Ordering No. 23/43	Measuring accuracy 0.15 % Ordering No. 21/41	Measuring accuracy 0.1 % Ordering No. 24/44
TEB @ -25...+85°C	[% FS typ.]	± 1.0	± 0.5	± 0.4 (0 ... 65°C)
TEB @ -25...+85°C; 0...4 to 0...100 bar	[% FS typ.]	-	-	± 0.4
TEB @ 0...+65°C; 0...4 to 0...100 bar	[% FS typ.]	-	-	± 0.25
Accuracy @ +25°C	[% FS typ.]	± 0.3	± 0.15	± 0.1
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.1	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.01	± 0.002	± 0.002
Long term stability 1 year @ +25°C	[% FS typ.]	< ± 0.1	< ± 0.1	< ± 0.1

Measuring accuracy 0.3 %



Measuring accuracy 0.15 %



Electrical connection

Protection / electrical connection					
	IP65 *)	IP67 *)	IP67 * **)	IP67 **)	
Industrial standard EN175301-803A	01 	M12x1 32 	5-pole 35 	MIL-C 26482 02 	Cable 08
Output signal					
8253.XX.XXXX.XX.19		2 1 1 4	1 3 4 5	4	red black
8253.XX.XXXX.XX.14/16/17/23		1 2 3 4	1 2 3 4	96 1 2 3 4 5	A C B/D - red green black -

*) Provided female connector is mounted according to instructions

**) Ventilation via male electric plug/cable end

Additional information

Documents

Data sheet

www.trafag.com/H72300

Instructions

www.trafag.com/H73250

Flyer

www.trafag.com/H70670

PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The pressure transmitter NAH 8254 with increased accuracy of 0.3% and optional switching outputs has an exceptionally long-term stable thin-film-on-steel sensor cell with triple (optionally 5-fold) overpressure protection. The robust design and the wide temperature range of -40°C to +125°C make the NAH 8254 the ideal solution when pressure needs to be measured accurately and reliably under rough environmental conditions.



Applications

- Machine tools
- Hydraulics
- Process technology
- Measuring and test bench technology

Features

- Measuring accuracy 0.3 %
- Completely welded steel sensor system without additional seals
- Excellent long-term stability
- Optional: 5-fold overpressure resistance
- Optional: Switching output 1 or 2 PNP transistors

Technical Data			
Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.3 % FS typ.
Measuring range	0 ... 0.2 to 0 ... 600 bar 0 ... 3 to 0 ... 7500 psi	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC, 0.5 ... 5 VDC, 1 ... 5 VDC, 0.5 ... 5.5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 1 ... 10 VDC, 0.1 ... 10.1 VDC, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors	Ambient temperature	-40°C ... +125°C (Cable PVC 22: -5°C ... +60°C) (Cable PUR 24: -40°C ... +70°C) (Cable Radox Tenuis 88: -40°C ... +120°C)

Subject to change

Ordering information/type code

				8254 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]			
0 ... 0.2 ¹⁰⁾	1.2	25	68	0 ... 3 ¹⁰⁾	18	350	F8		
0 ... 0.4 ¹⁰⁾	1.2	25	69	0 ... 5 ¹⁰⁾	18	350	F9		
0 ... 0.6 ¹⁰⁾	1.2	25	70	0 ... 10 ¹⁰⁾	20	350	G0		
0 ... 1.0 ¹⁰⁾	2	25	71	0 ... 15 ¹⁰⁾	30	350	G1		
0 ... 1.6 ¹⁰⁾	3.2	50	73	0 ... 25 ¹⁰⁾	50	700	G3		
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	HO		
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		
Option 5P:	Fivefold overpressure			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	9/16"-18UNF SAE6 male (J1926), seal: accessory 61				61		
	G1/4" male (Manometer) EN 837 ⁹⁾	53	R1/4" male, DIN3858 ⁵⁾				19		
	1/4" NPT male	30	R1/4" male, DIN2999 ⁹⁾				20		
	1/8" NPT male ^{5) 9)}	43	R1/8" male, DIN3858 ⁵⁾				16		
	7/16"-20UNF female SAE J512 with valve opener ⁴⁾	24	M10x1 male, DIN EN ISO 6149-2, seal: accessory 61				32		
	7/16"-20UNF female SAE J512 without valve opener ⁴⁾	44	M12x1.5 male, DIN EN ISO 9974-2, seal: accessory 61 ⁹⁾				49		
	7/16"-20UNF male, DIN3866 ⁴⁾	18	M14x1.5 male DIN EN ISO 6149-2, seal: accessory 61 ⁹⁾				31		
	7/16"-20UNF SAE4 male (J1926), seal: accessory 61	42							
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		
	Male electrical plug MIL-C 26482, 6-pole, metal						02		
	Male electrical plug Deutsch DT04-3P, 3-pole						D3		
	Male electrical plug Deutsch DT04-4P, 4-pole						D4		
	Cable Mat. PVC, IP67/IP68, 2 x 2 x 0.14 mm ² ⁷⁾						22		
	Cable Mat. PUR, IP67/IP68, 4 x 0.25 mm ² ⁷⁾						24		
	Cable Mat. EPD Raychem FDR25, IP67, 4 x 0.2 mm ² ⁷⁾						08		
	Cable Mat. Radox Tenuis, IP67/IP68, 4 x 0.5 mm ² ⁷⁾						88		

			8254 . XX	XX	XX	XX	XX	XX
Output signal	Signal output	Load resistance	I (supply)	U (supply)				
	4 ... 20 mA	See graphic		24 (9 ... 32) VDC				19
	0.5 ... 4.5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				20
	0 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				14
	0.5 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				22
	1 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				25
	0.5 ... 5.5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				24
	1 ... 6 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC				16
	0 ... 10 VDC	≥ 5.0 kΩ to Us-	≤ 15 mA	24 (15 ... 32) VDC				17
	1 ... 10 VDC	≥ 5.0 kΩ to Us-	≤ 15 mA	24 (15 ... 32) VDC				26
	0.1 ... 10.1 VDC	≥ 5.0 kΩ to Us-	≤ 15 mA	24 (15 ... 32) VDC				13
	0.5 ... 4.5 VDC ration.	≥ 5.0 kΩ to Us-	≤ 10 mA	5 (4.75 ... 5.25) VDC				23
	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 Out, Pin 2 +, Pin 3 Ground, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 01, industrial standard)							91
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 3 Out, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)							95
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 3 -, Pin 4 Out (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)							96
	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
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 Out, Pin 4 Ground (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)							E2
	Special electrical connection: Pin 1 Out, Pin 2 -, Pin 3 +, Pin 4 Ground (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 01, industrial standard)							E3
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 4 - (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)							E6
	Special electrical connection: Pin A +, Pin C - (only for output signal 19 and male electrical plug Deutsch DT04-3P, 3-pole)							F0
	Special electrical connection: Pin A +, Pin B Out, Pin C - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug Deutsch DT04-3P, 3-pole)							F1
	Cable length 0.5 m							EM
	Cable length 1.0 m							1M
	Cable length 2.0 m							2M
	Parameterization according to customer specification for output signal PS, T1 (see table "Parameters")							ZC
	Parameterization standard for output signal PS, T1 (see table "Parameters")							ZS
	Multiple packaging ⁸⁾							VM
	Signal processing, cut-off frequency (see table Signal processing)							

¹⁾ Customized pressure ranges upon request²⁾ For electrical connections 32 and 35³⁾ Only with electrical connections 32, 22, 24, 08, 88⁴⁾ Max. allowable pressure range 60 bar at 180 bar overpressure⁵⁾ Max. allowable pressure range 160 bar at 480 bar overpressure⁶⁾ Not for pressure connections 53, 24, 44, 18⁷⁾ Cable length see accessories⁸⁾ The order quantity must be a multiple of 50, only for electrical connections 01, 32, 35, 02, D3, D4, not for pressure connection 30 with electrical connections 02, D3, D4⁹⁾ Upon request¹⁰⁾ Only for pressure connections 17 and 30 and with output signal 4 ... 20 mA, code 19

Signal processing		Rise time (10 ... 90 % nominal pressure)	Output signal			
Code	Cut-off frequency f_G		4 ... 20 mA	0.5 ... 4.5 VDC ratiometric	0 ... 6 VDC	0 ... 10 VDC
GA ¹⁾	11 Hz	32 ms	x	x	-	-
GU ^{1) 2)}	20 kHz	18 µs	x	x	-	-
Standard specification	350 Hz	1 ms	x	x	x	x

¹⁾ Upon request²⁾ Only with electrical connections 32, 35 with shielded cable and 22, 24, 08, 88, only for pressure ranges ≥ 2 bar

Standard products (extra short lead time)						
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]	
NAH2.5A	8254 75 2317 32 0000 0000 19 33 44 61	0 ... 2.5	7.5	9 ... 32	± 0.3	
NAH4.0A	8254 76 2317 32 0000 0000 19 33 44 61	0 ... 4	12	9 ... 32	± 0.3	
NAH6.0A	8254 77 2317 32 0000 0000 19 33 44 61	0 ... 6	18	9 ... 32	± 0.3	
NAH10.0A	8254 78 2317 32 0000 0000 19 33 44 61	0 ... 10	30	9 ... 32	± 0.3	
NAH16.0A	8254 79 2317 32 0000 0000 19 33 44 61	0 ... 16	48	9 ... 32	± 0.3	
NAH25.0A	8254 80 2317 32 0000 0000 19 33 44 61	0 ... 25	75	9 ... 32	± 0.3	
NAH40.0A	8254 81 2317 32 0000 0000 19 33 44 61	0 ... 40	120	9 ... 32	± 0.3	
NAH100.0A	8254 83 2317 32 0000 0000 19 33 44 61	0 ... 100	300	9 ... 32	± 0.3	
NAH250.0A	8254 74 2317 32 0000 0000 19 33 44 61	0 ... 250	750	9 ... 32	± 0.3	
NAH400.0A	8254 84 2317 32 0000 0000 19 33 44 61	0 ... 400	1000	9 ... 32	± 0.3	
NAH600.0A	8254 86 2317 32 0000 0000 19 33 44 61	0 ... 600	1500	9 ... 32	± 0.3	

Parameters				
Name	Standard setting (accessory ZS)	Value range	Short name	Customer adjustment (accessory ZC)
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75 % Measuring range	> RP1, FL1 (2 ... 99 %) Hysteresis ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 (1 ... 98 %) Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 (2 ... 99 %) Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 (1 ... 98 %) Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	0; approx. 2 ^x [ms], x = 3, 4 ... 16	dS1	
Switch point delay time SP2 / RP2 (hysteresis mode) Switch point delay time FH2 / FL2 (window mode)	0	0; approx. 2 ^x [ms], x = 3, 4 ... 16	dS2	
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou1	
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc) Device ready	ou2	

i 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



Specifications			
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 0.5 ... 4.5 VDC: 24 (9...32) VDC 0 ... 5 VDC: 24 (9...32) VDC 0.5 ... 5 VDC: 24 (9...32) VDC 1 ... 5 VDC: 24 (9...32) VDC 0.5 ... 5.5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 10 VDC: 24 (15...32) VDC 1 ... 10 VDC: 24 (15...32) VDC 0.1 ... 10.1 VDC: 24 (15...32) VDC 0.5 ... 4.5 VDC ratiom., 10 ... 90% U_{supply} : 5 ± 0.25 VDC 1 or 2 PNP transistors: 24 (9...32) VDC	
	Rise time	Rise time of the supply voltage: > 32 V/s	
	Switch-on-delay pressure transmitters	100 ms	
	Switch-on-delay pressure switches	50 ms + switching delay time	
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4...20 mA: to $U_s = 32$ VDC 0.5...4.5 VDC, 0...5 VDC, 0.5...5 VDC, 1...5 VDC, 0.5...5.5 VDC, 1...6 VDC, 0...10 VDC, 1...10 VDC, 0.1...10.1 VDC: to $U_s = 28$ VDC 0.5...4.5 VDC ratiometric: to $U_s = 14$ VDC 1 or 2 PNP transistors: to $U_s = 32$ VDC	
Environmental conditions	Media temperature	-40°C ... +125°C	
	Ambient temperature	-40°C ... +125°C (Cable PVC 22: -5°C ... +60°C) (Cable PUR 24: -40°C ... +70°C) (Cable Radox Tenuis 88: -40°C ... +120°C)	
	Protection ¹⁾	IP65, IP67, IP68	
	Humidity	Max. 95 % relative	
	Vibration	15 g RMS (20...2000 Hz) (EN60068-2-64) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) (EN60068-2-6)	
	Shock	50 g / 11 ms 100 g / 6 ms Male electrical plug M12x1 (EN60068-2-27) ²⁾	
	Emission	EN/IEC 61000-6-3	
EMC Protection	Immunity	EN/IEC 61000-6-2	
	Sensor (wetted parts)	1.4542 (AISI630)	
Mechanical Data	Pressure connection (wetted parts)	1.4542 (AISI630)	
	Housing	1.4301 (AISI304)	
	Sealing	FPM/EPDM/NBR	
	Male electrical plug	See ordering information	
	Weight	appr. 50 g	
	Mounting torque	25 Nm	

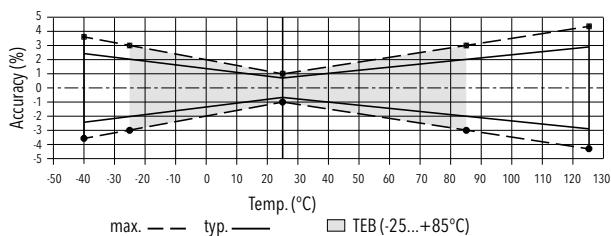
¹⁾ See electrical connection²⁾ For electrical connections 32 and 35

Analogue output			$\geq 0.2 \text{ bar}$ $\leq 0.6 \text{ bar}$	$> 0.6 \text{ bar}$ $< 2.0 \text{ bar}$	$\geq 2.0 \text{ bar}$
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 2.0	± 1.5	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.8	± 0.6	± 0.3
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.2	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.02	± 0.02	± 0.01
	Long term stability 1 year	[% FS typ.]	± 0.3	± 0.2	± 0.1
	Mounting dependency with 180° rotation (vibration and shock)	[% FS max.]	0.5 mbar	0.5 mbar	0.5 mbar
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure				

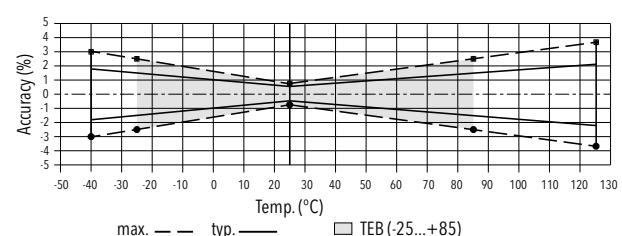
Switching output			
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	Long term stability 1 year	[% FS typ.]	± 0.1
Adjustment range of switchpoints	1 ... 99 % FS		
Distance switch point	$\geq 1.0 \% \text{ FS}$		
Switch point > reset point	Switchpoint > reset point		
Switching resistance	$\leq 3 \Omega$		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	-40°C ... +85°C	(Ambient and media temperature)	$\leq 400 \text{ mA}$, total of both switching outputs
	+85°C ... +125°C	(Ambient and media temperature)	$\leq 200 \text{ mA}$, total of both switching outputs
Current limiting	integrated		
Delay time	0; approx. $2^x [\text{ms}]$, $x = 3, 4 \dots 16$		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

Measuring accuracy

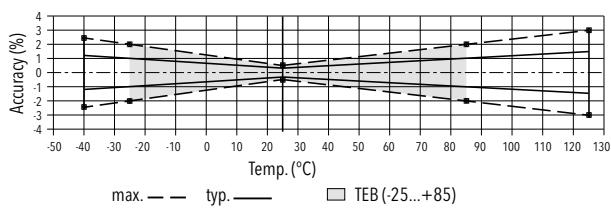
$\geq 0.2 \text{ bar} \dots \leq 0.6 \text{ bar}$



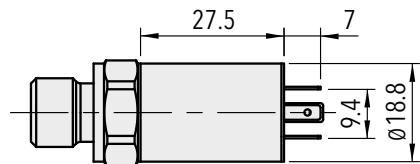
$> 0.6 \text{ bar} \dots < 2.0 \text{ bar}$



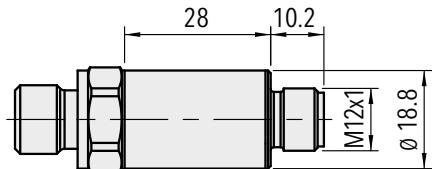
$\geq 2.0 \text{ bar}$



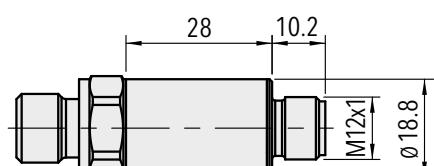
Dimensions



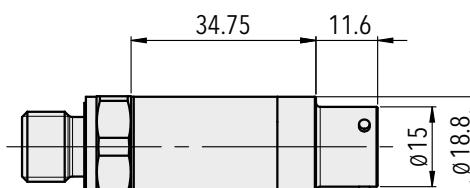
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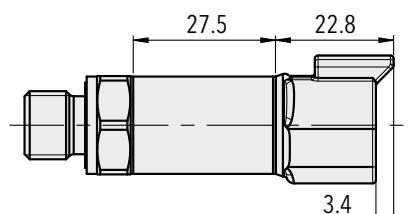
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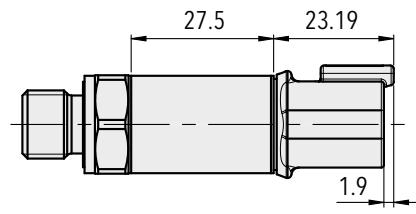
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8254.XX.XXXX.02.XX.XX



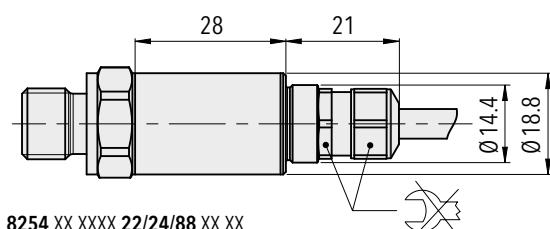
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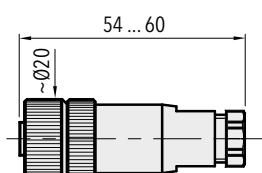
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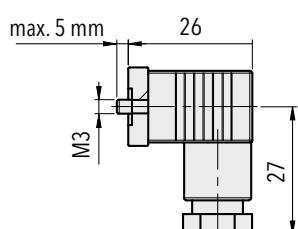
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8254.XX.XXXX.22/24/88.XX.XX

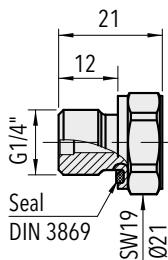


8254.XX.XXXX.XX.XX.33

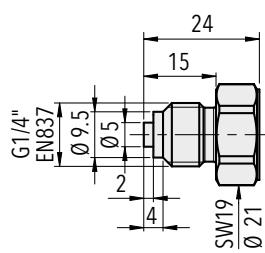


8254.XX.XXXX.XX.XX.34

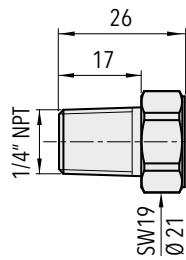
Dimensions



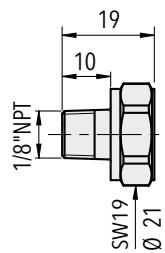
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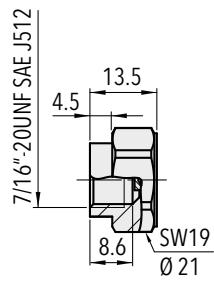
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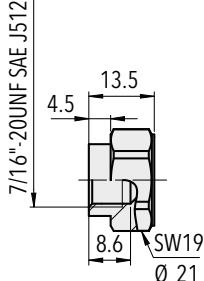
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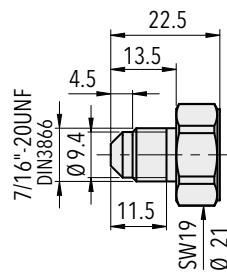
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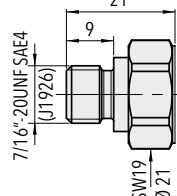
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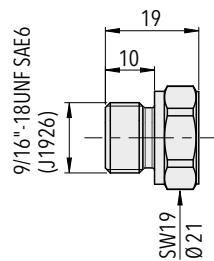
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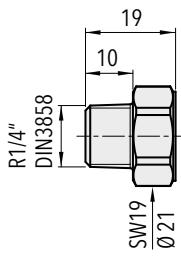
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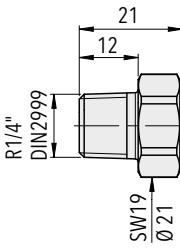
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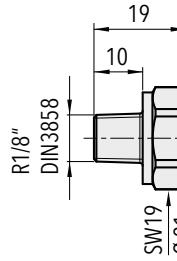
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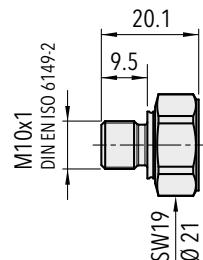
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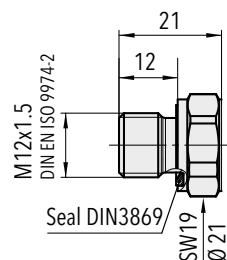
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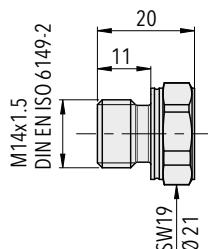
8254.XX.XX16.XX.XX.XX



8254.XX.XX32.XX.XX.XX



8254.XX.XX49.XX.XX.XX



8254.XX.XX31.XX.XX.XX

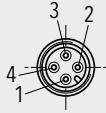
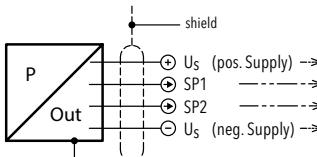
Electrical connection

Protection / electrical connection										
	IP65 ^{1) 2)}		IP67 ^{1) 2)}			IP67 ^{1) 2)}		IP67, IP68 ^{1) 4)}		IP67, IP68 ^{1) 4)}
Industrial standard Contact distance 9.4 mm	01			M12x1 32	4-pole	5-pole 35		MIL-C 26482 02	DT04-3P D3	DT04-4P D4
Output signal	90	92		E1	E6		4	A	F0	2
8254.XX.XXXX.XX.19	2	1	1	1	1				A	A
	1	4	2	3	2	4	1	B	B	1
	4	3	4	4	4	2	5	E	C	3
Output signal	91	E3		95	96	E2		A	F1	2
8254.XX.XXXXXX.13/14/16/17/20/ 22/23/24/25/26	1	2	3	1	1	1	2	A	A	2
	2	1	1	2	3	4	4	B	B	4
	3	4	2	3	4	3	3	C/D	B	1
	4	3	4	4	2	2	5	E	C	3

Protection / electrical connection										
	IP67, IP68 ^{2) 3)}			IP67 ²⁾			IP67, IP68 ^{2) 3)}			
	22/24			08			88			
Output signal										
8254.XX.XXXX.XX.19	white			red			brown			
	brown			black			black			
	yellow			green			yellow / green			
Output signal										
8254.XX.XXXXXX.13/14/16/17/20/ 22/23/24/25/26	white			red			brown			
	green			white			blue			
	brown			black			black			
	yellow			green			yellow / green			

¹⁾ Provided female connector is mounted according to instructions²⁾ Ventilation via male electric plug/cable end³⁾ IP68, 20 bar, 30 min.⁴⁾ IP68, 100 mbar, 4h

Electrical connection

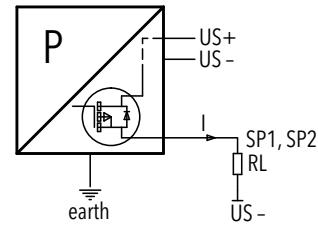
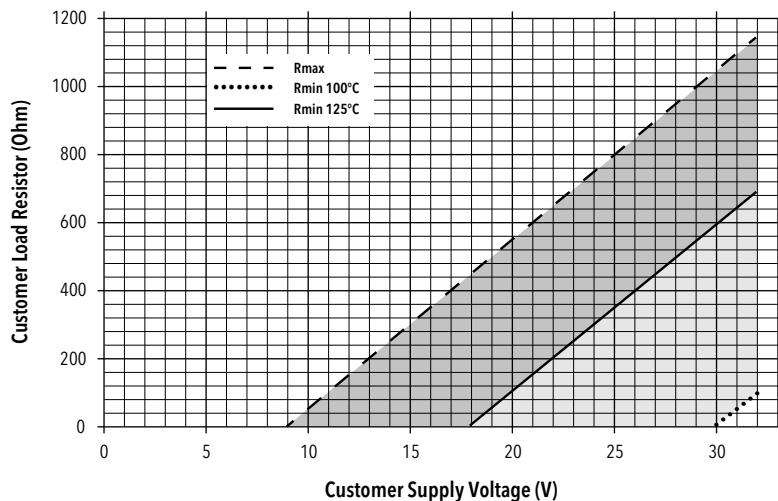
Protection / electrical connection							
	IP67 ^{1) 2)}	IP67, IP68 ^{2) 3)}	IP67 ²⁾	IP67, IP68 ^{2) 3)}			
M12x1 4-pole 32	Cable	Cable	Cable	Cable			
	22/24		08		88		
	8254.XX.XXXX.XX.PS/T1	PS	T1	PS	T1	PS	T1
		1 4 2 3	1 4 - 3	white green yellow brown	white green - brown	red white green black	red white - black
						brown blue yellow / green black	brown blue - black

¹⁾ Provided female connector is mounted according to instructions

²⁾ Ventilation via male electric plug/cable end

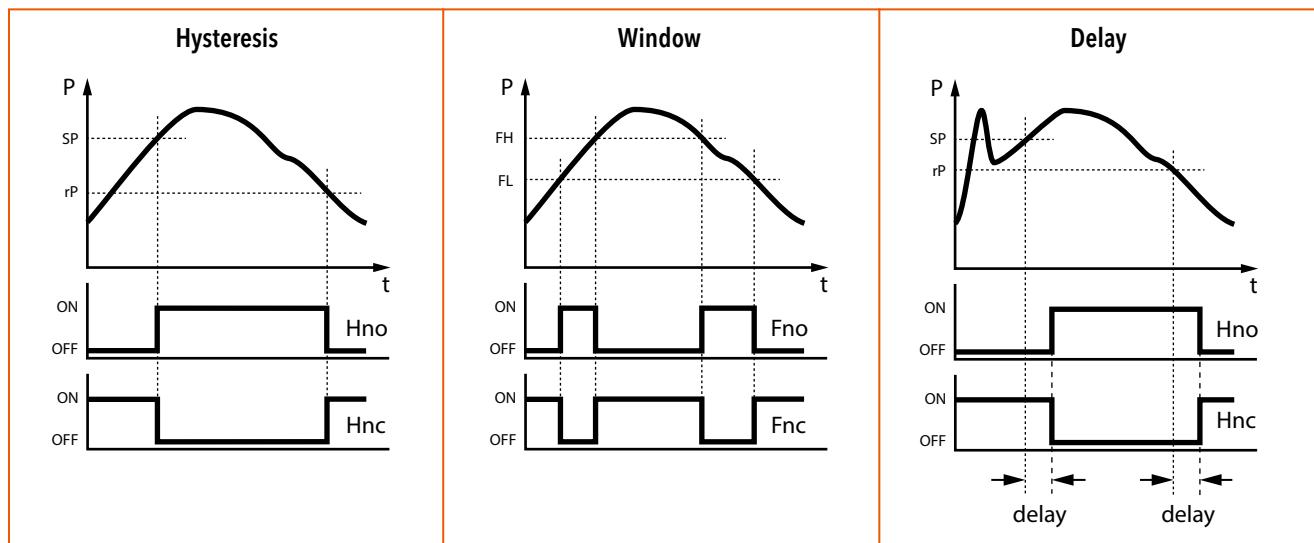
³⁾ IP68, 20 bar, 30 min.

4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



Connection of loads to switching output

Functions switching output



Additional information

Documents

[Data sheet](http://www.trafag.com/H72304)
www.trafag.com/H72304
[Instructions](http://www.trafag.com/H73303)
www.trafag.com/H73303
[Flyer](http://www.trafag.com/H70682)
www.trafag.com/H70682

ENGINE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The engine and shipbuilding pressure transmitter NAE 8256 features the extremely robust and stable thin-film-on-steel sensor element. The NAE 8256 is the smallest pressure transmitter of its kind with ship approvals. The wide temperature range from -40°C up to +125°C and triple overpressure safety makes it the first choice in rough environments such as marine applications.



Applications

- Shipbuilding
- Engine manufacturing
- Hydraulics

Features

- Measuring accuracy 0.3 %, 0.5 %
- Completely welded steel sensor system without additional seals
- Smallest design
- High resistance to over pressure
- Excellent long-term stability

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	Approval / conformity	ABS, BV, DNV-GL, KRS, LRS, NKK, RINA, RMRS
Accuracy @ 25°C typ.	0.5 %: ± 0.5 % FS typ. 0.3 %: ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

				8256 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]			
	0 ... 6 ^{5) 6)}	18	100	0 ... 100 ^{5) 6)}	300	1450	G7		
	0 ... 10	30	200	0 ... 150	450	2500	G8		
	0 ... 16	48	200	0 ... 200	600	2500	GA		
	0 ... 25	75	300	0 ... 250	750	2500	G9		
	0 ... 40	120	300	0 ... 300	900	4000	HA		
	0 ... 60	180	400	0 ... 400	1200	4000	HO		
	0 ... 100	300	500	0 ... 500	1200	4000	H1		
	0 ... 160	480	750	0 ... 1000	3000	5000	H2		
	0 ... 250	750	1000	0 ... 1500	4500	7000	H3		
	0 ... 400	1000	2000	0 ... 2000	6000	10000	H5		
	0 ... 600	1500	2500	0 ... 3000	9000	14500	G4		
				0 ... 5000	12500	21750	H4		
				0 ... 7500	18750	29000	H6		
Sensor	Relative pressure, accuracy: 0.5 %						25		
	Relative pressure, accuracy: 0.3 %						23		
Pressure connection	G1/4" male, seal: DIN 3869 (accessories 61/63/83)						17		
	G1/4" male (Manometer) EN 837 ⁶⁾						53		
	1/4" NPT male						30		
	M10x1 male						32		
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		
Accessories	Female electrical plug M12x1, 5-pole ²⁾						33		
	Female electrical connector industrial standard ³⁾						34		
	Pressure peak damping element ø 0.4 mm						44		
	Seal FPM, -18°C ... +125°C ⁴⁾						61		
	Seal EPDM, -40°C ... +125°C ⁴⁾						63		
	Seal NBR, -25°C ... +100°C ⁴⁾						83		
	Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 - (only for 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 32, M12x1, 4-pole)						E1		

¹⁾ Customized pressure ranges upon request²⁾ For electrical connections 32 and 35³⁾ For electrical connection 01⁴⁾ Only with pressure connection 17 (G1/4")⁵⁾ Only with sensor 23 (accuracy 0.3 %)⁶⁾ Only with ship approval DNV-GL

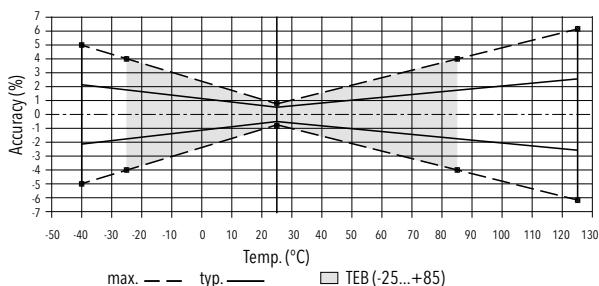
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
NAE6.0A	8256 77 2317 32 0000 0000 19 33 44 61	0 ... 6	18	9 ... 32	± 0.3
NAE10.0A	8256 78 2317 32 0000 0000 19 33 44 61	0 ... 10	30	9 ... 32	± 0.3
NAE16.0A	8256 79 2317 32 0000 0000 19 33 44 61	0 ... 16	48	9 ... 32	± 0.3
NAE25.0A	8256 80 2317 32 0000 0000 19 33 44 61	0 ... 25	75	9 ... 32	± 0.3
NAE40.0A	8256 81 2317 32 0000 0000 19 33 44 61	0 ... 40	120	9 ... 32	± 0.3
NAE100.0A	8256 83 2317 32 0000 0000 19 33 44 61	0 ... 100	300	9 ... 32	± 0.3
NAE250.0A	8256 74 2317 32 0000 0000 19 33 44 61	0 ... 250	750	9 ... 32	± 0.3
NAE400.0A	8256 84 2317 32 0000 0000 19 33 44 61	0 ... 400	1000	9 ... 32	± 0.3
NAE600.0A	8256 86 2317 32 0000 0000 19 33 44 61	0 ... 600	1500	9 ... 32	± 0.3

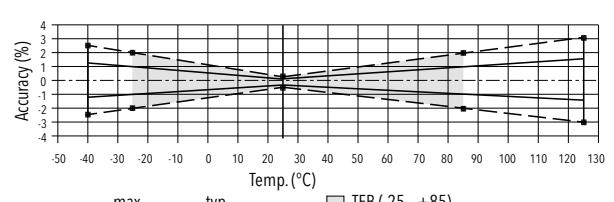
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	0.5 %: $\pm 1.75\%$ FS typ. 0.3 %: $\pm 1.0\%$ FS typ.
	Accuracy @ 25°C typ.	0.5 %: $\pm 0.5\%$ FS typ. 0.3 %: $\pm 0.3\%$ FS typ.
	NLH @ 25°C (BSL) typ.	0.5 %: $\pm 0.2\%$ FS typ. 0.3 %: $\pm 0.2\%$ FS typ.
	TC zero point and span typ.	0.5 %: $\pm 0.03\%$ FS/K typ. 0.3 %: $\pm 0.01\%$ FS/K typ.
	Long term stability 1 year typ.	$\pm 0.1\%$ FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24(9...32)VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4 ... 20 mA: to $U_{\text{supply}} = 32\text{ V}$
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection ¹⁾	IP65, IP67
	Humidity	IEC 60068-2-30 (damp heat cyclic, 100 % RH @ +55°C)
	Vibration	15 g RMS (20...2000 Hz) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C)
	Shock	50 g / 11 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	1.4301 (AISI304)
	Sealing	FPM/NBR/EPDM
	Male electrical plug	See ordering information
	Weight	~ 50 g
	Mounting torque	25 Nm

¹⁾ See electrical connection

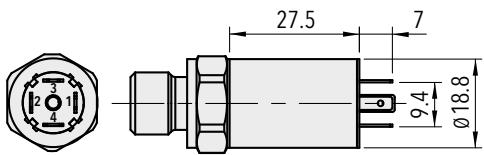
Measuring accuracy 0.5 %



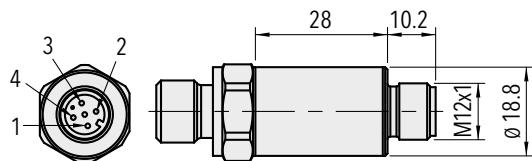
Measuring accuracy 0.3 %



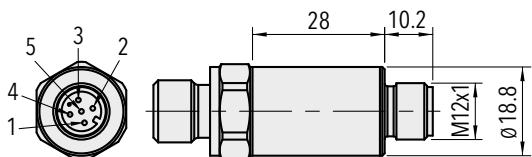
Dimensions



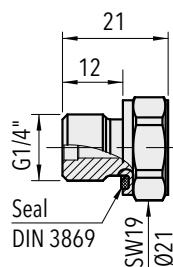
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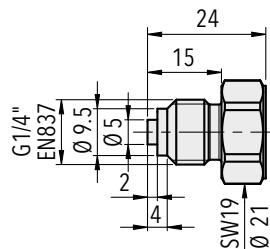
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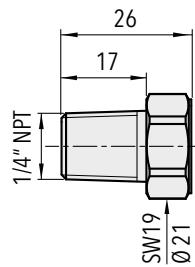
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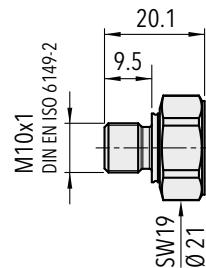
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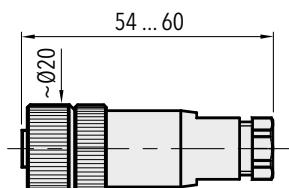
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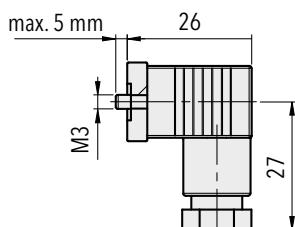
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8256.XX.XX32.XX.XX.XX

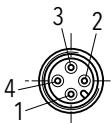
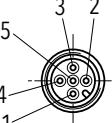
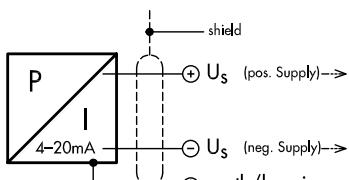


8256.XX.XXXX.XX.XX.33



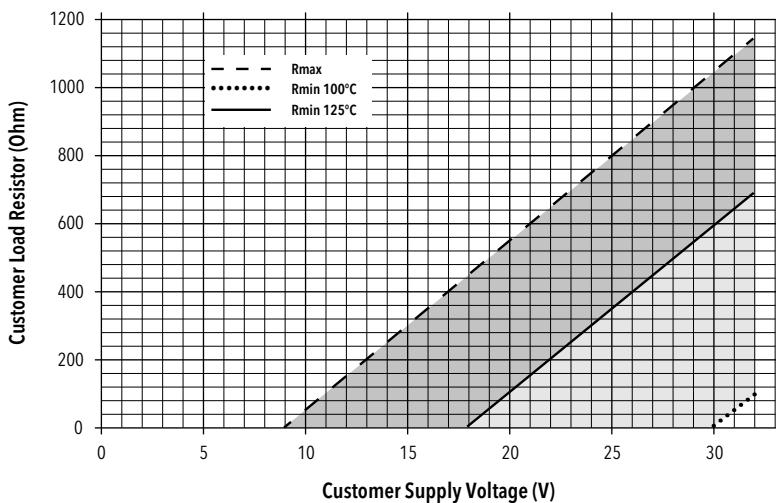
8256.XX.XXXX.XX.XX.34

Electrical connection

Protection / electrical connection				
	IP65*)		IP67*)	
	Industrial standard Contact distance 9.4 mm 01		4-pôle 32	M12x1 5-pôle 35
				
Output signal		90	E1	
8256.xx.xxxx.xx.19	2 1 4	2 4 3	1 3 4	4 1 5

*) Provided female connector is mounted according to instructions

4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



Additional information

Documents	Data sheet	www.trafag.com/H72305
	Instructions	www.trafag.com/H73303
	Flyer	www.trafag.com/H70684

LOW PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The very compact NSL low pressure transmitter is the only pressure transmitter in the market with thin-film-on-steel-membrane and pressure ranges down to 0 .. 200 mbar. This combination allows also for low pressure ranges accurate measurements with excellent longterm stability. Through the extraordinary high burst pressures up to 125 times nominal pressure the NSL is the first choice for critial applications.



Applications

- Shipbuilding
- Engine manufacturing
- Machine tools
- Process technology
- Water treatment
- Test benches



Features

- Smallest design
- Relative or absolute pressure measurement
- Excellent temperature resistance
- Improved vibration resistance
- 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 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	Approval / conformity	GL, DNV, RINA
Accuracy @ 25°C typ.	0.15 ... 0.8 % FS typ.		

Subject to change

Ordering information/type code

8257 . 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 ... 0.2 ²⁾	1.2	25	68	0 ... 3 ³⁾	18	350		
0 ... 0.4	1.2	25	69	0 ... 5 ³⁾	18	350		
0 ... 0.6	1.5	25	70	0 ... 10 ³⁾	25	350		
0 ... 1.0	2.0	25	71	0 ... 15 ³⁾	30	350		
0 ... 1.6	3.5	80	73	0 ... 25 ³⁾	50	1200		
0 ... 2.5	5.0	80	75	0 ... 30 ³⁾	70	1200		
Sensor	Relative pressure, accuracy: 0.3% Absolute pressure, accuracy: 0.3%					23		
	Relative pressure, accuracy: 0.15% ⁴⁾					43		
	Absolute pressure, accuracy: 0.15% ⁴⁾					21		
	Absolute pressure, accuracy: 0.15% ⁴⁾					41		
Pressure connection	G1/4" male (O-Ring) 1/4"NPT male					17		
						30		
Electrical connection	Male electrical plug, Industrial standard (contact distance 9.4mm), Mat. PBT Male electrical plug M12x1, 4-pole, Mat. PBT Male electrical plug M12x1, 5-pole, Mat. PBT					01		
						32		
						35		
Output	Output	Load resistance		I (supply)	U (supply)			
	4 ... 20mA	(Usupply-9V) / 20mA		≤ 10 mA	24 (9 ... 32)VDC	19		
	0 ... 5 VDC ⁵⁾	≥ 2.0 kΩ		≤ 10 mA	24 (9 ... 32)VDC	14		
	0 ... 10 VDC ⁵⁾	≥ 5.0 kΩ		≤ 10 mA	24 (15 ... 32)VDC	17		
	0.5 ... 4.5 VDC ⁵⁾	≥ 2.0 kΩ		≤ 10 mA	5 (4.5 ... 5.5)VDC ration.	23		
Accessories	Female electrical plug M12x1, 5-pole, for executions 32 and 35 Female electrical plug industrial standard Pressure peak damping element ø 1.0 mm Pressure peak damping element ø 0.3 mm Pressure peak damping element ø 0.5 mm					33		
						34		
						40		
						43		
						45		

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Relative pressure only³⁾ No ship approval DNV⁴⁾ Only for pressure ranges from 0.6 bar / 10 psi⁵⁾ No ship approval

i Identical construction with higher pressure ranges: Data sheet No. H72250, H72300

Standard products (extra short lead time)

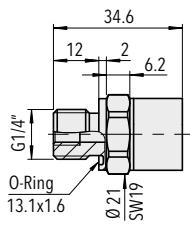
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
NSL0.2A	8257 68 2317 32 0000 0000 19 33 43	0 ... 0.2	1.2	9 ... 32	± 0.8
NSL0.4A	8257 69 2317 32 0000 0000 19 33 43	0 ... 0.4	1.2	9 ... 32	± 0.5
NSL0.6A	8257 70 2317 32 0000 0000 19 33 43	0 ... 0.6	1.5	9 ... 32	± 0.3
NSL1.0A	8257 71 2317 32 0000 0000 19 33 43	0 ... 1.0	2	9 ... 32	± 0.3
NSL1.6A	8257 73 2317 32 0000 0000 19 33 43	0 ... 1.6	3.5	9 ... 32	± 0.3
NSL2.5A	8257 75 2317 32 0000 0000 19 33 43	0 ... 2.5	5	9 ... 32	± 0.3

Specifications		
Electrical Data	Output / supply voltage	4...20 mA: 24 (9...32) VDC 0...5 VDC: 24 (9...32) VDC 0...10 VDC: 24 (15...32) VDC 0.5...4.5 VDC: 5 VDC ratio.
	Rise time	Typ. 1 ms/10...90 % nominal pressure
	Switch-on-delay	1 s
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection ¹⁾	Min. IP65
	Humidity	Max. 95 % relative
	Vibration	25g (20...2000 Hz)
EMC Protection	Shock	100 g/11ms
	Emission	EN/IEC 61000-6-4
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	1.4301 (AISI304)
	Sealing	FKM 70 Sh
	Male electrical plug	See ordering information
	Weight	~ 50 g
Mounting torque		25 Nm (see "Accuracy")

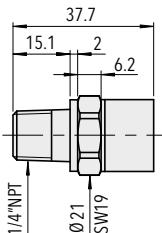
¹⁾ See electrical connection

Accuracy			Sensor 23/43 (0.3%)				Sensor 21/41 (0.15%)	
Range	[bar]		0 ... 0.2	0 ... 0.4	0 ... 0.6	0 ... 1.0	0 ... 1.6	0...0.6 0...1.6
	[psi]		0 ... 3	0 ... 5	0 ... 10	0 ... 15	0 ... 25	0...1.0 0...2.5
							0 ... 30	0...15 0...30
NLH @ +25°C (+77°F) BSL	[% FS typ.]		0.2	0.2	0.2	0.2	0.2	0.2
TEB @ -25...+85°C (-13...+185°F)	[% FS typ.]		2	1.5	1	1	1	0.5 0.5
Accuracy@ +25°C (+77°F)	[% FS typ.]		0.8	0.5	0.3	0.3	0.3	0.15 0.15
Long term stability 1 year @ +25°C (+77°F)	[% FS typ.]		0.3	0.15	0.1	0.1	0.1	0.1 0.1
TC zero point and span	[% FS/K typ.]		0.02	0.015	0.01	0.01	0.01	0.002 0.002
Mounting dependency with 180° rotation (Vibration and shock: multiply this value with number of g)	[% FS typ.]		0.25	0.13	0.09	0.05	< 0.05	0.05 < 0.05
Error mounting torque @ 25Nm	[% FS typ.]		0.25	0.13	0.09	0.05	0.05	0.05 0.05

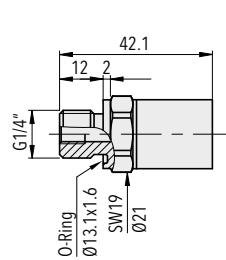
Dimensions



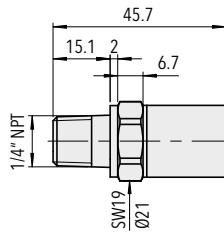
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8257.XX.2117.XX.XX.XX



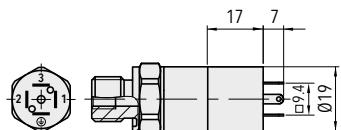
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8257.XX.2130.XX.XX.XX



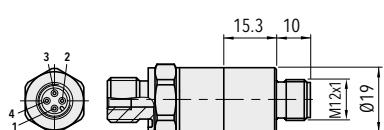
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8257.XX.4117.XX.XX.XX



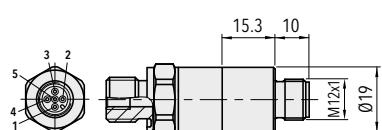
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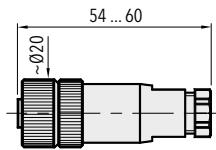
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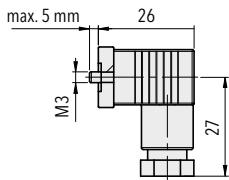
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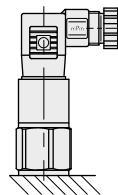
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8257.XX.XXXX.XX.XX.33

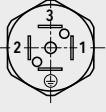
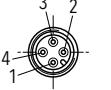
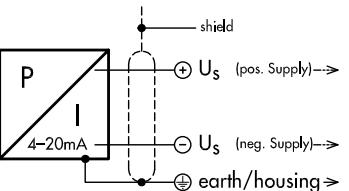
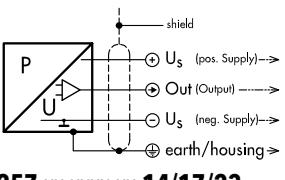


8257.XX.XXXX.XX.XX.34



Recommended mounting position
(Mounting dependency with 180° rotation see 'Accuracy')

Electrical Connection

Protection / electrical connection			
	IP65*)	IP67*)	
Output signal	Industrial standard EN175301-803A 01 	4-pole 32 	M12x1 5-pole 35 
	 8257.xx.XXXX.xx.19	2 1 4 1 5	1 3 4 1 5
 8257.xx.XXXX.xx.14/17/23	1 2 3 4	1 2 3 4	2 4 3 3 5

*) Provided female connector is mounted according to instructions

Additional information			
Documents	Data sheet		www.trafag.com/H72302
	Instructions		www.trafag.com/H73250
	Flyer		www.trafag.com/H70671

RAILWAY PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The pressure transmitter NAR 8258 with increased accuracy of 0.3 % was specifically designed for railway vehicles (EN 50155) and has a long-term stable thin-film-on-steel sensor cell. The wide temperature range from -40°C to +125°C and the triple over-pressure protection make the NAR 8258 the ideal choice for railway vehicles in rough environmental conditions.



Applications

- Railways



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 (Cable Radox Tenuis 88: -40°C ... +120°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.		

