ELECTRONIC PRESSURE MONITORING

- Mechanical pressure monitoring
- Temperature monitoring

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sensors controls


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Electronic pressure monitoring

Trafag – the hightech sensor company

Trafag, a Swiss-based company founded in 1942, is supported by a broad sales and service network in over 40 countries across the world. This allows Trafag to offer customers personalised and competent advice and ensures the best possible service. High-performance development and production departments not only guarantee the fast and reliable delivery of our high-quality and high-precision products, but also ensure that customisations can be implemented in a short time.

Competent and customer-oriented

Technological competence, manufacturing expertise and customer-orientation form the three cornerstones of Trafag as a company. Trafag is a completely independent company with headquarters in Bubikon, Switzerland, and further manufacturing companies in Germany and the Czech Republic. A fifth of its employees in Switzerland are involved in the fields of research and development, production technology or applications engineering.

Application and solution-oriented

The direct availability of these resources enables Trafag to be extremely flexible in the areas of development and production as well as in its perception and implementation of customer requirements. Thanks to modular engineering, Trafag is able to efficiently adapt its standard products to the specific needs of customers and to develop special OEM solutions.

Market-oriented and always within reach

Trafag maintains an active presence in over 40 countries. A great number of customers in diverse industrial sectors such as mechanical engineering, hydraulics, engine manufacturing, shipbuilding, railway technology or high-voltage technology appreciate the cooperation offered by our technically competent customer advisory service.

Adaptable and efficient

The ability to develop and manufacture its strategically important components in-house means that Trafag can both mass-produce and manufacture on a small scale at short notice. Rigorous quality management in accordance with ISO 9001, state of the art production facilities under clean room conditions and stringently monitored production processes ensure that Trafag meets the highest quality demands.

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.

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.

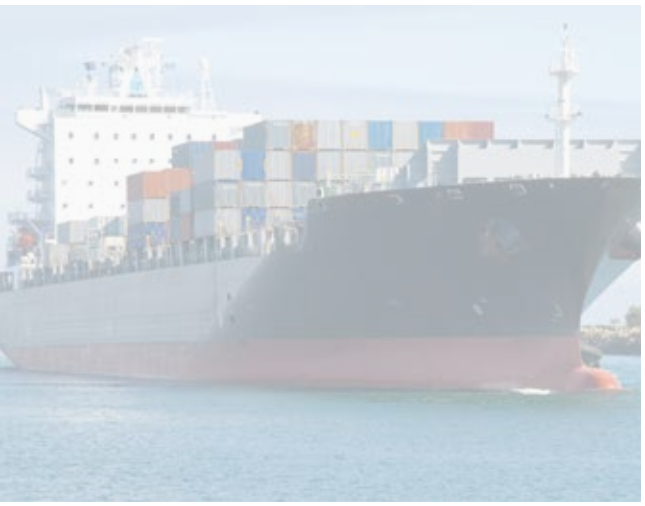
Mechanical pressure monitoring

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.

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.

Markets and applications

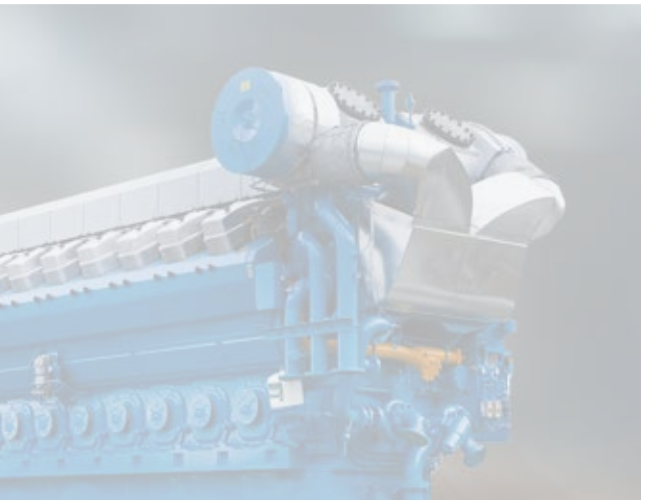


Shipbuilding

- 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
- Control and safety systems
- Air-conditioning systems

Test & measurement

- Engine and transmission test benches
- Mobile vehicle testing
- Testing of hydraulic components
- Material testing
- Brake and chassis test benches

Various

- Water treatment
- Level monitoring
- Machine building industry
- HVAC
- Oil and gas
- Chemical industry, process technology

trafag sensors controls


SP1
SP2
0520

Pressure transmitters and electronic pressure switches

Trafag pressure transmitters and electronic pressure switches are used for measuring and evaluating pressure. Over the decades, they have proven themselves in a multitude of demanding applications in harsh environments. Superior technology and precise manufacturing ensure that the transmitters work perfectly, especially in areas where high requirements are placed on long-term stability, vibration resistance, electromagnetic compatibility, shock resistance or temperature insensitivity. Trafag pressure transmitters and electronic pressure switches are available in many different designs to suit pressure and electrical connections, measuring procedures, electrical output signals. They are available with Ex- and ship approvals as well as with railway conformity.

Sensor technology

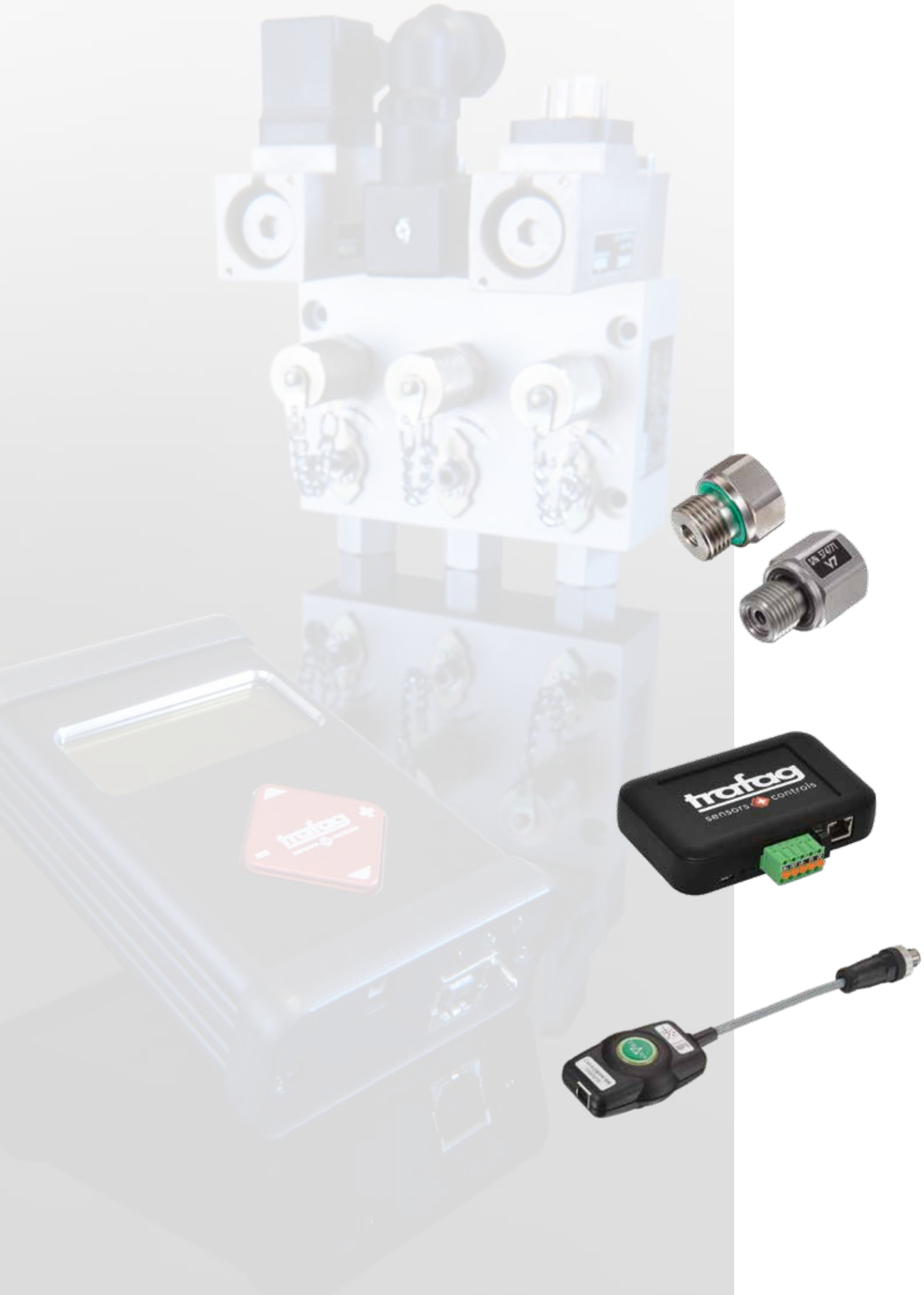
Key components of Trafag pressure transmitters are pressure sensors based on thin-film-on-steel technology (welded design without O-ring) or thick-film-on-ceramic technology. Both sensor technologies come from Trafag's own production and were developed in-house together with the ASIC (application-specific 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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sensors & controls

Accessories

Trafag offers a wide range of original accessories which are ideally matched to our products. These 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 calibration values of the transmitter in the Trafag ASIC. Trafag also offers a wide range of accessories that meet specific application requirements and make installation easier, such as diagnostic valve manifolds, snubbers and pressure peak damping elements. For thermostats various protective pipes are available.

Accessories for pressure measurement instruments

- 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 27	page 41	page 47	page 60	
					
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 ... 0.2 to 0 ... 600 bar 0 ... 3 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, 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, 1 or 2 PNP transistors	
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, IP68	
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) 1.4301 (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); G1/4" m with integrated damping; G1/8" m, DIN3852-E; 1/4"NPT m; 1/4"NPT f; 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; 1/4"NPT f; 7/16"-20UNF m; 7/16"-20UNF f, DIN3866, valve opener; 7/16"-20UNF m, SAE4 (J1926); 9/16"-18UNF m, SAE6 (J1926); 3/8"-24UNF m, SAE3 (J514); R1/4" m, DIN2999; M14x1.5 m, DIN EN ISO 6149-2	G1/4" m; G1/4" m (Manometer); G1/4" m with integrated damping; G1/8" m, DIN3852-E; 1/4"NPT m; 1/4"NPT f; 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 DT04-3P/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 DT04-3P/4P; cable	M12x1; cable IP67/IP68	
Applications	Machine tools Hydraulics HVAC Refrigeration Process technology Water treatment	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	

To accessories

	NSL 8257	NAR 8258		CMP 8270	CAN2USB
	page 66	page 71		page 80	page 254
					
	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. ± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	
	-40°C ... +125°C	EN 50155: OT6 (–40°C ... +85°C)		-40°C ... +125°C	
	-40°C ... +125°C	–40°C ... +85°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; 1/4" NPT f; 9/16"-18UNF m, SAE6 (J1926)	G1/4" m; G1/4" m with integrated damping; 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; 1/4"NPT f; 7/16"-20UNF m; 7/16"-20UNF f, DIN3866, valve opener; 7/16"-20UNF m, SAE4 (J1926); 9/16"-18UNF m, SAE6 (J1926); M10x1 m, DIN EN ISO 6149-2	
	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482	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	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 88	page 93	page 98	page 107	
					
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 ... 30 to 0 ... 7500 psi	0 ... 0.2 to 0 ... 600 bar 0 ... 3 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 ... 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; G1/4" m with integrated damping; G1/4" m (Manometer) EN 837; G1/2" m (Manometer) EN 837; 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 (J1926.3); 7/16"-20UNF f, SAE J512, valve opener	G1/4" f; G1/4" m Seal; G1/4" m with integrated damping; G1/4" m (Manometer) EN 837; G1/2" m (Manometer) EN 837; 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; 9/16"-18UNF m, SAE6 (J1926)	G1/4" m Seal; G1/2" m (Manometer) EN 837; 1/4" NPT m; 1/2" NPT m; R1/4" m, DIN3858; M14x1.5 m, DIN6149-2; 9/16"-18UNF m, SAE6 (J1926)	
Electrical connections	EN175301-803-A (DIN43650-A); Industrial standard, contact distance 9.4 mm; M12x1; Packard Metri Pack; cable	EN175301-803-A (DIN43650-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; DIN72585; cable	EN175301-803-A (DIN43650-A)	
Applications	Engine manufacturing Machine tools Hydraulics Process technology Water treatment Food Industry Chemical and pharmaceutical industry	Railways	Machine tools Hydraulics Industrial applications	Shipbuilding Engine manufacturing Machine tools Hydraulics	
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	

To accessories

	EPR 8293	EPN/EPNCR 8298	NAP 8842/8843	ESH 8845
	page 113	page 118	page 123	page 129
				
	Thin-film-on-steel	Thin-film-on-steel	Piezoresistive	Piezoresistive
	0 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 2500 bar	0 ... 0.1 to 0 ... 1000 bar	0 ... 0.1 to 0 ... 100 bar
	4 ... 20 mA	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA 0 ... 10 VDC	4 ... 20 mA, 0 ... 5 VDC, 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	-40°C ... +125°C	0°C ... +80°C (opt. -25 ... +100°C/-25 ... +150°C)	-40°C ... +125°C
	IP65, IP67	IP65, IP67, IP69K	Min. IP65	Min. IP40
	1.4542 (AISI630)	1.4542 (AISI630)	1.4435 (AISI316L)	1.4435 (AISI316L)
	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4435 (AISI316L)	1.4435 (AISI316L)
	1.4301 (AISI304) 1.4542 (AISI630)	1.4301 (AISI304) 1.4542 (AISI630)	1.4435 (AISI316L)	1.4435 (AISI316L)
	G1/4" m Seal; R1/4" m; 1/4"NPT m; 1/2"NPT m	G1/4" m Seal; R1/4" m DIN3858; G1/2" m (Manometer) EN 837; 1/4"NPT m; 1/2"NPT m; M14x1.5 m; M18x1.5 m	G1/4" f; G1/4" m; G1/4" m (Manometer); G1/2" m; G1/2" m, frontal membrane; G1/2" m, flush membrane; G1/2" m (Manometer)	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 (DIN43650-A); MIL-C 26482	EN175301-803-A (DIN43650-A); MIL-C 26482; DIN72585; Cable	Cable; DIN43650-A; Binder 723; MIL-C 26482	EN175301-803-A; M12x1; MIL-C 26482; Binder 723
	Railways	Shipbuilding Engine manufacturing Machine tools Hydraulics	Shipbuilding Machine tools Hydraulics HVAC Process technology Water treatment Food Industry	Test benches Test equipment
	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/H72354
	www.trafag.com/H73311	www.trafag.com/H73311	www.trafag.com/H73208	www.trafag.com/H73227

Pressure transmitters

	ECT 8472	ECT 8473	ECTN 8477	ECR 8478	
	page 135	page 144	page 153	page 161	
					
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	-25°C ... +125°C	-25°C ... +125°C	
Media temperature	-25°C ... +125°C -10°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_2O_3 (96 %)	Ceramic, Al_2O_3 (96 %)	Ceramic, Al_2O_3 (96 %)	Ceramic, Al_2O_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; G1/2" m, DIN3852-E, with inner cone; 1/4"NPT m, ANSI B1.20.1; 1/8"NPT m, ANSI B1.20.1; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 7/16"-20UNF f, SAE J512, valve opener; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858; G3/4" frontal membrane	G1/4" f; G1/4" m; G1/2" m, DIN3852-A; G1/2" m, DIN3852-E; G1/2" m, DIN3852-E, with inner cone; 1/4"NPT m, ANSI B1.20.1; 1/8"NPT m, ANSI B1.20.1; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 7/16"-20UNF f, SAE J512, valve opener; 9/16"-18UNF m, SAE6 (J1926); 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; 7/16"-20UNF m, SAE4 (J1926); R1/4" m, DIN3858; G3/4" frontal membrane	G1/4" m; G3/4" frontal membrane	
Electrical connections	EN175301-803-A (DIN43650-A); Industrial standard, contact distance 9.4 mm; M12x1; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); Industrial standard, contact distance 9.4 mm; M12x1; 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 EU RO Mutual Recognition Type Approval Certificate	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	

Pressure transmitters

	EXNT 8292	EXNA 8852/8853	EXNA 8854		ZEN...
	page 169	page 176	page 182		page 260
					
	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, Relais
	± 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 (Manometer) EN 837; G1/4" f; G1/2" m; G1/2" m (Manometer) EN 837; R1/4" m; 1/4"NPT m; M18x1.5 m	G1/4" f; G1/4" m; G1/4" m (Manometer); G1/2" m; G1/2" m, frontal membrane; G1/2" m, flush membrane; G1/2" m (Manometer)	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 (DIN43650-A); M12x1; 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		
	DNV-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	www.trafag.com/H73227	www.trafag.com/H73227		

Pressure transmitters

	N 8202	ND 8204	NPN 8264
	page 188	page 192	page 196
			
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		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

To accessories

Electronic pressure switches

EPN-S **8320**	**DPC** **8380**	**DPS** **8381**	**NAT** **8252**	**NAR** **8258**
page 202	page 207	page 216	page 27	page 71
				
Thin-film-on-steel	Thick-film-on-ceramic	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel
0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	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	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi
Transistor (open source)	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	Switching output: 1 or 2 PNP transistors	Switching output: 1 or 2 PNP transistors
± 0.5 % FS typ. (Switchpoint)	± 0.5 % FS typ.	± 0.5 % FS typ.	NAT: ± 0.5 % FS typ. NAH: ± 0.3 % FS typ.	± 0.3 % FS typ.
-25°C ... +85°C -40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	–40°C ... +125°C	EN 50155: OT6 (–40°C ... +85°C)
-40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	–40°C ... +125°C	–40°C ... +85°C
IP65 (IP67), IP69K	IP67	IP67	IP67, IP68	IP67, IP68
1.4542 (AISI630)	Ceramic, Al_2O_3 (96 %)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
1.4542 (AISI630) 1.4301 (AISI304)	1.4305 (AISI303 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
1.4301 (AISI304)	Zinc based die-casting alloy, nickel plated display housing plastic	Zinc based die-casting alloy, nickel plated display housing plastic	1.4301 (AISI304)	1.4301 (AISI304)
G1/4" m (Seal); 1/4"NPT m; G1/2" m, DIN3852-A; M14x1.5 m, DIN3852-A; 1/2"NPT m	G1/4" f; G1/4" m; G1/2" m, DIN3852-E; 1/4"NPT m; R1/4" m, DIN3858; 7/16"-20UNF m, DIN3866; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF f, SAE J512, valve opener; 9/16"-18UNF m, SAE6 (J1926); G3/4" frontal membrane	G1/4" f; G1/4" m Seal; G1/4" m with integrated damping; G1/4" m (Manometer) EN 837; G1/2" m (Manometer) EN 837; 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; 9/16"-18UNF m, SAE6 (J1926)	G1/4" m; G1/4" m (Manometer); G1/8" m, DIN3852-E; 1/4"NPT m; 1/4"NPT f; 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); 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
EN175301-803-A (DIN43650-A); Cable	Male electr. connector M12x1, 5-pole Male electr. connector M12x1, 4-pole	Male electr. connector M12x1, 5-pole Male electr. connector M12x1, 4-pole	M12x1; Cable IP67 (IP68)	M12x1
Shipbuilding Engine manufacturing Railways Machine tools Hydraulics HVAC	Machine tools HVAC Refrigeration Water treatment Process technology	Machine tools Hydraulics Process technology Industrial applications	Machine tools Hydraulics HVAC Refrigeration Process technology Water treatment	Railways
DNV-GL, RMRS EN 50155 (Railways) EN 45545-2 (Fire protection, railways)				EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 50121-3-2 (EMC)
www.trafag.com/H72333	www.trafag.com/H72320	www.trafag.com/H72321	NAT: www.trafag.com/H72303 NAH: www.trafag.com/H72304	www.trafag.com/H72307
www.trafag.com/H73333	www.trafag.com/H73320	www.trafag.com/H73320	www.trafag.com/H73303	www.trafag.com/H73303

Level transmitter

	ECL 8439	ECL 8438	NAL 8838	EXL 8432	8858
	page 225	page 231	page 235	page 240	page 245
					
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_2O_3 (96%)	Ceramic, Al_2O_3 (96 %)	1.4435 (AISI316L) or titanium	Ceramic, Al_2O_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	Shipbuilding 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	DNV-GL EU RO Mutual Recognition Type Approval Certificate		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/H73227	www.trafag.com/H73329	www.trafag.com/H73227

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 ... +100°C)
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.		

Subject to change

Ordering information/type code

						8252 .	XX	XX	XX	XX	XX	XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	
0 ... 2.5	7.5	50	**75**
0 ... 4	12	60	**76**
0 ... 6	18	100	**77**
0 ... 10	30	200	**78**
0 ... 16	48	200	**79**
0 ... 25	75	300	**80**
0 ... 40	120	300	**81**
0 ... 60	180	400	**82**
0 ... 100	300	500	**83**
0 ... 160	480	750	**85**
0 ... 250	750	1000	**74**
0 ... 400	1000	2000	**84**
0 ... 600	1500	2500	**86**
Option 5P:	**Fivefold overpressure**		
0 ... 2.5	12.5	60	**55**
0 ... 4	20	100	**56**
0 ... 6	30	200	**57**
0 ... 10	50	200	**58**
0 ... 16	80	300	**59**
0 ... 25	125	300	**60**
0 ... 40	200	400	**61**
0 ... 60	300	500	**62**
0 ... 100	500	750	**63**
0 ... 160	800	1000	**65**

Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 30	90	700	**G5**
0 ... 50	150	850	**G6**
0 ... 100	300	1450	**G7**
0 ... 150	450	2500	**G8**
0 ... 200	600	2500	**GA**
0 ... 250	750	2500	**G9**
0 ... 300	900	4000	**HA**
0 ... 400	1200	4000	**H0**
0 ... 500	1500	4000	**H1**
0 ... 1000	3000	5000	**H2**
0 ... 1500	4500	7000	**H3**
0 ... 2000	6000	10000	**H5**
0 ... 3000	9000	14500	**G4**
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**
G1/4" male, with integrated damping Ø 0.5 mm, Seal: DIN 3869 (accessories 61/63/83)	**15**
G1/4" male (Manometer) EN 837	**53**
G1/8" male DIN3852-E, seal: accessory 61 [5]	**54**
1/4" NPT male	**30**
1/4" NPT female [5]	**13**
1/8" NPT male [5]	**43**
7/16"-20UNF female, SAE J512 with valve opener [4]	**24**
7/16"-20UNF female, SAE J512 without valve opener [4]	**44**
7/16"-20UNF male, DIN3866 [4]	**18**
7/16"-20UNF SAE4 male (J1926), seal: accessory 61	**42**
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61	**61**
R1/4" male, DIN3858	**19**
R1/4" male, DIN2999 [9]	**20**
R1/8" male, DIN3858 [5]	**16**
M10x1 male, DIN EN ISO 6149-2, seal: accessory 61	**32**
M12x1.5 male, DIN EN ISO 9974-2, seal: accessory 61	**49**
M14x1.5 male DIN EN ISO 6149-2, seal: accessory 61 [9]	**31**

		8252 . XX	XX	XX	XX	XX	XX
Electrical connection	Male electrical connector, industrial standard, contact distance 9.4 mm, Mat. PA				01		
	Male electrical connector M12x1, 4-pole, Mat. PA, IEC 61076-2-101				32		
	Male electrical connector M12x1, 5-pole, Mat. PA, IEC 61076-2-101				35		
	Male electrical connector MIL-C 26482, 6-pole, metal				02		
	Male electrical connector Deutsch DT04-3P, 3-pole				D3		
	Male electrical connector Deutsch DT04-4P, 4-pole				D4		
	Cable Mat. PVC, IP67/IP68, 2 x 2 x 0.14 mm² [7]				22		
	Cable Mat. PUR, IP67/IP68, 4 x 0.25 mm² [7]				24		
	Cable Mat. EPD Raychem FDR25, IP67, 4 x 0.2 mm² [7]				08		
	Cable Mat. Radox Tenuis, IP67/IP68, 4 x 0.5 mm² [7]				88		

	Signal output	Load resistance	I (supply)	U (supply)			
Output signal	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		

		8252 . XX XX XX XX XX XX
Accessories	Female electrical plug M12x1, 5-pole [2]	33
	Female electrical plug 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 connector 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 connector 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 connector 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 connector 32, M12x1, 4-pole)	96
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 Ground (only for output signal 19 and male electrical connector 01, industrial standard)	92
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 Ground (only for output signal 19 and male electrical connector 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 connector 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 connector 01, industrial standard)	E3
	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 connector 01, industrial standard)	E9
	Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 4 - (only for output signal 19 and male electrical connector 32, M12x1, 4-pole)	E6
	Special electrical connection: Pin A +, Pin C - (only for output signal 19 and male electrical connector 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 connector Deutsch DT04-3P, 3-pole)	F1
	Special electrical connection: Pin A +, Pin C Out, Pin B/D -, Pin E Ground (Pin B and D are connected) (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical connector 02, MIL-C 26482)	F3
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 19 and male electrical connector 32, M12x1, 4-pole)	F4
	Special electrical connection: Pin 1 +, Pin 3 - (only for output signal 19 and male electrical connector 32, M12x1, 4-pole)	F5
	Special electrical connection: Pin 1 +, Pin 2 Out, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical connector 32, M12x1, 4-pole)	F6
	Special electrical connection: Pin 1 +, Pin 2 Out, Pin 3 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical connector 32, M12x1, 4-pole)	F7
	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 request
[2] For electrical connections 32 and 35
[3] Only with electrical connections 32, 22, 24, 08, 88
[4] Max. allowable pressure range 60 bar at 180 bar overpressure
[5] Max. allowable pressure range 160 bar at 480 bar overpressure
[6] Not for pressure connections 53, 24, 44, 18
[7] Cable length see accessories
[8] 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, D4
[9] 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
NAT2.5AM	8252 75 2517 32 0000 0000 19 33 44 61	0 ... 2.5	7.5	9 ... 32	±0.5
NAT4.0AM	8252 76 2517 32 0000 0000 19 33 44 61	0 ... 4	12	9 ... 32	±0.5
NAT6.0AM	8252 77 2517 32 0000 0000 19 33 44 61	0 ... 6	18	9 ... 32	±0.5
NAT10.0AM	8252 78 2517 32 0000 0000 19 33 44 61	0 ... 10	30	9 ... 32	±0.5
NAT16.0AM	8252 79 2517 32 0000 0000 19 33 44 61	0 ... 16	48	9 ... 32	±0.5
NAT25.0AM	8252 80 2517 32 0000 0000 19 33 44 61	0 ... 25	75	9 ... 32	±0.5
NAT40.0AM	8252 81 2517 32 0000 0000 19 33 44 61	0 ... 40	120	9 ... 32	±0.5
NAT60.0AM	8252 82 2517 32 0000 0000 19 33 44 61	0 ... 60	180	9 ... 32	±0.5
NAT100.0AM	8252 83 2517 32 0000 0000 19 33 44 61	0 ... 100	300	9 ... 32	±0.5
NAT160.0AM	8252 85 2517 32 0000 0000 19 33 44 61	0 ... 160	480	9 ... 32	±0.5
NAT250.0AM	8252 74 2517 32 0000 0000 19 33 44 61	0 ... 250	750	9 ... 32	±0.5
NAT400.0AM	8252 84 2517 32 0000 0000 19 33 44 61	0 ... 400	1000	9 ... 32	±0.5
NAT600.0AM	8252 86 2517 32 0000 0000 19 33 44 61	0 ... 600	1500	9 ... 32	±0.5

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
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 ... 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	

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 ... +100°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]
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/EPDM/NBR
	Male electrical plug	See ordering information
	Weight	appr. 50 g
	Mounting torque	25 Nm

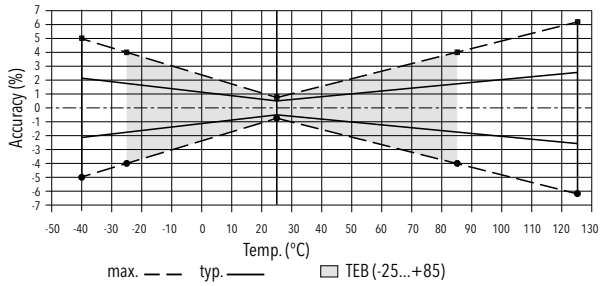
[1] See electrical connection

[2] For electrical connections 32 and 35

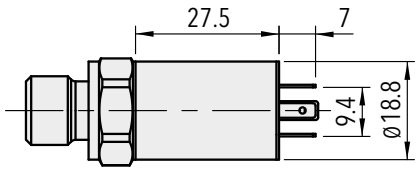
Analogue output			
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03
	Long term stability 1 year	[% FS typ.]	± 0.1
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure		

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 Switch point > reset point	≥ 1.0 % FS Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
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)	≤ 400 mA, total of both switching outputs ≤ 200 mA, total of both switching outputs
Current limiting	integrated		
Delay time	0; approx. 2^x[ms], x = 3, 4 ... 16		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

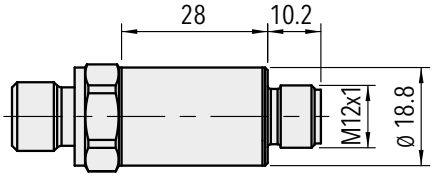
Measuring accuracy



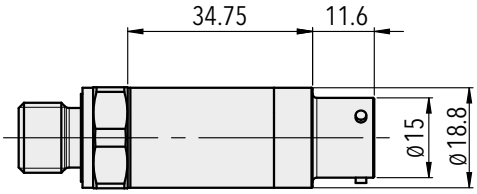
Dimensions



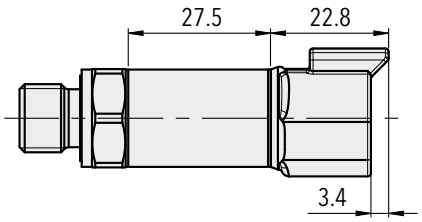
8252.XX.XXXX.**01**.XX.XX



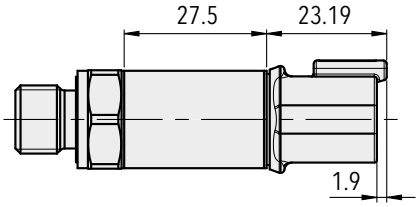
8252.XX.XXXX.**32/35**.XX.XX



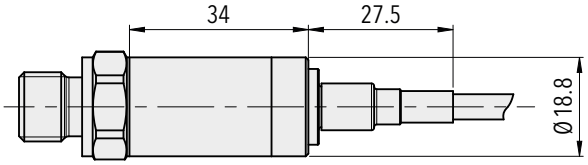
8252.XX.XXXX.**02**.XX.XX



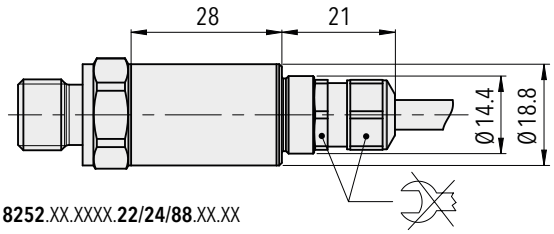
8252.XX.XXXX.**D3**.XX.XX



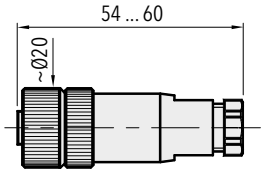
8252.XX.XXXX.**D4**.XX.XX



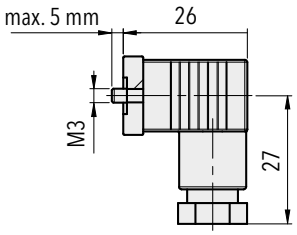
8252.XX.XXXX.**08**.XX.XX



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

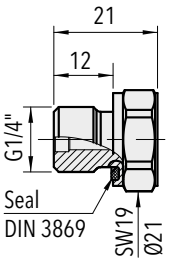


8252.XX.XXXX.XX.XX.**33**

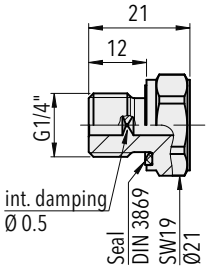


8252.XX.XXXX.XX.XX.**34**

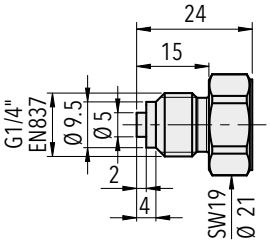
Dimensions



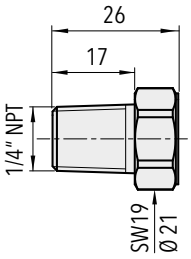
8252.XX.XX**17**.XX.XX.XX



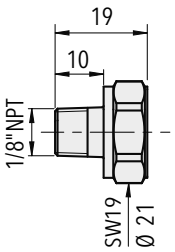
8252.XX.XX**15**.XX.XX.XX



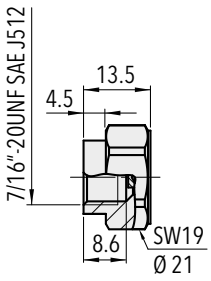
8252.XX.XX**53**.XX.XX.XX



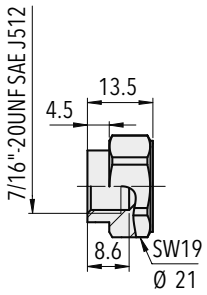
8252.XX.XX**30**.XX.XX.XX



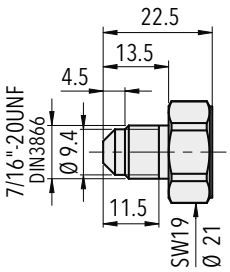
8252.XX.XX**43**.XX.XX.XX



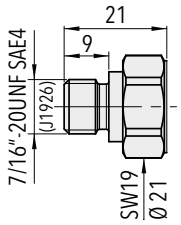
8252.XX.XX**24**.XX.XX.XX



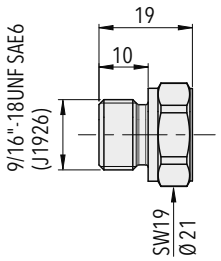
8252.XX.XX**44**.XX.XX.XX



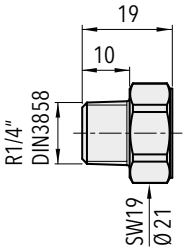
8252.XX.XX**18**.XX.XX.XX



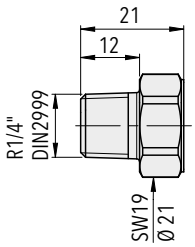
8252.XX.XX**42**.XX.XX.XX



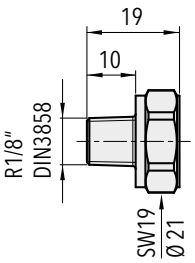
8252.XX.XX**61**.XX.XX.XX



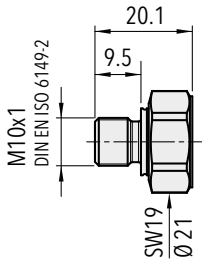
8252.XX.XX**19**.XX.XX.XX



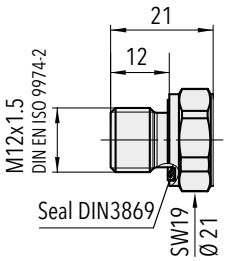
8252.XX.XX**20**.XX.XX.XX



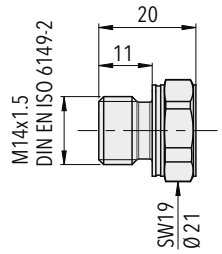
8252.XX.XX**16**.XX.XX.XX



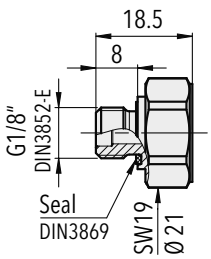
8252.XX.XX**32**.XX.XX.XX



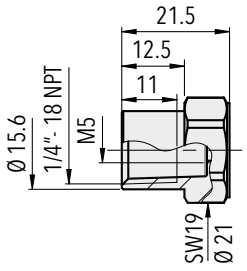
8252.XX.XX**49**.XX.XX.XX



8252.XX.XX**31**.XX.XX.XX



8252.XX.XX**54**.XX.XX.XX

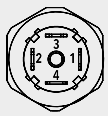


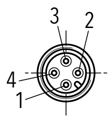
8252.XX.XX**13**.XX.XX.XX

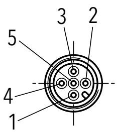
Electrical connection

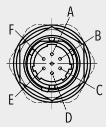
Protection / electrical connection

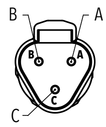
	IP65 1) 2)	IP67 1) 2)	IP67 1) 2)	IP67 1) 2)	IP67, IP68 1) 4)	IP67, IP68 1) 4)
	Industrial standard Contact distance 9.4 mm	M12x1 4-pole	M12x1 5-pole	MIL-C 26482	DT04-3P 3-pole	DT04-4P 4-pole
	01	**32**	**35**	**02**	**D3**	**D4**

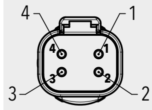




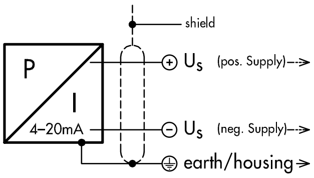






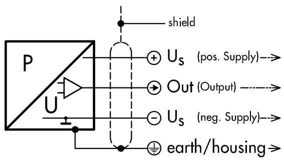


Output signal



8252.xx.xxxx.xx.**19**

	01	01: 90	01: 92	32	32: E1	32: E6	32: F4	32: F5	35	02	D3	D3: F0	D4
Us (pos. Supply)	2	2	1	1	1	1	1	1	4	A	A	A	2
Us (neg. Supply)	1	4	2	3	2	4	2	3	1	B	B	C	1
earth/housing	4	3	4	4	4	2			5	E			3

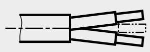


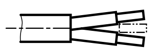
8252.xx.xxxx.xx.**13/14/16/17/20/22/23/24/25/26**

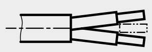
	01	01: 91	01: E3	01: E9	32	32: 95	32: 96	32: E2	32: F6	32: F7	35	02	02: F3	D3	D3: F1	D4
Us (pos. Supply)	1	2	3	1	1	1	1	1	1	1	2	A	A	A	A	2
Out (Output)	2	1	1	3	2	3	4	3	2	2	4	B	C	C	B	4
Us (neg. Supply)	3	4	2	2	3	4	3	2	4	3	3	C/D	B/D	B	C	1
earth/housing	4	3	4	4	4	2	2	4			5	E	E			3

Protection / electrical connection

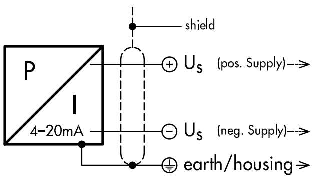
	IP67, IP68 2) 3)	IP67 2)	IP67, IP68 2) 3)
	Cable	Cable	Cable
	22/24	**08**	**88**





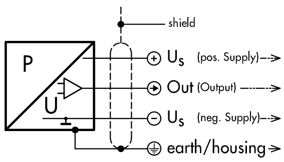


Output signal



8252.xx.xxxx.xx.**19**

	22/24	08	88
Us (pos. Supply)	white	red	brown
Us (neg. Supply)	brown	black	black
earth/housing	yellow	green	yellow / green

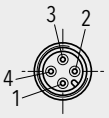
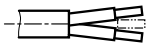
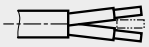
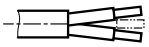
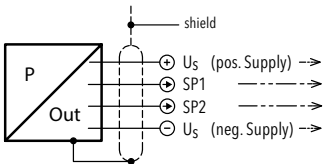


8252.xx.xxxxxx.**13/14/16/17/20/22/23/24/25/26**

	22/24	08	88
Us (pos. Supply)	white	red	brown
Out (Output)	green	white	blue
Us (neg. Supply)	brown	black	black
earth/housing	yellow	green	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) IP68, 100 mbar, 4h

Electrical connection

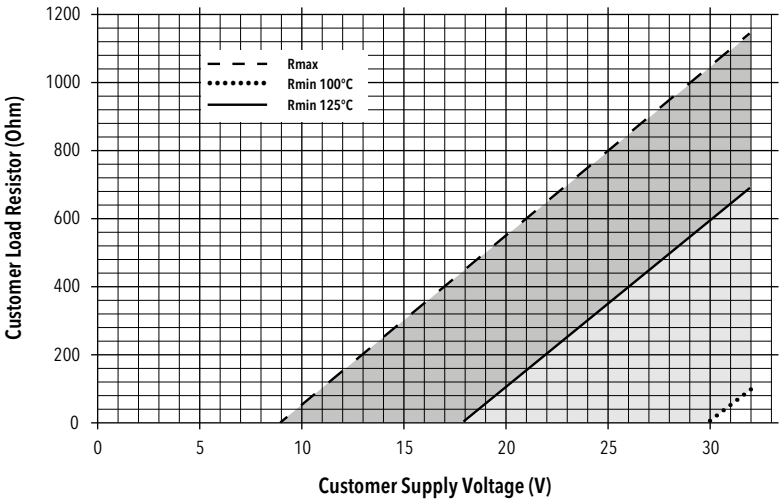
	Protection / electrical connection							
	IP67 [1) 2)]		IP67, IP68 [2) 3)]		IP67 [2)]		IP67, IP68 [2) 3)]	
	M12x1 4-pole		Cable		Cable		Cable	
	32		**22/24**		**08**		**88**	
								
Output signal	**PS**	**T1**	**PS**	**T1**	**PS**	**T1**	**PS**	**T1**
	1 4 2 3	1 4 – 3	white green yellow brown	white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

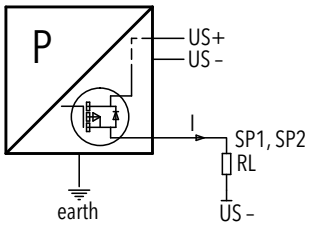
[1)] Provided female connector is mounted according to instructions

[2)] Ventilation via male electric plug/cable end

[3)] IP68, 20 bar, 30 min.

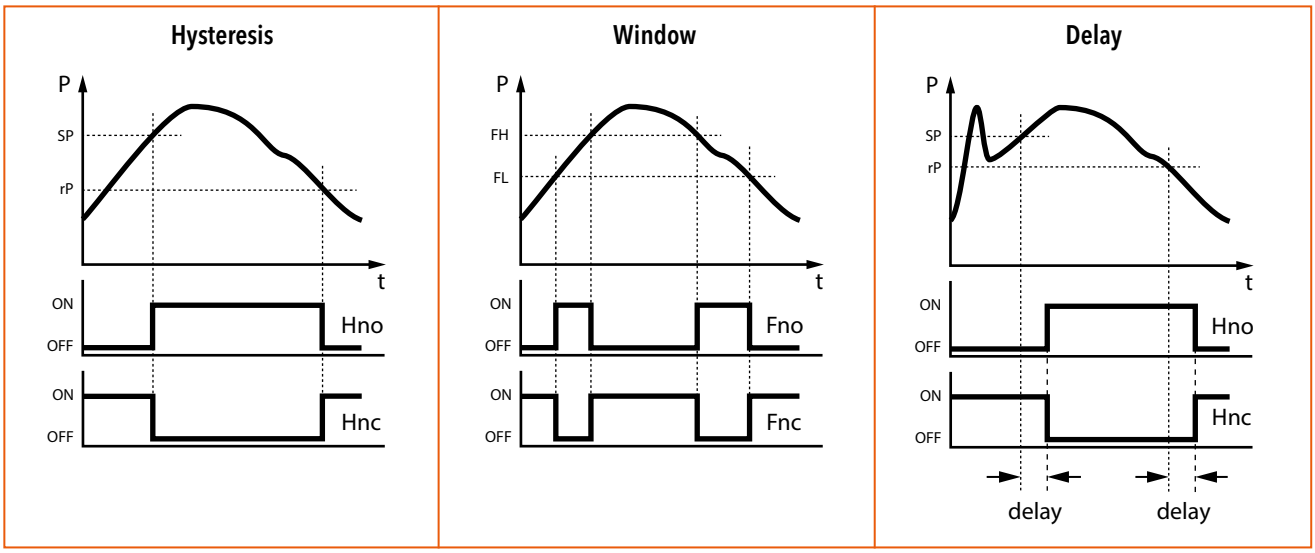
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%





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.	± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	Ambient temperature	-40°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. ± 0.1 % FS typ.		

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]	Code	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	Code
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**
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [3] [7]	**61**
3/8"-24UNF SAE3 male (J514) [3] [7]	**62**
R1/4" male, DIN2999 [3] [7]	**20**
M14x1.5 male DIN EN ISO 6149-2 [3] [7]	**31**

Electrical connection

Male electrical connector, industrial standard (contact distance 9.4 mm), Mat. PBT	**01**
Male electrical connector M12x1, 4-pole, Mat. PBT	**32**
Male electrical connector M12x1, 5-pole, Mat. PBT	**35**
Male electrical connector MIL-C 26482, 6-pole, metal	**02**
Cable Mat. EPD Raychem FDR25, IP67, 4 x 0.2 mm² [7]	**08**

Output signal

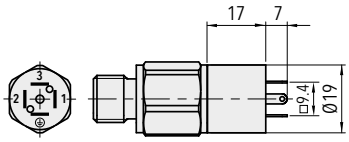
Signal output	Load resistance	I (supply)	U (supply)	Code
4 ... 20 mA	(Usupply-9 V) / 20 mA		24 (9 ... 32) VDC	**19**
0 ... 5 VDC	≥ 2.0 kΩ	≤ 10 mA	24 (9 ... 32) VDC	**14**
1 ... 6 VDC	≥ 2.0 kΩ	≤ 10 mA	24 (9 ... 32) VDC	**16**
0 ... 10 VDC	≥ 5.0 kΩ	≤ 10 mA	24 (15 ... 32) VDC	**17**
0.5 ... 4.5 VDC	≥ 2.0 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 plug 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 connector 32, M12x1, 4-pole)	96
	Special electrical connection: Pin A +, Pin C Out, Pin B/D -, Pin E Ground (Pin B and D are connected) (only for output signals 14, 16, 17, 23 and male electrical connector MIL-C 26482)	F3
	Cable length 0.5 m	EM
	Cable length 1.0 m	1M
	Cable length 2.0 m	2M

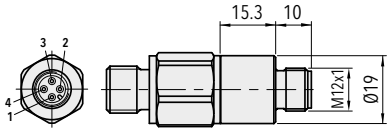
[1] Extended overpressure as well as customized pressure ranges upon request
[2] Measuring accuracy 0.3 %
[3] Only for relative pressure
[4] Max. allowable pressure range 40 bar
[5] Only with output 19
[6] Only for pressure connections 17 and 30
[7] Upon request

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

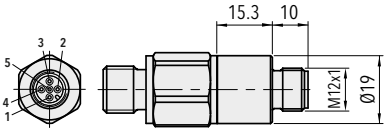
Dimensions



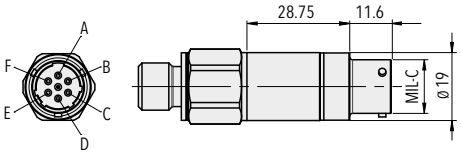
8253.XX.XXXX.**01**.XX.XX



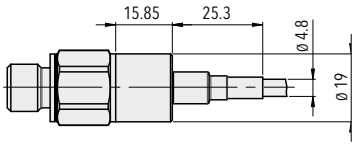
8253.XX.XXXX.**32**.XX.XX



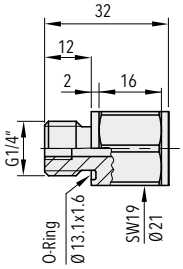
8253.XX.XXXX.**35**.XX.XX



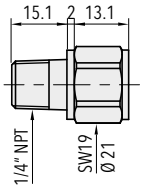
8253.XX.XXXX.**02**.XX.XX



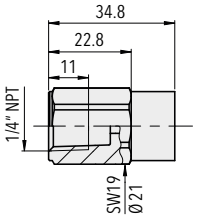
8253.XX.XXXX.**08**.XX.XX



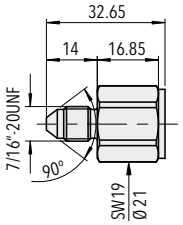
8253.XX.**2317**.XX.XX.XX
8253.XX.**2117**.XX.XX.XX



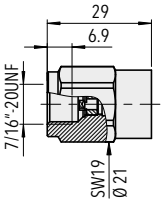
8253.XX.**2330**.XX.XX.XX
8253.XX.**2130**.XX.XX.XX



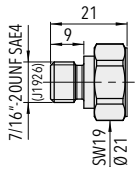
8253.XX.**2313**.XX.XX.XX
8253.XX.**2113**.XX.XX.XX



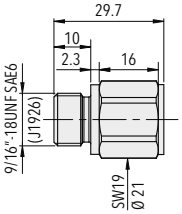
8253.XX.**2318**.XX.XX.XX
8253.XX.**2118**.XX.XX.XX



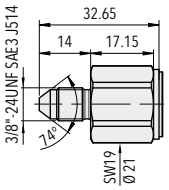
8253.XX.**2324**.XX.XX.XX
8253.XX.**2124**.XX.XX.XX



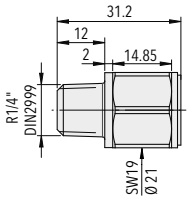
8253.XX.XX**42**.XX.XX.XX



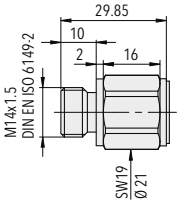
8253.XX.**2361**.XX.XX.XX
8253.XX.**2161**.XX.XX.XX



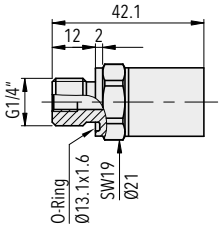
8253.XX.**2362**.XX.XX.XX
8253.XX.**2162**.XX.XX.XX



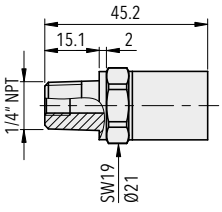
8253.XX.**2320**.XX.XX.XX
8253.XX.**2120**.XX.XX.XX



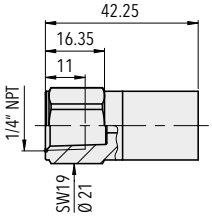
8253.XX.**2331**.XX.XX.XX
8253.XX.**2131**.XX.XX.XX



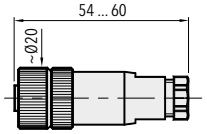
8253.XX.**4317**.XX.XX.XX
8253.XX.**4117**.XX.XX.XX



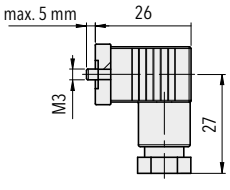
8253.XX.**4330**.XX.XX.XX
8253.XX.**4130**.XX.XX.XX



8253.XX.**4313**.XX.XX.XX
8253.XX.**4113**.XX.XX.XX



8253.XX.XXXX.XX.XX.**33**



8253.XX.XXXX.XX.XX.**34**

Specifications

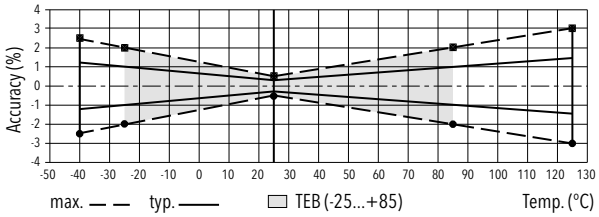
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0 ... 5 VDC: 24 (9 ... 32) VDC 1 ... 6 VDC: 24 (9 ... 32) VDC 0 ... 10 VDC: 24 (15 ... 32) VDC 0.5 ... 4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	1 s
Environmental conditions	Media 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)
	Shock	100 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: 1.4542 (AISI630) Pressure ranges > 250 bar: 1.4301 (AISI304)
	Housing	1.4301 (AISI304)
	Sealing	FKM 70 Sh
	Male electrical connector	See ordering information
	Weight	~ 50 g
	Mounting torque	25 Nm

[1)] See electrical connection

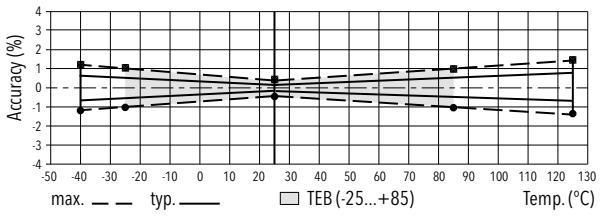
Accuracy

		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

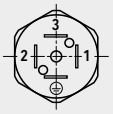
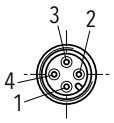
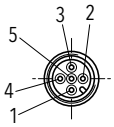
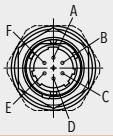
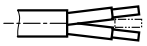
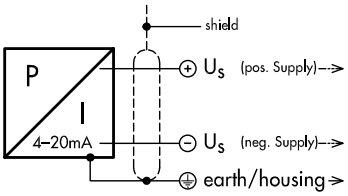
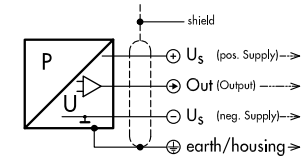
Measuring accuracy 0.3 %



Measuring accuracy 0.15 %



Electrical connection

		Protection / electrical connection					
		IP65 *)	IP67 *)		IP67 *) **)		IP67 **)
		Industrial standard EN175301-803A	M12x1 4-pole	M12x1 5-pole	MIL-C 26482		Cable
		01	**32**	**35**	**02**		**08**
							
Output signal	 **8253**.xx.xxxx.xx.**19**	2 1 ⏚	1 3 4	4 1 5			red black –
	 **8253**.xx.xxxx.xx.**14/16/17/23**	1 2 3 ⏚	1 2 3 4	**96** 1 4 3 2	2 4 3 5	A B C/D E	**F3** A C B/D E	red green black –

*) Provided female electrical plug 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 ... +100°C)
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.		