Subject to change

Ordering information/type code

				8258 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Pressure measurement range [ps]	Over pressure [ps]	Burst pressure [ps]			
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 ⁵⁾	75	300	80	0 ... 250	750	2500	G9		
0 ... 40 ⁵⁾	120	300	81	0 ... 300 ⁵⁾	900	4000	HA		
0 ... 60 ⁵⁾	180	400	82	0 ... 400 ⁵⁾	1200	4000	HO		
0 ... 100 ⁵⁾	300	500	83	0 ... 1000 ⁵⁾	3000	5000	H2		
0 ... 160 ⁵⁾	480	750	85	0 ... 1500 ⁵⁾	4500	7000	H3		
0 ... 250	750	1000	74	0 ... 2000 ⁵⁾	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		
	G1/4" male (Manometer) EN 837 ⁵⁾						53		
	1/4" NPT male						30		
	7/16"-20UNF SAE4 male (J1926), seal: accessory 61						42		
	R1/4" male, DIN2999 ⁵⁾						20		
	M10x1 male, DIN EN ISO 6149-2, seal: accessory 61						32		
	M12x1.5 male, DIN EN ISO 9974-2, seal: accessory 61 ⁵⁾						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		
	Cable Mat. Radox Tenuis, IP67/IP68, 4 x 0.5 mm ²						88		
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 ⁴⁾						40		
	Pressure peak damping element ø 0.4 mm ⁴⁾						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		
	Parameterization according to customer specification for output signal PS, T1 (see table "Parameters")						ZC		
	Parameterization standard for output signal PS, T1 (see table "Parameters")						ZS		

¹⁾ Customized pressure ranges upon request²⁾ For electrical connections 32 and 35³⁾ Only with electrical connection 32⁴⁾ Not for pressure connection 53⁵⁾ Upon request

Parameters				
Name	Standard setting (accessory ZS)	Value range	Short name	Customer adjustment (accessory ZC)
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75 % Measuring range	> RP1, FL1 (2 ... 99 %) Hysteresis ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 (1 ... 98 %) Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 (2 ... 99 %) Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 (1 ... 98 %) Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	0; approx. 2^x [ms], $x = 3, 4 \dots 16$	dS1	
Switch point delay time SP2 / RP2 (hysteresis mode) Switch point delay time FH2 / FL2 (window mode)	0	0; approx. 2^x [ms], $x = 3, 4 \dots 16$	dS2	
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou1	
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc) Device ready	ou2	

i 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



Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 1 or 2 PNP transistors: 24 (9...32) VDC
	Switch-on-delay pressure transmitters	100 ms
	Switch-on-delay pressure switches	50 ms + switching delay time
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4...20 mA: to $U_s = 32$ VDC 1 or 2 PNP transistors: to $U_s = 32$ VDC
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C (Cable Radox Tenuis 88: -40°C ... +120°C)
	Protection ¹⁾	IP65, IP67, IP68
	Humidity	Max. 95 % relative
	Vibration	15 g RMS (20...2000 Hz) (EN60068-2-64) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) (EN60068-2-6)
	Shock	50 g / 11 ms 100 g / 6 ms Male electrical plug M12x1 (EN60068-2-27) ³⁾
EMC Protection	Emission	EN/IEC 61000-6-3 EN50121-3-2
	Immunity	EN/IEC 61000-6-2 EN50121-3-2 ²⁾
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	1.4301 (AISI304)
	Sealing	FPM/EPDM/NBR
	Male electrical plug	See ordering information
	Weight	appr. 50 g
	Mounting torque	25 Nm

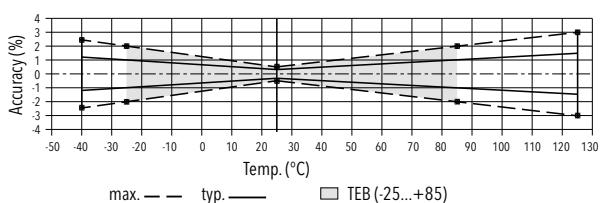
¹⁾ See electrical connection²⁾ Surge voltage on shield, shield connected on both sides³⁾ For electrical connections 32 and 35

Analogue output

Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.01
	Long term stability 1 year	[% FS typ.]	± 0.1
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure		

Switching output

Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	Long term stability 1 year	[% FS typ.]	± 0.1
Adjustment range of switchpoints	1 ... 99 % FS		
Distance switch point	$\geq 1.0\% \text{ FS}$		
Switch point > reset point	Switchpoint > reset point		
Switching resistance	$\leq 3 \Omega$		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	-40°C ... +85°C +85°C ... +125°C	(Ambient and media temperature) (Ambient and media temperature)	$\leq 400 \text{ mA, total of both switching outputs}$ $\leq 200 \text{ mA, total of both switching outputs}$
Current limiting	integrated		
Delay time	0; approx. $2^x[\text{ms}]$, $x = 3, 4 \dots 16$		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

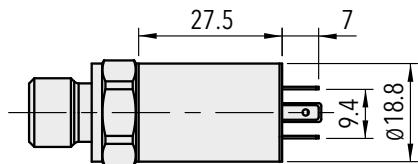
Measuring accuracy

Additional specifications railways			
Environmental conditions	Cold	EN 60068-2-1	Ab: -40°C, 2 h (not in operation) Ae: -40°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclic	EN 60068-2-30	Db: 55°C, variant 1, 2 cycles (2 x 24 h)
	Ambient temperature	EN 50155	Class TX
	Vibration and shock	EN 61373	Vibration: category 3 ¹⁾ Shock: category 3 ¹⁾
	Dielectrical strength	EN 50155	710 VDC
	Resistance of insulation	EN 50155	>100 MΩ, 500 VDC
	Behavior in case of fire (electrical connections 01, 32, 35)	EN 45545-2	Weight: < 10 g Surface: < 0.2 m²
Supply	Nominal voltage	EN 50155 ²⁾	24 V
	Interruptions of the voltage supply	EN 50155 ²⁾	Class S1
	Switching between two supply voltages	EN 50155 ²⁾	Class C1

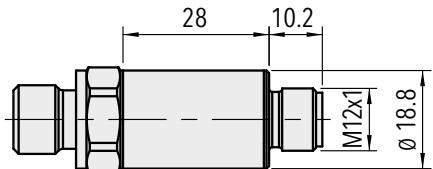
¹⁾ In Category 3 the 2010 versions' higher severity levels apply in each case

²⁾ Chapter 5.1 Voltage supply

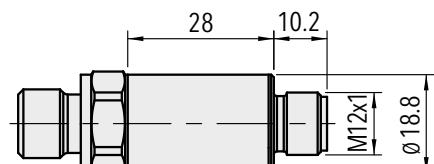
Dimensions



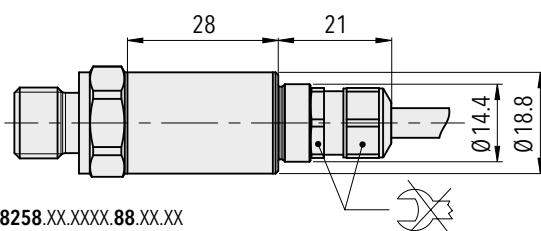
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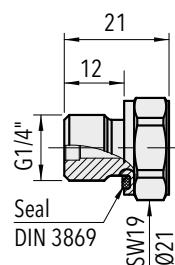
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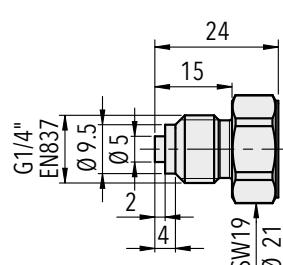
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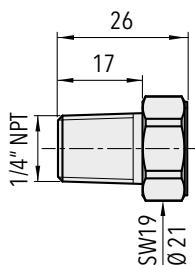
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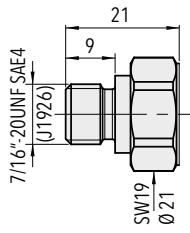
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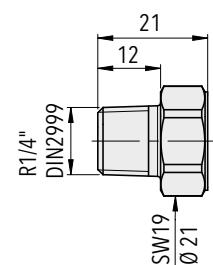
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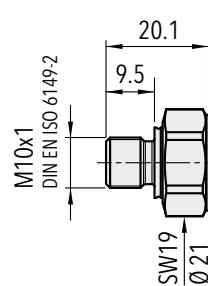
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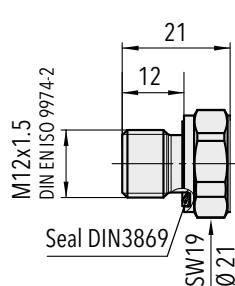
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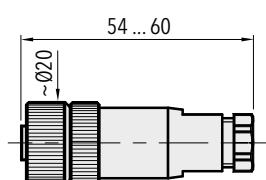
8258.XX.XX20.XX.XX.XX



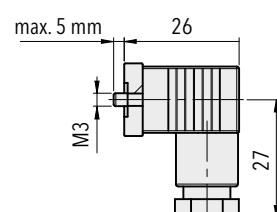
8258.XX.XX32.XX.XX.XX



8258.XX.XX49.XX.XX.XX

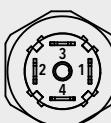
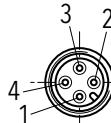
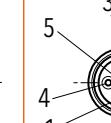
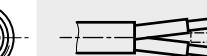
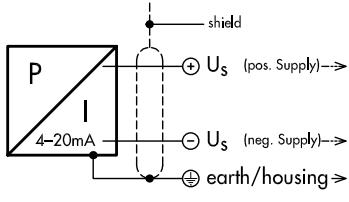
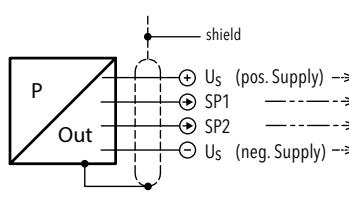


8258.XX.XXXX.XX.XX.33



8258.XX.XXXX.XX.XX.34

Electrical connection

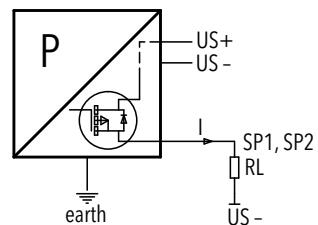
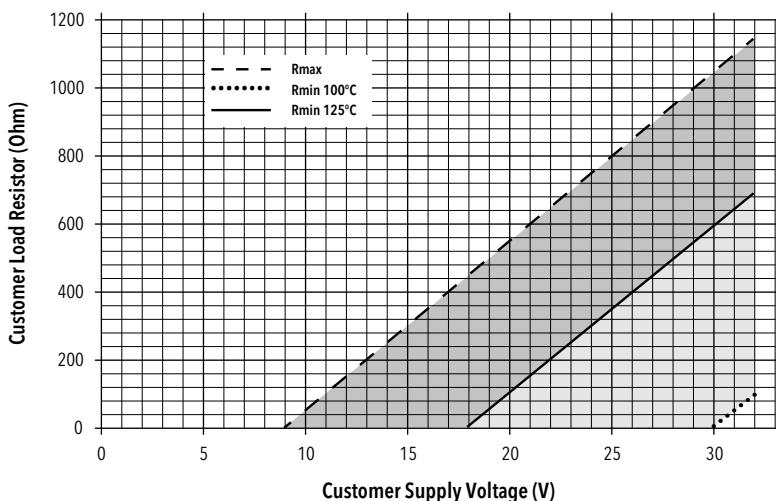
Protection / electrical connection						
	IP65 ¹⁾	IP67 ^{1,2)}	IP67, IP68 ^{2,3)}	Cable		
Industrial standard Contact distance 9.4 mm	01	32	35			
						
	90	92	E1		brown	
			PS	T1	black	
					yellow / green	

¹⁾ Provided female connector is mounted according to instructions

²⁾ Ventilation via male electric plug/cable end

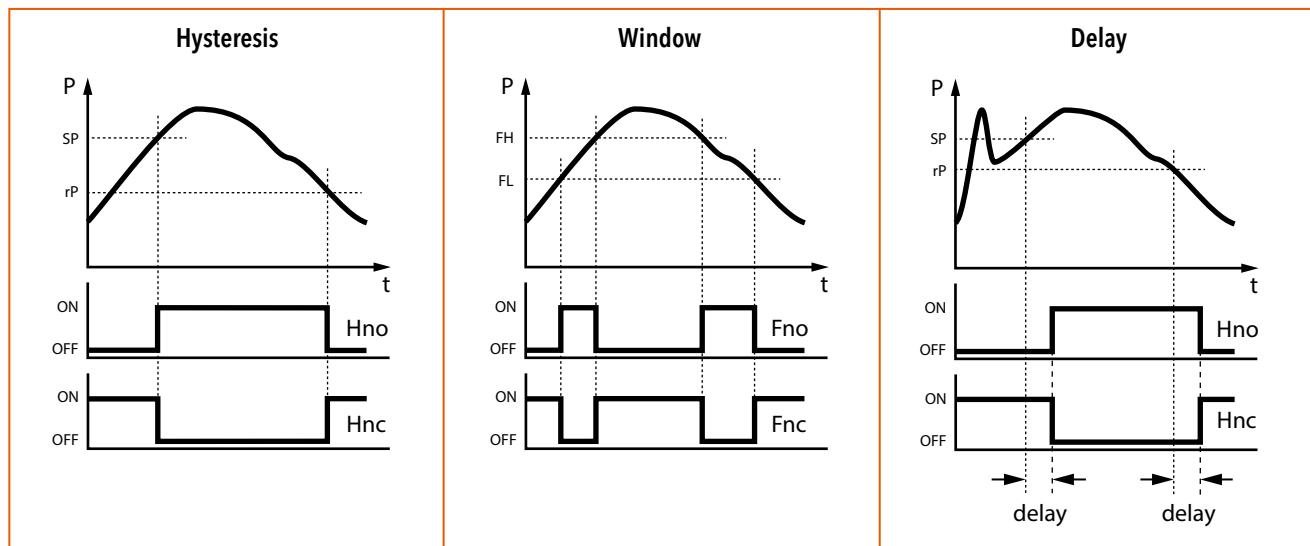
³⁾ IP68, 20 bar, 30 min.

4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



Connection of loads to switching output

Functions switching output



Additional information

Documents

[Data sheet](http://www.trafag.com/H72307)
www.trafag.com/H72307
[Instructions](http://www.trafag.com/H73303)
www.trafag.com/H73303
[Flyer](http://www.trafag.com/H70697)
www.trafag.com/H70697

CANOPEN MINIATURE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The CANopen miniature pressure transmitter CMP is based on Trafag's own thin-film-on-steel technology which offers high accuracy and longterm stability even in harsh environments. The most compact design and the proven high-performance electronics with CiA-certified, comprehensive CANopen-functionality makes the CMP 8270 best-in-class pressure transmitter.



Applications

- Engine manufacturing
- Railways
- Machine tools
- Hydraulics
- Process technology
- Test benches

Features

- Small and rugged construction
- Different accuracy classes
- Measurement of pressure and temperature
- CANopen bus protocol DS301/DS404 supports CAN 2.0A/B
- LSS (DS 305 V2.0)

Technical Data

Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	$\pm 0.5\%$ FS typ. $\pm 0.15\%$ FS typ. $\pm 0.1\%$ FS typ.
Measuring range	0 ... 0.2 to 0 ... 600 bar 0 ... 3 to 0 ... 7500 psi	Media temperature	-50°C ... +135°C
Output signal	Bus protocol CANopen DS404	Ambient temperature	-40°C ... +125°C

Subject to change

Ordering information/type code

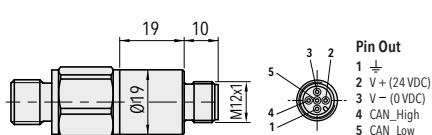
				8270 . XX	XX	XX	XX	XX	XX
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]			
0 ... 0.2 ^{2) 3) 5)}	1.2	25	68	0 ... 3 ^{2) 3) 5)}	18	350	F8		
0 ... 0.4 ^{2) 5)}	1.2	25	69	0 ... 5 ^{2) 5)}		350	F9		
0 ... 0.6 ^{2) 5)}	1.5	25	70	0 ... 10 ^{2) 5)}	25	350	G0		
0 ... 1 ²⁾	2	25	71	0 ... 15 ²⁾	30	350	G1		
0 ... 1.6 ²⁾	3.5	50	73	0 ... 25 ²⁾	50	700	G3		
0 ... 2.5 ²⁾	5	50	75	0 ... 30 ²⁾	60	700	G5		
0 ... 4	12	100	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	1200	2000	86	0 ... 3000	6000	14500	G4		
				0 ... 5000	10000	21750	H4		
				0 ... 7500	15000	29000	H6		
Sensor	Relative pressure, accuracy: 0.5 %	25	Absolute pressure, accuracy: 0.5 % ⁴⁾	45					
	Relative pressure, accuracy: 0.15 %	21	Absolute pressure, accuracy: 0.15 % ⁴⁾	41					
	Relative pressure, accuracy: 0.1 %	24	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				
	M10x1 male, DIN EN ISO 6149-2				32				
Electrical connection	Male electrical plug M12x1, 5-pole, Mat. PA				35				
Output signal	CANopen bus protocol with pre-adjustment Node-ID = 1, baudrate = 20 kbps				52				
	CANopen bus protocol with pre-adjustment, Node-ID: 1, automatic baudrate detection				53				
Accessories	Female electrical plug M12x1, 5-pole				33				
	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				

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Only with pressure connection 17 (G1/4") or 30 (1/4"NPT)³⁾ Only for relative pressure⁴⁾ Max. allowable pressure range 40 bar/600 psi⁵⁾ Only for sensors 0.5 % accuracy (Ordering no. 25 and 45)

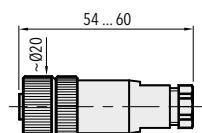
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
CMP4.0M	8270 76 2517 35 0000 0000 52 43	0 ... 4	12	8 ... 32	± 0.5
CMP6.0M	8270 77 2517 35 0000 0000 52 43	0 ... 6	12	8 ... 32	± 0.5
CMP10.0M	8270 78 2517 35 0000 0000 52 43	0 ... 10	20	8 ... 32	± 0.5
CMP16.0M	8270 79 2517 35 0000 0000 52 43	0 ... 16	32	8 ... 32	± 0.5
CMP25.0M	8270 80 2517 35 0000 0000 52 43	0 ... 25	50	8 ... 32	± 0.5
CMP40.0M	8270 81 2517 35 0000 0000 52 43	0 ... 40	80	8 ... 32	± 0.5
CMP100.0M	8270 83 2517 35 0000 0000 52 43	0 ... 100	200	8 ... 32	± 0.5
CMP250.0M	8270 74 2517 35 0000 0000 52 43	0 ... 250	500	8 ... 32	± 0.5
CMP400.0M	8270 84 2517 35 0000 0000 52 43	0 ... 400	800	8 ... 32	± 0.5

Dimensions

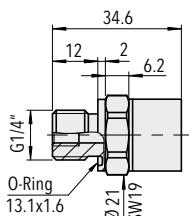


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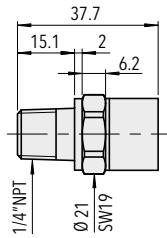


8270.XX.XXXX.XX.XX.33

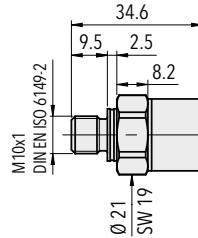
≤ 0 ... 2.5 bar



8270.XX.XX17.XX.XX.XX

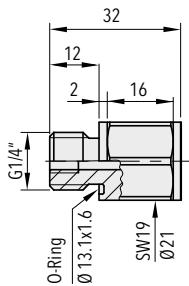


8270.XX.XX30.XX.XX.XX

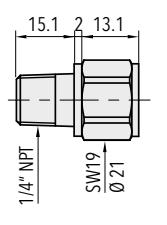


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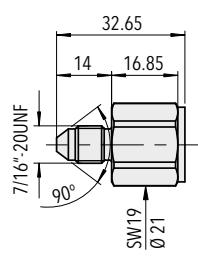
> 0 ... 2.5 bar



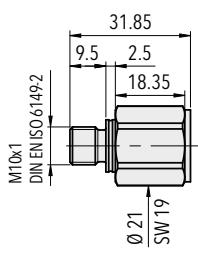
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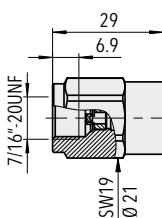
8270.XX.XX30.XX.XX.XX



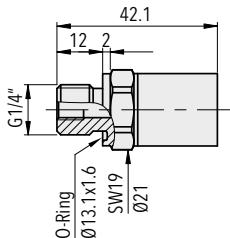
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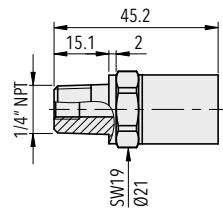
8270.XX.XX30.XX.XX.XX



8270.XX.XX24.XX.XX.XX



8270.XX.4417.XX.XX.XX



8270.XX.4430.XX.XX.XX

Specifications			
Electrical Data	Output / supply voltage	Bus protocol CANopen / 12/24 (8...32) VDC	
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure	
	Current consumption	ca. 20 mA	
Environmental conditions	Media temperature	-50°C ... +135°C	
	Ambient temperature	-40°C ... +125°C	
	Protection ¹⁾	Min. IP67	
	Humidity	Max. 95 % relative	
	Vibration	40 g (20 ... 2000 Hz)	
EMC Protection	Shock	100 g / 11 ms	
	Emission	EN/IEC 61000-6-4	
	Immunity	EN/IEC 61000-6-2	
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)	
	Pressure connection (wetted parts)	Pressure ranges ≤ 250 bar: 1.4542 (AISI630) Pressure ranges > 250 bar: 1.4301 (AISI304)	
	Housing	1.4301 (AISI304)	
	Sealing	FKM 70 Sh	
	Male electrical plug	See ordering information	
	Weight	~ 60 g	
Mounting torque		25 Nm	

¹⁾ Provided female connector is mounted according to instructions

Accuracy				
		Measuring accuracy 0.5 % Ordering No. 25/45	Measuring accuracy 0.15 % Ordering No. 21/41	Measuring accuracy 0.1 % Ordering No. 24/44
TEB @ -25 ... +85°C	[% FS typ.]	± 2.0	± 0.2	± 0.1
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.15	± 0.1
NLH @ +25°C (BSL)	[% FS typ.]	± 0.3	± 0.15	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.002	± 0.002
Long term stability 1 year @ +25°C	[% FS typ.]	< ± 0.2	± 0.1	< ± 0.1
Signal of pressure sensor				
Resolution		≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms	≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms	≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms
Sampling rate (fix)		1ms (1 kHz)	1ms (1 kHz)	1ms (1 kHz)
Measuring filter (moving average)	[ms]	1 ... 65'000	1 ... 65'000	1 ... 65'000
Signal of temperature sensor				
Total error @ -25 ... +85°C	[°C typ.]	not calibrated	± 1	± 1
Sampling rate (fix)			10x100 ms (1 Hz)	10x100 ms (1 Hz)
Measuring filter (moving average)	[s]		0.1 ... 6500	0.1 ... 6500

CANopen Features

- CiA conformance tested
- All CiA bus speeds: 10kbit/s...1Mbit/s
- Autobaud
- Supports 11/29 bit identifiers: CAN 2.0 A/B
- Frequency of measurement and transmission upto 1kHz
- Moving average filter: 1ms...65s (pressure)
- Additional PDO mode: delta and limit triggered
- All standardised data types for PDO's Floating point, integer with 32, 24, 16 bits
- Eligible, prefix adjustable units pressure: bar, Pa, psi, mmHg, mmWg, atm, at; temperature: °C, °F, K
- Auto-zero function
- Auto-Start-Mode for operation without master
- 4 Pressure - and 4 temperature thresholds with 8 free definable CAN messages
- Separate storage of parameters for communication and application
- Flash-Update
- Baudrate detection

CANopen- Bus Protocol

- Output signal: CAN BUS (ISO 118982)
- CANopen: DS301 V4.0
- Device profile: DS404 V1.2
- Baudrate (Autobaude): 10kbit/s...1Mbit/s
- Error control: Nodeguarding, Heartbeat
- Node ID: LSS (DSP 305 V2.0) fully implemented, proprietary
- No. of PDO's: 4 TX
- PDO modes: event-time-triggered, remotely requested, sync (cyclic/acyclic)
- PDO linking: yes
- PDO mapping: yes
- No. of SDO's: 1 server
- Emergency message: yes

Additional information

Documents	Data sheet	www.trafag.com/H72614
	Instructions	www.trafag.com/H73614
	Flyer	www.trafag.com/H70653

FLUSH MEMBRANE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The Flush Membrane Transmitter FPT is based on Trafag's own thin-film-on-steel technology and the in-house developed high performance ASIC chip electronics. It therefore ensures a high level of accuracy over a wide temperature range and excellent long-term stability in combination with an extraordinary smooth diaphragm surface.



Applications

- Engine manufacturing
- Machine tools
- Hydraulics
- Process technology
- Water treatment
- Food Industry
- Chemical and pharmaceutical industry

Features

- Flush membrane with smooth and plain surface
- Completely welded sensor system
- Very compact design
- Accuracy NLH 0.1% FS typ.
- Excellent long-term stability

Technical Data			
Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.4 % FS
Measuring range	0 ... 1 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC	Ambient temperature	-40°C ... +85°C (Cable PVC 22: -5°C ... +60°C)

Subject to change

Ordering information/type code

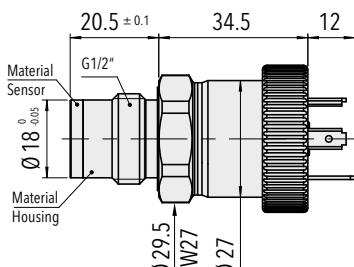
				8235 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]						
	0 ... 1	6	12	71					
	0 ... 2.5	6	12	75					
	0 ... 4	8	12	76					
	0 ... 6	12	18	77					
	0 ... 10	20	30	78					
	0 ... 16	32	48	79					
	0 ... 25	50	75	80					
	0 ... 40	80	120	81					
	0 ... 100	200	300	83					
Sensor	Relative pressure				23				
Pressure connection	G1/2" male, flush membrane					91			
Electrical connection	Male electrical plug EN 175301-803-A (DIN 43650-A) Mat. PA						05		
	Male electrical plug M12x1, 5-pol., Mat. PA						35		
	Male electrical plug, Industrial standard (contact distance 9.4 mm) Mat. PBT						01		
	Male electrical plug Packard Metri Pack						51		
	Cable IP67 (cable length see "Accessories") Mat. PVC (cable gland PA6-3), -5°C ... +60°C ²⁾						22		
	Cable IP68 max. 3m, medium +10°C...+35°C, max. 1 bar relative						68		
Output signal	Signal output	Load resistance	I (supply)	U (supply)					
	4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 30 VDC			19		
	0 ... 5 VDC	> 2.5 kΩ	< 10 mA	10 ... 30 VDC			14		
	1 ... 6 VDC	> 5.0 kΩ	< 10 mA	10 ... 30 VDC			16		
	0 ... 10 VDC	> 5.0 kΩ	< 10 mA	15 ... 30 VDC			17		
Accessories	Sealing Ring DIN 3869, Mat. FPM (FKM) -15°C ... +125°C						61		
	Sealing Ring DIN 3869, Mat. NBR, -25°C ... +100°C						69		
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C						58		
	Female electrical plug M12x1, 5-pole						33		
	Female electrical connector industrial standard						34		
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A) ²⁾						92		
	Special electrical connection: Pin 1 Out, Pin 2 -, Pin 3 + (only for output 14, 16, 17 and male electrical plug EN175301-803-A / DIN43650-A) ²⁾						98		
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 Out (only for output 14, 16, 17 and male electrical plug EN175301-803-A / DIN43650-A) ²⁾						97		
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 GR (Only for output 4...20mA and male electrical plug M12x1, 5-pol.) ²⁾						94		
	Special electrical connection: Pin 1 +, Pin 2 - (Only for male electrical plug Packard Metri Pack 3-pol.) ²⁾						99		
	Membrane electropolished Ra=0.4µm						EP		
	Cable length 1.5 m						1M		
	Cable length 3.0 m						3M		
	Cable length 5.0 m						5M		

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Details see electrical connection

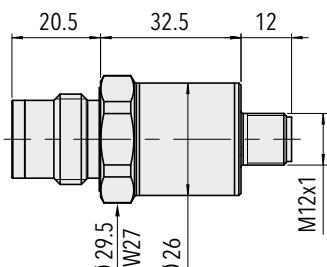
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Accuracy @ 25°C typ. [%]
FPT1.0A	8235 71 2391 05 0000 0000 19 58 61	0 ... 1	6	4 ... 20 mA	± 0.4
FPT2.5A	8235 75 2391 05 0000 0000 19 58 61	0 ... 2.5	5	4 ... 20 mA	± 0.4
FPT4.0A	8235 76 2391 05 0000 0000 19 58 61	0 ... 4	8	4 ... 20 mA	± 0.4
FPT6.0A	8235 77 2391 05 0000 0000 19 58 61	0 ... 6	12	4 ... 20 mA	± 0.4
FPT10.0A	8235 78 2391 05 0000 0000 19 58 61	0 ... 10	20	4 ... 20 mA	± 0.4
FPT16.0A	8235 79 2391 05 0000 0000 19 58 61	0 ... 16	32	4 ... 20 mA	± 0.4
FPT25.0A	8235 80 2391 05 0000 0000 19 58 61	0 ... 25	50	4 ... 20 mA	± 0.4
FPT40.0A	8235 81 2391 05 0000 0000 19 58 61	0 ... 40	80	4 ... 20 mA	± 0.4
FPT100.0A	8235 83 2391 05 0000 0000 19 58 61	0 ... 100	200	4 ... 20 mA	± 0.4

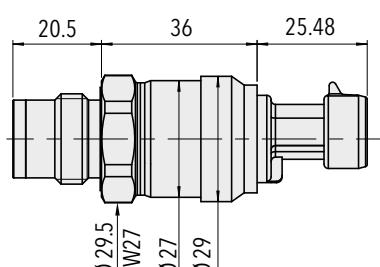
Dimensions



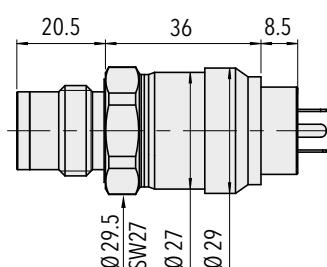
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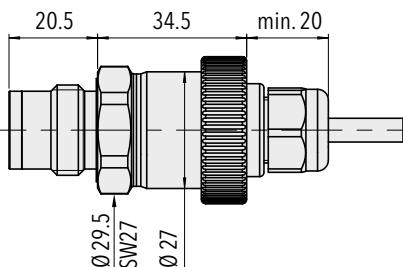
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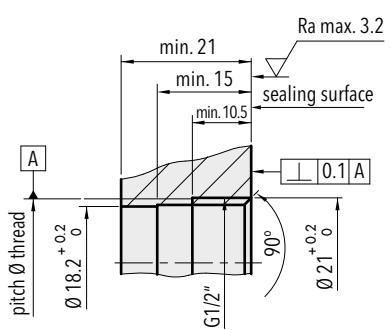
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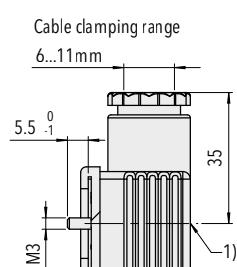
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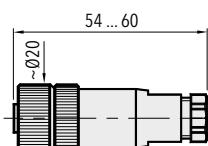


Mounting thread G1/2" DIN EN ISO 1179-1

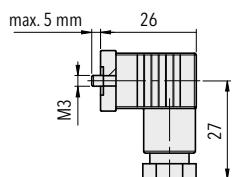


1) Torque moment 50...60 Ncm

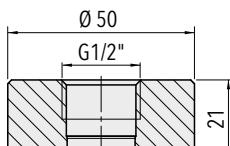
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8235.XX.XXXX.XX.XX.34



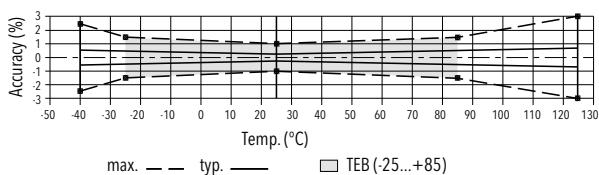
Welding flange for G1/2"

(1.4301)
Ordering No. C27804

Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 0.5 % FS typ.
	Accuracy @ 25°C typ.	± 0.4 % FS
	NLH @ 25°C (BSL) typ.	± 0.1 % FS typ.
	TC zero point and span typ.	± 0.005 % FS/K typ.
	Long term stability 1 year typ.	± 0.2 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC 0 ... 5 VDC: 24 (10 ... 30) VDC 1 ... 6 VDC: 24 (10 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	max. 1.5 s
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +85°C (Cable PVC 22: -5°C ... +60°C)
	Protection ¹⁾	IP65, IP67, IP68
	Humidity	Max. 95 % relative
	Vibration	15 g (50...2000 Hz)
	Shock	50 g / 3 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	1.4301 (AISI304)
	Sealing	FPM (FKM) NBR
	Weight	~ 80 ... 110 g (without cable)
	Mounting torque	20 ... 25 Nm not lubricated 15 ... 20 Nm lubricated

¹⁾ See electrical connection

Measuring accuracy



Electrical connection

Protection / electrical connection								
	IP65*)		IP67/IP68 max. 3m		IP67*)		IP67*)	
	Industrial standard EN175301-803A 05		Cable **) 22/68		M12x1 5-pole 35		Packet Metri Pak 3-pole 51	Industrial standard EN175301-803A 01
Output signal	Standard	92			Standard	94		99
	2	1		white	4	1	1	2
8235.XX.XXXX.XX.19	1	2		brown	1	3	2	3
	⊕	⊕		⊕	5	5		⊕
	Standard	98	97					99
8235.XX.XXXX.XX.14/16/17	2	3	1	white	2	1	1	1
	3	1	3	green	4	3	2	2
	1	2	2	brown	3	2	3	3
	⊕	⊕	⊕	⊕	5			⊕

*) Electrical connections 05/35/51: provided female connector is mounted according to instructions

**) Ventilation via cable end; shield in the device is not connected

Additional information

Documents

Data sheet

www.trafag.com/H72316

Instructions

www.trafag.com/H73316

Flyer

www.trafag.com/H70648

RAILWAY PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The EPR pressure transmitter was specifically designed for the high demand of the railway industry and offers reliable and accurate pressure measurement over a wide temperature range. Its excellent long-term stability is based on the leading thin-film-on-steel sensor technology from Trafag.



Applications

- Railways

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.		

Subject to change

Ordering information/type code

				8283 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	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	1/2" NPT male ²⁾		51				
	G1/4" male (Seal)	17	M14x1.5 male DIN6149-2 ²⁾		31				
	R1/4" male, DIN3858 ²⁾	19	7/16"-20UNF male, DIN3866 ^{2) 4)}		18				
	G1/2" male (Manometer) ²⁾	11	7/16"-20UNF male SAE (J1926-3) ²⁾		42				
	1/4" NPT male	30	7/16"-20UNF female SAE J512 with valve opener ⁴⁾		24				
	1/4"- 18 NPT female ²⁾	13							
Electrical connection	Male electrical plug EN 175301-803-A, Mat. PA				05				
	Male electrical plug M12x1, 5-pole, Mat. PBT				35				
	Male electrical plug MIL-C 26482, 6-pole ¹¹⁾				02				
	Cable PUR (Screwed cable gland PA 6-3), -20°C ... +70°C ^{6) 7) 9)}				24				
	Cable PVC (Screwed cable gland PA 6-3), -5°C ... +60°C ^{6) 7) 8) 9)}				22				
	Cable Raychem (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, material 1.4305 ⁵⁾				40				
	Pressure peak damping element ø 0.4 mm, Material 1.4305 ⁵⁾				44				
	Female electrical connector EN 175301-803-A(DIN43650-A)/NBR, -40°C ... +90°C				58				
	Female electrical connector EN 175301-803-A(DIN43650-A)/Silicone, -40°C ... +125°C				56				
	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				
	Multiple packaging ¹⁰⁾				VM				

¹⁾ Customized pressure ranges upon request²⁾ Upon request³⁾ Only with pressure connection 17 (G1/4")⁴⁾ Max. allowable pressure range 60 bar at 120 bar overpressure⁵⁾ Not for pressure connections 10, 11, 13, 18, 24⁶⁾ Cable length see accessories (max. length 50 m, in 5-meter sections)⁷⁾ IP68, max. 3 m, Media +10°C ... +35°C⁸⁾ Cable length max. 3 m, for pressure ranges ≤ 16 bar⁹⁾ Not according to standard EN 45545-2¹⁰⁾ The order quantity must be a multiple of 50, only for electrical connections 05 and 35¹¹⁾ Only for pressure connections 13, 17, 19

Specifications

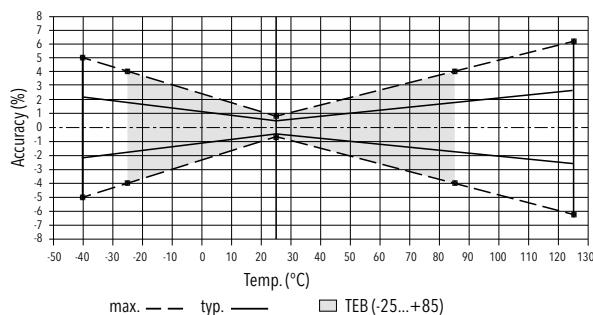
Electrical Data		Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC
	Rise time		Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay		100 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.		4 ... 20 mA: bis Us = 32 VDC
Environmental conditions			
Media temperature			-40°C ... +125°C
Ambient temperature			-40°C ... +125°C
Protection ¹⁾			IP65, IP67, IP68
Humidity			Max. 95 % relative
Vibration			15 g RMS (20...2000 Hz) acc.to EN 60068-2-64 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) acc.to EN 60068-2-6
Shock			500 g / 1 ms acc.to EN 60068-2-27
EMC Protection		Emission	EN/IEC 61000-6-3 EN50121-3-2
		Immunity	EN/IEC 61000-6-2 EN50121-3-2 ²⁾
Mechanical Data		Sensor (wetted parts)	1.4542 (AISI630)
		Pressure connection (wetted parts)	1.4542 (AISI630)
		Housing	1.4542 (AISI630)
		Sealing	FPM/EPDM/NBR
		Male electrical plug	See ordering information
		Weight	appr. 80 ... 110 g
		Mounting torque	25 Nm

¹⁾ See electrical connection²⁾ Surge voltage on shield, shield connected on both sides

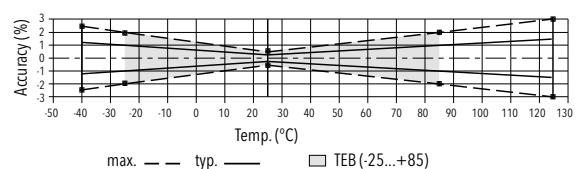
Accuracy

		Measuring accuracy 0.5 % Ordering No. 25	Measuring accuracy 0.3 % Ordering No. 23
TEB @ -25 ... +85°C	[% FS typ.]	± 1.75	± 1.0
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.2
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.01
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.1	± 0.1

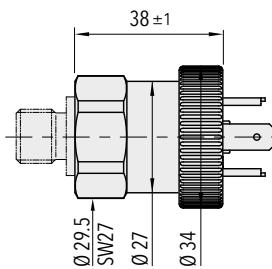
Measuring accuracy 0.5 %



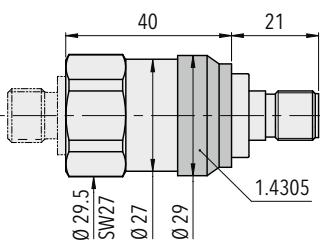
Measuring accuracy 0.3 %



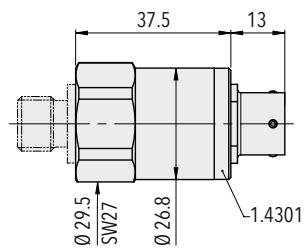
Dimensions



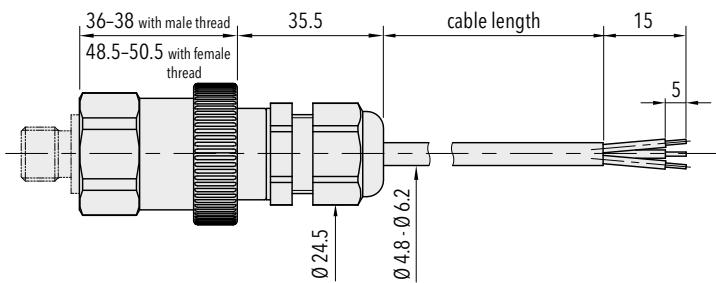
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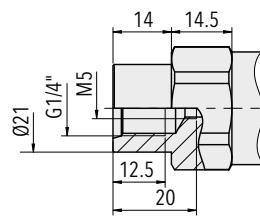
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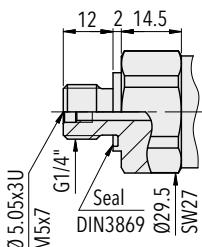
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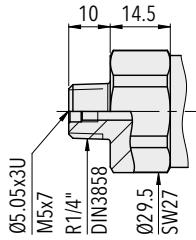
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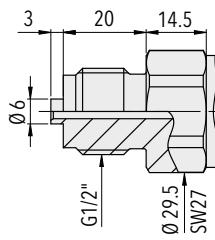
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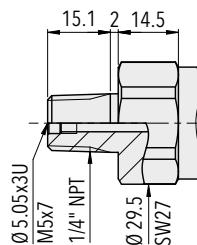
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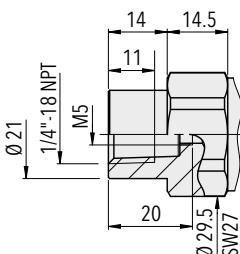
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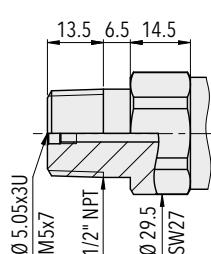
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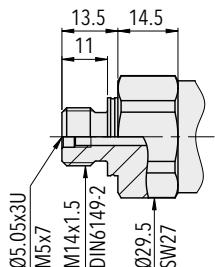
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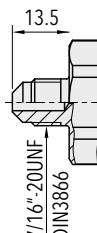
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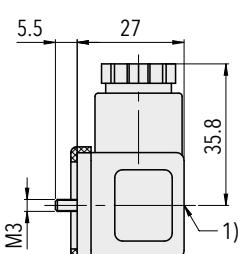
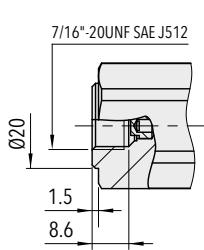
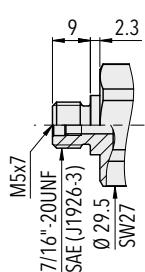
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8283.XX.XX31.XX.XX.XX



8283.XX.XX18.XX.XX.XX

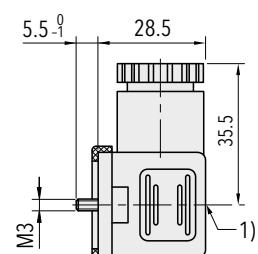


1) Tightening torque 50...60 Ncm

8283.XX.XX42.XX.XX.XX

8283.XX.XX24.XX.XX.XX

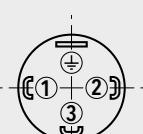
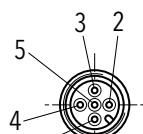
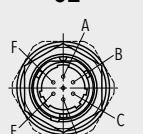
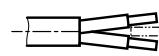
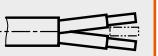
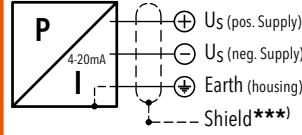
8283.XX.XXXX.XX.XX.56



1) Tightening torque 50...60 Ncm

8283.XX.XXXX.XX.XX.58

Electrical connection

Protection / electrical connection					
	IP65*) **)	IP67*) **)	IP67*) **)	IP68 max. 3 m	IP68 max. 3 m
	Industrial standard EN175301-803A 05 	M12x1 5-pole 35 	MIL-C 26482 02 	Cable**)****) 24/22 	Cable ***)/****) 08 
Output signal	 8283.XX.XXXX.XX.19	Standard 92	2 1 1 ⊕	4 1 5 A B E	white brown yellow red black green

*) Provided female connector is mounted according to instructions

**) Ventilation via male electric plug/cable end

***) Only cable versions or female electrical plug with shield connection

****) Not according to standard EN 45545-2

Additional specifications railways			
Environmental conditions	Cold	EN 60068-2-1	Ab: -40°C, 2 h (not in operation) Ae: -40°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclical	EN 60068-2-30	Db: 55°C, variant 1, 2 cycles (2 x 24 h)
	Vibration and shock	EN 61373	Vibration: category 3 ¹⁾ Shock: category 3 ¹⁾
	Dielectrical strength	EN 50155	710 VDC
	Resistance of insulation	EN 50155	>100 MΩ, 500 VDC
	Behavior in case of fire (only electrical connections 05, 35)	EN 45545-2	Weight: < 10 g Surface: < 0.2 m²
Supply	Nominal voltage	EN 50155	24 V
	Interruptions of the voltage supply	EN 50155	Class S1
	Switching between two supply voltages	EN 50155	Class C1

¹⁾ Male electrical plug EN 175301-803-A, cat. 2

Additional information			
Documents	Data sheet	www.trafag.com/H72319	
	Instructions	www.trafag.com/H73317	
	Flyer	www.trafag.com/H70601	

INDUSTRIAL PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The industrial pressure transmitter EPI 8287 features the extremely robust and stable thin-film-on-steel sensor element from its well-proven predecessor EPI 8297. In combination with the new inhouse developed ASIC TX it offers a wide temperature range up to 125°C and triple overpressure safety which makes it the perfect solution for a wide range of demanding applications.



Applications

- Machine tools
- Hydraulics
- Industrial applications

Features

- Excellent long-term stability
- Completely welded steel sensor system without additional seals
- Accuracy classes 0.3%, 0.5%
- Optional: 5-fold overpressure resistance
- Optionally with housing material AISI316L

Technical Data			
Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % 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 Cable PVC: -5°C ... +60°C Cable PUR: -20°C ... +70°C Cable Raychem: -20°C ... +100°C

Subject to change

Ordering information/type code

				8287 . 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	
	Option 5P: Fivefold overpressure			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 class: 0.5 %; Material pressure connection and housing: 1.4404 (AISI316L) ^{2) 3) 5)}								35
	Relative pressure, accuracy: 0.3 %; Material pressure connection and housing: 1.4542 (AISI630)								23
	Relative pressure, accuracy class: 0.3 %; Material pressure connection and housing: 1.4404 (AISI316L) ^{2) 3) 5)}								33
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
	1/4"- 18 NPT female ²⁾								13
	1/2" NPT male ²⁾								51
	M14x1.5 male DIN6149-2 ²⁾								31
	7/16"-20UNF male, DIN3866 ^{2) 6)}								18
	7/16"-20UNF male SAE4 (J1926) ²⁾								42
	7/16"-20UNF female SAE J512 with valve opener ⁶⁾								24
Electrical connection	Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA								05
	Male electrical plug M12x1, 5-pole, Mat. PBT								35
	Male electrical plug Packard Metri Pack, Mat. PBT								51
	Male electrical plug industrial standard (contact distance 9.4 mm), Mat. PBT								01
	Male electrical plug MIL-C 26482, 6-pole, metal ¹²⁾								02
	Cable PUR (Screwed cable gland PA 6-3), -20°C ... +70°C ^{8) 9)}								24
	Cable PVC (Screwed cable gland PA 6-3), -5°C ... +60°C ^{8) 9) 10)}								22
	Cable Raychem (Screwed cable gland PA 6-3), -20°C ... +100°C ^{8) 9) 10)}								08

			8287 . XX	XX	XX	XX	XX	XX
Output signal	Signal output	Load resistance	I (supply)	U (supply)				
	4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 32 VDC				19
	0 ... 5 VDC	> 2.5 kΩ	< 10 mA	9 ... 32 VDC				14
	1 ... 6 VDC	> 5.0 kΩ	< 10 mA	9 ... 32 VDC				16
	0 ... 10 VDC	> 5.0 kΩ	< 10 mA	15 ... 32 VDC				17
Accessories	0.5 ... 4.5 VDC ratiometric	> 5.0 kΩ	< 10 mA	5 (4.75 ... 5.25) VDC				23
	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, material 1.4305 ⁴⁾							40
	Pressure peak damping element ø 0.4 mm, material 1.4305 (sensors 23, 25) resp. 1.4404 (sensors 33, 35) ⁴⁾							44
	Female electrical connector EN 175301-803-A(DIN43650-A)/NBR, -40°C ... +90°C							58
	Female electrical connector EN 175301-803-A(DIN43650-A)/Silicone, -40°C ... +125°C							56
	Female electrical plug M12x1, 5-pole							33
	Female electrical connector industrial standard							34
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)							92
	Special electrical connection: Pin 1 Out, Pin 2 -, Pin 3 + (only for output 14, 16, 17 and male electrical plug EN175301-803-A / DIN43650-A)							98
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 Out (only for output 14, 16, 17 and male electrical plug EN175301-803-A / DIN43650-A)							97
	Special electrical connection: Pin 1 +, Pin 3 - (only for output 4 ... 20 mA and male electrical plug Packard Metri Pack 3-poles)							E4
	Special electrical connection: Pin 1 +, Pin 2 out Pin 3 - (only for output signals 14, 16, 17 and male electrical plug Packard Metri Pack 3-poles)							99
	Housing nut for electrical connection EN175301-803-A(DIN43650-A) secured with Loctite (max. 85°C)							L9
	Cable length 1.5 m							1M
	Cable length 3.0 m							3M
	Cable length 5.0 m							5M
	Multiple packaging ¹¹⁾							VM

¹⁾ Customized pressure ranges upon request²⁾ Upon request³⁾ Only with pressure connection 17 (G1/4")⁴⁾ Not for pressure connections 10, 11, 13, 18, 24⁵⁾ Only for pressure ranges ≥ 10 bar⁶⁾ Max. allowable pressure range 60 bar at 120 bar overpressure⁸⁾ Cable length see accessories (max. length 50 m, in 5-meter sections)⁹⁾ IP68, max. 3 m, Media +10°C ... +35°C¹⁰⁾ Cable length max. 3 m, for pressure ranges ≤ 16 bar¹¹⁾ The order quantity must be a multiple of 50, only for electrical connections 05 and 35¹²⁾ Only for sensors 23 and 25, only for pressure connections 13, 17, 19

Standard products (extra short lead time)

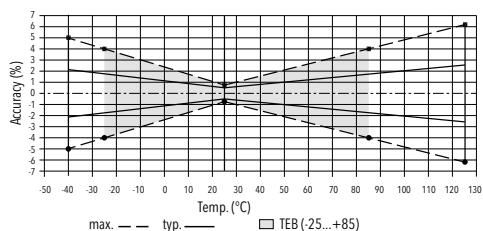
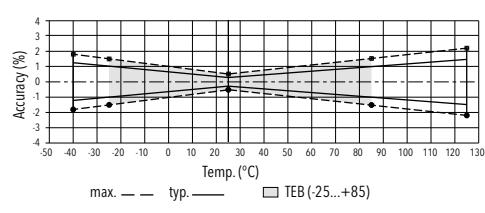
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
EPI2.5A	8287 75 2517 05 0000 0000 19 44 58 61	0 ... 2.5	7.5	4 ... 20 mA	9 ... 32
EPI4.0A	8287 76 2517 05 0000 0000 19 44 58 61	0 ... 4	12	4 ... 20 mA	9 ... 32
EPI6.0A	8287 77 2517 05 0000 0000 19 44 58 61	0 ... 6	18	4 ... 20 mA	9 ... 32
EPI10.0A	8287 78 2517 05 0000 0000 19 44 58 61	0 ... 10	30	4 ... 20 mA	9 ... 32
EPI16.0A	8287 79 2517 05 0000 0000 19 44 58 61	0 ... 16	48	4 ... 20 mA	9 ... 32
EPI25.0A	8287 80 2517 05 0000 0000 19 44 58 61	0 ... 25	75	4 ... 20 mA	9 ... 32
EPI40.0A	8287 81 2517 05 0000 0000 19 44 58 61	0 ... 40	120	4 ... 20 mA	9 ... 32
EPI60.0A	8287 82 2517 05 0000 0000 19 44 58 61	0 ... 60	180	4 ... 20 mA	9 ... 32
EPI100.0A	8287 83 2517 05 0000 0000 19 44 58 61	0 ... 100	300	4 ... 20 mA	9 ... 32
EPI160.0A	8287 85 2517 05 0000 0000 19 44 58 61	0 ... 160	480	4 ... 20 mA	9 ... 32
EPI250.0A	8287 74 2517 05 0000 0000 19 44 58 61	0 ... 250	750	4 ... 20 mA	9 ... 32
EPI400.0A	8287 84 2517 05 0000 0000 19 44 58 61	0 ... 400	1000	4 ... 20 mA	9 ... 32
EPI600.0A	8287 86 2517 05 0000 0000 19 44 58 61	0 ... 600	1500	4 ... 20 mA	9 ... 32
EPI2.5V	8287 75 2517 05 0000 0000 17 44 58 61	0 ... 2.5	7.5	0 ... 10 VDC	15 ... 32
EPI4.0V	8287 76 2517 05 0000 0000 17 44 58 61	0 ... 4	12	0 ... 10 VDC	15 ... 32
EPI6.0V	8287 77 2517 05 0000 0000 17 44 58 61	0 ... 6	18	0 ... 10 VDC	15 ... 32
EPI10.0V	8287 78 2517 05 0000 0000 17 44 58 61	0 ... 10	30	0 ... 10 VDC	15 ... 32
EPI16.0V	8287 79 2517 05 0000 0000 17 44 58 61	0 ... 16	48	0 ... 10 VDC	15 ... 32
EPI25.0V	8287 80 2517 05 0000 0000 17 44 58 61	0 ... 25	75	0 ... 10 VDC	15 ... 32
EPI40.0V	8287 81 2517 05 0000 0000 17 44 58 61	0 ... 40	120	0 ... 10 VDC	15 ... 32
EPI60.0V	8287 82 2517 05 0000 0000 17 44 58 61	0 ... 60	180	0 ... 10 VDC	15 ... 32
EPI100.0V	8287 83 2517 05 0000 0000 17 44 58 61	0 ... 100	300	0 ... 10 VDC	15 ... 32
EPI160.0V	8287 85 2517 05 0000 0000 17 44 58 61	0 ... 160	480	0 ... 10 VDC	15 ... 32
EPI250.0V	8287 74 2517 05 0000 0000 17 44 58 61	0 ... 250	750	0 ... 10 VDC	15 ... 32
EPI400.0V	8287 84 2517 05 0000 0000 17 44 58 61	0 ... 400	1000	0 ... 10 VDC	15 ... 32
EPI600.0V	8287 86 2517 05 0000 0000 17 44 58 61	0 ... 600	1500	0 ... 10 VDC	15 ... 32

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 0 ... 5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 10 VDC: 24 (15...32) VDC 0.5 ... 4.5 VDC ratiometric 10 ... 90 % U_{supply} : 5 ± 0.25 VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4 ... 20 mA: to $U_s = 32$ VDC 0 ... 10 VDC, 0 ... 5 VDC, 1 ... 6 VDC: to $U_s = 28$ VDC 0.5 ... 4.5 VDC ratiometric: to $U_s = 14$ VDC
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C Cable PVC: -5°C ... +60°C Cable PUR: -20°C ... +70°C Cable Raychem: -20°C ... +100°C
	Protection ¹⁾	IP65, IP67, IP68
	Humidity	Max. 95 % relative
	Vibration	15 g RMS (20...2000 Hz) acc.to EN 60068-2-64 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) acc.to EN 60068-2-6
	Shock	500 g / 1 ms acc.to EN 60068-2-27
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630) or 1.4404 (AISI316L)
	Housing	1.4542 (AISI630) or 1.4404 (AISI316L)
	Sealing	FPM/EPDM/NBR
	Male electrical plug	See ordering information
	Weight	appr. 80 ... 110 g
	Mounting torque	25 Nm

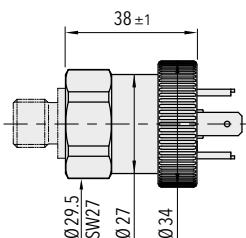
¹⁾ See electrical connection

Accuracy

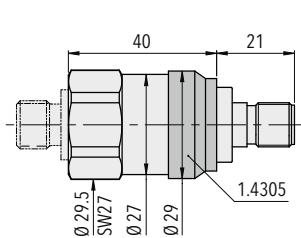
		Measuring accuracy 0.5 % Ordering No. 25/35	Measuring accuracy 0.3 % Ordering No. 23/33
TEB @ -25 ... +85°C	[% FS typ.]	± 1.75	± 1.0
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.2
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.01
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.1	± 0.2

Measuring accuracy 0.5 %**Measuring accuracy 0.3 %**

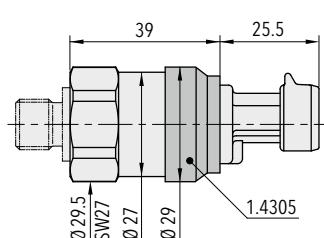
Dimensions



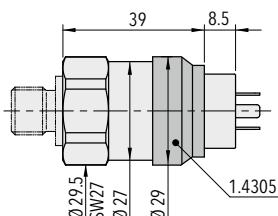
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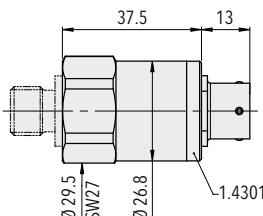
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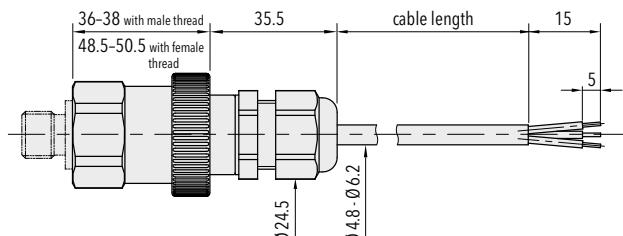
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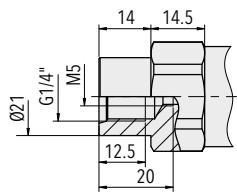
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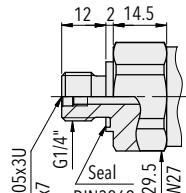
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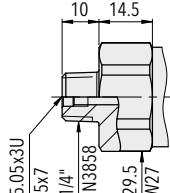
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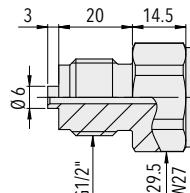
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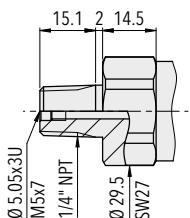
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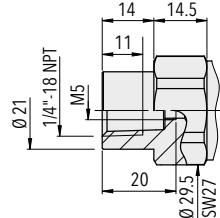
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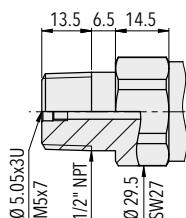
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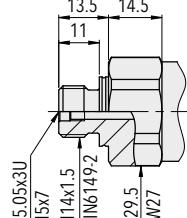
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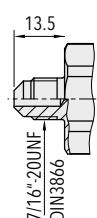
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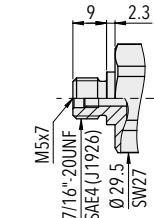
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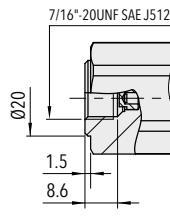
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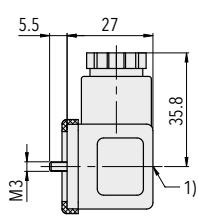
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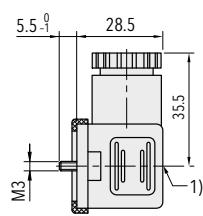


8287.XX.XX24.XX.XX.XX



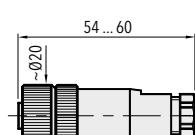
1) Tightening torque 50...60 Ncm

8287.XX.XXXX.XX.XX.56

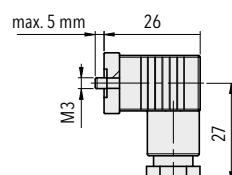


1) Tightening torque 50...60 Ncm

8287.XX.XXXX.XX.XX.58

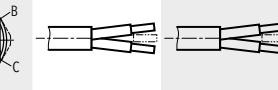
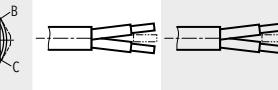
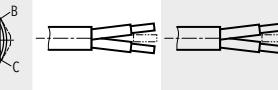
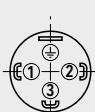
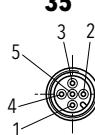
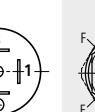
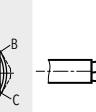
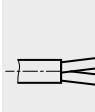
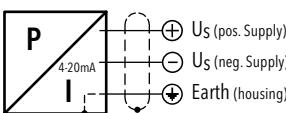
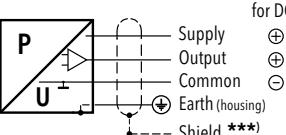


8287.XX.XXXX.XX.XX.33



8287.XX.XXXX.XX.XX.34

Electrical connection

Protection / electrical connection								
	IP65*) **)	IP67*) **)	IP67*) **)	IP65**)	IP67*) **)	IP68 max. 3 m	IP68 max. 3 m	
Industrial standard EN175301-803A	M12x1 5-pole	Packard Metri Pack 3-pole	Industrial standard Contact distance 9.4 mm	MIL-C 26482	Cable**) 	Cable**) 	Cable**) 	
05 	35 	51 	01 	02 	24/22 	08 		
Output signal  8287.XX.XXXX.XX.19	Standard 2 1 ④	92 1 2 ④	4 1 5	1 2 3	E4 2 1 ④	A B E	white brown yellow	red black green
 8287.XX.XXXX.XX.14/16/17/23	Standard 2 3 1 ④	98 3 1 2 ④	97 1 3 2 ④	2 4 3 5	99 1 2 3 ④		white green brown yellow	red white black green

*) Provided female connector is mounted according to instructions

**) Ventilation via male electric plug/cable end

***) Only cable versions or female electrical plug with shield connection

Additional information

Documents	Data sheet Instructions Flyer	www.trafag.com/H72317 www.trafag.com/H73317 www.trafag.com/H70692
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MARINE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The industrial pressure transmitter EPN 8288, like its reliable predecessor the EPN 8298, has an exceptional ruggedness and a strong thin-film-on-steel sensor cell. The triple overpressure safety, a wide temperature range of up to 125°C and the marine certifications make the EPN 8288 the ideal solution for a wide variety of challenging applications.