Subject to change

Ordering information/type code

8254 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	
0 ... 0.2 [10]	1.2	25	68
0 ... 0.4 [10]	1.2	25	69
0 ... 0.6 [10]	1.2	25	70
0 ... 1.0 [10]	2	25	71
0 ... 1.6 [10]	3.2	50	73
0 ... 2.5	7.5	50	75
0 ... 4	12	60	76
0 ... 6	18	100	77
0 ... 10	30	200	78
0 ... 16	48	200	79
0 ... 25	75	300	80
0 ... 40	120	300	81
0 ... 60	180	400	82
0 ... 100	300	500	83
0 ... 160	480	750	85
0 ... 250	750	1000	74
0 ... 400	1000	2000	84
0 ... 600	1500	2500	86
Option 5P:	**Fivefold overpressure**		
0 ... 2.5	12.5	60	55
0 ... 4	20	100	56
0 ... 6	30	200	57
0 ... 10	50	200	58
0 ... 16	80	300	59
0 ... 25	125	300	60
0 ... 40	200	400	61
0 ... 60	300	500	62
0 ... 100	500	750	63
0 ... 160	800	1000	65

Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 3 [10]	15	350	F8
0 ... 5 [10]	15	350	F9
0 ... 10 [10]	20	350	G0
0 ... 15 [10]	30	350	G1
0 ... 25 [10]	50	700	G3
0 ... 30	90	700	G5
0 ... 50	150	850	G6
0 ... 100	300	1450	G7
0 ... 150	450	2500	G8
0 ... 200	600	2500	GA
0 ... 250	750	2500	G9
0 ... 300	900	4000	HA
0 ... 400	1200	4000	H0
0 ... 500	1500	4000	H1
0 ... 1000	3000	5000	H2
0 ... 1500	4500	7000	H3
0 ... 2000	6000	10000	H5
0 ... 3000	9000	14500	G4
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, with integrated damping Ø 0.5 mm, Seal: DIN 3869 (accessories 61/63/83)	15
G1/4" male (Manometer) EN 837	53
G1/8" male DIN3852-E, seal: accessory 61 [5]	54
1/4" NPT male	30
1/4" NPT female [5]	13
1/8" NPT male [5]	43
7/16"-20UNF female, SAE J512 with valve opener [4]	24
7/16"-20UNF female, SAE J512 without valve opener [4]	44
7/16"-20UNF male, DIN3866 [4]	18
7/16"-20UNF SAE4 male (J1926), seal: accessory 61	42
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61	61
R1/4" male, DIN3858	19
R1/4" male, DIN2999 [9]	20
R1/8" male, DIN3858 [5]	16
M10x1 male, DIN EN ISO 6149-2, seal: accessory 61	32
M12x1.5 male, DIN EN ISO 9974-2, seal: accessory 61	49
M14x1.5 male DIN EN ISO 6149-2, seal: accessory 61 [9]	31

		8254 . XX	XX	XX	XX	XX	XX
Electrical connection	Male electrical connector, industrial standard, contact distance 9.4 mm, Mat. PA				01		
	Male electrical connector M12x1, 4-pole, Mat. PA, IEC 61076-2-101				32		
	Male electrical connector M12x1, 5-pole, Mat. PA, IEC 61076-2-101				35		
	Male electrical connector MIL-C 26482, 6-pole, metal				02		
	Male electrical connector Deutsch DT04-3P, 3-pole				D3		
	Male electrical connector Deutsch DT04-4P, 4-pole				D4		
	Cable Mat. PVC, IP67/IP68, 2 x 2 x 0.14 mm² [7]				22		
	Cable Mat. PUR, IP67/IP68, 4 x 0.25 mm² [7]				24		
	Cable Mat. EPD Raychem FDR25, IP67, 4 x 0.2 mm² [7]				08		
	Cable Mat. Radox Tenuis, IP67/IP68, 4 x 0.5 mm² [7]				88		

	Signal output	**Load resistance**	**I (supply)**	**U (supply)**		
Output signal	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 ratiom.	≥ 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	

		8254 . XX XX XX XX XX XX
Accessories	Female electrical plug M12x1, 5-pole [2]	**33**
	Female electrical plug 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 connector 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 connector 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 connector 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 connector 32, M12x1, 4-pole)	**96**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 Ground (only for output signal 19 and male electrical connector 01, industrial standard)	**92**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 Ground (only for output signal 19 and male electrical connector 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 connector 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 connector 01, industrial standard)	**E3**
	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 connector 01, industrial standard)	**E9**
	Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 4 - (only for output signal 19 and male electrical connector 32, M12x1, 4-pole)	**E6**
	Special electrical connection: Pin A +, Pin C - (only for output signal 19 and male electrical connector 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 connector Deutsch DT04-3P, 3-pole)	**F1**
	Special electrical connection: Pin A +, Pin C Out, Pin B/D -, Pin E Ground (Pin B and D are connected) (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical connector 02, MIL-C 26482)	**F3**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 19 and male electrical connector 32, M12x1, 4-pole)	**F4**
	Special electrical connection: Pin 1 +, Pin 3 - (only for output signal 19 and male electrical connector 32, M12x1, 4-pole)	**F5**
	Special electrical connection: Pin 1 +, Pin 2 Out, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical connector 32, M12x1, 4-pole)	**F6**
	Special electrical connection: Pin 1 +, Pin 2 Out, Pin 3 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical connector 32, M12x1, 4-pole)	**F7**
	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 request
[2] For electrical connections 32 and 35
[3] Only with electrical connections 32, 22, 24, 08, 88
[4] Max. allowable pressure range 60 bar at 180 bar overpressure
[5] Max. allowable pressure range 160 bar at 480 bar overpressure
[6] Not for pressure connections 53, 24, 44, 18
[7] Cable length see accessories
[8] 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, D4
[9] Upon request
[10] Only for pressure connections 17 and 30 and with output signal 4 ... 20 mA, code 19

Signal processing

Code	Cut-off frequency f_G	Rise time (10 ... 90 % nominal pressure)	Output signal			
			4 ... 20 mA	0.5 ... 4.5 VDC ratiometric	0 ... 6 VDC	0 ... 10 VDC
GA [1]	11 Hz	32 ms	x	x	-	-
GS [1] [2]	14 kHz	29 µs	x	-	-	-
GU [1] [2]	20 kHz	18 µs	x	x	-	-
Standard specification	350 Hz	1 ms	x	x	x	x

[1] Upon request

[2] 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. [%]
NAH0.2A	8254 68 2317 32 0000 0000 19 33 44 61	0 ... 0.2	1.2	9 ... 32	± 0.8
NAH0.4A	8254 69 2317 32 0000 0000 19 33 44 61	0 ... 0.4	1.2	9 ... 32	± 0.8
NAH0.6A	8254 70 2317 32 0000 0000 19 33 44 61	0 ... 0.6	1.2	9 ... 32	± 0.8
NAH1.0A	8254 71 2317 32 0000 0000 19 33 44 61	0 ... 1.0	2	9 ... 32	± 0.6
NAH1.6A	8254 73 2317 32 0000 0000 19 33 44 61	0 ... 1.6	3.2	9 ... 32	± 0.6
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	

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 ... +100°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]
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/EPDM/NBR
	Male electrical plug	See ordering information
	Weight	appr. 50 g
	Mounting torque	25 Nm

[1] See electrical connection

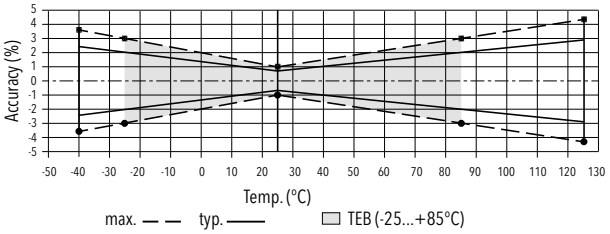
[2] For electrical connections 32 and 35

Analogue output			≥ 0.2 bar ≤ 0.6 bar	> 0.6 bar < 2.0 bar	≥ 2.0 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				

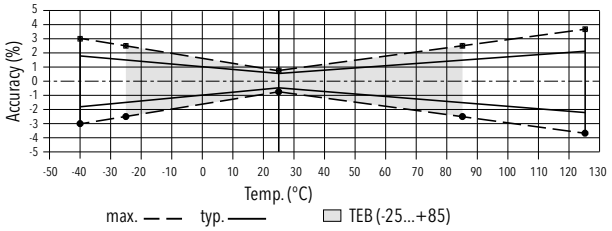
Switching output			
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	Long term stability 1 year	[% FS typ.]	± 0.1
Adjustment range of switchpoints	1 ... 99 % FS		
Distance switch point Switch point > reset point	≥ 1.0 % FS Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
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)	≤ 400 mA, total of both switching outputs ≤ 200 mA, total of both switching outputs
Current limiting	integrated		
Delay time	0; approx. 2^x[ms], x = 3, 4 ... 16		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

Measuring accuracy

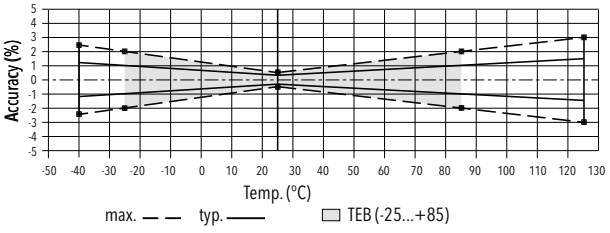
≥ 0.2 bar ... ≤ 0.6 bar



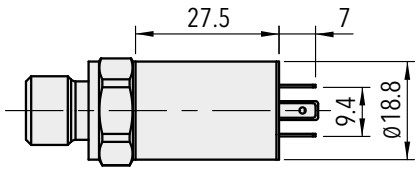
>0.6 bar ... <2.0 bar



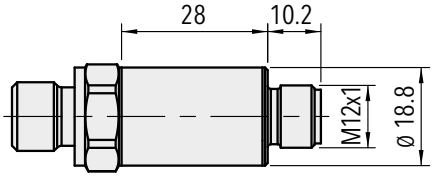
≥ 2.0 bar



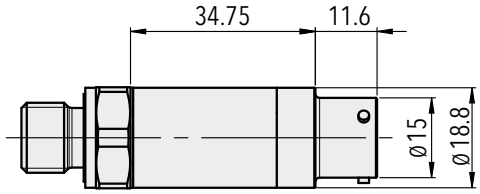
Dimensions



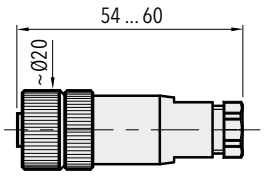
8254.XX.XXXX.**01**.XX.XX



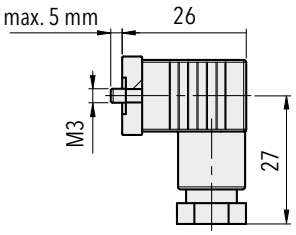
8254.XX.XXXX.**32/35**.XX.XX



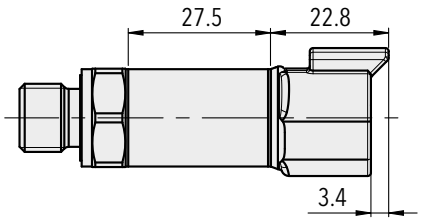
8254.XX.XXXX.**02**.XX.XX



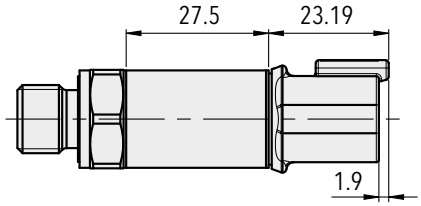
8254.XX.XXXX.XX.XX.**33**



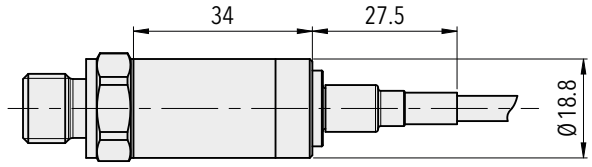
8254.XX.XXXX.XX.XX.**34**



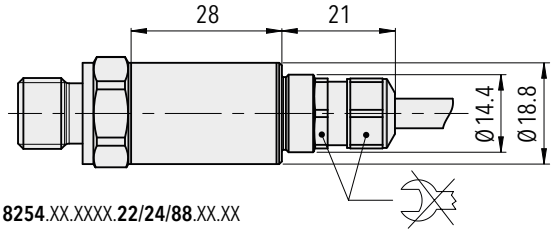
8254.XX.XXXX.**D3**.XX.XX



8254.XX.XXXX.**D4**.XX.XX

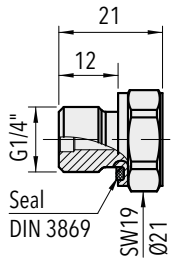


8254.XX.XXXX.**08**.XX.XX

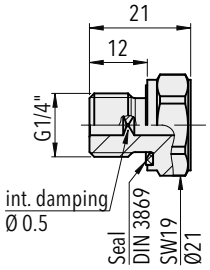


8254.XX.XXXX.**22/24/88**.XX.XX

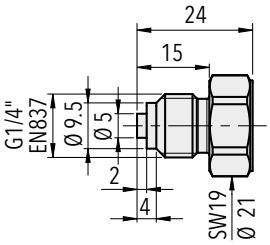
Dimensions



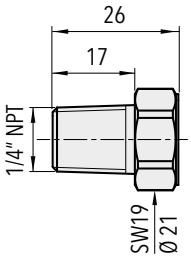
8254.XX.XX**17**.XX.XX.XX



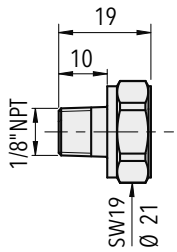
8254.XX.XX**15**.XX.XX.XX



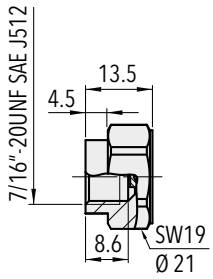
8254.XX.XX**53**.XX.XX.XX



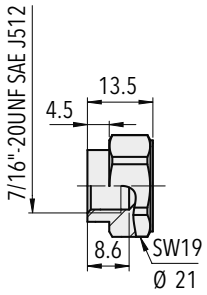
8254.XX.XX**30**.XX.XX.XX



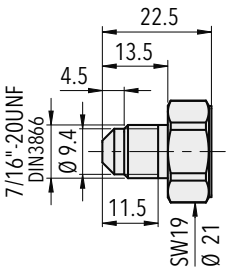
8254.XX.XX**43**.XX.XX.XX



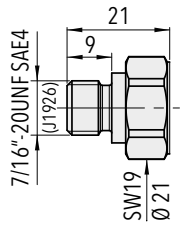
8254.XX.XX**24**.XX.XX.XX



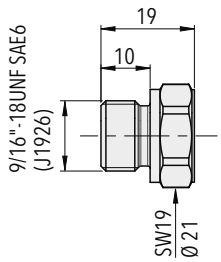
8254.XX.XX**44**.XX.XX.XX



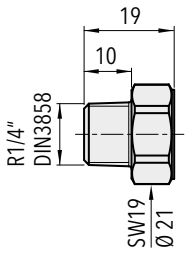
8254.XX.XX**18**.XX.XX.XX



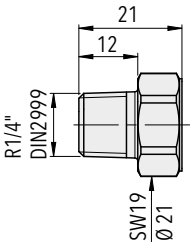
8254.XX.XX**42**.XX.XX.XX



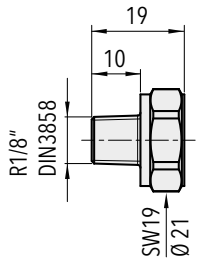
8254.XX.XX**61**.XX.XX.XX



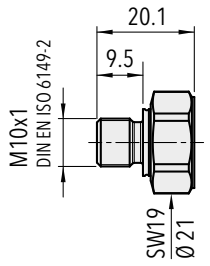
8254.XX.XX**19**.XX.XX.XX



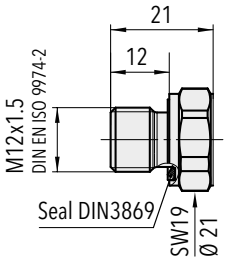
8254.XX.XX**20**.XX.XX.XX



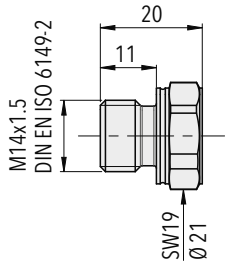
8254.XX.XX**16**.XX.XX.XX



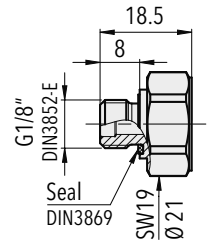
8254.XX.XX**32**.XX.XX.XX



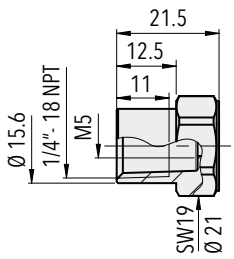
8254.XX.XX**49**.XX.XX.XX



8254.XX.XX**31**.XX.XX.XX

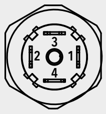
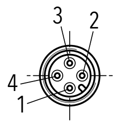
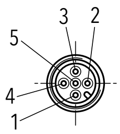
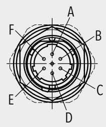
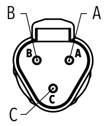
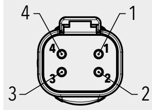
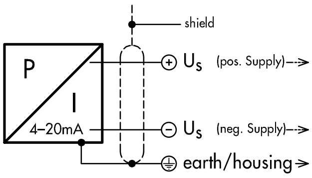
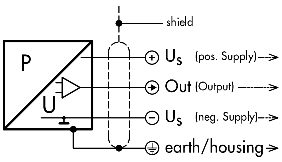


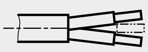
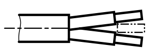
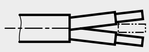
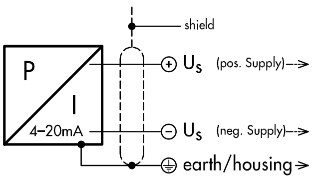
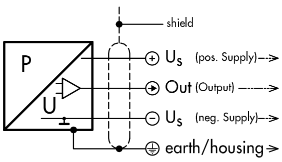
8254.XX.XX**54**.XX.XX.XX



8254.XX.XX**13**.XX.XX.XX

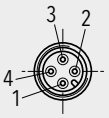
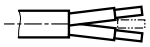
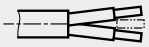
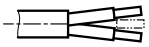
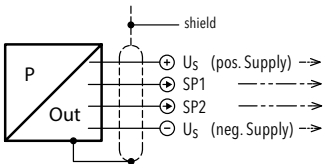
Electrical connection

	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	M12x1 5-pole	MIL-C 26482	DT04-3P 3-pole	DT04-4P 4-pole
	01	**32**	**35**	**02**	**D3**	**D4**
						
Output signal  **8254**.xx.xxxx.xx.**19**	2 / 1 / 4 **90**: 2 / 4 / 3 **92**: 1 / 2 / 4	1 / 3 / 4 **E1**: 1 / 2 / 4 **E6**: 1 / 4 / 2 **F4**: 1 / 2 **F5**: 1 / 3	4 / 1 / 5	A / B / E	A / B **F0**: A / C	2 / 1 / 3
Output signal  **8254**.xx.xxxx.xx.**13/14/16/17/20/ 22/23/24/25/26**	1 / 2 / 3 / 4 **91**: 2 / 1 / 4 / 3 **E3**: 3 / 1 / 2 / 4 **E9**: 1 / 3 / 2 / 4	1 / 2 / 3 / 4 **95**: 1 / 3 / 4 / 2 **96**: 1 / 4 / 3 / 2 **E2**: 1 / 3 / 2 / 4 **F6**: 1 / 2 / 4 **F7**: 1 / 2 / 3	2 / 4 / 3 / 5	A / B / C/D / E **F3**: A / C / B/D / E	A / C / B **F1**: A / B / C	2 / 4 / 1 / 3

	Protection / electrical connection		
	IP67, IP68 [2,3]	IP67 [2]	IP67, IP68 [2,3]
	Cable **22/24**	Cable **08**	Cable **88**
			
Output signal  **8254**.xx.xxxx.xx.**19**	white brown yellow	red black green	brown black yellow / green
Output signal  **8254**.xx.xxxx.xx.**13/14/16/17/20/ 22/23/24/25/26**	white green brown yellow	red white black green	brown blue 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) IP68, 100 mbar, 4h

Electrical connection

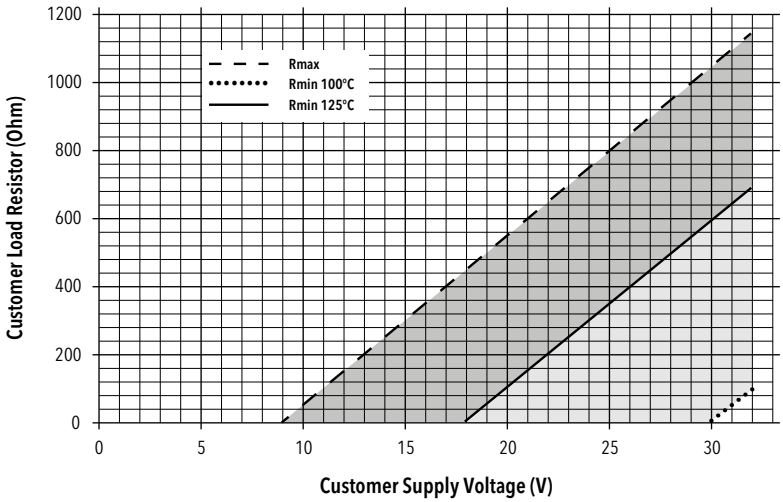
	Protection / electrical connection							
	IP67 [1) 2)]		IP67, IP68 [2) 3)]		IP67 [2)]		IP67, IP68 [2) 3)]	
	M12x1 4-pole		Cable		Cable		Cable	
	32		**22/24**		**08**		**88**	
								
Output signal	**PS**	**T1**	**PS**	**T1**	**PS**	**T1**	**PS**	**T1**
	1	1	white	white	red	red	brown	brown
	4	4	green	green	white	white	blue	blue
	2	–	yellow	–	green	–	yellow / green	–
	3	3	brown	brown	black	black	black	black
8254.xx.xxxx.xx.**PS/T1**								

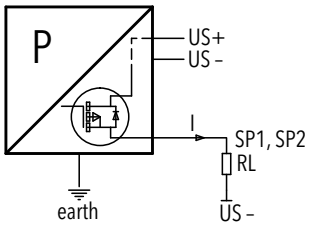
[1)] Provided female connector is mounted according to instructions

[2)] Ventilation via male electric plug/cable end

[3)] IP68, 20 bar, 30 min.

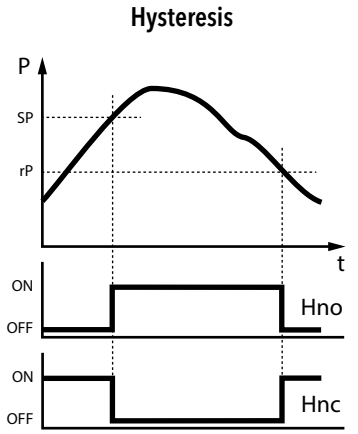
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%

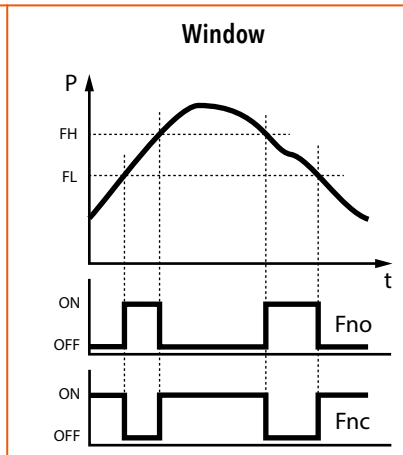


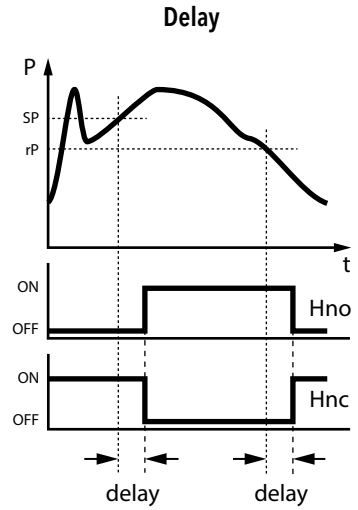


Connection of loads to switching output

Functions switching output







Additional information		
Documents	Data sheet	www.trafag.com/H72304
	Instructions	www.trafag.com/H73303
	Flyer	www.trafag.com/H70682

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 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

Bestellinformation/Typencode

8256 . XX XX XX XX XX XX

Messbereich [1]

Druckmessbereich [bar]	Überdruck [bar]	Berstdruck [bar]	
0 ... 6 [5] [6]	18	100	**77**
0 ... 10	30	200	**78**
0 ... 16	48	200	**79**
0 ... 25	75	300	**80**
0 ... 40	120	300	**81**
0 ... 60	180	400	**82**
0 ... 100	300	500	**83**
0 ... 160	480	750	**85**
0 ... 250	750	1000	**74**
0 ... 400	1000	2000	**84**
0 ... 600	1500	2500	**86**

Druckmessbereich [psi]	Überdruck [psi]	Berstdruck [psi]	
0 ... 100 [5] [6]	300	1450	**G7**
0 ... 150	450	2500	**G8**
0 ... 200	600	2500	**GA**
0 ... 250	750	2500	**G9**
0 ... 300	900	4000	**HA**
0 ... 400	1200	4000	**H0**
0 ... 500	1200	4000	**H1**
0 ... 1000	3000	5000	**H2**
0 ... 1500	4500	7000	**H3**
0 ... 2000	6000	10000	**H5**
0 ... 3000	9000	14500	**G4**
0 ... 5000	12500	21750	**H4**
0 ... 7500	18750	29000	**H6**

Sensor

Relativdruck, Genauigkeit: 0.5 %	**25**
Relativdruck, Genauigkeit: 0.3 %	**23**

Druckanschluss

G1/4" aussen, Dichtung: DIN 3869 (Zubehör 61/63/83)	**17**
G1/4" aussen (Manometer) EN 837 [6]	**53**
1/4" NPT aussen	**30**
M10x1 aussen	**32**

Elektrischer Anschluss

Gerätestecker, Industriestandard, Kontaktdistanz 9.4 mm, Mat. PA	**01**
Gerätestecker M12x1, 4-polig, Mat. PA, IEC 61076-2-101	**32**
Gerätestecker M12x1, 5-polig, Mat. PA, IEC 61076-2-101	**35**

Ausgangssignal

Ausgangssignal	Lastwiderstand	I (supply)	U (supply)	
4 ... 20 mA	Siehe Grafik		24 (9 ... 32) VDC	**19**

Zubehör

Kabeldose M12x1, 5-polig [2]	**33**
Kabeldose Industriestandard [3]	**34**
Druckspitzendämpfung ø 0.4 mm	**44**
Dichtung FPM, -18°C ... +125°C [4]	**61**
Dichtung EPDM, -40°C ... +125°C [4]	**63**
Dichtung NBR, -25°C ... +100°C [4]	**83**
Anschlussbelegung spezial: Pin 2 +, Pin 3 Erde, Pin 4 - (Nur für Gerätestecker 01, Industriestandard)	**90**
Anschlussbelegung spezial: Pin 1 +, Pin 2 -, Pin 4 Erde (Nur für Ausgangssignal 19 und Gerätestecker 32, M12x1, 4-polig)	**E1**

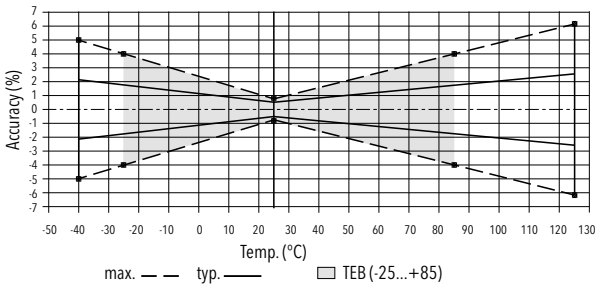
[1] Sonderdruckbereiche nach Kundenwunsch auf Anfrage
[2] Für elektrische Anschlüsse 32 und 35
[3] Für elektrischen Anschluss 01
[4] Nur mit Druckanschluss 17 (G1/4")
[5] Nur mit Sensor 23 (Genauigkeit 0.3 %)
[6] Nur mit Schiffszulassung DNV-GL

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

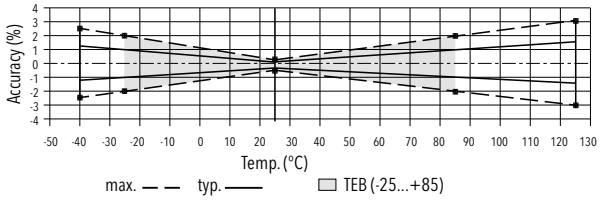
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	0.5 %: ± 1.75 % FS typ. 0.3 %: ± 1.0 % FS typ.
	Accuracy @ 25°C typ.	0.5 %: ± 0.5 % FS typ. 0.3 %: ± 0.3 % FS typ.
	NLH @ 25°C (BSL) typ.	0.5 %: ± 0.2 % FS typ. 0.3 %: ± 0.2 % FS typ.
	TC zero point and span typ.	0.5 %: ± 0.03 % FS/K typ. 0.3 %: ± 0.01 % FS/K typ.
	Long term stability 1 year typ.	± 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_{supply} = 32 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

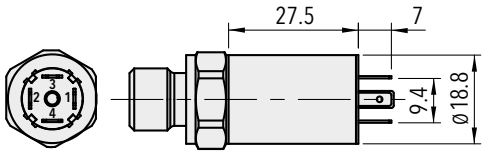
Measuring accuracy 0.5 %



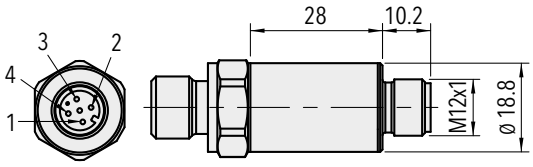
Measuring accuracy 0.3 %



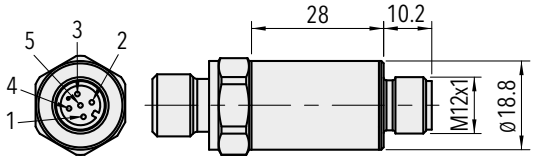
Dimensions



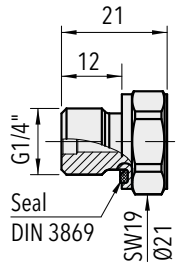
8256.XX.XXXX.**01**.XX.XX



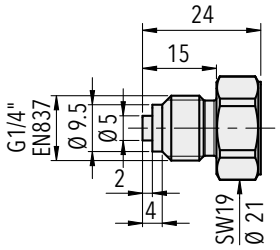
8256.XX.XXXX.**32**.XX.XX



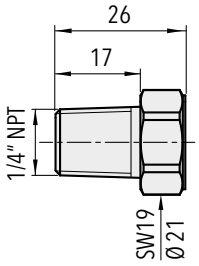
8256.XX.XXXX.**35**.XX.XX



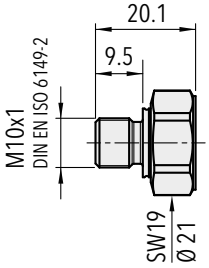
8256.XX.XX**17**.XX.XX.XX



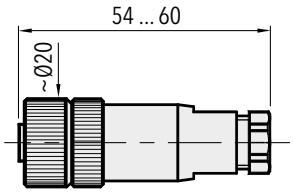
8256.XX.XX**53**.XX.XX.XX



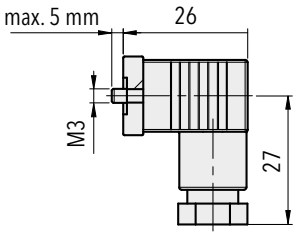
8256.XX.XX**30**.XX.XX.XX



8256.XX.XX**32**.XX.XX.XX

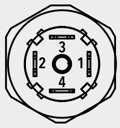
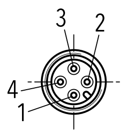
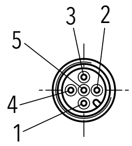
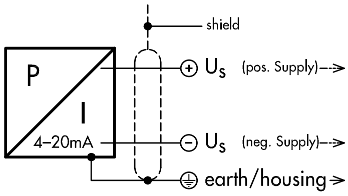


8256.XX.XXXX.XX.XX.**33**



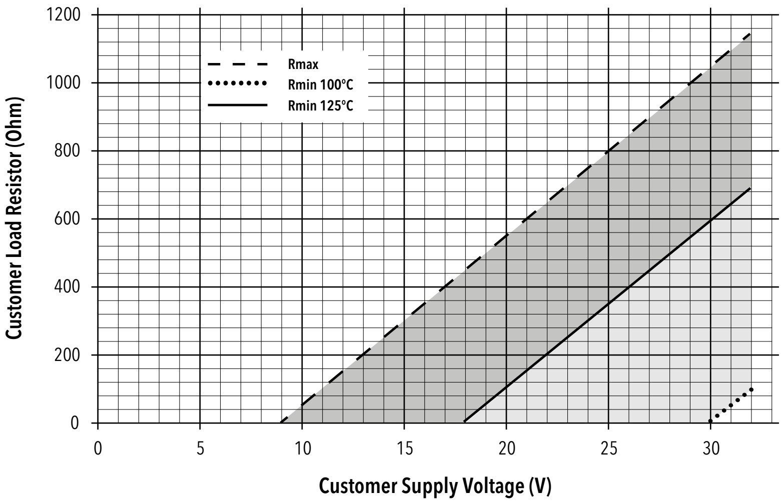
8256.XX.XXXX.XX.XX.**34**

Electrical connection

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

*⁾ 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 critical 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	Accuracy @ 25°C typ.	0.15 ... 0.8 % FS typ.
Measuring range	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	Ambient temperature	-40°C ... +125°C
NLH @ 25°C (BSL) typ.	0.2 % FS typ. 0.1 % FS typ.	Approval / conformity	DNV-GL

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]	Code	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	Code
0 ... 0.2 [2]	1.2	25	**68**	0 ... 3 [3]	18	350	**F8**
0 ... 0.4	1.2	25	**69**	0 ... 5 [3]	18	350	**F9**
0 ... 0.6	1.5	25	**70**	0 ... 10 [3]	25	350	**G0**
0 ... 1.0	2.0	25	**71**	0 ... 15 [3]	30	350	**G1**
0 ... 1.6	3.5	80	**73**	0 ... 25 [3]	50	1200	**G3**
0 ... 2.5	5.0	80	**75**	0 ... 30 [3]	70	1200	**G5**

Sensor

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

Pressure connection

G1/4" male (Seal)	**17**
1/4" NPT male	**30**
1/4" NPT female [6]	**13**
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [2] [6]	**61**

Electrical connection

Male electrical connector, industrial standard (contact distance 9.4 mm), Mat. PBT	**01**
Male electrical connector M12x1, 4-pole, Mat. PBT	**32**
Male electrical connector M12x1, 5-pole, Mat. PBT	**35**
Male electrical connector MIL-C 26482, 6-pole, metal [3]	**02**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	Code
4 ... 20 mA	(Usupply-9 V) / 20 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 ratiom.	**23**

Accessories

Female electrical plug M12x1, 5-pole, for electrical connections 32 and 35	**33**
Female electrical plug industrial standard	**34**
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**
Special electrical connection: Pin A +, Pin C Out, Pin B/D -, Pin E Ground (Pin B and D are connected) (only for output signals 14, 17, 23 and male electrical connector MIL-C 26482)	**F3**

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Only for relative pressure
[3] No ship approval DNV-GL
[4] Only for pressure ranges from 0.6 bar / 10 psi
[5] No ship approval
[6] Upon request

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

Specifications

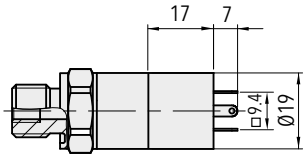
Electrical Data	Output / supply voltage	4...20 mA: 24 (9...32) VDC 0...5 VDC: 24 (9...32) VDC 0...10 VDC: 24 (15...32) VDC 0.5...4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	1 s
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection [1)]	Min. IP65
	Humidity	Max. 95 % relative
	Vibration	25 g (20...2000 Hz)
	Shock	100 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)	1.4542 (AISI630)
	Housing	1.4301 (AISI304)
	Sealing	FKM 70 Sh
	Male electrical connector	See ordering information
	Weight	~ 50 g
	Mounting torque	25 Nm (see "Accuracy")

[1)] See electrical connection

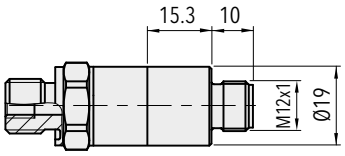
Accuracy

		Sensor 23/43 (0.3%)					Sensor 21/41 (0.15%)	
Pressure measuring range	**[bar]**	0 ... 0.2	0 ... 0.4	0 ... 0.6	0 ... 1.0	0 ... 1.6 0 ... 2.5	0...0.6 0...1.0	0...1.6 0...2.5
	[psi]	0 ... 3	0 ... 5	0 ... 10	0 ... 15	0 ... 25 0 ... 30	0...10 0...15	0...25 0...30
NLH @ +25°C (+77°F) (BSL)	[% FS typ.]	0.2	0.2	0.2	0.2	0.2	0.1	0.1
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 @ 25 Nm	[% FS typ.]	0.25	0.13	0.09	0.05	0.05	0.05	0.05

Dimensions



8257.XX.XXXX.**01**.XX.XX



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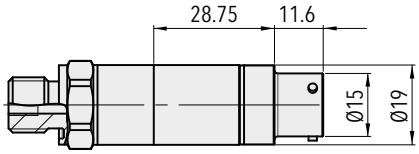

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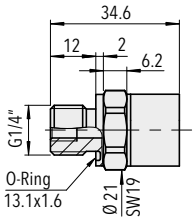

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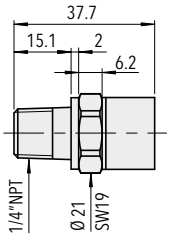
8257.XX.**2117**.XX.XX.XX



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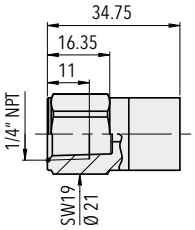
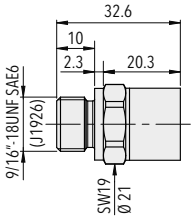
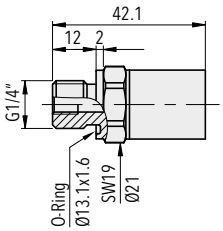
8257.XX.**2130**.XX.XX.XX



8257.XX.**2313**.XX.XX.XX
8257.XX.**2113**.XX.XX.XX



8257.XX.**2361**.XX.XX.XX
8257.XX.**2161**.XX.XX.XX



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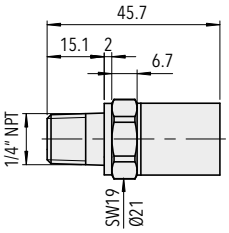
8257.XX.**4117**.XX.XX.XX



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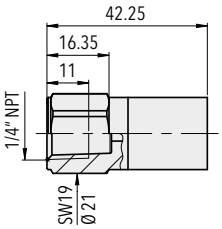
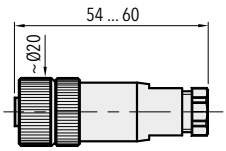
8257.XX.**4130**.XX.XX.XX



8257.XX.**4313**.XX.XX.XX
8257.XX.**4113**.XX.XX.XX



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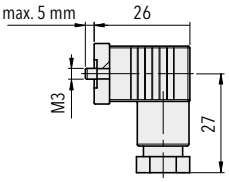
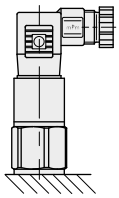
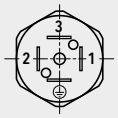
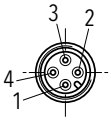
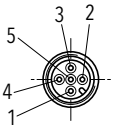
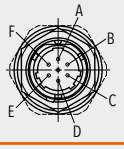
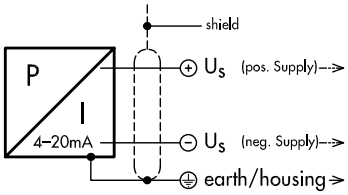
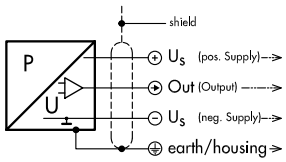


8257.XX.XXXX.XX.XX.**34**



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

Electrical connection

		Protection / electrical connection				
		IP65*)	IP67*)		IP67*) **)	
		Industrial standard EN175301-803A	M12x1 4-pole	M12x1 5-pole	MIL-C 26482	
		01 	**32** 	**35** 	**02** 	
Output signal	 **8257**.xx.xxxx.xx.**19**	2 1 ⏚	1 3 4	4 1 5		
	 **8257**.xx.xxxx.xx.**14/17/23**	1 2 3 ⏚	1 2 3 4	2 4 3 5	A B C/D E	**F3** A C B/D E

*) Provided female electrical plug is mounted according to instructions

**) Ventilation via male electric plug/cable end

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
- Meets EN 50155 (railways)

Technical Data			
Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.3 % FS typ.
Measuring range	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi	Media temperature	–40°C ... +85°C
Output signal	4 ... 20 mA, Switching output: 1 or 2 PNP transistors	Ambient temperature	EN 50155: OT6 (–40°C ... +85°C)
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.	Approval / conformity	EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 50121-3-2 (EMC)

Subject to change

Ordering information/type code

						8258 .	XX	XX	XX	XX	XX	XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	
0 ... 6	18	100	77
0 ... 10	30	200	78
0 ... 16	48	200	79
0 ... 25 [5]	75	300	80
0 ... 40 [5]	120	300	81
0 ... 60 [5]	180	400	82
0 ... 100 [5]	300	500	83
0 ... 160 [5]	480	750	85
0 ... 250	750	1000	74
0 ... 400	1000	2000	84
0 ... 600	1500	2500	86

Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 100	300	1450	G7
0 ... 150	450	2500	G8
0 ... 200	600	2500	GA
0 ... 250	750	2500	G9
0 ... 300 [5]	900	4000	HA
0 ... 400 [5]	1200	4000	H0
0 ... 1000 [5]	3000	5000	H2
0 ... 1500 [5]	4500	7000	H3
0 ... 2000 [5]	6000	10000	H5
0 ... 3000	9000	14500	G4
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, with integrated damping Ø 0.5 mm, Seal: DIN 3869 (accessories 61/63/83)	15
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 connector, industrial standard, contact distance 9.4 mm, Mat. PA	01
Male electrical connector M12x1, 4-pole, Mat. PA, IEC 61076-2-101	32
Male electrical connector M12x1, 5-pole, Mat. PA, IEC 61076-2-101	35
Cable Mat. Radox Tenuis, IP67/IP68, 4 x 0.5 mm²	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 plug 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 connector 01, industrial standard)	90
Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 Ground (only for output signal 19 and male electrical connector 01, industrial standard)	92
Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 Ground (only for output signal 19 and male electrical connector 32, M12x1, 4-pole)	E1
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

[1] Customized pressure ranges upon request
[2] For electrical connections 32 and 35
[3] Only with electrical connection 32
[4] Not for pressure connection 53
[5] 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 ... 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	

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 [4]		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 VDC (EN 50155) 1 or 2 PNP transistors: 24 VDC (EN 50155)
	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 ... +85°C
	Ambient temperature	EN 50155: OT6 (–40°C ... +85°C)
	Protection [1]	IP65, IP67, IP68
	Humidity	Max. 95 % relative
	Vibration	14.4 g RMS (10...500 Hz) (EN60068-2-64) 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	100 g / 6 ms Male electrical plug M12x1 (EN60068-2-27) [3]
EMC Protection	Emission	EN/IEC 61000-6-3 EN50121-3-2
	Immunity	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 connection

[2] Surge voltage on shield, shield connected on both sides

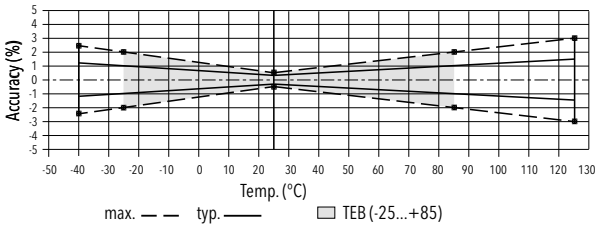
[3] For electrical connections 32 and 35

[4] Details see table "Details railway specifications"

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		

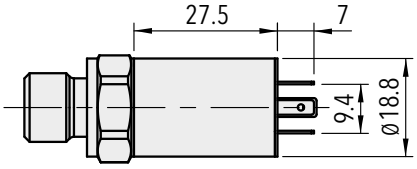
Switching output			
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	Long term stability 1 year	[% FS typ.]	± 0.1
Adjustment range of switchpoints	1 ... 99 % FS		
Distance switch point Switch point > reset point	≥ 1.0 % FS Switchpoint > reset point		
Switching resistance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

Measuring accuracy

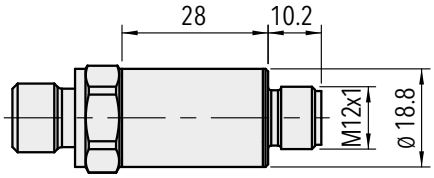


Details railways specifications			
Electrical data	Interruptions of the voltage supply	EN 50155	Class S1
	Switching between two supply voltages	EN 50155	Class C1
Environmental conditions	Cold	EN 60068-2-1	Ab: -40°C, 2 h (not in operation) Ae: -40°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclic	EN 60068-2-30	Db: 55°C, Variant 1, 2 cycles (2 x 24 h)
	Switch-on extended operating temperature	EN 50155	Class ST0
	Rapid temperature variations	EN 50155	Class H1
	Vibration and shock	EN 61373	Vibration: category 3 Shock: category 3
	Dielectrical strength	EN 50155	750 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 m^2

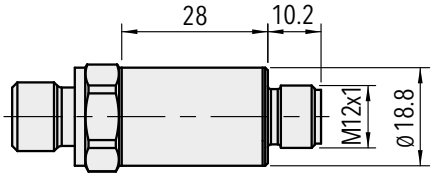
Dimensions



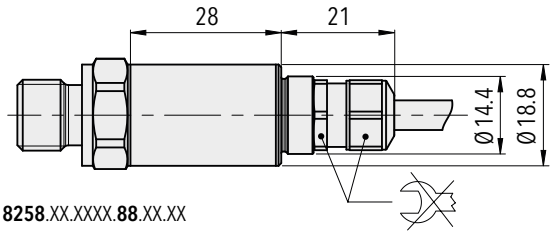
8258.XX.XXXX.**01**.XX.XX



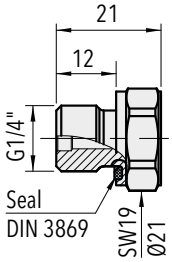
8258.XX.XXXX.**32**.XX.XX



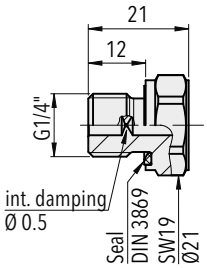
8258.XX.XXXX.**35**.XX.XX



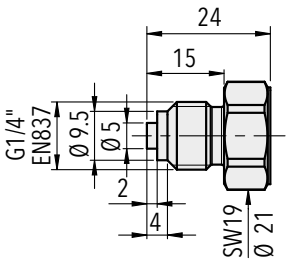
8258.XX.XXXX.**88**.XX.XX



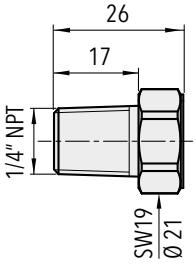
8258.XX.XX**17**.XX.XX.XX



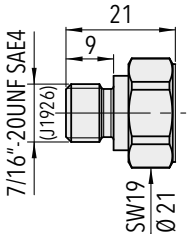
8258.XX.XX**15**.XX.XX.XX



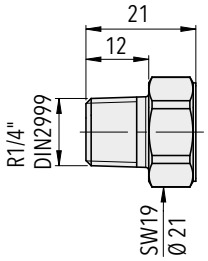
8258.XX.XX**53**.XX.XX.XX



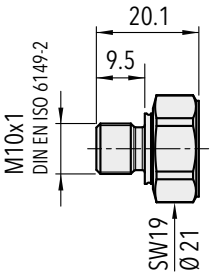
8258.XX.XX**30**.XX.XX.XX



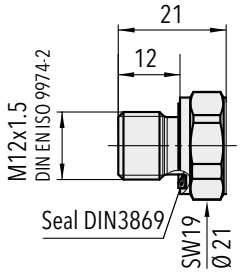
8258.XX.XX**42**.XX.XX.XX



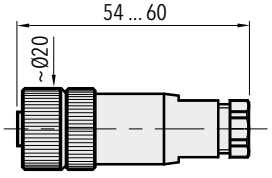
8258.XX.XX**20**.XX.XX.XX



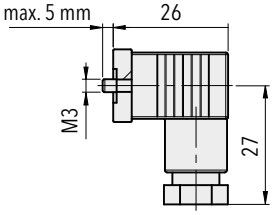
8258.XX.XX**32**.XX.XX.XX



8258.XX.XX**49**.XX.XX.XX

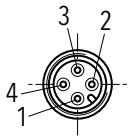
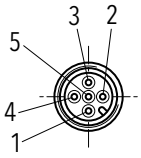
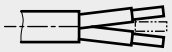
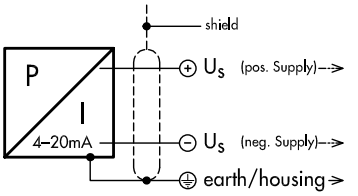
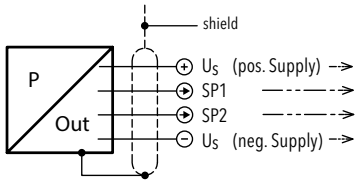


8258.XX.XXXX.XX.XX.**33**



8258.XX.XXXX.XX.XX.**34**

Electrical connection

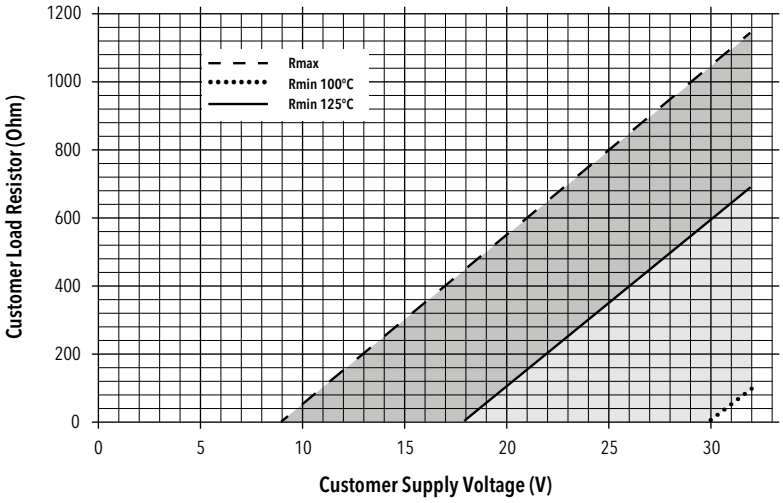
	Protection / electrical connection						
	IP65 [1)2)]			IP67 [1)2)]			IP67, IP68 [2)3)]
	Industrial standard Contact distance 9.4 mm			M12x1			Cable
				4-pole		5-pole	
	01			**32**		**35**	**88**
							
Output signal							
 **8258**.xx.xxxx.xx.**19**	2 1 4	**90** 2 4 3	**92** 1 2 4	1 3 4	**E1** 1 2 4	4 1 5	brown black yellow / green
 **8258**.xx.xxxx.xx.**PS/T1**				**PS** 1 4 2 3	**T1** 1 4 – 3		**PS** brown blue yellow / green black
							T1 brown blue – black

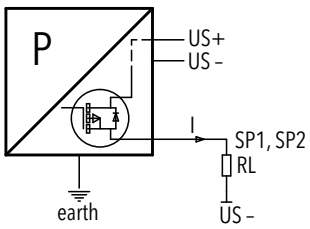
[1)] Provided female electrical plug is mounted according to instructions

[2)] Ventilation via male electric plug/cable end

[3)] IP68, 20 bar, 30 min.