Applications

- Shipbuilding
- Engine manufacturing
- Machine tools
- Hydraulics

Features

- Excellent long-term stability
- High resistance to over pressure
- Completely welded steel sensor system without additional seals
- Different accuracy classes

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	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 10 VDC	Approval / conformity	DNV-GL EU RO Mutual Recognition Type Approval Certificate
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

				8288 . 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: 0.3 %; Material pressure connection and housing: 1.4542 (AISI630)							23	
	Relative pressure, accuracy: 0.5 %; Material pressure connection and housing: 1.4542 (AISI630)							25	
	Relative pressure, accuracy class: 0.3 %; Material pressure connection and housing: 1.4404 (AISI316L) ²⁾							33	
	Relative pressure, accuracy class: 0.5 %; Material pressure connection and housing: 1.4404 (AISI316L) ²⁾							35	
Pressure connection	G1/4" male (Seal)							17	
	1/4" NPT male ³⁾							30	
	R1/4" male, DIN3858 ³⁾							19	
	1/2" NPT male ³⁾							51	
	M14x1.5 male DIN6149-2 ³⁾							31	
	G1/2" male (Manometer) ³⁾							11	
Electrical connection	Male electrical plug EN 175301-803-A(DIN43650-A), Mat. PA							05	
Output signal	Signal output	Load resistance	I (supply)	U (supply)					
	4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 32 VDC				19	
	0 ... 10 VDC	> 5 kΩ	< 10 mA	15 ... 32 VDC				17	
Accessories	Seal FPM, -18°C ... +125°C							61	
	Seal EPDM, -40°C ... +125°C							63	
	Seal NBR, -25°C ... +100°C							83	
	Pressure peak damping element ø 1.0 mm, material 1.4305 ⁴⁾							40	
	Pressure peak damping element ø 0.4 mm, material 1.4305 (sensors 23, 25) resp. 1.4404 (sensors 33, 35) ⁴⁾							44	
	Female electrical connector EN 175301-803-A(DIN43650-A)/NBR, -40°C ... +90°C							58	
	Female electrical connector EN 175301-803-A(DIN43650-A)/Silicone, -40°C ... +125°C							56	
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)							92	
	Special electrical connection: Pin 1 Out, Pin 2 -, Pin 3 + (only for output 0 ... 10 VDC and male electrical plug EN175301-803-A / DIN43650-A)							98	
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 Out (only for output 0 ... 10 VDC and male electrical plug EN175301-803-A / DIN43650-A)							97	
	Multiple packaging ⁵⁾							VM	

¹⁾ Customized pressure ranges upon request²⁾ Only for pressure ranges ≥ 0 ... 10 bar³⁾ Upon request⁴⁾ Not for pressure connection 11⁵⁾ The order quantity must be a multiple of 50

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
EPN2.5A	8288 75 2517 05 0000 0000 19 44 58 61	0 ... 2.5	7.5	4 ... 20 mA	9 ... 32
EPN4.0A	8288 76 2517 05 0000 0000 19 44 58 61	0 ... 4	12	4 ... 20 mA	9 ... 32
EPN6.0A	8288 77 2517 05 0000 0000 19 44 58 61	0 ... 6	18	4 ... 20 mA	9 ... 32
EPN10.0A	8288 78 2517 05 0000 0000 19 44 58 61	0 ... 10	30	4 ... 20 mA	9 ... 32
EPN16.0A	8288 79 2517 05 0000 0000 19 44 58 61	0 ... 16	48	4 ... 20 mA	9 ... 32
EPN25.0A	8288 80 2517 05 0000 0000 19 44 58 61	0 ... 25	75	4 ... 20 mA	9 ... 32
EPN40.0A	8288 81 2517 05 0000 0000 19 44 58 61	0 ... 40	120	4 ... 20 mA	9 ... 32
EPN60.0A	8288 82 2517 05 0000 0000 19 44 58 61	0 ... 60	180	4 ... 20 mA	9 ... 32
EPN100.0A	8288 83 2517 05 0000 0000 19 44 58 61	0 ... 100	300	4 ... 20 mA	9 ... 32
EPN160.0A	8288 85 2517 05 0000 0000 19 44 58 61	0 ... 160	480	4 ... 20 mA	9 ... 32
EPN250.0A	8288 74 2517 05 0000 0000 19 44 58 61	0 ... 250	750	4 ... 20 mA	9 ... 32
EPN400.0A	8288 84 2517 05 0000 0000 19 44 58 61	0 ... 400	1000	4 ... 20 mA	9 ... 32
EPN600.0A	8288 86 2517 05 0000 0000 19 44 58 61	0 ... 600	1500	4 ... 20 mA	9 ... 32

Specifications

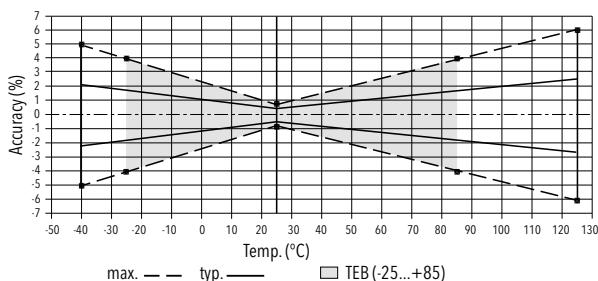
Electrical Data		Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0 ... 10 VDC 24 (15 ... 32) VDC
		Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
		Switch-on-delay	100 ms
		Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4...20 mA: to $U_s = 32$ VDC 0...10 VDC: to $U_s = 28$ VDC
Environmental conditions		Media temperature	-40°C ... +125°C
		Ambient temperature	-40°C ... +125°C
		Protection ¹⁾	IP65
		Humidity	IEC 60068-2-30 (damp heat, cyclic, 100 % RH @ +55°C)
		Vibration	15 g RMS (20...2000 Hz) acc.to EN 60068-2-64 25 g sin (10...2000 Hz), 1 oct./min, (1x @ 25°C) acc.to EN 60068-2-6
		Shock	500 g / 1 ms acc.to EN 60068-2-27
EMC Protection		Emission	EN/IEC 61000-6-3, IACS UR E10
		Immunity	EN/IEC 61000-6-2, IACS UR E10
Mechanical Data		Sensor (wetted parts)	1.4542 (AISI630)
		Pressure connection (wetted parts)	1.4542 (AISI630) or 1.4404 (AISI316L)
		Housing	1.4542 (AISI630) or 1.4404 (AISI316L)
		Sealing	FPM/EPDM/NBR
		Male electrical plug	See ordering information
		Weight	appr. 80 ... 110 g
		Mounting torque	25 Nm

¹⁾ See electrical connection

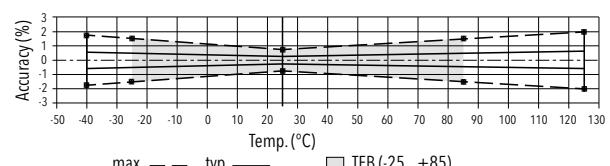
Accuracy

		Class 0.5 % Ordering No. 25/35	Class 0.3 % Ordering No. 23/33
TEB @ -25 ... +85°C	[% FS typ.]	± 1.75	± 0.5
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3
NLH @ +25°C(BSL)	[% FS typ.]	± 0.2	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.005
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.1	± 0.1

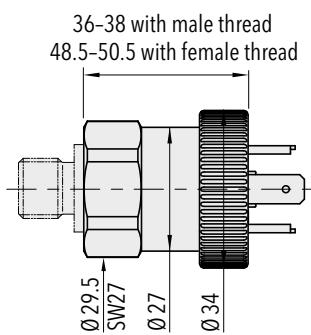
Class 0.5 %



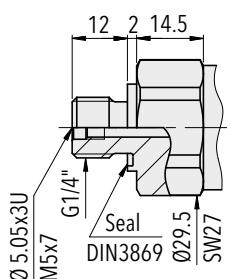
Class 0.3 %



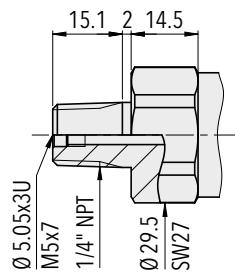
Dimensions



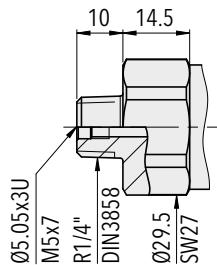
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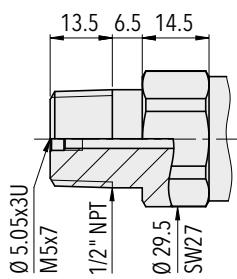
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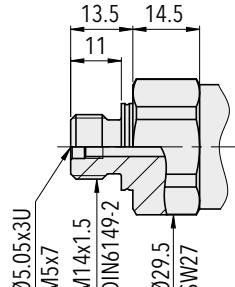
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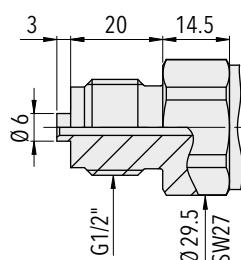
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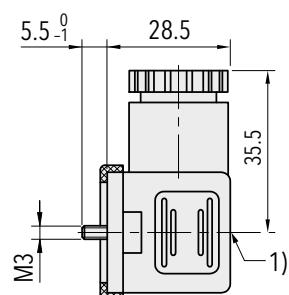
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8288.XX.XX31.XX.XX.XX

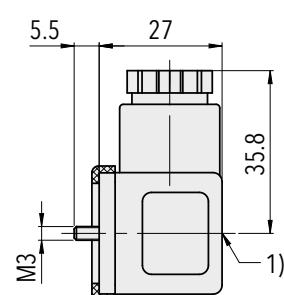


8288.XX.XX11.XX.XX.XX



1) Tightening torque 50...60 Ncm

8288.XX.XXXX.XX.XX.58



1) Tightening torque 50...60 Ncm

8288.XX.XXXX.XX.XX.56

Electrical connection

Protection / electrical connection			
Output signal	IP65, IP67*)		
	Industrial standard EN175301-803A **)		
	05		
8288.xx.XXXX.xx.19	Standard	92	
 8288.xx.XXXX.xx.19	2 1 ⊕	1 2 ⊖	
 8288.xx.XXXX.xx.17	Standard	98	97
	2 3 1 ⊕	3 1 2 ⊖	1 3 2 ⊖

*) Provided female connector is mounted according to instructions

**) Ventilation via male electric plug

***) Only female electrical plug with shield connection

Additional information			
Documents	Data sheet	www.trafag.com/H72318	
	Instructions	www.trafag.com/H73317	
	Flyer	www.trafag.com/H70693	

RAILWAY PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The EPR pressure transmitter was specifically designed for the high demand of the railway industry and offers reliable and accurate pressure measurement over a wide temperature range. Its excellent long-term stability is based on the leading thin-film-on-steel sensor technology from Trafag.



Applications

- Railways

Features

- Dielectrical strength: 500 VAC, 50 Hz, meets EN50155 (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	EN50155 (Railways)
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

			8293 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over 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 (O-Ring)			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 ... 20mA	(Usupply-9V) / 20mA		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			

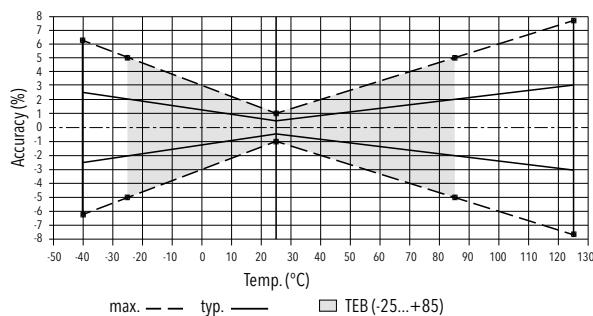
¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Only with electrical connection 04³⁾ Please ask us⁴⁾ For pressure ranges < 40 bar upon request

Specifications		
Electrical Data	Dielectric strength	500 VAC, 50 Hz
	Resistance of insulation	> 10 MΩ, 500 VDC
	Output / supply voltage	4...20 mA: 24 (9...32) VDC
	Rise time	Typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection ¹⁾	IP65, IP67
	Humidity	Max. 95 % relative
	Vibration	Electrical connection 04/02: 10g (20...2000 Hz)/5 grms Electrical connection 05: 15g (20...2000 Hz)
	Shock	50 g / 11 ms
EMC Protection	Emission	EN/IEC 61000-6-4
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	Pressure ranges ≤ 250 bar and > 600 bar: 1.4542 (AISI630) Pressure ranges > 250 bar and ≤ 600 bar: 1.4301 (AISI304)
	Housing	1.4301 (AISI304) except male electrical plug 04 and 2.5...250bar: 1.4542 (AISI630)
	Sealing	FKM 70 Sh
	Male electrical plug	See ordering information
	Weight	~ 80...110 g
	Mounting torque	25 Nm

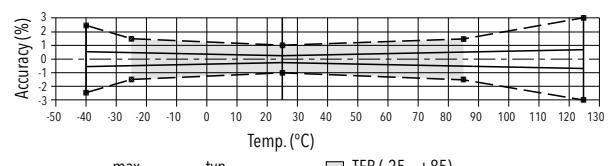
¹⁾ See electrical connection

Accuracy		Measuring accuracy 0.5% Ordering No. 25	Measuring accuracy 0.3% Ordering No. 23
TEB @ -25...+85°C	[% FS typ.]	± 2.0	± 0.5
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.005
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.2

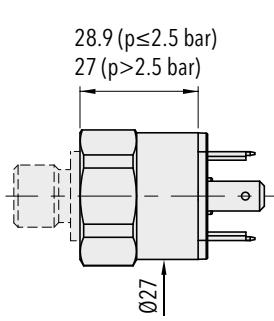
Measuring accuracy 0.5 %



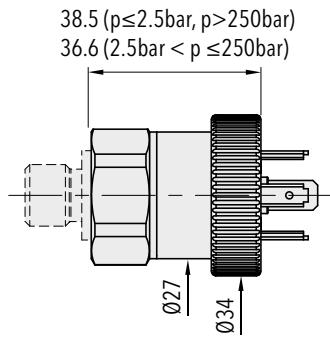
Measuring accuracy 0.3 %



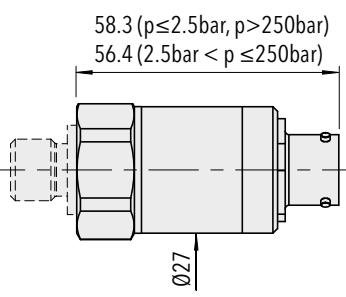
Dimensionen



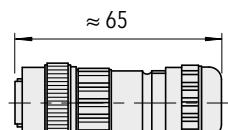
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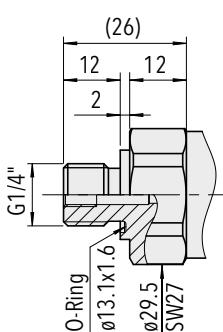
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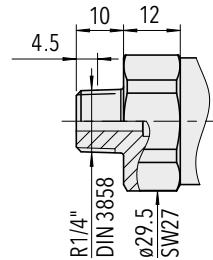
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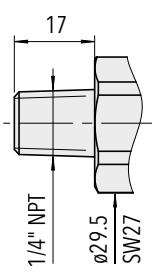
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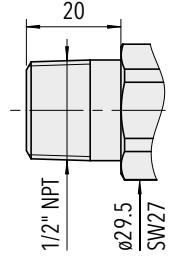
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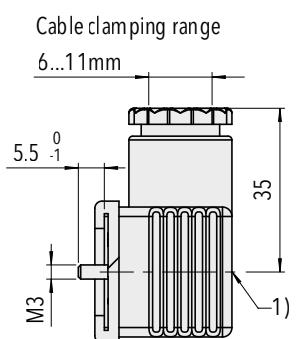
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8293.XX.XX30.XX.XX



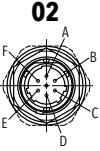
8293.XX.XX51.XX.XX



1) Torque moment 50...60 Ncm

8293.XX.XXXX.XX.XX.58

Electrical connection

Protection / electrical connection		
	IP65	IP67*
	Industrial standard EN175301-803A 04/05 	MIL-C 26482 02 
Output signal	Standard 2 1 ⊕	with accessory 92 1 2 ⊕
		A B E
		8293.XX.XXXX.XX.19

*^{a)} Provided female connector is mounted according to instructions

Additional information		
Documents	Data sheet	www.trafag.com/H72311
	Instructions	www.trafag.com/H73311
	Flyer	www.trafag.com/H70674

ENGINE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The EPN pressure transmitter offers reliable and accurate pressure measurement over a wide temperature range. Its excellent long-term stability is based on the leading thin-film-on-steel sensor technology from Trafag. Its robust design makes the EPN the perfect choice for demanding applications such as marine and rail industries.



Applications

- Shipbuilding
- Engine manufacturing
- Machine tools
- Hydraulics

Features

- Nominal pressure up to 2500 bar (Common Rail) with high pressure threaded connection
- High vibration resistance
- 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 ... 2500 bar	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

			8298 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	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				
	0 ... 1600	3000	4000	89				
	0 ... 2000	3000	4000	90				
	0 ... 2500	3000	4000	91				
Sensor	Relative pressure, accuracy: 0.3 %			23				
	Relative pressure, accuracy: 0.5 %			25				
Pressure connection	G1/4" male (Seal) ²⁾			17				
	R1/4" male DIN3858 ^{2) 4)}			19				
	G1/2" male (Manometer) ²⁾			11				
	1/4" NPT male ^{2) 5)}			30				
	1/2" NPT male ^{2) 5)}			51				
	M14x1.5 male (conical seal: 58°) ³⁾			28				
	M18x1.5 male (conical seal: 58°) ³⁾			29				
Electrical connection	Male electrical plug EN 175301-803-A(DIN43650-A), Mat. PA, normal vibration resistance ≤ 600 bar			04				
	Male electrical plug EN 175301-803-A(DIN43650-A), Mat. PA, extended vibration resistance			05				
	Male electrical plug: DIN72585 Code 1, Mat.: PBT (Contacts Mat.: Sn)			25				
	Male electrical plug MIL-C 26482, 6-pole, metal ⁸⁾			02				
	Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm ^{2) 6)}			78				
Output signal	Signal output	Load resistance	I (supply)	U (supply)				
	4 ... 20mA	(Usupply-9 V) / 20 mA		9 ... 32 VDC	19			
	0.5 ... 4.5 VDC ⁷⁾	≥ 15.0 kΩ	≤ 12 mA	5 VDC ± 0.25 VDC ratiom.	23			
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)/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			
	Cable length 1.5 m				1M			
	Cable length 3.0 m				3M			
	Cable length 5.0 m				5M			

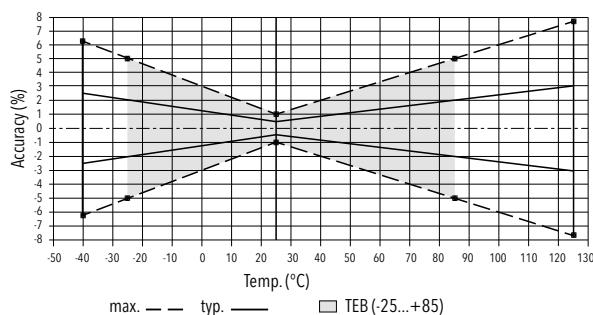
¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ For Ranges ≤ 600 bar³⁾ For ranges > 600 bar⁴⁾ Only with electrical connection 04⁵⁾ Please ask us⁶⁾ Cable length see accessories⁷⁾ Only with electrical connections 25 and 78⁸⁾ For pressure ranges < 40 bar upon request

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0.5 ... 4.5 VDC: 5 VDC ratio.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection ¹⁾	IP65, IP67, IP69K
	Humidity	Max. 95 % relative
	Vibration	Electrical connection 04/02: 10 g (50...2000 Hz) Electrical connection 05: 15 g (50...2000 Hz) Electrical connection 25: 15 g RMS Electrical connection 78: 20 g RMS
	Shock	50 g / 3 ms
EMC Protection	Emission	EN/IEC 61000-6-4
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	1.4301 (AISI304) except male electrical plug 04 and 2.5...250bar: 1.4542 (AISI630)
	Sealing	FKM 70 Sh
	Male electrical plug	See ordering information
	Weight	~ 80...110 g
	Mounting torque	25 Nm Pressure connection 28/29: 30 Nm

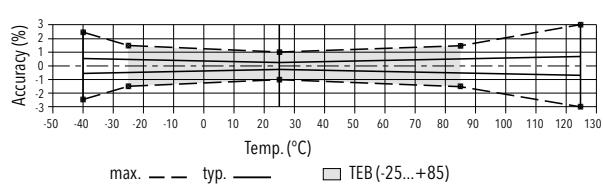
¹⁾ See electrical connection

Accuracy		Measuring accuracy 0.5% Ordering No. 25	Measuring accuracy 0.3% Ordering No. 23
TEB @ -25...+85°C	[% FS typ.]	± 2.0	± 0.5
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.005
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.2

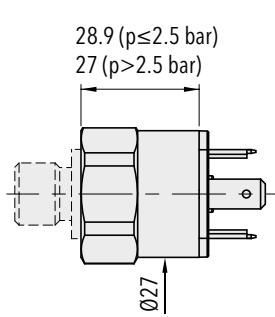
Measuring accuracy 0.5 %



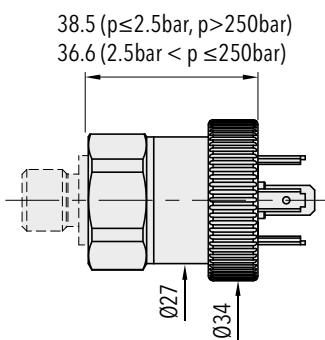
Measuring accuracy 0.3 %



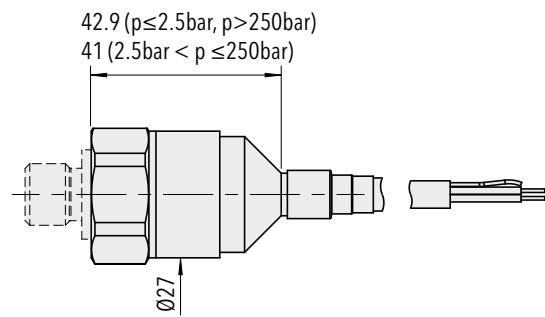
Dimensions



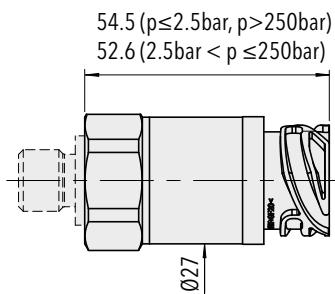
8298.XX.XXXX.04.XX.XX



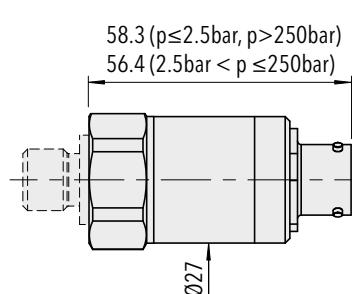
8298.XX.XXXX.05.XX.XX



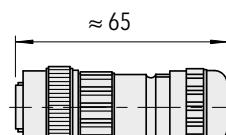
8298.XX.XXXX.78.XX.XX



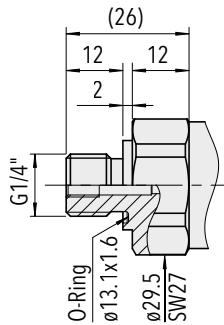
8298.XX.XXXX.25.XX.XX



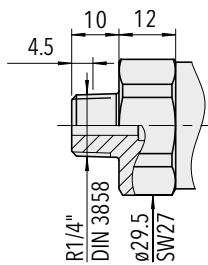
8298.XX.XXXX.02.XX.XX



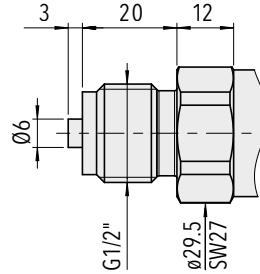
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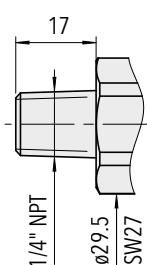
8298.XX.XX17.XX.XX.XX
Pressure ranges: ≤ 600 bar



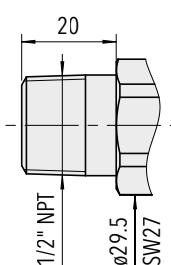
8298.XX.XX19.XX.XX.XX
Pressure ranges: ≤ 600 bar



8298.XX.XX11.XX.XX.XX
Pressure ranges: ≤ 600 bar

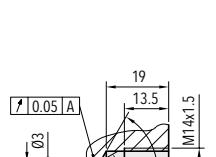


8298.XX.XX30.XX.XX.XX

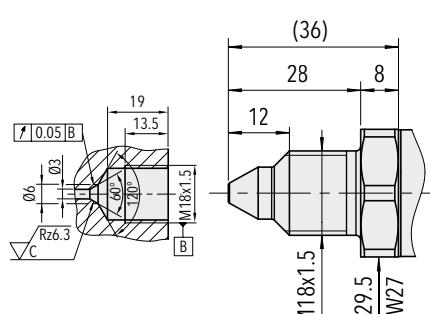


8298.XX.XX51.XX.XX.XX

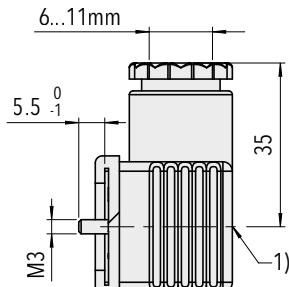
Cable clamping range
6...11mm



8298.XX.XX28.XX.XX.XX
Pressure ranges: ≤ 2500 bar



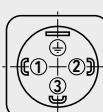
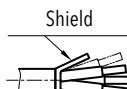
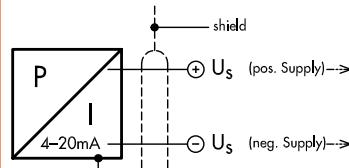
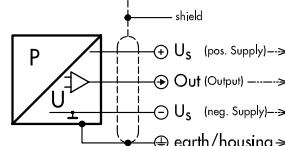
8298.XX.XX29.XX.XX.XX
Pressure ranges: ≤ 2500 bar



1) Torque moment 50...60 Ncm

8298.XX.XXXX.XX.XX.58

Electrical connection

Protection / electrical connection					
	IP65*)	IP69K	IP67*)	IP69K*)	
Industrial standard EN175301-803A 04/05		Cable **)	MIL-C 26482 78	DIN 72585**) Code 1 02	DIN 72585**) Code 1 25
					
Output signal	Standard	with accessory 92			
	2 1 ⊕	1 2 ⊖	brown black yellow / green	A B E	1 4 3
			brown blue black yellow / green		1 2 4 3

*) Provided female connector is mounted according to instructions

**) Ventilation via cable end

Additional information

Documents	Data sheet	www.trafag.com/H72312
	Instructions	www.trafag.com/H73311
	Flyer	www.trafag.com/H70669

PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature.



Applications

- Shipbuilding
- Machine tools
- Hydraulics
- HVAC
- Process technology
- Water treatment
- Food Industry

Features

- Low pressure ranges (to 100 mbar)
- Media temperature to 150°C
- EMC protection, IEC 61000
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

Technical Data

Measuring principle	Piezoresistive	Media temperature	0°C ... +80°C (opt. -25 ... +100°C/-25 ... +150°C)
Measuring range	0 ... 0.1 to 0 ... 1000 bar	Ambient temperature	0°C ... +70°C (opt. -25 ... +85°C)
Output signal	4 ... 20 mA 0 ... 10 VDC	Approval / conformity	GL, KRS

Subject to change

Ordering information/type code

				XXXX	XX	XX	XX	XX	XX
Custom build code	Relative pressure				8842				
	Absolute pressure				8843				
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		
	0 ... 0.1	3	200	66	0 ... 16	48	200	79	
	0 ... 0.16	3	200	67	0 ... 25	75	200	80	
	0 ... 0.2	3	200	68	0 ... 40	120	850	81	
	0 ... 0.4	3	200	69	0 ... 60	180	850	82	
	0 ... 0.6	3	200	70	0 ... 100	300	850	83	
	0 ... 1.0	3	200	71	0 ... 160	480	850	85	
	0 ... 1.6	4.8	200	73	0 ... 250	750	850	74	
	0 ... 2.5	7.5	200	75	0 ... 400	850	850	84	
	0 ... 4	12	200	76	0 ... 600	850	850	86	
	0 ... 6	18	200	77	0 ... 1000	1500	1500	88	
	0 ... 10	30	200	78					
Sensor	Type 05 (Accuracy NLH: $\pm 0.5\% \text{ FS}$) ²⁾					P5			
	Type 02 (Accuracy NLH: $\pm 0.25\% \text{ FS}$) ²⁾					P2			
	Type 01 (Accuracy NLH: $\pm 0.1\% \text{ FS}$) ²⁾					P1			
Pressure connection	G1/4" female					10			
	G1/4" male					15			
	G1/4" male (Manometer)					20			
	G1/2" male					21			
	G1/2" male, frontal membrane					31			
	G1/2" male, flush membrane					32			
	G1/2" male (Manometer)					11			
Electrical connection	Cable PUR: Length ... (mm) IP67					22			
	Male electrical plug: DIN43650-A, Mat.: PA, IP65					04			
	Male electrical plug: Binder 723, 5-pole (Mat.: Zn), IP67					14			
	Male electrical plug: MIL-C 26482 (Mat.: Al), IP 40					02			
Output	4 ... 20 mA					19			
	4 ... 20 mA with lightning protection (Surge)					09			
	0 ... 10 VDC					17			
Accessories	Female electrical connector DIN43650 A					58			
	Female electrical connector: Binder 723					37			
	Female electrical connector: MIL-C 26482, 6-pole					32			
	Special oil filling: Aseol					94			
	Special oil filling: Halocarbon					95			
	8842: Electronics packed in gel					96			
	Cable PUR: IP67					48			
	Operating temperature -25 ... +85°C (Media temperature -25 ... +100°C)					69			
	Operating temperature -25 ... +85°C (Media temperature -25 ... +150°C)					70			
	Damping elements and snubber see data sheet H72258								

¹⁾ Customized pressure ranges upon request²⁾ Accuracy NLH see table

Identical construction with other specifications:
Data sheet No. H72227, H72232

Standard products (extra short lead time)

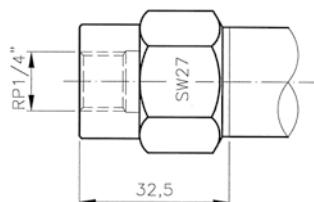
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
NAP0.1A	8842 66 P515 04 0000 0000 19 58	0 ... 0.1	3	9 ... 33	±0.5
NAP0.2A	8842 68 P515 04 0000 0000 19 58	0 ... 0.2	3	9 ... 33	±0.5
NAP0.4A	8842 69 P515 04 0000 0000 19 58	0 ... 0.4	3	9 ... 33	±0.5
NAP0.6A	8842 70 P515 04 0000 0000 19 58	0 ... 0.6	3	9 ... 33	±0.5
NAP1.0A	8842 71 P515 04 0000 0000 19 58	0 ... 1.0	3	9 ... 33	±0.5

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 9 ... 33 VDC 0 ... 10 VDC: 15 ... 30 VDC
	Load	4 ... 20 mA: $R_L \leq (U_s - 9V)/20 \text{ mA}$ 0 ... 10 VDC: $R_L > 10 \text{ k}\Omega$
	Rise time	typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	0°C ... +80°C (opt. -25 ... +100°C/-25 ... +150°C)
	Ambient temperature	0°C ... +70°C (opt. -25 ... +85°C)
	Protection ¹⁾	Min. IP65
	Humidity	Max. 95% relative
	Vibration	6g (25...2000 Hz)
	Shock	50g/ 1 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4435 (AISI316L)
	Pressure connection (wetted parts)	1.4435 (AISI316L)
	Housing	1.4435 (AISI316L)
	Sealing	FKM 70 Sh
	Male electrical plug	See ordering information
	Weight	~ 220 g
	Mounting torque	25 Nm

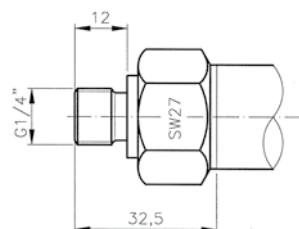
¹⁾ Provided female connector is mounted according to instructions

Accuracy						
Pressure measuring range	[bar]	0.1 ... 0.5	0.5 ... 2	2 ... 25	25 ... 600	> 600
Accuracy NLH (BSL through 0) P5	[% FS]	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5
Accuracy NLH (BSL through 0) P2	[% FS]	± 0.25	± 0.25	± 0.25	± 0.25	± 0.25
Accuracy NLH (BSL through 0) P1	[% FS]	-	± 0.1	± 0.1	± 0.1	-
Temperature coefficient zero point 0 ... +70°C	[% FS/K]	± 0.06	± 0.03	± 0.015	± 0.015	± 0.015
Temperature coefficient zero point Option -25 ... +85°C	[% FS/K]	± 0.08	± 0.04	± 0.02	± 0.02	± 0.02
Temperature coefficient span Option -25 ... +85°C	[% FS/K]	± 0.015	± 0.015	± 0.015	± 0.015	± 0.015
Temperature coefficient span Option -25 ... +85°C	[% FS/K]	± 0.02	± 0.02	± 0.02	± 0.02	± 0.02
Long term drift	[1 year]	< 4 mbar	< 4 mbar	< 0.2 % FS	< 0.2 % FS	< 0.2 % FS
Repeatability	[% FS]	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05

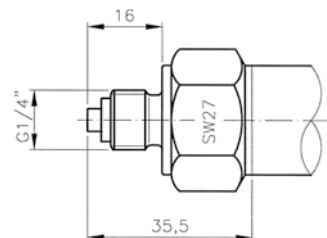
Dimensions



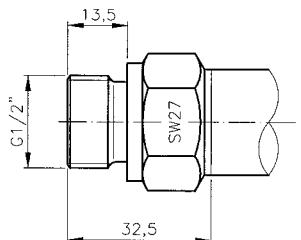
884X.XX.XX.10.XX.XX.XX



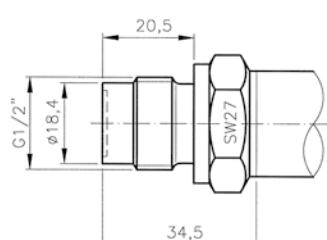
884X.XX.XX.15.XX.XX.XX



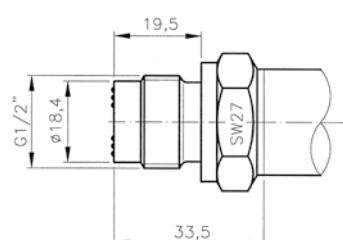
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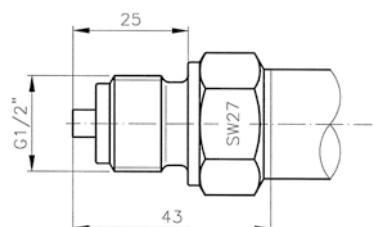
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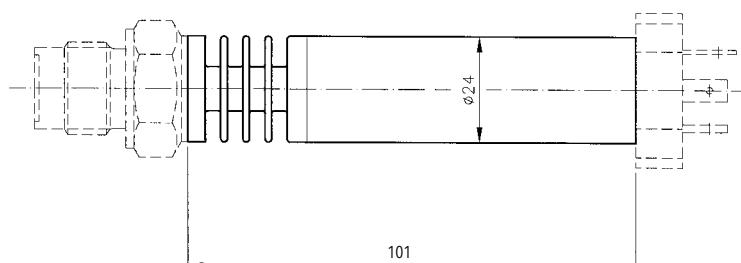
884X.XX.XX.31.XX.XX.XX



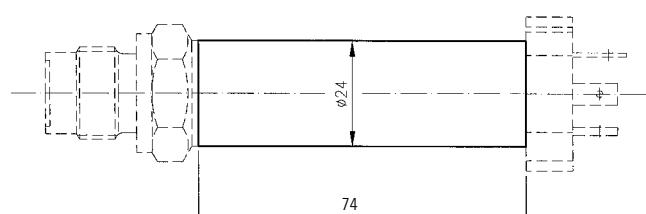
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884X.XX.XX.11.XX.XX.XX

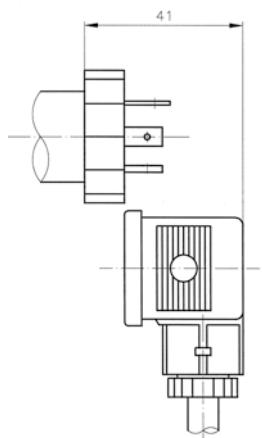


884X.XX.XX.XX.XX.XX.70



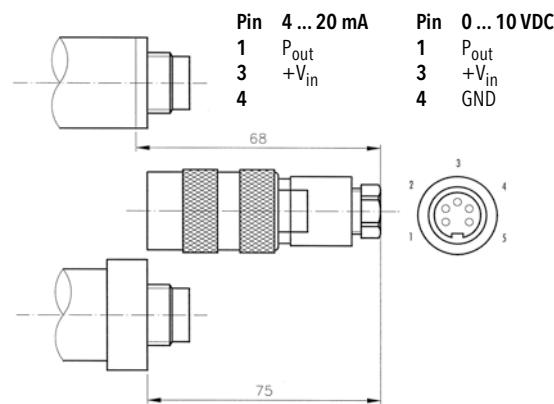
884X.XX.XX.XX.XX.XX.69

Dimensions



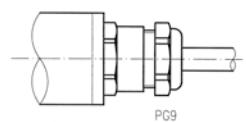
Pin 4 ... 20 mA
1 +V_{in}
2 P_{out}
3 GND

Pin 0 ... 10 VDC
1 +V_{in}
2 P_{out}
3 GND



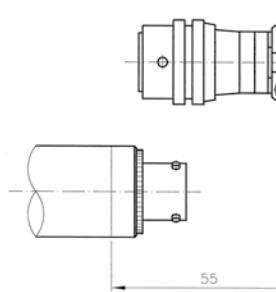
884X.XX.XX.XX.04.XX.58

884X.XX.XX.XX.14.XX.37



Color 4 ... 20 mA 0 ... 10 VDC
white +V_{in} +V_{in}
yellow P_{out} GND
brown P_{out} P_{out}

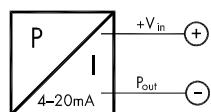
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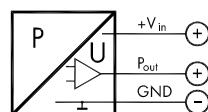
Pin 4 ... 20 mA Pin 0 ... 10 VDC
A +V_{in} A +V_{in}
B GND B GND
C P_{out} C P_{out}

884X.XX.XX.XX.02.XX.32

Electrical connection



4 ... 20 mA



0 ... 10 VDC

Additional information

Documents

Data sheet

www.trafag.com/H72230

Instructions

www.trafag.com/H73208

Flyer

www.trafag.com/H70683

INDUSTRIAL PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The economical pressure transmitter ECT 8472 is based on the tried and true ECT line of transmitters. The wide media temperature range from -25 to 125°C in combination with a comprehensive set of features and options makes the ECT 8472 pressure transmitter a versatile solution suitable for most industrial applications.



Applications

- Machine tools
- Hydraulics
- Water treatment

Features

- Excellent media compatibility
- Relative or absolute pressure measurement
- Titanium version optional
- Frontal membrane optional

Technical Data			
Measuring principle	Thick-film-on-ceramic	Accuracy @ 25°C typ.	± 0.5 % FS typ.
Measuring range	0 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	Media temperature	-25°C ... +125°C 400 bar/5000 psi: -10°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Ambient temperature	-25°C ... +125°C Cable PVC 22: -5°C ... +60°C Cable PUR 24: -20°C ... +70°C Cable Raychem 08: -20°C ... +100°C

Subject to change

Ordering information/type code

				8472 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]						
	0 ... 1.0	2	3	71					
	0 ... 1.6	3.2	4.8	73					
	0 ... 2.5	5	7.5	75					
	0 ... 4	8	12	76					
	0 ... 6	12	15	77					
	0 ... 10	20	25	78					
	0 ... 16	32	40	79					
	0 ... 25	50	75	80					
	0 ... 40	80	100	81					
	0 ... 60	120	180	82					
	0 ... 100 ⁴⁾	200	300	83					
	0 ... 160 ⁴⁾	320	480	85					
	0 ... 250 ⁴⁾	500	750	74					
	0 ... 400 ^{2) 4)}	800	1000	84					
Sensor	Relative pressure, Material pressure connection and housing: 1.4305 (AISI303)		57	Absolute pressure, Material pressure connection and housing: 1.4305 (AISI303) ³⁾		87			
	Relative pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) ⁴⁾		59	Absolute pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) ^{3) 4)}		89			
	Relative pressure, Material pressure connection and housing: 1.4462 (AISI318LN) ⁴⁾		52	Absolute pressure, Material pressure connection and housing: 1.4462 (AISI318LN) ^{3) 4)}		82			
	Relative pressure, titanium grade 5 ⁴⁾		53	Absolute pressure, titanium grade 5 ^{3) 4)}		83			
Pressure connection	G1/4" female				10				
	G1/4" male				17				
	G1/2" male DIN3852-A ⁴⁾				21				
	G1/2" male DIN3852-E ⁴⁾				41				
	1/4" NPT male, ANSI B1.20.1 ⁴⁾				30				
	1/8" NPT male, ANSI B1.20.1 ¹¹⁾				43				
	7/16"-20UNF male SAE4 (J1926) ⁴⁾				42				
	7/16"-20UNF male, DIN3866 ³⁾				18				
	7/16"-20UNF female SAE J512 with valve opener ³⁾				24				
	R1/4" male, DIN3858				19				
	G3/4" frontal membrane ^{4) 7)}				52				
Electrical connection	Male electrical plug EN 175301-803-A(DIN43650-A), Mat. PA				05				
	Male electrical plug M12x1, 5-pole, Mat. PA (Old shape), Mat. PBT (New shape)				35				
	Male electrical plug Packard Metri Pack, Mat. PBT				51				
	Male electrical plug industrial standard (contact distance 9.4 mm), Mat. PBT				01				
	Cable PUR (Screwed cable gland PA 6-3), -20°C ... +70°C ^{5) 6)}				24				
	Cable PVC (Screwed cable gland PA 6-3), -5°C ... +60°C ^{5) 6) 9)}				22				
	Cable Raychem (Screwed cable gland PA 6-3), -20°C ... +100°C ^{5) 6) 9)}				08				
Output signal	Signal output	Load resistance	I (supply)	U (supply)					
	4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 30 VDC					19
	0 ... 5 VDC	≥ 2.5 kΩ	≤ 10 mA	10 ... 30 VDC					14
	1 ... 6 VDC	≥ 5.0 kΩ	≤ 10 mA	10 ... 30 VDC					16
	0 ... 10 VDC	≥ 5.0 kΩ	≤ 10 mA	15 ... 30 VDC					17
	0.5 ... 4.5 VDC ratiometric	≥ 5.0 kΩ	≤ 10 mA	5 VDC ± 0.25 VDC ratiom.					23

8472 . XX XX XX XX XX

Accessories	Seal FKM (-20°C ... +125°C)	61
	Seal CR ≤ 100 bar (-25°C ... +100°C) ⁸⁾	62
	Seal EPDM (-25°C ... +125°C)	63
	Pressure peak damping element ø 1.0 mm, material 1.4305 ¹⁰⁾	40
	Pressure peak damping element ø 0.4 mm, material 1.4305 (sensors 57, 87) resp. 1.4404 (sensors 52, 53, 59, 82, 83, 89) ¹⁰⁾	44
	Female electrical connector EN 175301-803-A(DIN43650-A)/NBR, -40°C ... +90°C	58
	Female electrical connector EN 175301-803-A(DIN43650-A)/Silicone, -40°C ... +125°C	56
	Female electrical plug M12x1, 5-pole	33
	Female electrical connector industrial standard	34
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)	92
	Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 + (only for output 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A)	98
	Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 Out (only for output signals 14, 16, 17, 23 and male electrical plug EN 175301-803-A / DIN 43650-A)	97
	Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical Packard Metri Pack 3-poles)	E4
	Special electrical connection: Pin 1 + , Pin 2 Out, Pin 3 - (only for output signals 14, 16, 17, 23 and male electrical plug Packard Metri Pack 3-poles)	99
	Special electrical connection: Pin 1 + , Pin 3 -, Pin 5 Ground (only for output signal 4 ... 20 mA and male electrical plug 35, M12x1, 5-pole)	94
	Special electrical connection: Pin 1 Out, Pin 2 -, Pin 3 +, Pin 4 Ground (only for output signals 14, 16, 17, 23 and male electrical plug 01, industrial standard)	E3
	Cable length 1.5 m	1M
	Cable length 3.0 m	3M
	Cable length 5.0 m	5M
	Housing nut for electrical connection EN175301-803-A(DIN43650-A) secured with Loctite (max. 85°C)	L9
	Multiple packaging ¹²⁾	VM

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Media -10°C ... +125°C³⁾ max. 40 bar⁴⁾ Upon request⁵⁾ Cable length see accessories (max. length 50 m, in 5-meter sections)⁶⁾ Protection IP68: Immersion depth max. 3 m, Media +10°C ... +35°C⁷⁾ Not for sensors 57 and 87, only for pressure ranges ≤ 25 bar or 400 psi⁸⁾ Only for pressure connections 10, 30, 43, 42, 18, 24, 19⁹⁾ Pressure ranges > 16 bar (Pressure ranges ≤ 16 bar upon request)¹⁰⁾ Not for pressure connections 10, 18, 24, 52¹¹⁾ Only for sensors 59 and 89 and electrical connections 01, 35, 51 (others on request)¹²⁾ The order quantity must be a multiple of 50, only for electrical connections 05 and 35

Identical construction for refrigeration: Data sheet No. H72323

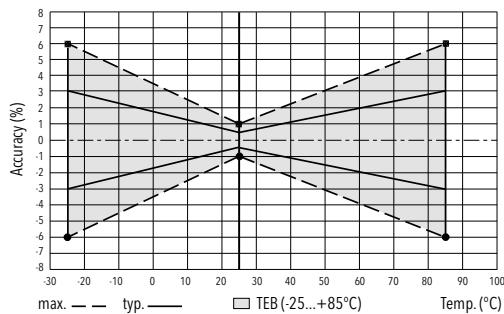
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
ECT1.0A	8472 71 5717 05 0000 0000 19 58 61	0 ... 1	3.2	4 ... 20 mA	9 ... 30
ECT1.6A	8472 73 5717 05 0000 0000 19 58 61	0 ... 1.6	3.2	4 ... 20 mA	9 ... 30
ECT2.5A	8472 75 5717 05 0000 0000 19 58 61	0 ... 2.5	5	4 ... 20 mA	9 ... 30
ECT4.0A	8472 76 5717 05 0000 0000 19 58 61	0 ... 4	8	4 ... 20 mA	9 ... 30
ECT6.0A	8472 77 5717 05 0000 0000 19 58 61	0 ... 6	12	4 ... 20 mA	9 ... 30
ECT10.0A	8472 78 5717 05 0000 0000 19 58 61	0 ... 10	20	4 ... 20 mA	9 ... 30
ECT16.0A	8472 79 5717 05 0000 0000 19 58 61	0 ... 16	32	4 ... 20 mA	9 ... 30
ECT25.0A	8472 80 5717 05 0000 0000 19 58 61	0 ... 25	50	4 ... 20 mA	9 ... 30
ECT40.0A	8472 81 5717 05 0000 0000 19 58 61	0 ... 40	80	4 ... 20 mA	9 ... 30
ECT60.0A	8472 82 5717 05 0000 0000 19 58 61	0 ... 60	120	4 ... 20 mA	9 ... 30
ECT1.0V	8472 71 5717 05 0000 0000 17 58 61	0 ... 1	3.2	0 ... 10 VDC	15 ... 30
ECT1.6V	8472 73 5717 05 0000 0000 17 58 61	0 ... 1.6	3.2	0 ... 10 VDC	15 ... 30
ECT2.5V	8472 75 5717 05 0000 0000 17 58 61	0 ... 2.5	5	0 ... 10 VDC	15 ... 30
ECT4.0V	8472 76 5717 05 0000 0000 17 58 61	0 ... 4	8	0 ... 10 VDC	15 ... 30
ECT6.0V	8472 77 5717 05 0000 0000 17 58 61	0 ... 6	12	0 ... 10 VDC	15 ... 30
ECT10.0V	8472 78 5717 05 0000 0000 17 58 61	0 ... 10	20	0 ... 10 VDC	15 ... 30
ECT16.0V	8472 79 5717 05 0000 0000 17 58 61	0 ... 16	32	0 ... 10 VDC	15 ... 30
ECT25.0V	8472 80 5717 05 0000 0000 17 58 61	0 ... 25	50	0 ... 10 VDC	15 ... 30
ECT40.0V	8472 81 5717 05 0000 0000 17 58 61	0 ... 40	80	0 ... 10 VDC	15 ... 30
ECT60.0V	8472 82 5717 05 0000 0000 17 58 61	0 ... 60	120	0 ... 10 VDC	15 ... 30

Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 3.0 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.
	TC zero point and span typ.	± 0.03 % FS/K typ.
	Long term stability 1 year typ.	± 0.3 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC 0 ... 5 VDC: 24 (10 ... 30) VDC 1 ... 6 VDC: 24 (10 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC 0.5 ... 4.5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4 ... 20 mA: to $U_s = 30$ VDC 0 ... 10 VDC, 0 ... 5 VDC, 1 ... 6 VDC: to $U_s = 30$ VDC 0.5 ... 4.5 VDC ratiometric: to $U_s = 5.25$ VDC
Environmental conditions	Media temperature	-25°C ... +125°C 400 bar/5000 psi: -10°C ... +125°C
	Ambient temperature	-25°C ... +125°C Cable PVC 22: -5°C ... +60°C Cable PUR 24: -20°C ... +70°C Cable Raychem 08: -20°C ... +100°C
	Protection ¹⁾	IP65, IP67, IP68
	Humidity	Max. 95 % relative
	Vibration	4 g (10...2000 Hz)
EMC Protection	Shock	50 g / 8 ms
	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	Ceramic, Al_2O_3 (96 %)
	Pressure connection (wetted parts)	57/87: 1.4305 (AISI303) 59/89: 1.4404/1.4435 (AISI316L) 52/82: 1.4462 (AISI318LN) 53/83: Titanium Grade 5
	Housing	57/87: 1.4305 (AISI303) 59/89: 1.4404/1.4435 (AISI316L) 52/82: 1.4462 (AISI318LN) 53/83: Titanium Grade 5
	Sealing	FKM 70 Sh, CR, EPDM
	Male electrical plug	See ordering information
	Weight	~ 110 g
	Mounting torque	15 ... 20 Nm

¹⁾ See electrical connection

Measuring accuracy 0.5 %



Electrical connection

Protection / electrical connection									
	IP65*)		IP67*)		IP67*)		IP65	IP68 max. 3m	IP68 max. 3 m
	Industrial standard EN175301-803A **)		M12x1 **) 5-pole		Packard Metri Pack **) 3-pole		Industrial standard Contact distance 9.4 mm **)	Cable**)	Cable **)
	05		35		51		01	24/22	08
Output signal		Standard	92	Standard	94		E4		
		2 1 ⊕	1 2 ⊕	4 1 3 5	1 3 5		1 3 ⊕	white brown yellow	red black green
8472.xx.xxxx.xx.19		Standard	92	Standard	94		E4		
		2 1 ⊕	1 2 ⊕	4 1 3 5	1 3 5		1 3 ⊕	white brown yellow	red black green
8472.xx.xxxx.xx.14/16/17/23		for DC	98	97		99		E3	
		2 3 1 ⊕	3 1 2 ⊕	1 2 3 5	2 3 3 5		1 2 3 3 ⊕	white green brown yellow	red white black green

*) Provided female connector is mounted according to instructions

**) Ventilation via male electric plug/cable end

***) Only cable versions or female electrical plug with shield connection

Additional information

Documents

Data sheet

www.trafag.com/H72324

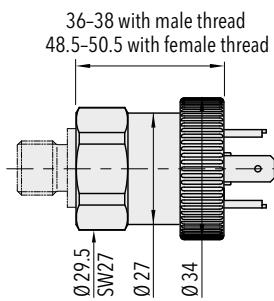
Instructions

www.trafag.com/H73324

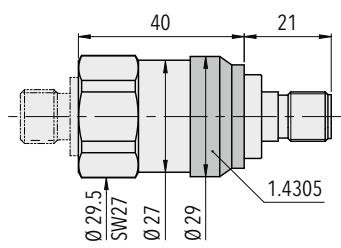
Flyer

www.trafag.com/H70662

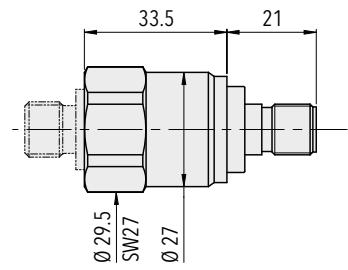
Dimensions



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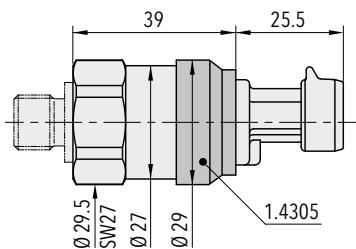


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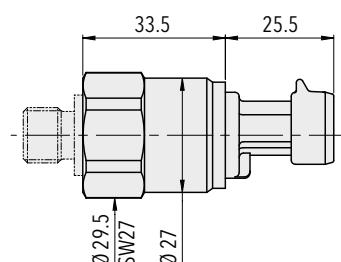


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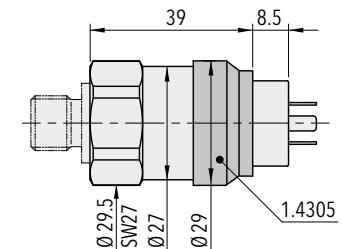


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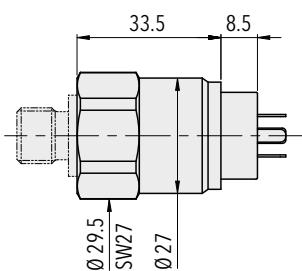


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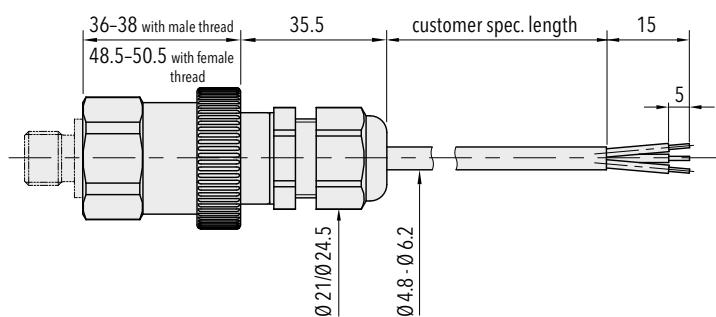


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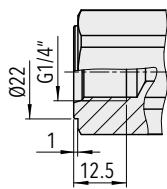
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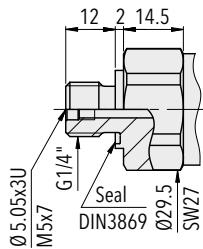


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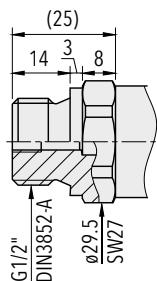
Dimensions



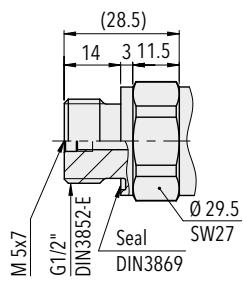
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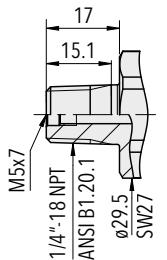
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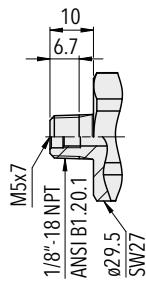
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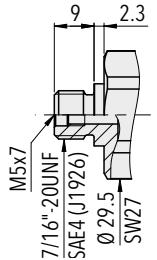
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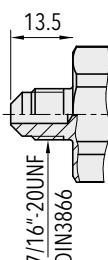
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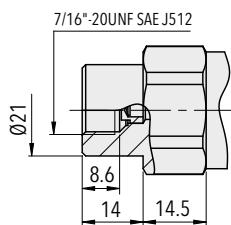
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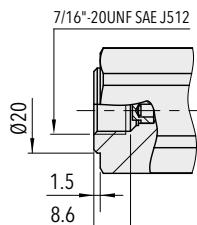
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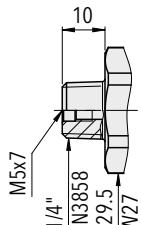
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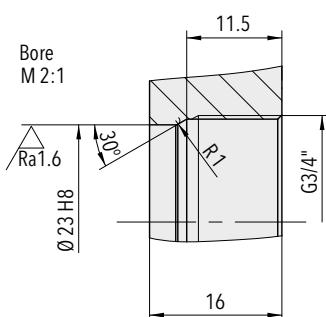
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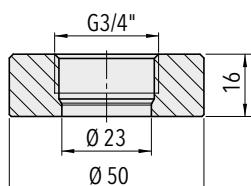
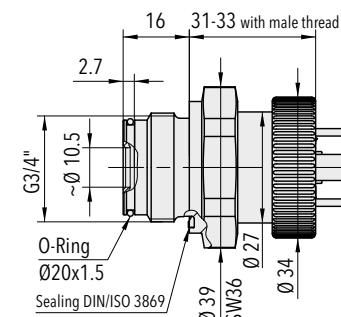
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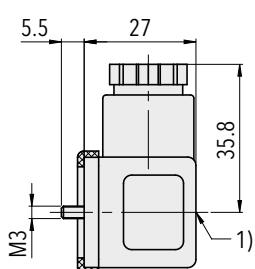
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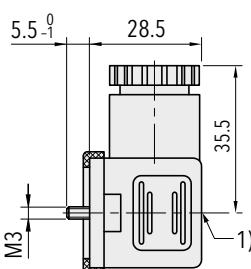
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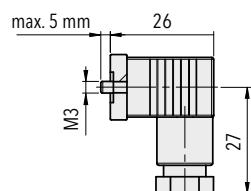
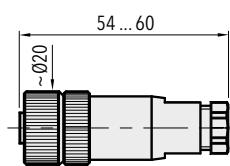
Welding flange for G3/4"
frontal membrane (1.4301)
Ordering No. C27805



1) Tightening torque 50...60 Ncm



1) Tightening torque 50...60 Ncm



8472.XX.XXXX.XX.XX.56

8472.XX.XXXX.XX.XX.58

8472.XX.XXXX.XX.XX.33

8472.XX.XXXX.XX.XX.34

INDUSTRIAL PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The economic pressure transmitter ECT 8473 is based on the tried and true ECT line of transmitters with the wide media temperature range from -25 to 125°C. The enhanced accuracy and the low pressure ranges down to 100 mbar in combination with a comprehensive set of features, materials and options makes the ECT 8473 pressure transmitter an ideal and versatile solution suitable for a wide variety of applications.



Applications

- Machine tools
- Hydraulics
- Water treatment

Features

- Measuring ranges from 100 mbar
- Excellent media compatibility
- Relative or absolute pressure measurement
- Titanium version optional
- Frontal membrane optional

Technical Data			
Measuring principle	Thick-film-on-ceramic	Accuracy @ 25°C typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)
Measuring range	0 ... 0.1 to 0 ... 40 bar 0 ... 1.5 to 0 ... 500 psi	Media temperature	-25°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Ambient temperature	-25°C ... +125°C Cable PVC 22: -5°C ... +60°C Cable PUR 24: -20°C ... +70°C Cable Raychem 08: -20°C ... +100°C

Subject to change

Ordering information/type code

			8473 . XX	XX	XX	XX	XX	XX
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]					
	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	1.2	2	70	0 ... 7.5	15	30	G0
	0 ... 1.0	2	3	71	0 ... 15	30	45	G1
	0 ... 1.6	3.2	4.8	73	0 ... 20	40	60	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
Sensor	Relative pressure, Material pressure connection and housing: 1.4305 (AISI303) Relative pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) ²⁾ Relative pressure, Material pressure connection and housing: 1.4462 (AISI318LN) ²⁾ Relative pressure, titanium grade 5 ²⁾	54 56 50 51	Absolute pressure, Material pressure connection and housing: 1.4305 (AISI303) ^{2) 3)} Absolute pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) ^{2) 3)} Absolute pressure, Material pressure connection and housing: 1.4462 (AISI318LN) ^{2) 3)} Absolute pressure, titanium grade 5 ^{2) 3)}	84 86 80 81				
Pressure connection	G1/4" female ²⁾ G1/4" male G1/2" male DIN3852-A ²⁾ G1/2" male DIN3852-E ²⁾ 1/4" NPT male, ANSI B1.20.1 ²⁾ 1/8" NPT male, ANSI B1.20.1 ^{2) 10)} 7/16"-20UNF male SAE4 (J1926) ²⁾ R1/4" male, DIN3858 ²⁾ G3/4" frontal membrane ^{2) 4)}						10 17 21 41 30 43 42 19 52	
Electrical connection	Male electrical plug EN 175301-803-A(DIN43650-A), Mat. PA Male electrical plug M12x1, 5-pole, Mat. PA (Old shape), Mat. PBT (New shape) Male electrical plug industrial standard (contact distance 9.4 mm), Mat. PBT Male electrical plug Packard Metri Pack, Mat. PBT Cable PUR (Screwed cable gland PA 6-3), -20°C ... +70°C ^{5) 6)} Cable PVC (Screwed cable gland PA 6-3), -5°C ... +60°C ^{5) 6) 9)} Cable Raychem (Screwed cable gland PA 6-3), -20°C ... +100°C ^{5) 6) 9)}						05 35 01 51 24 22 08	
Output signal	Signal output	Load resistance	I (supply)	U (supply)				
	4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 30 VDC				19
	0 ... 5 VDC	≥ 2.5 kΩ	≤ 10 mA	10 ... 30 VDC				14
	1 ... 6 VDC	≥ 5.0 kΩ	≤ 10 mA	10 ... 30 VDC				16
	0 ... 10 VDC	≥ 5.0 kΩ	≤ 10 mA	15 ... 30 VDC				17
	0.5 ... 4.5 VDC	≥ 5.0 kΩ	≤ 10 mA	5 VDC ± 0.25 VDC ratiom.				23

8473 . XX XX XX XX XX

Accessories	Seal FKM (-20°C ... +125°C)	61
	Seal CR ≤ 100 bar (-25°C ... +100°C) ⁷⁾	62
	Seal EPDM (-25°C ... +125°C)	63
	Pressure peak damping element ø 1.0 mm, material 1.4305 ⁸⁾	40
	Pressure peak damping element ø 0.4 mm, material 1.4305 (sensors 54, 84) resp. 1.4404 (sensors 50, 51, 56, 80, 81, 86) ⁸⁾	44
	Female electrical connector EN 175301-803-A(DIN43650-A)/NBR, -40°C ... +90°C	58
	Female electrical connector EN 175301-803-A(DIN43650-A)/Silicone, -40°C ... +125°C	56
	Female electrical plug M12x1, 5-pole	33
	Female electrical connector industrial standard	34
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)	92
	Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 + (only for output 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A)	98
	Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 Out (only for output signals 14, 16, 17, 23 and male electrical plug EN 175301-803-A / DIN 43650-A)	97
	Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical Packard Metri Pack 3-poles)	E4
	Special electrical connection: Pin 1 + , Pin 2 Out, Pin 3 - (only for output signals 14, 16, 17, 23 and male electrical plug Packard Metri Pack 3-poles)	99
	Special electrical connection: Pin 1 + , Pin 3 -, Pin 5 Ground (only for output signal 4 ... 20 mA and male electrical plug 35, M12x1, 5-pole)	94
	Special electrical connection: Pin 1 Out, Pin 2 -, Pin 3 +, Pin 4 Ground (only for output signals 14, 16, 17, 23 and male electrical plug 01, industrial standard)	E3
	Cable length 1.5 m	1M
	Cable length 3.0 m	3M
	Cable length 5.0 m	5M
	Housing nut for electrical connection EN175301-803-A(DIN43650-A) secured with Loctite (max. 85°C)	L9
	Multiple packaging ¹¹⁾	VM

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Upon request³⁾ Only for ranges: ≥ 400 mbar or 5 psi⁴⁾ Not for sensors 54 and 84, only for pressure ranges ≤ 25 bar or 400 psi⁵⁾ Cable length see accessories (max. length 50 m, in 5-meter sections)⁶⁾ Protection IP68: Immersion depth max. 3 m, Media +10°C ... +35°C⁷⁾ Only for pressure connections 10, 30, 43, 42, 18, 24, 19⁸⁾ Not for pressure connections 10, 52⁹⁾ Pressure ranges > 16 bar (Pressure ranges ≤ 16 bar upon request)¹⁰⁾ Only for sensors 56 and 86 and electrical connections 01, 35, 51 (others on request)¹¹⁾ The order quantity must be a multiple of 50, only for electrical connections 05 and 35

Identical construction for refrigeration:

Data sheet No. H72323

Standard products (extra short lead time)

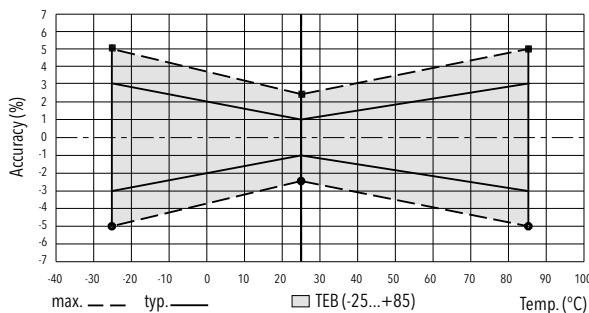
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Pressure connection	Signal output	Accuracy @ 25°C typ. [%]
ECT0.1A	8473 66 5417 05 0000 0000 19 58 61	0 ... 0.1	1.2	G1/4" male	4 ... 20 mA	1.0
ECT0.16A	8473 67 5417 05 0000 0000 19 58 61	0 ... 0.16	1.2	G1/4" male	4 ... 20 mA	1.0
ECT0.2A	8473 68 5417 05 0000 0000 19 58 61	0 ... 0.2	1.2	G1/4" male	4 ... 20 mA	0.5
ECT0.4A	8473 69 5417 05 0000 0000 19 58 61	0 ... 0.4	1.2	G1/4" male	4 ... 20 mA	0.5
ECT0.6A	8473 70 5417 05 0000 0000 19 58 61	0 ... 0.6	1.2	G1/4" male	4 ... 20 mA	0.3
ECT0.1V	8473 66 5417 05 0000 0000 17 58 61	0 ... 0.1	1.2	G1/4" male	0 ... 10 VDC	1.0
ECT0.16V	8473 67 5417 05 0000 0000 17 58 61	0 ... 0.16	1.2	G1/4" male	0 ... 10 VDC	1.0
ECT0.2V	8473 68 5417 05 0000 0000 17 58 61	0 ... 0.2	1.2	G1/4" male	0 ... 10 VDC	0.5
ECT0.4V	8473 69 5417 05 0000 0000 17 58 61	0 ... 0.4	1.2	G1/4" male	0 ... 10 VDC	0.5
ECT0.6V	8473 70 5417 05 0000 0000 17 58 61	0 ... 0.6	1.2	G1/4" male	0 ... 10 VDC	0.3
ECTF0.1A	8473 66 5652 05 0000 0000 19 58 61	0 ... 0.1	1.2	G3/4" frontal membrane	4 ... 20 mA	1.0
ECTF0.16A	8473 67 5652 05 0000 0000 19 58 61	0 ... 0.16	1.2	G3/4" frontal membrane	4 ... 20 mA	1.0
ECTF0.2A	8473 68 5652 05 0000 0000 19 58 61	0 ... 0.2	1.2	G3/4" frontal membrane	4 ... 20 mA	0.5
ECTF0.4A	8473 69 5652 05 0000 0000 19 58 61	0 ... 0.4	1.2	G3/4" frontal membrane	4 ... 20 mA	0.5
ECTF0.6A	8473 70 5652 05 0000 0000 19 58 61	0 ... 0.6	1.2	G3/4" frontal membrane	4 ... 20 mA	0.3
ECTF1.0A	8473 71 5652 05 0000 0000 19 58 61	0 ... 1	2	G3/4" frontal membrane	4 ... 20 mA	0.3
ECTF1.6A	8473 73 5652 05 0000 0000 19 58 61	0 ... 1.6	3.2	G3/4" frontal membrane	4 ... 20 mA	0.3
ECTF2.5A	8473 75 5652 05 0000 0000 19 58 61	0 ... 2.5	5	G3/4" frontal membrane	4 ... 20 mA	0.3
ECTF4.0A	8473 76 5652 05 0000 0000 19 58 61	0 ... 4	8	G3/4" frontal membrane	4 ... 20 mA	0.3
ECTF6.0A	8473 77 5652 05 0000 0000 19 58 61	0 ... 6	12	G3/4" frontal membrane	4 ... 20 mA	0.3
ECTF10.0A	8473 78 5652 05 0000 0000 19 58 61	0 ... 10	20	G3/4" frontal membrane	4 ... 20 mA	0.3

Specifications	
Electrical Data	Output / supply voltage Rise time Switch-on-delay Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.
	4 ... 20 mA: 24 (9 ... 30) VDC 0 ... 5 VDC: 24 (10 ... 30) VDC 1 ... 6 VDC: 24 (10 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC 0.5 ... 4.5 VDC: 5 VDC ratiom. Typ. 1 ms / 10 ... 90 % nominal pressure Max. 1.5 s 4...20 mA: to $U_s = 30$ VDC 0...10 VDC, 0...5 VDC, 1...6 VDC: to $U_s = 30$ VDC 0.5...4.5 VDC ratiometric: to $U_s = 5.25$ VDC
Environmental conditions	Media temperature Ambient temperature Protection ¹⁾ Humidity Vibration Shock
	-25°C ... +125°C -25°C ... +125°C Cable PVC 22: -5°C ... +60°C Cable PUR 24: -20°C ... +70°C Cable Raychem 08: -20°C ... +100°C IP65, IP67, IP68 Max. 95 % relative 4 g (10...2000 Hz) 50 g / 8 ms
EMC Protection	Emission Immunity
	EN/IEC 61000-6-3 EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts) Pressure connection (wetted parts) Housing Sealing Male electrical plug Weight Mounting torque
	Ceramic, Al_2O_3 (96 %) 54/84: 1.4305 (AISI303) 56/86: 1.4404/1.4435 (AISI316L) 50/80: 1.4462 (AISI318LN) 51/81: Titanium Grade 5 54/84: 1.4305 (AISI303) 56/86: 1.4404/1.4435 (AISI316L) 50/80: 1.4462 (AISI318LN) 51/81: Titanium Grade 5 FKM 70 Sh, CR, EPDM See ordering information ~ 110 g 15 ... 20 Nm

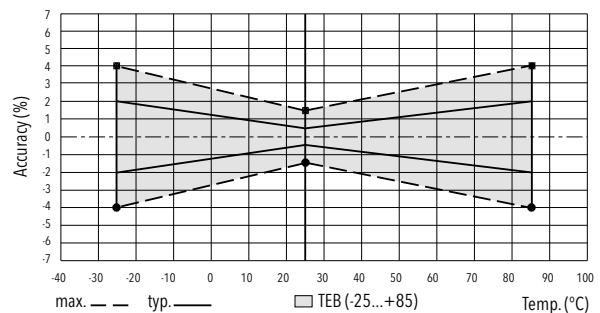
¹⁾ See electrical connection

Accuracy				
Pressure measuring range	[bar]	> 0 ... 0.4	0 ... 0.2	0 ... 0.1
	[psi]	> 0 ... 5	0 ... 2.5	0 ... 1.5
TEB @ -25 ... +85°C	[% FS typ.]	± 1.0	± 2.0	± 3.0
Accuracy @ +25°C	[% FS typ.]	± 0.3	± 0.5	± 1.0
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.3	± 0.3
TC zero point and span	[% FS/K typ.]	± 0.02	± 0.02	± 0.02
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.2	± 0.2

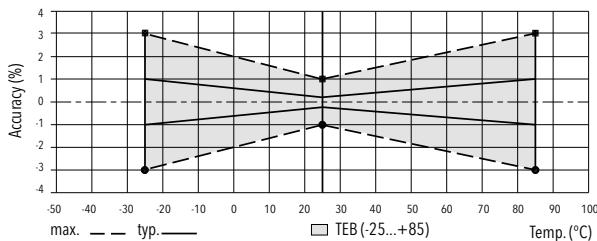
Measuring accuracy 1.0 %



Measuring accuracy 0.5 %



Measuring accuracy 0.3 %



Electrical connection

Protection / electrical connection							
	IP65*)	IP67*)	IP67*)	IP65	IP68 max. 3m	IP68 max. 3 m	
Industrial standard EN175301-803A **)		M12x1 **) 5-pole	Packard Metri Pack **) 3-pole	Industrial standard Contact distance 9.4 mm **)	Cable**)	Cable **)	
05	35	51	01	24/22	08		
	Standard	92	Standard	94	E4		
8473.XX.XXXX.XX.19		2 1 ⊕	4 1 3 5	1 2 3 5	1 1 ⊕	white brown yellow	red black green
	for DC	Standard	98	97	99	E3	
8473.XX.XXXX.XX.14/16/17/23		2 3 1 ⊕	3 1 2 ⊕	4 2 3 5	1 2 3 2 ⊕	white green brown yellow	red white black green

*) Provided female connector is mounted according to instructions

**) Ventilation via male electric plug/cable end

***) Only cable versions or female electrical plug with shield connection

Additional information

Documents

Data sheet

www.trafag.com/H72326

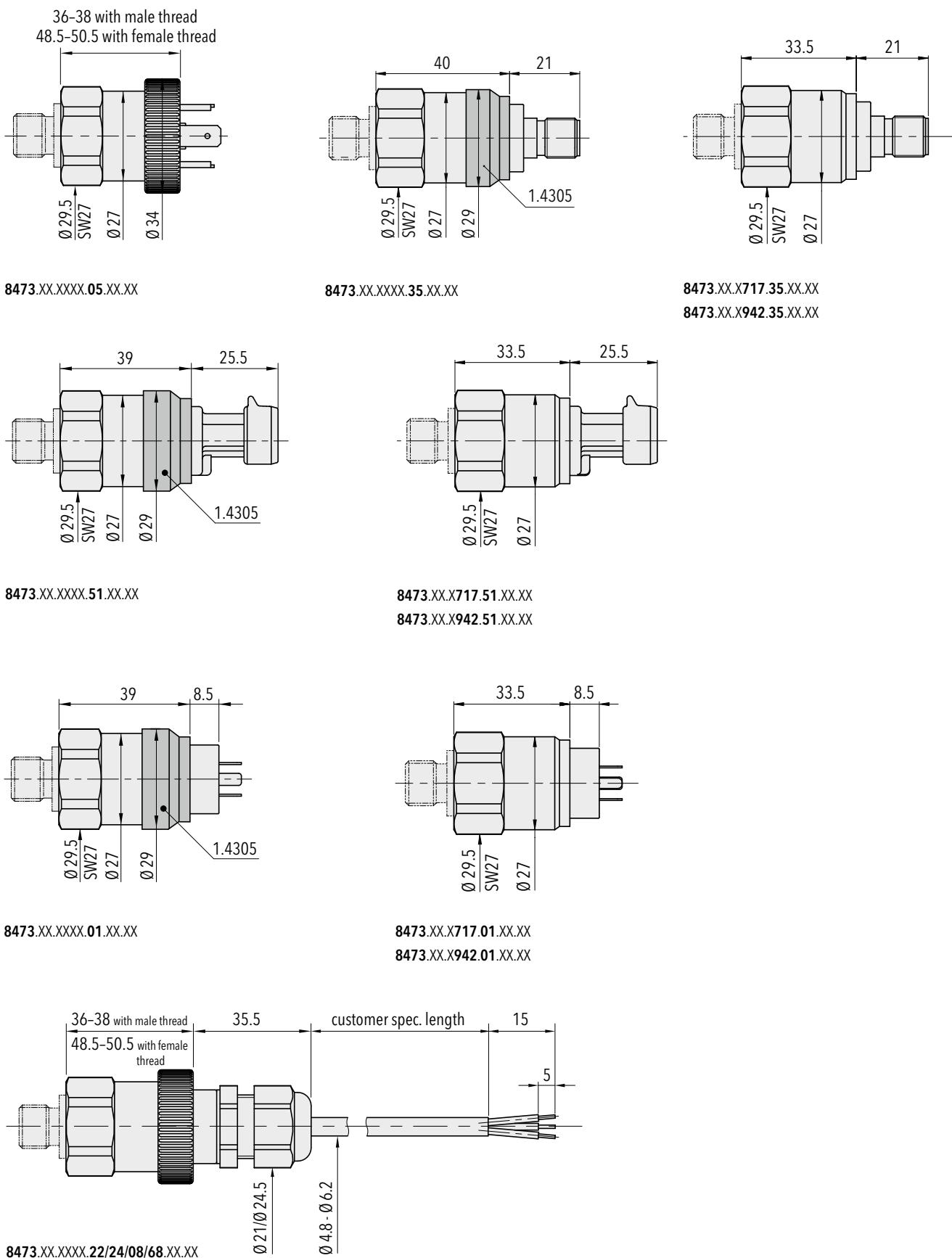
Instructions

www.trafag.com/H73324

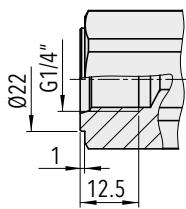
Flyer

www.trafag.com/H70663

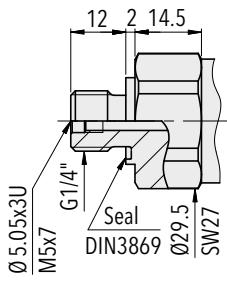
Dimensions



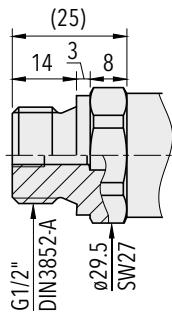
Dimensions



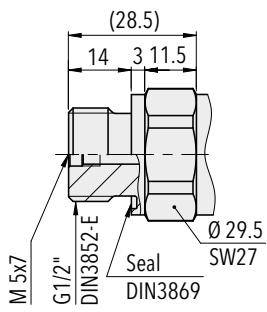
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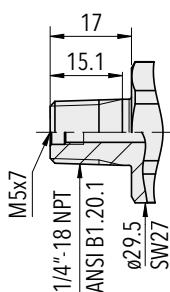
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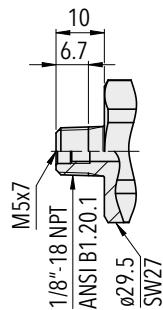
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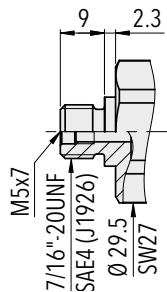
8473.XX.XX41.XX.XX.XX



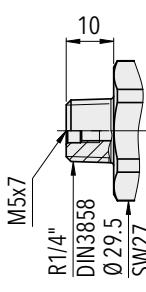
8473.XX.XX30.XX.XX.XX



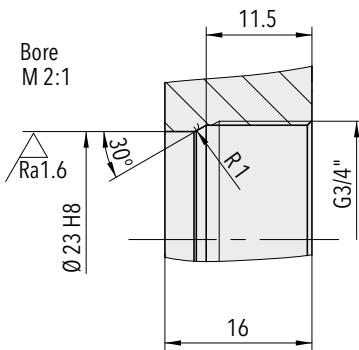
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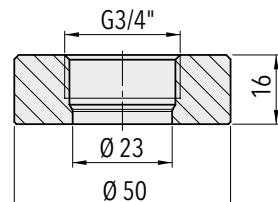
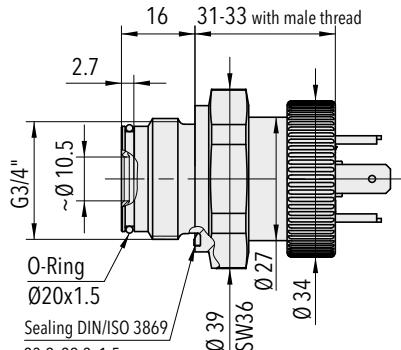
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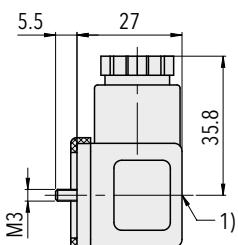
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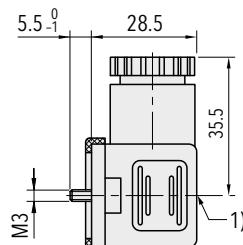
8473.XX.XX52.XX.XX.XX



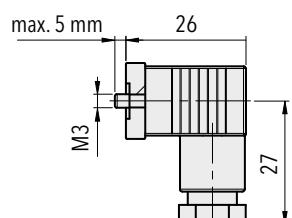
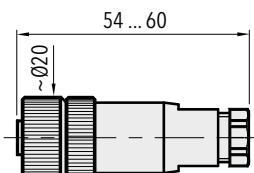
Welding flange for G3/4"
frontal membrane (1.4301)
Ordering No. C27805



1) Tightening torque 50...60 Ncm



1) Tightening torque 50...60 Ncm



8473.XX.XXXX.XX.XX.56

8473.XX.XXXX.XX.XX.58

8473.XX.XXXX.XX.XX.33

8473.XX.XXXX.XX.XX.34

MARINE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The economic pressure transmitter ECTN 8477 is based on the tried and true ECT line of transmitters. The wide media temperature range from -25 to 85°C in combination with a comprehensive set of features and options makes the ECTN 8477 pressure transmitter a versatile solution suitable for marine applications.



Applications

- Shipbuilding
- Engine manufacturing

Features

- Economical
- Good media compatibility
- Relative or absolute pressure measurement
- Titanium version optional

Technical Data

Measuring principle	Thick film on ceramic	Media temperature	-25°C ... +85°C 400 bar/5000 psi: -10°C ... +85°C
Measuring range	0 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA	Approval / conformity	DNV, GL, KRS, RINA
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

Ordering information/type code

				8477 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]						
	0 ... 1.0	2	3	71					
	0 ... 1.6	3.2	4.8	73					
	0 ... 2.5	5	7.5	75					
	0 ... 4	8	12	76					
	0 ... 6	12	15	77					
	0 ... 10	20	25	78					
	0 ... 16	32	40	79					
	0 ... 25	50	75	80					
	0 ... 40	80	100	81					
	0 ... 60	120	180	82					
	0 ... 100 ⁴⁾	200	300	83					
	0 ... 160 ⁴⁾	320	480	85					
	0 ... 250 ⁴⁾	500	750	74					
	0 ... 400 ^{2) 4)}	800	1000	84					
Sensor	Relative pressure, 1.4404/1.4435				59				
	Relative pressure, 1.4462 ⁴⁾				52				
	Relative pressure, titanium grade 5 ⁴⁾				53				
	Absolute pressure, 1.4404/1.4435 ³⁾				89				
	Absolute pressure, 1.4462 ^{3) 4)}				82				
	Absolute pressure, titanium grade 5 ^{3) 4)}				83				
Pressure connection	G1/4" female ⁴⁾				10				
	G1/4" male				17				
	G1/2" male DIN3852-A ⁴⁾				21				
	G1/2" male DIN3852-E ⁴⁾				41				
	1/4" NPT male ⁴⁾				30				
Electrical connection	Male electrical plug EN 175301-803-A, Mat. PA				05				
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 EPDM (-25°C ... +125°C)				63				
	Female electrical connector EN 175301-803-A(DIN43650-A)				58				
	Pressure peak damping element ø 0.4 mm				44				
	Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)				40				
	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 request²⁾ Media: -10°C ... +85°C³⁾ Absolute ranges max. 40 bar⁴⁾ Upon request

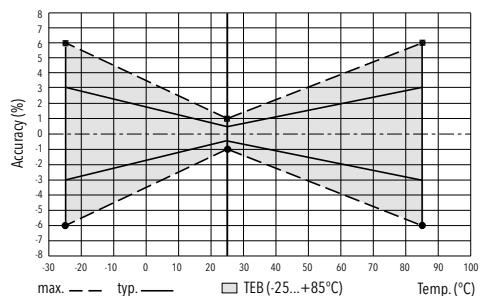
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
ECTN1.0A	8477 71 5917 05 0000 0000 19 58 61	0 ... 1	2	4 ... 20 mA	9 ... 30
ECTN2.5A	8477 75 5917 05 0000 0000 19 58 61	0 ... 2.5	5	4 ... 20 mA	9 ... 30
ECTN4.0A	8477 76 5917 05 0000 0000 19 58 61	0 ... 4	8	4 ... 20 mA	9 ... 30
ECTN6.0A	8477 77 5917 05 0000 0000 19 58 61	0 ... 6	12	4 ... 20 mA	9 ... 30
ECTN10.0A	8477 78 5917 05 0000 0000 19 58 61	0 ... 10	20	4 ... 20 mA	9 ... 30
ECTN16.0A	8477 79 5917 05 0000 0000 19 58 61	0 ... 16	32	4 ... 20 mA	9 ... 30
ECTN25.0A	8477 80 5917 05 0000 0000 19 58 61	0 ... 25	50	4 ... 20 mA	9 ... 30
ECTN40.0A	8477 81 5917 05 0000 0000 19 58 61	0 ... 40	80	4 ... 20 mA	9 ... 30

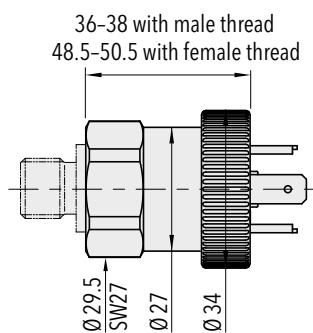
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 3.0 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.
	TC zero point and span typ.	± 0.03 % FS/K typ.
	Long term stability 1 year typ.	± 0.3 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4...20 mA: to $U_s = 30$ VDC
Environmental conditions	Media temperature	-25°C ... +85°C 400 bar/5000 psi: -10°C ... +85°C
	Ambient temperature	-25°C ... +85°C
	Protection ¹⁾	min. IP65
	Humidity	Max. 95 % relative
	Vibration	20 g (10...2000 Hz)
EMC Protection	Shock	50 g / 3 ms
	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	Ceramic, Al_2O_3 (96 %)
	Pressure connection (wetted parts)	59/89: 1.4404/1.4435 (AISI316L) 52/82: 1.4462 (AISI318LN) 53/83: Titanium Grade 5
	Housing	59/89: 1.4404/1.4435 (AISI316L) 52/82: 1.4462 (AISI318LN) 53/83: Titanium Grade 5
	Sealing	FKM 70 Sh, EPDM
	Male electrical plug	See ordering information
	Weight	~ 110 g
	Mounting torque	15...20 Nm

¹⁾ See electrical connection

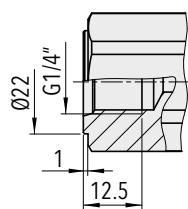
Measuring accuracy 0.5 %



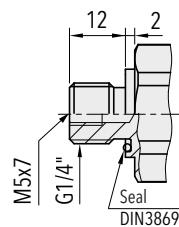
Dimensions



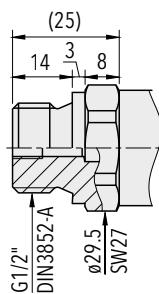
8477.XX.XXXX.05.XX.XX



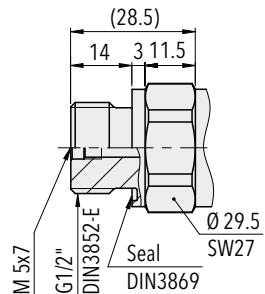
8477.XX.XX10.XX.XX.XX



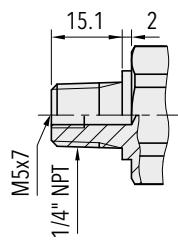
8477.XX.XX17.XX.XX.XX



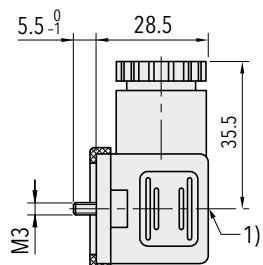
8477.XX.XX21.XX.XX.XX



8477.XX.XX41.XX.XX.XX



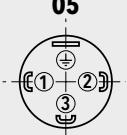
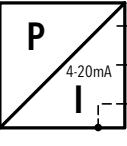
8477.XX.XX30.XX.XX.XX



1) Tightening torque 50...60 Ncm

8477.XX.XXXX.XX.XX.58

Electrical connection

Protection / electrical connection		
IP65*)		
Industrial standard EN175301-803A		
	05	
		
Output signal		
 8477.xx.xxxx.xx.19	Standard	with accessory 92
	2	1
	1	2
		

*) Provided female connector is mounted according to instructions

***) Only cable versions or female electrical plug with shield connection

Additional information		
Documents	Data sheet	www.trafag.com/H72322
	Instructions	www.trafag.com/H73324
	Flyer	www.trafag.com/H70688

RAILWAY PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature.



Applications

- Railways

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.)		

Subject to change

Ordering information/type code

			8478 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]					
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	1.2	2	70	0 ... 7.5	15	30	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, material 1.4305 ⁸⁾					40		
	Pressure peak damping element ø 0.4 mm, material 1.4305 (sensors 54, 57, 84, 87) resp. 1.4404 (sensors 56, 59, 86, 89) ⁸⁾					44		
	Female electrical connector EN 175301-803-A(DIN43650-A)/NBR, -40°C ... +90°C					58		
	Female electrical connector EN 175301-803-A(DIN43650-A)/Silicone, -40°C ... +125°C					56		
	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		
	Multiple packaging ⁷⁾					VM		

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Upon request³⁾ Max. 40 bar or 500 psi⁴⁾ ≥ 1 bar⁵⁾ Only with pressure connection 17 (1.4305)⁶⁾ Only for pressure ranges ≤ 25 bar or 400 psi⁷⁾ The order quantity must be a multiple of 50, only for electrical connections 05 and 35⁸⁾ Not for pressure connection 52

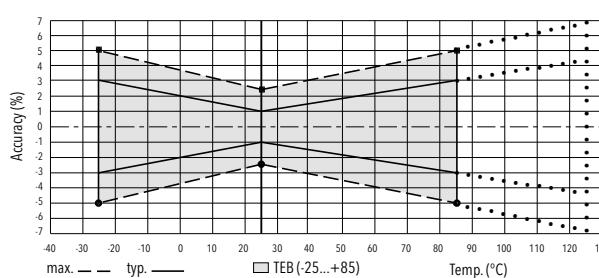
Specifications	
Electrical Data	Output / supply voltage Rise time Switch-on-delay Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.
	4 ... 20 mA: 24 (9 ... 30) VDC Typ. 1 ms / 10 ... 90 % nominal pressure 100 ms 4...20 mA: to $U_s = 30$ VDC
Environmental conditions	Media temperature Ambient temperature Protection ¹⁾ Humidity Vibration Shock
	-25°C ... +125°C -25°C ... +125°C IP65, IP67 Max. 95 % relative 15 g RMS (20...2000 Hz) (EN60068-2-64) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) (EN60068-2-6) 50 g / 11 ms 100 g / 6 ms Male electrical plug M12x1 (EN60068-2-27) ³⁾
EMC Protection	Emission Immunity
	EN/IEC 61000-6-3 EN50121-3-2 EN/IEC 61000-6-2 EN50121-3-2 ²⁾
Mechanical Data	Sensor (wetted parts) Pressure connection (wetted parts) Housing Sealing Male electrical plug Weight Mounting torque
	Ceramic, Al_2O_3 (96 %) 1.4404 (AISI316L) 1.4404/1.4435 (AISI316L) FKM 70 Sh, CR, EPDM See ordering information ~ 110 g 15 ... 20 Nm

¹⁾ See electrical connection²⁾ Surge voltage on shield, shield connected on both sides³⁾ For electrical connection 35

Accuracy		Sensors 57/87/59/89		Sensors 54/84/56/86	
Pressure measuring range	[bar]	$\geq 0 \dots 1$	$> 0 \dots 0.4$	0 ... 0.2	0 ... 0.1
	[psi]	$\geq 0 \dots 15$	$> 0 \dots 5$	0 ... 2.5	0 ... 1.5
TEB @ -25 ... +85°C	[% FS typ.]	± 3.0	± 1.0	± 2.0	± 3.0
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3	± 0.5	± 1.0
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.2	± 0.3	± 0.3
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.02	± 0.02	± 0.02
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.3	± 0.2	± 0.2	± 0.2

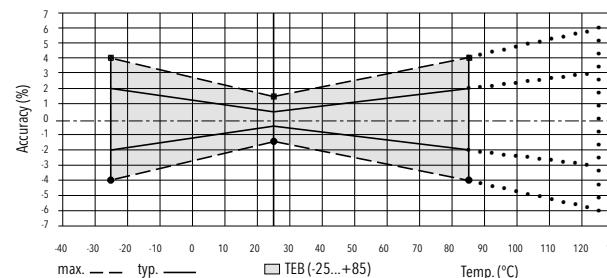
Sensors 54/84/56/86

0 ... 0.1 to 0 ... 0.16 bar



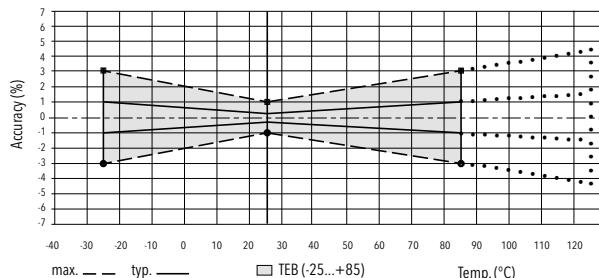
Sensors 54/84/56/86

0 ... 0.2 to 0 ... 0.4 bar



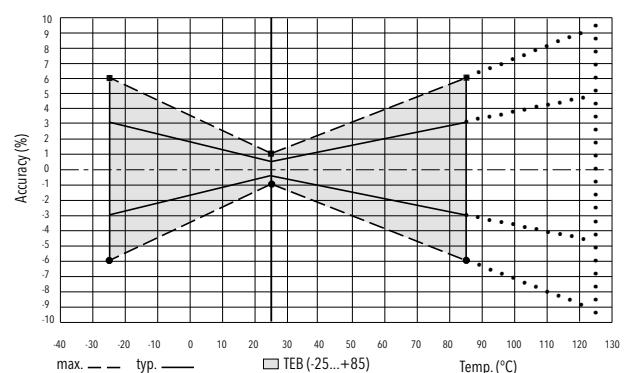
Sensors 54/84/56/86

> 0 ... 0.40 bar



Sensors 57/87/59/89

≥ 0 ... 1 bar



Additional specifications railways

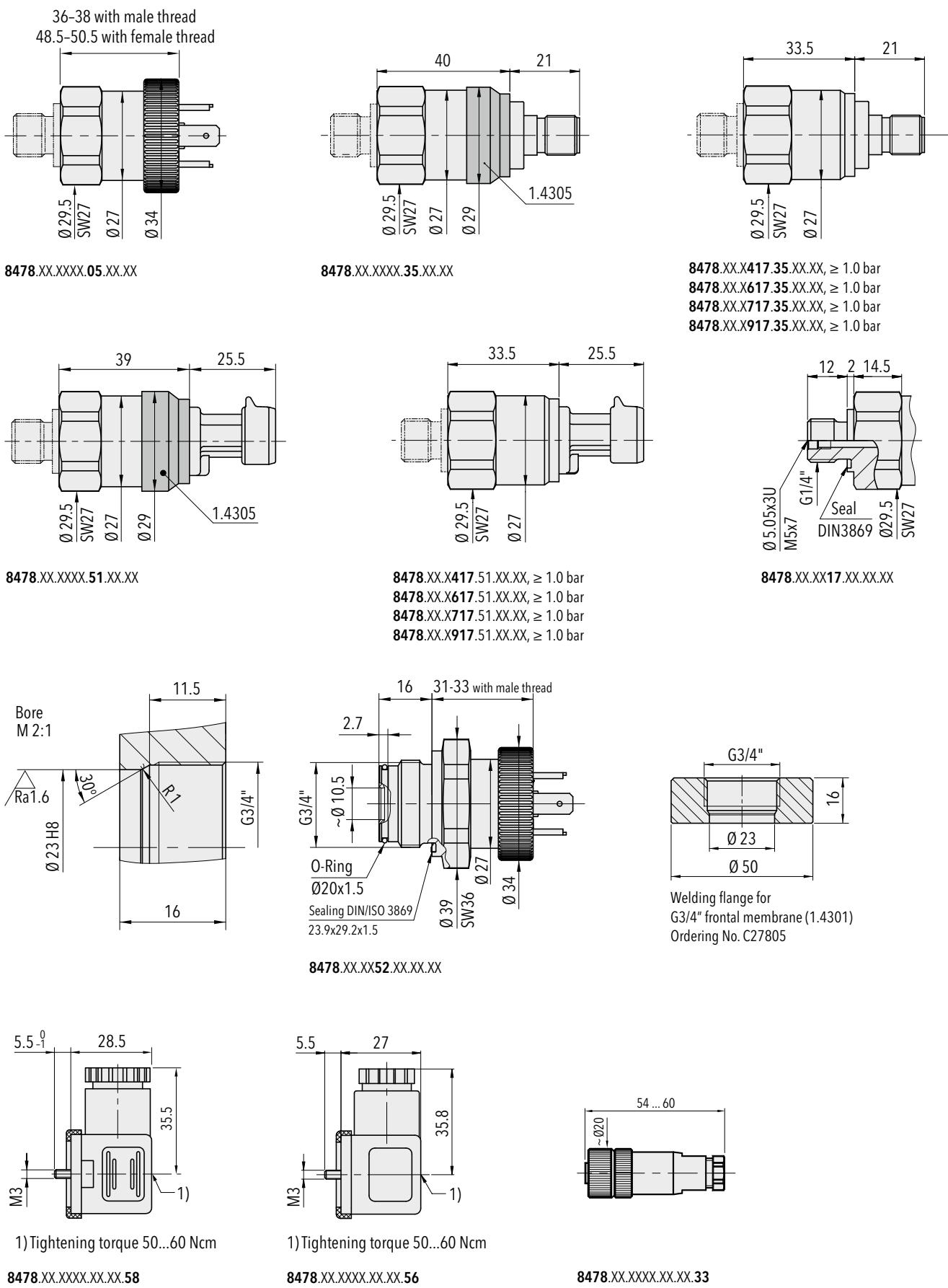
Environmental conditions	Cold	EN 60068-2-1	Ab: -25°C, 2 h (not in operation) Ae: -25°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclical	EN 60068-2-30	Db: 55°C, variant 1, 2 cycles (2 x 24 h)
	Vibration and shock	EN 61373	Vibration: category 3 Shock: category 3 ¹⁾ ³⁾
	Dielectrical strength	EN 50155	710 VDC
	Resistance of insulation	EN 50155	>100 MΩ, 500 VDC
	Behavior in case of fire (electrical connections 01, 32, 35)	EN 45545-2	Weight: < 10 g Surface: < 0.2 m²
Supply	Nominal voltage	EN 50155 ²⁾	24 V
	Interruptions of the voltage supply	EN 50155 ²⁾	Class S1
	Switching between two supply voltages	EN 50155 ²⁾	Class C1

¹⁾ In Category 3 the 2010 versions' higher severity levels apply in each case

²⁾ Chapter 5.1 Voltage supply

³⁾ Male electrical plug EN 175301-803-A, cat. 2

Dimensions



Electrical connection

Protection / electrical connection					
	IP65*)		IP67*)		IP67*)
	Industrial standard EN175301-803A		M12x1 5-pole		Packard Metri Pack 3-pole
	05		35		51
Output signal	Standard	92	Standard	94	Standard
	2	1	4	1	1
	1	2	1	3	2
	⊕	⊖	⊕	5	3
8478.xx.XXXX.xx.19					

*) Provided female connector is mounted according to instructions

****) Only cable versions or female electrical plug with shield connection

Additional information		
Documents	Data sheet	www.trafag.com/H72337
	Instructions	www.trafag.com/H73324
	Flyer	www.trafag.com/H70603

EX PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The EX pressure transmitter EXNT is based on Trafag's own thin-film-on-steel sensor technology with excellent long-term stability and offers reliable and accurate pressure measurement over a wide temperature range. The intrinsic safety design is certified for applications in Ex-Zones 0, 1, 2 (gas), 20, 21, 22 (dust) and mining.