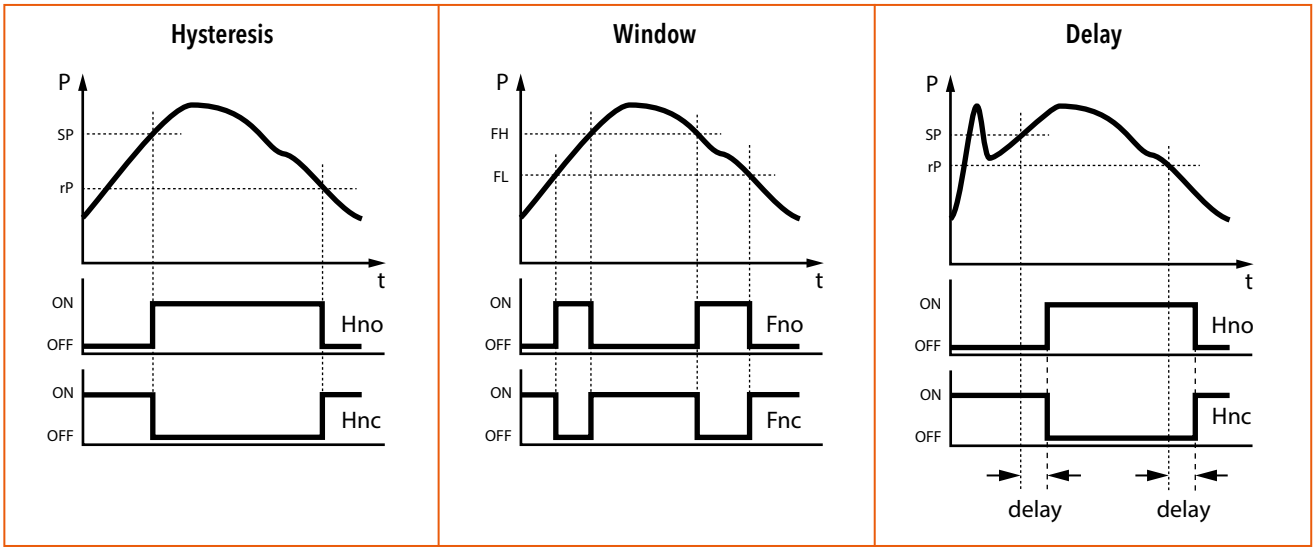
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%





Connection of loads to switching output

Functions switching output



Additional information		
Documents	Data sheet	www.trafag.com/H72307
	Instructions	www.trafag.com/H73303
	Flyer	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.	± 0.5 % FS typ. ± 0.3 % FS typ. ± 0.15 % FS typ. ± 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
NLH @ 25°C (BSL) typ.	± 0.3 % FS typ. ± 0.2 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.		

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]	1.2	25	68	0 ... 3 [2]	18	350	F8
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 [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 % [5]	25	Absolute pressure, accuracy: 0.5 % [4] [5]	45
Relative pressure, accuracy: 0.3 %	23	Absolute pressure, accuracy: 0.3 % [6]	43
Relative pressure, accuracy: 0.15 % [5]	21	Absolute pressure, accuracy: 0.15 % [4] [5]	41
Relative pressure, accuracy: 0.1 % [5]	24	Absolute pressure, accuracy: 0.1 % [4] [5]	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) [3]	42
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [3] [7]	61
M10x1 male, DIN EN ISO 6149-2 [3]	32

Electrical connection

Male electrical connector M12x1, 5-pol., 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

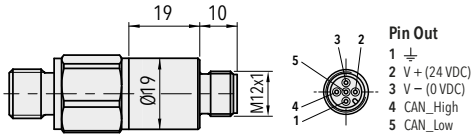
Accessories

Female electrical plug M12x1, 5-pole	33
Meets EN 50155 (railways)	11
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

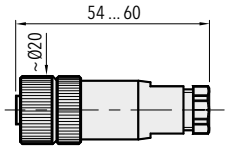
[1] Extended overpressure as well as customized pressure ranges upon request
[2] Only with pressure connection 17 (G1/4") or 30 (1/4"NPT)
[3] Only for relative pressure
[4] Max. allowable pressure range 40 bar/600 psi
[5] Only for pressure ranges ≥ 4 bar / 50 psi
[6] Only for pressure ranges ≥ 1 bar / 15 psi
[7] 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. [%]**
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

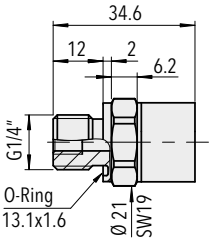


8270.XX.XXXX.**35**.XX.XX

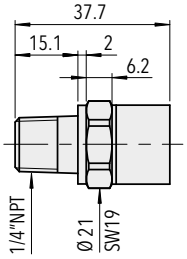


8270.XX.XXXX.XX.XX.**33**

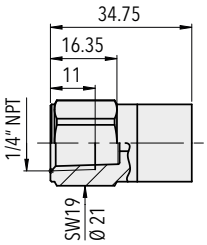
≤ 0 ... 2.5 bar



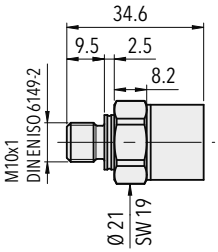
8270.XX.**2X17**.XX.XX.XX



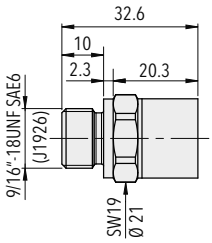
8270.XX.**2X30**.XX.XX.XX



8270.XX.**2X13**.XX.XX.XX

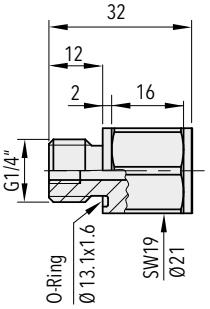


8270.XX.**2X32**.XX.XX.XX

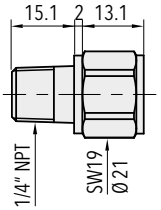


8270.XX.**2X61**.XX.XX.XX

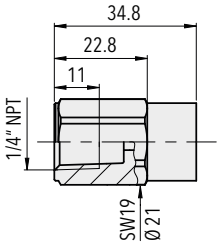
> 0 ... 2.5 bar



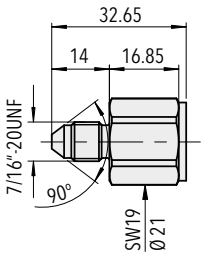
8270.XX.**2X17**.XX.XX.XX



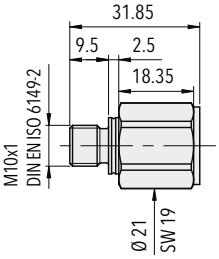
8270.XX.**2X30**.XX.XX.XX



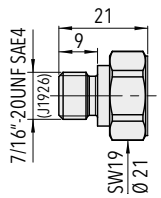
8270.XX.**2X13**.XX.XX.XX



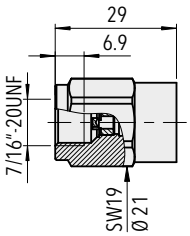
8270.XX.**2X18**.XX.XX.XX



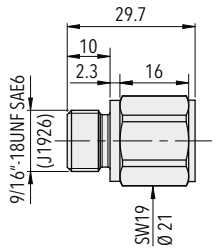
8270.XX.**2X32**.XX.XX.XX



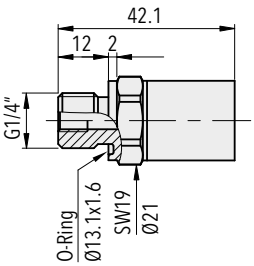
8270.XX.**2X42**.XX.XX.XX



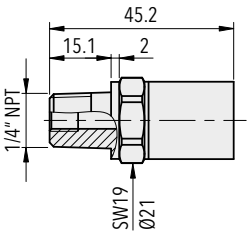
8270.XX.**2X24**.XX.XX.XX



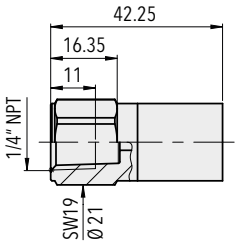
8270.XX.**2X61**.XX.XX.XX



8270.XX.**4X17**.XX.XX.XX



8270.XX.**4X30**.XX.XX.XX



8270.XX.**4X13**.XX.XX.XX

Specifications [2]		
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)
	Shock	100 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: 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

[2] For accessory code 11 see separate table

Accuracy

		Measuring accuracy 0.5 % Ordering No. 25/45	**Measuring accuracy 0.3 %** Ordering No. 23/43			**Measuring accuracy 0.15 %** Ordering No. 21/41	**Measuring accuracy 0.1 %** Ordering No. 24/44
	[bar]		**≥ 0.2 ≤ 0.6**	**> 0.6 < 2.0**	**≥ 2.0**		
TEB @ -25 ... +85°C	[% FS typ.]	± 2.0	± 2.0	± 1.5	± 1.0	± 0.2	± 0.1
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.8	± 0.6	± 0.3	± 0.15	± 0.1
NLH @ +25°C (BSL)	[% FS typ.]	± 0.3	± 0.2	± 0.2	± 0.2	± 0.15	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.02	± 0.02	± 0.01	± 0.002	± 0.002
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.3	± 0.2	± 0.1	± 0.1	± 0.1
Mounting dependency with 180° rotation (vibration and shock)	[% FS max.]	0.5 mbar		0.5 mbar		0.5 mbar	0.5 mbar
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	≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms
Sampling rate (fix)		1ms (1 kHz)		1ms (1 kHz)		1ms (1 kHz)	1ms (1 kHz)
Measuring filter (moving average)	[ms]	1 ... 65'000		1 ... 65'000		1 ... 65'000	1 ... 65'000
Signal of temperature sensor							
Total error @ -25 ... +85°C	[°C typ.]	not calibrated		± 2		± 1	± 1
Sampling rate (fix)		10x100 ms (1 Hz)		10x100 ms (1 Hz)		10x100 ms (1 Hz)	10x100 ms (1 Hz)
Measuring filter (moving average)	[s]	0.1 ... 6500		0.1 ... 6500		0.1 ... 6500	0.1 ... 6500

Railway specifications (type code 11)			
Electrical data	Output / supply voltage	EN50155	Bus protocol CANopen / 24 VDC
	Interruptions of the voltage supply	EN50155	Class S1
	Switching between two supply voltages	EN50155	Class C1
Environmental conditions	Media temperature	EN50155	OT6 (-40°C ... +85°C)
	Ambient temperature	EN50155	OT6 (-40°C ... +85°C)
	Startup at low temperature	EN50155	-40°C
	Dry heat	EN60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclic	EN60068-2-30	Db: 55°C, Variant 1, 2 cycles (2 x 24 h)
	Switch-on extended operating temperature	EN50155	Class ST0
	Rapid temperature variations	EN50155	Class H1
	Vibration and shock	EN61373	Vibration: category 3 Shock: category 3
	Dielectrical strength	EN50155	750 VDC
	Resistance of insulation	EN50155	> 100 MΩ, 500 VDC
	Behavior in case of fire	EN45545-2	Weight: < 10 g Surface: < 0.2 m^2
EMC Protection	Emission	EN50121-3-2	-
	Immunity	EN50121-3-2 [2)]	-

[2)] Surge voltage on shield, shield connected on both sides

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

CANopen Features

- CiA conformance tested
- All CiA bus speeds: 10kbit/s...1Mbit/s
- Autobaud
- Supports11/29 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 tresholds 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

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 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC	Ambient temperature	-40°C ... +85°C (Cable PVC 22: -5°C ... +60°C)
NLH @ 25°C (BSL) typ.	± 0.1 % FS typ.		

Subject to change

Ordering information/type code

8235 . XX XX XX XX XX XX

Measuring range [1)]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Code	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	Code
0 ... 1	6	12	**71**	0 ... 15	85	170	**G1**
0 ... 2.5	6	12	**75**	0 ... 30	85	170	**G5**
0 ... 4	8	12	**76**	0 ... 50	115	170	**G6**
0 ... 6	12	18	**77**	0 ... 100	170	260	**G7**
0 ... 10	20	30	**78**	0 ... 150	290	430	**G8**
0 ... 16	32	48	**79**	0 ... 250	450	690	**G9**
0 ... 25	50	75	**80**	0 ... 400	725	1080	**H0**
0 ... 40	80	120	**81**	0 ... 500	1100	1740	**H1**
0 ... 100	200	300	**83**	0 ... 1450	2900	4350	**H3**

Sensor

Relative pressure	**23**

Pressure connection

G1/2" male, flush membrane	**91**

Electrical connection

Male electrical connector EN 175301-803-A (DIN43650-A), Mat. PA	**05**
Male electrical connector M12x1, 5-pol., Mat. PA	**35**
Male electrical connector, industrial standard (contact distance 9.4 mm), Mat. PBT	**01**
Male electrical connector 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)	Code
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 ... 5 VDC	> 5.0 kΩ	< 10 mA	10 ... 30 VDC	**25**
1 ... 6 VDC	> 5.0 kΩ	< 10 mA	10 ... 30 VDC	**16**
0 ... 10 VDC	> 5.0 kΩ	< 10 mA	15 ... 30 VDC	**17**

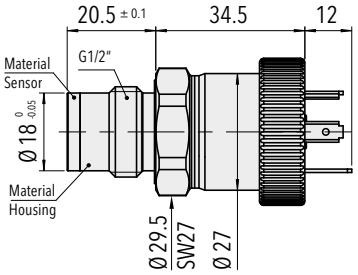
Accessories

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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**46**
Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**56**
Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2	**58**
Female electrical plug M12x1, 5-pole	**33**
Female electrical plug industrial standard	**34**
Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector 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 connector 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 connector 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 connector M12x1, 5-pol.) [2)]	**94**
Special electrical connection: Pin 1 + , Pin 3 - (only for male electrical connector Packard Metri Pack 3-poles) [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**

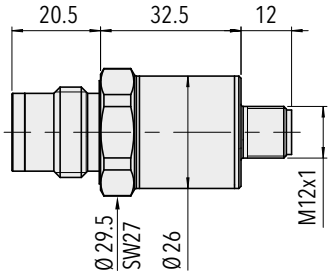
[1)] Extended overpressure as well as customized pressure ranges upon request
[2)] Details see electrical connection

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

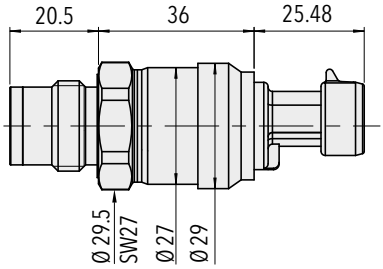
Dimensions



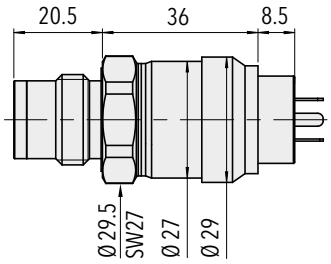
8235.XX.XX91.**05**.XX.XX



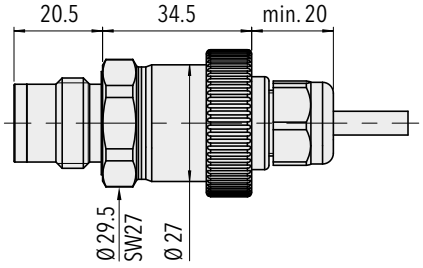
8235.XX.XX91.**35**.XX.XX



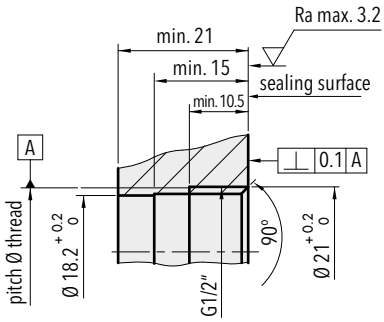
8235.XX.XX91.**51**.XX.XX



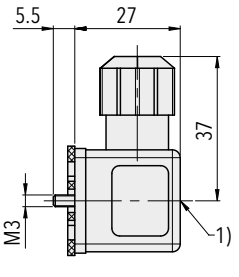
8235.XX.XX91.**01**.XX.XX



8235.XX.XX91.**22**.XX.XX
8235.XX.XX91.**68**.XX.XX

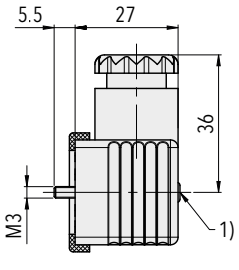


Mounting thread G1/2" DIN EN ISO 1179-1



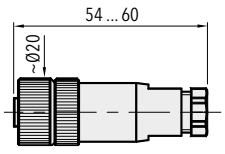
1) Tightening torque 50...60 Ncm

8235.XX.XXXX.XX.XX.**46/56**

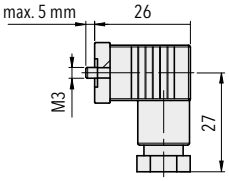


1) Tightening torque 50...60 Ncm

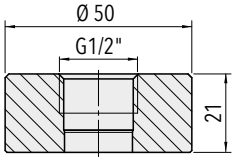
8235.XX.XXXX.XX.XX.**58**



8235.XX.XXXX.XX.XX.**33**



8235.XX.XXXX.XX.XX.**34**

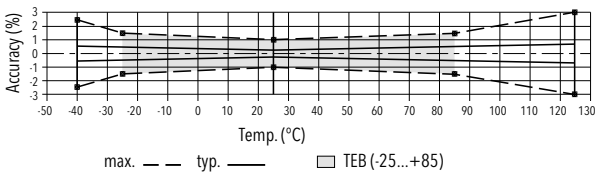


Welding flange for G1/2"
(1.4301)
Ordering No. C27804

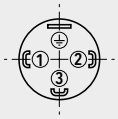
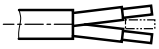
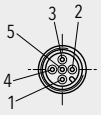
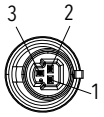
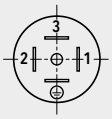
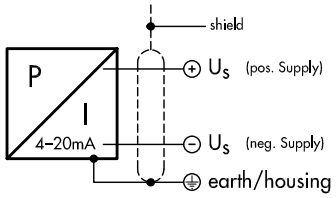
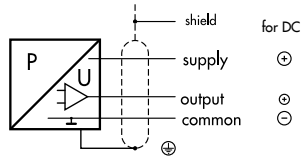
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 0.5 % FS typ.
	Accuracy @ 25°C typ.	± 0.4 % FS
	NLH @ 25°C (BSL) typ.	± 0.1 % FS typ.
	TC zero point and span typ.	± 0.005 % FS/K typ.
	Long term stability 1 year typ.	± 0.2 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC 0 ... 5 VDC: 24 (10 ... 30) VDC 1 ... 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*)		IP65	
		Industrial standard EN175301-803A **05** 		Cable **) **22/68** 	M12x1 5- pole **35** 		Packard Metri Pack 3- pole **51** 		Industrial standard EN175301-803A **01** 	
Output signal	 **8235**.xx.xxxx.xx.**19**	Standard	**92**		Standard	**94**		**99**		
		2	1	white	4	1	1	1	2	
		1	2	brown	1	3	2	3	1	
		⏚	⏚	⏚	5	5			⏚	
	 **8235**.xx.xxxx.xx.**14/16/17/25**	Standard	**98**	**97**				**99**		
		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 electrical plug 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	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	Ambient temperature	–40°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.	Approval / conformity	EN 50155 (Railway) EN 45545-2 (Fire protection)

Subject to change

Ordering information/type code

8283 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 2.5	7.5	50	**75**	0 ... 30	90	700	**G5**
0 ... 4	12	60	**76**	0 ... 50	150	850	**G6**
0 ... 6	18	100	**77**	0 ... 100	300	1450	**G7**
0 ... 10	30	200	**78**	0 ... 150	450	2500	**G8**
0 ... 16	48	200	**79**	0 ... 200	600	2500	**GA**
0 ... 25	75	300	**80**	0 ... 250	750	2500	**G9**
0 ... 40	120	300	**81**	0 ... 300	900	4000	**HA**
0 ... 60	180	400	**82**	0 ... 400	1200	4000	**H0**
0 ... 100	300	500	**83**	0 ... 500	1500	4000	**H1**
0 ... 160	480	750	**85**	0 ... 1000	3000	5000	**H2**
0 ... 250	750	1000	**74**	0 ... 1500	4500	7000	**H3**
0 ... 400	1000	2000	**84**	0 ... 2000	6000	10000	**H5**
0 ... 600	1500	2500	**86**	0 ... 3000	9000	14500	**G4**
				0 ... 5000	12500	21750	**H4**
				0 ... 7500	18750	29000	**H6**

Sensor

Relative pressure, accuracy: 0.5 %; Material pressure connection and housing: 1.4542 (AISI630)	**25**
Relative pressure, accuracy: 0.3 %; Material pressure connection and housing: 1.4542 (AISI630)	**23**

Pressure connection

G1/4" female [2]	**10**	1/4"- 18 NPT female [2]	**13**
G1/4" male, Seal: DIN 3869 (accessories 61/63/83)	**17**	1/2" NPT male [2]	**51**
G1/4" male, with integrated damping Ø 0.5 mm, Seal: DIN 3869 (accessories 61/63/83)	**15**	R1/4" male, DIN3858 [2]	**19**
G1/4" male (Manometer) EN 837 [2]	**53**	M14x1.5 male, DIN6149-2 [2]	**31**
G1/2" male (Manometer) EN 837 [2]	**11**	7/16"-20UNF male, DIN3866 [2] [4]	**18**
1/4" NPT male	**30**	7/16"-20UNF male SAE (J1926-3) [2]	**42**
		7/16"-20UNF female, SAE J512 with valve opener [4]	**24**

Electrical connection

Male electrical connector EN 175301-803-A (DIN43650-A), Mat. PA	**05**
Male electrical connector M12x1, 5-pole, Mat. PBT	**35**
Male electrical connector 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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**46**
Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**56**
Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2	**58**
Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector 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 request
[2] Upon request
[3] Only with pressure connection 17 (G1/4")
[4] Max. allowable pressure range 60 bar at 180 bar overpressure
[5] Not for pressure connections 10, 11, 13, 18, 24
[6] Cable length see accessories (max. length 50 m, in 5-meter sections)
[7] IP68, max. 3 m, Media +10°C … +35°C
[8] Cable length max. 3 m, for pressure ranges ≤ 16 bar
[9] Not according to standard EN 45545-2
[10] The order quantity must be a multiple of 50, only for electrical connections 05 and 35
[11] 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 connector	See ordering information
	Weight	appr. 80 ... 110 g
	Mounting torque	25 Nm

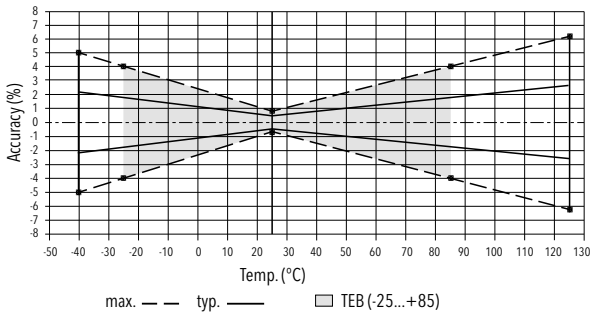
[1] See electrical connection

[2] Surge voltage on shield, shield connected on both sides

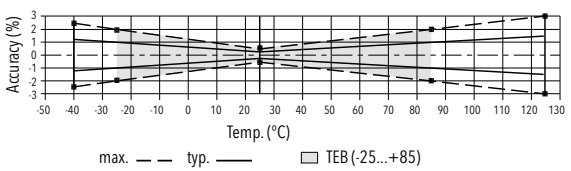
Accuracy

		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

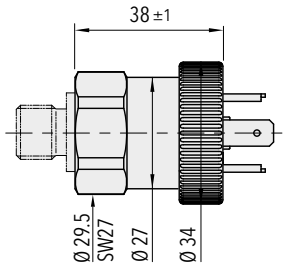
Measuring accuracy 0.5 %



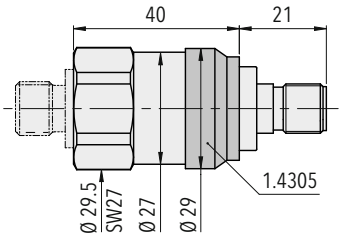
Measuring accuracy 0.3 %



Dimensions



8283.XX.XXXX.**05**.XX.XX



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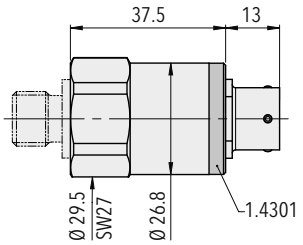

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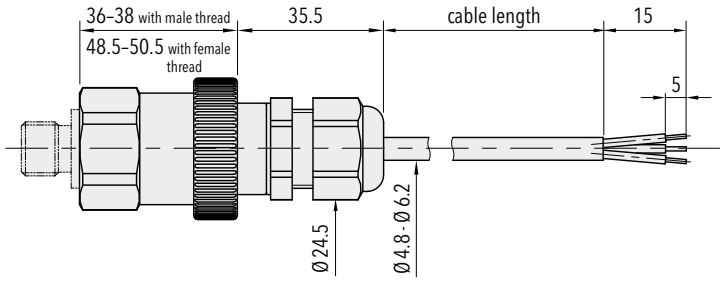
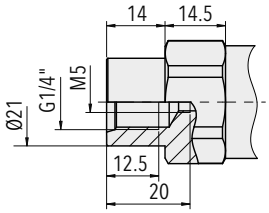
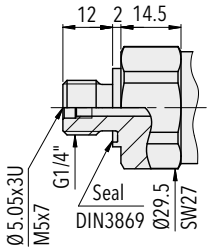


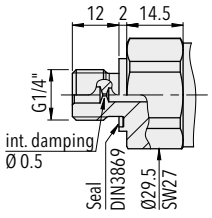
8283.XX.XXXX.**24/22/08**.XX.XX



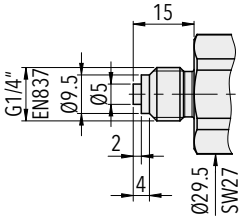
8283.XX.XX**10**.XX.XX.XX



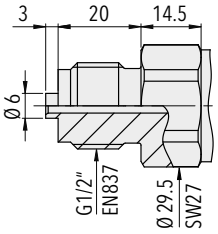
8283.XX.XX**17**.XX.XX.XX



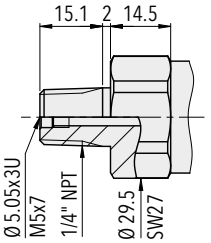
8283.XX.XX**15**.XX.XX.XX



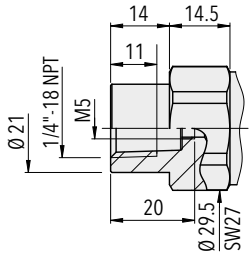
8283.XX.XX**53**.XX.XX.XX



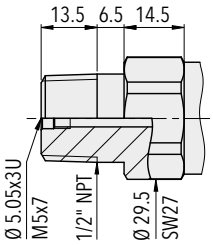
8283.XX.XX**11**.XX.XX.XX



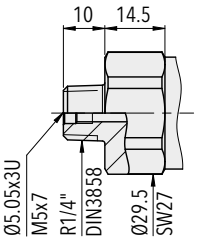
8283.XX.XX**30**.XX.XX.XX



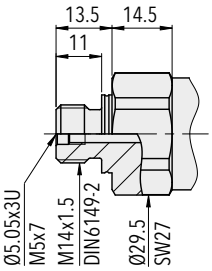
8283.XX.XX**13**.XX.XX.XX



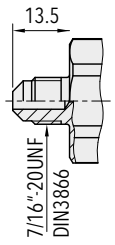
8283.XX.XX**51**.XX.XX.XX



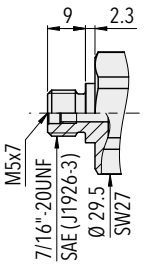
8283.XX.XX**19**.XX.XX.XX



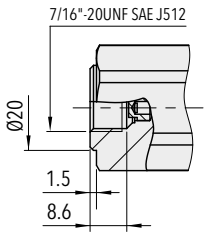
8283.XX.XX**31**.XX.XX.XX



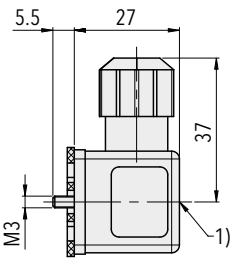
8283.XX.XX**18**.XX.XX.XX



8283.XX.XX**42**.XX.XX.XX

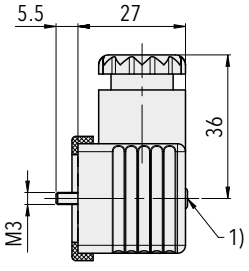


8283.XX.XX**24**.XX.XX.XX



1) Tightening torque 50...60 Ncm

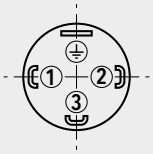
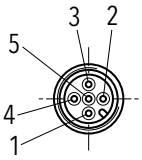
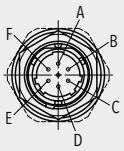
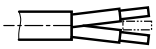
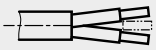
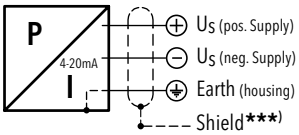
8283.XX.XXXX.XX.XX.**46/56**



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	M12x1 5-pole	MIL-C 26482	Cable**)/****)	Cable **)/****)
		05	**35**	**02**	**24/22**	**08**
						
Output signal	 **8283**.xx.xxxx.xx.**19**	Standard	**92**			
		2	1	4	A	white	red
		1	2	1	B	brown	black
		⏚	⏚	5	E	yellow	green

*) Provided female electrical plug 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, cyclic	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 m^2
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 connector 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 ... 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 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
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.		

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]	
0 ... 0.2 [7]	1.2	25	**68**
0 ... 0.4 [7]	1.2	25	**69**
0 ... 0.6 [7]	1.2	25	**70**
0 ... 1.0 [7]	2	25	**71**
0 ... 1.6 [7]	3.2	50	**73**
0 ... 2.5	7.5	50	**75**
0 ... 4	12	60	**76**
0 ... 6	18	100	**77**
0 ... 10	30	200	**78**
0 ... 16	48	200	**79**
0 ... 25	75	300	**80**
0 ... 40	120	300	**81**
0 ... 60	180	400	**82**
0 ... 100	300	500	**83**
0 ... 160	480	750	**85**
0 ... 250	750	1000	**74**
0 ... 400	1000	2000	**84**
0 ... 600	1500	2500	**86**
Option 5P:	**Fivefold overpressure**		
0 ... 2.5	12.5	60	**55**
0 ... 4	20	100	**56**
0 ... 6	30	200	**57**
0 ... 10	50	200	**58**
0 ... 16	80	300	**59**
0 ... 25	125	300	**60**
0 ... 40	200	400	**61**
0 ... 60	300	500	**62**
0 ... 100	500	750	**63**
0 ... 160	800	1000	**65**

Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 3 [7]	18	350	**F8**
0 ... 5 [7]	18	350	**F9**
0 ... 10 [7]	20	350	**G0**
0 ... 15 [7]	30	350	**G1**
0 ... 25 [7]	50	700	**G3**
0 ... 30	90	700	**G5**
0 ... 50	150	850	**G6**
0 ... 100	300	1450	**G7**
0 ... 150	450	2500	**G8**
0 ... 200	600	2500	**GA**
0 ... 250	750	2500	**G9**
0 ... 300	900	4000	**HA**
0 ... 400	1200	4000	**H0**
0 ... 500	1500	4000	**H1**
0 ... 1000	3000	5000	**H2**
0 ... 1500	4500	7000	**H3**
0 ... 2000	6000	10000	**H5**
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 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	**10**
G1/4" male, Seal: DIN 3869 (accessories 61/63/83)	**17**
G1/4" male, with integrated damping Ø 0.5 mm, Seal: DIN 3869 (accessories 61/63/83) [14]	**15**
G1/4" male (Manometer) EN 837 [2]	**53**
G1/2" male (Manometer) EN 837	**11**
1/4" NPT male	**30**
1/4"- 18 NPT female [2]	**13**
1/2" NPT male [2]	**51**
R1/4" male, DIN3858 [2]	**19**
M14x1.5 male DIN EN ISO 6149-2, seal: accessory 61 [2]	**31**
7/16"-20UNF male, DIN3866 [2] [6]	**18**
7/16"-20UNF male, SAE4 (J1926), seal: accessory 61 [2]	**42**
7/16"-20UNF female, SAE J512 with valve opener [6]	**24**
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [2]	**61**

		8287 . XX	XX	XX	XX	XX	XX
Electrical connection	Male electrical connector EN 175301-803-A (DIN43650-A), Mat. PA				05		
	Male electrical connector M12x1, 5-pole, Mat. PBT				35		
	Male electrical connector Packard Metri Pack, Mat. PBT				51		
	Male electrical connector, industrial standard (contact distance 9.4 mm), Mat. PBT				01		
	Male electrical connector MIL-C 26482, 6-pole, metal [12]				02		
	Male electrical connector: DIN72585 Code 1, Mat.: PBT (Contacts Mat.: Sn) [13]				25		
	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		

	Signal output	Load resistance	I (supply)	U (supply)			
Output signal	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		
	0.5 ... 4.5 VDC ratiometric	> 5.0 kΩ	< 10 mA	5 (4.75 ... 5.25) VDC	23		

Accessories	Seal FPM, -18°C ... +125°C				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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0				46		
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0				56		
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2				58		
	Female electrical plug M12x1, 5-pole				33		
	Female electrical plug industrial standard				34		
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector 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 connector 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 connector EN175301-803-A / DIN43650-A)				97		
	Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 GR (only for output 4...20mA and male electrical connector M12x1, 5-pol.)				94		
	Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical connector 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 connector 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 request
[2] Upon request
[3] Only with pressure connection 17 (G1/4")
[4] Not for pressure connections 10, 11, 13, 18, 24
[5] Only for pressure ranges ≥ 10 bar
[6] Max. allowable pressure range 60 bar at 180 bar overpressure
[7] Only for pressure connections 17, 31 (upon request: 30, 42, 61)
[8] Cable length see accessories (max. length 50 m, in 5-meter sections)
[9] IP68, max. 3 m, Media +10°C … +35°C
[10] Cable length max. 3 m, for pressure ranges ≤ 16 bar
[11] The order quantity must be a multiple of 50, only for electrical connections 05 and 35
[12] Only for sensors 23 and 25, only for pressure connections 13, 17, 19, 53, only for output signal 4 ... 20 mA (code 19)
[13] Only for sensors 23 and 25, only for pressure connections 13, 17, 19, 53
[14] Only for sensors 23 and 25

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

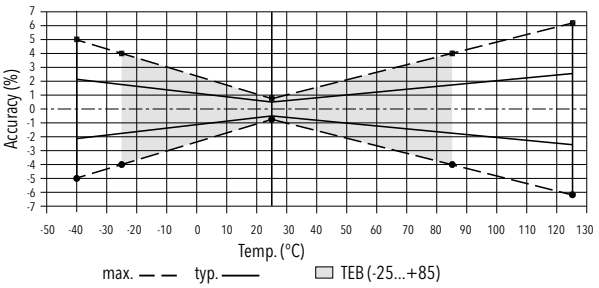
Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 0 ... 5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 10 VDC: 24 (15...32) VDC 0.5 ... 4.5 VDC ratiometric 10 ... 90 % U_{supply}: 5 ± 0.25 VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
	Inverse-polarity protection, short-circuit strenght @ 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

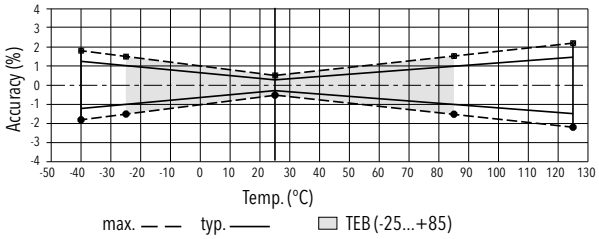
Accuracy

		≥ 0.2 bar ≤ 0.6 bar	> 0.6 bar < 2.0 bar	≥ 2.0 bar
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				

Measuring accuracy 0.5 %



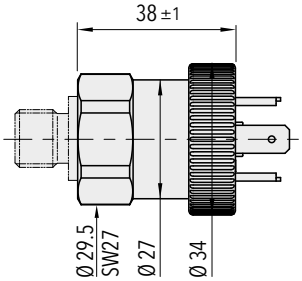
Measuring accuracy 0.3 %



Additional information

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

Dimensions



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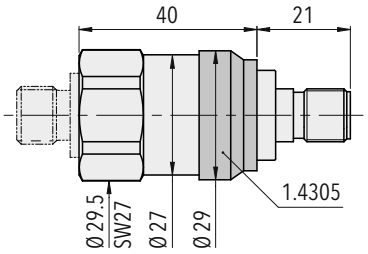

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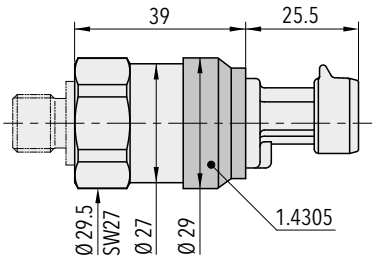

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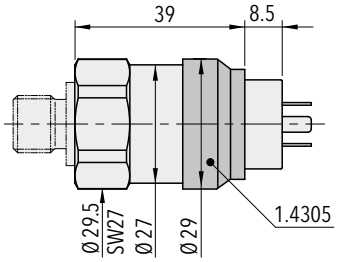

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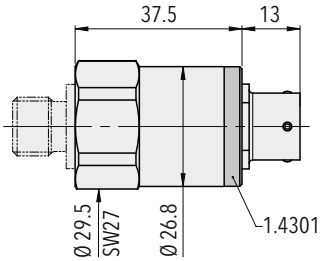

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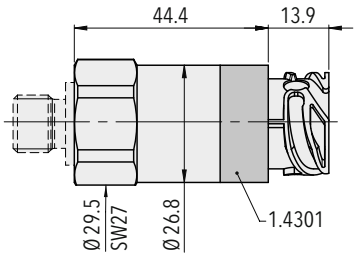

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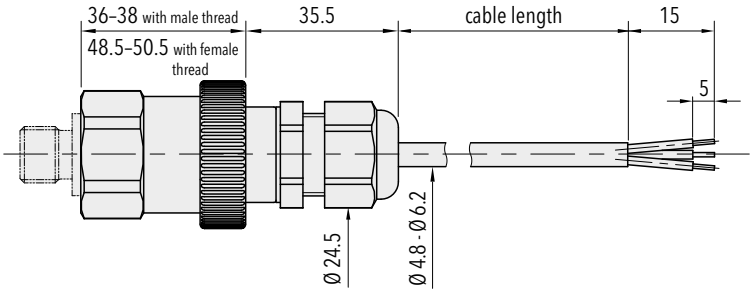

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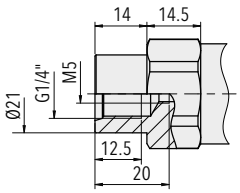
Dimensions



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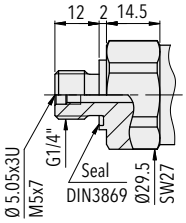

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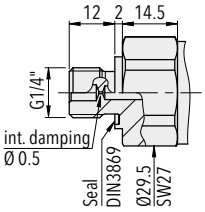

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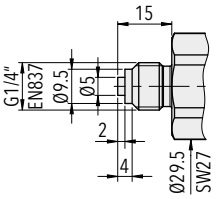

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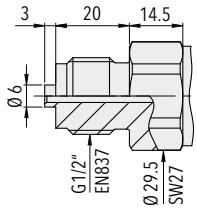

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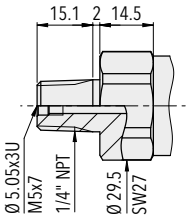

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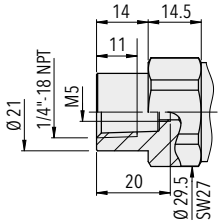

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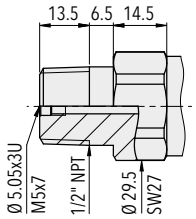

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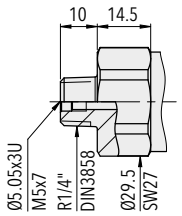

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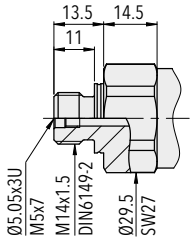
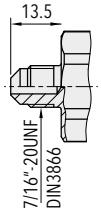


8287.XX.XX**31**.XX.XX.XX



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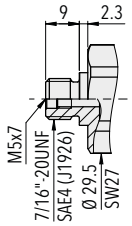

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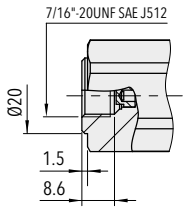

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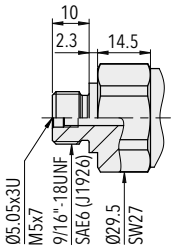

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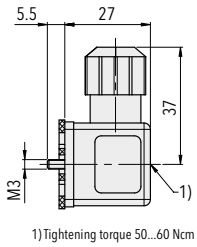

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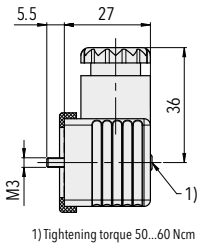

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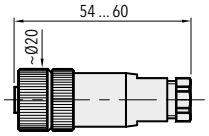

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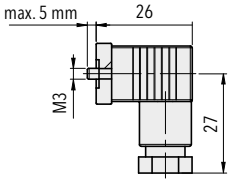
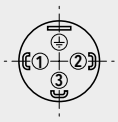
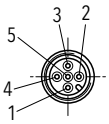
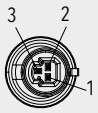
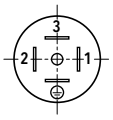
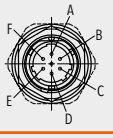
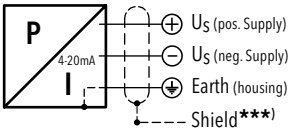
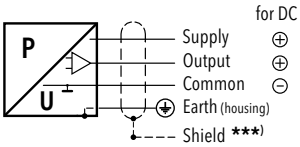


8287.XX.XXXX.XX.XX.**34**

Electrical connection

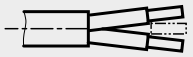
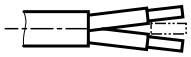
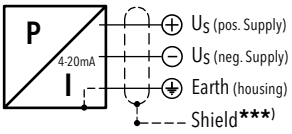
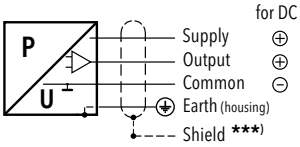
		Protection / electrical connection					
		IP65*) **)	IP67*) **)	IP67*) **)	IP65**)	IP67*) **)	IP69K*)
		Industrial standard EN175301-803A	M12x1 5-pole	Packard Metri Pack 3-pole	Industrial standard Contact distance 9.4 mm	MIL-C 26482	DIN 72585**) Code 1
		05	**35**	**51**	**01**	**02**	**25** [1]
							
Output signal	 **8287**.xx.xxxx.xx.**19**	Standard	**92**		**94**		**E4**			
		2	1	4	1	1	1	2	A	
		1	2	1	3	2	3	1	B	
		⏚	⏚	5	5			⏚	E	
Output signal	 **8287**.xx.xxxx.xx.**14/16/17/23**	Standard	**98**	**97**			**99**			
		2	3	1	2		1	1		1
		3	1	3	4		3	2	3	2		2
		1	2	2	3		2	3		4
		⏚	⏚	⏚	5			⏚		3

[1] Only for output signal 23

*) Provided female electrical plug is mounted according to instructions

**) Ventilation via male electric plug/cable end

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

		Protection / electrical connection	
		IP68 max. 3 m	IP68 max. 3 m
		Cable**)	Cable**)
		24/22	**08**
			
Output signal	 **8287**.xx.xxxx.xx.**19**	white	red
		brown	black
		yellow	green
Output signal	 **8287**.xx.xxxx.xx.**14/16/17/23**	white	red
		green	white
		brown	black
		yellow	green

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	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 ... 10 VDC	Ambient temperature	–40°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	Approval / conformity	DNV-GL EU RO Mutual Recognition Type Approval Certificate

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**	
G1/2" male (Manometer) EN 837 [3]	**11**	
1/4" NPT male [3]	**30**	
1/2" NPT male [3]	**51**	
R1/4" male, DIN3858 [3]	**19**	
M14x1.5 male, DIN6149-2 [3]	**31**	
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [3]	**61**	

Electrical connection

Male electrical connector 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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**46**
Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**56**
Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2	**58**
Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector 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 connector 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 connector EN175301-803-A / DIN43650-A)	**97**
Multiple packaging [5]	**VM**

[1] Customized pressure ranges upon request
[2] Only for pressure ranges ≥ 0 … 10 bar
[3] Upon request
[4] Not for pressure connection 11
[5] 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

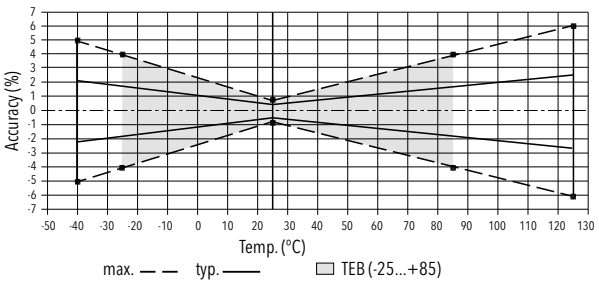
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0 ... 10 VDC 24 (15 ... 32 VDC)
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4...20 mA: to U_s = 32 VDC 0...10 VDC: to U_s = 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