Applications

- Shipbuilding
- Ex Zones 0, 1, 2 (gas); 20, 21, 22 (dust) and mining
- Hydrogen

Features

- II 1G Ex ia IIC T4/T6 Ga
- II 1D Ex ia IIIC T130° Da
- I M1 Ex ia I Ma
- II 1/2G Ex ia IIC T4/T6 Ga/Gb (with plastic-type connector)
- Pressure ranges from 0.4 to 2000 bar
- Completely welded sensor system
- Optional with hydrogen-compatible sensor
- ATEX and IECEx

Technical Data			
Measuring principle	Thin-film-on-steel	Media temperature	Max. -40°C ... +120°C (see electrical connection)
Measuring range	0 ... 0.4 to 0 ... 2000 bar 0 ... 5 to 0 ... 30000 psi	Ambient temperature	Max. -40°C ... +120°C (see electrical connection)
Output signal	4 ... 20 mA	Approval / conformity	GL, KRS, RMRS ATEX / IECEx, according to the norm EN/IEC 60079-0/EN 60079-11/ EN 60079-26/ EN 50303
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

				8292 . 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 ... 0.4 ²⁾	1.2	25	69	0 ... 5 ²⁾	18	350	F9	
	0 ... 0.6 ²⁾	1.5	25	70	0 ... 10 ²⁾	25	350	G0	
	0 ... 1.0 ²⁾	2.0	25	71	0 ... 15 ²⁾	30	350	G1	
	0 ... 1.6	3.5	80	73	0 ... 25	50	1200	G3	
	0 ... 2.5	5	100	75	0 ... 30	30	720	G5	
	0 ... 4	8	100	76	0 ... 50	120	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	460	2900	G9	
	0 ... 25	50	300	80	0 ... 400	730	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	
	0 ... 1000 ⁹⁾	1600	3000	88	0 ... 15000 ⁹⁾	25000	45000	H8	
	0 ... 1600	3000	4000	89	0 ... 25000	45000	60000	H9	
	0 ... 2000	3000	4000	90	0 ... 30000	45000	60000	J0	
Sensor	Relative pressure, accuracy: 0.3%(> 1 bar)						23		
	Relative pressure, accuracy: 0.5%(> 1 bar)						25		
	Relative pressure, accuracy: 0.5%(<= 1 bar)						26		
	Relative pressure, accuracy: 0.5 %, wetted parts hydrogen compatible ^{7) 8)}						35		
	Relative pressure, accuracy: 0.3 %, wetted parts hydrogen compatible ^{7) 8)}						33		
Pressure connection	G1/4" male ³⁾						17		
	G1/4" male (Manometer) EN 871 ^{3) 8)}						53		
	G1/4" female ^{3) 8)}						10		
	G1/2" male ^{3) 8)}						21		
	G1/2" male (Manometer) ^{3) 8)}						11		
	R1/4" male ^{3) 8)}						19		
	1/4" NPT male ^{3) 8)}						30		
	M18x1.5 male (conical seal: 58°) ^{4) 8)}						29		
Electrical connection	Male electrical plug EN 175301-803-A, plastic						05		
	Male electrical plug M12x1, 5-pole, metal						35		
	Male electrical plug MIL-C 26482, 6-pole, metal ⁵⁾						02		
	Male electrical plug Binder 723, 5-pole, metal						14		
	Cable with shield, material FDR 25 (Raychem), 4 x 0.5mm ² (cable length see "Accessories") - not ship approved						78		
	Cable intrinsically safe with shield, material PVC, 2 x 0.75mm ² (-40...+80°C), (cable length see "Accessories") - not ship approved						80		
Output signal	Signal output	Load resistance	I (supply)	U (supply)					
	4 ... 20 mA	(Usupply-10 V) / 20 mA		10 ... 30 VDC				19	

8292 . XX XX XX XX XX

Accessories	Female electrical connector EN 175301-803-A(DIN43650-A), plastic (not for zones 0 (gas))	58
	Female electrical plug M12x1, 5-pole, plastic (not for zones 0 (gas))	33
	Female electrical plug M12x1, 5-pole, metal	35
	Female electrical connector MIL-C 26482, 6-pole, metal	32
	Female electrical connector Binder 723, 5-pole, metal	37
	Pressure peak damping element ø 0.4 mm	44
	Pressure peak damping element ø 1.0 mm	40
	Cable length 1.5 m ⁶⁾	1M
	Cable length 3.0 m ⁶⁾	3M
	Cable length 5.0 m ⁶⁾	5M
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)	92
	Zener barrier 28V/93mA; R ≈300Ω: Ordering no ZEN28VDC	
	Damping elements and snubber see data sheet H72258	

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Only with sensor 26 (0.5%)³⁾ For pressure ranges ≤ 600 bar⁴⁾ For pressure ranges > 600 bar⁵⁾ For pressure ranges < 40 bar upon request⁶⁾ Other cable lengths upon request⁷⁾ Pressure ranges 0 ... 40 to 0 ... 1000 bar, max. ambient and media temperature +85°C⁸⁾ Upon request⁹⁾ With sensors 33 and 35: Overpressure 1300 bar/19000 psi, Burst pressure 2600 bar/38000 psi

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
EXNT0.4A	8292 69 2617 05 0000 0000 19 58 92	0 ... 0.4	1.2	10 ... 30	± 0.5
EXNT0.6A	8292 70 2617 05 0000 0000 19 58 92	0 ... 0.6	1.5	10 ... 30	± 0.5
EXNT1.0A	8292 71 2617 05 0000 0000 19 58 92	0 ... 1	2	10 ... 30	± 0.5
EXNT2.5A	8292 75 2517 05 0000 0000 19 58 92	0 ... 2.5	5	10 ... 30	± 0.5
EXNT4.0A	8292 76 2517 05 0000 0000 19 58 92	0 ... 4	8	10 ... 30	± 0.5
EXNT6.0A	8292 77 2517 05 0000 0000 19 58 92	0 ... 6	12	10 ... 30	± 0.5
EXNT10.0A	8292 78 2517 05 0000 0000 19 58 92	0 ... 10	20	10 ... 30	± 0.5
EXNT16.0A	8292 79 2517 05 0000 0000 19 58 92	0 ... 16	32	10 ... 30	± 0.5
EXNT25.0A	8292 80 2517 05 0000 0000 19 58 92	0 ... 25	50	10 ... 30	± 0.5
EXNT40.0A	8292 81 2517 05 0000 0000 19 58 92	0 ... 40	80	10 ... 30	± 0.5
EXNT100.0A	8292 83 2517 05 0000 0000 19 58 92	0 ... 100	200	10 ... 30	± 0.5
EXNT250.0A	8292 74 2517 05 0000 0000 19 58 92	0 ... 250	500	10 ... 30	± 0.5

Additional information

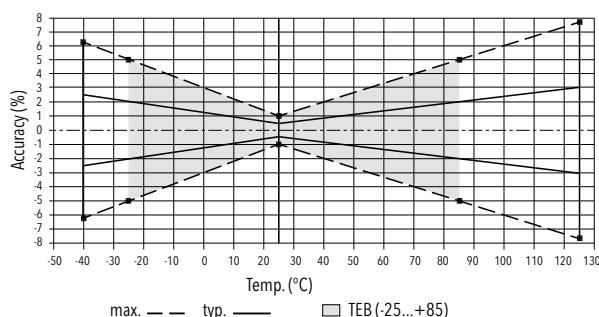
Documents	Data sheet	www.trafag.com/H72329
	Instructions	www.trafag.com/H73329
	Flyer	www.trafag.com/H70657

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (10 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
Environmental conditions	Media temperature	Max. -40°C ... +120°C (see electrical connection)
	Ambient temperature	Max. -40°C ... +120°C (see electrical connection)
	Protection ¹⁾	Min. IP65 Electrical connection cable: IP67 Electrical connection 02: IP67
	Humidity	Max. 95 % relative
	Vibration	10 g (50...2000 Hz)
	Shock	50 g / 3 ms
EMC Protection	Emission	IEC 61000-6-4
	Immunity	IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630), optional hydrogen-compatible steel
	Pressure connection (wetted parts)	Pressure ranges ≤ 250 bar and > 600 bar: 1.4542 (AISI630) Pressure ranges > 250 bar and ≤ 600 bar: 1.4301 (AISI304) Optional hydrogen-compatible steel
	Housing	1.4301 (AISI304)
	Sealing	FKM 70 Sh
	Male electrical plug	See ordering information
	Weight	~ 165 g
	Mounting torque	25 Nm Pressure connection 29: 30 Nm

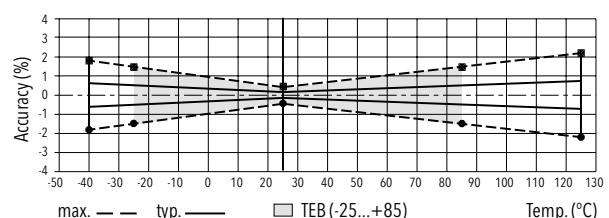
¹⁾ See electrical connection

Accuracy				
		Class 0.5 % Ordering No. 25/35 (> 1 bar)	Class 0.3 % Ordering No. 23/33 (> 1 bar)	Class 0.5 % Ordering No. 26 (≤ 1bar)
TEB @ -25 ... +85°C	[% FS typ.]	± 2.0	± 0.5	± 1.0
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3	± 0.5
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.1	± 0.10
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.005	± 0.01
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.2	± 0.2
Mounting dependency with 180° rotation (Vibration and shock: multiply this value with number of g)	[% FS typ.]	-	-	0 ... 1 bar: 0.05 0 ... 0.6 bar: 0.09 0 ... 0.4 bar: 0.13

Class 0.5 %



Class 0.3 %



Electrical connection

Protection / electrical connection						
	IP65*)	IP67 **)	IP67 **)	IP65*)	IP67*)	IP65*)
	Industrial standard EN175301-803A 	Cable (4 x 0.5 mm ²) 	Cable (2 x 0.75 mm ²) 	Binder 723 	MIL-C 26482 	M12x1 5-pole 35
Output signal	 8292 .XX.XXXX.XX.19	Standard 2 1 ⊕	92 1 2 ⊖	brown black yellow / green (blue = not connected)	1 (black) 2 (black) -	3 1 5 A C F 4 1 5
T-Range	Ambient and media temperature T4	-40 ... +120°C ¹⁾	-40 ... +120°C ¹⁾	-40 ... +80°C	-30 ... +95°C ¹⁾	-40 ... +120°C ¹⁾ -40 ... +120°C ¹⁾
	Ambient and media temperature T6	-40 ... +65°C	-40 ... +65°C	-40 ... +65°C	-30 ... +65°C	-40 ... +65°C -40 ... +65°C
For Ex zones	1, 2 20, 21, 22	0*, 1, 2 20, 21, 22			0, 1, 2 20, 21, 22	

* Attention! Additional measure against static charges are required for Zone 0 to 20 for these cables (laid with earthed metal braid, metal hose or metal pipe).

*) Provided female connector is mounted according to instructions

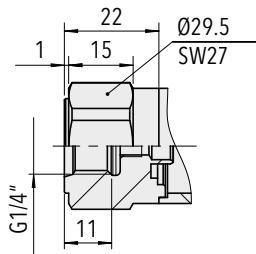
**) Ventilation via cable end

***) Only cable versions or female electrical plug with shield connection

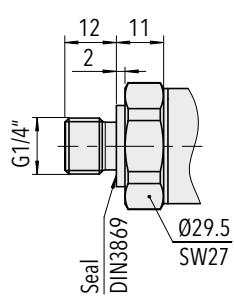
¹⁾ With sensors 33 and 35: max. +85°C

Marking	
For Ex zones	Marking
0, 1, 2, 20, 21, 22 M1, M2	 II 1G Ex ia IIC T4/T6 Ga II 1D Ex ia IIIC T130°C Da I M1 Ex ia I Ma
1, 2 20, 21, 22 M2	 II 2 G Ex ia IIC T4/T6 Gb (version with plastic type connector) II 1 D Ex ia IIIC T130°C Da I M1 Ex ia I Ma

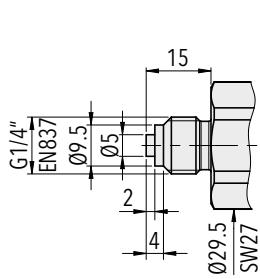
Dimensions



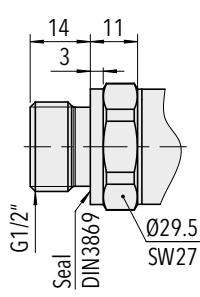
8292.XX.XX10.XX.XX.XX
(≤ 600 bar)



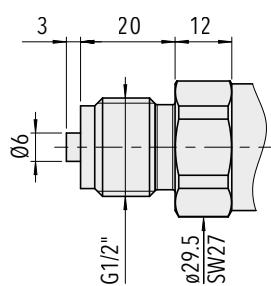
8292.XX.XX17.XX.XX.XX
(≤ 600 bar)



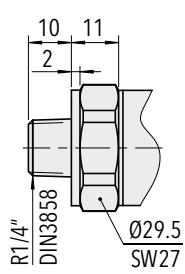
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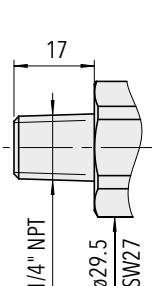
8292.XX.XX21.XX.XX.XX
(≤ 600 bar)



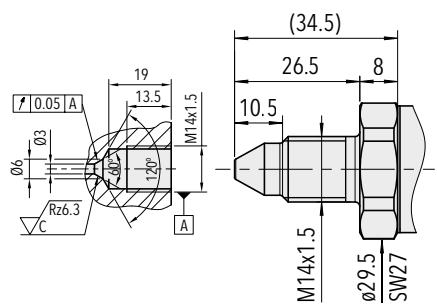
8292.XX.XX11.XX.XX.XX
(≤ 600 bar)



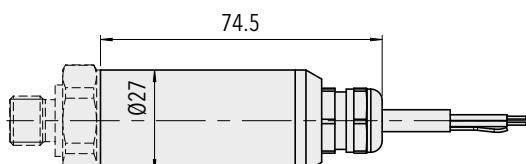
8292.XX.XX19.XX.XX.XX
(≤ 600 bar)



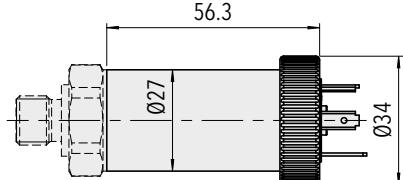
8292.XX.XX30.XX.XX.XX
(≤ 1000 bar)



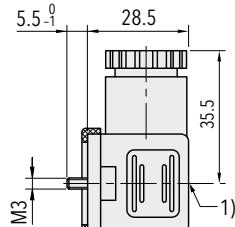
8292.XX.XX29.XX.XX.XX
(> 600 bar)



8292.XX.XXXX.78/80.XX.XX

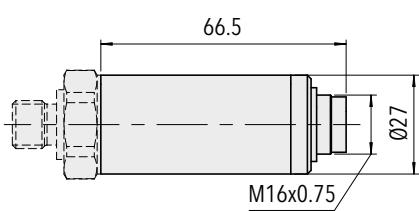


8292.XX.XXXX.05.XX.XX

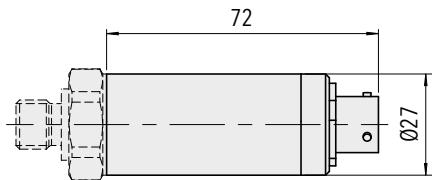
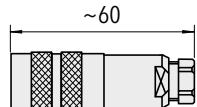


1) Tightening torque 50...60 Ncm

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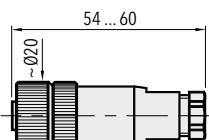
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8292.XX.XXXX.35.XX.XX



8292.XX.XXXX.XX.XX.33/35

EX PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature.



Applications

- Ex Zone 0, 1, 2 / Gas
- Ex Zone 20, 21, 22 / Dust
- Ex Underground Mining
- Shipbuilding

Features

- Ex SEV 11 ATEX 0145 X
- Pressure ranges from 100 mbar
- Versions with frontal flush diaphragm
- Media temperature to 150°C
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

Technical Data

Measuring principle	Piezoresistive	Ambient temperature	T3/T4: -25°C ... +85°C T6: -25°C ... +55°C
Measuring range	0 ... 0.1 to 0 ... 1000 bar	Approval / conformity	GL, KRS
Output signal	4 ... 20 mA	Type of protection	Ex II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC T125°C Da I M1 Ex ia I Ma
Media temperature	T3: -25°C ... +150°C T4: -25°C ... +100°C T6: -25°C ... +55°C		

Subject to change

Ordering information/type code

				XXXX	XX	XX	XX	XX	XX
Custom build code	Relative pressure				8852				
	Absolute pressure				8853				
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		
	0 ... 0.1	3	200	66	0 ... 16	48	200	79	
	0 ... 0.16	3	200	67	0 ... 25	75	200	80	
	0 ... 0.2	3	200	68	0 ... 40	120	850	81	
	0 ... 0.4	3	200	69	0 ... 60	180	850	82	
	0 ... 0.6	3	200	70	0 ... 100	300	850	83	
	0 ... 1	3	200	71	0 ... 160	480	850	85	
	0 ... 1.6	4.8	200	73	0 ... 250	750	850	74	
	0 ... 2.5	7.5	200	75	0 ... 400	850	850	84	
	0 ... 4	12	200	76	0 ... 600	850	850	86	
	0 ... 6	18	200	77	0 ... 1000	1500	1500	88	
	0 ... 10	30	200	78					
Sensor	Type 05 (Accuracy NLH: $\pm 0.5\% FS$) ²⁾					P5			
	Type 02 (Accuracy NLH: $\pm 0.25\% FS$) ²⁾					P2			
	Type 01 (Accuracy NLH: $\pm 0.1\% FS$) ²⁾					P1			
Pressure connection	G1/4" female					10			
	G1/4" male					15			
	G1/4" male (Manometer)					20			
	G1/2" male					21			
	G1/2" male, frontal membrane					31			
	G1/2" male, flush membrane					32			
	G1/2" male (Manometer)					11			
Electrical connection	Male electrical plug: MIL-C 26482 (Mat.: Al), IP 40					02			
	Male electrical plug: DIN43650-A, Mat.: PA, IP65					04			
	Male electrical plug: Binder 723, Mat.: Zn, IP67					14			
	Male electrical plug M12x1, 4-pole, metal					32			
	Cable PUR: length ... (mm) IP67					22			
	Cable FEP: length ... mm (IP67)					39			
Output signal	4 ... 20 mA					19			
	4 ... 20 mA with lightning protection (Surge)					09			
Accessories	Female electrical connector EN 175301-803-A(DIN43650-A)					58			
	Female electrical connector: Binder 723					37			
	Female electrical connector: MIL-C 26482, 6-pole, Metal, Zone 0,1,2 (Ga)					32			
	Special oil filling: Anderol					94			
	Temperature class T3					T3			
	Temperature class T4					T4			
	Temperaturklasse T6					T6			
	Titanium (Material pressure connection and housing)					Ti			

¹⁾ Customized pressure ranges upon request²⁾ Accuracy NLH see table

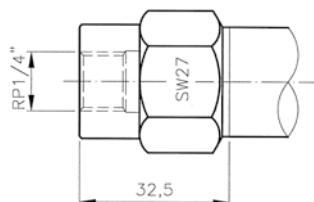
 Identical construction with other specifications:
Data sheet No. H72230

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA / 10 ... 30 VDC
	Load	$R_L \leq (\text{US-9V}) / 20 \text{ mA}$
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	T3: -25°C ... +150°C T4: -25°C ... +100°C T6: -25°C ... +55°C
	Ambient temperature	T3/T4: -25°C ... +85°C T6: -25°C ... +55°C
	Protection ¹⁾	Min. IP65
	Humidity	Max. 95 % relative
	Vibration	6 g (25...2000 Hz)
	Shock	50 g / 1 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4435 (AISI316L)
	Pressure connection (wetted parts)	1.4435 (AISI316L)
	Housing	1.4435 (AISI316L)
	Sealing	FKM 70 Sh (Viton)
	Male electrical plug	See ordering information
	Weight	~ 220 g
	Mounting torque	25 Nm

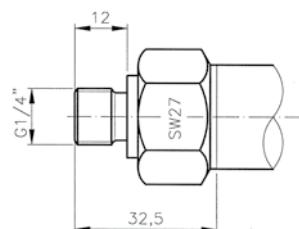
¹⁾ Provided female connector is mounted according to instructions

Accuracy						
Range	[bar]	0.1 ... 0.5	0.5 ... 2	2 ... 25	25 ... 600	> 600
Accuracy NLH (BSL through 0) P5	[± % FS]	0.5	0.5	0.5	0.5	0.5
Accuracy NLH (BSL through 0) P2	[± % FS]	0.25	0.25	0.25	0.25	0.25
Accuracy NLH (BSL through 0) P1	[± % FS]	-	0.1	0.1	0.1	-
Temperature coefficient zero point 0 ... +70°C	[± % FS/K]	0.06	0.03	0.015	0.015	0.015
Temperature coefficient zero point Option -25 ... +85°C	[± % FS/K]	0.08	0.04	0.02	0.02	0.02
Temperature coefficient span 0 ... +70°C	[± % FS/K]	0.015	0.015	0.015	0.015	0.015
Temperature coefficient span Option -25 ... +85°C	[± % FS/K]	0.02	0.02	0.02	0.02	0.02
Long-term drift	[1 year]	< 4 mbar	< 4 mbar	< 0.2 % FS	< 0.2 % FS	< 0.2 % FS
Repeatability	[± % FS]	0.05	0.05	0.05	0.05	0.05

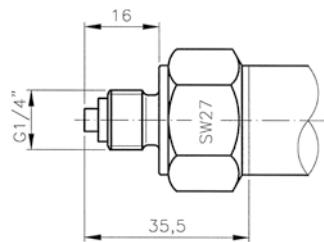
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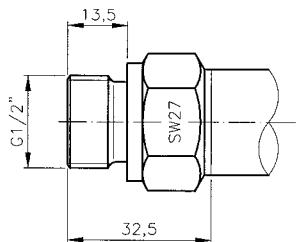
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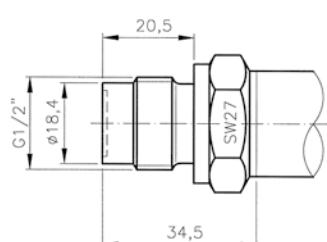
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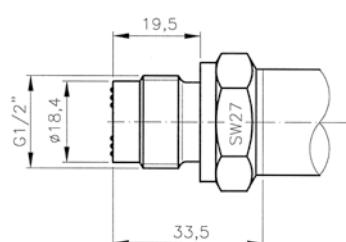
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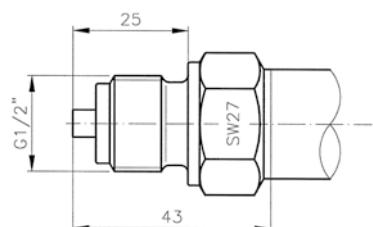
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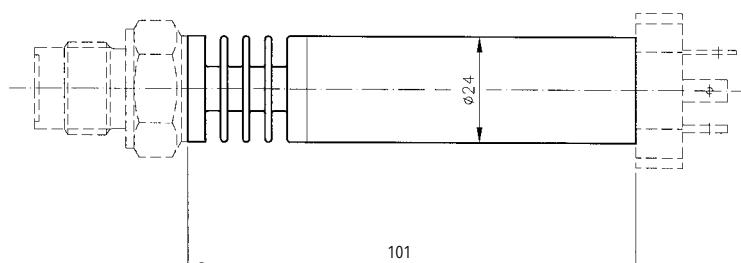
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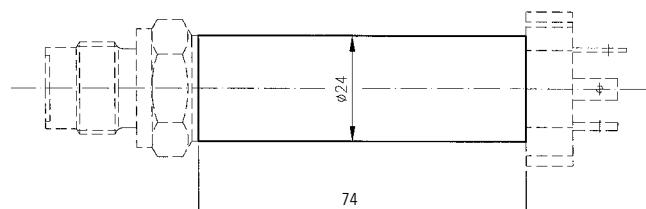
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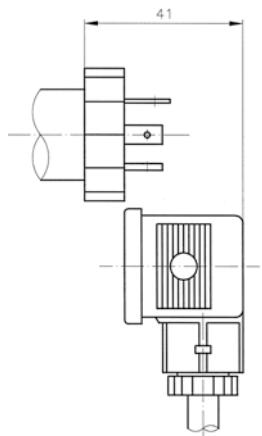
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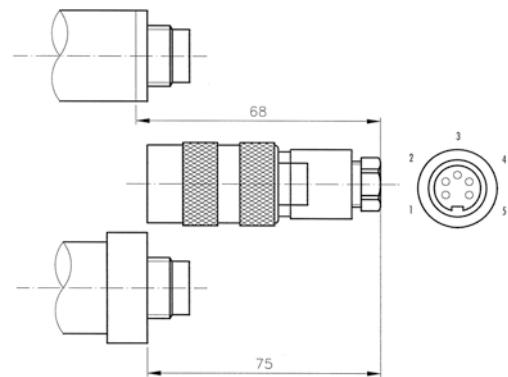
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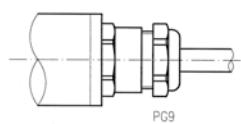
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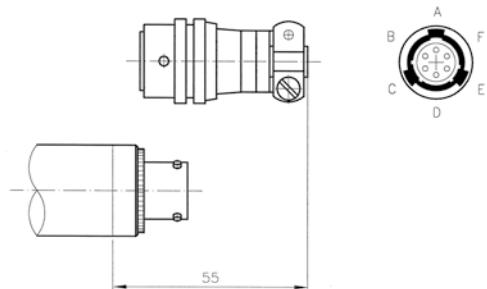
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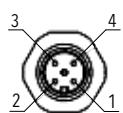
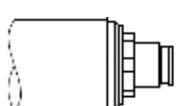
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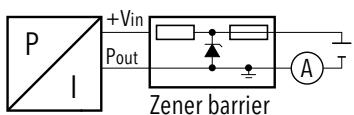
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Electrical connection

Protection IP65					
Version	Industrial standard EN175301-803A	Binder 723	MIL-C 26482	Cable	M12x1 4-pole
Electrical connection	04 	14 	02 	22/39 	32
4 ... 20 mA + V _{in} P _{out} ⊕ EP	1 2 3	3 1 5	A C F	white yellow grey	4 3 1
For Ex zones	1, 2 20, 21, 22	0, 1, 2 20, 21, 22	0, 1, 2 20, 21, 22	0*, 1, 2 20, 21, 22	1, 2 20, 21, 22



Marking	
For Ex zones	Marking
0, 1, 2, 20, 21, 22 M1, M2	Ex II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC T125°C Da I M1 Ex ia I Ma
1, 2 20, 21, 22 M2	Ex II 2G Ex ia IIB T3 ... T6 Gb II 1D Ex ia IIIC T125°C Da I M2 Ex ia I Mb

Additional information			
Documents	Data sheet	www.trafag.com/H72227	
	Instructions	www.trafag.com/H73227	
	Flyer	www.trafag.com/H70685	

EX PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The intrinsically safe EX pressure transmitter EXNA 8854 is certified to ATEX and IECEx for applications in Ex-Zones 0, 1, 2 (gas), 20, 21, 22 (dust) and mining. Due to the wide range of variants and pressure ranges from 0.1 to 1000 bar it can be configured for almost any application appropriately.



Applications

- Ex Zone 0, 1, 2 / Gas
- Ex Zone 20, 21, 22 / Dust
- Ex Underground Mining

Features

- Ex ATEX / IECEx
- Pressure ranges from 100 mbar
- Versions with frontal flush diaphragm
- Media temperature to 150°C
- EMC protection, IEC 61000

Technical Data

Measuring principle	Piezoresistive	Ambient temperature	T3: -40°C ... +125°C T4: -40°C ... +85°C T6: -40°C ... +50°C
Measuring range	0 ... 0.1 to 0 ... 1000 bar	Approval / conformity	DNV-GL Ex according to standards, IEC/EN 60079-0/-11/-26, EN 50303
Output signal	4 ... 20 mA	Type of protection	Ex II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC T145°C Da I M1 Ex ia I Ma
Media temperature	T3: -40°C ... +150°C T4: -40°C ... +100°C T6: -40°C ... +50°C		

Subject to change

Ordering information/type code

				8854 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]						
0 ... 0.1	3	200	66	0 ... 16	48	200	79		
0 ... 0.16	3	200	67	0 ... 25	75	200	80		
0 ... 0.2	3	200	68	0 ... 40	120	850	81		
0 ... 0.4	3	200	69	0 ... 60	180	850	82		
0 ... 0.6	3	200	70	0 ... 100	300	850	83		
0 ... 1	3	200	71	0 ... 160	480	850	85		
0 ... 1.6	4.8	200	73	0 ... 250	750	850	74		
0 ... 2.5	7.5	200	75	0 ... 400	850	1500	84		
0 ... 4	12	200	76	0 ... 600	850	1500	86		
0 ... 6	18	200	77	0 ... 1000	1500	1500	88		
0 ... 10	30	200	78						
Sensor	Type 02 relative (Accuracy NLH BSL ± 0.25 % FS)				P2				
	Type 02 absolute (Accuracy NLH BSL ± 0.25 % FS)				A2				
	Type 01 relative (Accuracy NLH BSL ± 0.1 % FS) ⁶⁾				P1				
	Type 01 absolute (Accuracy NLH BSL ± 0.1 % FS) ⁶⁾				A1				
Pressure connection	1/4" NPT male				30				
	1/2" NPT male				39				
	G1/4" female				10				
	G1/4" male				15				
	G1/2" male				21				
	G1/2" male, frontal membrane				31				
	G1/2" male, flush membrane				32				
Electrical connection	Male electrical plug EN 175301-803-A, Mat. plastic				05				
	Male electrical plug Binder 723, 5-pole, Metal				14				
	Male electrical plug MIL-C 26482, 6-pole, Metal				02				
	Male electrical plug M12x1, 4-pole, metal				32				
	PUR cable, length ... mm (IP67) ⁵⁾				22				
	FEP cable, length ... mm (IP67)				39				
Output signal	Signal output	Load resistance	I (supply)	U (supply)					
	4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 28 VDC				19	
Accessories	Special oil filling: Anderol								94
	Female electrical connector EN 175301-803-A (DIN43650-A)								58
	Female electrical connector Binder 723, 5-pole, metal								37
	Female electrical connector MIL-C 26482, 6-pole, metal								32
	Temperature class T3								T3
	Temperature class T4								T4
	Temperaturklasse T6								T6
	Pressure peak damping element ²⁾								DE
	Titanium (Material pressure connection and housing)								Ti
	Zener barrier 28V/93mA; R ≈ 300Ω: Ordering code F90138								

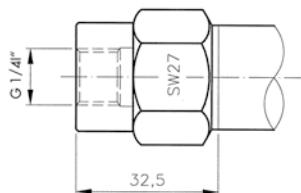
¹⁾ Customized pressure ranges upon request²⁾ Only with pressure connection 30, 39, 15, 21³⁾ P2/A2 ≤ 120 bar⁴⁾ P1/A1 ≤ 270 bar⁵⁾ ≤ +50°C⁶⁾ ≤ 600 bar

Specifications	
Electrical Data	Zener barrier Output / supply voltage Rise time
	28V/ 93 mA/ 0.65 W 4 ... 20 mA: 9 ... 28 VDC Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature Ambient temperature Protection ¹⁾ Humidity Vibration Shock
	T3: -40°C ... +150°C T4: -40°C ... +100°C T6: -40°C ... +50°C T3: -40°C ... +125°C T4: -40°C ... +85°C T6: -40°C ... +50°C Min. IP65 Max. 95 % relative EN 60068-2-6: 10 g (4...2000 Hz) EN 60068-2-27: 100 g/ 6 ms
EMC Protection	Emission Immunity
	EN 61000-4-3: 10 V/m IEC 61000-4-2: 8 kV K./15 kV L.
Mechanical Data	Sensor (wetted parts) Pressure connection (wetted parts) Housing Sealing Male electrical plug Weight Mounting torque
	1.4435 (AISI316L) or titanium 1.4435 (AISI316L) or titanium 1.4435 (AISI316L) or titanium FKM 70 Sh; EPDM / Kalrez See ordering information ~ 220 g 25 Nm

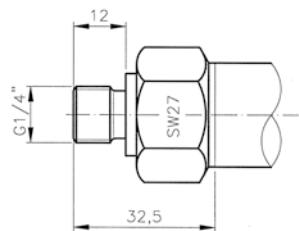
¹⁾ Provided female connector is mounted according to instructions

Accuracy						
Sensor 01 (P1/A1) NLH ± 0.1 %						
Pressure measuring range	[bar]	0.1 ... 0.5	0.5 ... 2	2 ... 100	100 ... 600	> 600
NLH @ +25°C (BSL through 0)	[% FS typ.]	± 0.1	± 0.1	± 0.1	± 0.1	-
TEB @ 0 ... +70°C	[% FS typ.]	± 0.8	± 0.3	± 0.3	± 0.3	± 0.3
TEB @ -25 ... +100°C	[% FS typ.]	± 1.3	± 0.75	± 0.75	± 0.75	± 0.75
Long term stability 1 year		< 4 mbar	< 4 mbar	< 0.2 % FS	< 0.2 % FS	< 0.2 % FS
Repeatability	[% FS typ.]	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
Sensor 02 (P2/A2) NLH ± 0.25 %						
Pressure measuring range	[bar]	0.1 ... 0.5	0.5 ... 2	2 ... 100	100 ... 600	> 600
NLH @ +25°C (BSL through 0)	[% FS typ.]	± 0.25	± 0.25	± 0.25	± 0.25	± 0.25
TEB @ 0 ... +70°C	[% FS typ.]	± 1.0	± 0.7	± 0.7	± 0.7	± 0.7
TEB @ -25 ... +100°C	[% FS typ.]	± 2.0	± 1.0	± 1.0	± 1.0	± 1.0
Long term stability 1 year		< 4 mbar	< 4 mbar	< 0.2 % FS	< 0.2 % FS	< 0.2 % FS
Repeatability	[% FS typ.]	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05

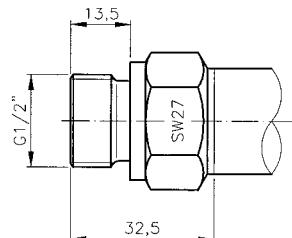
Dimensions



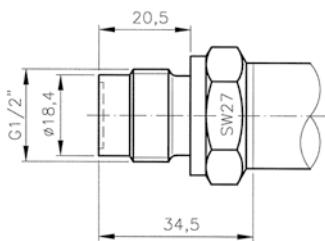
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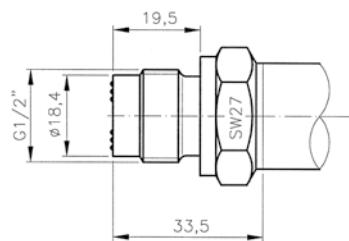
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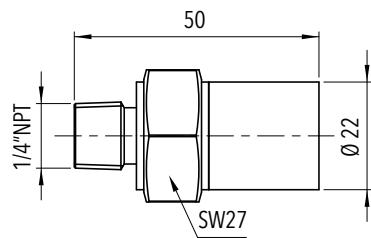
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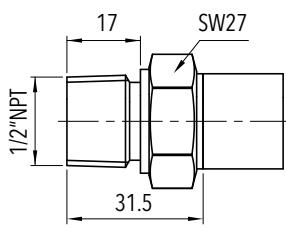
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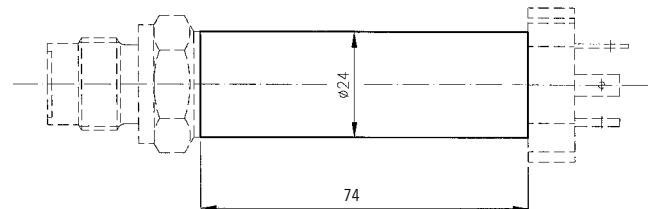
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8854.XX.XX30.XX.XX.XX

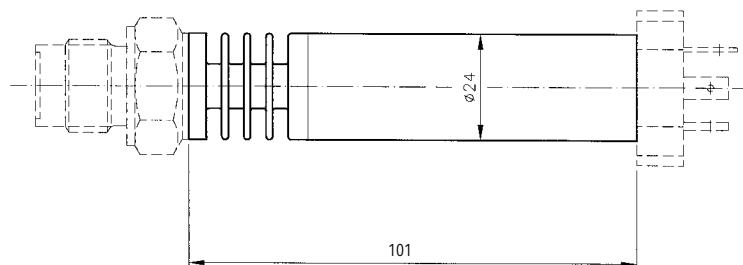


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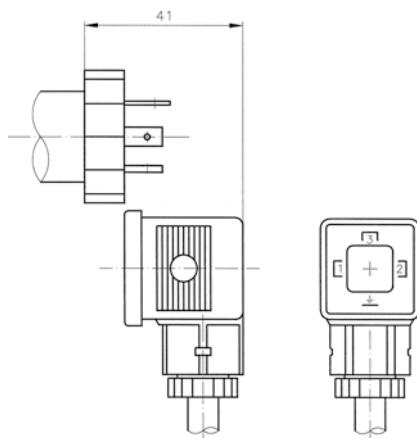
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8854.XX.XXXX.XX.XX.T6

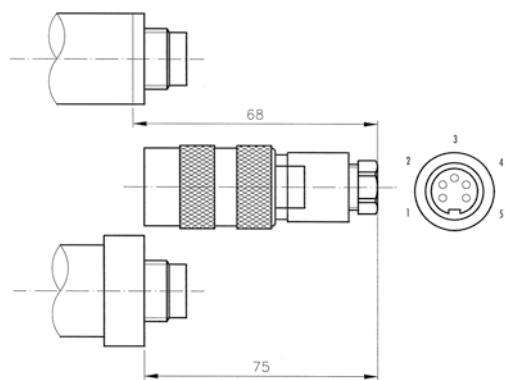


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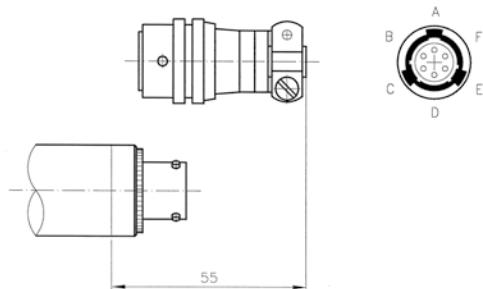
Dimensions



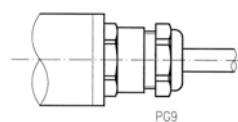
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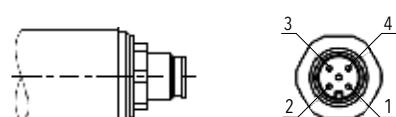
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8854.XX.XXXX.02.XX.32



8854.XX.XXXX.22/39.XX.XX

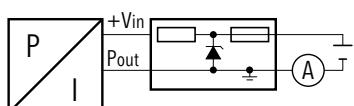


8854.XX.XXXX.32.XX.XX

Electrical connection

Protection IP65					
Version	Industrial standard EN175301-803A	Binder 723	MIL-C 26482	Cable	M12x1 4-pole
Electrical connection	05 	14 	02 	22/39 	32
4 ... 20 mA + Vin Pout ⊕ EP	1 2 3	3 1 5	A C F	white yellow grey	4 3 1
For Ex zones	1, 2 20, 21, 22	0, 1, 2 20, 21, 22	0, 1, 2 20, 21, 22	0*, 1, 2 20, 21, 22	1, 2 20, 21, 22

* **Attention!** Additional measure against static charges are required for Zone 0 to 20 for these cables (laid with earthed metal braid, metal hose or metal pipe).



Uo 28 V
Io 93 mA
Po 0.65 W

Marking	
For Ex zones	Marking
0, 1, 2, 20, 21, 22 M1, M2	Ex II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC T145°C Da I M1 Ex ia I Ma
1, 2 20, 21, 22 M2	Ex II 2G Ex ia IIB T3 ... T6 Gb II 1D Ex ia IIIC T145°C Da I M2 Ex ia I Mb

Additional information		
Documents	Data sheet	www.trafag.com/H72334
	Instructions	www.trafag.com/H73227
	Flyer	www.trafag.com/H70679

NAVITRAG

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature.



Applications

- Shipbuilding
- Engine manufacturing

Features

- Excellent long-term stability
- Protection IP65
- EMC protection, IEC 61000
- Excellent resistance to pressure peaks and dynamic pressure changes

Technical Data

Measuring principle	Thin-film-on-steel	Media temperature	-25°C ... +125°C
Measuring range	0 ... 1.0 to 0 ... 600 bar	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA	Approval / conformity	ABS, BV, CCS, DNV-GL, KRS, LRS
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

Subject to change

Ordering information/type code

			8202 . XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]				
	0 ... 1.0	3	100	71			
	0 ... 1.6	3	100	73			
	0 ... 2.5	6	100	75			
	0 ... 4	10	100	76			
	0 ... 6	15	100	77			
	0 ... 10	20	200	78			
	0 ... 16	32	200	79			
	0 ... 25	80	300	80			
	0 ... 40	80	300	81			
	0 ... 60	200	500	82			
	0 ... 100	200	500	83			
	0 ... 160	500	1000	85			
	0 ... 250	500	1000	74			
	0 ... 400	800	1500	84			
	0 ... 600	1000	2000	86			
Sensor	relative			22			
	absolute			26			
Pressure connection	G1/4" female			10			
	G1/2" male			11			
Fixing	Wall mounting bracket			31			
Accessories	Connector with marine cable gland DIN89280, M24x1.5 (Cable ø 14...16.5)			27			
	Connector with marine cable gland DIN89280, M18x1.5 (Cable ø 8...10.5)			40			
	Cable gland for screened cable, Cable ø 6...12mm			28			
	Damping elements and Snubber: See specification sheet H72258						

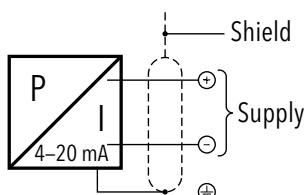
¹⁾ Customized pressure ranges upon request

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
N1.0	8202 71 2210	0...1	3	12...34	± 0.5
N2.5	8202 75 2210	0...2.5	6	12...34	± 0.5
N4.0	8202 76 2210	0...4	10	12...34	± 0.5
N6.0	8202 77 2210	0...6	15	12...34	± 0.5
N10.0	8202 78 2210	0...10	20	12...34	± 0.5
N16.0	8202 79 2210	0...16	32	12...34	± 0.5
N25.0	8202 80 2210	0...25	80	12...34	± 0.5
N40.0	8202 81 2210	0...40	80	12...34	± 0.5
N100.0	8202 83 2210	0...100	200	12...34	± 0.5
N250.0	8202 74 2210	0...250	500	12...34	± 0.5
N400.0	8202 84 2210	0...400	800	12...34	± 0.5

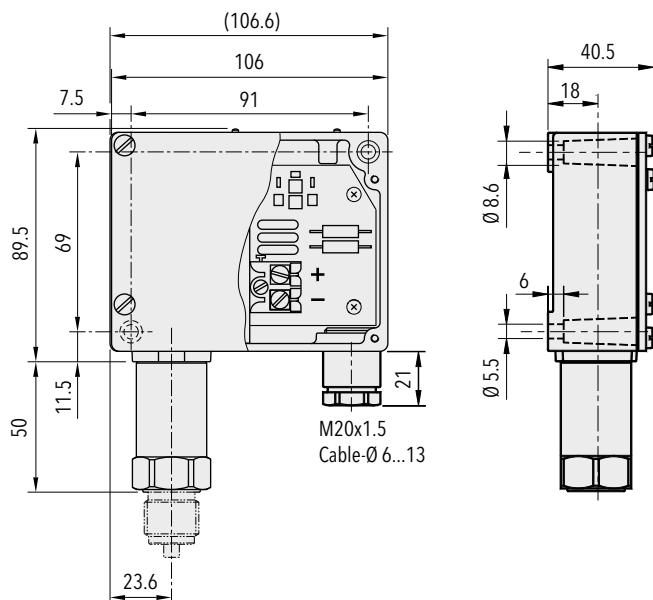
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 2 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.3 % FS typ.
	TC zero point and span typ.	± 0.02 % FS/K typ.
	Long term stability 1 year typ.	± 0.2 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA; 24 (12 ... 34) VDC
	Load	$U_{\text{supply}} - 12V)/20 \text{ mA}$
	Rise time	typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	-25°C ... +125°C
	Ambient temperature	-25°C ... +85°C
	Protection	Min. IP65
	Humidity	Max. 95 % relative
	Vibration	6g (25...2000 Hz)
	Shock	50g/ 11 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Electrical connections	Terminal screw 0.75 ... 2.5 mm ²
	Screwed cable gland	M20x1.5 Cable-Ø 6...13 mm
	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	AlSi10Mg/ Epoxy coated
	Sealing	NBR 70 Sh
	Weight	~ 520 g
	Mounting torque	25 Nm

Electrical Connection

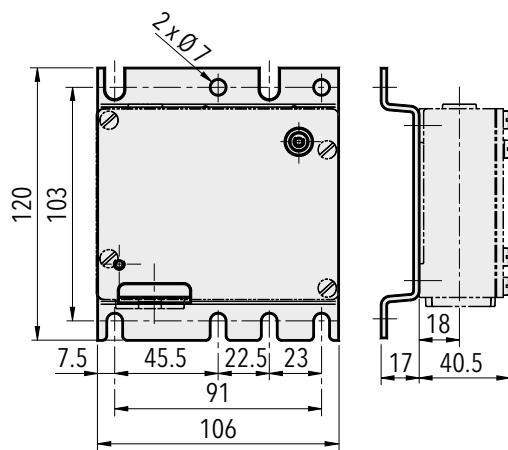


Additional information		
Documents	Data sheet	www.trafag.com/H72206
	Instructions	www.trafag.com/H70722
	Flyer	www.trafag.com/H70677

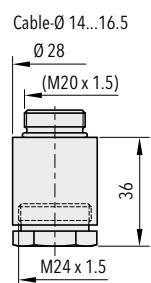
Dimensions



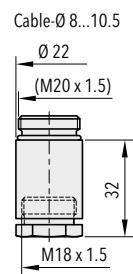
8202.XX.XXXX.XX.XX



8202.XX.XXXX.31.XX



8202.XX.XXXX.XX.27



8202.XX.XXXX.XX.40

DIFFERENTIAL PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature.



Applications

- Shipbuilding
- Engine manufacturing



Features

- High zero point stability
- High resistance to pressure cycling
- EMC protection, IEC 61000

Technical Data

Measuring principle	Thin-film-on-steel	Media temperature	-25°C ... +125°C
Measuring range	0 ... 1 to 0 ... 16 bar	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA(P1-P2)	Approval / conformity	BV
Accuracy @ 25°C typ.	± 0.8 % FS typ		

Subject to change

Ordering information/type code

			8204 . XX	XXXX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Maximum system pressure [bar]	Overpressure on one side [bar]			
	0 ... 1.0	2.5	6	71		
	-1 ... 1.5	6	15	55		
	0 ... 2.5	6	15	75		
	-1 ... 5	16	32	58		
	0 ... 6	16	32	77		
	0 ... 10	40	80	78		
	0 ... 16	40	80	79		
Pressure connection	G1/4" female			2210		
Fixing	Fixing Standard				00	
	Wall mounting bracket				31	
Accessories	■ Connector with marine cable gland DIN89280, M24x1.5 (Cable -ø 14...16.5)					27
	■ Connector with marine cable gland DIN89280, M18x1.5 (Cable -ø 8...10.5)					40
	Damping elements and Snubber: See specification sheet H72258					

¹⁾ Customized pressure ranges upon request

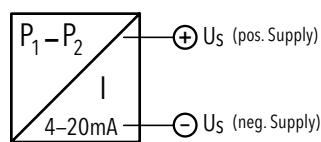
Standard products (extra short lead time)

Product No.	Type Code	Differential pressure (measuring range) [bar]	Maximum system pressure [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
ND1.0	8204 71 2210	0 ... 1.0	2.5	6	12 ... 34	± 0.8
ND1.5	8204 55 2210	-1 ... 1.5	6	15	12 ... 34	± 0.8
ND2.5	8204 75 2210	0 ... 2.5	6	15	12 ... 34	± 0.8
ND5	8204 58 2210	-1 ... 5.0	16	32	12 ... 34	± 0.8
ND6	8204 77 2210	0 ... 6.0	16	32	12 ... 34	± 0.8

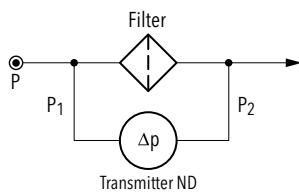
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 3.5 % FS typ.
	Accuracy @ 25°C typ.	± 0.8 % FS typ
	NLH @ 25°C (BSL) typ.	± 0.5 % FS typ.
	TC zero point and span typ.	± 0.04 % FS/K typ.
	Long term stability 1 year typ.	± 0.4 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA; 24 (12 ... 34) VDC
	Load	$U_{\text{supply}} \cdot 12V/20 \text{ mA}$
	Rise time	typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	-25°C ... +125°C
	Ambient temperature	-25°C ... +85°C
	Protection ¹⁾	Min. IP65
	Humidity	Max. 95 % relative
	Vibration	6g (25...2000 Hz)
	Shock	50g/ 1 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Electrical connections	Terminal screw 0.75 ... 2.5 mm ²
	Screwed cable gland	M20x1.5 Cable-Ø 6...13 mm
	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	AlSi10Mg/ Epoxy coated
	Sealing	NBR 70 Sh
	Weight	~ 720 g
	Mounting torque	25 Nm

¹⁾ Provided female connector is mounted according to instructions

Electrical Connection

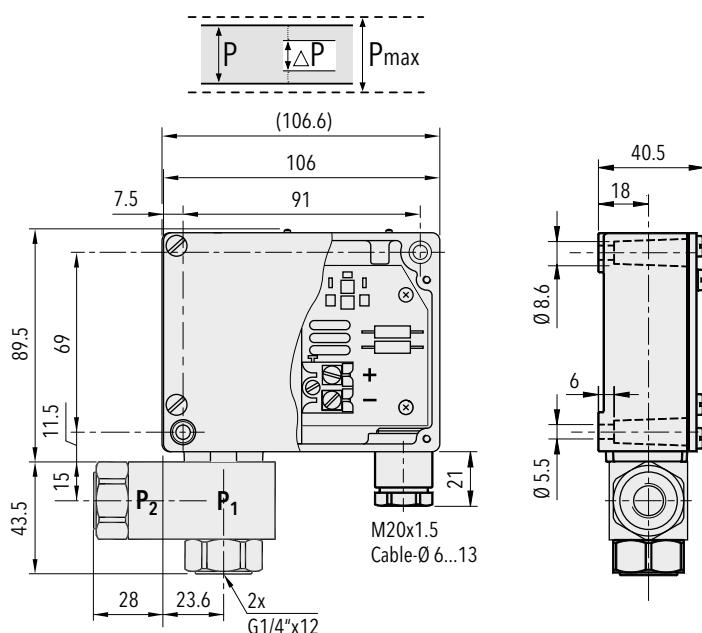


Functional diagram

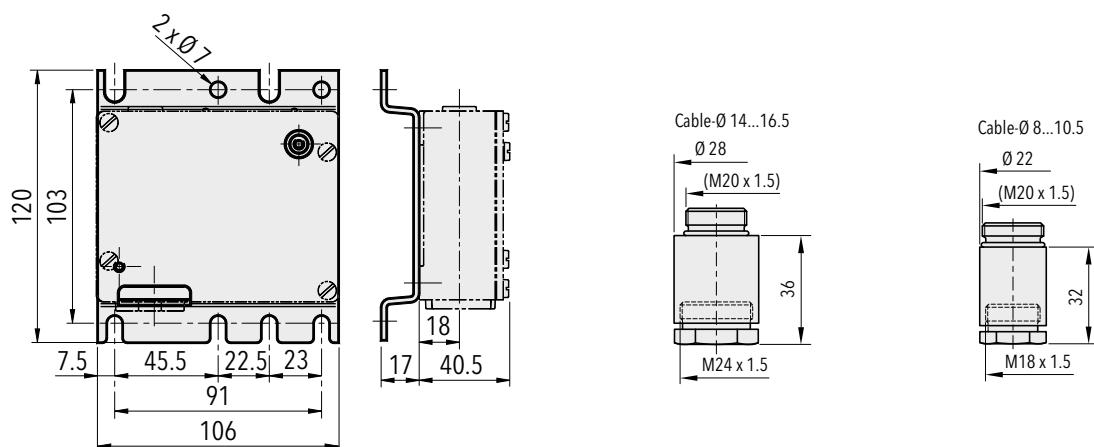


Δp = Differential Pressure
 P₁ = Higher pressure
 P₂ = Lower pressure
 P = System pressure

Dimensions



8204.XX.2210.XX.XX



8204.XX.2210.31.XX

8204.XX.XXXX.XX.27

8204.XX.XXXX.XX.40

Additional information

Documents

Data sheet

www.trafag.com/H72218

Instructions

www.trafag.com/H73218

Flyer

www.trafag.com/H70678

PICOTRANS

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The NPN pressure transmitter offers reliable and accurate pressure measurement over a wide temperature range. Its excellent long-term stability is based on the leading thin-film-on-steel sensor technology from Trafag. Its robust design and the block design with its optional flange connection makes the NPN the perfect choice for demanding applications such as marine and rail industries.



Applications

- Shipbuilding
- Engine manufacturing
- Railways
- Machine tools
- Hydraulics



Features

- Compact design
- Flange connection (PICO family)
- High vibration resistance
- Good temperature resistance
- Completely welded steel sensor system without additional seals

Technical Data

Measuring principle	Thin film on steel	Media temperature	-40°C ... +100°C
Measuring range	0 ... 2.5 to 0 ... 250 bar	Ambient temperature	-40°C ... +100°C
Output signal	4 ... 20 mA	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

			8264 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over 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 ²⁾	320	1000	85				
	0 ... 250 ²⁾	500	1000	74				
Sensor	Relative pressure, accuracy: 0.3 %			23				
	Relative pressure, accuracy: 0.5 %			25				
Pressure connection	G1/4" female			10				
	M10x1 female			17				
	G1/8" female			18				
Electrical connection	Male electrical plug: EN 175301-803-A (DIN43650-A), Mat.: PA			04				
	Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5 mm ² (cable length see "Accessories")			78				
Output signal	Signal output	Load resistance	I (supply)	U (supply)				
	4 ... 20mA	(Usupply-9 V) / 20 mA		24 (9 ... 32)VDC				19
Accessories	Flange connection with O-Ring ³⁾							41
	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
	Welsh plug G1/8"							57
	Welsh plug G1/4"							74
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C							58
	Elbow connector female: 90° EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C							55
	Fixing set							V3
	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)							92
	Cable length 1.5 m							1M
	Cable length 3.0 m							3M
	Cable length 5.0 m							5M

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Only for pressure connection G1/4"³⁾ Flange (accessory 41) only for pressure ranges ≤ 40 bar

Standard products (extra short lead time)

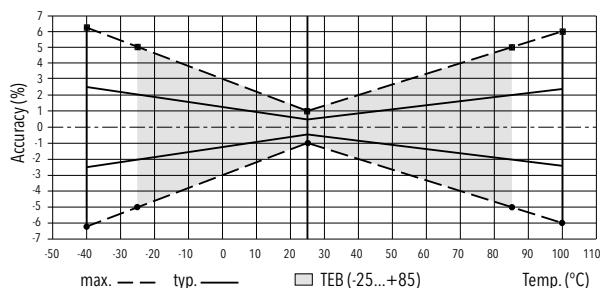
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
NPN4.0A4	8264 76 2510 04 0000 0000 19 58 V3	0...4	10	4...20 mA	24 (9 ... 32)
NPN6.0A4	8264 77 2510 04 0000 0000 19 58 V3	0...6	15	4...20 mA	24 (9 ... 32)
NPN10.0A4	8264 78 2510 04 0000 0000 19 58 V3	0...10	20	4...20 mA	24 (9 ... 32)
NPN16.0A4	8264 79 2510 04 0000 0000 19 58 V3	0...16	32	4...20 mA	24 (9 ... 32)
NPN25.0A4	8264 80 2510 04 0000 0000 19 58 V3	0...25	50	4...20 mA	24 (9 ... 32)
NPN40.0A4	8264 81 2510 04 0000 0000 19 58 V3	0...40	80	4...20 mA	24 (9 ... 32)
NPN4.0AF4	8264 76 2510 04 0000 0000 19 41 58 74 V3	0...4	10	4...20 mA	24 (9 ... 32)
NPN6.0AF4	8264 77 2510 04 0000 0000 19 41 58 74 V3	0...6	15	4...20 mA	24 (9 ... 32)
NPN10.0AF4	8264 78 2510 04 0000 0000 19 41 58 74 V3	0...10	20	4...20 mA	24 (9 ... 32)
NPN16.0AF4	8264 79 2510 04 0000 0000 19 41 58 74 V3	0...16	32	4...20 mA	24 (9 ... 32)
NPN25.0AF4	8264 80 2510 04 0000 0000 19 41 58 74 V3	0...25	50	4...20 mA	24 (9 ... 32)
NPN40.0AF4	8264 81 2510 04 0000 0000 19 41 58 74 V3	0...40	80	4...20 mA	24 (9 ... 32)

Specifications		
Electrical Data	Output / supply voltage	4...20 mA: 24 (9...32) VDC
	Rise time	typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +100°C
	Ambient temperature	-40°C ... +100°C
	Protection ¹⁾	Electrical connection 04: IP65 Electrical connection 78: IP69K
	Humidity	Max. 95 % relative
	Vibration	Electrical connection 04/accessory 55: 10g (50...2000 Hz) Electrical connection 04: 15g (50...2000 Hz) Electrical connection 78: 15g rms
	Shock	50g/ 3 ms
EMC Protection	Emission	EN/IEC 61000-6-4
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	1.4301 (AISI304)
	Sealing	NBR
	Male electrical plug	See ordering information
	Weight	~ 190...220 g
	Mounting torque	See accessories

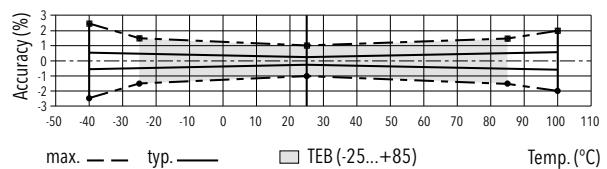
¹⁾ Electrical connection 04: Provided female connector is mounted according to instructions

Accuracy		Measuring accuracy 0.5% Ordering No. 25	Measuring accuracy 0.3% Ordering No. 23
TEB @ -25...+85°C	[% FS typ.]	± 2.0	± 0.5
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.005
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.2

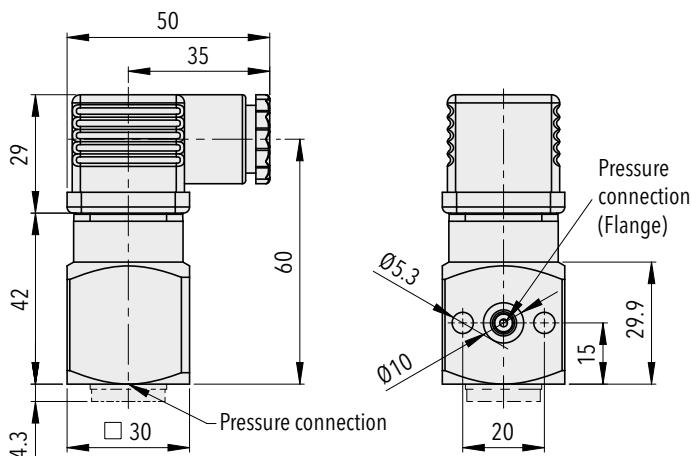
Measuring accuracy 0.5%



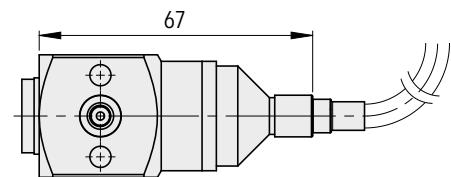
Measuring accuracy 0.3%



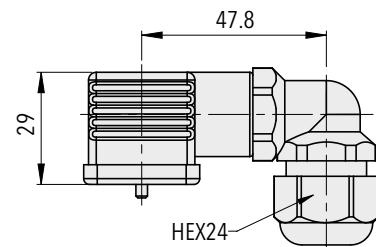
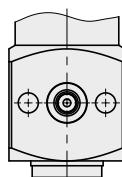
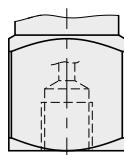
Dimensions



8264.XX.XXXX.04.XX.XX



8264.XX.XXXX.78.XX.XX



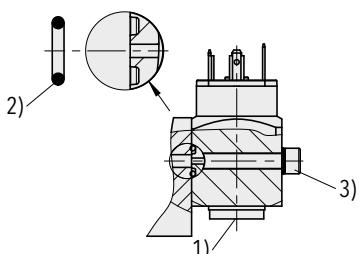
8264.XX.XXXX.XX.XX.55

G 1/4" x12: 8264.XX.XX10.XX.XX.XX

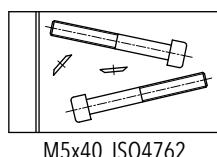
G 1/8" x10: 8264.XX.XX18.XX.XX.XX

M10x1x10: 8264.XX.XX17.XX.XX.XX

Flange: 8264.XX.XXXX.XX.XX.41



8264.XX.XXXX.XX.XX.41

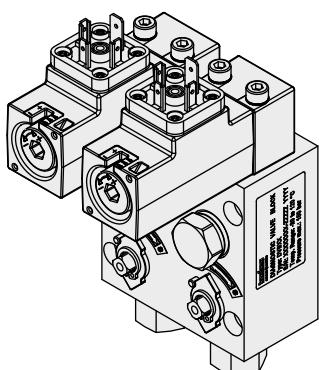


8264.XX.XXXX.XX.XX.V3

1) Torque: G 1/4": $M_A = 32 \dots 40 \text{ Nm}$ 2) O-Ring: $\phi 6.75 \times 1.78 \text{ NBR 90 Sh}$

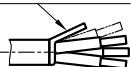
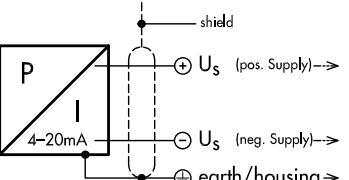
3) Fixing screw: M5; property class: 8.8; torque: 4.5...6 Nm

Electrical connector center screw: max. torque 0.4 Nm



Diagnostic Valve Bloc (DVB)
see specification sheet H72361

Electrical connection

Protection / electrical connection			
	IP65	IP69K	
	Industrial standard EN175301-803A	Cable **)	
	04 	78 Shield 	
Output signal	Standard	with accessory 92	
 8264.XX.XXXX.XX.19	2 1 ⊕	1 2 ⊕	brown black yellow / green

**) Ventilation via cable end

Additional information			
Documents	Data sheet	www.trafag.com/H72313	
	Instructions	www.trafag.com/H73313	
	Flyer	www.trafag.com/H70673	

DISPLAY PRESSURE SWITCH

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The DPC 8380 is the ideal combination of pressure switch and transmitter with pressure display. The parameters are set on the device or in a timesaving way via an NFC - smartphone App. The settings in combination with a comprehensive set of options make the DPC 8380 suitable for a wide range of industrial applications.



Applications

- Machine tools
- HVAC
- Refrigeration
- Water treatment
- Process technology

Features

- Parameterization also via NFC-smartphone App (Android)
- Display and electrical connection are independently rotatable 335°/343°
- Analogue output switchable mA or V
- Integrated datalogger
- Measuring range adjustable

Technical Data

Measuring principle	Thick-film-on-ceramic	Media temperature	-25°C ... +85°C
Measuring range	0 ... 0.2 to 0 ... 100 bar 0 ... 2.5 to 0 ... 1500 psi adjustable	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	Pressure unit for display	bar, psi, MPa, kPa, m WC, mm WC, %, user scale
Switching output	2 transistors PNP	Logger	Ring buffer: 3518 data points Sampling time: 0.1 ... 999.9 s, Off (0)
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

Subject to change

Ordering information/type code

			8380 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]					
	0 ... 0.2	1.2	2	68				
	0 ... 0.4	1.2	2	69				
	0 ... 0.6	1.2	2	70				
	0 ... 1	2	4.8	71				
	0 ... 1.6	3.2	4.8	73				
	0 ... 2.5	5	7.5	75				
	0 ... 4	8	12	76				
	0 ... 6	12	15	77				
	0 ... 10	20	25	78				
	0 ... 16	32	40	79				
	0 ... 25	50	75	80				
	0 ... 40	80	100	81				
	0 ... 60	120	180	82				
	0 ... 100	200	300	83				
Sensor	Relative pressure, 1.4305, accuracy: 0.5 %		57	Absolute pressure, 1.4305, accuracy: 0.5 % ³⁾		87		
	Relative pressure, 1.4404/1.4435, accuracy: 0.5 % ⁴⁾		59	Absolute pressure, 1.4404/1.4435, accuracy: 0.5 % ^{3) 4)}		89		
	Relative pressure, 1.4462, accuracy: 0.5 % ⁴⁾		52	Absolute pressure, 1.4462, accuracy: 0.5 % ^{3) 4)}		82		
	Relative pressure, titanium grade 5, accuracy: 0.5 % ⁴⁾		53	Absolute pressure, Titanium Grade 5, accuracy: 0.5 % ^{3) 4)}		83		
Pressure connection	G1/4" female		10	7/16"-2OUNF male, DIN3866 ^{3) 4)}		18		
	G1/4" male		17	7/16"-2OUNF female SAE J512 with valve opener ^{3) 4)}		24		
	G1/2" male DIN3852-E ⁴⁾		41	7/16"-2OUNF male SAE4 (J1926) ⁴⁾		42		
	1/4" NPT male ⁴⁾		30	G3/4" frontal membrane ^{4) 6)}		52		
	R1/4" male, DIN3858 ⁴⁾		19					
Electrical connection	Male electrical plug M12x1, 4-pole, Mat. PA (Accessories P3, P4)					32		
	Male electrical plug M12x1, 5-pole, Mat. PA (Accessories P1, P2)					35		
Output signal	Switching output PNP, current output 4 ... 20 mA, switchable to 0 ... 10 VDC; output detail see accessories P1, P2, P3					PA		
	Switching output PNP, voltage output 1 ... 6 VDC; output detail see accessories P1, P2, P3					PU		
	Switching output PNP, voltage output 0 ... 10 VDC; output detail see accessories P1, P2, P3					PV		
	Switching output PNP, voltage output 0 ... 5 VDC; output detail see accessories P1, P2, P3					PW		
	Switching output PNP; output detail see accessory P4					PS		
Accessories	Pin configuration 5-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1, 5: SP2					P1		
	Pin configuration 5-pole.; 1: U+, 2: SP2 , 3: U-, 4: SP1, 5: analogue					P2		
	Pin configuration 4-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1					P3		
	Pin configuration 4-pole.; 1: U+, 2: SP2 , 3: U-, 4: SP1					P4		
	Pressure peak damping element ø 1.0 mm, material 1.4305 ⁷⁾					40		
	Pressure peak damping element ø 0.4 mm, material 1.4305 (sensors 57, 87) resp. 1.4404 (sensors 52, 53, 59, 82, 83, 89) ⁷⁾					44		
	Seal FPM, -18°C ... +125°C					61		
	Seal EPDM, -40°C ... +125°C					63		
	Female electrical plug M12x1, 5-pole ⁵⁾					33		
	Parameterization standard for output signal PS, T1 (see table "Parameters")					ZS		
	Parameterization according to customer specification (see table "Parameters")					ZC		
	Function package 1: Zero set / Measuring range zero point adjustment					Z1		
	Function package 2: User scale unit / analogue output adjustment					Z2		
	Protective cap, 1 pc. F89051, package of 5 pcs. F89052, package of 25 pcs. F89075							

¹⁾ Extended overpressure as well as customized pressure ranges upon request³⁾ Max. 40 bar or 500 psi⁴⁾ Upon request⁵⁾ For electrical connections 32 and 35⁶⁾ Not for sensors 57 and 87, only for pressure ranges ≤ 25 bar or 400 psi⁷⁾ Not for pressure connections 10, 18, 24, 52

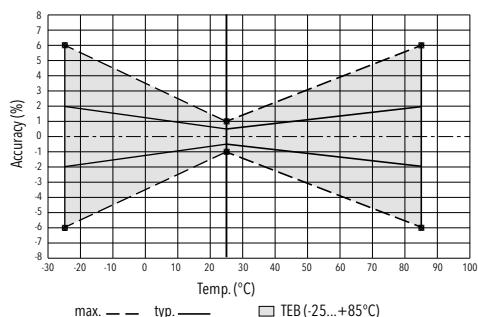
Standard products (extra short lead time)					
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
DPC0.2PAP1	8380 68 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 0.2	1.2	15 ... 30	± 0.5
DPC0.4PAP1	8380 69 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 0.4	1.2	15 ... 30	± 0.5
DPC0.6PAP1	8380 70 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 0.6	1.2	15 ... 30	± 0.5
DPC1.0PAP1	8380 71 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 1	2	15 ... 30	± 0.5
DPC1.6PAP1	8380 73 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 1.6	3.2	15 ... 30	± 0.5
DPC2.5PAP1	8380 75 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 2.5	5	15 ... 30	± 0.5
DPC4.0PAP1	8380 76 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 4	8	15 ... 30	± 0.5
DPC6.0PAP1	8380 77 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 6	12	15 ... 30	± 0.5
DPC10.0PAP1	8380 78 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 10	20	15 ... 30	± 0.5
DPC16.0PAP1	8380 79 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 16	32	15 ... 30	± 0.5
DPC25.0PAP1	8380 80 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 25	50	15 ... 30	± 0.5
DPC40.0PAP1	8380 81 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 40	80	15 ... 30	± 0.5
DPC60.0PAP1	8380 82 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 60	120	15 ... 30	± 0.5
DPC100.0PAP1	8380 83 5717 35 0000 0000 PA P1 44 61 ZS	0 ... 100	200	15 ... 30	± 0.5

Parameters				
Name	Standard adjust- ment (Accessory ZS)	Value range	Shortname	Customer adjustment (Accessory ZC)
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75 % Measuring range	SP1 > RP1 FH1 > FL1 Hysteresis ≥ 1 % d.S.	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	RP1 < SP1 FL1 < FH1 Hysteresis ≥ 1 % d.S.	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	SP2 > RP2 FH2 > FL2 Hysteresis ≥ 1 % d.S.	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	RP2 < SP2 FL2 < FH2 Hysteresis ≥ 1 % d.S.	RP2	
Switch point delay time SP1 (hysteresis mode) Switch point delay time FH1 (window mode)	0	0 ... 99.99 s	dS1	
Switch point delay time RP1 (hysteresis mode) Switch point delay time FL1 (window mode)	0	0 ... 99.99 s	dR1	
Switch point delay time SP2 (hysteresis mode) Switch point delay time FH2 (window mode)	0	0 ... 99.99 s	dS2	
Switch point delay time RP2 (hysteresis mode) Switch point delay time FL2 (window mode)	0	0 ... 99.99 s	dR2	
Function switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou1	
Function switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou2	
Pressure unit	bar	bar, psi, MPa, kPa, m WC	uni	
Measuring range adjustment	100 % Nominal pressure	50 ... 100 % Nominal	P-EP	
Damping analogue output	0.01 s	0.01 ... 3.00 s (time constant)	dAA	
Display rotation	No	No, yes (180°)	disr	
Display mode	Current pressure value	Pressure value: current, highest, lowest, display off Current value: decimal places selectable (max. 3)	dis	
Display actualisation	2	1, 2, 5, 20 Hz	duPd	

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (15 ... 30) VDC 0 ... 5 VDC: 24 (15 ... 30) VDC 1 ... 6 VDC: 24 (15 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC
	Switch-on-delay	Typ. 200 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	integrated
Environmental conditions	Current consumption	≤ 30 mA
	Media temperature	-25°C ... +85°C
	Ambient temperature	-25°C ... +85°C
	Protection ¹⁾	IP67
	Humidity	Max. 95 % relative
	Vibration	10 g (10 ... 2000 Hz)
EMC Protection	Shock	50 g / 3 ms
	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	Ceramic, Al ₂ O ₃ (96 %)
	Pressure connection (wetted parts)	57/87: 1.4305 (AISI303) 59/89: 1.4404/1.4435 (AISI316L) 52/82: 1.4462 (AISI318LN) 53/83: Titanium Grade 5
	Housing	Zinc based die-casting alloy, nickel plated display housing plastic
	Sealing	FPM, EPDM
	Male electrical plug	See ordering information
	Weight	~ 189 g
	Mounting torque	15 ... 20 Nm
	Housing alignment	Display 335° rotatable, max. 2.5 Nm Electrical connection 343° rotatable, max. 5 Nm

¹⁾ See electrical connection

Measuring accuracy 0.5 %



Analogue output			
Output signal	Switchable 4 ... 20 mA or voltage		
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 2.0
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03
	Long term stability 1 year	[% FS typ.]	± 0.3
Current limiting output signal	4 ... 20 mA: 25 mA (overload) 0 ... 10 VDC: < 40 mA (short-circuit)		
Damping (rise time)	0.01 ... 3.00 s / 10 ... 90 % Nominal pressure		
Zero set; ¹⁾	± 0.2 % FS		
Offset correction of analogue output and display indication			
Measuring range zero point adjustment (P_nP) ¹⁾	0 ... 50 % FS ²⁾		
Measuring range end point adjustment (P_EP)	50 ... 100 % FS ²⁾		
Zero point adjustment analogue output (o_nP) ¹⁾	Voltage output: 0 ... 2 VDC Current output: 3.9 ... o_EP - 8 mA		
End point adjustment analogue output (o_EP) ¹⁾	Voltage output: o_nP + 4 ... 10.5 VDC Current output: o_nP + 8 ... 20.1 mA		

¹⁾ Available with optional function package, see "Accessories"

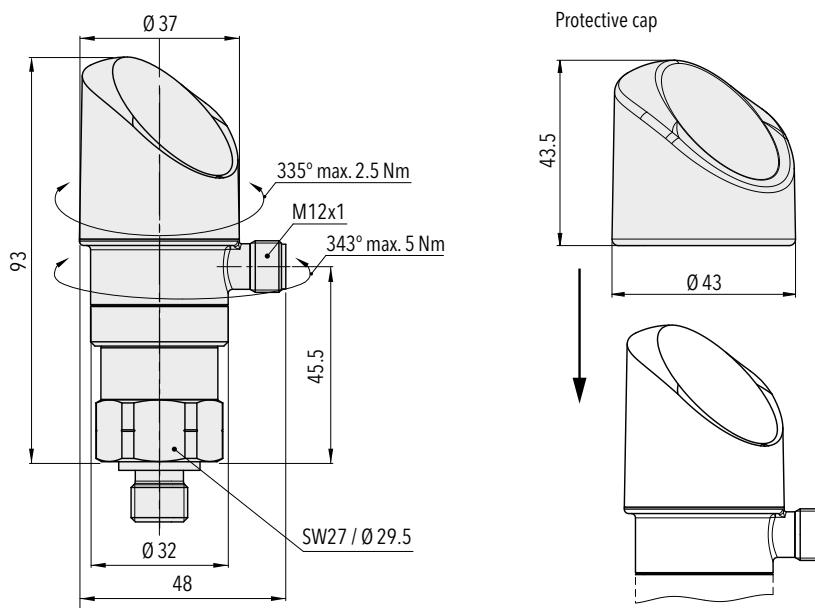
²⁾ P_EP - P_nP ≥ 50 % FS

Switching output			
Accuracy	Accuracy @ +25°C	[% FS typ.]	± 0.5
	TEB @ -25 ... +85°C	[% FS typ.]	± 2.0
	Long term stability 1 year	[% FS typ.]	≤ ± 0.3
Adjustment range of switchpoints	0 ... 100 % FS		
Switching hysteresis	≥ 1 % FS		
	Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	≤ 0.5 A each switching output		
Current limiting	≤ 2 A each switching output		
Switching frequency	max. 200 Hz		
Delay time	0 ... 99.99 s		

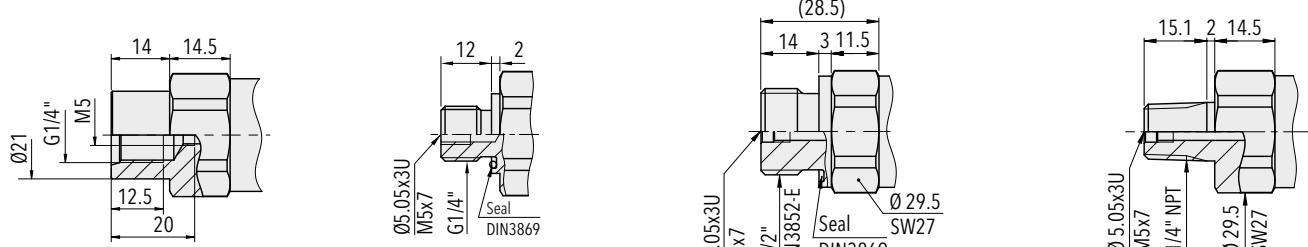
Display	
Display	4-digit 7-segment display 180° flippable with disable function Standard decimal places: ≤ 9: 3 decimal places 10 ... 99: 2 decimal places 100 ... 999: 1 decimal place
Switching status indication	2 LED, red
Operation	With 3 buttons and menu navigation according to VDMA 24574-1
Display resolution	0.1 % FS
Display range	-3 ... 103 % FS
Setting parameters	See table Parameters
User scale unit	Display zero point: -999 ... 9998
User defined values for display indication zero point and end point ¹⁾	Display end point: -998 ... 9999

¹⁾ Available with optional function package, see "Accessories"

Dimensions



8380.XX.XXXX.35/32.XX.XX

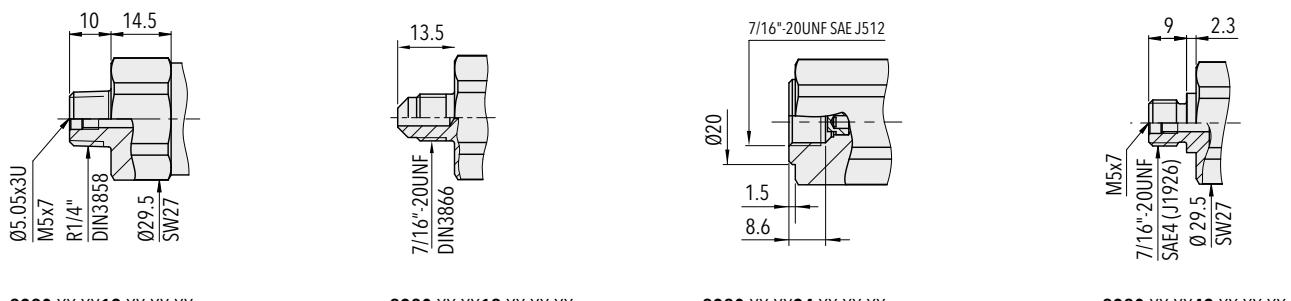


8380.XX.XX10.XX.XX.XX

8380.XX.XX17.XX.XX.XX

8380.XX.XX41.XX.XX.XX

8380.XX.XX30.XX.XX.XX

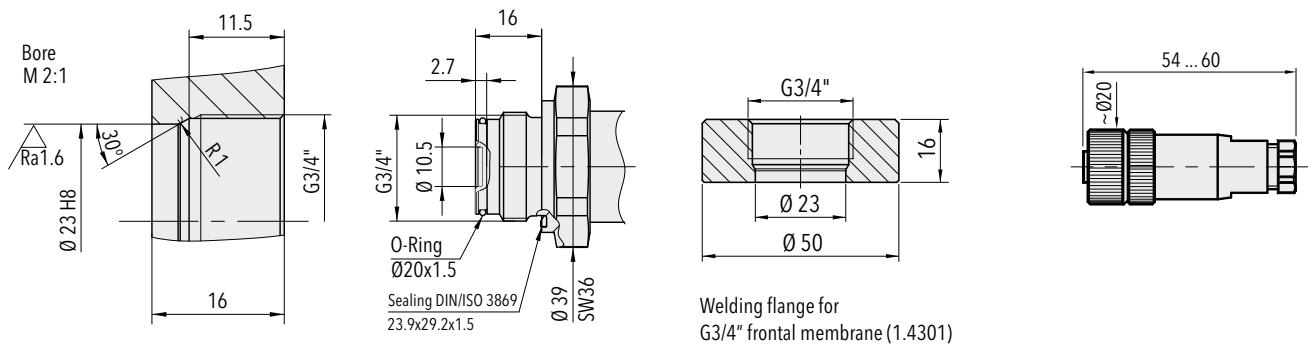


8380.XX.XX19.XX.XX.XX

8380.XX.XX18.XX.XX.XX

8380.XX.XX24.XX.XX.XX

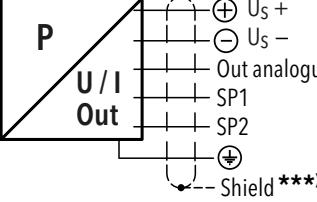
8380.XX.XX42.XX.XX.XX



8380.XX.XX52.XX.XX.XX

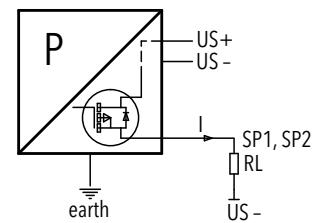
8380.XX.XXXX.XX.XX.33

Electrical connection

		Protection / electrical connection			
Output signal	Pin Configuration	IP67*)			
		P1	P2	P3	P4
PA		✓	✓	✓	
PU		✓	✓	✓	
PV		✓	✓	✓	
PW		✓	✓	✓	
PS					✓
	 8380.xx.xxxx.xx.PA/PU/PV/PW/PS	P1	P2	P3	P4
		1	1	1	1
		3	3	3	3
		2	5	2	-
		4	4	4	4
		5	2		2
		Shield ***)		Shield ***)	

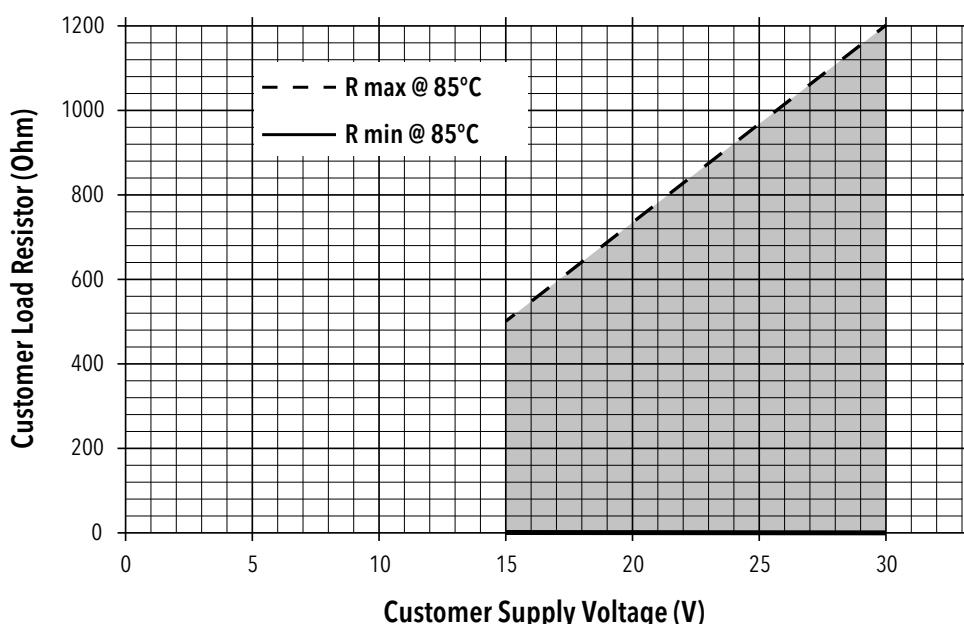
*) Provided female connector is mounted according to instructions

*** The use of a shielded cable is recommended

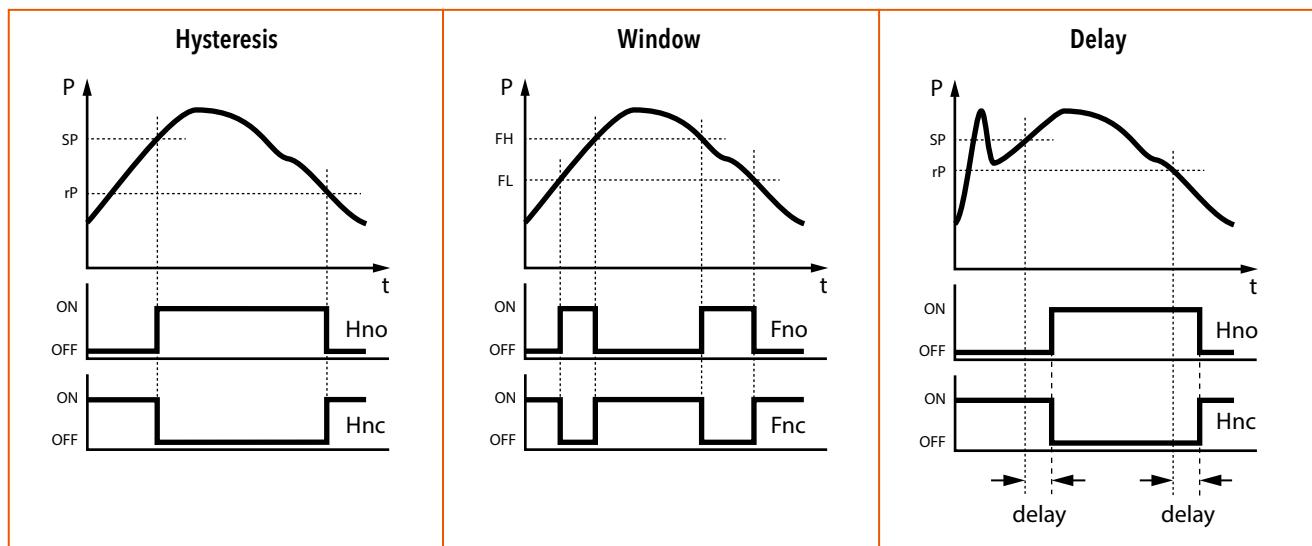


Connection of loads to switching output

4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



Functions switching output



Additional information

Documents

Data sheet

www.trafag.com/H72320

Instructions

www.trafag.com/H73320

Flyer

www.trafag.com/H70691

DISPLAY PRESSURE SWITCH

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The DPS 8381 is the ideal combination of pressure switch and transmitter with a pressure display. The parameters are set on the device or in a timesaving way via an NFC - smartphone App. The settings in combination with a comprehensive set of options make the DPS 8381 suitable for a wide range of demanding applications.



Applications

- Machine tools
- Hydraulics
- Process technology
- Industrial applications

Features

- Parameterization also via NFC-smartphone App (Android)
- Display and electrical connection are independently rotatable 335°/343°
- Analogue output switchable mA or V
- Integrated datalogger
- Measuring range adjustable

Technical Data			
Measuring principle	Thin-film-on-steel	Media temperature	-25°C ... +85°C
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi adjustable	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	Pressure unit for display	bar, psi, MPa, kPa, m WC, mm WC, %, user scale
Switching output	2 transistors PNP	Logger	Ring buffer: 3518 data points Sampling time: 0.1 ... 999.9 s, Off (0)
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

Subject to change

Ordering information/type code

				8381 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]						
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 %				25				
Pressure connection	G1/4" female ²⁾	10	1/2" NPT male ²⁾				51		
	G1/4" male (Seal)	17	M14x1.5 male DIN6149-2 ²⁾				31		
	R1/4" male, DIN3858 ²⁾	19	7/16"-20UNF male, DIN3866 ^{2) 4)}				18		
	G1/2" male (Manometer) ²⁾	11	7/16"-20UNF male SAE4 (J1926) ²⁾				42		
	1/4" NPT male ²⁾	30	7/16"-20UNF female SAE J512 with valve opener ^{2) 4)}				24		
Electrical connection	Male electrical plug M12x1, 4-pole, Mat. PA (Accessories P3, P4)					32			
	Male electrical plug M12x1, 5-pole, Mat. PA (Accessories P1, P2)					35			
Output signal	Switching output PNP, current output 4 ... 20 mA, switchable to 0 ... 10 VDC; output detail see accessories P1, P2, P3						PA		
	Switching output PNP, voltage output 1 ... 6 VDC; output detail see accessories P1, P2, P3						PU		
	Switching output PNP, voltage output 0 ... 10 VDC; output detail see accessories P1, P2, P3						PV		
	Switching output PNP, voltage output 0 ... 5 VDC; output detail see accessories P1, P2, P3						PW		
	Switching output PNP; output detail see accessory P4						PS		
Accessories	Pin configuration 5-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1, 5: SP2						P1		
	Pin configuration 5-pole.; 1: U+, 2: SP2 , 3: U-, 4: SP1, 5: analogue						P2		
	Pin configuration 4-pole.; 1: U+, 2: analogue, 3: U-, 4: SP1						P3		
	Pin configuration 4-pole.; 1: U+, 2: SP2 , 3: U-, 4: SP1						P4		
	Pressure peak damping element ø 1.0 mm, material 1.4305 ⁵⁾						40		
	Pressure peak damping element ø 0.4 mm, material 1.4305 ⁵⁾						44		
	Seal FPM, -18°C ... +125°C						61		
	Seal EPDM, -40°C ... +125°C						63		
	Seal NBR, -25°C ... +100°C						83		
	Female electrical plug M12x1, 5-pole ³⁾						33		
	Parameterization standard for output signal PS, T1 (see table "Parameters")						ZS		
	Parameterization according to customer specification (see table "Parameters")						ZC		
	Function package 1: Zero-set / Measuring range zero-point adjustment						Z1		
	Function package 2: User scale unit / Analogue output adjustment						Z2		
	Protective cap, 1 pc. F89051, package of 5 pcs. F89052, package of 25 pcs. F89075								

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Upon request³⁾ For electrical connections 32 and 35⁴⁾ Max. allowable pressure range 60 bar at 120 bar overpressure⁵⁾ Not for pressure connections 10, 18, 24

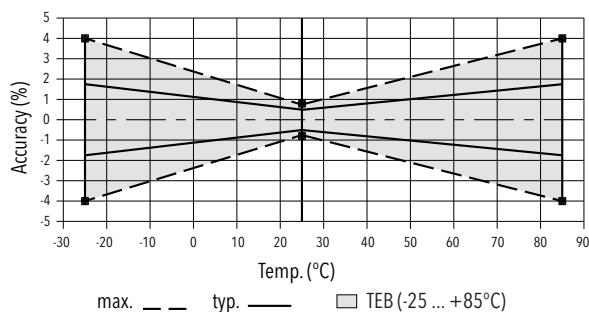
Standard products (extra short lead time)						
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]	
DPS2.5PAP1	8381 75 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 2.5	7.5	15 ... 30	± 0.5	
DPS4.0PAP1	8381 76 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 4	12	15 ... 30	± 0.5	
DPS6.0PAP1	8381 77 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 6	18	15 ... 30	± 0.5	
DPS10.0PAP1	8381 78 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 10	30	15 ... 30	± 0.5	
DPS16.0PAP1	8381 79 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 16	48	15 ... 30	± 0.5	
DPS25.0PAP1	8381 80 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 25	75	15 ... 30	± 0.5	
DPS40.0PAP1	8381 81 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 40	120	15 ... 30	± 0.5	
DPS60.0PAP1	8381 82 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 60	180	15 ... 30	± 0.5	
DPS100.0PAP1	8381 83 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 100	300	15 ... 30	± 0.5	
DPS160.0PAP1	8381 85 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 160	480	15 ... 30	± 0.5	
DPS250.0PAP1	8381 74 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 250	750	15 ... 30	± 0.5	
DPS400.0PAP1	8381 84 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 400	1000	15 ... 30	± 0.5	
DPS600.0PAP1	8381 86 2517 35 0000 0000 PA P1 44 61 ZS	0 ... 600	1500	15 ... 30	± 0.5	

Parameters				
Name	Standard setting (accessory ZS)	Value range	Short name	Customer adjust- ment (accessory ZC)
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75 % Measuring range	SP1 > RP1 FH1 > FL1 Hysteresis ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	RP1 < SP1 FL1 < FH1 Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	SP2 > RP2 FH2 > FL2 Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	RP2 < SP2 FL2 < FH2 Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 (hysteresis mode) Switch point delay time FH1 (window mode)	0	0 ... 99.99 s	dS1	
Switch point delay time RP1 (hysteresis mode) Switch point delay time FL1 (window mode)	0	0 ... 99.99 s	dR1	
Switch point delay time SP2 (hysteresis mode) Switch point delay time FH2 (window mode)	0	0 ... 99.99 s	dS2	
Switch point delay time RP2 (hysteresis mode) Switch point delay time FL2 (window mode)	0	0 ... 99.99 s	dR2	
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou1	
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou2	
Pressure units	bar	bar, psi, MPa, kPa, m WC	uni	
Measuring range adjustment	100 % Nominal pressure	50 ... 100 % Nominal	P-EP	
Damping (analogue output)	0.01 s	0.01 ... 3.00 s (time constant)	dAA	
Display rotation	No	no, yes (180°)	disr	
Display mode	Current pressure value	Pressure value: current, highest, lowest, display off Current value: decimal places selectable (max. 3)	dis	
Display actualisation	2	1, 2, 5, 20 Hz	duPd	

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (15 ... 30) VDC 0 ... 5 VDC: 24 (15 ... 30) VDC 1 ... 6 VDC: 24 (15 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC
	Switch-on-delay	Typ. 200 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	integrated
Environmental conditions	Current consumption	≤ 30 mA
	Media temperature	-25°C ... +85°C
	Ambient temperature	-25°C ... +85°C
	Protection ¹⁾	IP67
	Humidity	Max. 95 % relative
	Vibration	10 g (10 ... 2000 Hz)
EMC Protection	Shock	50 g / 3 ms
	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	Zinc based die-casting alloy, nickel plated display housing plastic
	Sealing	FPM, NBR, EPDM
	Male electrical plug	See ordering information
	Weight	~ 189 g
	Mounting torque	15 ... 20 Nm
Housing alignment		Display 335° rotatable, max. 2.5 Nm Electrical connection 343° rotatable, max. 5 Nm

¹⁾ See electrical connection

Measuring accuracy 0.5 %



Analogue output

Output signal	Switchable 4 ... 20 mA or voltage		
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03
	Long term stability 1 year	[% FS typ.]	± 0.1
Current limiting output signal	4 ... 20 mA: 25 mA (overload) 0 ... 10 VDC: < 40 mA (short-circuit)		
Damping (rise time)	0.01 ... 3.00 s / 10 ... 90 % Nominal pressure		
Zero set; ¹⁾	± 0.2 % FS		
Offset correction of analogue output and display indication			
Measuring range zero point adjustment (P_nP) ¹⁾	0 ... 50 % FS ²⁾		
Measuring range end point adjustment (P_EP)	50 ... 100 % FS ²⁾		
Zero point adjustment analogue output (o_nP) ¹⁾	Voltage output: 0 ... 2 VDC Current output: 3.9 ... o_EP - 8 mA		
End point adjustment analogue output (o_EP) ¹⁾	Voltage output: o_nP + 4 ... 10.5 VDC Current output: o_nP + 8 ... 20.1 mA		

¹⁾ Available with optional function package, see "Accessories"²⁾ P_EP - P_nP ≥ 50 % FS**Switching output**

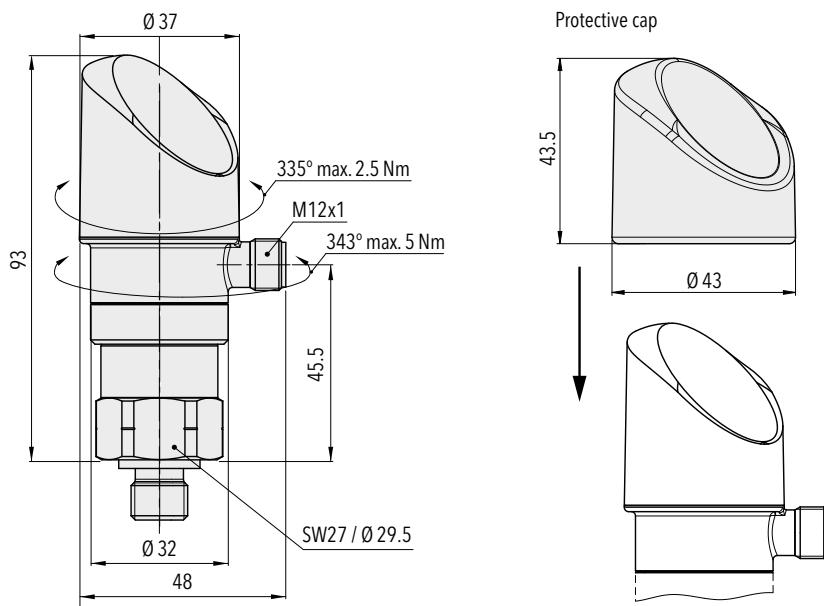
Accuracy	Accuracy @ +25°C	[% FS typ.]	± 0.5
	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Long term stability 1 year	[% FS typ.]	≤ ± 0.3
Adjustment range of switchpoints	0 ... 100 % FS		
Switching hysteresis	≥ 1 % FS		
	Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	≤ 0.5 A each switching output		
Current limiting	≤ 2 A each switching output		
Switching frequency	max. 200 Hz		
Delay time	0 ... 99.99 s		

Display

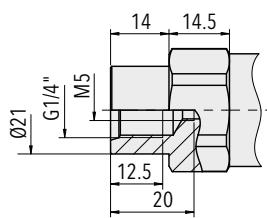
Display	4-digit 7-segment display 180° flippable with disable function Standard decimal places: ≤ 9: 3 decimal places 10 ... 99: 2 decimal places 100 ... 999: 1 decimal place
Switching status indication	2 LED, red
Operation	With 3 buttons and menu navigation according to VDMA 24574-1
Display resolution	0.1 % FS
Display range	-3 ... 103 % FS
Setting parameters	See table Parameters
User scale unit;	Display zero point: -999 ... 9998
User defined values for display indication zero point and end point ¹⁾	Display end point: -998 ... 9999

¹⁾ Available with optional function package, see "Accessories"

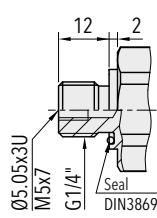
Dimensions



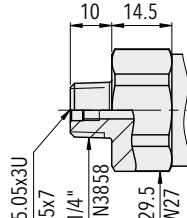
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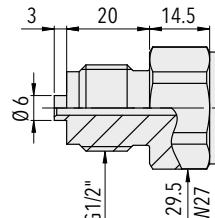
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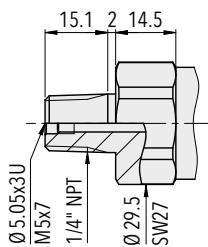
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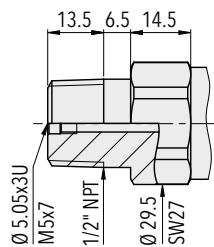
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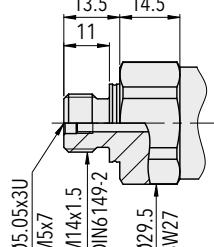
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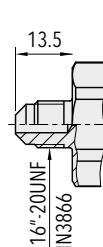
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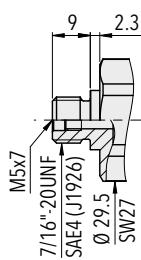
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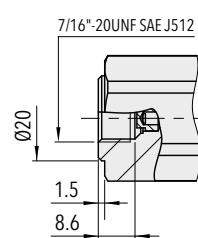
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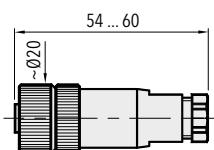
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8381.XX.XX42.XX.XX.XX

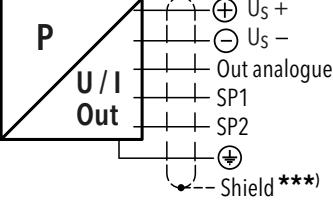


8381.XX.XX24.XX.XX.XX



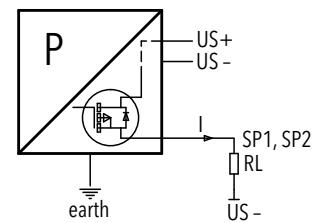
8381.XX.XXXX.XX.XX.33

Electrical connection

		Protection / electrical connection			
Output signal	Pin Configuration	IP67*)			
		P1	P2	P3	P4
PA		✓	✓	✓	
PU		✓	✓	✓	
PV		✓	✓	✓	
PW		✓	✓	✓	
PS					✓
	 8381.xx.xxxx.xx PA/PU/PV/PW/PS	P1	P2	P3	P4
		1	1	1	1
		3	3	3	3
		2	5	2	-
		4	4	4	4
		5	2		2
		Shield ***)		Shield ***)	

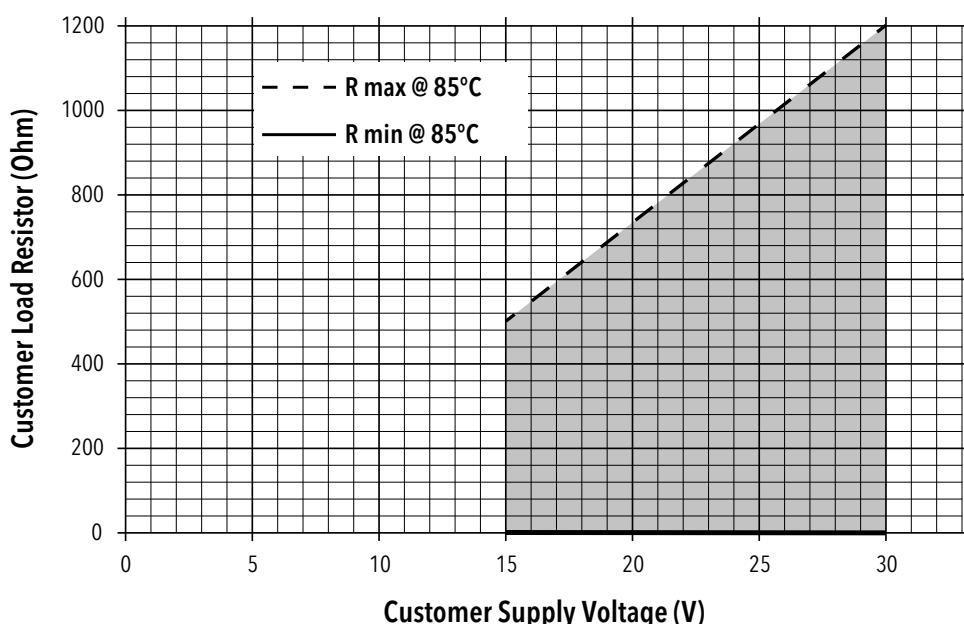
*) Provided female connector is mounted according to instructions

***) The use of a shielded cable is recommended

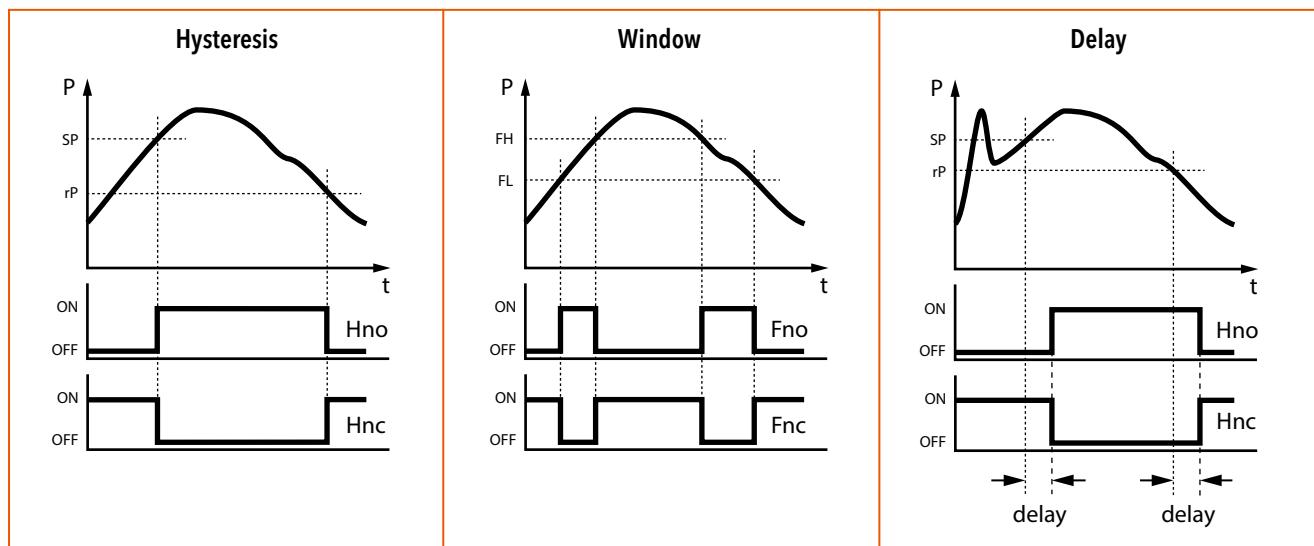


Connection of loads to switching output

4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



Functions switching output



Additional information

Documents

Data sheet

www.trafag.com/H72321

Instructions

www.trafag.com/H73320

Flyer

www.trafag.com/H70694

SUBMERSIBLE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The new Submersible Pressure Transmitter ECL is based on Trafag's own thick-film-on-ceramic technology. The optionally configurable pressure ranges can be adapted individually via interface tool and Smartphone App.



Applications

- Process technology
- Water treatment (wastewater, grey-water, drinking water)
- Seawater
- Level of oils and fuels

Features

- Suitable for thick and viscous media
- Different materials for optimum media compatibility
- Lightning protection integrated
- Configurable measuring ranges

Technical Data			
Measuring principle	Thick film on ceramic	Accuracy @ 25°C typ.	± 0.3 % FS typ. Range 0 ... 0.1 to 0 ... 0.2 bar: ± 0.5 % FS typ.
Measuring range	0 ... 0.1 to 0 ... 2.0 bar 0 ... 1.5 to 0 ... 30 psi	Media temperature	max. -25°C ... +70°C
Output signal	4 ... 20 mA	Ambient temperature	max. -25°C ... +70°C

Subject to change

Ordering information/type code

				8439 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]						
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 ... 0.5	1.2	2	64	0 ... 6.5	15	30	F4		
0 ... 0.6	1.2	2	70	0 ... 7.5	15	30	G0		
0 ... 1.0	2	3	71	0 ... 15	30	45	G1		
0 ... 1.6	3.2	4.8	73	0 ... 20	45	70	G3		
0 ... 2.0	3.2	4.8	72	0 ... 30	45	70	G2		
Configurable measuring ranges Standard, see table on page 3									
Sensor	Relative pressure						23		
Housing	Housing AISI316L, standard version ²⁾						58		
	Housing 1.4462, standard version ^{2) 3)}						55		
	Housing AISI316L, OEM-version ²⁾						56		
	Housing 1.4462, OEM-version ^{2) 3)}						50		
	Housing AISI316L, Serto Connection ^{2) 3)}						60		
Electrical connection	Cable PUR, Ø 6 mm, L = 5 m		21	Cable Radox, Ø 6 mm, L = 25 m			35		
	Cable PUR, Ø 6 mm, L = 10 m		22	Cable Radox, Ø 6 mm, L = 30 m			36		
	Cable PUR, Ø 6 mm, L = 15 m		23	Cable Radox, Ø 6 mm, customized (L = max. 50 m)			30		
	Cable PUR, Ø 6 mm, L = 20 m		24	Cable PE, Ø 6 mm, L = 5 m			41		
	Cable PUR, Ø 6 mm, L = 25 m		25	Cable PE, Ø 6 mm, L = 10 m			42		
	Cable PUR, Ø 6 mm, L = 30 m		26	Cable PE, Ø 6 mm, L = 15 m			43		
	Cable PUR, Ø 6 mm, customized (L = max. 50 m)		20	Cable PE, Ø 6 mm, L = 20 m			44		
	Cable Radox, Ø 6 mm, L = 5 m		31	Cable PE, Ø 6 mm, L = 25 m			45		
	Cable Radox, Ø 6 mm, L = 10 m		32	Cable PE, Ø 6 mm, L = 30 m			46		
	Cable Radox, Ø 6 mm, L = 15 m		33	Cable PE, Ø 6 mm, customized (L = max. 50 m)			40		
	Cable Radox, Ø 6 mm, L = 20 m		34						
Output signal	4 ... 20 mA						19		
Accessories	Seal FKM / FPM / Viton						61		
	Seal EPDM / TPE						63		

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ See "Dimensions"³⁾ Upon request

Configurable measuring ranges standard

Pressure measuring range minimal	Pressure measuring range max. (nominal range)	Overpressure	Burst pressure	Ordering no.
0 ... 0.1	0 ... 0.3	1.2	2	C1
0 ... 0.15	0 ... 0.4	1.2	2	C2
0 ... 0.2	0 ... 0.6	1.2	2	C3
0 ... 0.35	0 ... 1.0	2	3	C4
0 ... 0.6	0 ... 1.6	3.2	4.8	C5
0 ... 0.85	0 ... 2.0	3.2	4.8	C6

All accuracy indications refer to the nominal measurement range and the respective span. When minimizing the span, the relative errors are increasing in relation of the maximum to the selected span.

i Configuration of the measuring ranges

All measuring ranges can be configured via Smartphone app (Android). The SMI Sensor Master Interface as well as the Smartphone, which are necessary for the configuration, 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



Type	Type code	Housing	Cable material	Seal	Typical applications
Standard ¹⁾ OEM ¹⁾ Serto	8439.XX.2358.2X.19.61.XX 8439.XX.2356.2X.19.61.XX 8439.XX.2360.2X.19.61.XX	AISI316L AISI316L / Brass nickel plated AISI316L	PUR	FKM / Viton	General applications
Standard OEM Serto	8439.XX.2358.3X.19.61.XX 8439.XX.2356.3X.19.61.XX 8439.XX.2360.3X.19.61.XX	AISI316L AISI316L / Brass nickel plated AISI316L	Radox	FKM / Viton	Oils and fuels
Standard OEM Serto	8439.XX.2358.4X.19.63.XX 8439.XX.2356.4X.19.63.XX 8439.XX.2360.4X.19.63.XX	AISI316L AISI316L / Brass nickel plated AISI316L	PE	EPDM / TPE	Wastewater, grey-water, drinking water
Standard OEM	8439.XX.2355.4X.19.63.XX 8439.XX.2350.4X.19.63.XX	1.4462 1.4462 / Brass nickel plated	PE	EPDM / TPE	Seawater, Saline water
Standard OEM	8439.XX.23.55.3X.19.63.XX 8439.XX.23.50.3X.19.63.XX	1.4462 1.4462 / Brass nickel plated	Radox	EPDM / TPE	Marine applications ²⁾

Non-standard build-up combinations may be selected, whereas minimum order quantities may apply

¹⁾ Extra short lead time

²⁾ Cable PUR or PE only usable inside tank

Specifications		
Electrical Data	Output / supply voltage	4...20 mA: 24 (9...32) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
Environmental conditions	Media temperature ¹⁾	max. -25°C ... +70°C
	Ambient temperature	max. -25°C ... +70°C
	Protection	IP68 (2.0 bar/20 m)
	Vibration	20 g (40 ... 2000 Hz) 15 grms (20 ... 2000 Hz)
	Shock	50 g / 8 ms
EMC Protection	Emission	EN/IEC 61000-6-3 / DNVGL-CG-0339
	Immunity	EN/IEC 61000-6-2 / DNVGL-CG-0339
Mechanical Data	Sensor (wetted parts)	Ceramic, Al ₂ O ₃ (96%)
	Pressure connection (wetted parts)	1.4404 (AISI316L) or 1.4462 (AISI318LN)
	Housing	1.4404 (AISI316L) or 1.4462 (AISI318LN) OEM-version: Screwed cable gland brass nickel plated
	Sealing	FKM (FPM, Viton), EPDM (TPE)
	Weight	~ 200 g (without cable) / OEM ~ 150 g

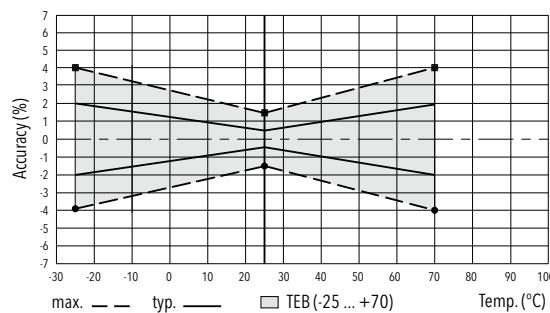
¹⁾ see table Temperature ranges

Temperature ranges		
Max. ambient and media temperature		-25°C ... +70°C
Cable PE	Code 8439.XX.23.XX.4X.19.XX	-20°C ... +65°C
Seal FKM with standard version	Code 8439.XX.23.55.XX.19.61	
	Code 8439.XX.23.58.XX.19.61	-20°C ... +70°C
Seal FKM with Serto connection	Code 8439.XX.23.60.XX.19.61	

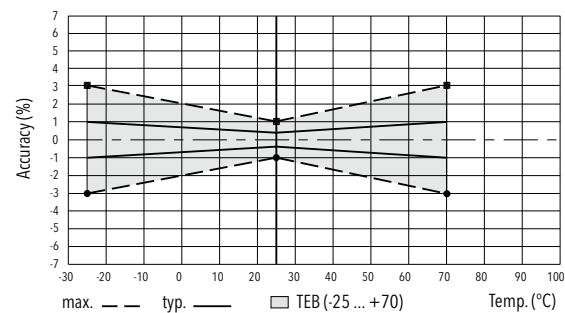
Accuracy			
		Measuring accuracy 0.3 %	Measuring accuracy 0.5 %
		Measuring ranges ≥ 0.3 bar	Measuring ranges < 0.3 bar
TEB @ -25 ... +70°C	[% FS typ.]	± 1.0	± 2.0
Accuracy @ +25°C	[% FS typ.]	± 0.3	± 0.5
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.3
TC zero point and span	[% FS/K typ.]	± 0.02	± 0.02
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.2

The indications of instruments with configurable measuring ranges refer always to the span of the maximum measuring range. When minimizing the span, the relative errors are increasing in relation of the maximum to the selected span.