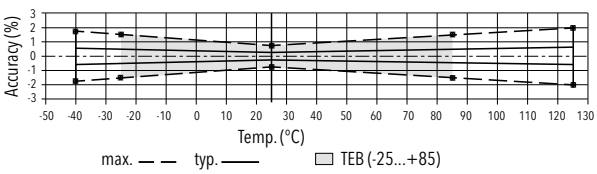
Accuracy

		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

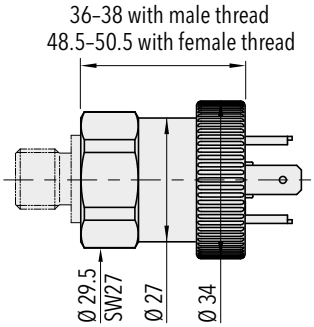
Class 0.5 %



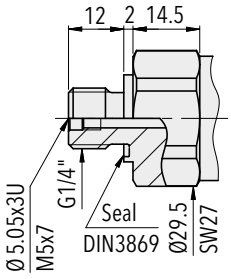
Class 0.3 %



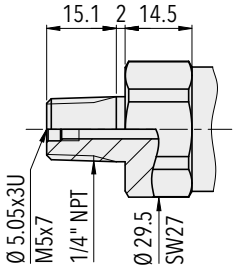
Dimensions



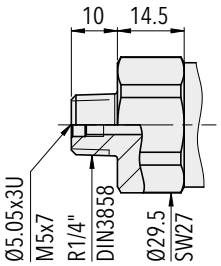
8288.XX.XXXX.**05**.XX.XX



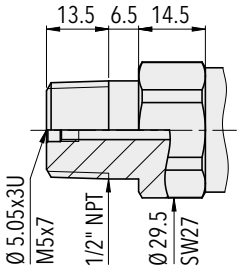
8288.XX.XX**17**.XX.XX.XX



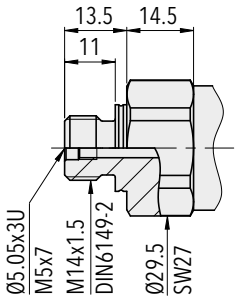
8288.XX.XX**30**.XX.XX.XX



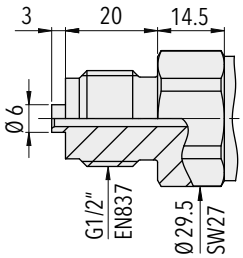
8288.XX.XX**19**.XX.XX.XX



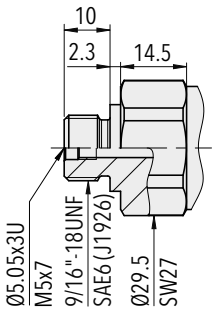
8288.XX.XX**51**.XX.XX.XX



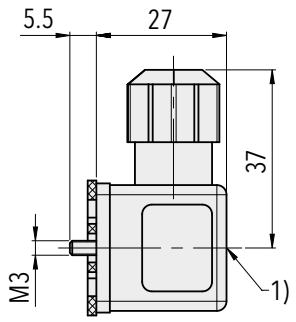
8288.XX.XX**31**.XX.XX.XX



8288.XX.XX**11**.XX.XX.XX

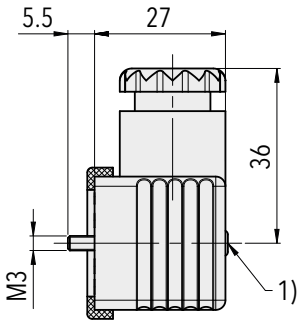


8288.XX.XX**61**.XX.XX.XX



1) Tightening torque 50...60 Ncm

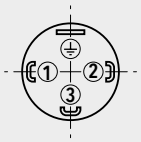
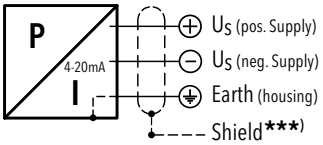
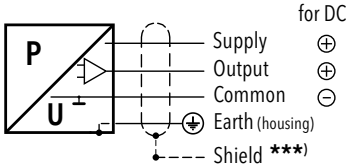
8288.XX.XXXX.XX.XX.**46/56**



1) Tightening torque 50...60 Ncm

8288.XX.XXXX.XX.XX.**58**

Electrical connection

		Protection / electrical connection		
		IP65, IP67*)		
		Industrial standard EN175301-803A **) **05** 		
Output signal	 **8288**.xx.xxxx.xx.**19**	Standard 2 1 ⏚	**92** 1 2 ⏚	
	 **8288**.xx.xxxx.xx.**17**	Standard 2 3 1 ⏚	**98** 3 1 2 ⏚	**97** 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	Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 600 bar	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA	Ambient temperature	-40°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	Approval / conformity	EN 50155 (Railways)

Subject to change

Ordering information/type code

				8293 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**						
	0 ... 2.5	5	100	**75**					
	0 ... 4	8	100	**76**					
	0 ... 6	12	100	**77**					
	0 ... 10	20	200	**78**					
	0 ... 16	32	200	**79**					
	0 ... 25	50	300	**80**					
	0 ... 40	80	300	**81**					
	0 ... 60	120	500	**82**					
	0 ... 100	200	500	**83**					
	0 ... 160	320	1000	**85**					
	0 ... 250	500	1000	**74**					
	0 ... 400	800	1500	**84**					
	0 ... 600	1000	2000	**86**					
Sensor	Relative pressure, accuracy: 0.3 %				**23**				
	Relative pressure, accuracy: 0.5 %				**25**				
Pressure connection	G1/4" male (Seal)					**17**			
	R1/4" male [2]					**19**			
	1/4" NPT male [3]					**30**			
	1/2" NPT male [3]					**51**			
Electrical connection	Male electrical connector EN 175301-803-A (DIN43650-A), Mat. PA						**04**		
	Male electrical connector EN 175301-803-A, Mat. PA, Extended vibration resistance						**05**		
	Male electrical connector MIL-C 26482, 6-pole, metal [4]						**02**		
Output signal	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**					
	4... 20 mA	(Usupply-9 V) / 20 mA		9 ... 32 VDC				**19**	
Accessories	Pressure peak damping element ø 1.0 mm								**40**
	Pressure peak damping element ø 0.3 mm								**43**
	Pressure peak damping element ø 0.5 mm								**45**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0								**46**
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0								**56**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2								**58**
	Female electrical plug MIL-C 26482, 6-pole, metal								**32**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector EN175301-803-A / DIN43650-A)								**92**

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

Specifications

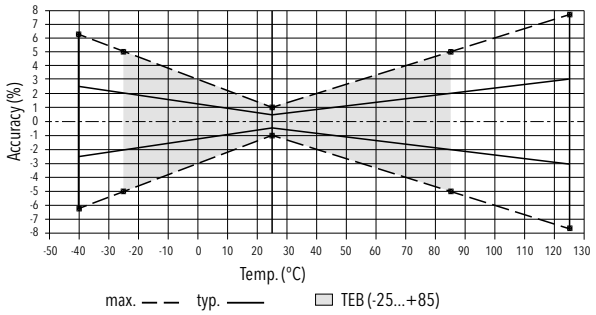
Electrical Data	Dielectric strength	500 VAC, 50 Hz
	Resistance of insulation	> 10 MΩ, 500 VDC
	Output / supply voltage	4...20 mA: 24 (9...32) VDC
	Rise time	Typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection [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

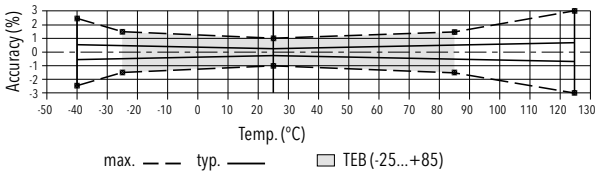
Accuracy

		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

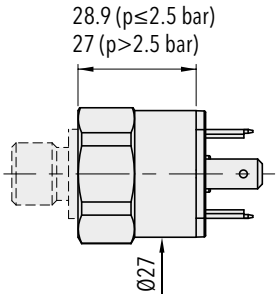
Measuring accuracy 0.5 %



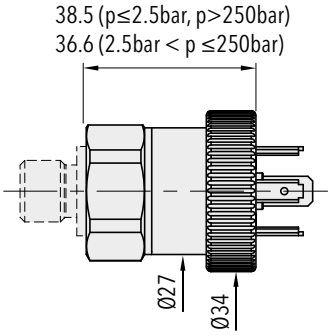
Measuring accuracy 0.3 %



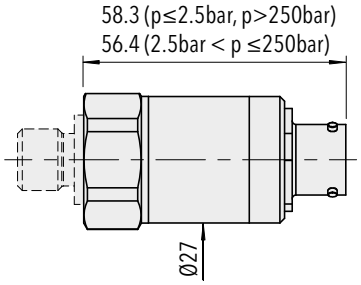
Dimensions



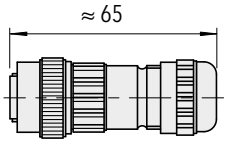
8293.XX.XXXX.**04**.XX.XX



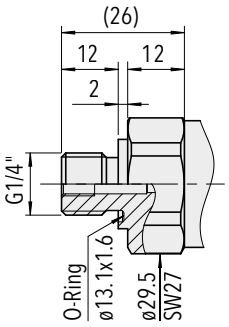
8293.XX.XXXX.**05**.XX.XX



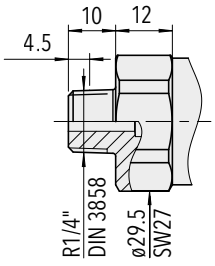
8293.XX.XXXX.**02**.XX.XX



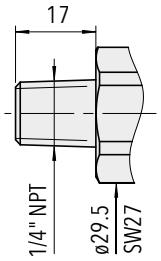
8293.XX.XXXX.02.XX.**32**



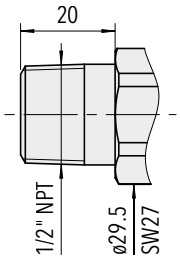
8293.XX.XX**17**.XX.XX



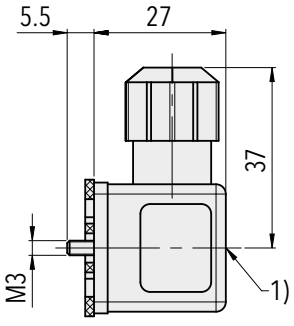
8293.XX.XX**19**.XX.XX



8293.XX.XX**30**.XX.XX

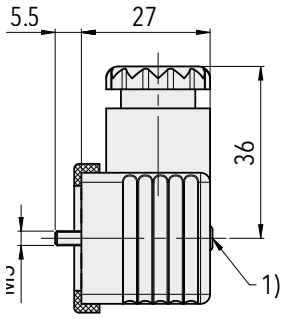


8293.XX.XX**51**.XX.XX



1) Tightening torque 50...60 Ncm

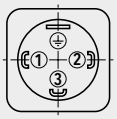
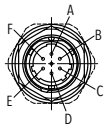
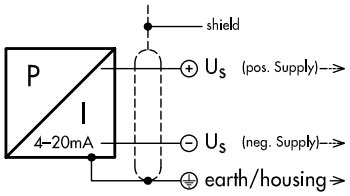
8293.XX.XXXX.XX.XX.**46/56**



1) Tightening torque 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  **8293**.xx.xxxx.xx.**19**	Standard	with accessory **92**	
	2	1	A
	1	2	B
	⏚	⏚	E

*) 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	Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 2500 bar	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	Ambient temperature	-40°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	Approval / conformity	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS

Subject to change

Ordering information/type code

				8298 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**						
	0 ... 2.5	5	100	**75**					
	0 ... 4	8	100	**76**					
	0 ... 6	12	100	**77**					
	0 ... 10	20	200	**78**					
	0 ... 16	32	200	**79**					
	0 ... 25	50	300	**80**					
	0 ... 40	80	300	**81**					
	0 ... 60	120	500	**82**					
	0 ... 100	200	500	**83**					
	0 ... 160	320	1000	**85**					
	0 ... 250	500	1000	**74**					
	0 ... 400	800	1500	**84**					
	0 ... 600	1000	2000	**86**					
	0 ... 1600	3000	4000	**89**					
	0 ... 2000	3000	4000	**90**					
	0 ... 2500 [10]	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) EN 837 [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 connector EN 175301-803-A (DIN43650-A), Mat. PA, normal vibration resistance ≤ 600 bar						**04**		
	Male electrical connector EN 175301-803-A (DIN43650-A), Mat. PA, extended vibration resistance						**05**		
	Male electrical connector: DIN72585 Code 1, Mat.: PBT (Contacts Mat.: Sn)						**25**		
	Male electrical connector MIL-C 26482, 6-pole, metal [8]						**02**		
	Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm² [6]						**78**		
Output signal	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**					
	4 ... 20 mA	(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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0								**46**
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0								**56**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2 [9]								**58**
	Female electrical plug MIL-C 26482, 6-pole, metal								**32**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector 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 request
[2] For Ranges ≤ 600 bar
[3] For ranges > 600 bar
[4] Only with electrical connection 04
[5] Upon request
[6] Cable length see accessories
[7] Only with electrical connections 25 and 78
[8] For pressure ranges < 40 bar upon request
[9] Without ship approval DNV-GL
[10] Without ship approvals

Specifications

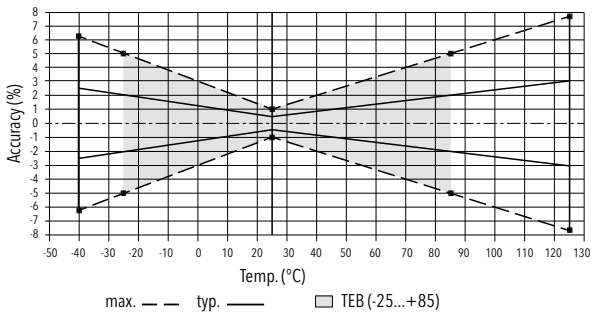
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0.5 ... 4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection [1)]	IP65, IP67, IP69K
	Humidity	Max. 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

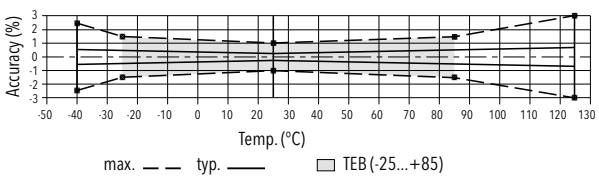
Accuracy

		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

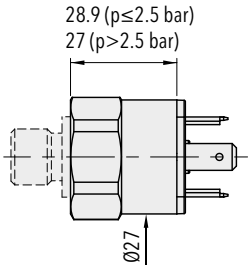
Measuring accuracy 0.5 %



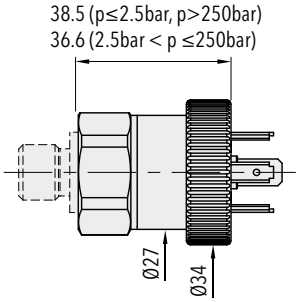
Measuring accuracy 0.3 %



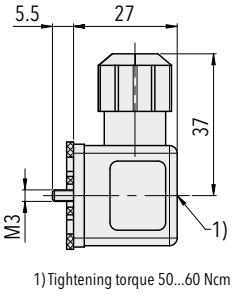
Dimensions



8298.XX.XXXX.**04**.XX.XX

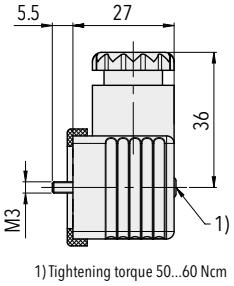


8298.XX.XXXX.**05**.XX.XX



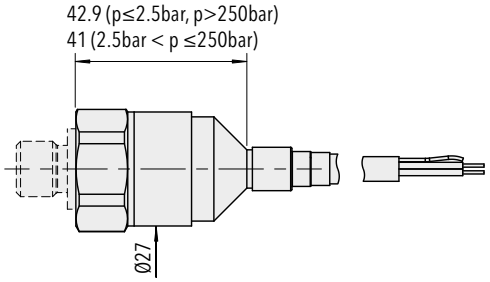
1) Tightening torque 50...60 Ncm

8298.XX.XXXX.XX.XX.**46/56**

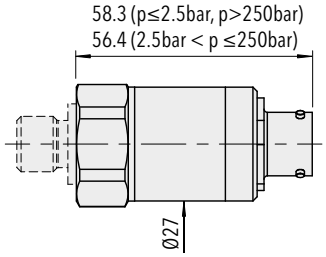


1) Tightening torque 50...60 Ncm

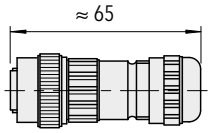
8298.XX.XXXX.XX.XX.**58**



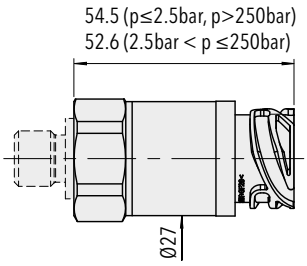
8298.XX.XXXX.**78**.XX.XX



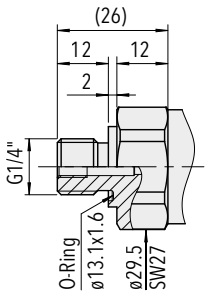
8298.XX.XXXX.**02**.XX.XX



8298.XX.XXXX.02.XX.**32**

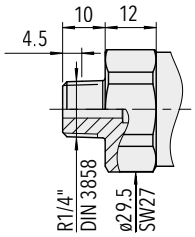


8298.XX.XXXX.**25**.XX.XX



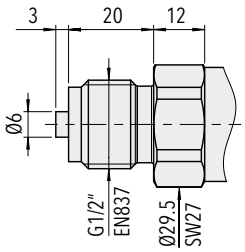
8298.XX.XX**17**.XX.XX.XX

Pressure ranges: ≤ 600 bar



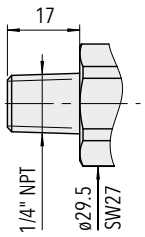
8298.XX.XX**19**.XX.XX.XX

Pressure ranges: ≤ 600 bar

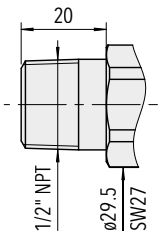


8298.XX.XX**11**.XX.XX.XX

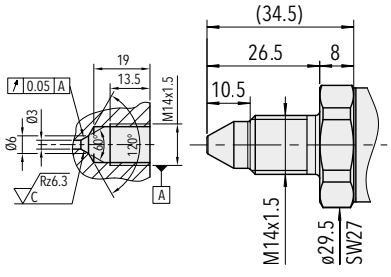
Pressure ranges: ≤ 600 bar



8298.XX.XX**30**.XX.XX.XX

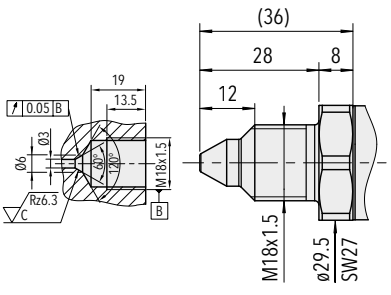


8298.XX.XX**51**.XX.XX.XX



8298.XX.XX**28**.XX.XX.XX

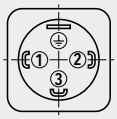
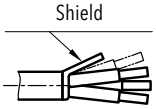
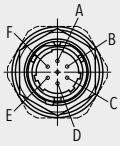
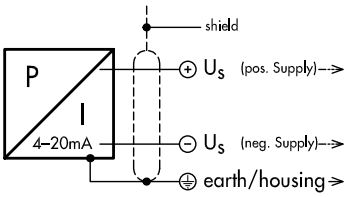
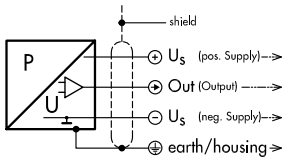
Pressure ranges: ≤ 2500 bar



8298.XX.XX**29**.XX.XX.XX

Pressure ranges: ≤ 2500 bar

Electrical connection

		Protection / electrical connection				
		IP65*)		IP69K	IP67*)	IP69K*)
		Industrial standard EN175301-803A **04/05** 		Cable **) **78** 	MIL-C 26482 **02** 	DIN 72585**) Code 1 **25** 
Output signal	 **8298**.xx.xxxx.xx.**19**	Standard	with accessory **92**			
		2	1	brown	A	1
		1	2	black	B	4
		⏚	⏚	yellow / green	E	3
	 **8298**.xx.xxxx.xx.**23**					
				brown		1
				blue		2
				black		4
				yellow / green		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	XX
Custom build code	Relative pressure	**8842**						
	Absolute pressure	**8843**						

Measuring range [1]

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: ± 0.5 % FS) [2]		**P5**				
	Type 02 (Accuracy NLH: ± 0.25 % FS) [2]		**P2**				
	Type 01 (Accuracy NLH: ± 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	Cable PUR: length ... (mm) IP67				**22**		
	Male electrical connector: DIN43650-A, Mat.: PA, IP65				**04**		
	Male electrical connector: Binder 723, 5-pole (Mat.: Zn), IP67				**14**		
	Male electrical connector: 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 plug EN 175301-803-A (DIN43650-A)						**58**
	Female electrical plug: Binder 723						**37**
	Female electrical plug: MIL-C 26482, 6-pole						**32**
	Special oil filling: Aseol						**94**
	Special oil filling: Halocarbon						**95**
	8842: Electronics packed in gel						**96**
	Cable IP67, Mat. PUR						**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 request
[2] 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

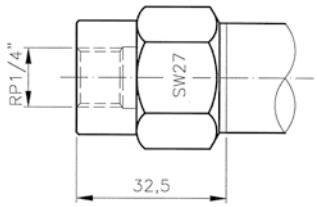
Electrical Data	Output / supply voltage	4 ... 20 mA: 9 ... 33 VDC 0 ... 10 VDC: 15 ... 30 VDC
	Load	4 ... 20 mA: $R_L \leq (U_S\text{-}9V)/20\ mA$ 0 ... 10 VDC: $R_L > 10\ k\Omega$
	Rise time	typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	0°C ... +80°C (opt. -25 ... +100°C/-25 ... +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

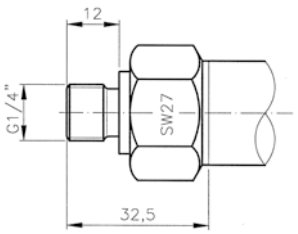
Accuracy

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

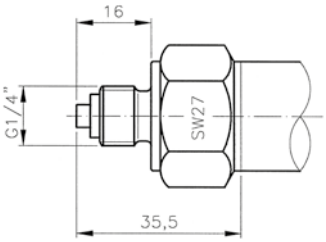
Dimensions



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



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



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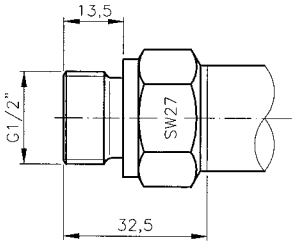
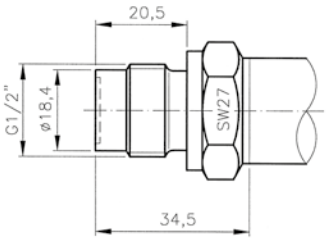
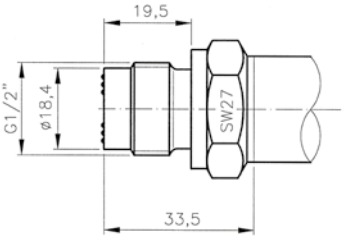


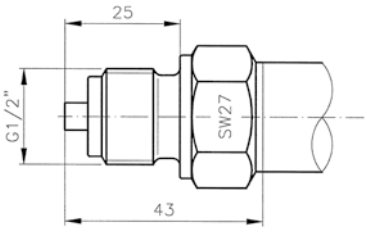
884X.XX.XX.**21**.XX.XX.XX



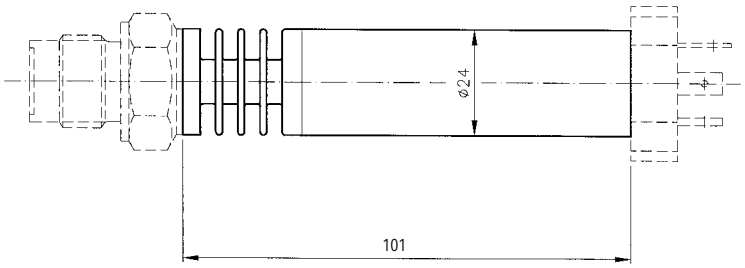
884X.XX.XX.**31**.XX.XX.XX



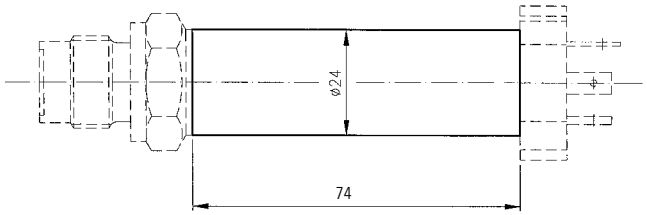
884X.XX.XX.**32**.XX.XX.XX



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



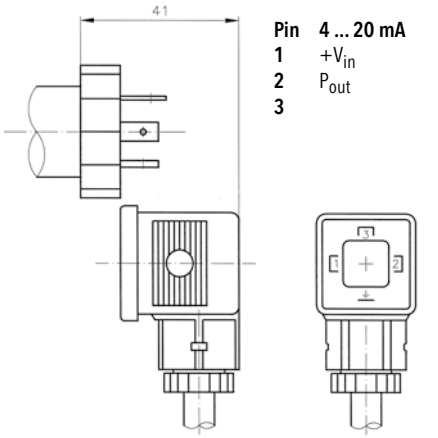
884X.XX.XX.XX.XX.XX.**70**



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

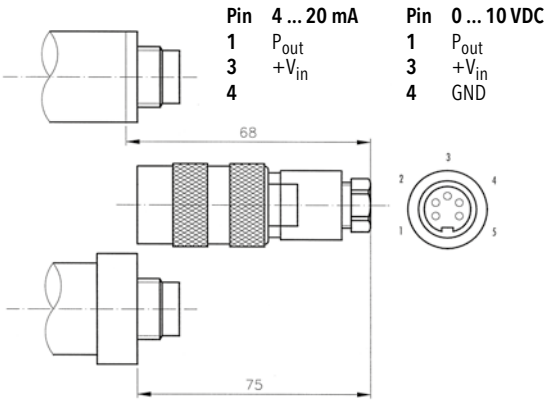
884X.XX.XX.XX.XX.XX.**69**

Dimensions



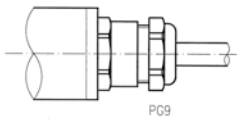
Pin	4 ... 20 mA	Pin	0 ... 10 VDC
1	$+V_{in}$	1	$+V_{in}$
2	P_{out}	2	P_{out}
3		3	GND

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



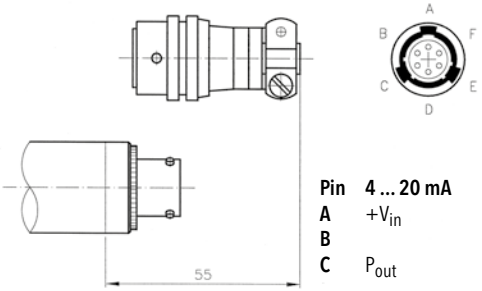
Pin	4 ... 20 mA	Pin	0 ... 10 VDC
1	P_{out}	1	P_{out}
3	$+V_{in}$	3	$+V_{in}$
4		4	GND

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}

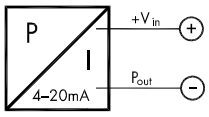
884X.XX.XX.XX.**22**.XX.XX



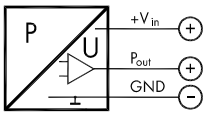
Pin	4 ... 20 mA	Pin	0 ... 10 VDC
A	$+V_{in}$	A	$+V_{in}$
B		B	GND
C	P_{out}	C	P_{out}

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

HIGH ACCURACY 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
- Test equipment

Features

- Accuracy up to 0.05 % FS
- Versions with frontal or with flush diaphragm
- Media temperature to 125°C
- EMC protection, IEC 61000

Technical Data			
Measuring principle	Piezoresistive	Media temperature	-40°C ... +125°C
Measuring range	0 ... 0.1 to 0 ... 100 bar	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC		

Subject to change

Ordering information/type code

8845 . XX XX XX XX XX XX

Measuring range [1)]

Pressure measurement range [bar]	Over pres-sure [bar]	Burst pres-sure [bar]	Code	Pressure measurement range [psi]	Over pres-sure [psi]	Burst pres-sure [psi]	Code
0 ... 0.1	3	850	**66**	0 ... 1.5	40	12000	**F6**
0 ... 0.16	3	850	**67**	0 ... 2	40	12000	**F7**
0 ... 0.2	3	850	**68**	0 ... 2.5	40	12000	**F8**
0 ... 0.4	3	850	**69**	0 ... 5	40	12000	**F9**
0 ... 0.6	3	850	**70**	0 ... 7.5	40	12000	**G0**
0 ... 1	3	850	**71**	0 ... 15	40	12000	**G1**
0 ... 1.6	4.8	850	**73**	0 ... 20	60	12000	**G3**
0 ... 2.5	7.5	850	**75**	0 ... 30	100	12000	**G5**
0 ... 4	12	850	**76**	0 ... 50	150	12000	**G6**
0 ... 6	18	850	**77**	0 ... 100	250	12000	**G7**
0 ... 10	30	850	**78**	0 ... 150	400	12000	**G8**
0 ... 16	48	850	**79**	0 ... 250	600	12000	**G9**
0 ... 25	75	850	**80**	0 ... 400	1000	12000	**H0**
0 ... 40	120	850	**81**	0 ... 500	1700	12000	**H1**
0 ... 60	180	850	**82**	0 ... 1000	2500	12000	**H2**
0 ... 100	300	850	**83**	0 ... 1500	4000	12000	**H3**

Sensor

Type 03 relative	**P3**
Type 03 absolute	**A3**

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 connector EN 175301-803-A (DIN43650-A)	**05**
Male electrical connector: Binder 723, 5-pole	**14**
Male electrical connector MIL-C 26482, 10 - 6	**02**
Male electrical connector M12x1, 4-pole	**32**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 33 VDC	**19**
0 ... 5 VDC	≥ 10 kΩ	≤ 3 mA	10 ... 30 VDC	**14**
0 ... 10 VDC	≥ 10 kΩ	≤ 3 mA	12 ... 30 VDC	**17**

Accessories

Seal FKM, -18°C ... +125°C (Standard)	**61**
Seal EPDM, -40°C ... +125°C	**63**
Special oil filling: Anderol Food (for food applications)	**94**
Female electrical plug EN 175301-803-A (DIN43650-A)	**58**
Female electrical plug Binder 723, 5-pole, metal	**37**
Female electrical plug MIL-C 26482, 10 - 6, metal	**32**
Compensated temperature range -40°C ... +125°C	**TA**
Compensated temperature range -25°C ... +100°C	**TB**
Compensated temperature range 0°C ... +70°C	**TC**
Pressure peak damping element [2)]	**DE**

[1)] Customized pressure ranges upon request
[2)] Only with pressure connection 30, 39, 15, 21

Specifications

Electrical Data	Output / supply voltage	4 ... 20 mA: 9 ... 33 VDC 0 ... 5 VDC: 10 ... 30 VDC 0 ... 10 VDC: 12 ... 30 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)]	Min. IP40
	Vibration	EN 60068-2-6: 10 g (4...2000 Hz)
	Shock	EN 60068-2-27: 100 g/ 6 ms
EMC Protection	Emission	EN 61000-4-3: 10 V/m
	Immunity	IEC 61000-4-2: 8 kV contact/15 kV air
Mechanical Data	Sensor (wetted parts)	1.4435 (AISI316L)
	Pressure connection (wetted parts)	1.4435 (AISI316L)
	Housing	1.4435 (AISI316L)
	Sealing	FKM 70 Sh / EPDM
	Male electrical connector	See ordering information
	Weight	~ 220 g
	Mounting torque	max. 30 Nm

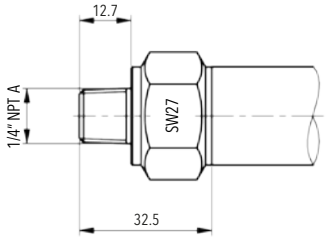
[1)] Provided female electrical plug is mounted according to instructions

Accuracy

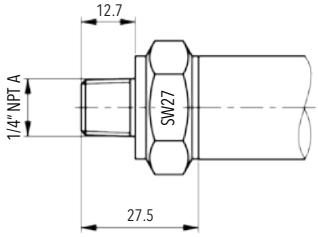
Pressure measuring range	[bar]	**0.1 ... < 1.0**	**0 ... 1 to 0 ... 100**
NLH @ +25°C (BSL through 0)	[% FS max.]	± 0.1	± 0.05
TEB @ 0 ... +70°C [2]	[% FS typ.]	± 0.2	± 0.15
	[% FS max.]	± 0.4	± 0.3
TEB @ -25 ... +100°C [2)]	[% FS typ.]	± 0.3	± 0.2
	[% FS max.]	± 0.5	± 0.4
TEB @ -40 ... +125°C [2)]	[% FS typ.]	± 0.4	± 0.3
	[% FS max.]	± 0.7	± 0.6
Long term stability 1 year	typ. max.	< 1 mbar < 2 mbar	< 0.1 % FS < 0.2 % FS

[2)] Total errors including characteristics curve deviation and temperature errors at maximum signal span

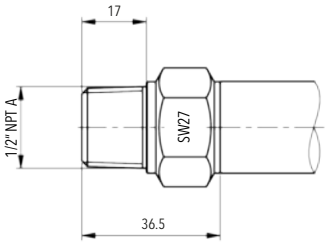
Dimensions



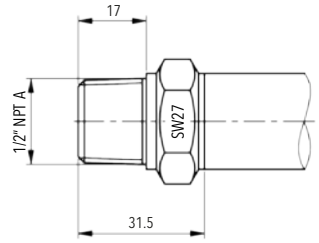
8845.XX.XX**30**.XX.XX.XX
> 25 bar



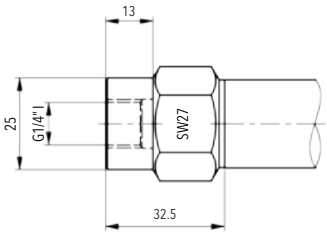
8845.XX.XX**30**.XX.XX.XX
≤ 25 bar



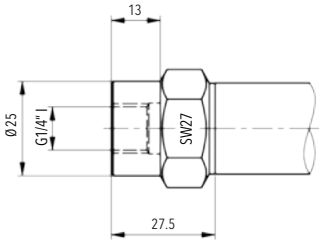
8845.XX.XX**39**.XX.XX.XX
> 25 bar



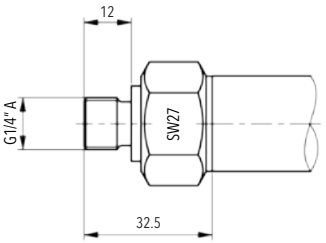
8845.XX.XX**39**.XX.XX.XX
≤ 25 bar



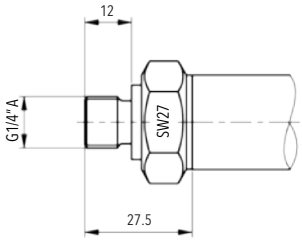
8845.XX.XX**10**.XX.XX.XX
> 25 bar



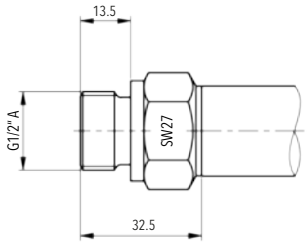
8845.XX.XX**10**.XX.XX.XX
≤ 25 bar



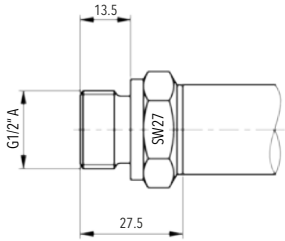
8845.XX.XX**15**.XX.XX.XX
> 25 bar



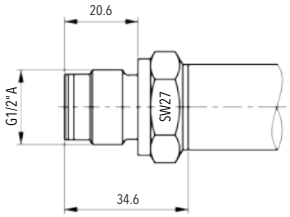
8845.XX.XX**15**.XX.XX.XX
≤ 25 bar



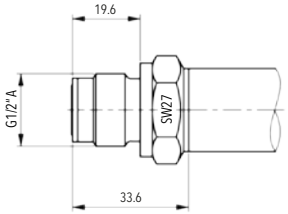
8845.XX.XX**21**.XX.XX.XX
> 25 bar



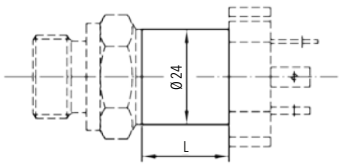
8845.XX.XX**21**.XX.XX.XX
≤ 25 bar



8845.XX.XX**31**.XX.XX.XX

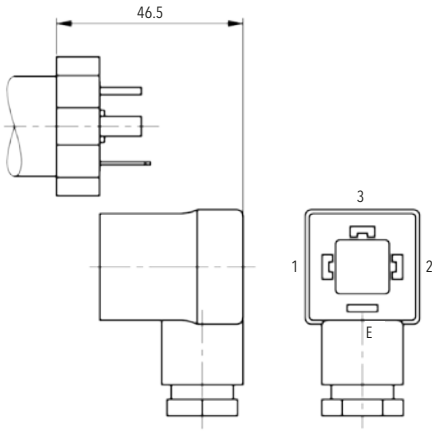


8845.XX.XX**32**.XX.XX.XX

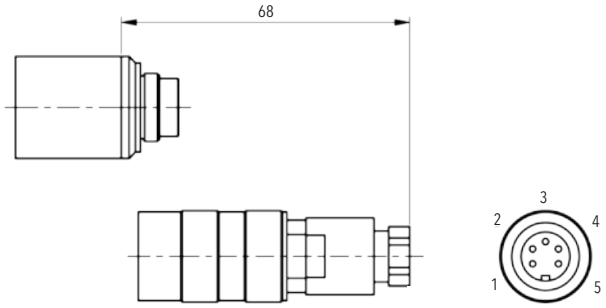


8845.XX.XXXX.XX.XX.**TA**
8845.XX.XXXX.XX.XX.**TB**
8845.XX.XXXX.XX.XX.**TC**

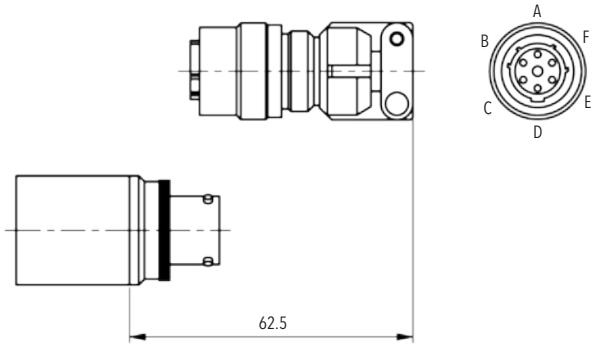
Electrical connection



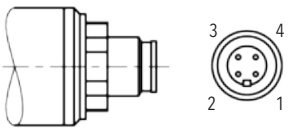
8845.XX.XXXX.**05**.XX.**58**



8845.XX.XXXX.**14**.XX.**37**

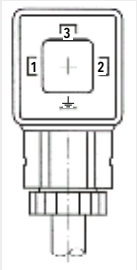
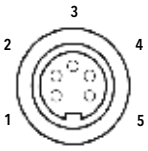
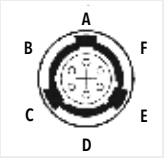
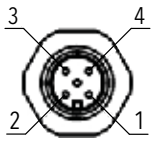
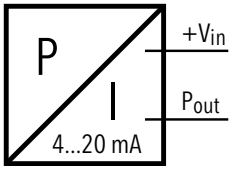
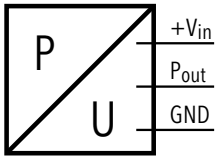


8845.XX.XXXX.**02**.XX.**32**



8845.XX.XXXX.**32**.XX.XX

Electrical connection

		Protection / electrical connection			
		IP65	IP67	IP40	IP67
		Industrial standard EN175301-803A (DIN43650)	Binder 723 5-pole	MIL-C 26482 10 - 6	M12x1 4- pole
		05 *	**14 ***	**02 ***	**32 ***
					
Output signal	 **8845**.xx.xxxx.xx.**19**	1 2	3 1	A C	4 3
Output signal	 **8845**.xx.xxxx.xx.**14/17**	1 2 3	3 1 4	A C B	4 3 1

***** View on female electrical plug

Additional information		
Documents	Data sheet	www.trafag.com/H72354
	Instructions	www.trafag.com/H73227
	Flyer	www.trafag.com/H70609

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 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
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.		

Subject to change

Ordering information/type code

8472 . 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 ... 1.0	2	3	71	0 ... 15	30	40	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
0 ... 60	120	180	82	0 ... 1000	2000	3000	H2
0 ... 100 [4]	200	300	83	0 ... 1500 [4]	3000	4500	H3
0 ... 160 [4]	320	480	85	0 ... 2000 [4]	4000	6000	H5
0 ... 250 [4]	500	750	74	0 ... 3000 [4]	6000	9000	G4
0 ... 400 [2] [4]	800	1000	84	0 ... 5000 [2] [4]	10000	12500	H4
Option 5P:	**Fivefold overpressure**						
0 ... 2.5	12.5	18	55				
0 ... 4	20	30	56				
0 ... 6	30	48	57				
0 ... 10	50	75	58				
0 ... 16	80	120	59				
0 ... 25	125	180	60				
0 ... 40	200	300	61				
0 ... 60	300	480	62				

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
G1/2" male DIN3852-E, with inner cone [4] [13]	59
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
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [4] [14]	61
R1/4" male, DIN3858	19
G3/4" frontal membrane [4] [7]	52

Electrical connection

Male electrical connector EN 175301-803-A (DIN43650-A), Mat. PA	05
Male electrical connector M12x1, 5-pole, Mat. PA (Old shape), Mat. PBT (New shape)	35
Male electrical connector Packard Metri Pack, Mat. PBT	51
Male electrical connector, 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

8472 . XX XX XX XX XX XX

	Signal output	Load resistance	I (supply)	U (supply)	
Output signal	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**

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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**46**
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**56**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2	**58**
	Female electrical plug M12x1, 5-pole	**33**
	Female electrical plug industrial standard	**34**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector 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 connctor 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 connector EN 175301-803-A / DIN 43650-A)	**97**
	Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical connector 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 connector 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 connector 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 connector 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 request
[2] Media -10°C ... +125°C
[3] max. 40 bar
[4] Upon request
[5] Cable length see accessories (max. length 50 m, in 5-meter sections)
[6] Protection IP68: Immersion depth max. 3 m, Media +10°C … +35°C
[7] Not for sensors 57 and 87, only for pressure ranges ≤ 25 bar or 400 psi
[8] Only for pressure connections 10, 30, 43, 42, 18, 24, 19
[9] Pressure ranges > 16 bar (Pressure ranges ≤ 16 bar upon request)
[10] Not for pressure connections 10, 18, 24, 52
[11] 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
[13] Only for sensors 52 and 82
[14] Only for sensors 59 and 89

Vacuum measuring ranges: Measuring ranges below 0 bar (e.g. -1 bar ... 0 bar) are available as special pressure ranges.
Reversed calibration: A reversed calibration is also possible for measuring ranges below 0 bar, with the signals 4 ... 20 mA (code 19), 1 ... 6 VDC (code 16) and 0 ... 10 VDC (code 17). The signal zero point is at 0 bar, the signal end point at -1 bar.
Additional configurations on request.

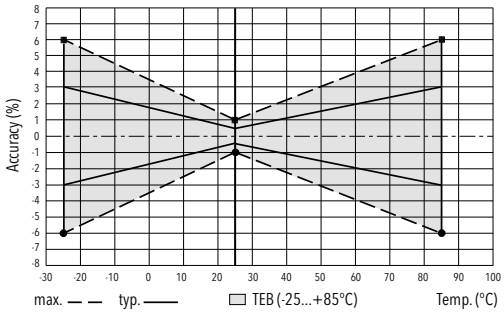
Standard products (extra short lead time)

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

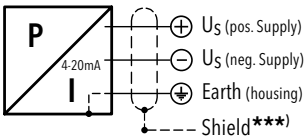
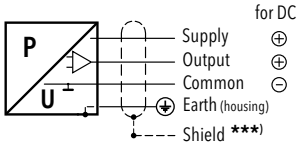
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 3.0 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.
	TC zero point and span typ.	± 0.03 % FS/K typ.
	Long term stability 1 year typ.	± 0.3 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 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)
	Shock	50 g / 8 ms
EMC Protection	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	 **8472**.xx.xxxx.xx.**19**	Standard	**92**	Standard	**94**		**E4**				
		2	1	4	1	1	1	2		white	red
		1	2	1	3	2	3	1		brown	black
		⏚	⏚	5	5			⏚		yellow	green
	 **8472**.xx.xxxx.xx.**14/16/17/23**	Standard	**98**	**97**			**99**		**E3**		
		2	3	1	2	1	1	1	3	white	red
		3	1	3	4	3	2	2	1	green	white
		1	2	2	3	2	3	3	2	brown	black
		⏚	⏚	⏚	5			⏚	⏚	yellow	green

*) Provided female connector is mounted according to instructions

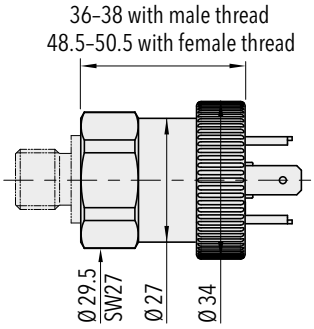
**) Ventilation via male electric plug/cable end

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

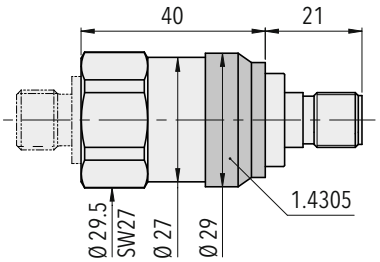
Additional information

Documents	Data sheet	www.trafag.com/H72324
	Instructions	www.trafag.com/H73324
	Flyer	www.trafag.com/H70662

Dimensions



8472.XX.XXXX.**05**.XX.XX



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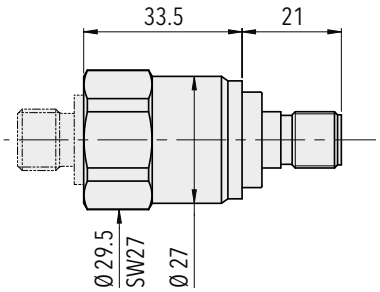
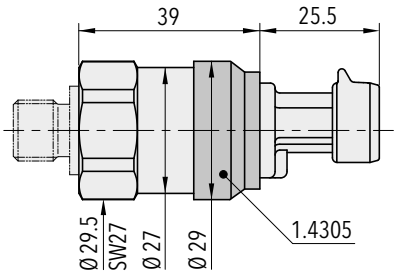


8472.XX.X**717.35**.XX.XX
8472.XX.X**942.35**.XX.XX



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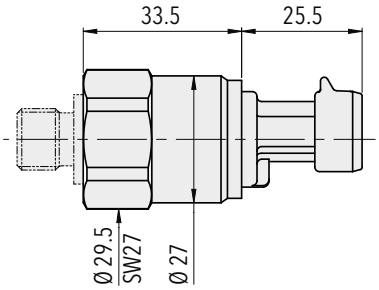

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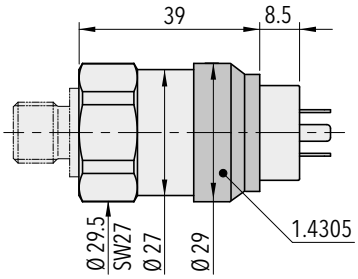
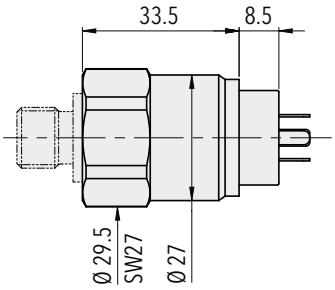
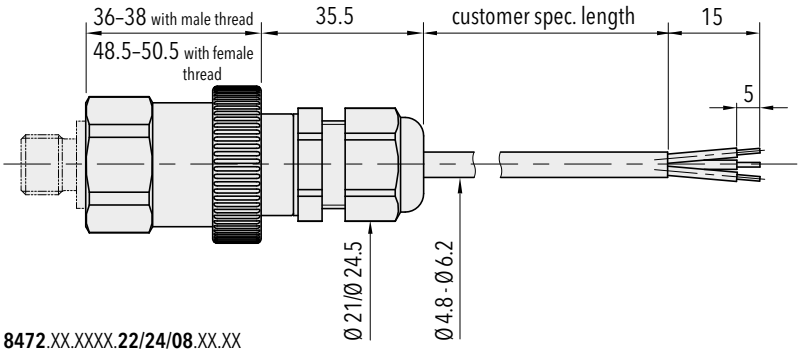
8472.XX.X**942.51**.XX.XX



8472.XX.XXXX.**01**.XX.XX

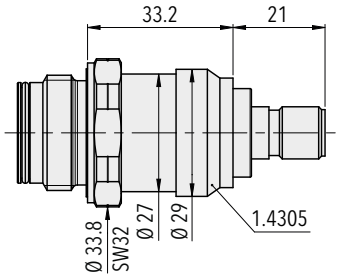


8472.XX.X**717.01**.XX.XX
8472.XX.X**942.01**.XX.XX

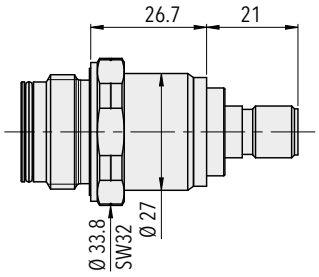


8472.XX.XXXX.**22/24/08**.XX.XX

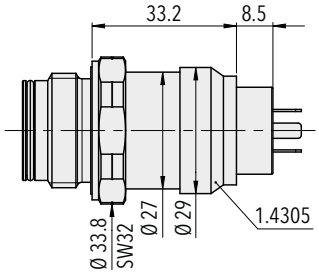
Dimensions



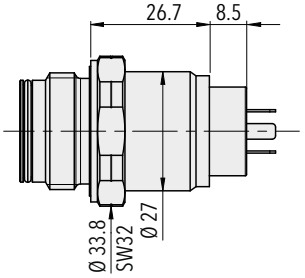
8472.XX.XX**52.35.**XX.XX



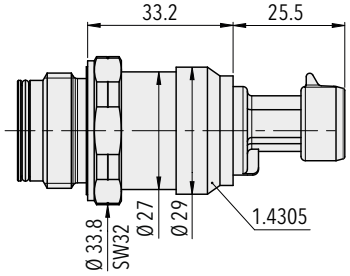
8472.XX.XX**52.35**.XX.XX



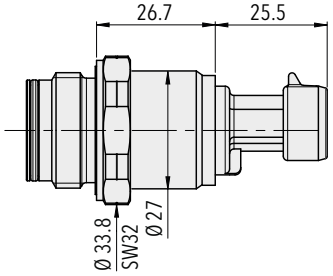
8472.XX.XX**52.01**.XX.XX



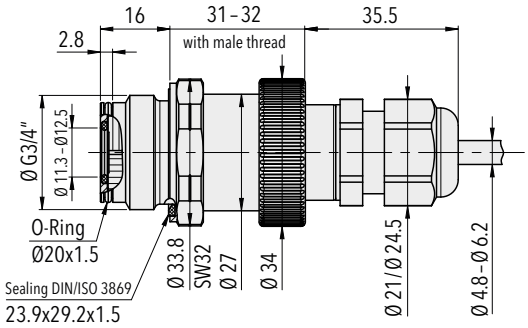
8472.XX.XX**52.01**.XX.XX



8472.XX.XX**52.51**.XX.XX

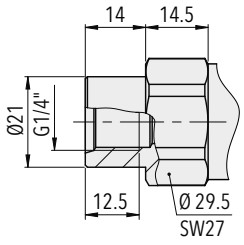


8472.XX.XX**52.51**.XX.XX

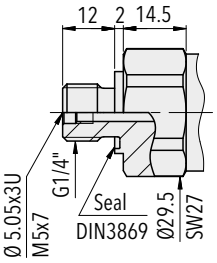


8472.XX.XX**52.22/24/08**.XX.XX

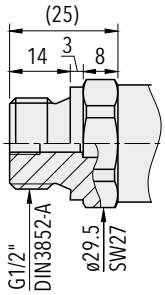
Dimensions



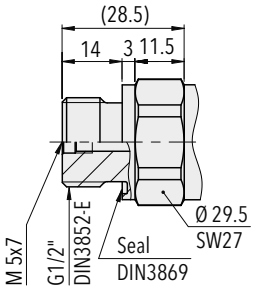
8472.XX.XX**10**.XX.XX.XX



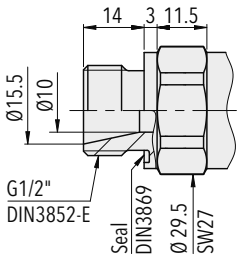
8472.XX.XX**17**.XX.XX.XX



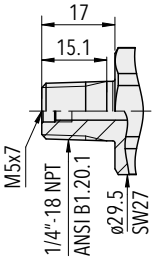
8472.XX.XX**21**.XX.XX.XX



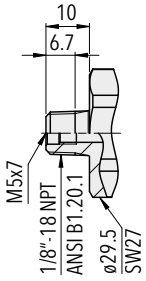
8472.XX.XX**41**.XX.XX.XX



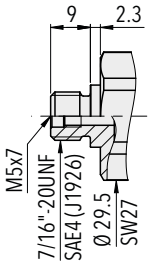
8472.XX.XX**59**.XX.XX.XX



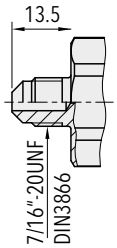
8472.XX.XX**30**.XX.XX.XX



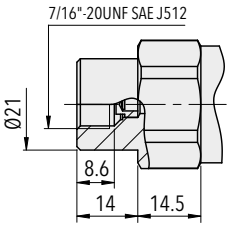
8472.XX.**X943**.XX.XX.XX



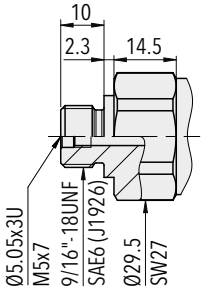
8472.XX.XX**42**.XX.XX.XX



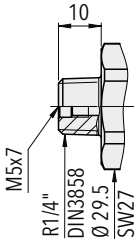
8472.XX.XX**18**.XX.XX.XX



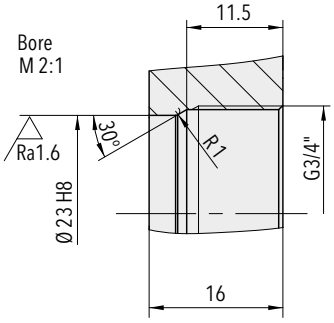
8472.XX.XX**24**.XX.XX.XX

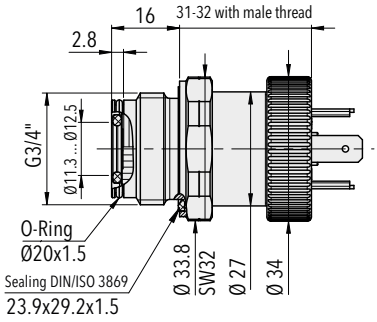


8472.XX.XX**61**.XX.XX.XX

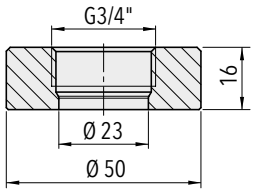


8472.XX.XX**19**.XX.XX.XX

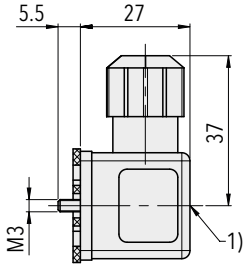




8472.XX.XX**52.05**.XX.XX

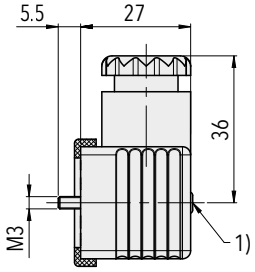


Welding flange for G3/4"
frontal membrane (1.4301)
Ordering No. C27805



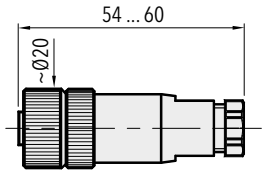
1) Tightening torque 50...60 Ncm

8472.XX.XXXX.XX.XX.**46/56**

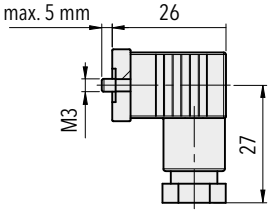


1) Tightening torque 50...60 Ncm

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 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
NLH @ 25°C (BSL) typ.	± 0.2 FS typ. (± 0.3 FS typ.)		