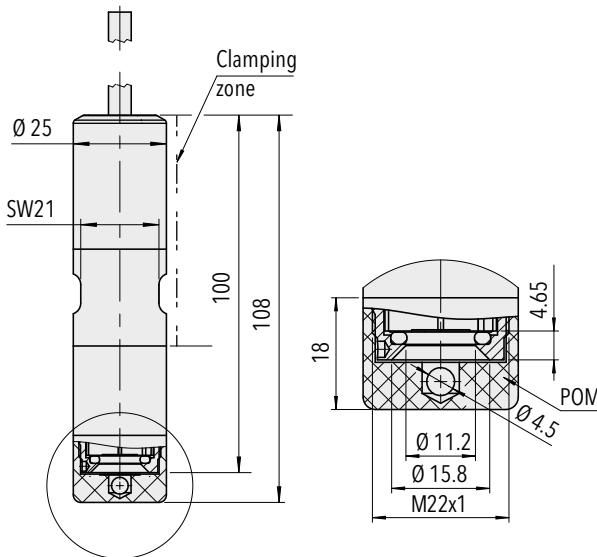
Measuring accuracy 0.5 %



Measuring accuracy 0.3 %



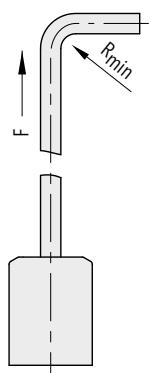
Dimensions

**8439.XX.XX58/55.XX.XX.XX**

Standard version

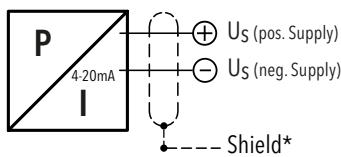
8439.XX.XX56/50.XX.XX.XX

OEM-version

8439.XX.XX60.XX.XX.XXSerto adapter SO 50021-12
for stainless steel tubes with:
outer diameter 12 mm
inner diameter 8 mm

F = max. 12 kg (120 N)

Electrical connection

Protection / electrical connection				
	IP68 (2.0 bar/20 m)	IP68 (2.0 bar/20 m)	IP68 (2.0 bar/20 m)	
	Cable PUR Ø 6 mm (5x0.22mm ²) 2X Shield Venting	Cable Radox Ø 6 mm (5x0.22mm ²) 3X Shield Venting	Cable PE Ø 6 mm (5x0.22mm ²) 4X Shield Venting	
Output signal	 8439.xx.xxxx.xx.19	white brown (yellow = not connected) (green = not connected) (red = not connected)	white brown (yellow = not connected) (green = not connected) (red = not connected)	white brown (yellow = not connected) (green = not connected) (red = not connected)
Minimum cable bending radius R _{min}	40 mm	60 mm	30 mm	
T-Range	Ambient and media temperature	-25°C ... +70°C	-25°C ... +70°C	-20°C ... +65°C

* Shield not connected

Additional information			
Documents	Data sheet	www.trafag.com/H72336	
	Instructions	www.trafag.com/H73336	
	Flyer	www.trafag.com/H70690	

SUBMERSIBLE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The new Submersible Pressure Transmitter ECL is based on Trafag's own thick-film-on-ceramic technology. Together with the inhouse developed high performance ASIC chip electronics it ensures a high level of accuracy over a wide temperature range.



Applications

- Process technology
- Water treatment



Features

- Good media compatibility
- Economical
- Cable PUR/PE or FEP
- Lightning protection integrated

Technical Data

Measuring principle	Thick film on ceramic	Media temperature	-25°C ... +80°C (+70°C)
Measuring range	0 ... 0.1 to 0 ... 10 bar	Ambient temperature	-25°C ... +80°C (+70°C)
Output signal	4 ... 20 mA	Approval / conformity	GL, KRS
Accuracy @ 25°C typ.	± 0.3 % FS typ. Range 0...0.1 to 0...0.4 bar: ± 0.5 % FS typ.		

Subject to change

Ordering information/type code

			8438 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]					
	0 ... 0.1	1.2	2	66				
	0 ... 0.16	1.2	2	67				
	0 ... 0.2	1.2	2	68				
	0 ... 0.4	1.2	2	69				
	0 ... 0.6	1.2	2	70				
	0 ... 1.0	2	3	71				
	0 ... 1.6	3.2	4.8	73				
	0 ... 2.5	5	7.5	75				
	0 ... 4	8	12	76				
	0 ... 6	12	15	77				
	0 ... 10	20	25	78				
Sensor	Relative pressure > 400 mbar, accuracy 0.3%			23				
	Relative pressure ≤ 400 mbar, accuracy: 0.5%			26				
Pressure connection	Type 1, female, M 10x1, 1.4404/1.4435			46				
	Type 2, male, M 22x1, 1.4404/1.4435			48				
Electrical connection	Cable: PUR ø 6 mm ²⁾ 3)			22				
	Cable: FEP ø 6 mm ²⁾ 3)			32				
	Cable: PE ø 6 mm ²⁾ 3)			42				
Output	Signal output	Load resistance	I (supply)	U (supply)				
	4 ... 20mA	(Usupply-9V) / 20mA		9 ... 30 VDC	19			
Accessories	Seal FKM			61				
	Seal CR			62				
	Seal EPDM			63				

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Please specify cable length when ordering (cable lengths >50 m up to 120 m upon request)³⁾ For level measurement applications on ships under certification GL (German Lloyd), the cable of such transmitters must be installed inside the tank only

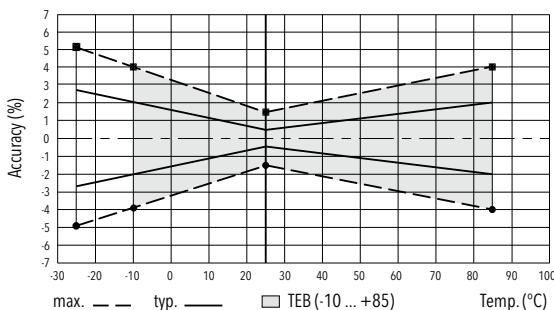
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Cable length
ECL0.2A	8438 68 2646 22 0000 0000 19 61 5M	0...0.2	2	9...30	5m
ECL0.5A	8438 21 2346 22 0000 0000 19 61 8M 01	0...0.5	2	9...30	10m

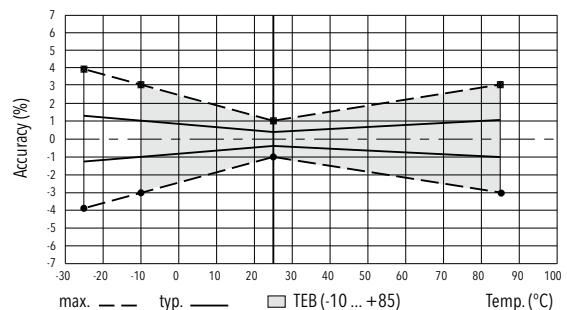
Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC
	Rise time	Typ. 1 ms/10...90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
Environmental conditions	Media temperature	-25°C ... +80°C (+70°C)
	Ambient temperature	-25°C ... +80°C (+70°C)
	Protection	IP68 (25 bar; 250m)
	Vibration	6g (25...2000 Hz)
	Shock	50g/ 8 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	Ceramic, Al ₂ O ₃ (96 %)
	Pressure connection (wetted parts)	1.4404/1.4435 (AISI316L)
	Housing	1.4404/1.4435 (AISI316L)
	Sealing	FKM 70 Sh CR, EPDM
	Weight	~ 200 g

Accuracy		
	Measuring accuracy 0.3% Ordering No. 23	Measuring accuracy 0.5% Ordering No. 26
TEB @ -10...+80°C	[% FS typ.]	± 1.0
Accuracy @ +25°C	[% FS typ.]	± 0.3
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
TC zero point and span	[% FS/K typ.]	± 0.02
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2

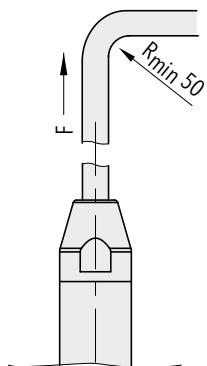
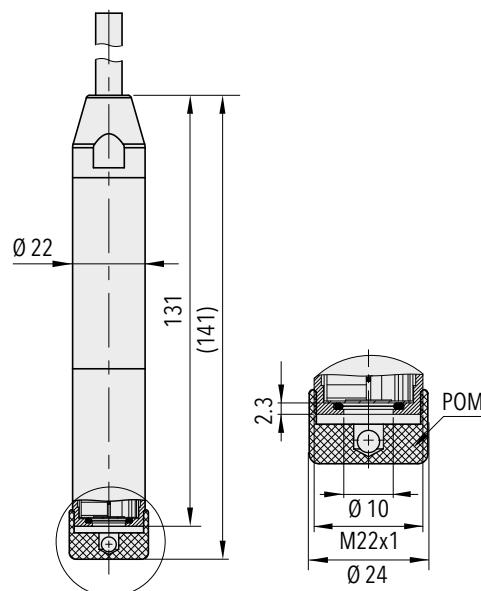
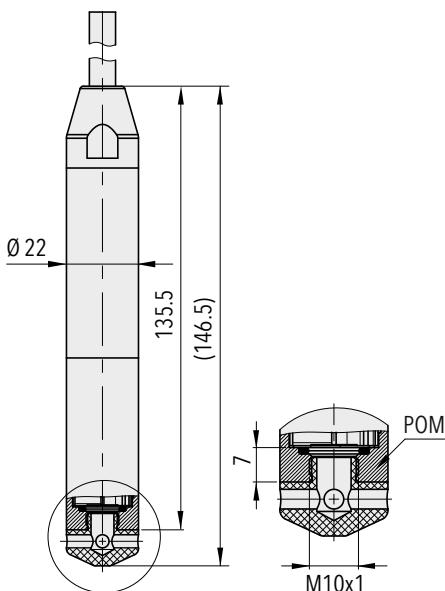
Measuring accuracy 0.5%



Measuring accuracy 0.3%



Dimensions



Electrical Connection

Protection / electrical connection			
	IP68 (25 bar; 250m) Cable PUR Ø 6 mm (5x0.22mm ²) 22	IP68 (25 bar; 250m) Cable FEP Ø 6 mm (5x0.22mm ²) 32	IP68 (25 bar; 250m) Cable PE Ø 6 mm (5x0.22mm ²) 42
Shield			
Venting			
Output signal	<p>8438.XX.XXXX.XX.19</p>	white brown yellow (green = not connected) (red = not connected)	white brown yellow (green = not connected) (red = not connected)
Temperature range	-25 ... +70°C	-25 ... +80°C	-25 ... +70°C

Any manipulation on the ventilation tube will result in warranty loss

*** For all cable versions

Additional information

Documents

Data sheet

www.trafag.com/H72328

Instructions

www.trafag.com/H73328

Flyer

www.trafag.com/H70641

SUBMERSIBLE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature.



Applications

- Shipbuilding
- Process technology
- Water treatment

Features

- Low pressure ranges (to 100 mbar)
- No media contacting O-rings
- PUR or Teflon cables
- Option: Chemical resistant material, e.g. titanium
- Option: Lightning protection (IEC 61000-4-5)

Technical Data

Measuring principle	Piezoresistive	Media temperature	-5°C ... +50°C
Measuring range	0 ... 0.1 to 0 ... 25 bar	Ambient temperature	-5°C ... +50°C
Output signal	4 ... 20 mA 0 ... 10 VDC	Approval / conformity	GL, KRS

Subject to change

Ordering information/type code

			8838 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]						
	0 ... 0.1	3	200	66				
	0 ... 0.16	3	200	67				
	0 ... 0.2	3	200	68				
	0 ... 0.4	3	200	69				
	0 ... 0.6	3	200	70				
	0 ... 1.0	3	200	71				
	0 ... 1.6	4.8	200	73				
	0 ... 2.5	7.5	200	75				
	0 ... 4	12	200	76				
	0 ... 6	18	200	77				
	0 ... 10	30	200	78				
	0 ... 16	48	200	79				
	0 ... 25	75	200	80				
Sensor	Type 05, accuracy NLH: $\pm 0.5\% \text{ FS}^2)$			P5				
	Type 02, accuracy NLH: $\pm 0.25\% \text{ FS}^2)$			P2				
	Type 01, accuracy NLH: $\pm 0.1\% \text{ FS}^2)$			P1				
Pressure connection	Open			40				
	Closed			41				
	G1/4" male			15				
Electrical Connection	Cable PUR ³⁾			22				
	Cable Teflon ³⁾			32				
	Cable PE ³⁾			29				
Output	4 ... 20 mA			19				
	4 ... 20 mA with lightning protection (Surge)			09				
	0 ... 10 VDC			17				
Accessories	Detachable cable ⁴⁾			37				
	Special oil filling Aseol ⁴⁾			94				
	Special oil filling Halocarbon ⁴⁾			95				
	Electronics packed in gel ⁴⁾			96				
	Application for seawater ⁴⁾			97				

¹⁾ Customized pressure ranges upon request²⁾ Accuracy NLH see table³⁾ Please specify the cable length when ordering⁴⁾ Please specify the measuring medium when ordering

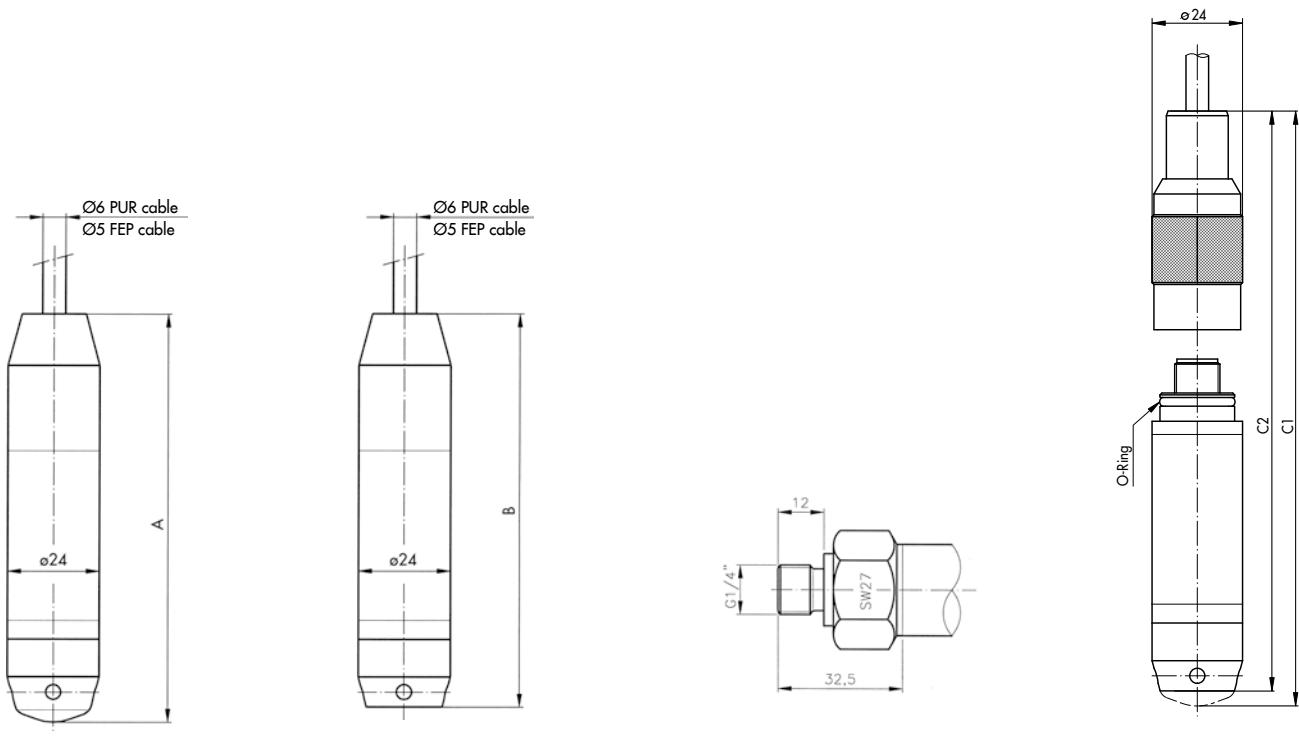
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
NAL0.1A	8838	0...0.1	3	9...33	± 0.5
NAL0.2A	8838	0...0.2	3	9...33	± 0.5
NAL1.0A	8838	0...1.0	3	9...33	± 0.5

Specifications		
Electrical Data	Output / supply voltage	4...20 mA: 9...33 VDC 0...10 VDC: 15...30 VDC
	Load	4 ... 20 mA: $R_L \leq (U_s - 9V)/20 \text{ mA}$ 0 ... 10 VDC: $R_L > 10 \text{ k}\Omega$
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	-5°C ... +50°C
	Ambient temperature	-5°C ... +50°C
	Protection	Min. IP68
	Humidity	Max. 95 % relative
	Vibration	6 g (25...2000 Hz)
	Shock	50 g / 11 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4435 (AISI316L) or titanium
	Pressure connection (wetted parts)	1.4435 (AISI316L) or titanium
	Housing	1.4435 (AISI316L) or titanium
	Sealing	FKM
	Male electrical plug	See ordering information
	Weight	~ 220 g
Mounting torque		25 Nm

Accuracy				
Range	[bar]	0.1 ... 0.5	0.5 ... 2	2 ... 25
NLH (BSL through 0)				
P5		±0.5	±0.5	±0.5
P2	[% FS]	±0.25	±0.25	±0.25
P1			±0.1	±0.1
Temperature coefficient				
Zero point -5 ... +50°C	[% FS/K]	±0.06	±0.03	±0.015
Span -5 ... +50°C		±0.015	±0.015	±0.015
Long term drift (1 year)	[mbar]	< 4	< 4	< 4

Dimensions



8838.XX.XX.41.XX.XX.XX

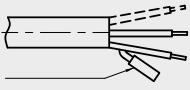
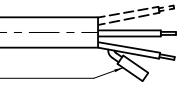
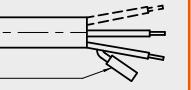
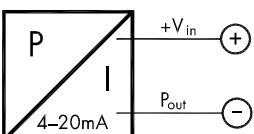
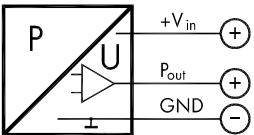
8838.XX.XX.40.XX.XX.XX

8838.XX.XX.15.XX.XX.XX

8838.XX.XX.XX.XX.XX.37

	A [mm]	B [mm]	C1 [mm]	C2 [mm]
Standard	108	104	135	131
With lightning protection	157	153	184	180

Electrical Connection

Protection / electrical connection			
	Min. IP68	Min. IP68	Min. IP68
	Cable PUR 22 	Cable Teflon 32 	Cable PE 29 
Output signal			
 8838.xx.xxxx.xx.19	white yellow	white yellow	white yellow
 8838.xx.xxxx.xx.17	white brown yellow	white brown yellow	white brown yellow

Any manipulation on the ventilation tube will result in warranty loss

Additional information			
Documents	Data sheet	www.trafag.com/H72228	
	Instructions	www.trafag.com/	
	Flyer	www.trafag.com/H70681	

EX SUBMERSIBLE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The new EX Submersible Pressure Transmitter EXL is based on the ECL submersible pressure transmitter with Trafag's own thick-film-on-ceramic sensor technology. The intrinsic safety design is certified for applications in Ex-Zones 0, 1, 2 (gas) and mining.



Applications

- Ex Zone 0, 1, 2 / Gas
- Ex Underground Mining

Features

- Ex II 1G Ex ia IIC T4/T6 Ga I M1 Ex ia I Ma
- Good media compatibility
- Cable PUR/PE or FEP
- EMC protection, IEC 61000

Technical Data

Measuring principle	Thick film on ceramic	Media temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
Measuring range	0 ... 0.2 to 0 ... 10 bar	Ambient temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
Output signal	4 ... 20 mA	Approval / conformity	GL, KRS Ex ATEX/IECEx, EN 60079-0/ EN 60079-11/EN 60079-26/ EN 50303
Accuracy @ 25°C typ.	± 0.3 % FS typ. ± 0.5 % FS typ.		

Subject to change

Ordering information/type code

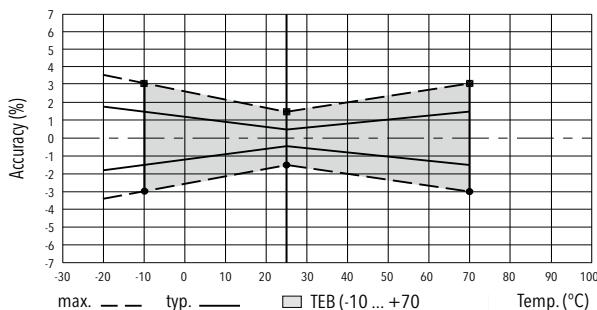
			8432 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]						
	0 ... 0.2	1.2		2	68			
	0 ... 0.4	1.2		2	69			
	0 ... 0.6	2		3	70			
	0 ... 1.0	3.2		4.8	71			
	0 ... 1.6	3.2		4.8	73			
	0 ... 2.5	5		7.5	75			
	0 ... 4	8		12	76			
	0 ... 6	12		15	77			
	0 ... 10	20		25	78			
Sensor	Relative pressure > 400 mbar, Accuracy: 0.3%				23			
	Relative pressure ≤ 400 mbar, Accuracy: 0.5%				26			
Pressure connection	Type 1, female, M 10x1, 1.4404/1.4435				46			
	Type 2, male, M 22x1, 1.4404/1.4435				48			
Electrical connection	Cable with shield: PUR ø 6 mm, 5x0.22mm ² ²⁾ ³⁾				22			
	Cable with shield: FEP ø 6 mm, 5x0.22mm ² ²⁾ ³⁾				32			
	Cable with shield: PE ø 6 mm, 6x0.22mm ² ²⁾ ³⁾				42			
Output	Signal output	Load resistance	I (supply)	U (supply)				
	4 ... 20 mA	(Usupply-10 V) / 20 mA		10 ... 30 VDC	19			
Accessories	Seal FKM				61			
	Seal EPDM				63			
	Zener barrier 28V/93mA; R ≈ 300Ω: Ordering no ZEN28VDC							

¹⁾ Extended overpressure as well as customized pressure ranges upon request²⁾ Please specify cable length when ordering (cable lengths > 50 m up to 120 m upon request)³⁾ For level measurement applications on ships under certification GL (German Lloyd), the cable of such transmitters must be installed inside the tank only

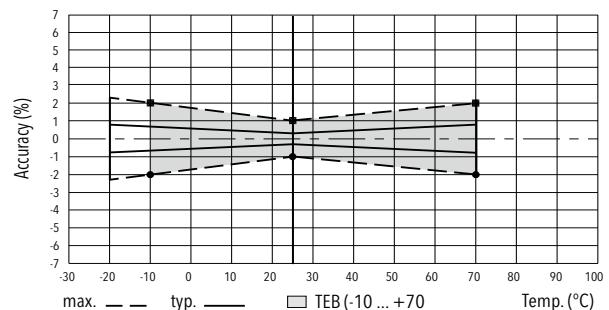
Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (10 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	max. 1.5 s
Environmental conditions	Media temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
	Ambient temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
	Protection	IP68 (25 bar; 250m)
	Vibration	10 g (50...2000 Hz)
	Shock	50 g / 3 ms
EMC Protection	Emission	IEC 61000-6-4
	Immunity	IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	Ceramic, Al ₂ O ₃ (96 %)
	Pressure connection (wetted parts)	1.4404/1.4435 (AISI316L)
	Housing	1.4404/1.4435 (AISI316L)
	Sealing	FKM 70 Sh
	Weight	~ 200 g

Accuracy		Measuring accuracy 0.3 % Ordering No. 23	Measuring accuracy 0.5 % Ordering No. 26
TEB @ -10 ... +70°C	[% FS typ.]	± 0.75	± 1.5
Accuracy @ +25°C	[% FS typ.]	± 0.3	± 0.5
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.3
TC zero point and span	[% FS/K typ.]	± 0.02	± 0.02
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.2

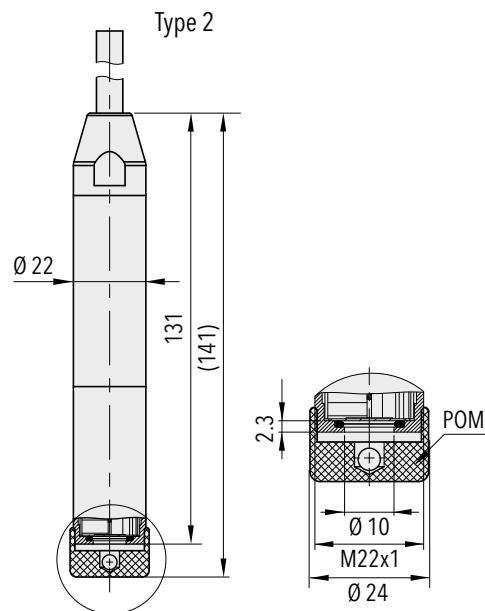
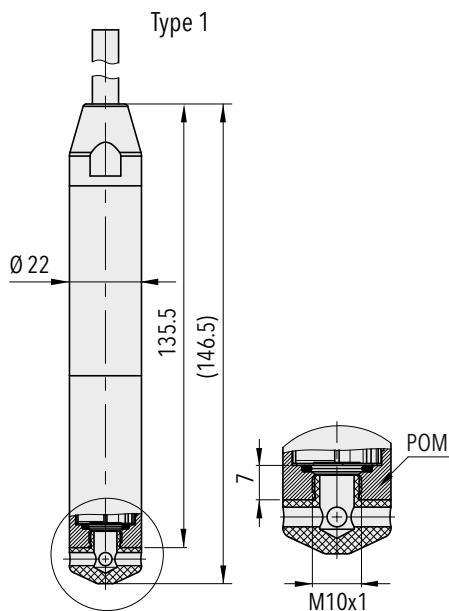
Measuring accuracy 0.5%



Measuring accuracy 0.3%

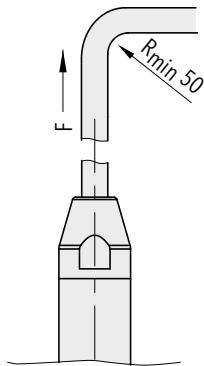


Dimensions

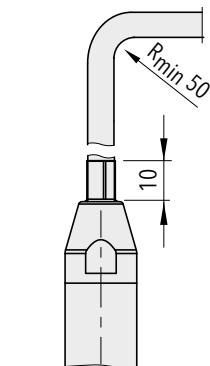


8432.XX.XX46.XX.XX.XX

8432.XX.XX48.XX.XX.XX

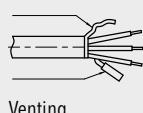
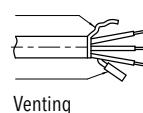
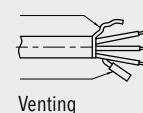
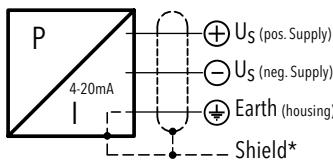


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8432.XX.XXXX.32/42.XX.XX

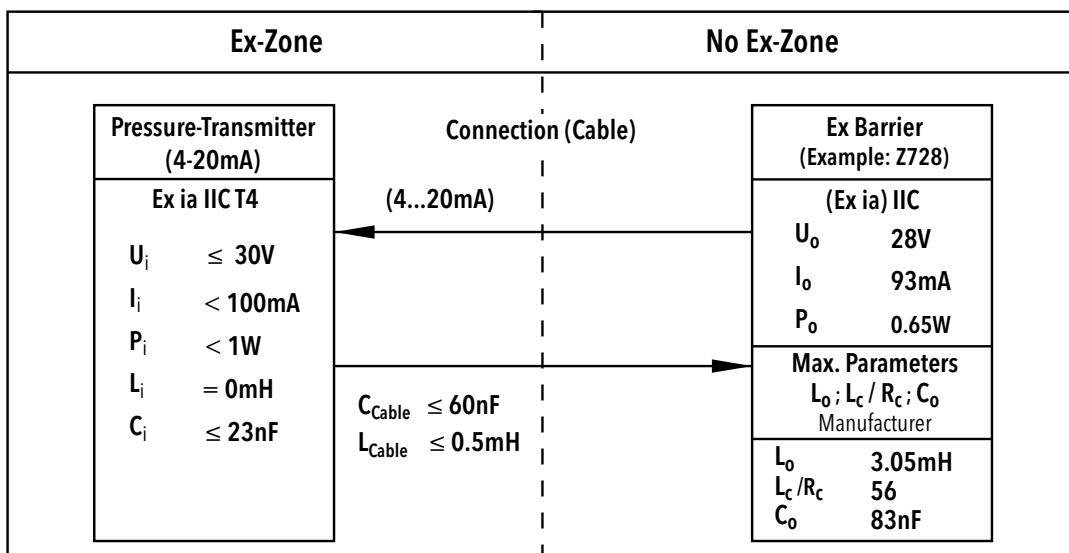
Electrical connection

Protection / electrical connection			
Output signal	IP68 (25 bar; 250m)	IP68 (25 bar; 250m)	IP68 (25 bar; 250m)
	Cable PUR Ø 6 mm (5x0.22mm ²) 22 Shield  Venting	Cable FEP Ø 6 mm (5x0.22mm ²) 32 Shield  Venting	Cable PE Ø 6 mm (6x0.22mm ²) 42 Shield  Venting
 8432.xx.xxxx.xx.19	white brown yellow (green = not connected) (red = not connected)	white brown yellow (green = not connected) (red = not connected)	white brown yellow (green = not connected) (pink = not connected) (grey = not connected)
Temperature range	-20 ... +70°C	-20 ... +70°C	-20 ... +70°C

Any manipulation on the ventilation tube will result in warranty loss

****) For all cable versions

Ex-Barrier



Additional information			
Documents	Data sheet	www.trafag.com/H72330	
	Instructions	www.trafag.com/H73329	
	Flyer	www.trafag.com/H70658	

EX SUBMERSIBLE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature.



Applications

- Shipbuilding
- Ex SEV 11 ATEX 0145 X

Features

- Pressure ranges from 100 mbar
- Cable PUR or FEP
- Chemical resistant material, e.g. titanium
- Explosion-proof Ex ia IIC T3 ... T6
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

Technical Data

Measuring principle	Piezoresistive	Ambient temperature	T4/T6: -5°C ... +50°C
Measuring range	0 ... 0.1 to 0 ... 25 bar	Approval / conformity	GL, KRS
Output signal	4 ... 20 mA	Type of protection	Ex ia IIC T3 ... T6 Ga Ex ia IIIC T125°C Da Ex ia I Ma
Media temperature	T4/T6: -5°C ... +50°C		

Subject to change

Ordering information/type code

			8858 . XX	XX	XX	XX	XX	XX
Measuring range¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]					
	0 ... 0.1	3	200	66				
	0 ... 0.16	3	200	67				
	0 ... 0.2	3	200	68				
	0 ... 0.4	3	200	69				
	0 ... 0.6	3	200	70				
	0 ... 1	3	200	71				
	0 ... 1.6	4.8	200	73				
	0 ... 2.5	7.5	200	75				
	0 ... 4	12	200	76				
	0 ... 6	18	200	77				
	0 ... 10	30	200	78				
	0 ... 16	48	200	79				
	0 ... 25	75	200	80				
Sensor	Type 01, relative pressure (accuracy NLH: $\pm 0.1\% \text{ FS}$) ²⁾			P1				
	Type 02, relative pressure (accuracy NLH: $\pm 0.25\% \text{ FS}$) ²⁾			P2				
	Type 05, relative pressure (Accuracy NLH: $\pm 0.5\% \text{ FS}$) ²⁾			P5				
Pressure connection	Open			40				
	Closed			41				
	G1/4" male			15				
Electrical connection	Cable PUR ^{3) 5)}			22				
	Cable FEP ^{3) 5)}			39				
Output signal	4 ... 20 mA			19				
	4 ... 20 mA with lightning protection (Surge)			09				
Accessories	Special oil filling: Anderol ⁴⁾			94				
	Temperature class T4 ⁴⁾			T4				
	Temperaturklasse T6 ⁴⁾			T6				
	Application for seawater ⁴⁾			97				
	Titanium (Material pressure connection and housing)			Ti				

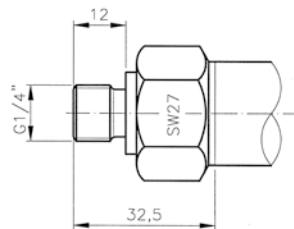
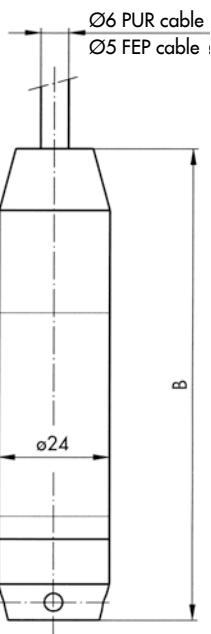
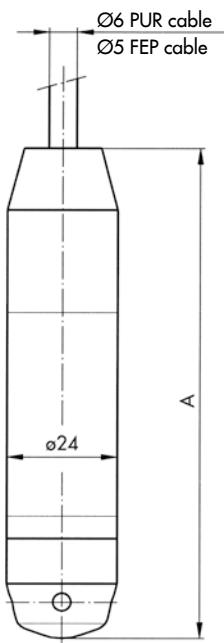
¹⁾ Customized pressure ranges upon request²⁾ Accuracy NLH see table³⁾ Please specify the cable length when ordering⁴⁾ Please specify the measuring medium when ordering⁵⁾ Attention! Additional measure against static charges are required for Zone 0 to 20 for these cables (laid with earthed metal braid, metal hose or metal pipe).

Specifications	
Electrical Data	Repeatability
	Zener barrier
	Load
	Rise time
Environmental conditions	
	Media temperature
	Ambient temperature
	Protection
	Humidity
	Vibration
	Shock
EMC Protection	
	Burst
	Surge
	Emission
	Immunity
Mechanical Data	
	Sensor (wetted parts)
	Pressure connection (wetted parts)
	Housing
	Sealing
	Male electrical plug
	Weight
	Mounting torque

Accuracy				
Range	[bar]	0.1 ... 0.5	0.5 ... 2	2 ... 25
Accuracy NLH (BSL through 0) P5	[± % FS]	± 0.5	± 0.5	± 0.5
Accuracy NLH (BSL through 0) P2	[± % FS]	± 0.25	± 0.25	± 0.25
Accuracy NLH (BSL through 0) P1	[± % FS]	-	± 0.1	± 0.1
Temperature coefficient Zero point -5 ... +50°C	[± % FS/K]	± 0.06	± 0.03	± 0.015
Temperature coefficient Span -5 ... +50°C	[± % FS/K]	± 0.015	± 0.015	± 0.015
Long term drift	[1 year]	< 4 mbar	< 4 mbar	< 0.2 % FS

Additional information			
Documents	Data sheet	www.trafag.com/H72231	

Dimensions



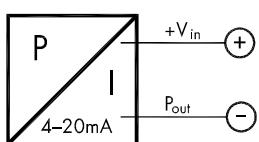
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8858.XX.XX.40.XX.XX.XX

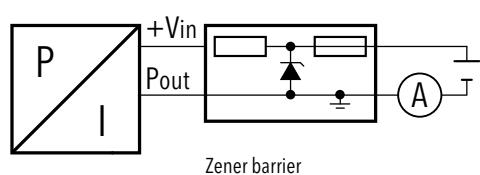
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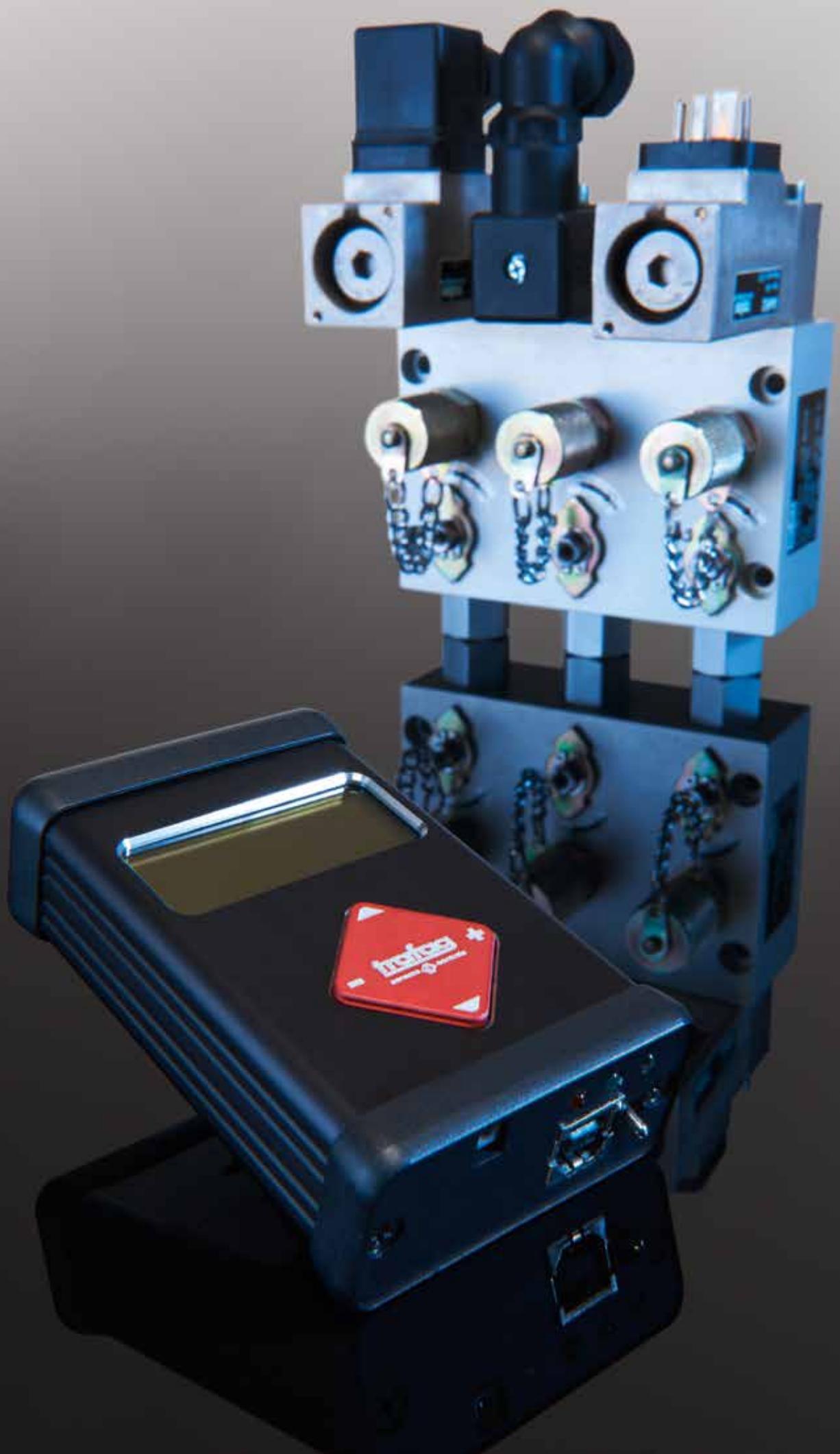
	A [mm]	B [mm]
Standard	113	109
With lightning protection	157	153

Electrical connection



Color 4 ... 20 mA
 white +V_{in}
 yellow P_{out}
 grey ⊕ EP





Accessories

Trafag offers a wide range of original accessories which are ideally matched to our products. They include devices for monitoring or configuring transmitters, such as hand pumps with precision pressure gauge or the Sensor Communicator, a handheld device which provides direct access to the transmitter calibration values in the Trafag ASIC. Trafag also offers a wide range of accessories, which can be adapted to meet specific application requirements and also make installation easier. They include diagnostic valve manifolds, snubbers and pressure peak damping elements as well as ventilation boxes, cable tension clamps or separation barriers for explosion-protection applications.

Accessories for pressure transmitters

- SMI Sensor Master Interface
- SC Sensor Communicator
- CAN2USB CANopen Configuration Tool
- DVB Diagnostic valve block
- Hand pump with precision manometer
- Switch amplifier
- Venting box
- Cable hanger
- Pressure peak damping element
- Snubber
- Adapters for different pressure connections
- Stop valve



SMI

Sensor Master Interface

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The Sensor Master Interface SMI is used to set parameters of electronic pressure switches such as switching points, output function and switching delay time as well as to adjust the measuring range of submersible pressure transmitters. By reading the device data, the connected pressure measurement device can be precisely identified and the parameters can be checked.



Applications

- Supports device types NAT 8252, NAH 8254, NAR 8258, ECL 8439

Features

- Read out of sensor data
- Parameterization of switching points on NAX pressure switches
- Measuring range adjustment on submersible pressure transmitter ECL
- Fast and easy operation via Android App "Sensor Master Communicator SMC"
- Reset pressure measurement instruments to factory settings

Technical Data

Ambient temperature	0°C ... +40°C	Dimensions	LxWxH: 120x76x27 mm
Supply voltage	5 VDC, ±0.25, 1 A (Supply via USB interface)	Communication SMC/SMI	via Bluetooth LE
Protection	IP20	Operation Interface	via Android App "Sensor Master Communicator SMC"
Storage temperature	-10°C ... +50°C		

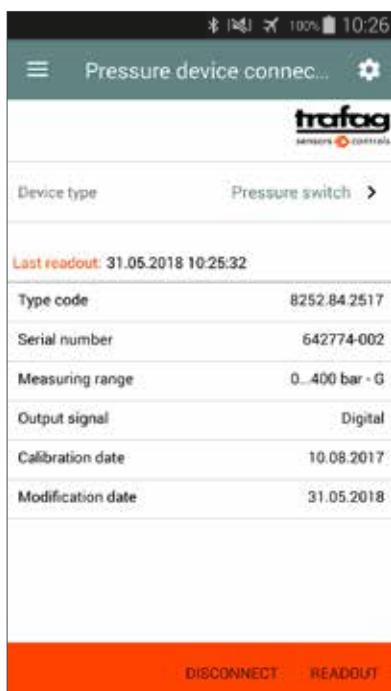
SMI

Ordering information

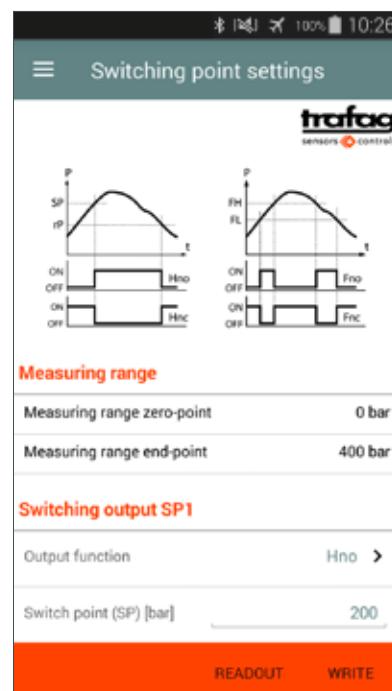
	Ordering no.
SMI Packet containing:	F90170
SMI	
USB Bluetooth Dongle (Trafag)	F90172 (Spare part)
Device connector SMI (5-pole, push-in)	F90171 (Spare part)
Cable USB 2.0 A male, Micro-B 1.0 m	F90173 (Spare part)
Accessories	
Cable PVC, M12x1 connector	F90174
Device connector SMI with housing (5-pole)	F90175
Case for SMI and accessories (325x248x50 mm)	H30782



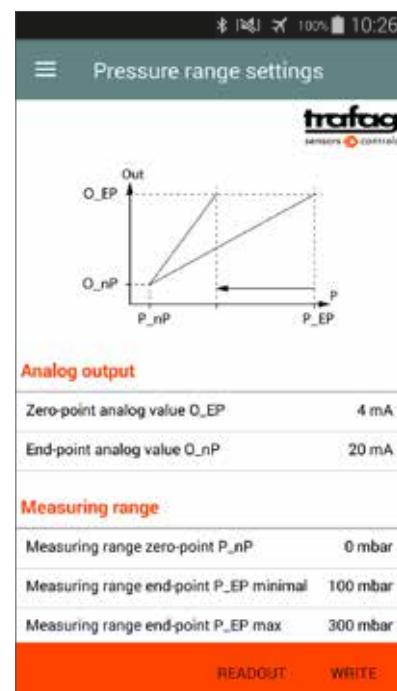
Reading out of device data



Parameterization of switching points on NAx pressure switches



Measuring range adjustment on submersible pressure transmitter ECL



Erweiterte Informationen

Dokumente	Datenblatt	www.trafag.com/H72618
	Betriebsanleitung	www.trafag.com/H73618
	Flyer	www.trafag.com/H70602

SC

Sensor Communicator



Features

- Read out of sensor data
- Adjustment of set point or zero point and span
- Real time pressure measuring
- Software update and battery charge with USB-interface

Technical Data

- Identification of device data: Model, signal output, type plate, manufacturing date
- Setting of switchpoint (8320 EPN-S)
- CANopen: Setting of Node-ID and baudrate
- Reset to factory settings



Instruction

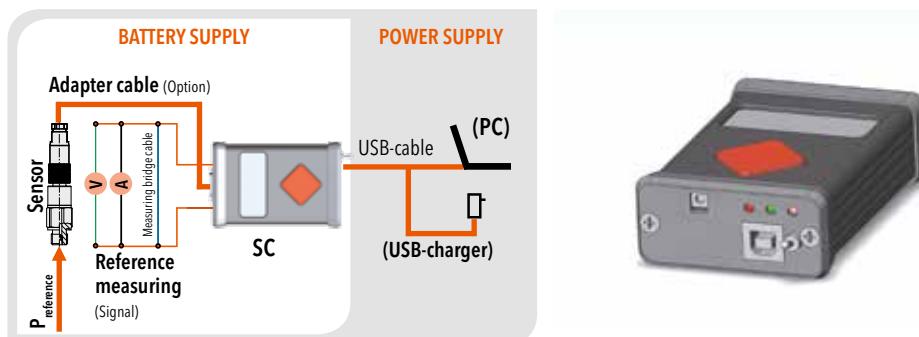
www.trafag.com/H73699_en

H73698 de

Compatible devices and adapter cables

Model	Connector	Output signal		
		4 ... 20 mA	0 ... 10 VDC 0 ... 5 VDC 1 ... 6 VDC	0.5 ... 4.5 VDC ratiometric
NAT(8251) NAH(8253)	Industrial standard 82XX.XXXX.01.XX..	SC01A	SC01V	SC01R
NAE(8255) NSL(8257)	M12, 4-pole 82XX.XXXX.32.XX..	SC32A	SC32V	SC32R
	M12, 5-pole 82XX.XXXX.35.XX..	SC35A	SC35V	SC35R
Output signal				
Model	Connector	4 ... 20 mA	CANopen	Switching output
CMP(8270)	M12, 5-pole 82XX.XXXX.35.XX..		SC35CAN	
EPN-S(8320)	DIN43650 8320.XXXX.40.XX..			SC04SW
EPR(8293) EPN(8298)	DIN43650 82XX.XXXX.04.XX..	SC04A		
NPN(8264)	DIN43650 (invers) 82XX.XXXX.04.XX.92..	SC04A92		

Connection scheme



Content of delivery:

- 1 pce SC incl. batteries
- 1 pce USB-cable
- 1 pce Measuring bridge cable
- Option: Adapter cable (see table)

CAN2USB

CANopen Configuration Tool



Features

- Configuration of Trafags pressure transmitter CMP 8270 via USB
- Easy to use visual user interface
- Integrated datalogger
- Complete set available at Trafag AG
- System requirements: Windows 7, Windows 8, Windows 10, USB 2.0 or higher

Technical Data

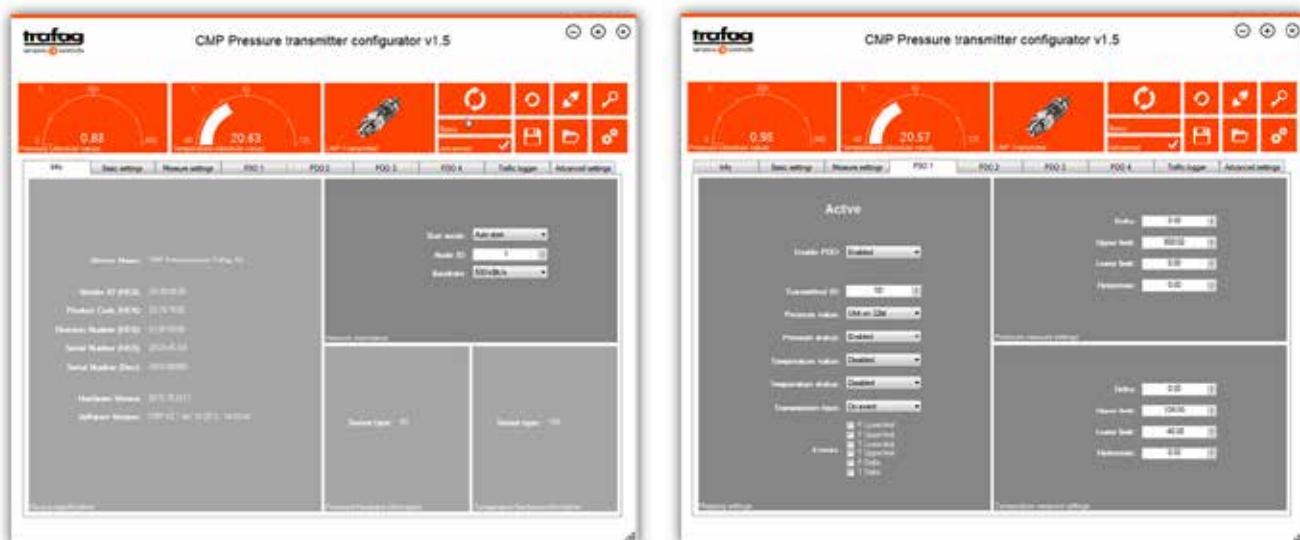
Configuration of CANopen devices is hard for non-experts. Most available software is developed for experts with much background knowledge and experience in programming such devices. Neither the software user interface nor the interface hardware, such as plugs and adapters, are designed for occasional users.

The CMP CANopen Configuration tool, developed and produced for Trafag CMP 8270 CANopen pressure transmitter, is the perfect solution for this: Easy-to-use software interface and a USB-to-CANopen dongle. It allows configuration of all CANopen parameters and access to the complete object dictionary. Live display of the actual measurements of pressure and temperature and an integrated logger with export function offers easy monitoring of the CANopen bus communication.



Instruction

www.trafag.com/H73617



Content of delivery:

- CAN2USB adapter
- Cable from adapter to USB
- T-connector M12 F-F-M
- Terminator 120 Ω
- USB Memory stick with software and manual for CAN2USB and CMP 8270

Recommended accessory (not included):

- CMP0.6M: CANopen Pressure Transmitter 8270 CMP with pressure range 0 ... 0.6 bar
- C29161: Pressure applicator



DVB

Diagnostic Valve Block



Features

- Function tests during operation (no interruption necessary) with stop valve and test connection

Technical Data

Pressure	-0.8 ... 100 bar
Ambient temperature	-20°C ... +120°C

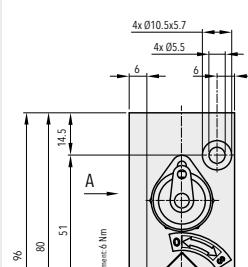
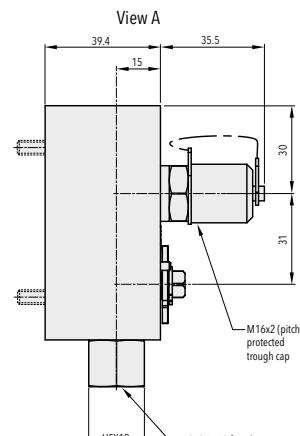
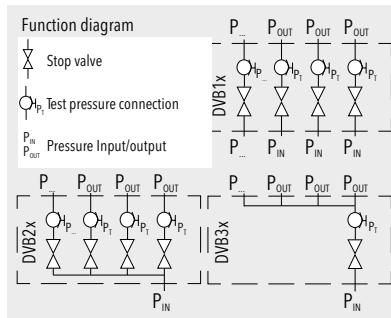


Data sheet
Instruction

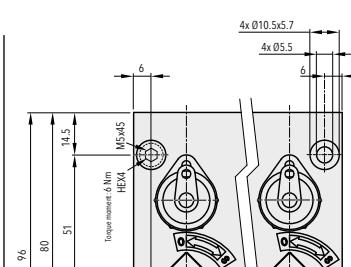
www.trafag.com/H72361
www.trafag.com/H73361

Standard products (extra short lead time)

Product No	Material	Product No	Material
DVB11	1 P-in, 1 test connection, 1 P-out	DVB24	1 P-in, 4 test connection, 4 P-out
DVB12	2 P-in, 2 test connection, 2 P-out	DVB25	1 P-in, 5 test connection, 5 P-out
DVB13	3 P-in, 3 test connection, 3 P-out	DVB32	1 P-in, 1 test connection, 2 P-out
DVB14	4 P-in, 4 test connection, 4 P-out	DVB33	1 P-in, 1 test connection, 3 P-out
DVB15	5 P-in, 5 test connection, 5 P-out	DVB34	1 P-in, 1 test connection, 4 P-out
DVB22	1 P-in, 2 test connection, 2 P-out	DVB35	1 P-in, 1 test connection, 5 P-out
DVB23	1 P-in, 3 test connection, 3 P-out		

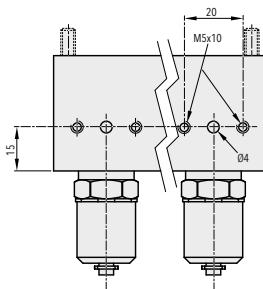


DVB11



DVB X2...X5

No of outputs N	2	3	4	5
Length L ₁ [mm]	76	116	156	196



THP...

Hand pump



Features

- For testing of pressure transmitters and pressure switches

Technical Data

Connection	G1/4" female
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Standard products (extra short lead time)

Product No	Range [bar]	
THP30	-0.85 ... +25	
THP700	0 ... 700	Resolution 0.2 bar

V6/V7

Stop valve



Features

- Allows replacement of instruments without interruption of process (max. 40 bar)

Technical Data

Material	1.4305 / FKM
Pressure	max. 600 bar
Media temperature	-25°C ... +125 °C

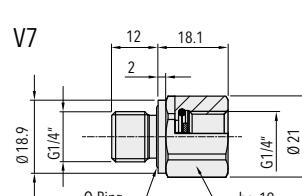
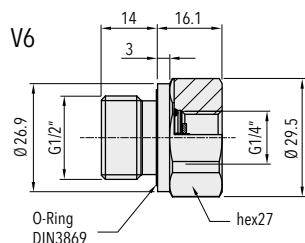


Data sheet

www.trafag.com/H72258

Standard products (extra short lead time)

Product No	Connection
V6	G1/2" male - G1/4" female
V7	G1/4" male - G1/4" female



HIP...

Venting box



Features

- For all Trafag level transmitters

Technical Data

Vented plastic housing with wire terminals to connect a submersible pressure transmitter.

Standard products (extra short lead time)

Product No	Material
HIP67	Box 130 x 94 x 57 mm, fixing 4 x Ø 5 mm, hole pattern 115 x 79 mm

AKL...

Cable hanger



Technical Data

Cable hanger to clamp cable with diameters of 5.5 ... 9.5 mm

Features

- For all Trafag level transmitters

Standard products (extra short lead time)

Product No	Connection	Material
AKL5.5-9.5	174 x 45 x 32 mm For cable diameters 5.5 ... 9 mm	1.4301, PA fibreglass reinforced

A../D..

Adapters with manometer pressure ports



Features

- Pressure adapters with different thread combinations and materials for individual applications

Technical Data

Material	1.4435 (AISI316L) / Brass
Connection	G1/4"m - G1/2"m, G1/4"m - G3/8"m, G1/4"f - G1/2"m

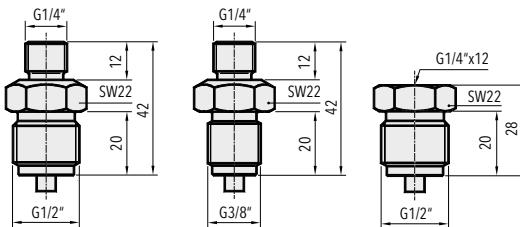


Data sheet

www.trafag.com/H72258

Standard products (extra short lead time)

Product No	Material
A1	Brass
A2	Brass
D1	1.4435 (AISI316L)
D2	1.4435 (AISI316L)
D4	1.4435 (AISI316L)



A2/D2

A1/D1

D4

K.../F...

Snubber



Features

- Integrated in an adapter
- K1/K2: Pressure peak damping element integrated in an adapter

Technical Data

Material	1.4435/316L, brass
Connection	G1/4" male - female, G1/8" male - female

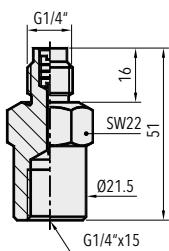


Data sheet

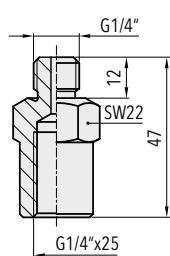
www.trafag.com/H72258

Standard products (extra short lead time)

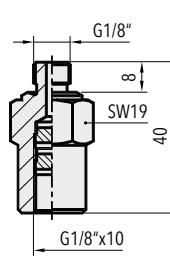
Product No	Connection	Material
F3	G1/4" male - female	Brass
F4	G1/4" male - female	Brass
F5	G1/4" male - female	Brass
K1	G1/4" male - female	1.4435 (AISI316L)
K2	G1/8" male - female	1.4435 (AISI316L)
K3	G1/4" male - female	1.4435 (AISI316L)
K4	G1/4" male - female	1.4435 (AISI316L)
K5	G1/4" male - female	1.4435 (AISI316L)



K3/K4/K5
F3/F4/F5



K1



K2

DAMP...

Pressure peak damping element



Features

- Retrofit kit with integrated M5 male thread
- Hole diameter 0.4 mm, 1.0 mm
- Set of 5 pcs.

Technical Data

Material	1.4305 (AISI303)
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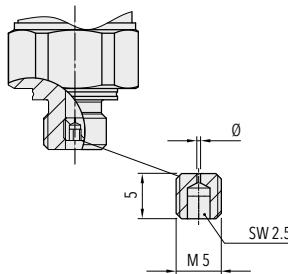


Data sheet

www.trafag.com/H72258

Standard products (extra short lead time)

Product No	Material
DAMP1.0	With 1.0 mm hole, for heavy oil 1.4305 (AISI303)
DAMPO.4	With 0.4 mm hole, for water and light oil 1.4305 (AISI303)



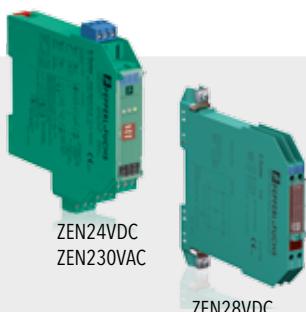
ZEN...

Switch amplifier



Features

- Ex II 1 G Ex ia IIC Ga
- Ex II 1 D Ex ia IIIC Da
- Ex I M1 Ex ia I Ma
- IP 20
- Output: Signal, relays



Technical Data

Ambient temperature	-20°C ... +60°C
---------------------	-----------------

The switch amplifier transfers digital signals from the hazardous area. Sensors per DIN EN 60947-5-6 (NAMUR) and mechanical contacts may be used as alarms. The control circuit is monitored for lead breakage (LB).

Standard products (extra short lead time)

Product No	Connection	
ZEN24VDC	20 ... 30 VDC, 20 ... 23 mA	$U_0 = 10.5 \text{ V}$, $I_0 = 13 \text{ mA}$, $P_0 = 34 \text{ mW}$
ZEN230VAC	207 ... 253 VAC, 45 ... 65 Hz	$U_0 = 10.6 \text{ V}$, $I_0 = 19.1 \text{ mA}$, $P_0 = 51 \text{ mW}$
ZEN28VDC	Max. 28 VDC	$U_0 = 28 \text{ V}$, $I_0 = 93 \text{ mA}$, $P_0 = 650 \text{ mW}$

Terminology for pressure measurement instruments

Relevant standards

DIN 16086, IEC 61298-2

Instrument types

Pressure sensors

Membranes with elements applied whose physical properties change when the membranes deform (strain gauges with changing resistance, for example).

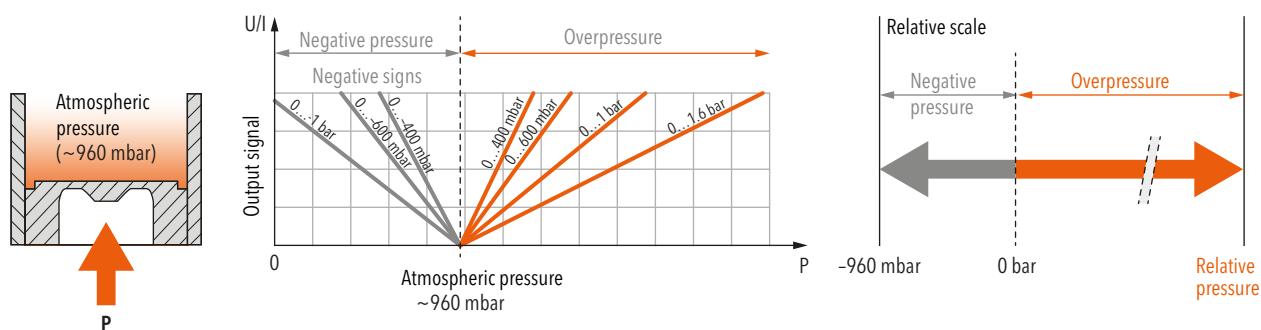
Pressure transmitters

Transmitters for converting the pressure to be measured into a defined or standardised analogue and/or digital output signal.

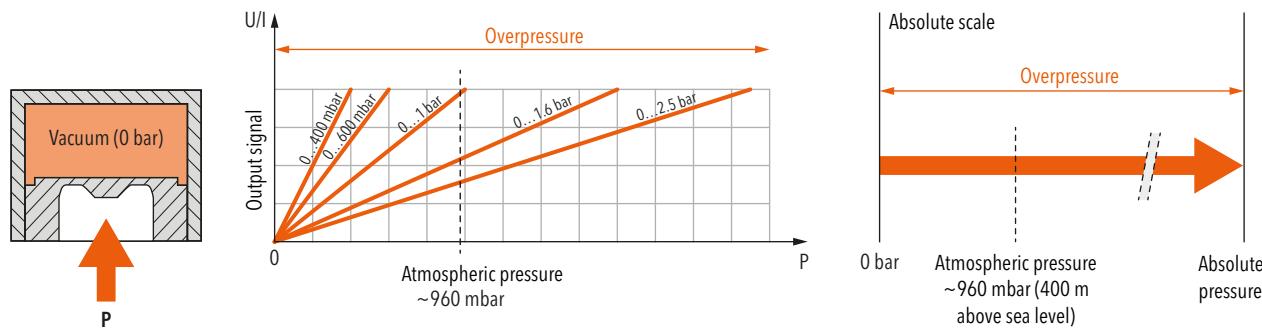
Pressure transducers

Pressure sensors that have a process connection and electrical connection (e.g. connector) but do not convert pressure into a standardised electrical signal like a pressure transmitter.

Relative pressure measurement



Absolute pressure measurement



Terminology for pressure measurement instruments

Main features

Nominal pressure measuring range

Range between the upper and lower limits of the size measured (operating pressure). The specified accuracy remains within this range.

Measuring span

Algebraic difference between the upper and lower limit values of a certain measuring range.

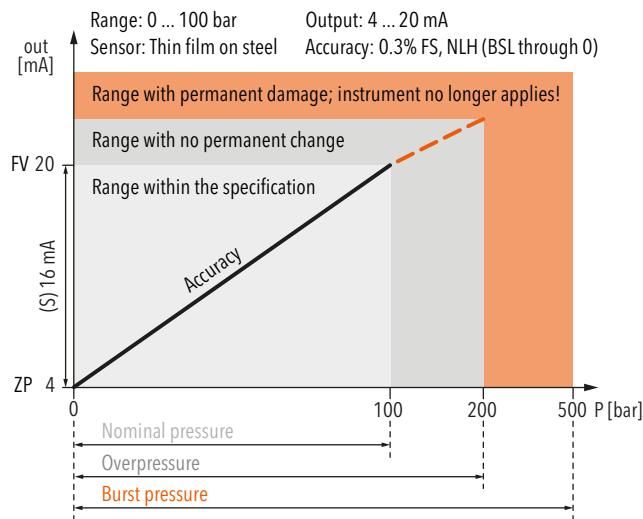
Overpressure Max. working pressure

Highest pressure specified by manufacturer for which the pressure transformer is designed at maximum temperature. The pressure transformer can be loaded up to this pressure without the guaranteed metrological properties having changed after going back into the measuring range. However, there is no longer a clear link between pressure and output signal in the range between nominal pressure and overpressure.

Burst pressure

Pressure value (static) at which the measuring instrument suffers permanent damage. The instrument can withstand pressures up to this value without bursting and will not leak any measuring medium.

Example



Accuracy

Typ. accuracy

(Typical) Mostly corresponds to the 1-sigma value of the normal distribution, i.e. approx. 68.3%. Generally, well over 75% of all Trafag instruments meet this typical measured value.

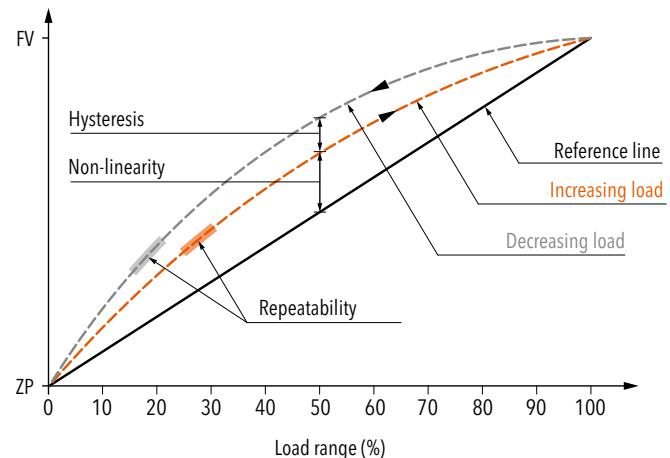
Max. accuracy

(maximum) 100% of all instruments meet this maximum measured value.

Non-linearity

The largest deviation from the effective characteristic line of an ideal reference line. The reference line can be defined as a limit point adjustment, a BSL or a BSL through 0.

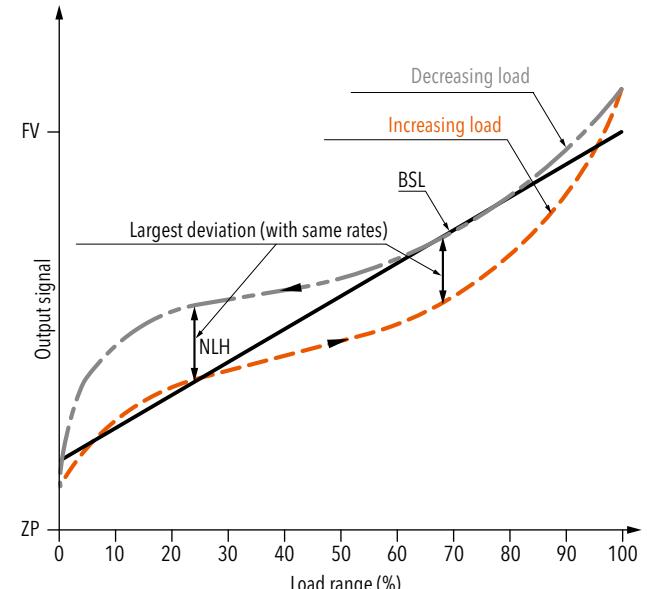
Specifications: Non-linearity, Hysteresis



BSL Best Straight Line

The reference line according to the BSL or the minimum value adjustment is placed in such a way that the maximum positive and negative deviations are as small as possible.

Specifications: Accuracy NLH (BSL)

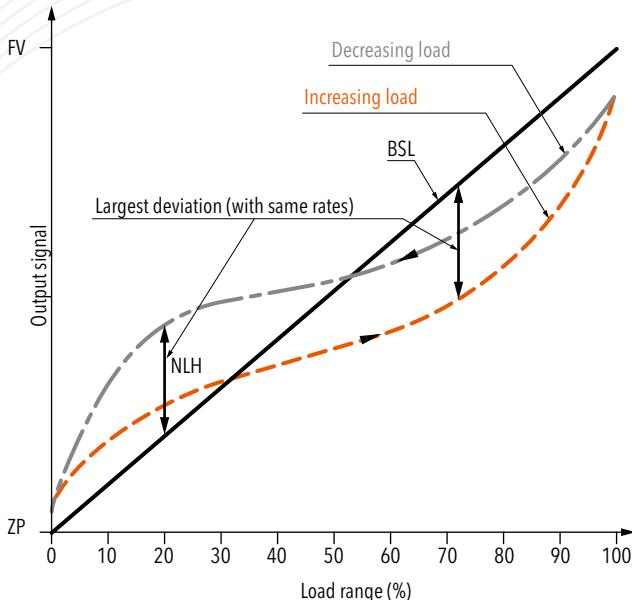


Terminology for pressure measurement instruments

BSL through zero

As an additional requirement for the minimum value adjustment, the BSL through zero (also BSL/0) must go straight through zero or the origin.

Specifications: Accuracy NLH (BSL through zero)



Non-linearity according to limit point adjustment

The reference line runs through the origin and end point of the characteristic line. Non-linearity indicates the greatest deviations from this line.

Hysteresis

Property of an instrument for yielding different output values in relation to its input values, which are dependent on the effective direction in which the input values are created (acc. to IEC 61298-2).

Pressure hysteresis

The difference that occurs at the same pressure between measurements in the direction of increasing and then decreasing pressure.

Temperature hysteresis

Maximum change of the zero point and output span for the pressure signal after specified temperature cycle over the operating temperature range.

NLH non-linearity and hysteresis

Largest deviation from the ideal characteristic line (BSL, BSL/0 or limit point). In pressure measuring instruments, the non-linearity and pressure hysteresis are given together at a constant temperature.

Accuracy DIN 16086: Measurement deviation

The accuracy denoted in the standard DIN 16086 with measurement deviation (at 25°C reference temperature) includes all deviations as a result of non-linearity, hysteresis, non-repeatability, zero point (start of measuring range) errors and span (end of measuring range) errors. Zero point errors and span errors also include the measuring uncertainty of the configuration ensemble.

Repeatability DIN 16086: Non-repeatability

Deviation of the output signals with same input signals under identical (established) application conditions.

Temperature coefficient TC

Change of measured value for zero point and span as a result of changes in temperature.

Long-term stability Long-term drift

The change of accuracy due to aging under certain reference conditions during a certain period of time, typically 1 year.

TEB Total error band

Total error (root from sum of the square of the deviations) due to measurement deviations (accuracy) and temperature influence (temperature coefficient TC). The temperature influence is usually given in the information from Trafag across a range larger than that given in the standard (-10 ... +60 °C). Whilst DIN 16086 also continues to add to the long-term stability over a year, the information from Trafag is subject to ex-works conditions for obvious reasons.

Scale accuracy

For pressostats: Deviation arising from the manual switch point adjustment with the help of the display (scale).

Electrical Data

Output signal

Electrical signal that emits the value of the measurement size for further processing

Rise time Step response

The time it takes for an output signal after a severe pressure change to increase from 10% to 90% of its final value that results from the change in pressure.

Zero point ZP

Output signal in the pressureless state (P_{\min}), e.g. 4 mA at 0 bar (P_{\min}).

Terminology for pressure measurement instruments

Final value FV

Output value of the largest pressure value in the nominal pressure range (P_{max}), e.g. 20 mA at 100 bar (P_{max}).

Span S

Final value (FV) - zero point (ZP) = span (S)
e.g. span (S) = (FV) 20 mA - (ZP) 4 mA = 16 mA

Switching differential Pressostats

Range within which the micro-switch in pressostats switches on and off

Example:

X...X = adjustable value
X - X = non-adjustable value; runs proportional to the
nominal pressure
X = fixed value

Limiter Pressostats

Pressostat with manual micro-switch reset.

EMC Protection

EMC Electromagnetic compatibility

Instrument property for functioning in an environment with electromagnetic interference and for not unduly influencing this environment (to which other equipment also belongs).

Immission

Immunity to external electromagnetic disturbances.

Emission

Interference emission from electromagnetic disturbances.

Surge

Immunity to unipolar surge voltages that can occur due to surges as a result of switching operation and lighting.

Burst

Immunity to recurring, rapid, transient electrical disturbances.

Environmental conditions

Media temperature

Permissible temperature range of the measuring media.

Operating temperature

Ambient temperature
Temperature range in which the measuring instrument adheres to its specifications. As the electronics in certain instruments are more sensitive to temperature than the sensor element, the maximum ambient temperature for the instrument is lower than the permissible media temperature.

Storage temperature

Temperature range in which the measuring instrument can be stored or transported without permanently changing the measuring characteristics.

Protection

Humidity and dust shield according to IP classes in accordance with EN 60529.

Information about Ex products

Trafag draws from decades of experience in the design and manufacturing of pressure and temperature measuring instruments for hazardous area applications. We continuously meet the rising expectations in respect of safety and reliability of our products. These products provide reliable functionality in various hazardous zones with ATEX and in many cases also IECEx certification.

CE - Designation and marking



Control No. of notified body
for the supervision of the
quality assurance system

I: Mining
II: All other
applications

Category
(see below)

G = Gas
D = Dust

- Category 1: Can be used in zone 0 (gas) and 20 (dust)
 - Potentially explosive atmosphere: Permanent
 - Two independent failures – safety
- Category 2: Can be used in zone 1 (gas) and 21 (dust)
 - Potentially explosive atmosphere: Regularly
 - One failure – safety
- Category 3: Can be used in zone 2 (gas) and 22 (dust)
 - Potentially explosive atmosphere: Unlikely or for very short time

IEC/EN 60079-0 - Gases

Ex ia IIC T6 Ga

Type of protection

Equipment groups
(for gases)

Temperature
class

Equipment
protection
level

- Type of protection: Intrinsically safe
- Equipment group (gases): IIC = Hydrogen, Acetylene
- Temperature level: Defines ignition temperature and permissible temperature of equipment surface
- Protection level: Referring to installation zone (Ga = Zone 0 = Category 1 in ATEX)

IEC/EN 60079-0 - Dust

Ex ia IIIC T130 °C Da

Type of
protection

Equipment groups
(for dust)

Surface
temperature

Equipment
protection
level

- Type of protection: Intrinsically safe, powder filling, encapsulation, ...
- Equipment group (dust): IIIC = Conductive dust
- Temperature level: Defines maximum surface temperature
- Protection level: Referring to installation zone (Da = Zone 20 = Category 1 in ATEX)

EN 50303 - Mining

Ex ia I Ma

Type of protection

Equipment
for mining

Equipment protection
level

- Category and Protection level:
 - Category M1 / Protection level Ma: Fully functional and safe when explosive atmosphere is present. Requires means to cope with two independent failures
 - Category M2 / Protection level Mb: These products are intended to be deenergised in the presence of an explosive atmosphere

Fluid resistance guide

		CODES:			S - SATISFACTORY	F - FAIR	U - UNSATISFACTORY	T - TEST FOR SPECIFIC APPLICATION				
		RESILIENT MATERIALS			PLASTICS			METALS				
BUTYL N (NBR)	EPR	EPDM	NEOPRENE	PROPYLIC (EPM)				STAINLESS STEEL	DIN 1.4335/1.4301	DIN 1.4320	DIN 1.4301/1.4320	DIN 1.4512
US	T	UUUUU	UUUUU	FUFST	UUUUU	SUUSU	SUUSU	SUFFS	S	S	S	TUUUS
SS	F	UUU	FFF		SU	SSSU	SUSSS	SUSSS	S	U	U	UUU
US	U	UUU	UUU	TUUS		U		SS	S	S	S	SFFF
TS	T	TTT	TTU	TTSSS	SFT	SSS	SUFSF	F	U	U	U	UUUUF
TF	F	UUU	UUU	UUUUS	UTUS	SFT	STT	FUFFS	S	F	U	UUUUS
UF	T	UUU	UUU	FUUFU	UUU	USTUSU	TUUTS	SUTS	S	T	S	UUUUS
US	U	UUU	UUU	FUUFF	FUUSU	SSTS	SUSS	SFFFS	S	F	S	SSSSF
SSTF	U	STUT	STS	SUS	SUFSU	S	SSSSU	S	S	S	S	UUTS
UU	U	UUU	SU		U	S	UUUU	U	U	U		F
U	SU	S					S	TTTT				S
USSF	U	UUU	FFT	T	S	SSSS	TS		FSS	S		SSF
FSSFT	FF	FT	TT	S	S	SS	T	S	SFFS	FF	FF	FFFT
SSSF	U	SU	F	STSS	S	USSSS	S	SSSFSS	S	F	S	SSSSST
UUUUUU	UUU	SU	U	S	S	S	S	S	S	S	S	SS
S	SSS	S			S	S			S		S	SSSS
SSSSSS	S	FF	TT	FF	SS	SSSS	SSSS	ST	UUUUU	F	F	UUUUU
SSSSSS	S	FF	TT	FF	SS	SSSS	SSSS	U	TTUUU	F	F	TTF
SSSSSS	S	TT	F	S	TS	SSS	U	FUFFFS	S	F	F	FFFF
SSS	S	TT	S	F	S	SSF	T	FUUTF	F	T	U	TTTF
F					S			U	TT	F	F	UUF
FF	F	ST	FF			S		TUUUT	UF	U	U	TTTU
SSSSSS	S	FF	TT	FF	SS	SSSS	SSSS	U	TTUTF	T	F	UTTTTU
FTUSUUU	F	UUUU	S	FT	S	FTS	U	SSSTS	SUFS	S	U	STUUU
SFSS	SSS				FT	TTSSS	S	F	FFFF	S	SFF	FUUFF
STT	T	U	T	F	T	S	FF	FUUFF	F	U	UUU	UUU
US	S	U	S	F	SS	TSS	SFS	TFFF	S	F	F	TUUUUF
SS	SS	S	U	F	UFF	FSSSS	SSTS	UUUUU	F	U	T	UUUUU
TS	SS	S	U	F	TT	SUSS	SSSS	UTS	SUSSU	U	S	UUUUF
S	S	S	S	S	S	S	S	U	F			Ammonium monophosphate
SSSS	STUFS	UFF	FS	SSSS	SSSS	SSSS	U	ST	FSS	U	F	SUUUUT
S	SSSS	SU	S	S	S	S	S	F	FFFI	U	F	SUUUUF
FS	UU	SS			S	S	S	S	S	F	F	SUUUUF
SSSSSS	S	FF	U	FF	FF	SSSS	SSSS	T	S	F	FT	SUFUT
SSSS	S	FF	U	U	SS	SSSS	S	TUTS	F	FT	T	FUUUU
S	SS	S			S	S	S	U	UTF	U	U	UUUU
S	S	T			S		S	TSS	S	S	F	TF
USUUUUU	UUU	U	U	U	U	U	U	SFFF	S	S	S	USSS
UF	FF	UUU	F	F	UT	TSS	UU	SFFS	S	S	S	TTTU
UF	TUUU	U	F	U	T	SUUU	U	UUUUT	F	U	T	UUUU
FF	F	S				S	UUUU	U	U	U		Aniline hydrochloride
T	T				S	SS		UUU	F	F	F	UU
S	S	S	S		S	S		UUU		S		Antimony trichloride
FTS	S	FF	SS	S	S	S	S	S	FSSSS	S	T	TTTTTT
TU	U	U	S	S	S	U	S	SSSSSS	SSSSS	S	SS	Aromatic hydrocarbons
SSSS	STSS	S	S	S	SS	SSFS	ST	FTFTIU	UFU	U	U	TTTU
SU	S	SU			S		S	UT	UF	S	U	T
FUUF	S	SU	UF	SSSSFF	S	SSSF		SSFS	S	S	S	Asphalt
SSSSSS	S	FS	F	SSSSSS	S	SSSFSS	S	UTSSS	S	S	S	Barium chloride 5%
SSSS	S	SS	FS	SS	SS	SSFS	S	TTSSS	S	S	S	Barium hydroxide
FF	S	TS	TS	S	SS	SSSSF	U	FTSSS	T	F	UUU	U
USS	SS	S	S	U	SS	SSSS	S	FUFSSU	S	U	U	Barium nitrate
SS	FU	SS	SS	S	U	SSSS	S	SSFS	S	S	S	Barium sulphide
SSSSSS	S	S	S	S	S	S	S	SSFS	S	S	S	Beer
SSSSSS	S	S	S	S	S	S	S	SSFS	S	S	S	Beet sugar liquid
UUUUU	UT	FU	U	FT	U	TSS	UU	FSSSS	F	F	S	SSSSSS
UUUUU	UUU	U	F	U	T	UU	SU	TFFFU	F	F	T	TTTT
UUTUUU	UUU	U	F	U	FT	U	SU	TFFFU	F	F	T	TTTT
SFFS	SUSS	FT	T	U	S	SS	S	FTTF	F	U	T	UUUU
TUUTT	TT	S	ST	S	S	S	S	ST	U	T	S	U
SSS	S	SS	S	S	S	S	S	UT	U	F	F	UUU
UTT	T	TU	S	S	S	S	S	SUSS	S	S	T	Bleaching powder, wet
FST	TU	S	F	F	U	SSSS	S	SSSS	S	S	S	Blood
SSST	U	S	F	T	U	SSSS	S	S	S	S	S	Borax
SSSTU	S	F	T	U	U	SSSS	S	FUFTSS	ST	F	S	SFSFU
U	FUUU	F	U	T		U	S	SSSS	S	S	S	Boric acid
SSSS	S	S	SSSS	S	S	S	S	SSSS	S	S	S	Brake fluid (non-petroleum)
UUUUU	UUU	U	F	U	U	S	S	UUU	S	S	F	FFFU
UUUUU	UUU	U	F	U	U	S	S	UUU	F	U	U	Bromine, dry
UUUUU	UUU	U	F	U	U	S	S	UUU	F	U	U	Bromine, wet
SSTT	SUS	S	S	S	SU	SUUSU	S	SSSS	S	S	S	Butadiene (gas)

Due to the numerous different application possibilities Trafag cannot accept any guarantee for the correctness of these recommendations. We therefore suggest that for a particular application you carry out tests to verify the fluid resistance.

Fluid resistance guide

CODES:		S - SATISFACTORY	F - FAIR	U - UNSATISFACTORY	T - TEST FOR SPECIFIC APPLICATION
RESILIENT MATERIALS		PLASTICS			METALS
BUTYL NITROB	NYLON	PROPYLENE (EPDM)			
ETHYLENE	NYLAR	PROPYLENE (EPDM)			
NEOPRENE	COPRONE	PROPYLENE (EPDM)			
SILICONE	URIDENE (CR)	PROPYLENE (EPDM)			
VITON (FPM/FM)	ANTEROSILICONE	PROPYLENE (EPDM)			
BUTYL	SELCON	PROPYLENE (EPDM)			
FLUOROSILICONE	DELRIN	PROPYLENE (EPDM)			
ANTEROSILICONE	LEZAN	PROPYLENE (EPDM)			
SELCON	LYCOP	PROPYLENE (EPDM)			
DELRIN	POLYSULFONE	PROPYLENE (EPDM)			
LEZAN	TEFLON	PROPYLENE (EPDM)			
LYCOP	PVC	PROPYLENE (EPDM)			
POLYSULFONE	POLYPROPYLENE	PROPYLENE (EPDM)			
TEFLON	POLYTHYLENE	PROPYLENE (EPDM)			
PVC	POLYCARBONATE	PROPYLENE (EPDM)			
POLYPROPYLENE	COPRA	PROPYLENE (EPDM)			
POLYTHYLENE	CAIFEN	PROPYLENE (EPDM)			
POLYCARBONATE	ST. ST. DIN 14435/1, 14434	PROPYLENE (EPDM)			
CAIFEN	ST. ST. DIN 14430	PROPYLENE (EPDM)			
ST. ST. DIN 14435/1, 14434	SILVER	PROPYLENE (EPDM)			
ST. ST. DIN 14430	NICKEL-IRON	PROPYLENE (EPDM)			
SILVER	MONEL-IRON	PROPYLENE (EPDM)			
NICKEL-IRON	LEAD	PROPYLENE (EPDM)			
MONEL-IRON	IRON	PROPYLENE (EPDM)			
LEAD	INCORONEL	PROPYLENE (EPDM)			
IRON	COPPER	PROPYLENE (EPDM)			
INCORONEL	BRONZE	PROPYLENE (EPDM)			
COPPER	BRASS	PROPYLENE (EPDM)			
BRONZE	ALUMINUM	PROPYLENE (EPDM)			
BRASS	ALUMINUM	PROPYLENE (EPDM)			
ALUMINUM	ALUMINUM	PROPYLENE (EPDM)			
Butane					
Butanol					
Buttermilk					
Butyl acetate					
Butyl alcohol					
Butyl stearate					
Butyric acid					
Calcium acetate					
Calcium bisulfite					
Calcium carbide					
Calcium carbonate					
Calcium chlorate					
Calcium chloride					
Calcium hydroxide					
Calcium hypochlorite					
Calcium nitrate					
Calcium sulfate					
Calcium sulphide					
Calgon					
Caliche liquid					
Cane sugar syrups					
Carbolic acid (Phenol)					
Carbon disulfide					
Carbon monoxide					
Carbon tetrachloride					
Carbonated water					
Carbonic acid					
Castor oil					
Cellosolve (see Ethyle acetate)					
Cellulube					
China wood oil (Tung)					
Chlordane					
Chlorides, organic					
Chloric acid					
Chlorinated water					
Chlorinated solvents					
Chlorine anhydrous liquid					
Chlorine, gas					
Chlorine, dioxide					
Chlorine trifluoride					
Chloroacetic acid					
Chlorobenzene					
Chloroform					
Chlorosulfonic, acid, diluted					
Chlorothene (trichloroethane)					
Chlorox					
Choline chloride					
Chrome plating solution					
Chromic acid					
Chromium-potassium sulfate					
Chromium sulfate (basic)					
Cider					
Citric acid					
Coal tar					
Cocconut oil					
Cod liver oil					
Coffee					
Coke oven gas					
Cooking oil					
Copper acetate					
Copper ammonium acetate					
Copper chloride					
Copper cyanide (elect. pl. sol.)					
Copper nitrate					
Copper sulfate					
Copper sulfate (elect. pl. sol.)					

Fluid resistance guide

		CODES: S - SATISFACTORY			F - FAIR			U - UNSATISFACTORY			T - TEST FOR SPECIFIC APPLICATION					
		RESILIENT MATERIALS			PLASTICS						METALS					
BUNA-N (NBR)	ETHERYLENE TROPOLYMER (EPDM)	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
HYDROXYLURIDYL (CR)	SILICONE	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
URETHANE	VITON (FKM/FPM)	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NEOPRENE	FLUOROSILICONE	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
SILICONE	HYDRAULIC CELLOPHANE	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
BUTYL	DELRIAN	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LECAW	NYLON	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYSULFONE	PVC	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	POLYPROPYLENE	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYTHYLENE	POLYPHENYLENE SULFIDE	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	STEEL	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	STAINLESS STEEL	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	STAINLESS STEEL DN 1.4335/1.4404	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	STAINLESS STEEL DN 1.4301/1.4325/1.4542	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	NICKEL	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	IRON	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	LEAD	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	NIQUEL	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPHENYLENE SULFIDE	IRON	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	INCOPER	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	COPPER	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	BRONZE	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	BRASS	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	ALUMINUM	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	Corn oil	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	Corn starch slurries	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	Cottonseed oil	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYTHYLENE	Creosote	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	Cresylic acids (alkyl phenols)	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	Cupric chlorides 5%	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	Dibutyl phthalate	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	Diesel fuel	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	Diesel oil, light	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	Diethyl ether	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	Dichlorethane	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	Difluoroethane(dow chem.#200)	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYTHYLENE	D.T.E. Lubricating oil	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	Dowtherm A or E	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	Enamel	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	Esso # 90 line	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	Ethane	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	Ether	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	Ethyl acetate	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	Ethyl benzene	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	Ethyl cellulose	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYTHYLENE	Ethyl chloride	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	Ethyl metcaptan	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	Ethyl sulfate	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	Ethylene	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	Ethylene bromide	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	Ethylene chloride	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	Ethylene dibromide	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	Ethylene dichloride	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	Ethylene glycol	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYTHYLENE	Ethylene oxide	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	Embalming fluid	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	Ethanol (see alcohol-ethyl)	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	Fatty acids	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	Ferric chloride	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	Ferric nitrate	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	Ferric sulfate	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	Ferrous ammonium sulfate	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	Ferrous chloride	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYTHYLENE	Ferrous sulfate	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	Fish oil	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	Fluoboric acid	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	Fluorine	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	Fluosilicic acid	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	Formaldehyde	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	Formic acid	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	Freon 11	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	Freon 12	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYTHYLENE	Freon 13	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	Freon 21	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	Freon 22	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	Freon 31	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	Freon 32	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	Freon 112	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	Freon 113	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	Freon 114	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	Freon 115	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYTHYLENE	Freon 218	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
UHMW	Freon 502	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
CEYLON	Freon 503	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
DELRIAN	Freon 13B1	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
LEXAN	Freon 6316	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
NYLON	Freon 6318	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
PVC	Freon TF (solvent)	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
TEFLON	Freon TWD 602 (solvent)	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S
POLYPROPYLENE	Freon TE 35	S	F	F	T	S	F	T	S	S	S	S	S	S	S	S

Fluid resistance guide

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		CODES: S - SATISFACTORY			F - FAIR			U - UNSATISFACTORY			T - TEST FOR SPECIFIC APPLICATION			
		RESILIENT MATERIALS			PLASTICS			METALS						
BUNA N (NBR)	ETHYLENE PROPYLENE (EPM)	T	S	S	U	S	U	T	S	S	S	F	S	S
HYDRAULIC HYDROCARBON	HYDROGEN PROPYLENE (CR)	F	S	T	F	T	F	U	U	U	U	T	F	T
SILICONE	URETHANE	U	U	U	U	U	U	U	U	U	U	T	T	F
BUTYL	VITON FERMIPM	T	U	U	U	U	U	U	U	U	U	T	T	F
FLUOROSILICONE	HYDREEL CELCON	U	U	U	U	U	U	U	U	U	U	T	T	F
LEMAN	DELMON	U	U	U	U	U	U	U	U	U	U	T	T	F
NYLON	POLYURETHANE	T	U	U	U	U	U	U	U	U	U	T	T	F
PVC	POLYSILICONE	U	U	U	U	U	U	U	U	U	U	T	T	F
TEFLON	POLYPROPYLENE	U	U	U	U	U	U	U	U	U	U	T	T	F
POLYCARBONATE	POLYPHENYLENE SULFIDE	U	U	U	U	U	U	U	U	U	U	T	T	F
UTERIN	STAINLESS STEEL	U	U	U	U	U	U	U	U	U	U	T	T	F
STAINLESS STEEL	STAINLESS STEEL	U	U	U	U	U	U	U	U	U	U	T	T	F
DN 14351/14404	DN 14351/14404	U	U	U	U	U	U	U	U	U	U	T	T	F
DN 14351/14551/14542	DN 14351/14551/14542	U	U	U	U	U	U	U	U	U	U	T	T	F
42-NICKEL-IRON	MONEL	U	U	U	U	U	U	U	U	U	U	T	T	F
LEAD	IRON	U	U	U	U	U	U	U	U	U	U	T	T	F
MICRO	COPPER	U	U	U	U	U	U	U	U	U	U	T	T	F
BRONZE	BRASS	U	U	U	U	U	U	U	U	U	U	T	T	F
ALUMINUM	ALUMINUM	U	U	U	U	U	U	U	U	U	U	T	T	F
Oronite hydraulic fluid														
Oxalic acid														
Oxidizing gases														
Oxygen														
F														
Paint, oil base														
Paint vehicles (except soya)														
Palm oil														
Palmitic acid														
Paraffin														
Paraffin oil														
Penicillin solution														
Pentane														
Perchloric acid														
Perchloroethylene 539														
Petroleum oils														
Petroleum residue from distillation														
Phenol														
Phosphate ester non-inflammable oils														
Phosphoric acid (aerated)														
Phosphoric acid (air free)														
Phosphorous														
Phosphoric acid vapors														
Pickling solution														
Picric acid														
Pine oil														
Potassium acetate														
Potassium aluminum sulfate														
Potassium bicarbonate														
Potassium bisulfate														
Potassium bromide														
Potassium carbonate														
Potassium chlorate														
Potassium chloride														
Potassium chromates														
Potassium cyanide														
Potassium dichromate														
Potassium ferricyanide														
Potassium hydroxide														
Potassium hypochlorite														
Potassium nitrate														
Potassium permanganate														
Potassium peroxide														
Potassium persulfate														
Potassium sulfate														
Potassium sulfide														
Potassium sulfite														
Prestone anti-freeze														
Producer gas														
Propane														
Propyl alcohol														
Propylene dichloride														
Pyranol (dielectric)														
Pydraul (mansanto)														
Pyrogard (mobil) 5%														
Pyroligneous acid														
(see Sodium thiosulfate)														
Propylene														
Propylene glycol														
Rosin emulsion														
Saccharin solution														
Salicylic acid														
Sewage														
Shellac														

Fluid resistance guide

		CODES: S - SATISFACTORY F - FAIR U - UNSATISFACTORY				T - TEST FOR SPECIFIC APPLICATION			
		RESILIENT MATERIALS		PLASTICS		METALS			
BUNA-N (NBR)	EHTYLENE PROPYLENE (EPDM)	S	S	S	S	T	S	S	S
EHTYLENE PROPYLENE (CR)	SILICONE	S	S	S	S	S	S	S	S
VITON (FKM/FPM)	BUTYL	S	S	S	S	S	S	S	S
FLUOROSILICONE	CEYLON	S	S	S	S	S	S	S	S
LEVIAN	NYLON	S	S	S	S	S	S	S	S
DELRIN	POLYSILOXANE	S	S	S	S	S	S	S	S
TEFLON	PVC	S	S	S	S	S	S	S	S
POLYPROPYLENE	POLYPHENYLENE	S	S	S	S	S	S	S	S
POLYCARBONATE	ULTEM	S	S	S	S	S	S	S	S
STEEL DIN 1.4435/1.4404	STEEL DIN 1.4331/1.4304	S	S	S	S	S	S	S	S
STAINLESS STEEL DIN 1.4301/1.4305/1.4342	SILVER	S	S	S	S	S	S	S	S
19-NICKEL-IRON	MONGEL	S	S	S	S	S	S	S	S
LEAD	IRON	S	S	S	S	S	S	S	S
INCONEL	COPPER	S	S	S	S	S	S	S	S
BRONZE	BRASS	S	S	S	S	S	S	S	S
ALUMINUM		S	S	S	S	S	S	S	S
S	S	S	S	S	S	S	S	S	Silicone oil
		S	S	S	S	S	S	S	Silver bromide
				S	F	F	S	U	Silver chloride 602
U	S	S	S	S	F	F	F	S	Silver nitrate
S	S	S	S	S	S	S	S	S	Soap (molten)
U	F	U	U	U	T	U	T	S	Skydrof
F	S		U	U	U	U	S	S	Sodium
F	S	U	F	U	T	S	S	S	Sodium acetate
S		S	S	T	S	S	S	S	Sodium aluminate
S	S	S	S	T	F	F	S	S	Sodium bicarbonate
S	S	S	S	F	U	S	S	S	Sodium bichromate
S	F	S	T	S	F	S	S	S	Sodium bisulfate
S	S	S	S	S	S	S	S	S	Sodium bisulfate 10%
S	S	S	S	S	S	S	S	S	Sodium bisulfite
S	S	S	S	S	S	S	S	S	Sodium borate
S	T	T	T	S	F	S	S	S	Sodium bromide
S	S	S	S	F	S	S	S	S	Sodium carbonate (soda ash)
S	S	S	S	F	S	S	S	S	Sodium chloride
S	T	S	S	T	S	S	S	S	Sodium chromate
				S		S	S	S	Sodium citrate
S	S	S	S	S	F	F	F	F	Sodium cyanide
T	T	S	T	T	S	S	S	S	Sodium dichromate
S	S	T	S	T	S	F	S	S	Sodium ferricyanide
S	S	S	S	S	S	S	S	S	Sodium fluoride
T	S	S	S	T	U	S	S	S	Sodium hydroxide (caustic soda)
U	F	T	U	T	S	F	F	S	Sodium hypochlorite
				S		S	S	S	Sodium hyposulfite
S	S	F	F	T	S	F	S	S	Sodium metaphosphate
S	S	S	T	S	F	S	S	S	Sodium metasilicate 563
F	S	S	F	T	S	F	S	S	Sodium nitrate
S	S	T	S	S	S	S	S	S	Sodium nitrite
F	S	F	T	S	F	S	F	S	Sodium perborate
T	S	T	U	S	S	F	S	S	Sodium peroxide
T	S	S	S	T	S	F	S	S	Sodium phenolate
S	S	S	F	S	S	S	S	S	Sodium phosphate
F	S	S	S	T	S	F	S	S	Sodium phosphate (tri-basic)
T	T	T	T	T	T	S	S	S	Sodium plumbite
S	S	S	S	S	S	F	F	S	Sodium resinate 642
				S		F	F	T	Sodium salicylate
S	S	S	F	S	S	S	S	S	Sodium silicate
S	S	S	S	F	S	S	S	S	Sodium sulfate
F	S	S	S	S	S	S	S	S	Sodium sulfide
S	S	S	S	S	S	S	S	S	Sodium sulfate
S	T	S	S	F	T	U	S	S	Sodium tetraborate
F	S	T	F	S	T	S	S	S	Sodium thiophosphate (aeroBoat)
F	S	S	S	S	F	T	S	S	Sodium thiosulfate
S	S	S	S	S	S	S	S	S	Solvac (socony)
S	U	F	F	S	U	S	S	S	Sovasol #1
S	U	F	F	F	S	S	S	S	Sovasol #2
S	U	F	F	F	S	S	S	S	Sovasol #3
S	U	F	F	F	S	S	S	S	Sovasol #73
S	U	F	F	F	S	S	S	S	Sovasol #74
S	S	U	T	T	F	S	S	S	Stannic chloride
F	U	S	F	T	T	S	S	S	Stannous chloride
S	F	S	T	S	S	S	S	S	Starch
U	T	U	U	U	T	U	T	S	Steam
S	S	S	U	U	T	S	S	S	Steam condensate 663
F	F	S	T	S	T	F	S	S	Stearic acid
S	U	F	S	S	S	S	S	S	Stoddards solvent
F	T		F	F	S	S	S	S	Strontium nitrate
U	U	U	U	U	S	S	S	S	Styrene 666
T	T	T	T	U	T	S	S	S	Succinic acid
				S		S	S	S	Sul (dil)
T	F	F	T	S	T	U	S	S	Sulfate liquor
U	S	U	T	S	S	T	F	S	Sulfur
U	U	U	U	U	S	U	T	S	Sulfur chloride
U	S	F	U	F	F	S	T	T	Sulfur dioxide

Fluid resistance guide

Conversion of pressure units

	bar	mbar	Pa N/m²	kPa kN/m²	MPa MN/m²	at kp/cm²	atm	mmWS mmCE	mWS mCE	Torr mm Hg	psi lbf/in²
1 bar	1	1000	10 ⁵	100	0.1	1.02	0.987	1.02·10 ⁴	10.2	750	14.5
1 mbar	0.001	1	100	0.1	10 ⁴	1.02·10 ⁻³	0.987·10 ⁻³	10.2	0.0102	0.75	0.0145
1 Pa 1 N/m²	10 ⁻⁵	0.01	1	0.001	10 ⁻⁶	1.02·10 ⁻⁵	0.987·10 ⁻⁵	0.102	1.02·10 ⁻⁴	0.0075	1.45·10 ⁻⁴
1 kPa 1 kN/m²	0.01	10	1000	1	0.001	0.0102	9.87·10 ⁻³	102	0.102	7.5	0.145
1 MPa 1 MN/m²	10	10 ⁴	10 ⁶	1000	1	10.2	9.87	1.02·10 ⁵	102	7500	145
1 at 1 kp/cm²	0.981	981	0.981·10 ⁵	98.1	0.0981	1	0.968	10 ⁴	10	736	14.22
1 atm	1.013	1013	1.013·10 ⁵	101.3	0.1013	1.033	1	1.033·10 ⁴	10.332	760	14.696
1 mmWS 1mmCE	0.981·10 ⁻⁴	0.098	9.807	9.81·10 ⁻³	9.81·10 ⁻⁶	10 ⁴	0.968·10 ⁻⁴	1	0.001	0.0736	1.422·10 ⁻³
1 mWS 1mCE	0.0981	98.07	9807	9.81	9.81·10 ⁻³	0.1	0.0968	1000	1	73.6	1.422
1 Torr 1 mmHg	1.133·10 ⁻³	1.333	133.323	0.133	1.333·10 ⁻⁴	1.36·10 ⁻³	1.316·10 ⁻³	13.595	1.359·10 ⁻²	1	1.934·10 ⁻²
1 psi 1 lbf/in²	6.895·10 ⁻²	68.95	6895	6.895	6.895·10 ⁻³	7.031·10 ⁻²	0.06805	703.1	0.7031	51.7	1

Conversion of temperature units

[°F] to [°C] Formula: $^{\circ}\text{C} = \frac{5}{9} \cdot (^{\circ}\text{F} - 32)$					
°F	°C	°F	°C	°F	°C
-100	-73.3	105	40.6	315	157.2
-95	-70.6	110	43.3	320	160.0
-90	-67.8	115	46.1	325	162.8
-85	-65.0	120	48.9	330	165.6
-80	-62.2	125	51.7	335	168.3
-75	-59.4	130	54.4	340	171.1
-70	-56.7	135	57.2	345	173.9
-65	-53.9	140	60.0	350	176.7
-60	-51.1	145	62.8	355	179.4
-55	-48.3	150	65.6	360	182.2
-50	-45.6	155	68.3	365	185.0
-45	-42.8	160	71.1	370	187.8
-40	-40.0	165	73.9	375	190.6
-35	-37.2	170	76.7	380	193.3
-30	-34.4	175	79.4	385	196.1
-25	-31.7	180	82.2	390	198.9
-20	-28.9	185	85.0	395	201.7
-15	-26.1	190	87.8	400	204.4
-10	-23.3	195	90.6	405	207.2
-5	-20.6	200	93.3	410	210.0
0	-17.8	205	96.1	415	212.8
5	-15.0	210	98.9	420	215.6
10	-12.2	215	101.7	425	218.3
15	-9.4	220	104.4	430	221.1
20	-6.7	225	107.2	435	223.9
25	-3.9	230	110.0	440	226.7
30	-1.1	235	112.8	445	229.4
32	0	240	115.6	450	232.2
35	1.7	245	118.3	455	235.0
40	4.4	250	121.1	460	237.8
45	7.2	255	123.9	465	240.6
50	10.0	260	126.7	470	243.3
55	12.8	265	129.4	475	246.1
60	15.6	270	132.2	480	248.9
65	18.3	275	135.0	485	251.7
70	21.1	280	137.8	490	254.4
75	23.9	285	140.6	495	257.2
80	26.7	290	143.3	500	260.0
85	29.4	295	146.1	505	262.8
90	32.2	300	148.9	510	265.6
95	35.0	305	151.7	515	268.3
100	37.8	310	154.4	520	271.1

[°C] to [°F] Formula: $^{\circ}\text{F} = \frac{9}{5} \cdot (^{\circ}\text{C} + 32)$					
°C	°F	°C	°F	°C	°F
-100	-148	105	221	315	599
-95	-139	110	230	320	608
-90	-130	115	239	325	617
-85	-121	120	248	330	626
-80	-112	125	257	335	635
-75	-103	130	266	340	644
-70	-94	135	275	345	653
-65	-85	140	284	350	662
-60	-76	145	293	355	671
-55	-67	150	302	360	680
-50	-58	155	311	365	689
-45	-49	160	320	370	698
-40	-40	165	329	375	707
-35	-31	170	338	380	716
-30	-22	175	347	385	725
-25	-13	180	356	390	734
-20	-4	185	365	395	743
-15	5	190	374	400	752
-10	14	195	383	405	761
-5	23	200	392	410	770
0	32	205	401	415	779
5	41	210	410	420	788
10	50	215	419	425	797
15	59	220	428	430	806
20	68	225	437	435	815
25	77	230	446	440	824
30	86	235	455	445	833
32	89.6	240	464	450	842
35	95	245	473	455	851
40	104	250	482	460	860
45	113	255	491	465	869
50	122	260	500	470	878
55	131	265	509	475	887
60	140	270	518	480	896
65	149	275	527	485	905
70	158	280	536	490	914
75	167	285	545	495	923
80	176	290	554	500	932
85	185	295	563	505	941
90	194	300	572	510	950
95	203	305	581	515	959
100	212	310	590	520	968

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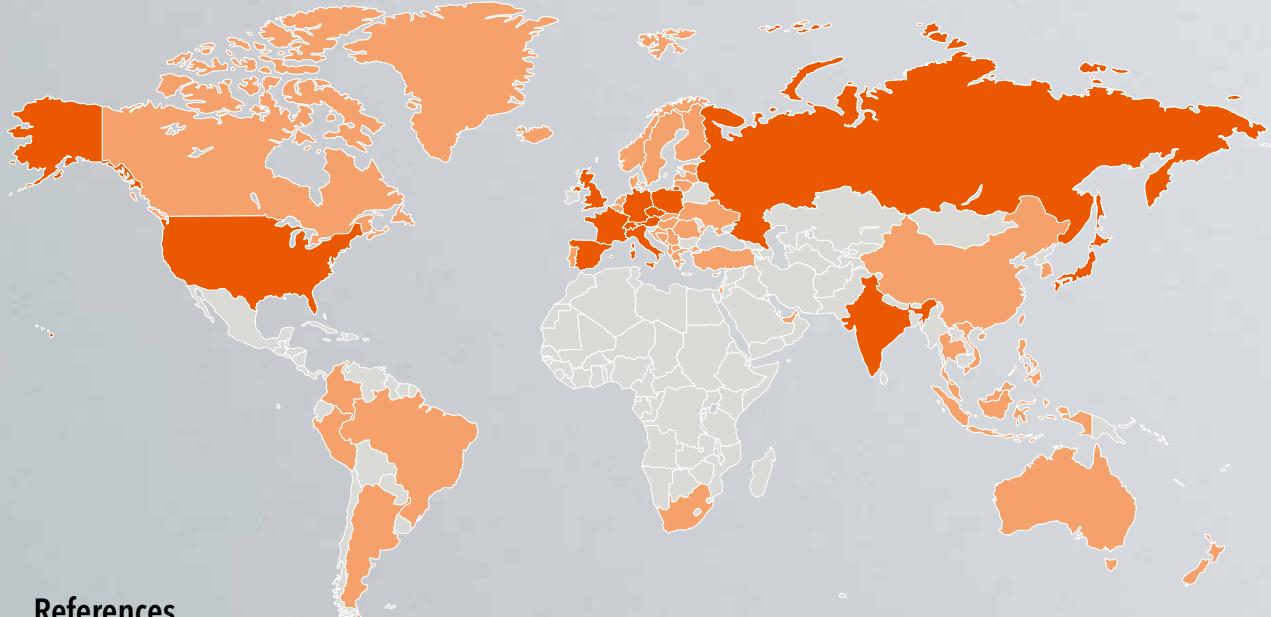
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