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]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 0.1	1.2	2	**66**	0 ... 1.5	15	30	**F6**
0 ... 0.16	1.2	2	**67**	0 ... 2	15	30	**F7**
0 ... 0.2	1.2	2	**68**	0 ... 2.5	15	30	**F8**
0 ... 0.4	1.2	2	**69**	0 ... 5	15	30	**F9**
0 ... 0.6	1.2	2	**70**	0 ... 10	20	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**
Option 5P:	**Fivefold overpressure**						
0 ... 2.5	12.5	18	**55**				
0 ... 4	20	30	**56**				
0 ... 6	30	48	**57**				
0 ... 10	50	75	**58**				
0 ... 16	80	120	**59**				

Sensor

Relative pressure, Material pressure connection and housing: 1.4305 (AISI303)	**54**	Absolute pressure, Material pressure connection and housing: 1.4305 (AISI303) [2] [3]	**84**
Relative pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [2]	**56**	Absolute pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [2] [3]	**86**
Relative pressure, Material pressure connection and housing: 1.4462 (AISI318LN) [2]	**50**	Absolute pressure, Material pressure connection and housing: 1.4462 (AISI318LN) [2] [3]	**80**
Relative pressure, titanium grade 5 [2]	**51**	Absolute pressure, titanium grade 5 [2] [3]	**81**

Pressure connection

G1/4" female [2]	**10**
G1/4" male	**17**
G1/2" male DIN3852-A [2]	**21**
G1/2" male DIN3852-E [2]	**41**
G1/2" male DIN3852-E, with inner cone [2] [12]	**59**
1/4" NPT male, ANSI B1.20.1 [2]	**30**
1/8" NPT male, ANSI B1.20.1 [2] [10]	**43**
7/16"-20UNF male, SAE4 (J1926) [2]	**42**
7/16"-20UNF male, DIN3866 [3]	**18**
7/16"-20UNF female, SAE J512 with valve opener [3]	**24**
9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [2] [13]	**61**
R1/4" male, DIN3858 [2]	**19**
G3/4" frontal membrane [2] [4]	**52**

Electrical connection

Male electrical connector EN 175301-803-A (DIN43650-A), Mat. PA	**05**
Male electrical connector M12x1, 5-pole, Mat. PA (Old shape), Mat. PBT (New shape)	**35**
Male electrical connector, industrial standard (contact distance 9.4 mm), Mat. PBT	**01**
Male electrical connector Packard Metri Pack, Mat. PBT	**51**
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**

8473 . XX XX XX XX XX XX

	Signal output	Load resistance	I (supply)	U (supply)	
Output signal	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**

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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**46**
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**56**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2	**58**
	Female electrical plug M12x1, 5-pole	**33**
	Female electrical plug industrial standard	**34**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector 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 connctor 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 connector EN 175301-803-A / DIN 43650-A)	**97**
	Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical connector 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 connector 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 connector 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 connector 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 request
[2] Upon request
[3] Only for ranges: ≥ 400 mbar or 5 psi
[4] Not for sensors 54 and 84, only for pressure ranges ≤ 25 bar or 400 psi
[5] Cable length see accessories (max. length 50 m, in 5-meter sections)
[6] Protection IP68: Immersion depth max. 3 m, Media +10°C … +35°C
[7] Only for pressure connections 10, 30, 43, 42, 18, 24, 19
[8] Not for pressure connections 10, 52
[9] 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
[12] Only for sensors 50 and 80
[13] Only for sensors 56 and 86

Vacuum measuring ranges: Measuring ranges below 0 bar (e.g. -1 bar ... 0 bar) are available as special pressure ranges.
Reversed calibration: A reversed calibration is also possible for measuring ranges below 0 bar, with the signals 4 ... 20 mA (code 19), 1 ... 6 VDC (code 16) and 0 ... 10 VDC (code 17). The signal zero point is at 0 bar, the signal end point can be individually chosen between -1 bar and -0.1 bar.
Additional configurations on request.

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

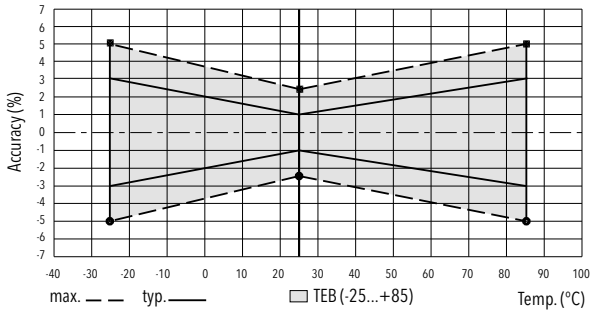
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC 0 ... 5 VDC: 24 (10 ... 30) VDC 1 ... 6 VDC: 24 (10 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC 0.5 ... 4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
	Inverse-polarity protection, 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
	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)
	Shock	50 g / 8 ms
EMC Protection	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)	54/84: 1.4305 (AISI303) 56/86: 1.4404/1.4435 (AISI316L) 50/80: 1.4462 (AISI318LN) 51/81: Titanium Grade 5
	Housing	54/84: 1.4305 (AISI303) 56/86: 1.4404/1.4435 (AISI316L) 50/80: 1.4462 (AISI318LN) 51/81: 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

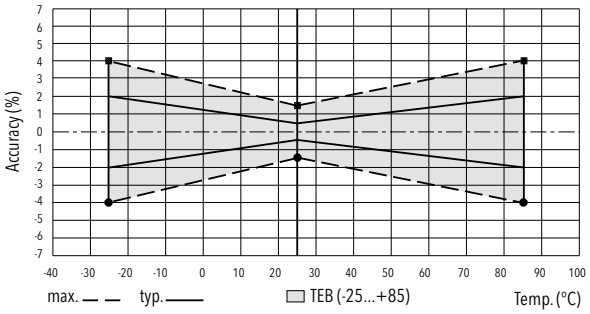
Accuracy

Pressure measuring range	**[bar]** **[psi]**	> 0 ... 0.4 > 0 ... 5	0 ... 0.2 0 ... 0.4 0 ... 2.5 0 ... 5	0 ... 0.1 0 ... 0.16 0 ... 1.5 0 ... 2
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

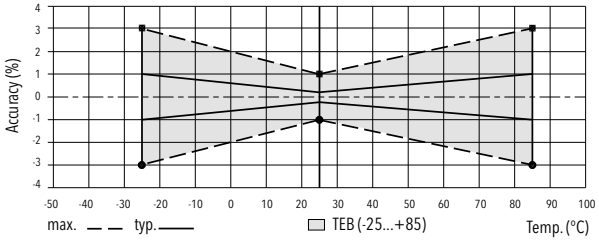
Measuring accuracy 1.0 %



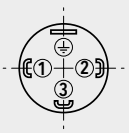
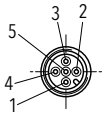
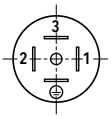
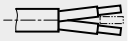
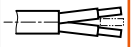
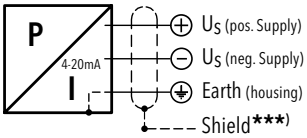
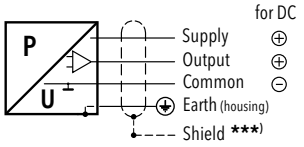
Measuring accuracy 0.5 %



Measuring accuracy 0.3 %



Electrical connection

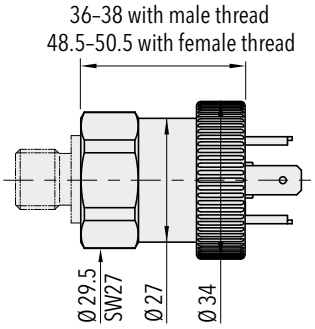
	Protection / electrical connection									
	IP65*)		IP67*)		IP67*)		IP65		IP68 max. 3m	IP68 max. 3 m
	Industrial standard EN175301-803A **)		M12x1 **) 5-pole		Packard Metri Pack **) 3-pole		Industrial standard Contact distance 9.4 mm **)		Cable**)	Cable **)
	05		**35**		**51**		**01**		**24/22**	**08**
										
Output signal	Standard	**92**	Standard	**94**		**E4**				
 Us (pos. Supply)	2	1	4	1	1	1	2		white	red
Us (neg. Supply)	1	2	1	3	2	3	1		brown	black
Earth (housing)	⏚	⏚	5	5			⏚		yellow	green
Shield***)										
8473.xx.xxxx.xx.**19**										
 for DC	Standard	**98**	**97**			**99**		**E3**		
Supply ⊕	2	3	1	2		1	1	3	white	red
Output ⊕	3	1	3	4		3	2	1	green	white
Common ⊖	1	2	2	3		2	3	2	brown	black
Earth (housing) ⏚	⏚	⏚	⏚	5		3	⏚	⏚	yellow	green
Shield ***)										
8473.xx.xxxx.xx.**14/16/17/23**										

*) 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

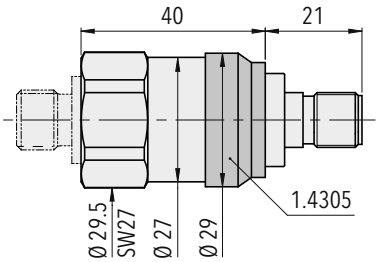
Additional information

Documents	Data sheet	www.trafag.com/H72326
	Instructions	www.trafag.com/H73324
	Flyer	www.trafag.com/H70663

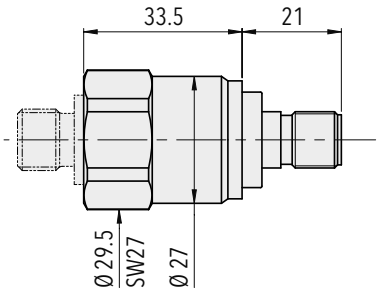
Dimensions



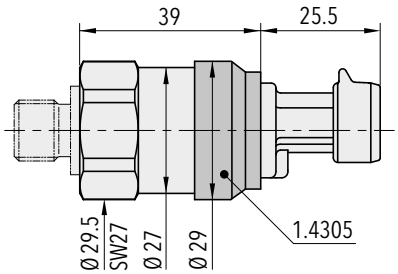
8473.XX.XXXX.**05**.XX.XX



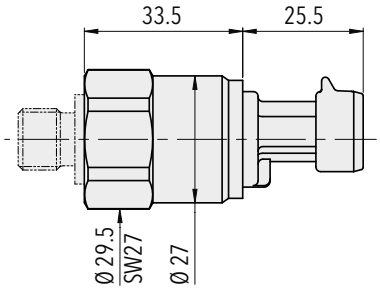
8473.XX.XXXX.**35**.XX.XX



8473.XX.X**717.35**.XX.XX
8473.XX.X**942.35**.XX.XX



8473.XX.XXXX.**51**.XX.XX



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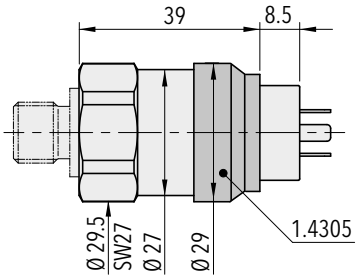
8473.XX.X**942.51**.XX.XX



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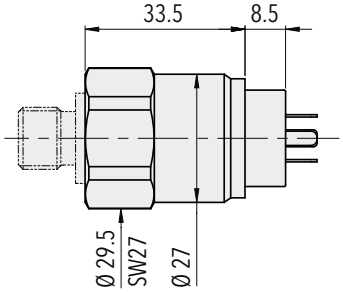

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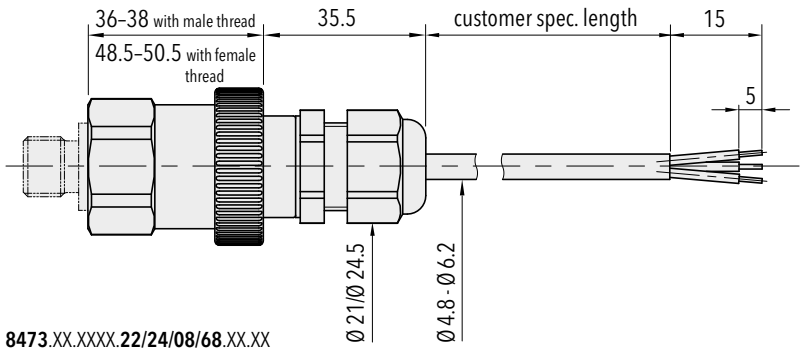
8473.XX.X**942.01**.XX.XX



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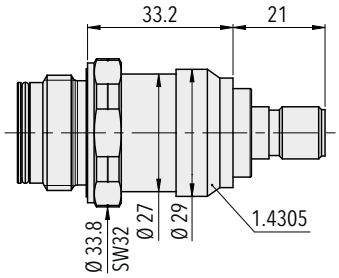
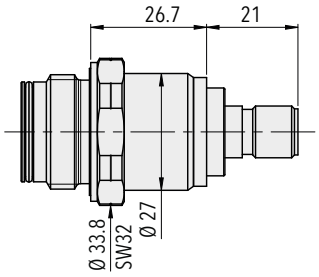
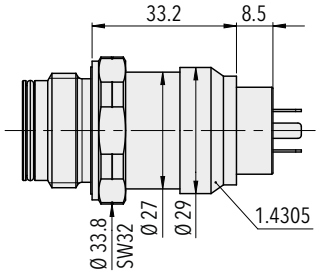
Dimensions



8473.XX.XX**52.35**.XX.XX



8473.XX.XX**52.35**.XX.XX



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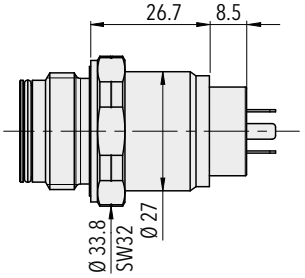

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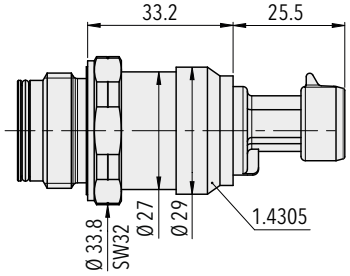

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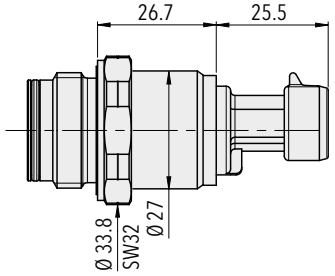
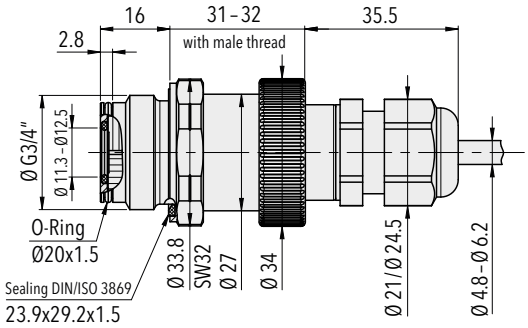


8473.XX.XX**52.51**.XX.XX



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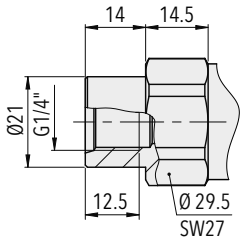
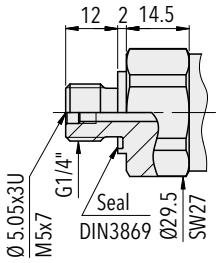
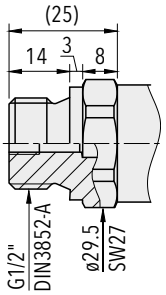
Dimensions



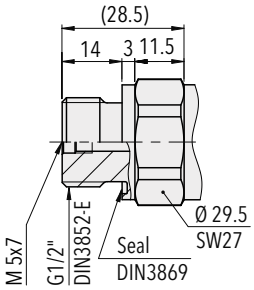
8473.XX.XX**10**.XX.XX.XX



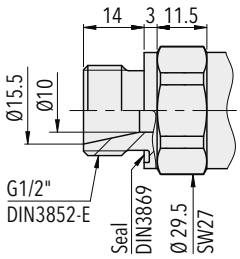
8473.XX.XX**17**.XX.XX.XX



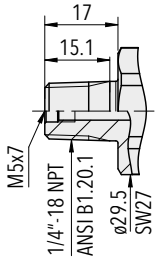
8473.XX.XX**21**.XX.XX.XX



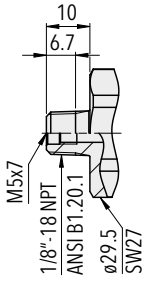
8473.XX.XX**41**.XX.XX.XX



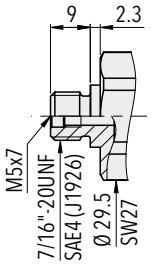
8473.XX.XX**59**.XX.XX.XX



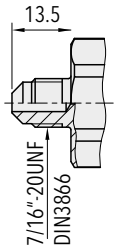
8473.XX.XX**30**.XX.XX.XX



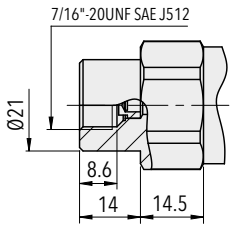
8473.XX.X643.XX.XX.XX



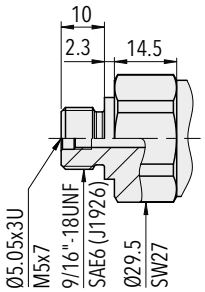
8473.XX.XX**42**.XX.XX.XX



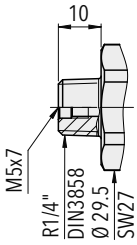
8473.XX.XX**18**.XX.XX.XX



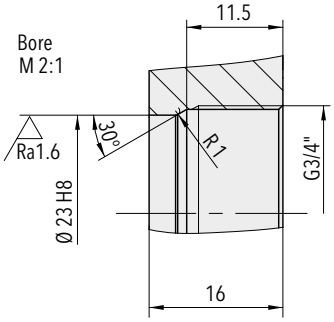
8473.XX.XX**24**.XX.XX.XX

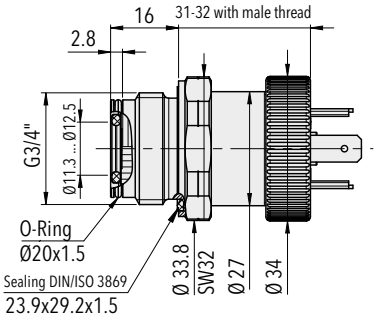


8473.XX.X**661**.XX.XX.XX

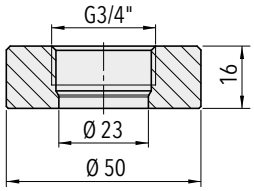


8473.XX.XX**19**.XX.XX.XX

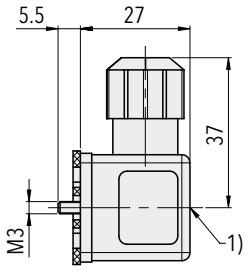




8473.XX.XX**52.05**.XX.XX

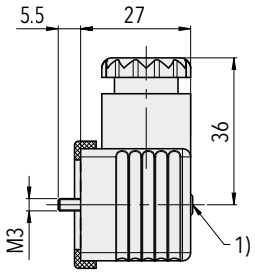


Welding flange for G3/4"
frontal membrane (1.4301)
Ordering No. C27805



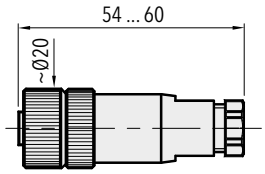
1) Tightening torque 50...60 Ncm

8473.XX.XXXX.XX.XX.**46/56**

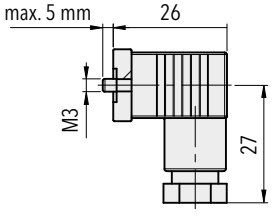


1) Tightening torque 50...60 Ncm

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 125°C in combination with a comprehensive set of of features and options makes the ECTN 8477 pressure transmitter a versatile solution suitable for marine applications.

Applications

- Shipbuilding
- Engine manufacturing

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 ... 250 bar 0 ... 1.5 to 0 ... 3000 psi	Media temperature	-25°C ... +125°C
Output signal	4 ... 20 mA	Ambient temperature	-25°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. (± 0.3 % FS typ.)	Approval / conformity	DNV-GL EU RO Mutual Recognition Type Approval Certificate

Subject to change

Ordering information/type code

8477 . 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 ... 0.16	1.2	2	67
0 ... 0.2	1.2	2	68
0 ... 0.4	1.2	2	69
0 ... 0.6	2	3	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
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
Option 5P:	**Fivefold overpressure**		
0 ... 2.5	12.5	18	55
0 ... 4	20	30	56
0 ... 6	30	48	57
0 ... 10	50	75	58
0 ... 16	80	120	59
0 ... 25 [12]	125	180	60
0 ... 40 [12]	200	300	61
0 ... 60 [12]	300	480	62

Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 1.5	15	30	F6
0 ... 2	15	30	F7
0 ... 2.5	15	30	F8
0 ... 5	15	30	F9
0 ... 10	20	45	G0
0 ... 15	30	45	G1
0 ... 20	40	70	G3
0 ... 30	60	90	G5
0 ... 50	100	150	G6
0 ... 100	200	250	G7
0 ... 150	300	375	G8
0 ... 250	500	625	G9
0 ... 400	800	1200	H0
0 ... 500	1000	1250	H1
0 ... 1000	2000	3000	H2
0 ... 1500 [4]	3000	4500	H3
0 ... 2000 [4]	4000	6000	H5
0 ... 3000 [4]	6000	9000	G4

Sensor

with temperature compensation	
Relative pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L)	56
Relative pressure, Material pressure connection and housing: 1.4462 (AISI318LN) [4]	50
Relative pressure, Material pressure connection and housing: titanium grade 5 [4]	51
Absolute pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [3]	86
Absolute pressure, Material pressure connection and housing: 1.4462 (AISI318LN) [3] [4]	80
Absolute pressure, Material pressure connection and housing: titanium grade 5 [3] [4]	81

without temperature compensation	
Relative pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [10]	59
Relative pressure, Material pressure connection and housing: 1.4462 (AISI318LN) [4] [10]	52
Relative pressure, Material pressure connection and housing: titanium grade 5 [4] [10]	53
Absolute pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [3] [10]	89
Absolute pressure, Material pressure connection and housing: 1.4462 (AISI318LN) [3] [4] [10]	82
Absolute pressure, Material pressure connection and housing: titanium grade 5 [3] [4] [10]	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
7/16"-20UNF male, SAE4 (J1926) [4]	42
R1/4" male, DIN3858	19
G3/4" frontal membrane [4] [6]	52

Electrical connection

Male electrical connector EN 175301-803-A, Mat. PA, -25°C ... +90°C	05
Male electrical connector M12x1, 5-pole, Mat. PBT	35
Cable Raychem, cable gland PA 6-3, -20°C ... +100°C [7] [8] [9]	08

					8477 . 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 ... 30 VDC					19	

Accessories	Seal FKM (-20°C ... +125°C)	**61**
	Seal EPDM (-25°C ... +125°C)	**63**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**46**
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**56**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2	**58**
	Female electrical plug M12x1, 5-pole	**33**
	Pressure peak damping element ø 0.4 mm, material 1.4404 [5]	**44**
	Pressure peak damping element ø 1.0 mm, material 1.4305 [5]	**40**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector EN175301-803-A / DIN43650-A)	**92**
	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 request
[2] Media -10°C ... +85°C
[3] Absolute ranges max. 40 bar
[4] Upon request
[5] Not for pressure connections 10, 52
[6] Only for pressure ranges ≤ 25 bar or 400 psi
[7] Cable length see accessories (max. length 50 m, in 5-meter sections)
[8] IP68, max. 3 m, Media +10°C … +35°C
[9] Cable length max. 3 m for pressure ranges ≤ 16 bar
[10] ≥ 1 bar
[11] The order quantity must be a multiple of 50
[12] Only for sensors without temperature compensation

Vacuum measuring ranges: Measuring ranges below 0 bar (e.g. -1 bar ... 0 bar) are available as special pressure ranges.
Reversed calibration: A reversed calibration is also possible for measuring ranges below 0 bar, with the signals 4 ... 20 mA (code 19), 1 ... 6 VDC (code 16) and 0 ... 10 VDC (code 17). The signal zero point is at 0 bar, the signal end point can be individually chosen between -1 bar and -0.1 bar.
Additional configurations on 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

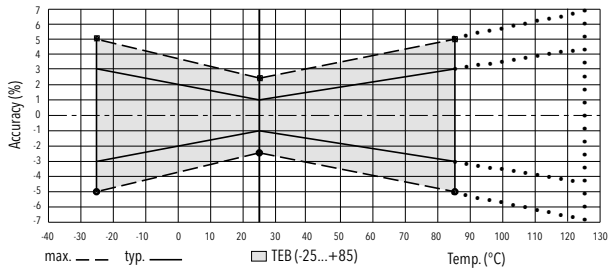
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4...20 mA: to U_s = 30 VDC
Environmental conditions	Media temperature	-25°C ... +125°C
	Ambient temperature	Max. -25°C ... +125°C
	Protection [1)]	IP65, IP67, IP68
	Humidity	IEC 60068-2-30 (damp heat, cyclic, 100 % RH @ +55°C)
	Vibration	20 g (10...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)	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

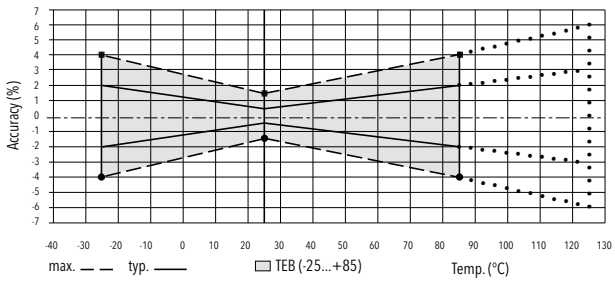
Accuracy

		Sensors 59/89/52/82/53/83	Sensors 56/86/50/80/51/81		
Pressure measuring range	**[bar]**	≥ 0 ... 1	> 0 ... 0.4	0 ... 0.2 0 ... 0.4	0 ... 0.1 0 ... 0.16
	[psi]	≥ 0 ... 15	> 0 ... 5	0 ... 2.5 0 ... 5	0 ... 1.5 0 ... 2
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

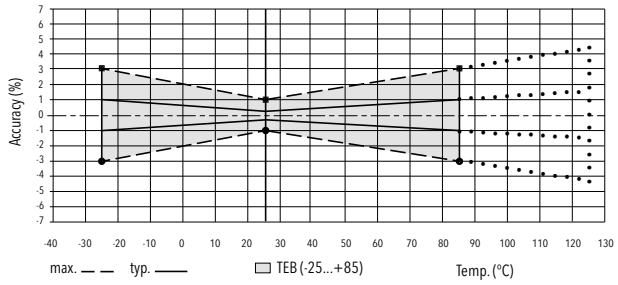
Sensors 56/86/50/80/51/81
0 ... 0.1 to 0 ... 0.16 bar



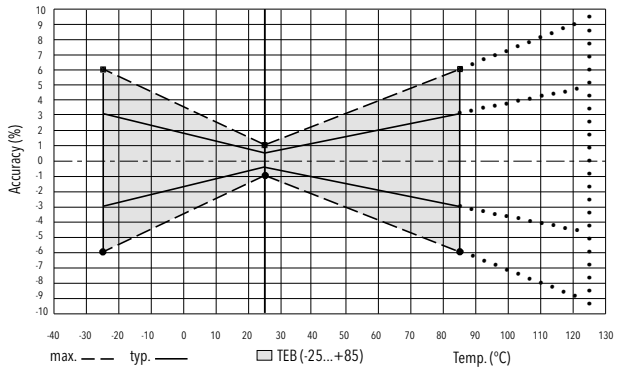
Sensors 56/86/50/80/51/81
0 ... 0.2 to 0 ... 0.4 bar



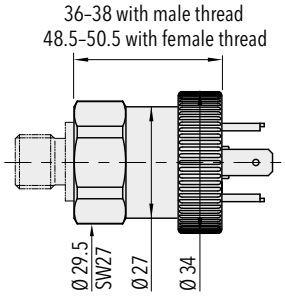
Sensors 56/86/50/80/51/81
> 0 ... 0.4 bar



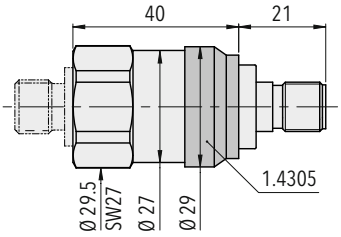
Sensors 59/89/52/82/53/83
≥ 0 ... 1 bar



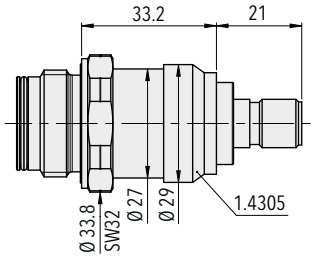
Dimensions



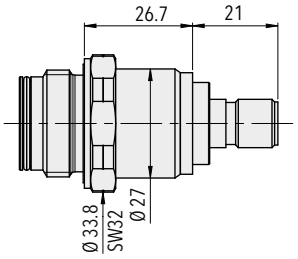
8477.XX.XXXX.**05**.XX.XX



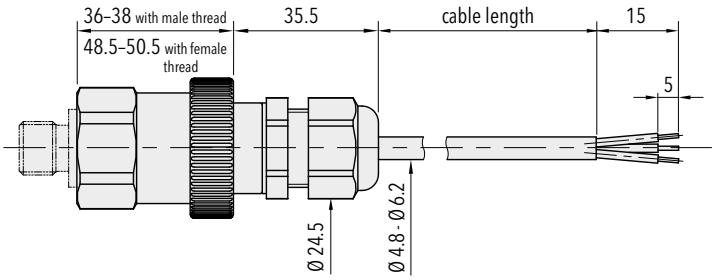
8477.XX.XXXX.**35**.XX.XX



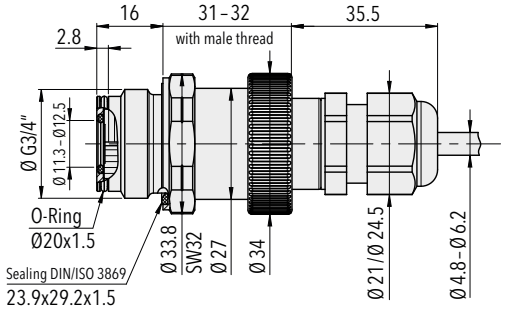
8477.XX.XX**52.35**.XX.XX



8477.XX.XX**52.35**.XX.XX

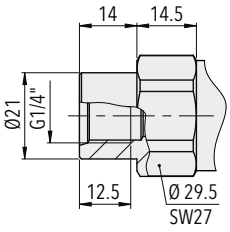


8477.XX.XXXX.**08**.XX.XX

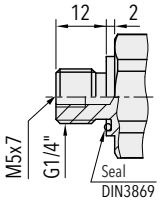


8477.XX.XX**52.08**.XX.XX

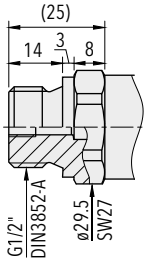
Dimensions



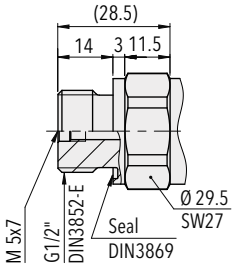
8477.XX.XX**10**.XX.XX.XX



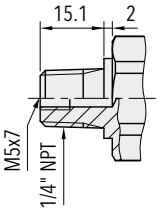
8477.XX.XX**17**.XX.XX.XX



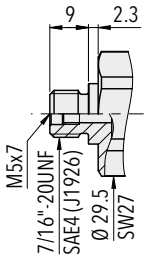
8477.XX.XX**21**.XX.XX.XX



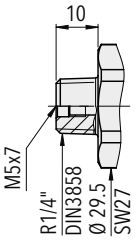
8477.XX.XX**41**.XX.XX.XX



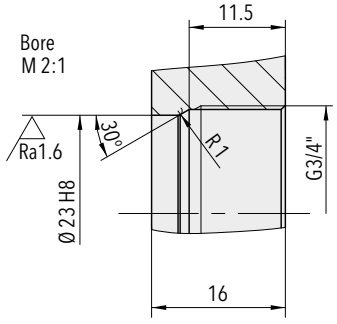
8477.XX.XX**30**.XX.XX.XX



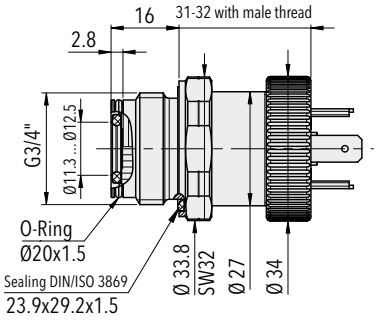
8477.XX.XX**42**.XX.XX.XX

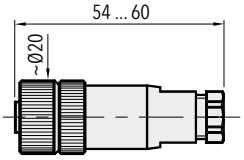


8477.XX.XX**19**.XX.XX.XX

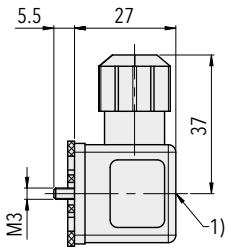


8477.XX.XX**52.05**.XX.XX



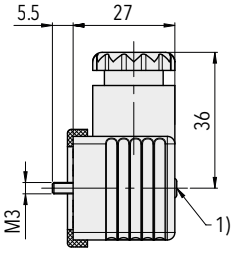


8477.XX.XXXX.XX.XX.**33**



1) Tightening torque 50...60 Ncm

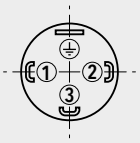
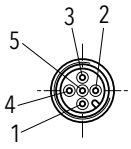
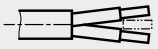
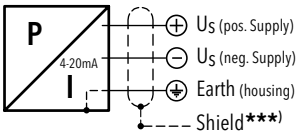
8477.XX.XXXX.XX.XX.**46/56**



1) Tightening torque 50...60 Ncm

8477.XX.XXXX.XX.XX.**58**

Electrical connection

		Protection / electrical connection			
		IP65*)	IP67*)	IP68 max. 3 m	
		Industrial standard EN175301-803A**)	M12x1 **) 5-pole	Cable**)	
		05	**35**	**08**	
					
Output signal		Standard	**92**		
	P 4-20mA I	2	1	4	red
	⊕ U_S (pos. Supply)	1	2	1	black
	⊖ U_S (neg. Supply)	⏚	⏚	5	green
	⏚ Earth (housing)				
	Shield***)				
	8477.xx.xxxx.xx.**19**				

*) 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/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: 600 VAC / 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	Accuracy @ 25°C typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)
Measuring range	0 ... 0.1 to 0 ... 60 bar 0 ... 1.5 to 0 ... 1000 psi	Media temperature	-25°C ... +125°C
Output signal	4 ... 20 mA	Ambient temperature	-25°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.2 FS typ. (± 0.3 FS typ.)	Approval / conformity	EN 50155 (Railway) EN 45545-2 (Fire protection)

Subject to change

Ordering information/type code

8478 . XX XX XX XX XX XX

Measuring range [1)]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 0.1	1.2	2	**66**	0 ... 1.5	15	30	**F6**
0 ... 0.16	1.2	2	**67**	0 ... 2	15	30	**F7**
0 ... 0.2	1.2	2	**68**	0 ... 2.5	15	30	**F8**
0 ... 0.4	1.2	2	**69**	0 ... 5	15	30	**F9**
0 ... 0.6	1.2	2	**70**	0 ... 10	20	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**
Option 5P:	**Fivefold overpressure**						
0 ... 2.5	12.5	18	**55**				
0 ... 4	20	30	**56**				
0 ... 6	30	48	**57**				
0 ... 10	50	75	**58**				
0 ... 16	80	120	**59**				
0 ... 25 [9)]	125	180	**60**				
0 ... 40 [9)]	200	300	**61**				
0 ... 60 [9)]	300	480	**62**				

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**
G1/2" male DIN3852-E, with inner cone [2) 9)]	**59**
G3/4" frontal membrane [2) 6)]	**52**

Electrical connection

Male electrical connector EN 175301-803-A (DIN43650-A), Mat. PA	**05**
Male electrical connector M12x1, 5-pole, Mat. PBT	**35**
Male electrical connector 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**

		8478 . XX XX XX XX XX XX
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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	46
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	56
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2	58
	Female electrical plug M12x1, 5-pole	33
	Special electrical connection: Pin 1 +, Pin 2 - (for male electrical connector EN175301-803-A / DIN43650-A)	92
	Special electrical connection: Pin 1 +, Pin 3 -, Pin 5 Ground (for male electrical connector 35, M12x1, 5-pole)	94
	Special electrical connection: Pin 1 + , Pin 3 - (only for male electrical connector 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 request
[2] Upon request
[3] Max. 40 bar or 500 psi
[4] ≥ 1 bar
[5] Only with pressure connection 17 (1.4305)
[6] Only for pressure ranges ≤ 25 bar or 400 psi
[7] The order quantity must be a multiple of 50, only for electrical connections 05 and 35
[8] Not for pressure connection 52
[9] Only for sensors without temperature compensation

Vacuum measuring ranges: Measuring ranges below 0 bar (e.g. -1 bar ... 0 bar) are available as special pressure ranges.
Reversed calibration: A reversed calibration is also possible for measuring ranges below 0 bar, with the signals 4 ... 20 mA (code 19), 1 ... 6 VDC (code 16) and 0 ... 10 VDC (code 17). The signal zero point is at 0 bar, the signal end point can be individually chosen between -1 bar and -0.1 bar. Additional configurations on request.

Specifications

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 ... +125°C
	Ambient temperature	-25°C ... +125°C
	Protection [1)]	IP65, IP67
	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)	Ceramic, Al_2O_3 (96 %)
	Pressure connection (wetted parts)	1.4404 (AISI316L)
	Housing	1.4404/1.4435 (AISI316L)
	Sealing	FKM 70 Sh, CR, EPDM
	Male electrical plug	See ordering information
	Weight	~ 110 g
	Mounting torque	15 ... 20 Nm

[1)] See electrical connection

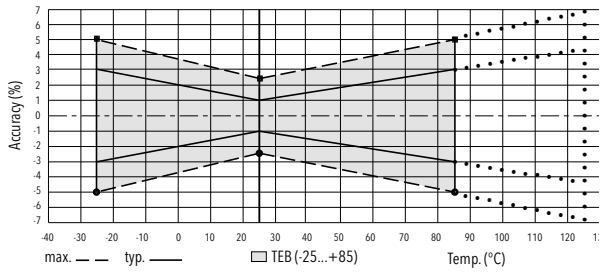
[2)] Surge voltage on shield, shield connected on both sides

[3)] For electrical connection 35

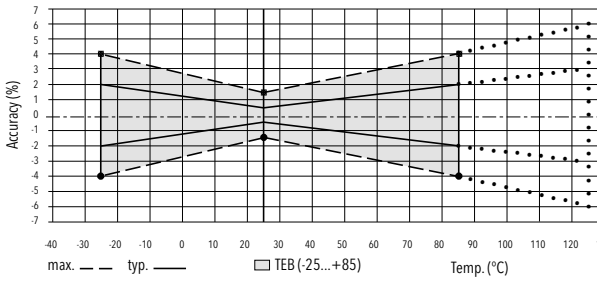
Accuracy

		Sensors 57/87/59/89	Sensors 54/84/56/86		
Pressure measuring range	**[bar]**	≥ 0 ... 1	> 0 ... 0.4	0 ... 0.2 0 ... 0.4	0 ... 0.1 0 ... 0.16
	[psi]	≥ 0 ... 15	> 0 ... 5	0 ... 2.5 0 ... 5	0 ... 1.5 0 ... 2
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

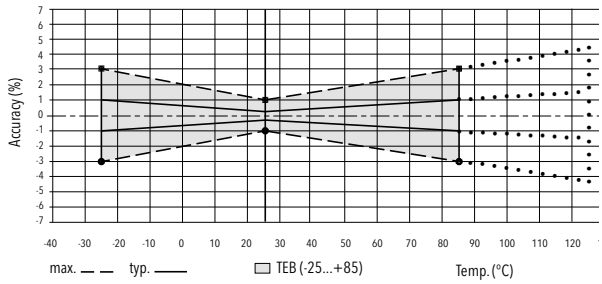
Sensors 54/84/56/86
0 ... 0.1 to 0 ... 0.16 bar



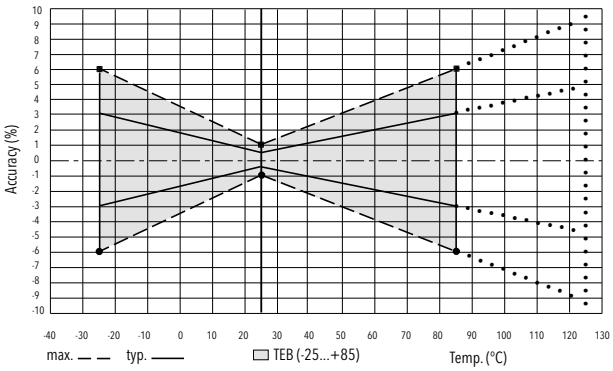
Sensors 54/84/56/86
0 ... 0.2 to 0 ... 0.4 bar



Sensors 54/84/56/86
> 0 ... 0.40 bar



Sensors 57/87/59/89
≥ 0 ... 1 bar



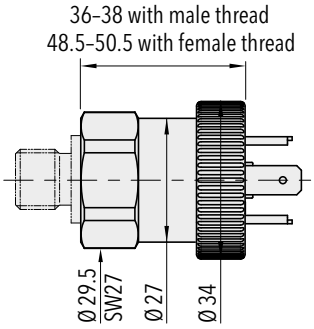
Additional specifications railways			
Environmental conditions	Cold	EN 60068-2-1	Ab: -25°C, 2 h (not in operation) Ae: -25°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclic	EN 60068-2-30	Db: 55°C, variant 1, 2 cycles (2 x 24 h)
	Vibration and shock	EN 61373	Vibration: category 3 Shock: category 3 [1) 3)]
	Dielectrical strength	EN 50155	600 VAC / 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 m^2
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

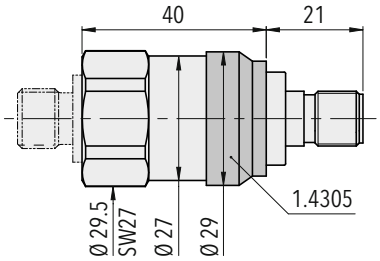
[2)] Chapter 5.1 Voltage supply

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

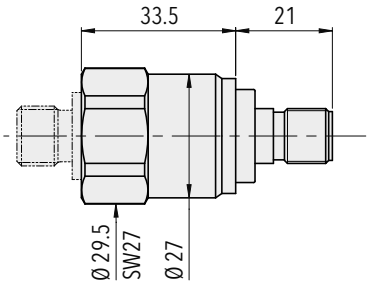
Dimensions



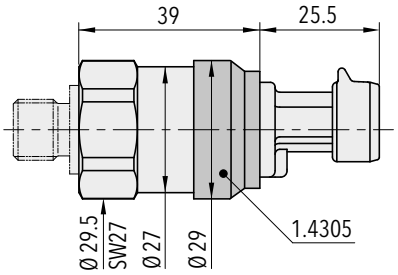
8478.XX.XXXX.**05**.XX.XX



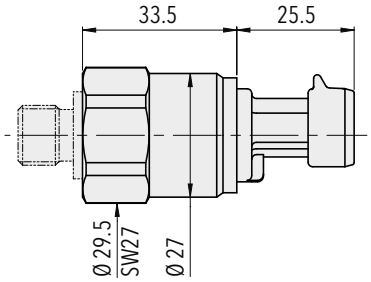
8478.XX.XXXX.**35**.XX.XX



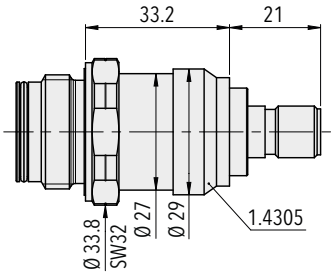
8478.XX.X**417.35**.XX.XX, ≥ 1.0 bar
8478.XX.X**617.35**.XX.XX, ≥ 1.0 bar
8478.XX.X**717.35**.XX.XX, ≥ 1.0 bar
8478.XX.X**917.35**.XX.XX, ≥ 1.0 bar



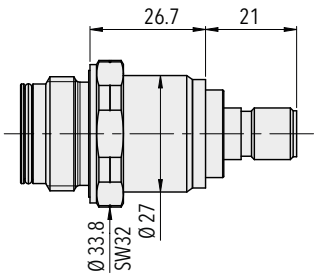
8478.XX.XXXX.**51**.XX.XX



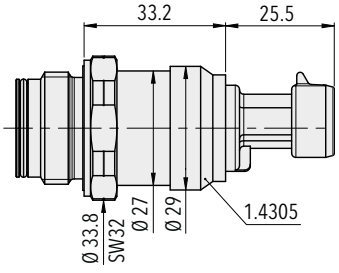
8478.XX.X**417.51**.XX.XX, ≥ 1.0 bar
8478.XX.X**617.51**.XX.XX, ≥ 1.0 bar
8478.XX.X**717.51**.XX.XX, ≥ 1.0 bar
8478.XX.X**917.51**.XX.XX, ≥ 1.0 bar



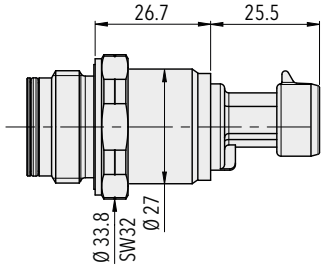
8478.XX.XX**52.35**.XX.XX



8478.XX.XX**52.35**.XX.XX

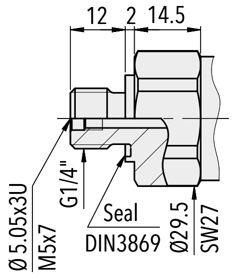


8478.XX.XX**52.51**.XX.XX

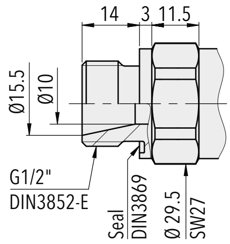


8478.XX.XX**52.51**.XX.XX

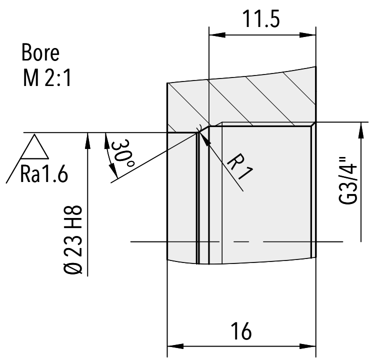
Dimensions

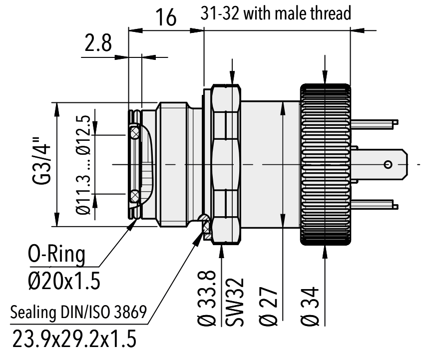


8478.XX.XX**17**.XX.XX.XX

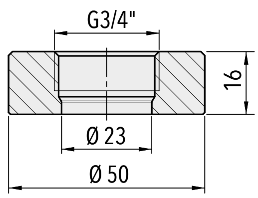


8478.XX.XX**59**.XX.XX.XX

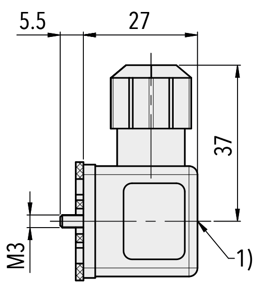




8478.XX.XX**52.05**.XX.XX

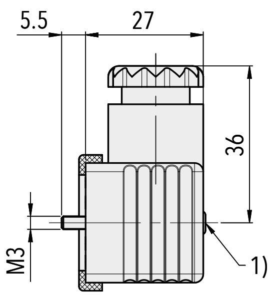


Welding flange for G3/4"
front membrane (1.4301)
Ordering No. C62780805



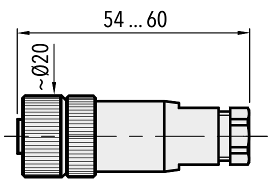
1) Tightening torque 50...60 Ncm

8478.XX.XXXX.XX.XX.**46/56**



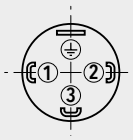
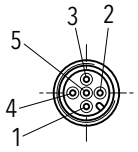
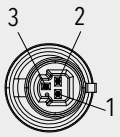
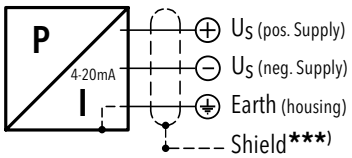
1) Tightening torque 50...60 Ncm

8478.XX.XXXX.XX.XX.**58**



8478.XX.XXXX.XX.XX.**33**

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	**E4**
 **8478**.xx.xxxx.xx.**19**	2	1	4	1	1	1
	1	2	1	3	2	3
	⏚	⏚	5	5		

*) 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

- Ⓔx
  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	Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Measuring range	0 ... 0.4 to 0 ... 2000 bar 0 ... 5 to 0 ... 30000 psi	Media temperature	Max. –40°C ... +120°C (see electrical connection)
Output signal	4 ... 20 mA	Ambient temperature	Max. –40°C ... +120°C (see electrical connection)
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	Approval / conformity	DNV-GL, KRS, RMRS ATEX / IECEx, according to the norm EN/IEC 60079-0/EN 60079-11/ EN 60079-26/ EN 50303

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 837 [3] [8]	**53**
G1/4" female [3] [8]	**10**
G1/2" male [3] [8]	**21**
G1/2" male (Manometer) EN 837 [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 connector EN 175301-803-A, plastic	**05**
Male electrical connector M12x1, 5-pole, metal	**35**
Male electrical connector MIL-C 26482, 6-pole, metal [5]	**02**
Male electrical connector Binder 723, 5-pole, metal	**14**
Cable with shield, material FDR 25 (Raychem), 4 x 0.5mm² (cable length see "Accessories") - not ship approved [10]	**78**
Cable intrinsically safe with shield, material PVC, 2 x 0.75mm² (-40...+80°C), (cable length see "Accessories") - not ship approved [10]	**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	XX
Accessories	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**46**					
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**56**					
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2 [11]	**58**					
	Female electrical plug M12x1, 5-pole, plastic (not for zones 0 (gas)	**33**					
	Female electrical plug M12x1, 5-pole, metal	**35**					
	Female electrical plug MIL-C 26482, 6-pole, metal	**32**					
	Female electrical plug 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 connector 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 request
[2] Only with sensor 26 (0.5%)
[3] For pressure ranges ≤ 600 bar
[4] For pressure ranges > 600 bar
[5] For pressure ranges < 40 bar upon request
[6] Other cable lengths upon request
[7] Pressure ranges 0 … 40 to 0 … 1000 bar, max. ambient and media temperature +85°C
[8] Upon request
[9] With sensors 33 and 35: Overpressure 1300 bar/19000 psi, Burst pressure 2600 bar/38000 psi
[10] Cable length max. 20 m
[11] Without 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. [%]
EXNT0.4A	8292 69 2617 05 0000 0000 19 46 92	0 ... 0.4	1.2	10 ... 30	± 0.5
EXNT0.6A	8292 70 2617 05 0000 0000 19 46 92	0 ... 0.6	1.5	10 ... 30	± 0.5
EXNT1.0A	8292 71 2617 05 0000 0000 19 46 92	0 ... 1	2	10 ... 30	± 0.5
EXNT2.5A	8292 75 2517 05 0000 0000 19 46 92	0 ... 2.5	5	10 ... 30	± 0.5
EXNT4.0A	8292 76 2517 05 0000 0000 19 46 92	0 ... 4	8	10 ... 30	± 0.5
EXNT6.0A	8292 77 2517 05 0000 0000 19 46 92	0 ... 6	12	10 ... 30	± 0.5
EXNT10.0A	8292 78 2517 05 0000 0000 19 46 92	0 ... 10	20	10 ... 30	± 0.5
EXNT16.0A	8292 79 2517 05 0000 0000 19 46 92	0 ... 16	32	10 ... 30	± 0.5
EXNT25.0A	8292 80 2517 05 0000 0000 19 46 92	0 ... 25	50	10 ... 30	± 0.5
EXNT40.0A	8292 81 2517 05 0000 0000 19 46 92	0 ... 40	80	10 ... 30	± 0.5
EXNT100.0A	8292 83 2517 05 0000 0000 19 46 92	0 ... 100	200	10 ... 30	± 0.5
EXNT250.0A	8292 74 2517 05 0000 0000 19 46 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

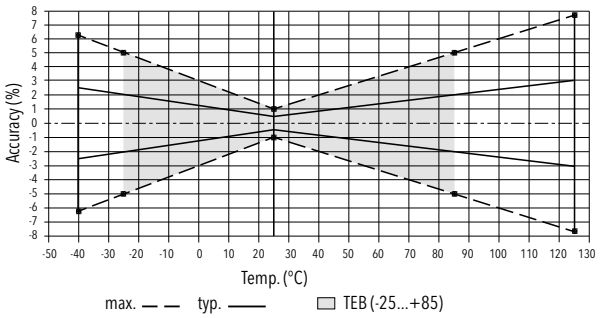
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (10 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
Environmental conditions	Media temperature	Max. –40°C ... +120°C (see electrical connection)
	Ambient temperature	Max. –40°C ... +120°C (see electrical 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

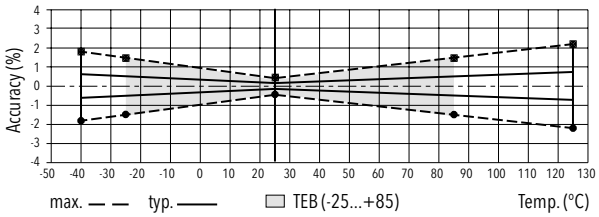
Accuracy

		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	± 0.1
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

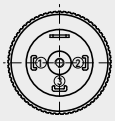
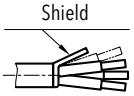
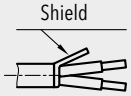
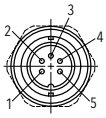
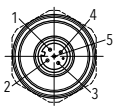
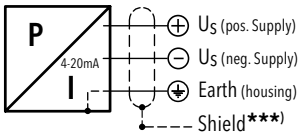
Class 0.5 %



Class 0.3 %



Electrical connection

		Protection / electrical connection					
		IP65*)	IP67 **)	IP67 **)	IP65*)	IP67*)	IP65*)
		Industrial standard EN175301-803A **05**	Cable (4 x 0.5 mm²) **78**	Cable (2 x 0.75 mm²) **80**	Binder 723 **14**	MIL-C 26482 **02**	M12x1 5-pole **35**
							
Output signal	 **8292** .xx.xxxx.xx.**19**	Standard / **92** 2 / 1 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		

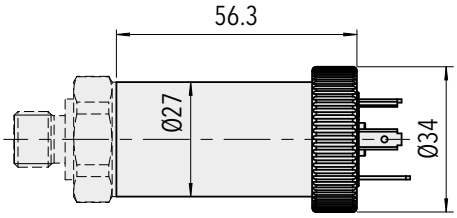
*** Attention!** Additional measure against static charges are required for Zone 0 to 20 for these cables (laid with earthed metal braid, metal hose or metal pipe).

*) 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

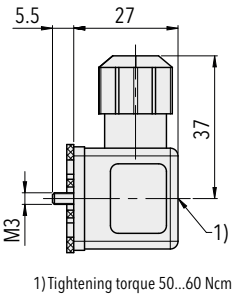
Marking

For Ex zones	Marking
0, 1, 2, 20, 21, 22 M1, M2	Ⓔx 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	Ⓔx 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

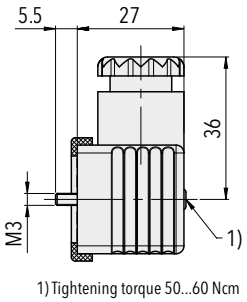


8292.XX.XXXX.**05**.XX.XX



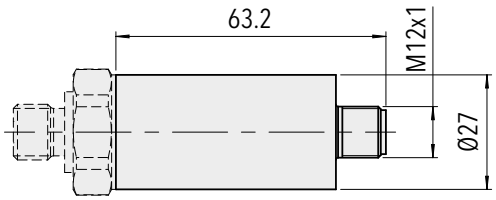
1) Tightening torque 50...60 Ncm

8292.XX.XXXX.XX.XX.**46/56**

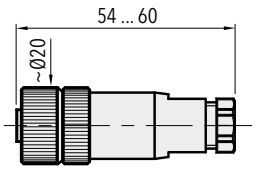


1) Tightening torque 50...60 Ncm

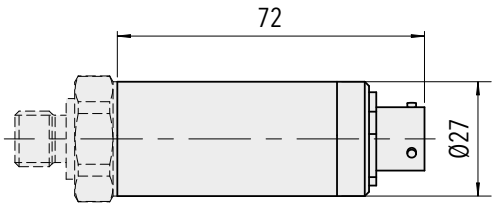
8292.XX.XXXX.XX.XX.**58**

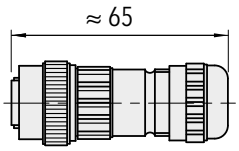


8292.XX.XXXX.**35**.XX.XX

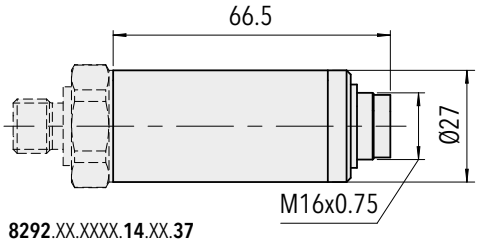


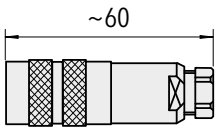
8292.XX.XXXX.XX.XX.**33/35**



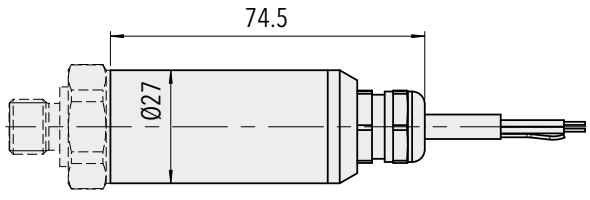


8292.XX.XXXX.**02**.XX.**32**



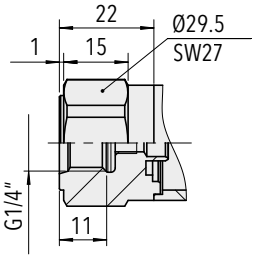


8292.XX.XXXX.**14**.XX.**37**

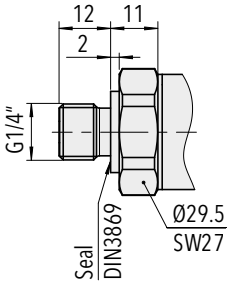


8292.XX.XXXX.**78/80**.XX.XX

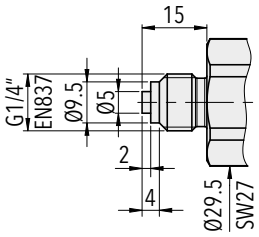
Dimensions



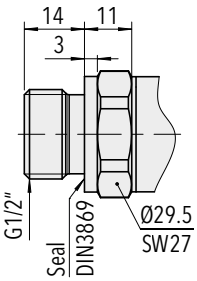
8292.XX.XX**10**.XX.XX.XX
(≤ 600 bar)



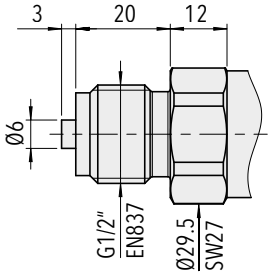
8292.XX.XX**17**.XX.XX.XX
(≤ 600 bar)



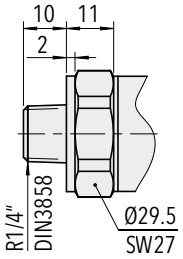
8292.XX.XX**53**.XX.XX.XX



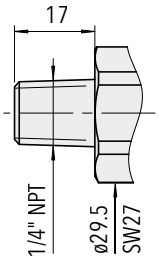
8292.XX.XX**21**.XX.XX.XX
(≤ 600 bar)



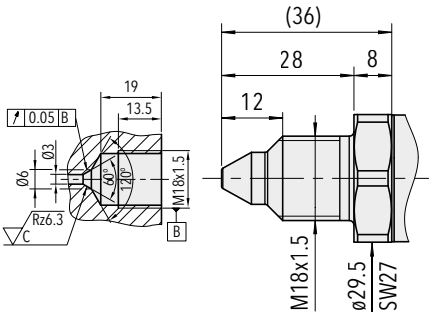
8292.XX.XX**11**.XX.XX.XX
(≤ 600 bar)



8292.XX.XX**19**.XX.XX.XX
(≤ 600 bar)



8292.XX.XX**30**.XX.XX.XX
(≤ 1000 bar)



8292.XX.XX**29**.XX.XX.XX
(> 600 bar)

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	XX
Custom build code	Relative pressure	**8852**						
	Absolute pressure	**8853**						

Measuring range [1]

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: ± 0.5 % FS) [2]		**P5**				
	Type 02 (Accuracy NLH: ± 0.25 % FS) [2]		**P2**				
	Type 01 (Accuracy NLH: ± 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 connector: MIL-C 26482 (Mat.: Al), IP 40				**02**		
	Male electrical connector: DIN43650-A, Mat.: PA, IP65				**04**		
	Male electrical connector: Binder 723, Mat.: Zn, IP67				**14**		
	Male electrical connector 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 plug EN 175301-803-A (DIN43650-A)						**58**
	Female electrical plug: Binder 723						**37**
	Female electrical plug: 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 request
[2] Accuracy NLH see table

Identical construction with other specifications:
Data sheet No. H72230

Specifications

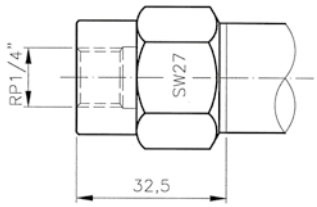
Electrical Data	Output / supply voltage	4 ... 20 mA / 10 ... 30 VDC
	Load	$R_L \leq$ (US-9V) /20 mA
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	T3: -25°C ... +150°C T4: -25°C ... +100°C T6: -25°C ... +55°C
	Ambient temperature	T3/T4: -25°C ... +85°C 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

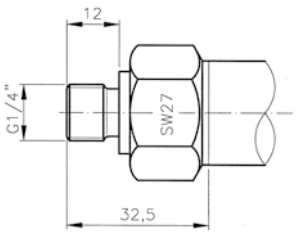
Accuracy

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

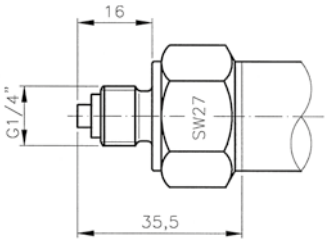
Dimensions



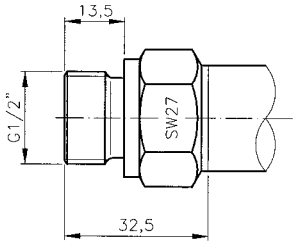
885X.XX.XX**10**.XX.XX.XX



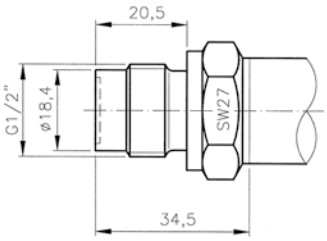
885X.XX.XX**15**.XX.XX.XX



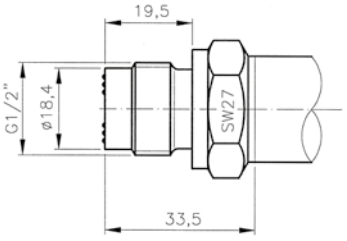
885X.XX.XX**20**.XX.XX.XX



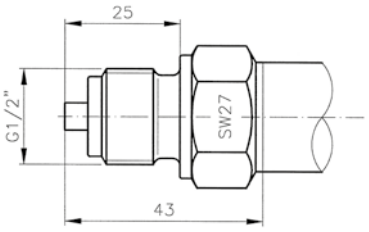
885X.XX.XX**21**.XX.XX.XX



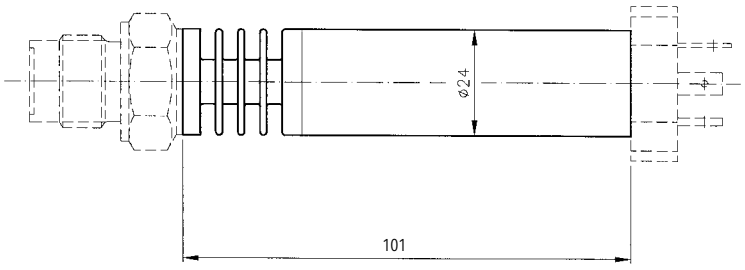
885X.XX.XX**31**.XX.XX.XX



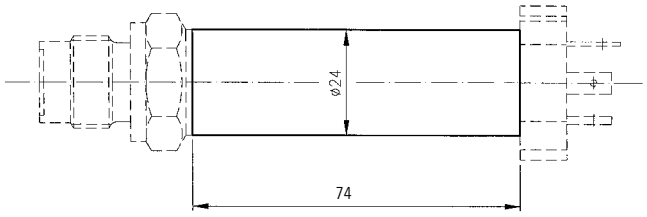
885X.XX.XX**32**.XX.XX.XX



885X.XX.XX**11**.XX.XX.XX



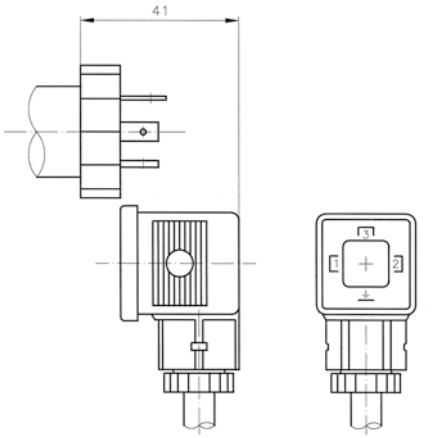
885X.XX.XXXX.XX.XX.**T3**



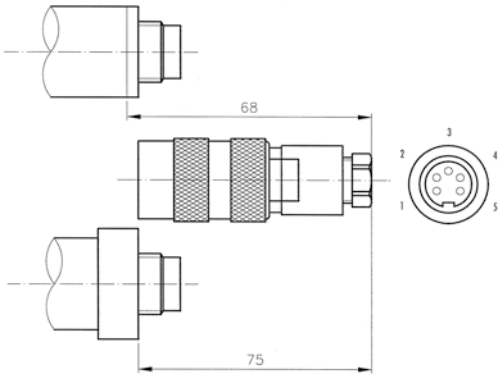
885X.XX.XXXX.XX.XX.**T4**

885X.XX.XXXX.XX.XX.**T6**

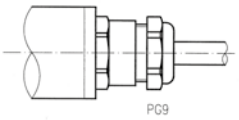
Dimensions



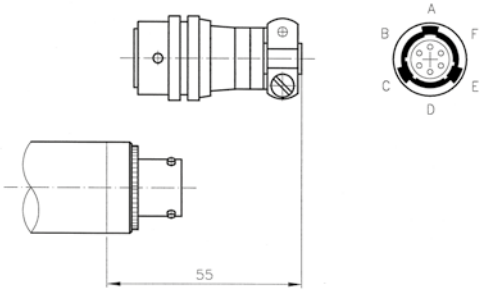
885X.XX.XXXX.**04**.XX.**58**



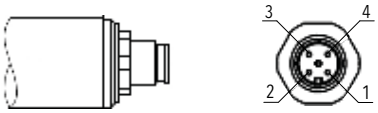
885X.XX.XXXX.**14**.XX.**37**



885X.XX.XXXX.**22/39**.XX.XX

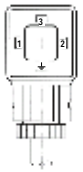
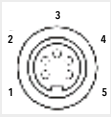
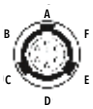
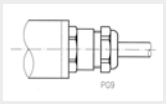
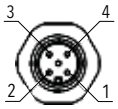


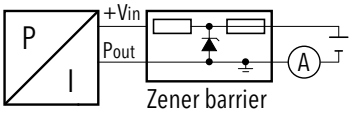
885X.XX.XXXX.**02**.XX.**32**



885X.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	**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



Zener barrier

Marking

For Ex zones	Marking
0, 1, 2, 20, 21, 22 M1, M2	Ⓔx 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	Ⓔx 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 range [1]

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	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 connector EN 175301-803-A, Mat. plastic	**05**
Male electrical connector Binder 723, 5-pole, Metal	**14**
Male electrical connector MIL-C 26482, 6-pole, metal	**02**
Male electrical connector 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 plug EN 175301-803-A (DIN43650-A)	**58**
Female electrical plug Binder 723, 5-pole, metal	**37**
Female electrical plug 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 request
[2] Only with pressure connection 30, 39, 15, 21
[3] P2/A2 ≤ 120 bar
[4] P1/A1 ≤ 270 bar
[5] ≤ +50°C
[6] ≤ 600 bar

Specifications

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

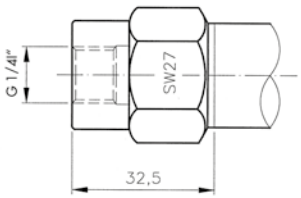
[1)] Provided female connector is mounted according to instructions

Accuracy

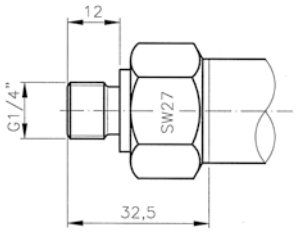
		Sensor 01 (P1/A1) NLH ± 0.1 %				
Pressure measuring range	[bar]	0.1 ... 0.5	0.5 ... 2	2 ... 100	100 ... 600	> 600
NLH @ +25°C (BSL through 0)	[% FS typ.]	± 0.1	± 0.1	± 0.1	± 0.1	-
TEB @ 0 ... +70°C	[% FS typ.]	± 0.8	± 0.3	± 0.3	± 0.3	± 0.3
TEB @ -25 ... +100°C	[% FS typ.]	± 1.3	± 0.75	± 0.75	± 0.75	± 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

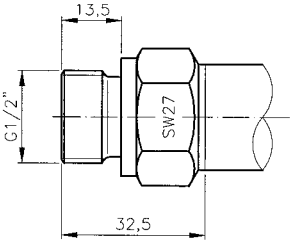
Dimensions



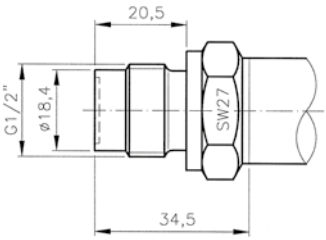
8854.XX.XX**10**.XX.XX.XX



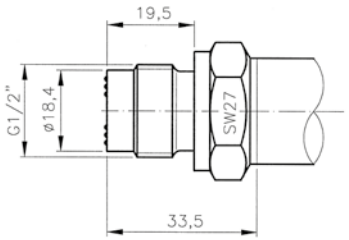
8854.XX.XX**15**.XX.XX.XX



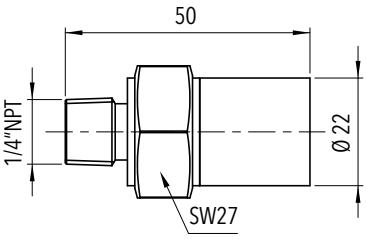
8854.XX.XX**21**.XX.XX.XX



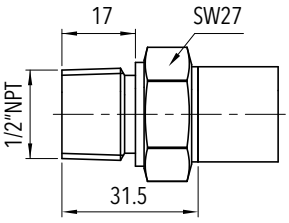
8854.XX.XX**31**.XX.XX.XX



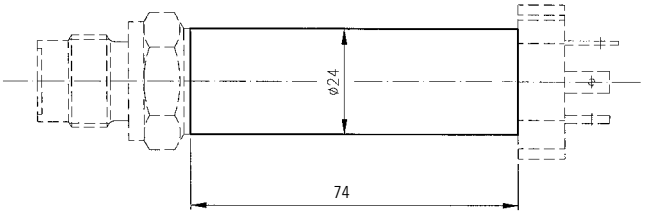
8854.XX.XX**32**.XX.XX.XX



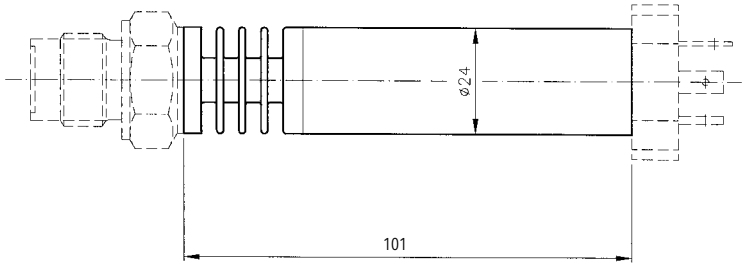
8854.XX.XX**30**.XX.XX.XX



8854.XX.XX**39**.XX.XX.XX

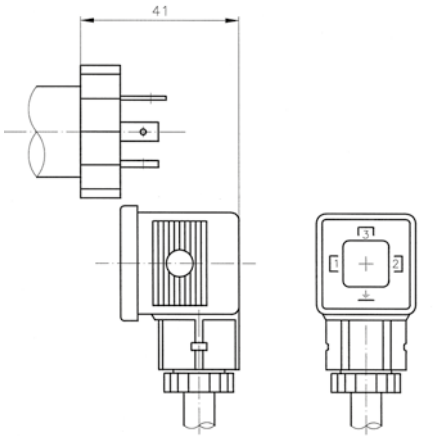


8854.XX.XXXX.XX.XX.**T4**
8854.XX.XXXX.XX.XX.**T6**

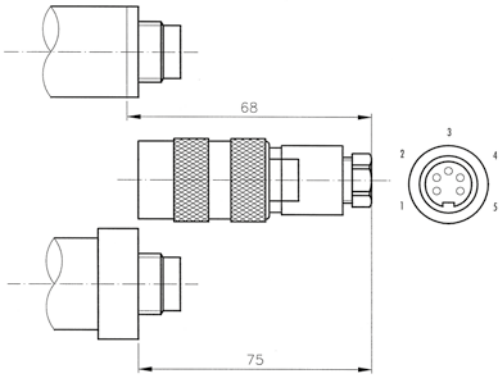


8854.XX.XXXX.XX.XX.**T3**

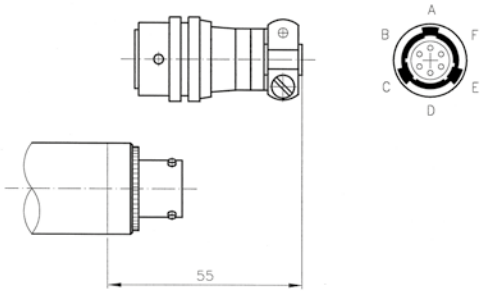
Dimensions



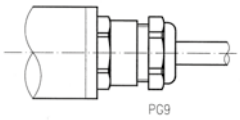
8854.XX.XXXX.**05**.XX.**58**



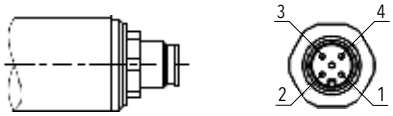
8854.XX.XXXX.**14**.XX.**37**



8854.XX.XXXX.**02**.XX.**32**

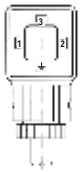
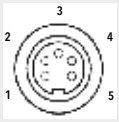
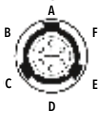
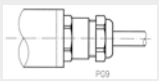
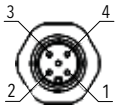


8854.XX.XXXX.**22/39**.XX.XX

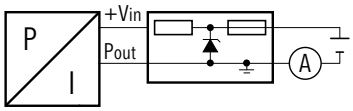


8854.XX.XXXX.**32**.XX.XX

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 + 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

*** 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	Ⓔx 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	Ⓔx 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 range [1]	**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							

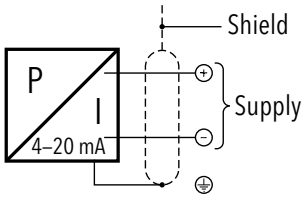
[1] Customized pressure ranges upon request

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

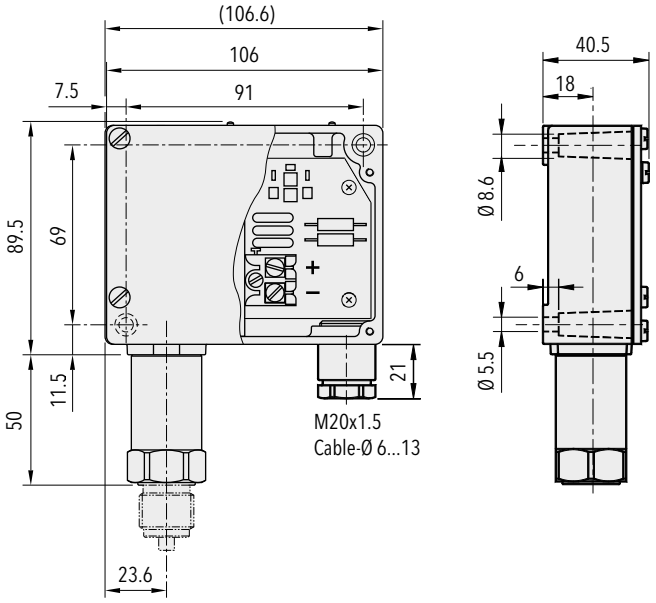
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 2 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.3 % FS typ.
	TC zero point and span typ.	± 0.02 % FS/K typ.
	Long term stability 1 year typ.	± 0.2 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (12 ... 34) VDC
	Load	U_{supply}-12V)/20 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 mm²
	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

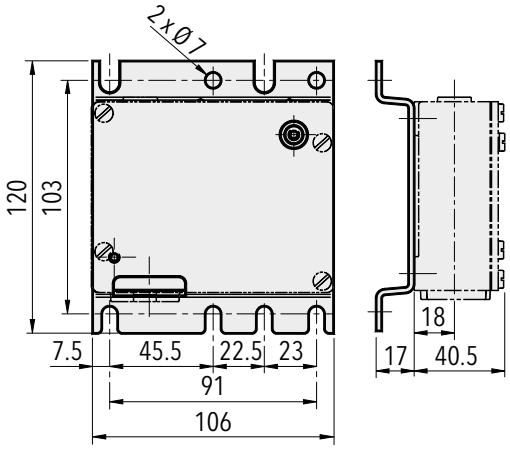


Additional information		
Documents	Data sheet	www.trafag.com/H72206
	Instructions	www.trafag.com/H70722
	Flyer	www.trafag.com/H70677

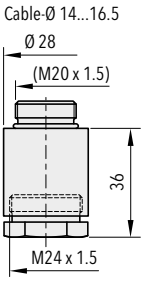
Dimensions



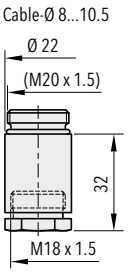
8202.XX.XXXX.XX.XX



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	Accuracy @ 25°C typ.	± 0.8 % FS typ
Measuring range	0 ... 1 to 0 ... 16 bar	Media temperature	-25°C ... +125°C
Output signal	4 ... 20 mA (P1–P2)	Ambient temperature	-25°C ... +85°C
NLH @ 25°C (BSL) typ.	± 0.5 % FS typ.		

Subject to change

Ordering information/type code

				8204 . XX	XXXX	XX	XX
Measuring range [1]	**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	Fixation standard					**00**	
	Wall mounting bracket					**31**	
Accessories	Screwed cable gland DIN89280, M24x1.5 (Cable-ø 14 ... 16.5)						**27**
	Screwed cable gland DIN89280, M18x1.5 (Cable-ø 8 ... 10.5)						**40**
	Damping elements and snubber see data sheet H72258						

[1] Customized pressure ranges upon request

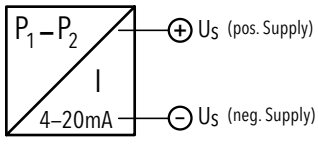
Standard products (extra short lead time)

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

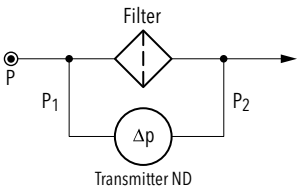
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 3.5 % FS typ.
	Accuracy @ 25°C typ.	± 0.8 % FS typ
	NLH @ 25°C (BSL) typ.	± 0.5 % FS typ.
	TC zero point and span typ.	± 0.04 % FS/K typ.
	Long term stability 1 year typ.	± 0.4 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (12 ... 34) VDC
	Load	U_{supply}-12V/20 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 mm²
	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

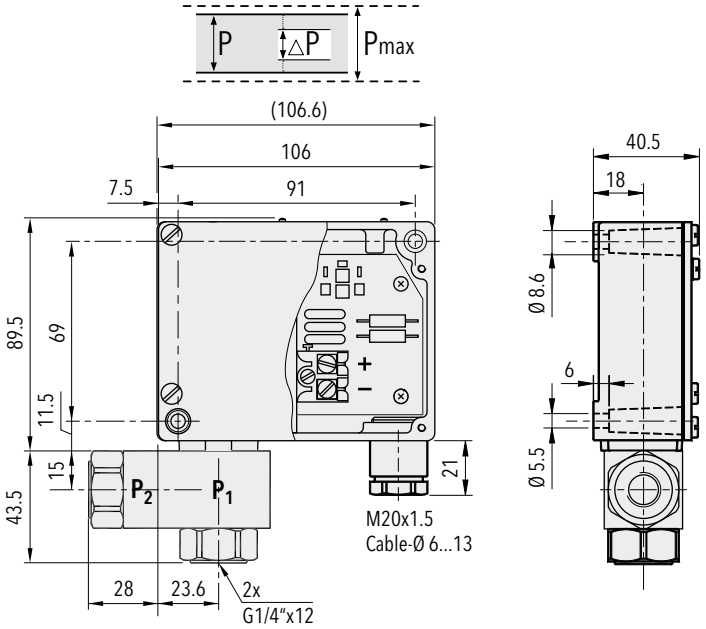


Functional diagram

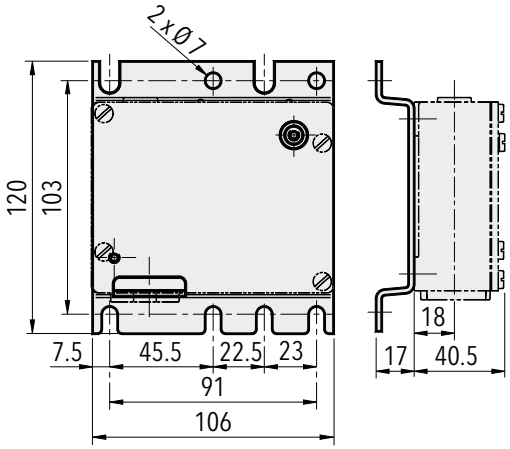


Δp = Differential Pressure
P_1 = Higher pressure
P_2 = Lower pressure
P = System pressure

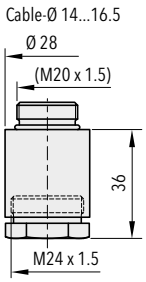
Dimensions



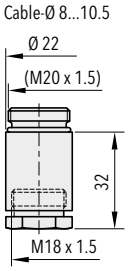
8204.XX.2210.XX.XX



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	Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 250 bar	Media temperature	-40°C ... +100°C
Output signal	4 ... 20 mA	Ambient temperature	-40°C ... +100°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	Approval / conformity	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS

Subject to change

Ordering information/type code

				8264 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**						
	0 ... 2.5	5	100	**75**					
	0 ... 4	8	100	**76**					
	0 ... 6	12	100	**77**					
	0 ... 10	20	200	**78**					
	0 ... 16	32	200	**79**					
	0 ... 25	50	300	**80**					
	0 ... 40	80	300	**81**					
	0 ... 60	120	500	**82**					
	0 ... 100	200	500	**83**					
	0 ... 160 [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 connector EN 175301-803-A (DIN43650-A), Mat. PA						**04**		
	Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5 mm² (cable length see "Accessories")						**78**		
Output signal	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**					
	4 ... 20 mA	(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 plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0								**46**
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0								**56**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2 [4]								**58**
	Elbow connector female: 90° EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 6.5 … 9.5 mm, flammability standard UL94-V2 [4]								**55**
	Fixing set								**V3**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector 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 request
[2] Only for pressure connection G1/4"
[3] Flange (accessory 41) only for pressure ranges ≤ 40 bar
[4] Without ship approval DNV-GL

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 46 V3	0 ... 4	10	4 ... 20 mA	24 (9 ... 32)
NPN6.0A4	8264 77 2510 04 0000 0000 19 46 V3	0 ... 6	15	4 ... 20 mA	24 (9 ... 32)
NPN10.0A4	8264 78 2510 04 0000 0000 19 46 V3	0 ... 10	20	4 ... 20 mA	24 (9 ... 32)
NPN16.0A4	8264 79 2510 04 0000 0000 19 46 V3	0 ... 16	32	4 ... 20 mA	24 (9 ... 32)
NPN25.0A4	8264 80 2510 04 0000 0000 19 46 V3	0 ... 25	50	4 ... 20 mA	24 (9 ... 32)
NPN40.0A4	8264 81 2510 04 0000 0000 19 46 V3	0 ... 40	80	4 ... 20 mA	24 (9 ... 32)
NPN4.0AF4	8264 76 2510 04 0000 0000 19 41 46 74 V3	0 ... 4	10	4 ... 20 mA	24 (9 ... 32)
NPN6.0AF4	8264 77 2510 04 0000 0000 19 41 46 74 V3	0 ... 6	15	4 ... 20 mA	24 (9 ... 32)
NPN10.0AF4	8264 78 2510 04 0000 0000 19 41 46 74 V3	0 ... 10	20	4 ... 20 mA	24 (9 ... 32)
NPN16.0AF4	8264 79 2510 04 0000 0000 19 41 46 74 V3	0 ... 16	32	4 ... 20 mA	24 (9 ... 32)
NPN25.0AF4	8264 80 2510 04 0000 0000 19 41 46 74 V3	0 ... 25	50	4 ... 20 mA	24 (9 ... 32)
NPN40.0AF4	8264 81 2510 04 0000 0000 19 41 46 74 V3	0 ... 40	80	4 ... 20 mA	24 (9 ... 32)

Specifications

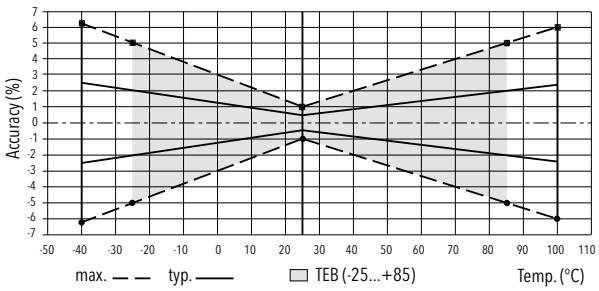
Electrical Data	Output / supply voltage	4...20 mA: 24 (9...32) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +100°C
	Ambient temperature	-40°C ... +100°C
	Protection [1)]	Electrical connection 04: IP65 Electrical connection 78: IP69K
	Humidity	Max. 95 % relative
	Vibration	Electrical connection 04/accessory 55: 10 g (50...2000 Hz) Electrical connection 04: 15 g (50...2000 Hz) Electrical connection 78: 15 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)
	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

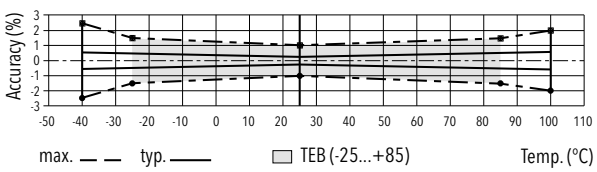
Accuracy

		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

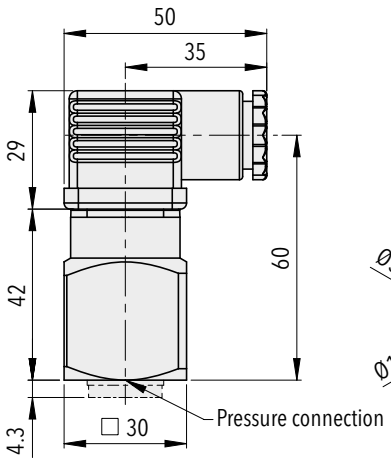
Measuring accuracy 0.5%

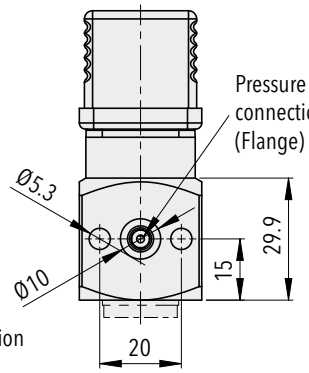


Measuring accuracy 0.3%

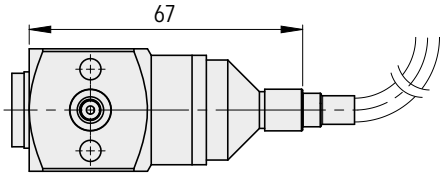


Dimensions

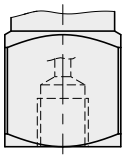




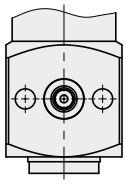
8264.XX.XXXX.**04**.XX.XX



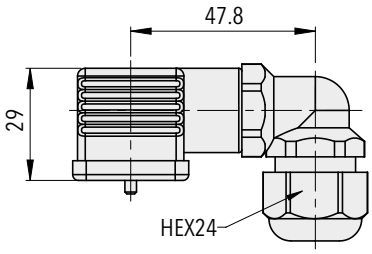
8264.XX.XXXX.**78**.XX.XX



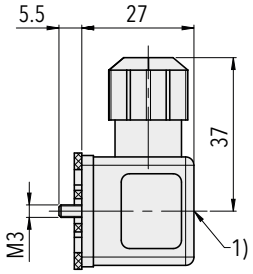
G1/4"x12: **8264**.XX.XX**10**.XX.XX.XX
G1/8"x10: **8264**.XX.XX**18**.XX.XX.XX
M10x1x10: **8264**.XX.XX**17**.XX.XX.XX



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

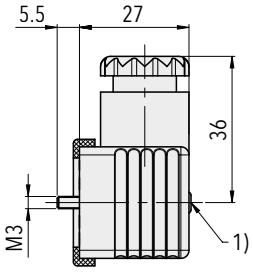


8264.XX.XXXX.XX.XX.**55**



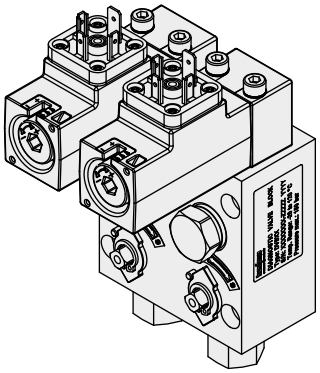
1) Tightening torque 50...60 Ncm

8264.XX.XXXX.XX.XX.**46/56**

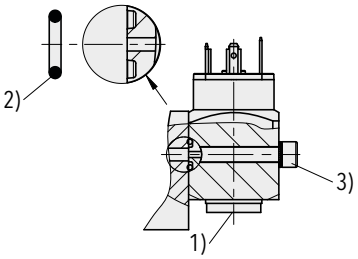


1) Tightening torque 50...60 Ncm

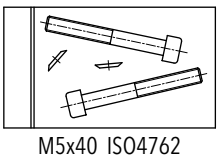
8264.XX.XXXX.XX.XX.**58**



Diagnostic Valve Bloc (DVB)
see specification sheet H72361



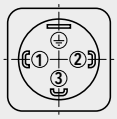
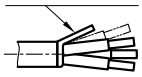
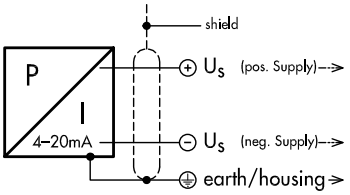
8264.XX.XXXX.XX.XX.**41**



8264.XX.XXXX.XX.XX.**V3**

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

Electrical connection

	Protection / electrical connection		
	IP65		IP69K
	Industrial standard EN175301-803A **04** 		Cable **) **78** Shield 
Output signal  **8264**.xx.xxxx.xx.**19**	Standard	with accessory **92**	
	2	1	brown
	1	2	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

ELECTRONIC PRESSURE SWITCH

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The Electronic Pressure Switch EPN-S is based on the well-proven EPN transmitter family. It stands for reliable accuracy over a wide temperature range and excellent long-term stability even in harshest environments in the shipbuilding and railway industry. The switchpoint is factory set or can be programmed on site using Trafag's Sensor Communicator SC.

Applications

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

Features

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

Technical Data			
Measuring principle	Thin-film-on-steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	Ambient temperature	Standard: -25°C ... +85°C Option accessory 67: -40°C ... +125°C
Output signal	Transistor (open source)	Approval / conformity	DNV-GL, RMRS EN 50155 (Railways) EN 45545-2 (Fire protection, railways)
Accuracy @ 25°C typ.	± 0.5 % FS typ. (Switchpoint)		

Subject to change

Ordering information/type code

8320 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pres-sure [bar]	Burst pres-sure [bar]	Code	Pressure measurement range [psi]	Over pres-sure [psi]	Burst pres-sure [psi]	Code
0 ... 2.5	5	100	**75**	0 ... 30	30	720	**G5**
0 ... 4	8	100	**76**	0 ... 50	115	860	**G6**
0 ... 6	12	100	**77**	0 ... 100	170	1450	**G7**
0 ... 10	20	200	**78**	0 ... 150	290	2900	**G8**
0 ... 16	32	200	**79**	0 ... 250	464	2900	**G9**
0 ... 25	50	300	**80**	0 ... 400	725	4350	**H0**
0 ... 40	80	300	**81**	0 ... 500	1160	4350	**H1**
0 ... 60	120	500	**82**	0 ... 1000	1740	5800	**H2**
0 ... 100	200	500	**83**	0 ... 1500	2900	7250	**H3**
0 ... 160	320	1000	**85**	0 ... 2000	4640	10850	**H5**
0 ... 250	500	1000	**74**	0 ... 3000	7250	14500	**G4**
0 ... 400	800	1500	**84**	0 ... 5000	11600	21750	**H4**
0 ... 600	1000	2000	**86**	0 ... 7500	14500	29000	**H6**

Sensor	Relative pressure	**23**
Pressure connection	G1/4" male (Seal)	**17**
	1/4" NPT male	**30**
	G1/2" male (DIN3852-A) [2]	**21**
	M14x1.5 male (DIN3852-A) [2]	**22**
	1/2" NPT male [2]	**51**
Electrical connection	Male electrical connector EN 175301-803-A (DIN43650-A)	**04**
	Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm², -40°C ... +125°C, (Cable lenght see "Accessories")	**78**
	Cable with shield: Material: Radox Tenuis-TW 600V MM S (EN45545), 4 x 0.5mm², -40°C ... +120°C, (Cable lenght see "Accessories")	**88**
Output signal	1 Transistor out: switchpoint "ON": ... (bar); switchpoint "OFF": ... (bar); delay time: standard 5 (ms), ... (ms) range: 5...10000 (ms)	**T1**
Accessories	Pressure peak damping element ø 0.4 mm	**44**
	Pressure peak damping element ø 1.0 mm	**40**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**46**
	Female electrical plug EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0	**56**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2	**58**
	Railways version (500 VAC/DC), with shielded cable only	**11**
	Higher operating temperature: -40°C ... +125°C	**67**
	Cable length 1.5 m	**1M**
	Cable length 3.0 m	**3M**
	Cable length 5.0 m	**5M**

[1] Customized pressure ranges upon request
[2] Upon request

Programming device Sensor Communicator SC

Ordering No.
- Sensor Communicator SC: F88030
- Programming cable with connector EN 175301-803A: F88049

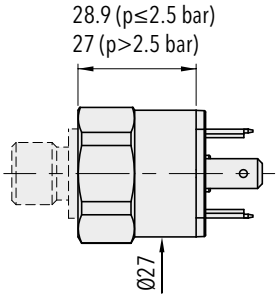
Manuals:
- Sensor Communicator SC: www.trafag.com/H73699

trafag sensors controls

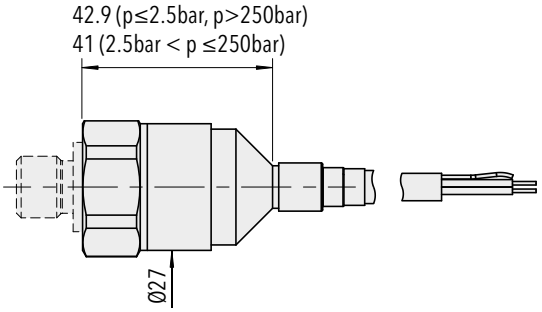
Specifications		
Accuracy	Accuracy @ 25°C typ.	± 0.5 % FS typ. (Switchpoint)
	Temperature dependence switching point	Switchpoint @ +25°C: ± 0.5 % FS typ. Switchpoint @ -25°C ... +85°C: ± 1.0 % FS typ. Switchpoint @ -40°C ... +125°C: ± 1.3 % FS typ. (Accessory 67: higher operating temperature -40°C ... +125°C)
	Long term stability 1 year typ.	≤ ± 0.15 % FS typ.
Electrical Data	Supply voltage	24 (9 ... 32) VDC
	Resistance of insulation	>10 MΩ, 250 VDC 🚢 >10 MΩ, 500 VDC
	Dielectric strength	250 VAC, 50 Hz 🚢 500 VAC, 50 Hz
	Output / supply voltage	Transistor (open source): 24 (9 ... 32) VDC
	Inverse-polarity protection, short-circuit strenght @ 25°C during 5 min.	integrated
	Current consumption	≤ 15 mA
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	Standard: -25°C ... +85°C Option accessory 67: -40°C ... +125°C
	Protection	Electrical connection 04: IP65 (IP67) Electrical connection 78/88: IP69K
	Humidity	Max. 95 % relative
	Vibration	15 g (50...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)	1.4542 (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	~ 85 ... 110 g
	Mounting torque	25 Nm

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

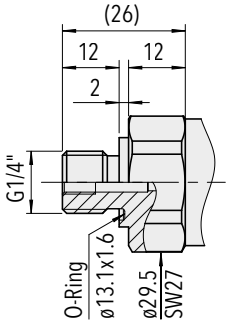
Dimensions



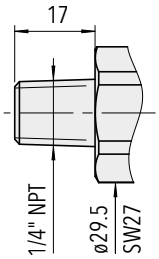
8320.XX.XXXX.**04**.XX.XX
Switchpoint factory set or programmable on site with Trafag Sensor Communicator SC



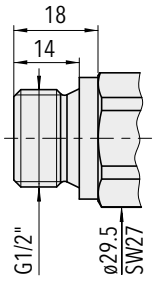
8320.XX.XXXX.**78**.XX.XX Switchpoint factory set
8320.XX.XXXX.**88**.XX.XX



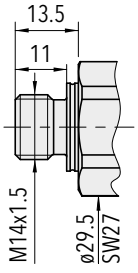
8320.XX.XX**17**.XX.XX.XX



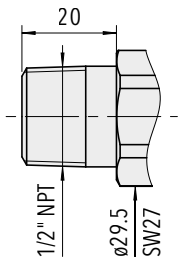
8320.XX.XX **30**.XX.XX.XX



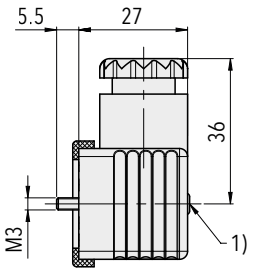
8320.XX.XX **21**.XX.XX.XX



8320.XX.XX **22**.XX.XX.XX

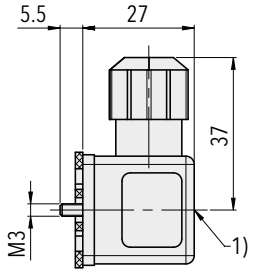


8320.XX.XX**51**.XX.XX.XX



1) Tightening torque 50...60 Ncm

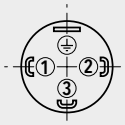
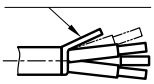
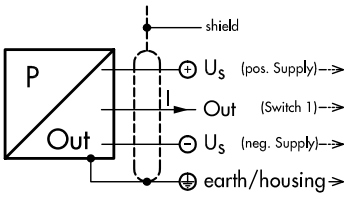
8320.XX.XXXX.XX.XX.**58**



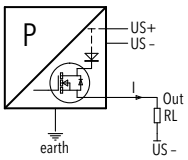
1) Tightening torque 50...60 Ncm

8320.XX.XXXX.XX.XX.**46/56**

Electrical connection

	Protection / electrical connection	
	IP65 (IP67)	IP69K
	Industrial standard EN175301-803A	Cable **)
	04	**78/88**
		Shield 
Output signal  **8320**.xx.xxxx.xx.**T1**	1	brown
	2	blue
	3	black
	⏚	yellow / green

**) Ventilation via cable end



Connection of loads to switch contacts

Additional information

Documents	Data sheet	www.trafag.com/H72333
	Instructions	www.trafag.com/H73333
	Flyer	www.trafag.com/H70652

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

Subject to change

Ordering information/type code

	8380 .	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	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 ... 10	20	30	**G0**
0 ... 1	2	4.8	**71**	0 ... 15	45	70	**G1**
0 ... 1.6	3.2	4.8	**73**	0 ... 20	45	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**
0 ... 100	200	300	**83**	0 ... 1500	3000	4500	**H3**

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"-20UNF male, DIN3866 [3] [4]	**18**
G1/4" male	**17**	7/16"-20UNF female, SAE J512 with valve opener [3] [4]	**24**
G1/2" male DIN3852-E [4]	**41**	7/16"-20UNF male, SAE4 (J1926) [4]	**42**
1/4" NPT male [4]	**30**	9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [2] [4]	**61**
R1/4" male, DIN3858 [4]	**19**	G3/4" frontal membrane [4] [6]	**52**

Electrical connection

Male electrical connector M12x1, 4-pole, Mat. PA (Accessories P3, P4)	**32**
Male electrical connector 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 (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	
Adapter with flange connection, 1 pc. F82054	

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Only for sensors 59 and 89
[3] Max. 40 bar or 500 psi
[4] Upon request
[5] For electrical connections 32 and 35
[6] Not for sensors 57 and 87, only for pressure ranges ≤ 25 bar or 400 psi
[7] 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 Z1 Z2	0 ... 0.2	1.2	15 ... 30	± 0.5
DPC0.4PAP1	8380 69 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 0.4	1.2	15 ... 30	± 0.5
DPC0.6PAP1	8380 70 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 0.6	1.2	15 ... 30	± 0.5
DPC1.0PAP1	8380 71 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 1	2	15 ... 30	± 0.5
DPC1.6PAP1	8380 73 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 1.6	3.2	15 ... 30	± 0.5
DPC2.5PAP1	8380 75 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 2.5	5	15 ... 30	± 0.5
DPC4.0PAP1	8380 76 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 4	8	15 ... 30	± 0.5
DPC6.0PAP1	8380 77 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 6	12	15 ... 30	± 0.5
DPC10.0PAP1	8380 78 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 10	20	15 ... 30	± 0.5
DPC16.0PAP1	8380 79 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 16	32	15 ... 30	± 0.5
DPC25.0PAP1	8380 80 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 25	50	15 ... 30	± 0.5
DPC40.0PAP1	8380 81 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 40	80	15 ... 30	± 0.5
DPC60.0PAP1	8380 82 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 60	120	15 ... 30	± 0.5
DPC100.0PAP1	8380 83 5717 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 100	200	15 ... 30	± 0.5

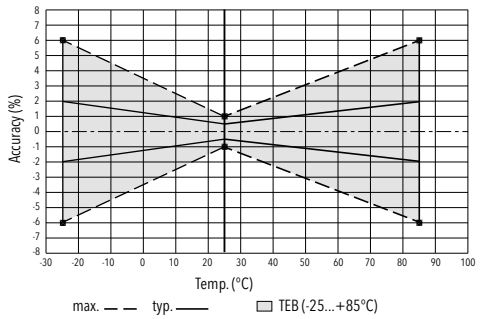
Parameters

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	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, mWC, inchWC	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
	Current consumption	≤ 30 mA
Environmental conditions	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)
	Shock	50 g / 3 ms
EMC Protection	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	Zinc based die-casting alloy, nickel plated display housing plastic
	Sealing	FPM, EPDM
	Male electrical connector	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] Offset correction of analogue output and display indication	± 0.2 % FS		
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		

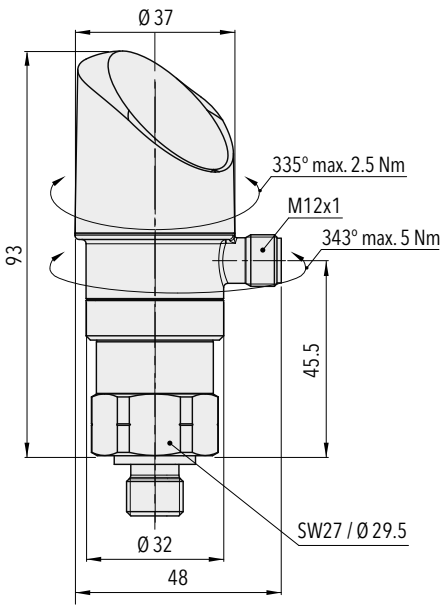
[1] Available with optional function package, see "Accessories"
[2] P_EP – P_nP ≥ 50 % FS

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		

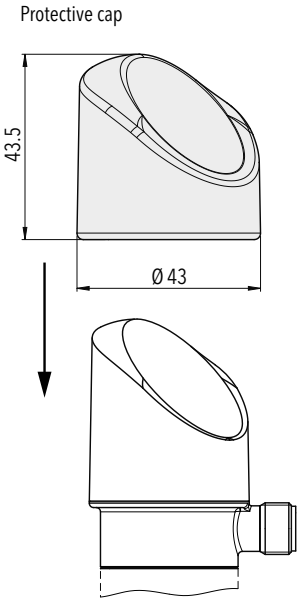
Display	
Display	4-digit 7-segment display 180° flippable with disable function Standard decimal places: ≤ 9: 3 decimal places 10 ... 99: 2 decimal places 100 ... 999: 1 decimal place
Switching status indication	2 LED, red
Operation	With 3 buttons and menu navigation according to VDMA 24574-1
Display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

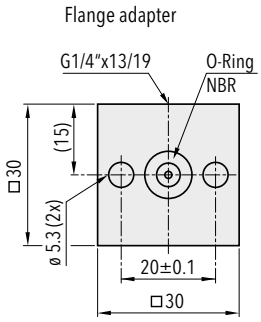
[1] Available with optional function package, see "Accessories"

Dimensions



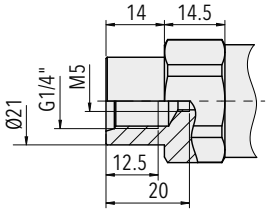
8380.XX.XXXX.**35/32**.XX.XX



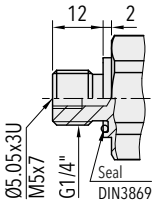


F82054

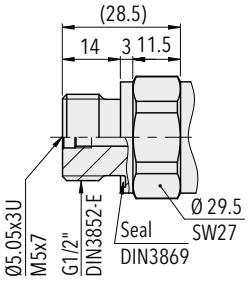
Mounting accessory included



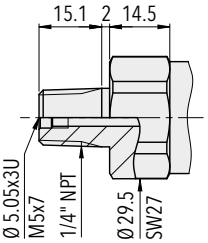
8380.XX.XX**10**.XX.XX.XX



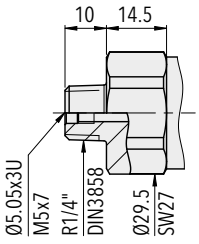
8380.XX.XX**17**.XX.XX.XX



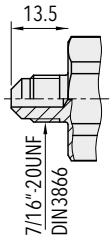
8380.XX.XX**41**.XX.XX.XX



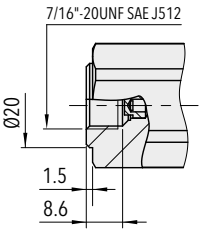
8380.XX.XX**30**.XX.XX.XX



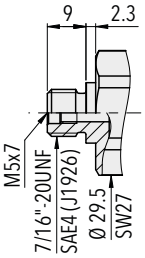
8380.XX.XX**19**.XX.XX.XX



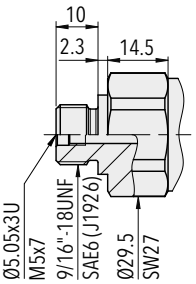
8380.XX.XX**18**.XX.XX.XX



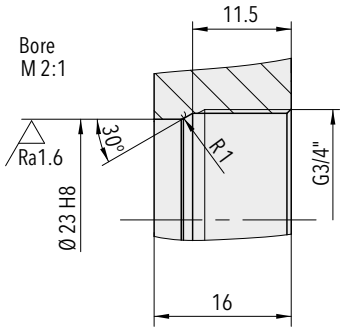
8380.XX.XX**24**.XX.XX.XX

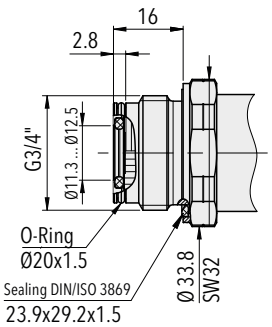


8380.XX.XX**42**.XX.XX.XX

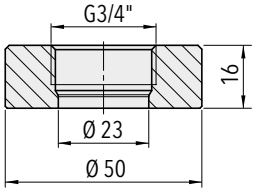


8380.XX.XX**61**.XX.XX.XX

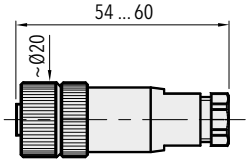




8380.XX.XX**52**.XX.XX.XX

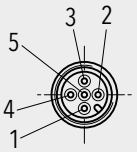
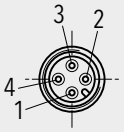
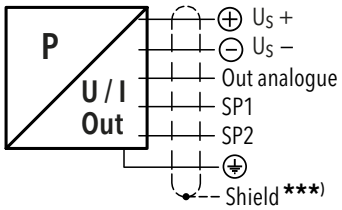


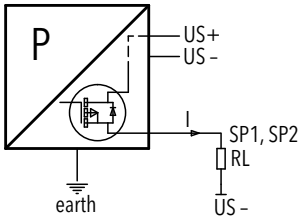
Welding flange for G3/4" frontal membrane (1.4301)
Ordering No. C27805



8380.XX.XXXX.XX.XX.**33**

Electrical connection

		Protection / electrical connection			
		IP67*)			
		M12x1			
		5-pole **35** 		4-pole **32** 	
Output signal		P1	P2	P3	P4
	PA	✓	✓	✓	
	PU	✓	✓	✓	
	PV	✓	✓	✓	
	PW	✓	✓	✓	
	PS				✓
Pin Configuration	 **8380**.xx.xxxx.xx.**PA/PU/PV/PW/PS**	P1 1 3 2 4 5 Shield ***)	P2 1 3 5 4 2 Shield ***)	P3 1 3 2 4 Shield ***)	P4 1 3 – 4 2

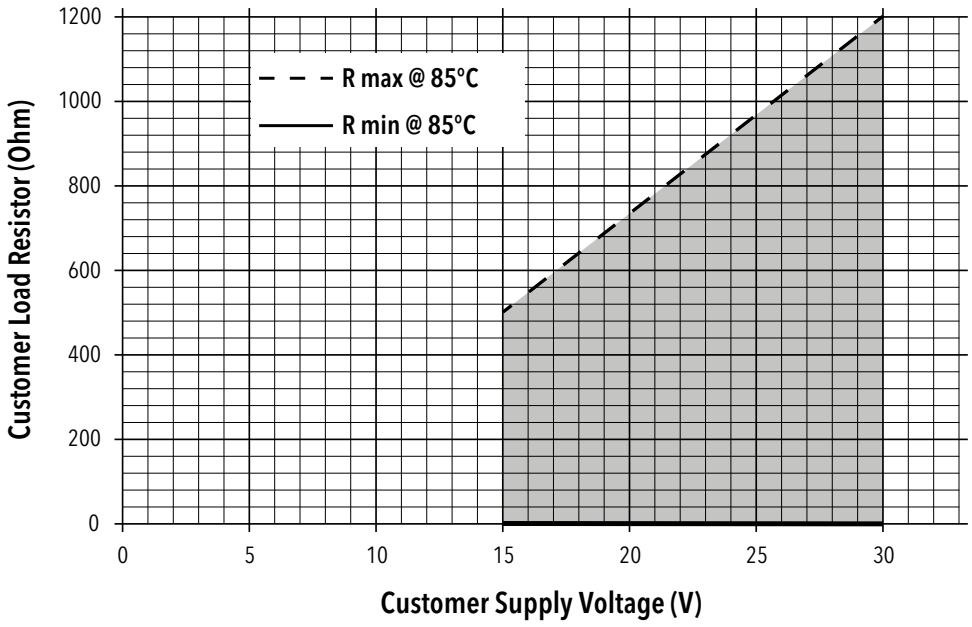


Connection of loads to switching output

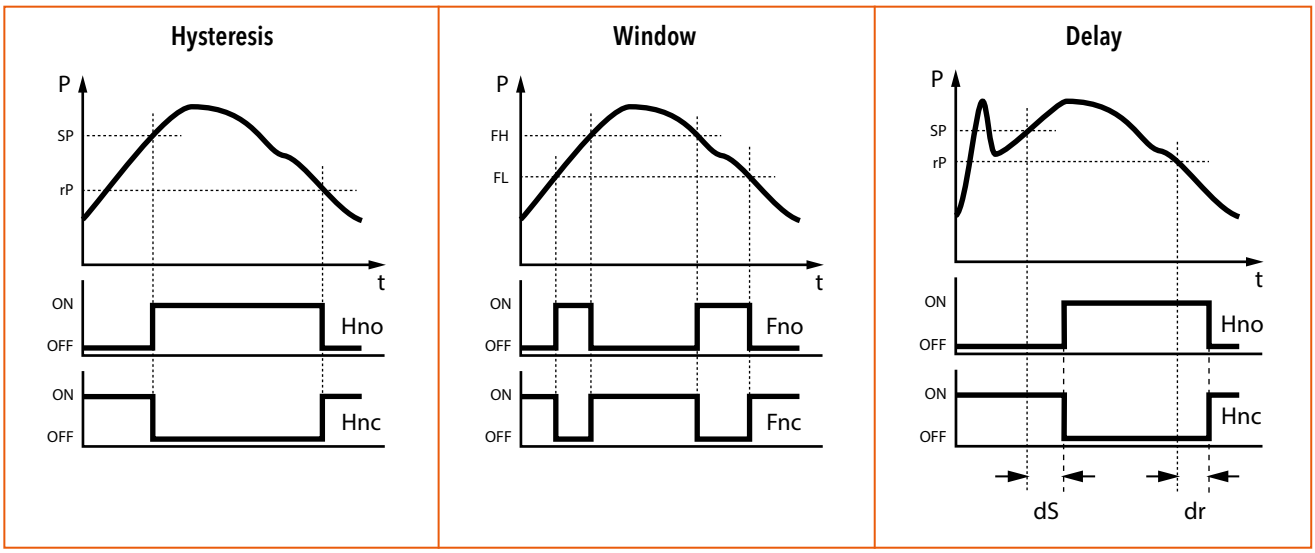
*) Provided female electrical plug is mounted according to instructions

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

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	Accuracy @ 25°C typ.	± 0.5 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi adjustable	Media temperature	-25°C ... +85°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	Ambient temperature	-25°C ... +85°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.	Pressure unit for display	bar, psi, MPa, kPa, mWC, mmWC, inchWC, %, user scale
Switching output	2 transistors PNP	Logger	Ring buffer: 3518 data points Sampling time: 0.1 ... 999.9 s, Off (0)

Ordering information/type code

8381 . XX XX XX XX XX XX

Measuring range [1)]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Code	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	Code
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

Description	Code
Relative pressure, accuracy: 0.5 %	**25**

Pressure connection

Description	Code	Description	Code
G1/4" female [2)]	**10**	1/2" NPT male [2)]	**51**
G1/4" male, Seal: DIN 3869 (accessories 61/63/83)	**17**	R1/4" male, DIN3858 [2)]	**19**
G1/4" male, with integrated damping Ø 0.5 mm, Seal: DIN 3869 (accessories 61/63/83)	**15**	M14x1.5 male, DIN6149-2 [2)]	**31**
		7/16"-20UNF male, DIN3866 [2) 4)]	**18**
G1/4" male (Manometer) EN 837 [2)]	**53**	7/16"-20UNF male, SAE4 (J1926) [2)]	**42**
G1/2" male (Manometer) EN 837 [2)]	**11**	7/16"-20UNF female, SAE J512 with valve opener [2) 4)]	**24**
1/4" NPT male [2)]	**30**	9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 [2)]	**61**

Electrical connection

Description	Code
Male electrical connector M12x1, 4-pole, Mat. PA (Accessories P3, P4)	**32**
Male electrical connector M12x1, 5-pole, Mat. PA (Accessories P1, P2)	**35**

Output signal

Description	Code
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

Description	Code
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	
Adapter with flange connection, 1 pc. F82054	

[1)] Extended overpressure as well as customized pressure ranges upon request
[2)] Upon request
[3)] For electrical connections 32 and 35
[4)] Max. allowable pressure range 60 bar at 120 bar overpressure
[5)] Not for pressure connections 10, 18, 24

Standard products (extra short lead time)

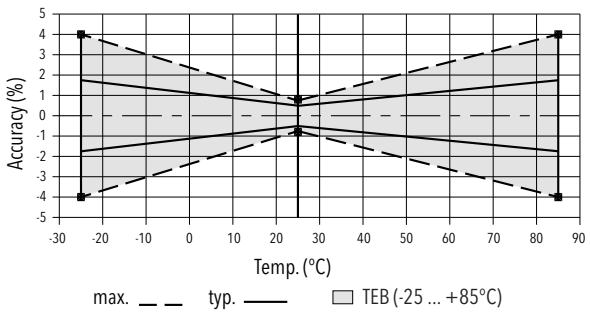
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
DPS2.5PAP1	8381 75 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 2.5	7.5	15 ... 30	± 0.5
DPS4.0PAP1	8381 76 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 4	12	15 ... 30	± 0.5
DPS6.0PAP1	8381 77 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 6	18	15 ... 30	± 0.5
DPS10.0PAP1	8381 78 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 10	30	15 ... 30	± 0.5
DPS16.0PAP1	8381 79 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 16	48	15 ... 30	± 0.5
DPS25.0PAP1	8381 80 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 25	75	15 ... 30	± 0.5
DPS40.0PAP1	8381 81 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 40	120	15 ... 30	± 0.5
DPS60.0PAP1	8381 82 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 60	180	15 ... 30	± 0.5
DPS100.0PAP1	8381 83 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 100	300	15 ... 30	± 0.5
DPS160.0PAP1	8381 85 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 160	480	15 ... 30	± 0.5
DPS250.0PAP1	8381 74 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 250	750	15 ... 30	± 0.5
DPS400.0PAP1	8381 84 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 400	1000	15 ... 30	± 0.5
DPS600.0PAP1	8381 86 2517 35 0000 0000 PA P1 44 61 ZS Z1 Z2	0 ... 600	1500	15 ... 30	± 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	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, mWC, inchWC	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
	Current consumption	≤ 30 mA
Environmental conditions	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)
	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	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] Offset correction of analogue output and display indication	± 0.2 % FS		
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		

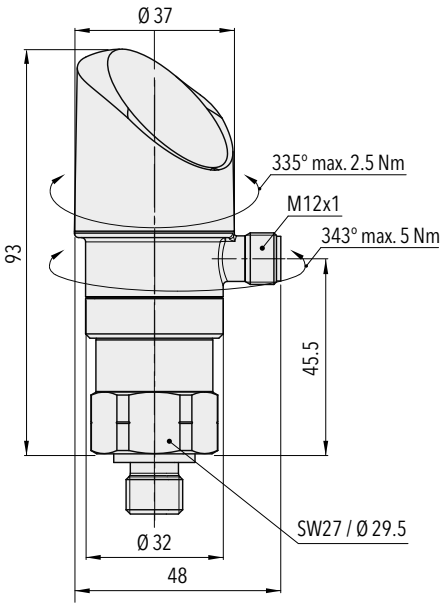
[1] Available with optional function package, see "Accessories"
[2] P_EP – P_nP ≥ 50 % FS

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; User defined values for display indication zero point and end point [1]	Display zero point: -999 ... 9998 Display end point: -998 … 9999

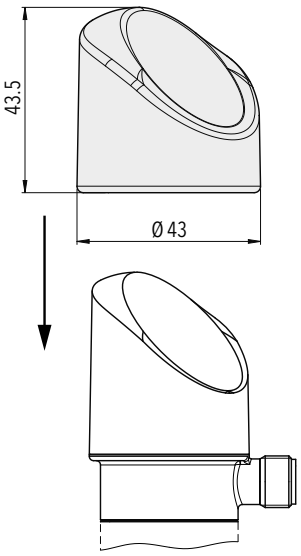
[1] Available with optional function package, see "Accessories"

Dimensions

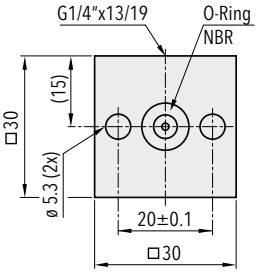


8381.XX.XXXX.**35/32**.XX.XX

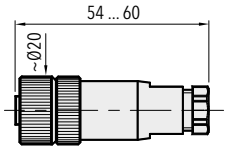
Protective cap



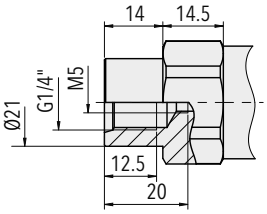
Flange adapter



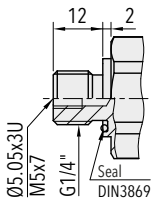
F82054
Mounting accessory included



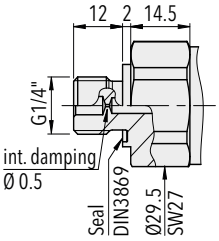
8381.XX.XXXX.XX.XX.**33**



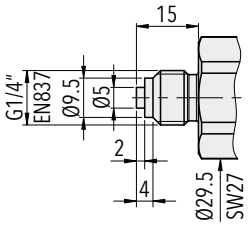
8381.XX.XX**10**.XX.XX.XX



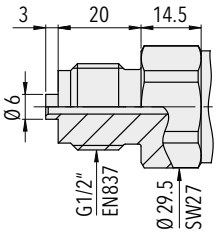
8381.XX.XX**17**.XX.XX.XX



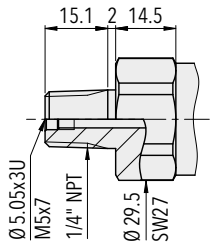
8381.XX.XX**15**.XX.XX.XX



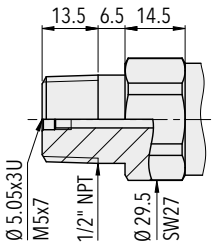
8381.XX.XX**53**.XX.XX.XX



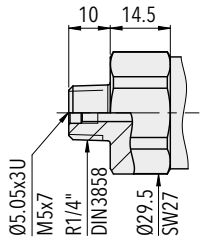
8381.XX.XX**11**.XX.XX.XX



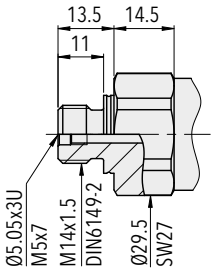
8381.XX.XX**30**.XX.XX.XX



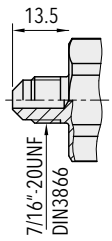
8381.XX.XX**51**.XX.XX.XX



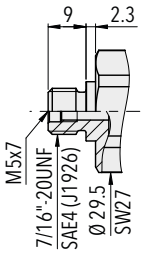
8381.XX.XX**19**.XX.XX.XX



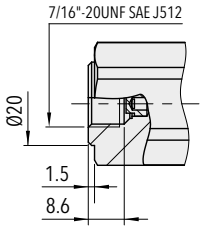
8381.XX.XX**31**.XX.XX.XX



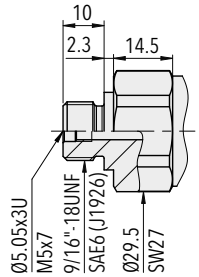
8381.XX.XX**18**.XX.XX.XX



8381.XX.XX**42**.XX.XX.XX

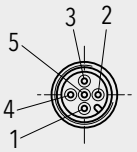
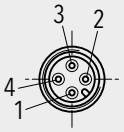
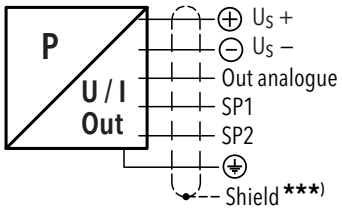


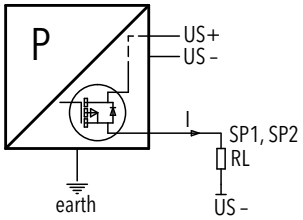
8381.XX.XX**24**.XX.XX.XX



8381.XX.XX**61**.XX.XX.XX

Electrical connection

		Protection / electrical connection			
		IP67*)			
		M12x1			
		5-pole **35** 		4-pole **32** 	
Output signal		P1	P2	P3	P4
	PA	✓	✓	✓	
	PU	✓	✓	✓	
	PV	✓	✓	✓	
	PW	✓	✓	✓	
	PS				✓
Pin Configuration	 **8381**.xx.xxxx.xx.**PA/PU/PV/PW/PS**	P1 1 3 2 4 5 Shield ***)	P2 1 3 5 4 2	P3 1 3 2 4 Shield ***)	P4 1 3 – 4 2

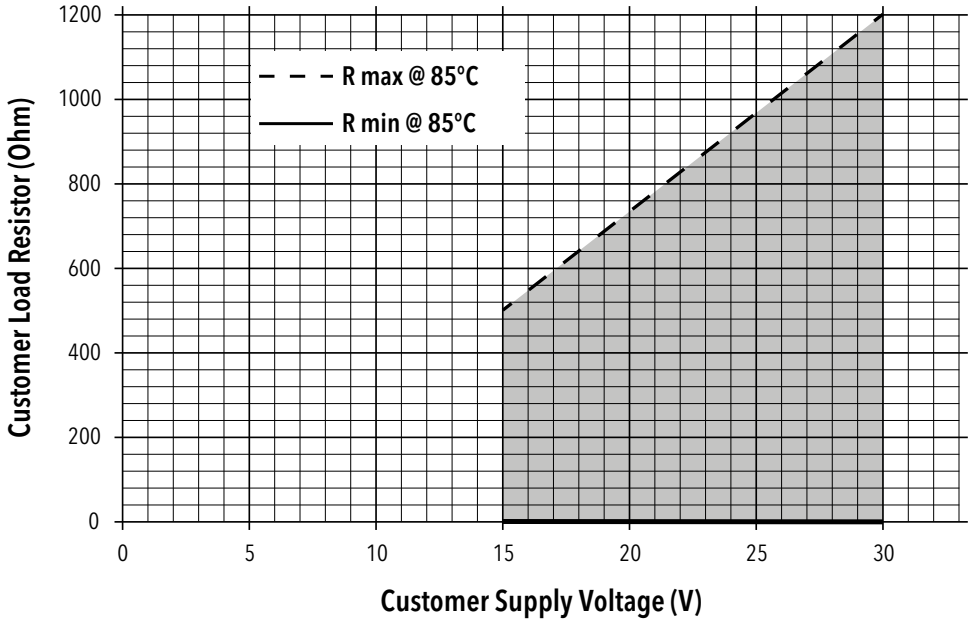


Connection of loads to switching output

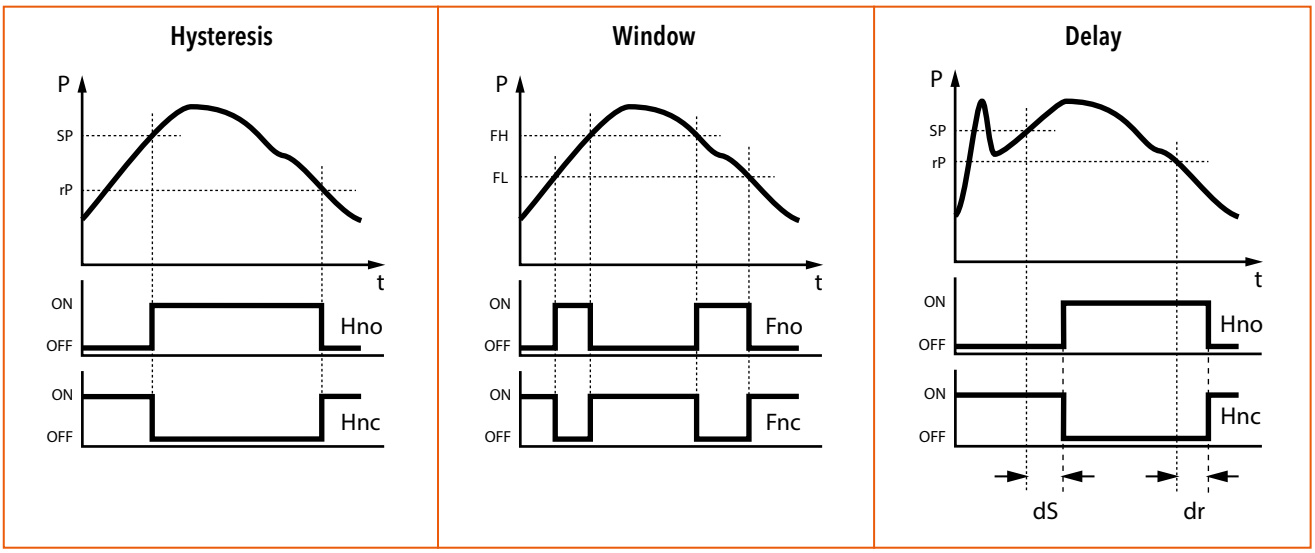
*) Provided female connector is mounted according to instructions

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

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.

OEM-version

Applications

- Shipbuilding
- Process technology
- Water treatment (wastewater, grey-water, drinking water)
- Seawater

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 ... 6.0 bar 0 ... 1.5 to 0 ... 100 psi	Media temperature	max. -25°C ... +70°C
Output signal	4 ... 20 mA	Ambient temperature	max. -25°C ... +70°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. Range 0 ... 0.1 to 0 ... 0.2 bar: ± 0.3 % FS typ.	Approval / conformity	DNV-GL EU RO Mutual Recognition Type Approval Certificate

Subject to change

Ordering information/type code

8439 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 0.1	1.2	2	**66**	0 ... 1.5	15	30	**F6**
0 ... 0.16	1.2	2	**67**	0 ... 2	15	30	**F7**
0 ... 0.2	1.2	2	**68**	0 ... 2.5	15	30	**F8**
0 ... 0.4	1.2	2	**69**	0 ... 5	15	30	**F9**
0 ... 0.5	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 [4]	45	70	**G5**
0 ... 2.5 [4]	5	7.5	**75**	0 ... 50 [4]	100	150	**G6**
0 ... 4 [4]	8	12	**76**	0 ... 100 [4]	200	250	**G7**
0 ... 6 [4]	12	15	**77**				

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 PE, Ø 6 mm, L = 5 m	**41**
	Cable PUR, Ø 6 mm, L = 10 m	**22**	Cable PE, Ø 6 mm, L = 10 m	**42**
	Cable PUR, Ø 6 mm, L = 15 m	**23**	Cable PE, Ø 6 mm, L = 15 m	**43**
	Cable PUR, Ø 6 mm, L = 20 m	**24**	Cable PE, Ø 6 mm, L = 20 m	**44**
	Cable PUR, Ø 6 mm, L = 25 m	**25**	Cable PE, Ø 6 mm, L = 25 m	**45**
	Cable PUR, Ø 6 mm, L = 30 m	**26**	Cable PE, Ø 6 mm, L = 30 m	**46**
	Cable PUR, Ø 6 mm, customized (L = max. 50 m)	**20**	Cable PE, Ø 6 mm, customized (L = max. 50 m)	**40**

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 request
[2] See "Dimensions"
[3] Upon request
[4] Without ship approval DNV-GL

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.

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 [2]	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.2358.4X.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

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 (6.0 bar/60 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_2O_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

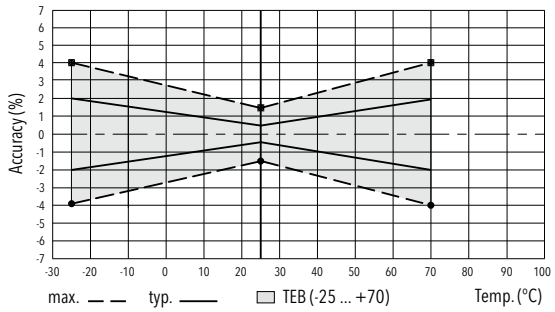
[1)] see table Temperature ranges

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	

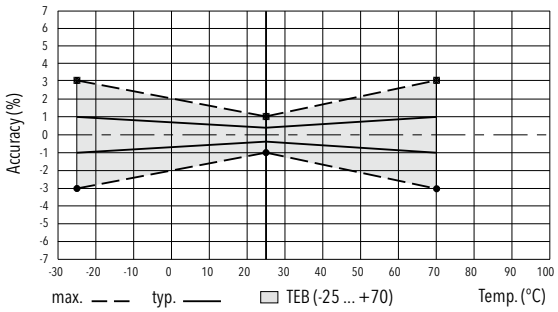
Accuracy		**Measuring accuracy 0.3 %** Measuring ranges ≥ 0.3 bar	**Measuring accuracy 0.5 %** Measuring ranges < 0.3 bar
TEB @ -25 ... +70°C	[% FS typ.]	± 1.0	± 2.0
Accuracy @ +25°C	[% FS typ.]	± 0.3	± 0.5
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.3
TC zero point and span	[% FS/K typ.]	± 0.02	± 0.02
Long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

For instruments with configurable measuring ranges, the specifications always refer to the measuring span of the maximum measuring range. If the measuring span is reduced, the relative errors increase in relation to the maximum and the set measuring span.

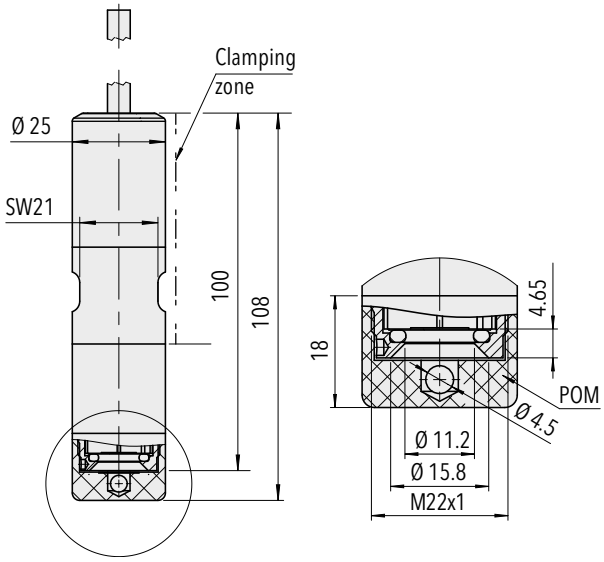
Measuring accuracy 0.5 %



Measuring accuracy 0.3 %

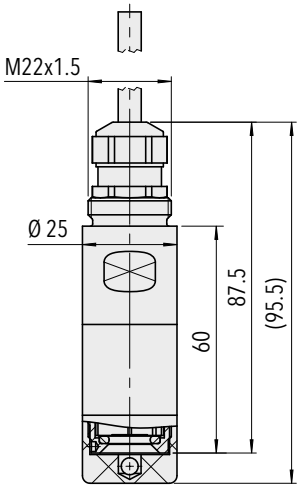


Dimensions



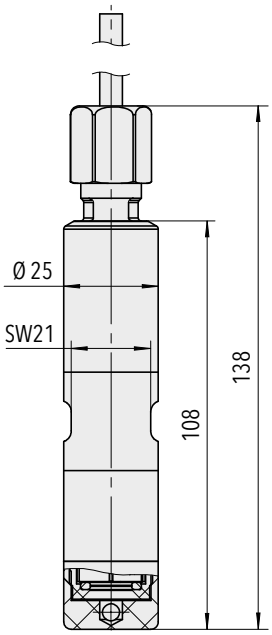
8439.XX.XX**58/55**.XX.XX.XX

Standard version



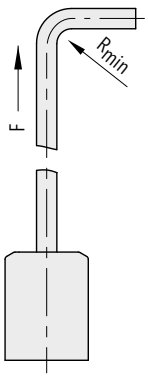
8439.XX.XX**56/50**.XX.XX.XX

OEM-version



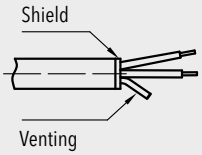
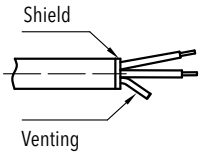
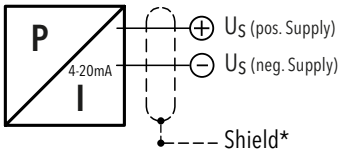
8439.XX.XX**60**.XX.XX.XX

Serto 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 (6.0 bar/60 m)	IP68 (6.0 bar/60 m)
		Cable PUR Ø 6 mm (5x0.22mm²) **2X** 	Cable PE Ø 6 mm (5x0.22mm²) **4X** 
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)
T-Range	Minimum cable bending radius R_{min}	40 mm	30 mm
T-Range	Ambient and media temperature	-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 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	Accuracy @ 25°C typ.	± 0.3 % FS typ. Range 0...0.1 to 0...0.4 bar: ± 0.5 % FS typ.
Measuring range	0 ... 0.1 to 0 ... 10 bar	Media temperature	-25°C ... +80°C (+70°C)
Output signal	4 ... 20 mA	Ambient temperature	-25°C ... +80°C (+70°C)
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. Range 0...0.1 to 0...0.4 bar: ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

				8438 . 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 ... 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]						**22**		
	Cable: FEP ø 6 mm [2]						**32**		
	Cable: PE ø 6 mm [2]						**42**		
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								**61**
	Seal CR								**62**
	Seal EPDM								**63**

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Please specify cable length when ordering (cable lengths >50 m up to 120 m upon request)

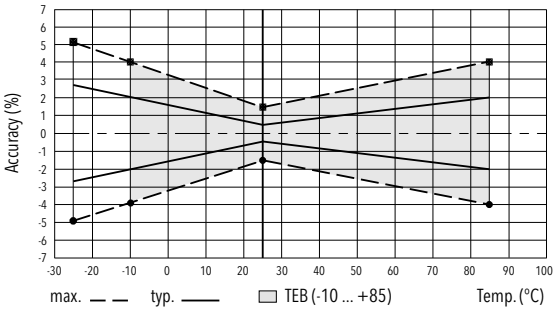
Standard products (extra short lead time)

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

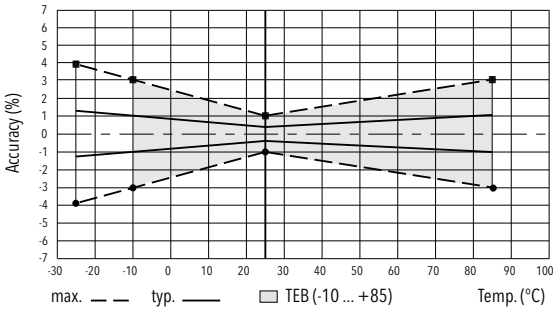
Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC
	Rise time	Typ. 1 ms/10...90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
Environmental conditions	Media temperature	-25°C ... +80°C (+70°C)
	Ambient temperature	-25°C ... +80°C (+70°C)
	Protection	IP68 (25 bar; 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_2O_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	± 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

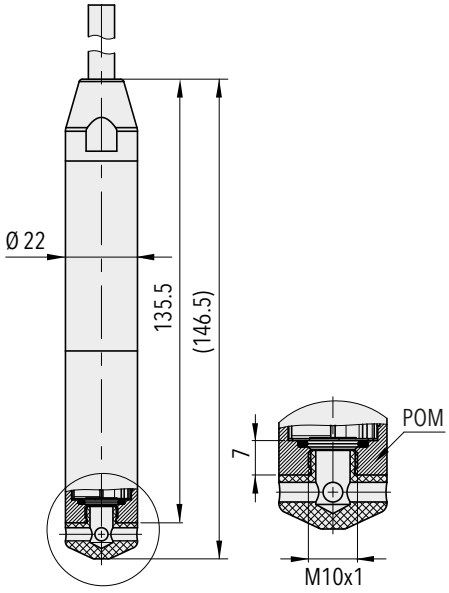
Measuring accuracy 0.5%



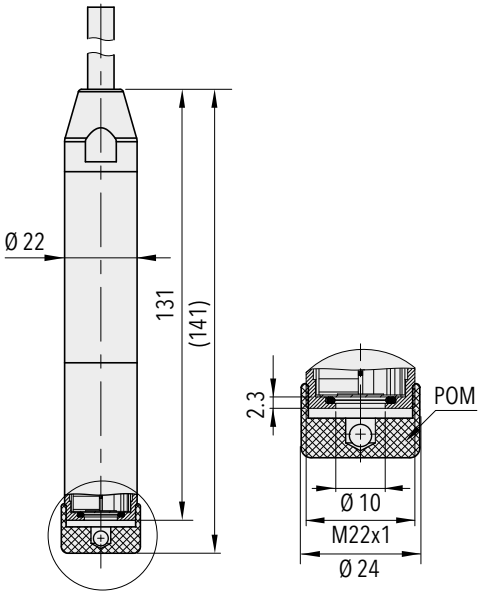
Measuring accuracy 0.3%



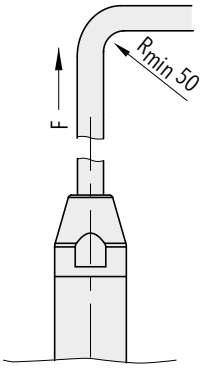
Dimensions



8438.XX.XX**46**.XX.XX.XX

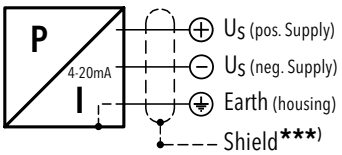


8438.XX.XX**48**.XX.XX.XX



F = max. 12 kg (120 N)

Electrical Connection

		Protection / electrical connection		
		IP68 (25 bar; 250m)	IP68 (25 bar; 250m)	IP68 (25 bar; 250m)
		Cable PUR Ø 6 mm (5x0.22mm²) **22** Shield Venting	Cable FEP Ø 6 mm (5x0.22mm²) **32** Shield Venting	Cable PE Ø 6 mm (5x0.22mm²) **42** Shield Venting
Output signal	 **8438**.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) (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

- Pressure ranges from 100 mbar
- No media contacting O-rings
- Cable PUR or FEP
- 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 range [1]	**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 ... 1.0	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: ± 0.5% FS [2]				**P5**				
	Type 02, accuracy NLH: ± 0.25% FS [2]				**P2**				
	Type 01, accuracy NLH: ± 0.1% FS [2]				**P1**				
Pressure connection	Open					**40**			
	Closed					**41**			
	G1/4" male					**15**			
Electrical Connection	Cable PUR [3]						**22**		
	Cable FEP [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 request
[2] Accuracy NLH see table
[3] Please specify the cable length when ordering
[4] Please specify the measuring medium when ordering

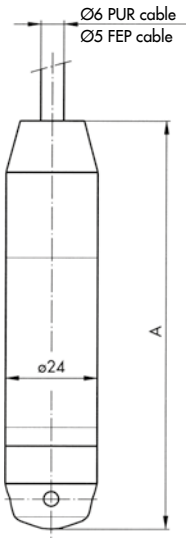
Specifications

Electrical Data	Output / supply voltage	4...20 mA: 9...33 VDC 0...10 VDC: 15...30 VDC
	Load	4 ... 20 mA: $R_L \leq (U_S\text{-}9V)/20\ mA$ 0 ... 10 VDC: $R_L > 10\ k\Omega$
	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

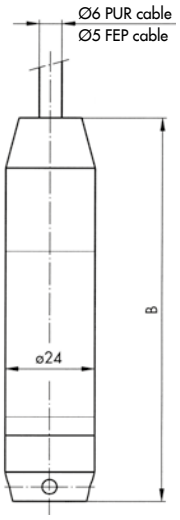
Accuracy

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

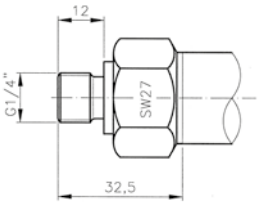
Dimensions



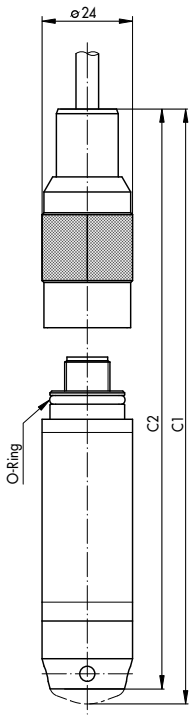
8838.XX.XX.**41**.XX.XX.XX



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



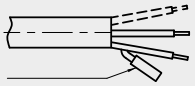
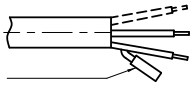
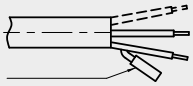
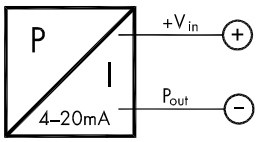
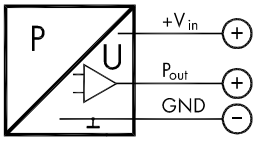
8838.XX.XX.**15**.XX.XX.XX



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	Cable Teflon	Cable PE
		22	**32**	**29**
		 Venting	 Venting	 Venting
Output signal	 **8838**.xx.xxxx.xx.**19**	white yellow	white yellow	white yellow
Output signal	 **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

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

Subject to change

Ordering information/type code

				8432 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**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	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, 5x0.22mm² [2]						**22**		
	Cable with shield: FEP ø 6 mm, 5x0.22mm² [2]						**32**		
	Cable with shield: PE ø 6 mm, 6x0.22mm² [2]						**42**		
Output signal	**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 request
[2] Please specify cable length when ordering (cable lengths >50 m up to 120 m upon request)

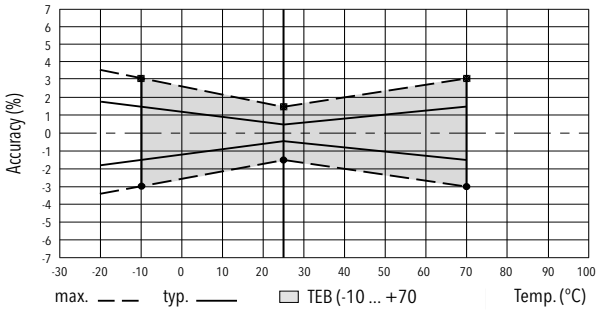
Specifications

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_2O_3 (96 %)
	Pressure connection (wetted parts)	1.4404/1.4435 (AISI316L)
	Housing	1.4404/1.4435 (AISI316L)
	Sealing	FKM 70 Sh
	Weight	~ 200 g

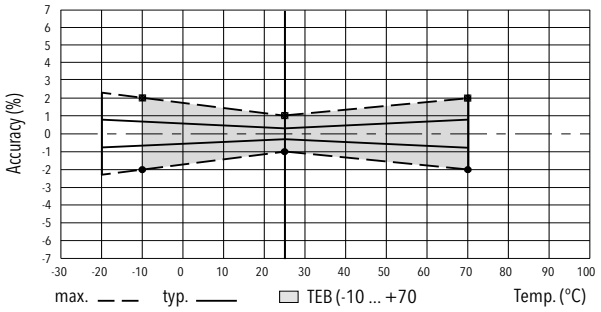
Accuracy

		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

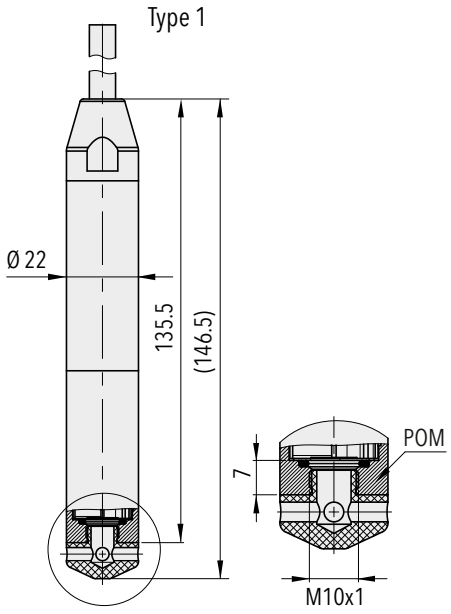
Measuring accuracy 0.5%



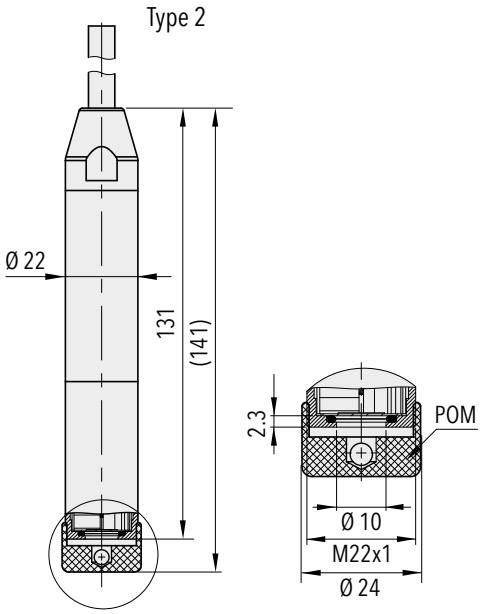
Measuring accuracy 0.3%



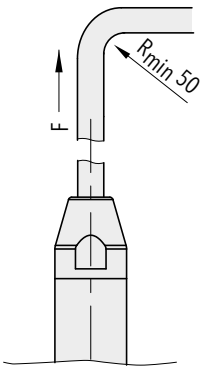
Dimensions



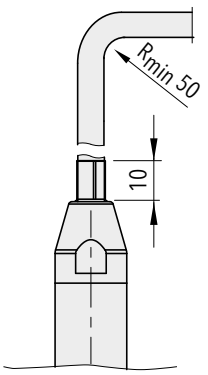
8432.XX.XX**46**.XX.XX.XX



8432.XX.XX**48**.XX.XX.XX

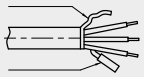
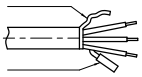
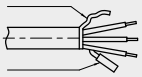
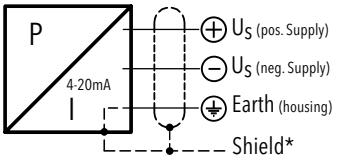


8432.XX.XXXX.**22**.XX.XX



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

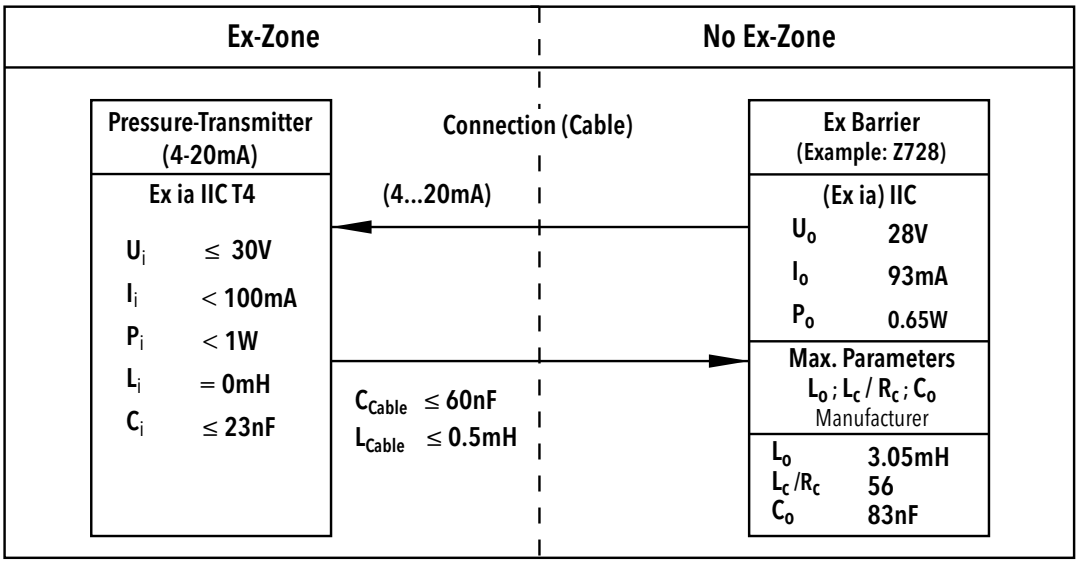
Electrical connection

		Protection / electrical connection		
		IP68 (25 bar; 250m)	IP68 (25 bar; 250m)	IP68 (25 bar; 250m)
		Cable PUR Ø 6 mm (5x0.22mm²) **22** Shield  Venting	Cable FEP Ø 6 mm (5x0.22mm²) **32** Shield  Venting	Cable PE Ø 6 mm (6x0.22mm²) **42** Shield  Venting
Output signal	 **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	Ⓔx II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC T125°C Da I M1 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 range [1]	**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: ±0.1 % FS) [2]				**P1**				
	Type 02, relative pressure (accuracy NLH: ±0.25 % FS) [2]				**P2**				
	Type 05, relative pressure (Accuracy NLH: ± 0.5 % 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 request
[2] Accuracy NLH see table
[3] Please specify the cable length when ordering
[4] Please specify the measuring medium when ordering
[5] 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	± 0.05 % FS
	Zener barrier	30 VDC/ 100mA/ 1W
	Load	4 ... 20 mA: $R_L \leq (U_S\text{-}9V)/20$ mA
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	T4/T6: -5°C ... +50°C
	Ambient temperature	T4/T6: -5°C ... +50°C
	Protection	Min. IP68
	Humidity	Max. 95 % relative
	Vibration	6 g (25...2000 Hz)
	Shock	50 g / 1 ms
EMC Protection	Burst	EN/IEC 61000-4-4, Level 3
	Surge	EN/IEC 61000-4-5, Level 3 $R_i = 42\Omega$
	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) or titanium
	Housing	1.4404 (AISI316L) or titanium
	Sealing	FKM (Viton)
	Male electrical plug	See ordering information
	Weight	~ 200 g
	Mounting torque	25 Nm

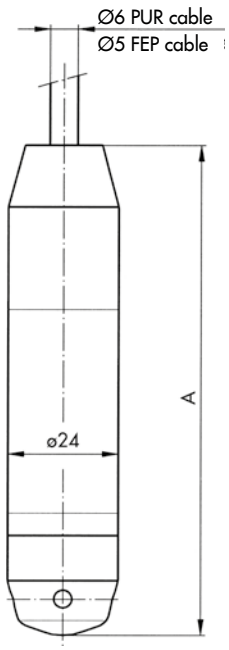
Accuracy

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

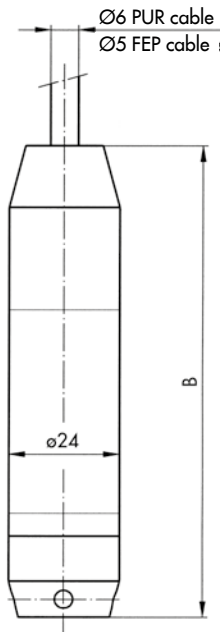
Additional information

Documents	Data sheet	www.trafag.com/H72231
	Instructions	www.trafag.com/H73227
	Flyer	www.trafag.com/H70610

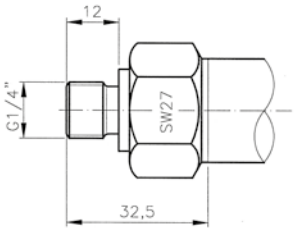
Dimensions



8858.XX.XX.**41**.XX.XX.XX



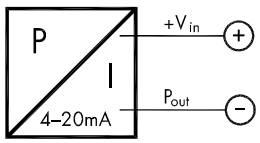
8858.XX.XX.**40**.XX.XX.XX



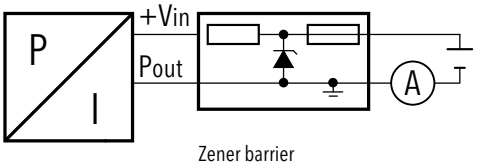
8858.XX.XX.15.XX.XX.XX

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

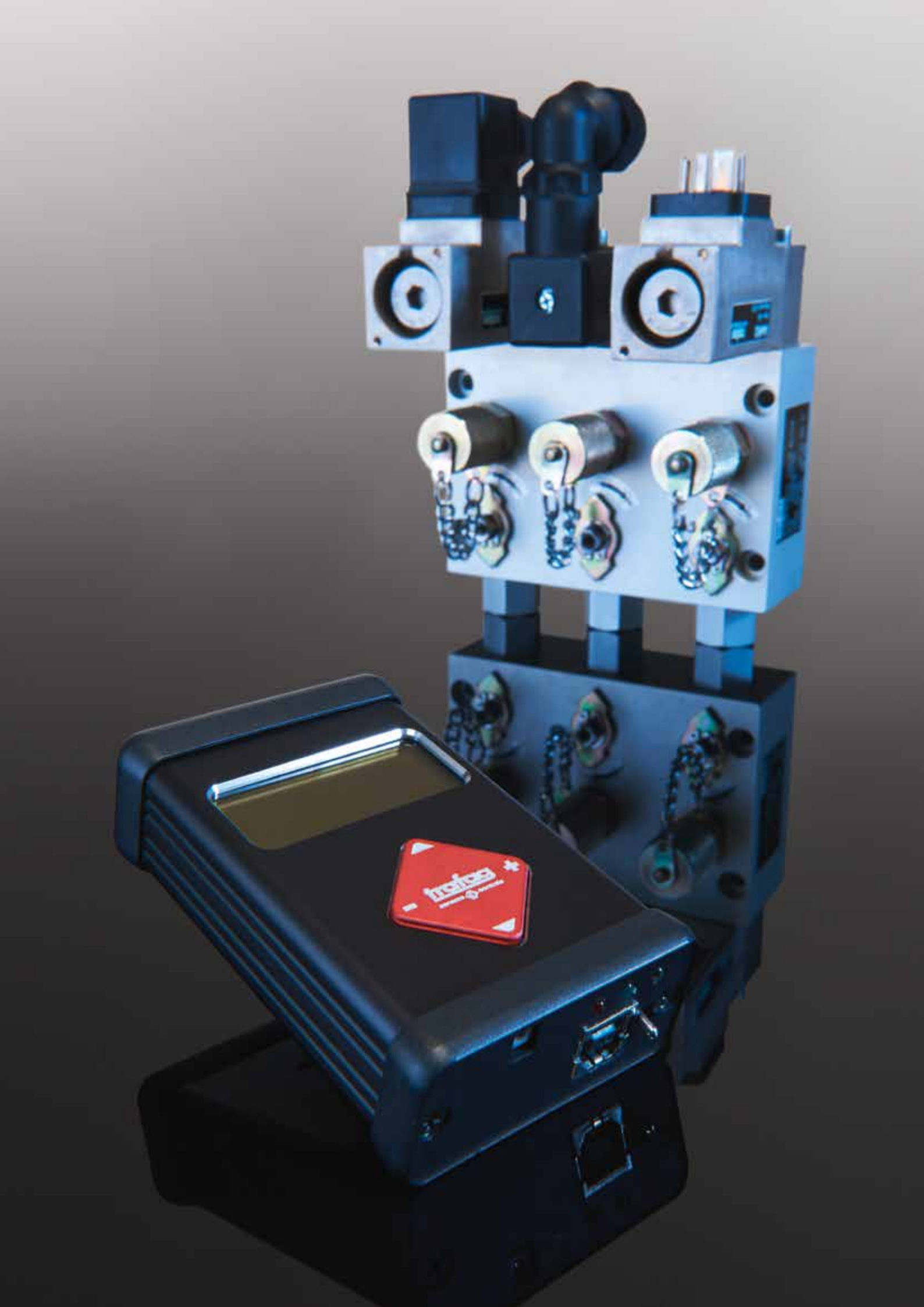
Electrical connection



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



Zener barrier

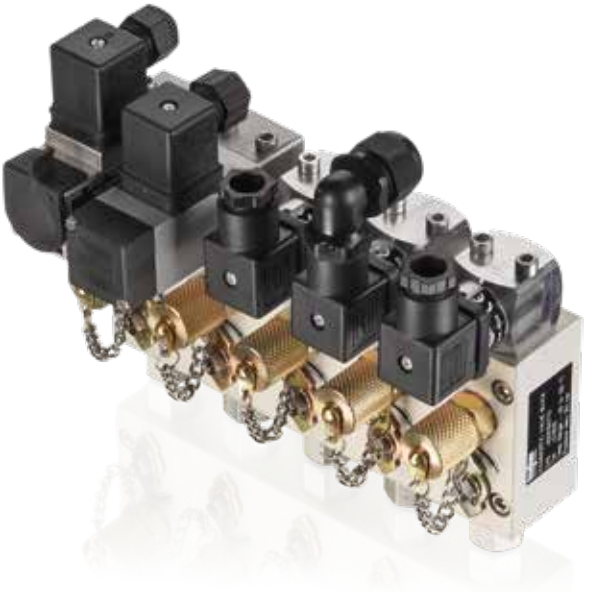


Accessories

Trafag offers a wide range of original accessories which are ideally matched to our products. They include devices for monitoring or configuring transmitters and electronic pressure switches, such as the Sensor Master Interface SMI with Bluetooth to connect with the Android-App, hand pumps with precision pressure gauge or the Sensor Communicator, a handheld device which provides direct access to the calibration values in the Trafag ASIC. Trafag also offers a wide range of accessories, which can be adapted to meet specific application requirements to 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 and electronic pressure switches

- 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		

trafag sensors controls

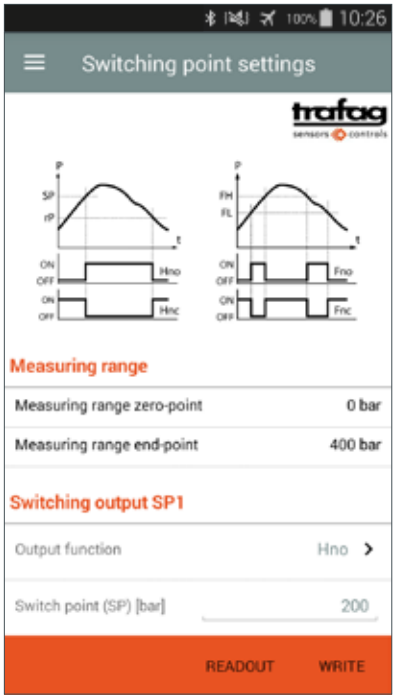
SMI

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	

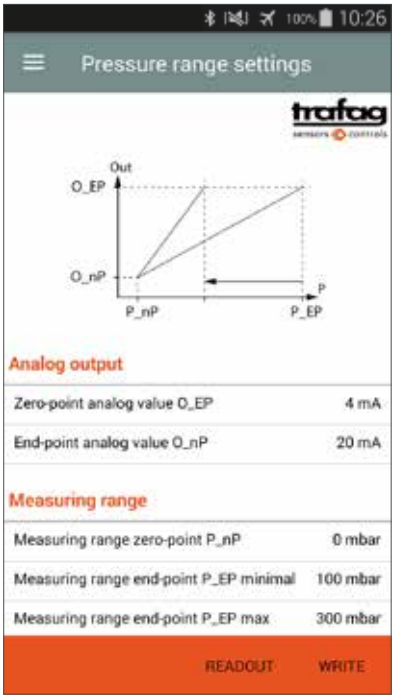
GET IT ON Google Play

Reading out of device data

Parameterization of switching points on NAx pressure switches



Measuring range adjustment on submersible pressure transmitter ECL



Additional information		
Documents	Data sheet	www.trafag.com/H72618
	Instructions	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

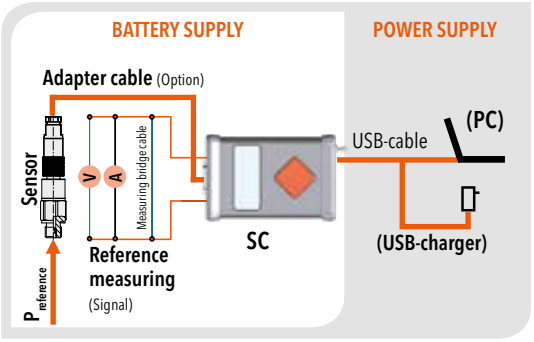
Instruction www.trafag.com/H73699

Compatible devices and adapter cables

		Output signal		
Model	**Connector**	4 ... 20 mA	0 ... 10 VDC 0 ... 5 VDC 1 ... 6 VDC	0.5 ... 4.5 VDC ratiometric
NAT (8251) NAH (8253) NAE (8255) NSL (8257)	**Industrial standard** 82XX.XXXX.**01**.XX..	**SC01A**	**SC01V**	**SC01R**
	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) NPN (8264)	**DIN43650** 82XX.XXXX.**04**.XX..	**SC04A**		
	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 availabe 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

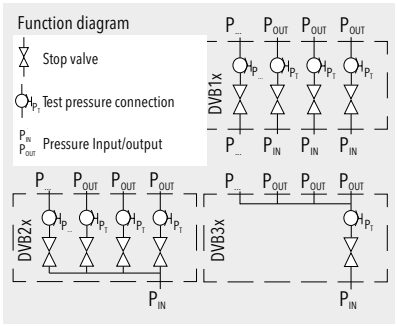
- Function tests during operation (no interruption necessary) with stop valve and test connection

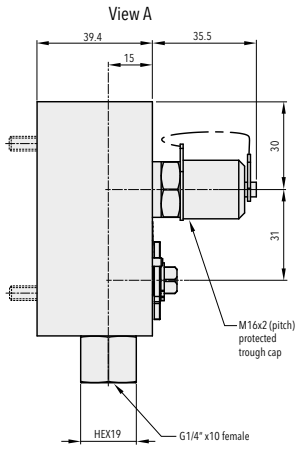
Technical Data	
Pressure	-0.8 ... 100 bar
Ambient temperature	-20°C ... +120°C

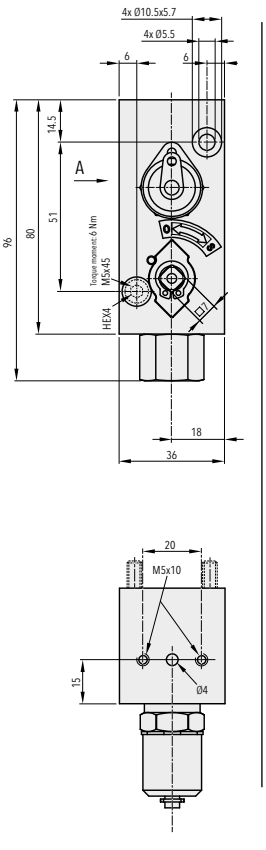
Data sheet www.trafag.com/H72361
Instruction www.trafag.com/H73361

Standard products (extra short lead time)

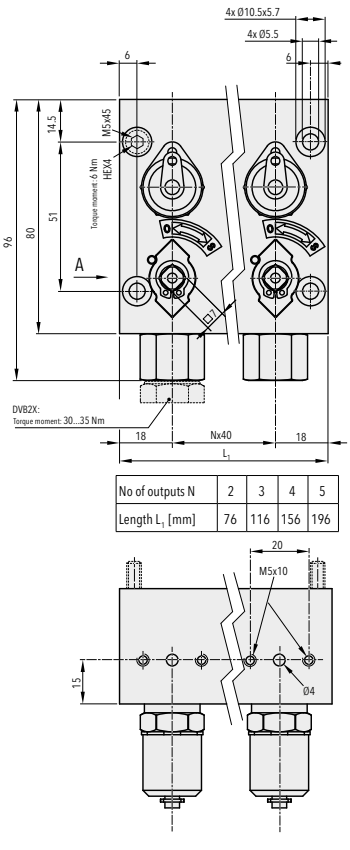
Product No		Material	Product No		Material
DVB11	1 P-in, 1 test connection, 1 P-out	Al, PEEK, FPM	DVB24	1 P-in, 4 test connection, 4 P-out	Al, PEEK, FPM
DVB12	2 P-in, 2 test connection, 2 P-out	Al, PEEK, FPM	DVB25	1 P-in, 5 test connection, 5 P-out	Al, PEEK, FPM
DVB13	3 P-in, 3 test connection, 3 P-out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







DVB11



DVB X2... X5

THP...

Hand pump

Features

- For testing of pressure transmitters and pressure switches

Technical Data	
Connection	G1/4" female

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

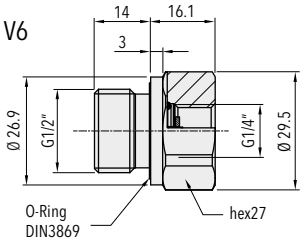
- Allows replacement of instruments without interruption of process (max. 40 bar)

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

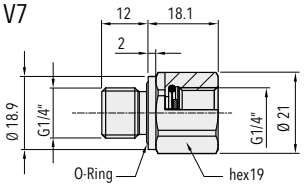
Data sheet www.trafag.com/H72258

Standard products (extra short lead time)		
Product No		**Connection**
V6	For water, air, light-crude, heavy oil	G1/2" male - G1/4" female
V7	For water, air, light-crude, heavy oil	G1/4" male - G1/4" female

V6



V7



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	Polystyrol, not suitable for outdoor applications

AKL...

Cable hanger

Features

- For all Trafag level transmitters

Technical Data

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

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

A1/A2
D1/D2

D4

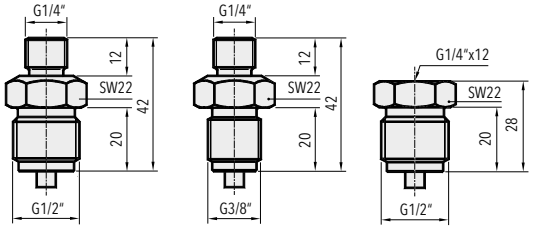
Features

- 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	G1/4" male - G3/8" male manometer	Brass
A2	G1/4" male - G1/2" male manometer	Brass
D1	G1/4" male - G3/8" male manometer	1.4435 (AISI316L)
D2	G1/4" male - G1/2" male manometer	1.4435 (AISI316L)
D4	G1/4" female - G1/2" male manometer	1.4435 (AISI316L)



A2/D2 A1/D1 D4

K.../F...

Snubber


K3/K4/K5
F3/F4/F5


K1/K2

Features

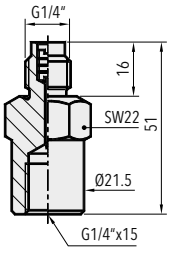
- Integrated in an adapter
- K1/K2: Pressure peak damping element integrated in an adapter

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

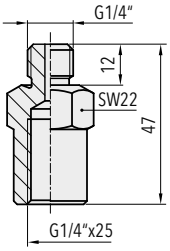
Data sheet www.trafag.com/H72258

Standard products (extra short lead time)

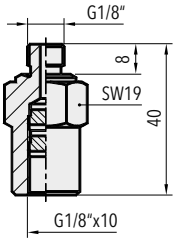
Product No		Connection	Material
F3	Snubber for heavy oil	G1/4" male - female	Brass
F4	Snubber for light oil	G1/4" male - female	Brass
F5	Snubber for water/air	G1/4" male - female	Brass
K1	Snubber for water/air/light oil	G1/4" male - female	1.4435 (AISI316L)
K2	Snubber for water/air/light oil	G1/8" male - female	1.4435 (AISI316L)
K3	Snubber for heavy oil	G1/4" male - female	1.4435 (AISI316L)
K4	Snubber for light oil	G1/4" male - female	1.4435 (AISI316L)
K5	Snubber for water/air	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.

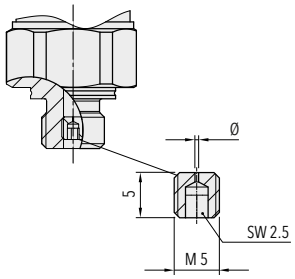
Technical Data

Material	1.4305 (AISI303)

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)
DAMP0.4	With 0.4 mm hole, for water and light oil	1.4305 (AISI303)



ZEN...

Switch amplifier

Features

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

ZEN24VDC
ZEN230VAC

ZEN28VDC

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 V, I_0 = 13 mA, P_0 = 34 mW
ZEN230VAC	207 … 253 VAC, 45 … 65 Hz	U_0 = 10.6 V, I_0 = 19.1 mA, P_0 = 51 mW
ZEN28VDC	Max. 28 VDC	U_0 = 28 V, I_0 = 93 mA, P_0 = 650 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.

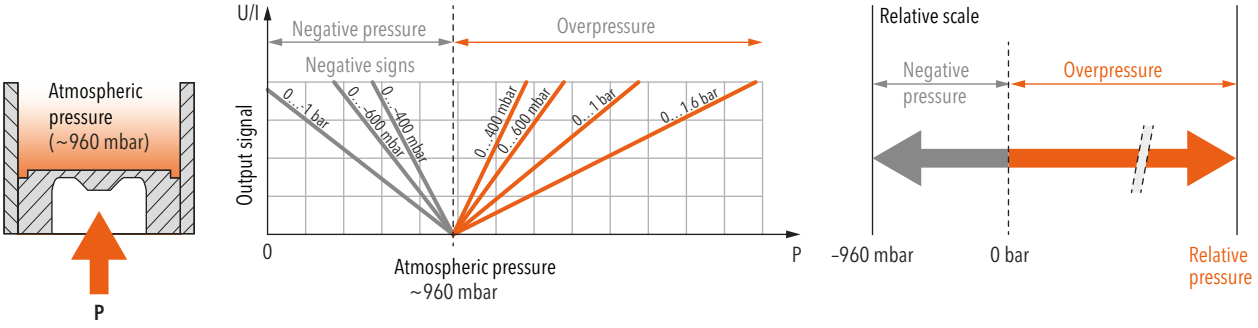
Types of pressure measurement

Differential pressure measurement
The measurement of differential pressure of two different pressures. The measuring instrument has two pressure connections.

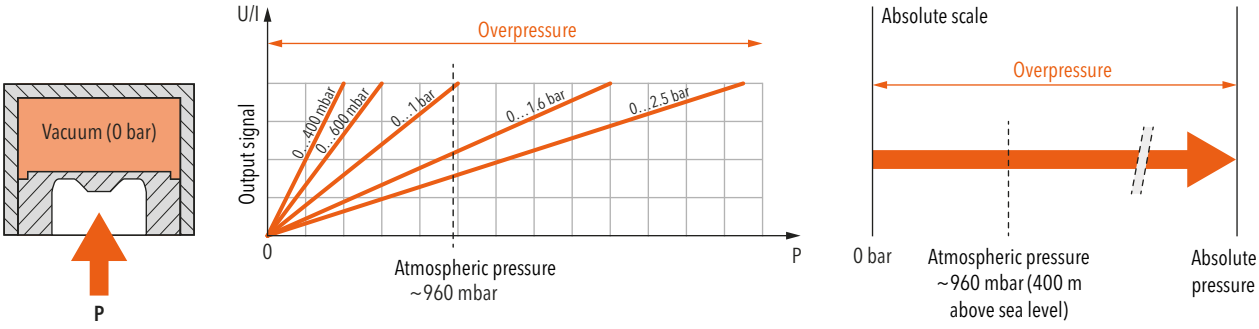
Absolute pressure measurement
The measuring result is always the deviation to the absolute zero (vacuum).
e.g. 4 mA = 0 bar (= vacuum); zero point (ZP): 0 bar

Relative pressure measurement DIN 16086: overpressure
The measuring result is always the deviation to the current, absolute atmospheric pressure.
e.g. 4 mA = 960 mbar (= atmospheric pressure); zero point (ZP): 0 bar

Relative pressure measurement



Absolute pressure measurement



Terminology for pressure measurement instruments

Main features

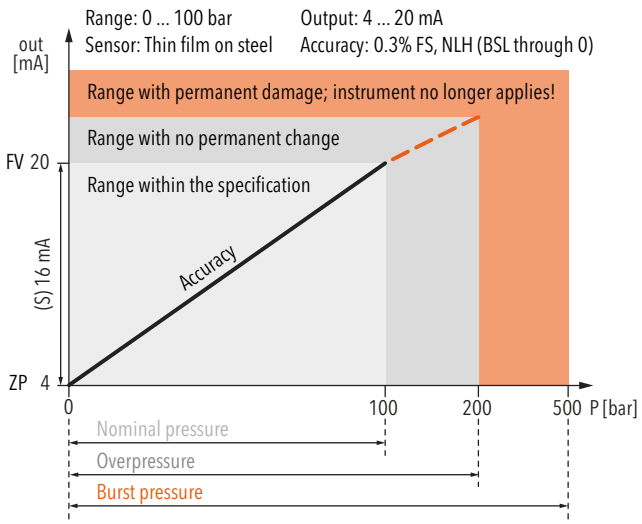
Nominal pressure measuring range
Range between the upper and lower limits of the size measured (operating pressure). The specified accuracy remains within this range.

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



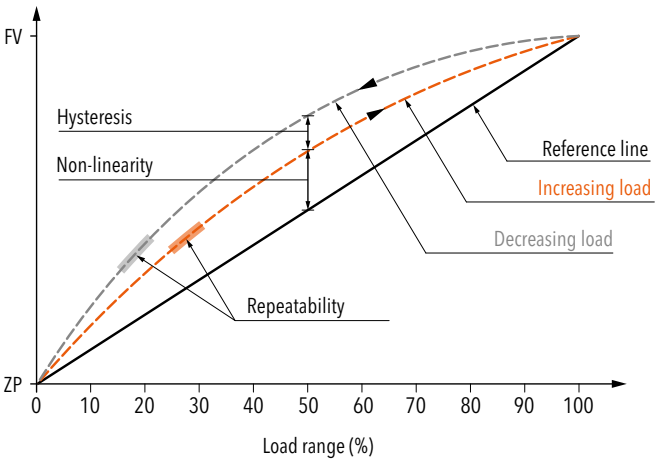
Accuracy

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.

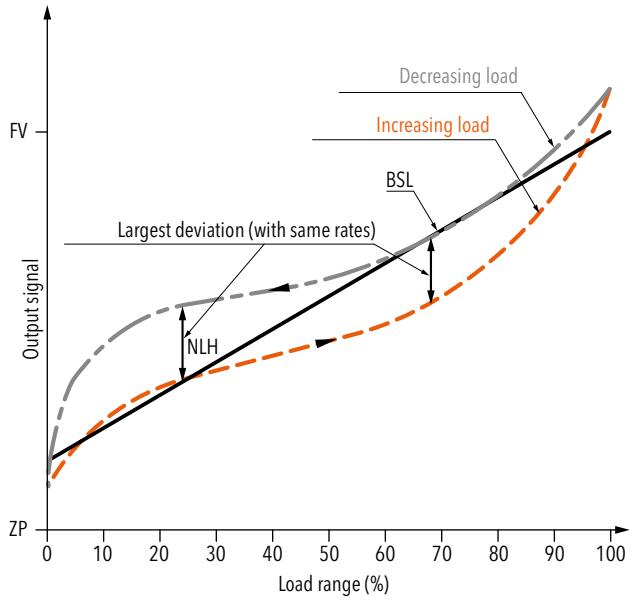
Non-linearity
The largest deviation from the effective characteristic line of an ideal reference line. The reference line can be defined as a limit point adjustment, a BSL or a BSL through 0.

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.

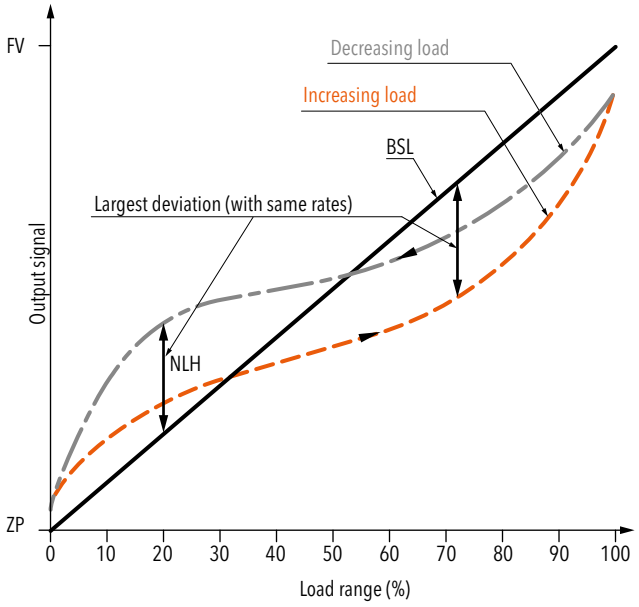
Specifications: Accuracy NLH (BSL)



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.

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.

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.

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

CE 1258 Ex II 2 GD

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

Fluid	BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON (CSM)	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM
Acetaldehyde	U	S	T	U	U	U	U	F	U	F	S	T	U	U	U	U	S	U	U	S	U		S	U	F	F	S		S	S	S	T	U	U	U	S
Acetamide	S	S		F	U	F	F	F	F					S	U		S	S	S	S	U		S	U	S	S	S		U	S	F		U	U	U	U
Acetate, Amyl	U	S		U	U	U	U	T	U	U	S					U	S								S	S			S		S	S	S	S	F	F
Acetic acid, 10%	T	S		T	U	T	T	T	U	U	T	T	S	S	S	T	S	F	T	S	S	S	S	U	F	S	F		F		U	U	U	U	U	F
Acetic acid, Glacial	T	F		F	U	S	U	F	U	U	U	U	S	U	T	U	S	F	T	S	T	T	F	U	F	F	S	U	S	F	U	U	U	U	U	S
Acetic anhydride	U	F	T	T	U	U	U	F	U	U	F	U		U	U	U	S	T	U	S	U		T	U	U	T	S		S	U	T	S	U	U	U	S
Acetone	U	S	U	U	U	U	U	F	U	U	F	F	U	S	U	U	S	S	T	S	U	U	S	S	F	F	S		S	F	S	S	S	S	S	F
Acetylene gas	S	S	T	F		U	S	T	U	T		S	T	S	U	S	S	U	F	S	U		S	S	S	S	U		S	U	S		U	U	T	S
Acetylene tetra-chloride	U	U		U		U	S	U						U			S						U	U	U	U			U	U	U					F
Acrylic acid	U		S	U			S																S	T	T	T	T									S
Alcohol amyl	U	S	S	F	U	U	S	F	T	T		S		S	S	S	S		T	S					F	S	S		S				S	S	F	
Alcohol ethyl (Ethanol)	F	S	S	F	T	F	F	F	T	T	S	S		S		S	S		T			S		S	F	F	S		F	F	F	S	F	F	F	T
Alcohol methyl (Methanol)	S	S	S	F	U	S	U	F	S	T	S	S		S	U	S	S	S	S			S	S	S	F	S	S		S	F	S	S	S	S	S	T
Alkazine	U	U	U	U	U	U	S	U	T					S			S								S	S							S		S	
Alumina	S			S	S	S								S			S												S				S	S	S	S
Aluminum chloride	S	S	S	S	S	S	S	F	T	F	F	S	S	S	S	S	S	S	S	S	T		U	U	U	U	F		F	U	U	S	T	T	U	U
Aluminum uoride	S	S	S	S	S	S	S	F	T		U	U		S	S	S	S	S	F	S			U	T	U	U	F		F	F	T		T	F		S
Aluminum hydroxide	S	S	S	S	S	S	S	T	T		F			S	T	S	S	S	S		U		F	F	F	F	S		F		F		F	F	F	F
Aluminum potassium sulfate	S	S		S	S	T	S	F						S		S	S	S	F		T		F	U	U	T	F		T	F	U		T	T	T	F
Aluminum potassium 10%	F																S							U	T	T			F			F			U	F
Aluminum sodium sulfate	F	F		F	S	T	F	F									S						T	U	U	U	T		U	F	U	U	T	T	U	U
Aluminum sulfate (Alum)	S	S	S	S	S	S	S	F	T	T	F	S	S	U	S	S	S	S	F	S	S		T	U	U	T	F		T	F	U	T	T	T	T	U
Ammonia	F	T	U	S	U	U	U	F	U	U	U	U		S	F	T	S	F	T	S	U		S	S	S	S	T	S	U	F	S	S	T	U	U	F
Ammonium bicarbonate	S	F		S	S	S					F	T	T	S	S	S	S		F				F	F	F	F	F		S	F	F	F	U	U	U	F
Ammonium bromide	S	T		T			U	T			F			T		S	S	F	F				F	U	U	U	F		F		U		U	U	U	U
Ammonium carbonate	U	S		S		U	S	F			S	S		T	S	S	S	S	F	S			T	F	F	F	S		F		F	T	U	U	U	F
Ammonium chloride	S	S		S	S	U	S	F	U	F	F	S	S	S	S	S	S	S	T	S	S		U	U	U	U	F		U	T	U	S	U	U	U	U
Ammonium hydroxide	T	S	S	S	U	S	F	T	T	U	S	U	U	S	S	S	S	S	S	S	U	T	S	U	S	S	U		U			S	U	U	U	F
Ammonium monophosphate	S			S			S							S			S	S						U		F										
Ammonium n trate	S	S	S	S	T	U	F	S	U	F	F	S	S	S	S	S	S	S	S	S	U		S	T	F	S	S		U	U	F	S	U	U	U	T
Ammonium nitrate hydroxide25%	S		S	S	S	S	U							S			S							F	F	F			U		F	S	U	U	U	F
Ammonium persulfates 5%	F	S			U	U	S	S									S	S	T				S	U	S	T	U	S	U			S	F	F	U	U
Ammonium phosphate	S	S	S	S	S	S	S	F	U	F	F	F	S	S	S	S	S	S	S	S	S		T	S	F	S	F		F	F	T	S	U	F	U	T
Ammonium sulfate	S	S	S	S		S					F	F	U	U	S	S	S	S	S	S				T	U	T	S		F	F	T	F	U	U	U	U
Ammonium sulfite	S			S	S									S			S							U	U	T	F		U	F	U		U	U	U	U
Ammonium triphosphate	S			S		T											S							T	S	S			S	S	S		F		T	F
Amyl acetate	U	S	U	U	U	U	U	T	U	U	F	U	U	T	U	U	U	U	U	S	U		S	F	F	F	S		S			S	U	S	S	S
Aniline dyes	U	F	F	F	U	U	U	F	F	U	T	T	S	S	U	U	S						S		F	F	S		S	S	S		T	T	T	U
Aniline hydrochloride	U	F	T	U	U	U	F	U	T								S	U	U	U	U		U	U	U	U	T		F			U	T	U	U	U
Animal fat	F	F		F			S																													
Antimony trichloride	T			T										S		S	S							U	U	U			F			F			U	U
Antioxidents	S			S		S					S						S												S							
Argon gas	F	T		S		F	F			S	S			S				S					S	F	S	S	S	S	S	T	T	T	T	T	T	T
Aromatic hydrocarbons	T	U		U		U	S				S			S		U	S							S	S	S	S	S	S	S	S		S	S	S	
Arsenuc acid	S	S	S	S	T	S	S	F	S					S	S		S	S	F	S	T		F	T	F	T	U		U	F	U	U	T	T	T	U
Arsenic trichloride	S	U		S		S	U	U									S						U	T		U	F		S				U			T
Asphalt	F	U	U	F	S	U	S	U	F	S	S	S	F	F		S	S	S	F				S	S	F	S			S		S	S	S	S	F	S
Barium chloride 5%	S	S	S	S	S	S	S	F	S	F	S	S	S	S	S	S	S	S	F	S	S		U	T	S	S	S		S			S	F	F	U	U
Barium hydroxide	S	S	S	S	U	S	S	F	S	F				S	S		S	S	F	S	U		T	T	S	S	S		S			S	U	U	U	U
Barium nitrate	F	F		S		T	S	T	S			S	S		S	S	S	S	F		U		F	T	S	S	S		T			F	U	U	U	F
Barium sulphide	U	S	S	S	S	S	S	F	S		S			U	S	S	S	S	F				F	U	F	S	U		S				U	U	U	U
Beer	S	S		F	U	S	S	S	S	F	S	S	S	S		S	S	S	S	S	S		S	S	F	S			S		S	S	S	F	F	S
Beet sugar liquid	S	S	S	S	S	S	S					S	S	S		S	S	F	F				S	S	F	S		S	S		S	S	S	S	F	S
Benzene benzol (Benzene)	U	U	U	U	U	T	F	U	F	U	F	T	U	S	U	U	S	U	U	S	U		F	S	S	S	S		F	F	S	S	S	S	S	S
Benzaldehyde	U	S	U	U	U	U	U	F	U	F				T	U	U	S	U	U	S	U		T	F	F	F	U		F			F	T	T	T	T
Benzoic acid	U	U	T	U	U	U	F	U	F	U	F	T		F	U	S	S	T	F	S	S		F	F	F	F	S		F	U	U	S	T	T	F	T
Black sulfate liquor	S	F	F	S	U	S	S	F	T	T				U		S	S	S					T	T	T	F			F	U	T		U	U	U	U
Blast furnace gas	T	U	U	T	U	T	T	U	T	T		S	S	T		S	S							S		T			T	U	S		U			
Bleaching powder, wet	S	S		S		S	S							S			S								U	T			U				F	F	U	U
Blood	U	T		T		T	U				S		S		S	U	S						S	U	S	S			S			S				T
Borax	F	S	F	T	U	S	S				F	F	U	S	S	S	S	S	S					S	S	S			S		S	S	F	S	F	U
Boric acid	S	S	S	T	U	S	S	F	T	F	U	U		T		S	S	S	S	S	T		F	U	F	T	S	S	T	F	U	S	T	T	T	T
Brake fluid (non-petroleum)	U	S		F	U	U	U	F	U		T											U			S	S	S						S	S	S	
Brine	S	S	S	S		S	S				S	S	S	S	S	S	S		T						U				S		F	S	F	F	U	
Bromine, dry	U	U	U	U	U	U	F	U	T	U	U	U	U	U	U	U	S	U	U	U	U		U	U	U	U	S		T	T	U	F	T	T	T	U
Bromine, wet	U	U	U	U	U	U	F	U	T	U	U	U	U	U	U	U	S	U	U	U	U		U	U	U	U	F		U	U	U	U	U	U	U	U
Butadiene (gas)	S	S	T	T	S	U	S				S			S	U		S	U	U	S	U		S	S	S	S	T		S		S		S	S	S	T

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

BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON (CSM)	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM	
F	U	F	F		T	S	U	S	F	S	S	U	S		T	S	U	U	S	U		S	S	S	S	S		S	S	S	T	S	S	S	S	Butane
S	F	S	F	U	F	S	F	T	T				S	S		S					S	S	S	S	S	F		S				S	S	S	S	Butanol
S	S	S	F	S	T	S		T		S			S			S	S	S		S		S	U	S	F			S		U	S	U	U	U	S	Buttermilk
U	T	U	U	U	U	U	U	U	U	F	F	U	S	U	U	S	U	U	S	U		S	S	F	F	S		F	F	F		F	F	F	S	Butyl acetate
S	F	S	S	F	T	S				S			S			S	S	T					S		F			S		S		S	S	S	S	Butyl alcohol
T	U	U	U		U	S	U	T	U							S						F	F	F		F						F	F	F	F	Butyl stearate
U	F	U	U		S	F	T	T	T	U	U		U	U		S	T		S	U		F	T	U	U	S		T	U	U	S	T	T	U	T	Butyric acid
F	S	U	F	U	U	U	F	U														T	T	F	T	F						F	F	F	U	Calcium acetate
S	U	S	S		S	F	U	T	U	U	U	U	U	S	S	S	S	S	S	U		T	U	U	F	F		U	F	U	U	T	F	U	U	Calcium bisulfite
																S	S						S		F			F		S		U			U	Calcium carbide
S	S	S	S	U	S	S	T	T		S	S		S		S	S	S	S		U		F	F	F	S	S		F	U	F	T	F	S	F	S	Calcium carbonate
F	S		F			S	F			F	S		U		S	S	S	S				F	F	F	F	T		T		F	T	T	U	T	T	Calcium chlorate
F	S	S	S	S	S	S	F	T	F	F	S	S	U	S	S	S	S	S	S	U		T	S	T	F	S	S	T	U	T	S	T	F	T	U	Calcium chloride
																S						T	T		F	S						F	F	U	T	Calcium uoride
S	T	S	T	U	S	S	T	T	T	S	S	S	S	S	S	S	S	S		U		F	F	F	F	S	S	F	U	F	S	F	F	U	U	Calcium hydroxide
U	S	S	U	U	S	F	T	F	T	F	F		T	S	S	S	S	S	S	U		U	U	U	U	T		U	U	U	U	U	U	U	U	Calcium hypochlorite
S	S	S	S	U	F	S	T	T		S			T	S	S		S	S	S	T		T	T	F	T	F						F	F	F	T	Calcium nitrate
S	S	S	U	S	S	S	T			S			S	S	S	S	S		S	S		T	T	F	F	S		F	F	F		U	F	U	F	Calcium sulfate
S	S	S	S	S	F													U					F	F	F	U						U	U	U	T	Calcium sulphide
S	T	S	S	U	S	S	F	T		S	S		S			S						F	U	F	S			S		U			U			Calgon
S			S			S										S							S													Caliche liquid
S	S	S	S	U	S					S	S	S		S	S	S	S							F	S			S				S	S	F	F	Cane sugar syrups
U	F	U	U		U	F				U			S			S							T	F	S	S		F	F	T		F	S	F	T	Carbolic acid (Phenol)
U	U	U	U	S		S				S	S	S	S	S	U	S	U						S	F	F	F		F	F	F	S	F	F	F	F	Carbon bisulfide
S	T	T	T	S	U	T	T	T	F	S	S		U	S	S	S	S	S	S	T		S	S	S	S	S		S	S	S	S	S	S	S	S	Carbon dioxide dry
U	U	U	U	U	U	S	U	T	U	F	F	U	U	U	U	S	U	U	S	U		T	S	S	S	F		F			S	U	F	U	S	Carbon disulfide
F	S		T		S	S	T	F	F	S	T		T		S	S	S	S	S			S	S	F	S	F		S	S	S	S	S	S	S	S	Carbon monoxide
U	U	U	U	U	U	S	U	U	U	F	F	U	U	U	T	S	U	U	T	U	S	F	T	F	F	F		F	T	U	S	T	F	T	U	Carbon tetrachloride
S			S		S	S							S			S								S	S			S				T	F	F	F	Carbonated water
T	S	S	S	T	S	S	F	T	U	S			F	S		S	S	S	S	F		S	U	F	F	F		S	U	U	S	T	T	F	F	Carbonic acid
S	F	S	S	F	S					S	S	S	S	S	S	S	S						S	T	S			S		S	S	S	S	S	S	Castor oil
											S																									Cellosolve (see Ethyle acetate)
U	S	U	U	U	T	T										S							S	S	S	S	S	S	S	S		F	S	S	F	Cellulube
S	U	T	F	T	T	S					F	S	S		S	S							S	T	S			S		S		F	T	F	S	China wood oil (Tung)
U	U		U	U	U	S	U	T	U													T	T		T	T						T		T	T	Chlordane
F			S										U			S								S	S			T		U					U	Chlorides, organic
U										U	U					S	U	T	U			U	U	U	U	U		U			U			U	U	Chloric acid
F	F			S		F							U			S	F							U	U									U		Chlorinated water
U	U	U	U	U	U	S	U	T	U			U	U	U	T	S	U					T	F		F	T						T	S	T	U	Chlorinated solvents
U			U		F	S				U	U	U	U	U	T	S	T							F	U			S	F	U		T	T	U		Chlorine anhydrous liquid
U	U	U	U	U	U	F	U	T		U	U	U	U	U	U	S	U	U	U	U		T	T	U	U	F		T	F	T	T	T	T	U	U	Chlorine, gas
U	U	U	U	U	U	T	U	T		U						S	U					U	U		U	S						U	U	U	T	Chlorine, dioxide
U	U	U	U	U	U	U	U	U		U	U	U		U	U	F						T	S	T	T			S				T	T		T	Chlorine trifluoride
U	F	T	U	U	U	S	T	U	U	U	U		S	U		S	S	U	S	U		T	U	U	U	U		F			F	U	F	U	U	Chloroacetic acid
U	U	U	U	U	U	S	U	T	U	S	S	U	T	U	U	S	U	U	S	U		T	T	T	F	F		F		T	T	F	F	F	S	Chlorobenzene
U	U	U	U	U	T	T	U	U	U	F	F	S	S	U	U	S	U	U	U	U	F	T	T	F	S	S		S	F	T	T	T	F	T	U	Chloroform
U	U	U	U	U	U	U	U	U	U	U	U		U	U		S	U	U	U	U		U	U	U	T			F			F	U		U	F	Chlorosulfonic, acid, diluted
U			U	U		T	U	T														T	T	T	T	F						T	U	T	T	Chlorothene (trichloroethane)
U	F	U	F		S	S					U		S		T	S							U	U	U			F		U		U	U	U	U	Chlorox
F					S	T				U						S												S					U	U		Choline chloride
U	F	U	U	U	F	F				U																										Chrome plating solution
U	U	F	U	U	T	U	T	T	U	U	U		U	U	T	S	T	T	T	T		T	U	U	T	U		U	F	F	F	U	U	U	U	Chromic acid
S	S		F	T	T	S	F						S			S	S					T	U	U	F			T	F	U		T		T	U	Chromium-potassium sulfate
													S			S							U	F	F			T	F	U		F		F		Chromium sulfate (basic)
S	S		S	U	S	S	U	T	T	S			T			S	S					S	U	S	S			S				S	S	U	F	Cider
S	S	S	S	S	S	S	S	T	F	S			S	T	S	S	S	F	S	T	T	T	U	T	T	T		T	U	U	F	U	U	U	T	Citric acid
T	U		U	U	U	T	U	T	U				U			S						S			S			S							S	Coal tar
S	F	U	U	U	U	S	F	T		S			T			S	T					F	F	S	S			S		S			T		T	Cocoanut oil
T	S	U	F	S	F	S	F	T		S			T			S	T			T			U			U		S		U		U	U	U	S	Cod liver oil
S	T		S	U	S	S	T	T		S			S			S	T			T		S		S	S			S				S	S	S	S	Coffee
T	U	U	T	U	T	F	U	T			S	T	T		S	S	T					T	S	S	S	S		S	U	S		T	T	U	S	Coke oven gas
	T					S				S														S	S							S		S		Cooking oil
T	S	U	F	U	U	U	T	U								S						T	U	F	F	S		F		U		F	T	U	U	Copper acetate
U	S		U	U	U	U		U		S	S	U			U	S						T	S	S	S	U				S		U	U	U	U	Copper ammonium acetate
S	S	F	F	S	S	S	F	T	T	U	U	U	U	S	S	S	S	S	S	T		T	U	U	U			U	U	U	U	U	U	U	U	Copper chloride
S	S	S	S	S	S	S	T	T		S			T	S		F	S	S	S	U		T	S	S	S	S		F		S	U	U	U	U	U	Copper cyanide (elect. pl. sol.)
S	S		S	T	S	S	F			S	S	S	S	S	S	S	S	S	S	U		F	U	F	F	F		U		U	U	U	U	U	U	Copper nitrate
S	S	S	S	S	S	S	F	T	F	S	S	S	F	S	S	S	S	S	S	T		F	U	F	F	F		T	F	U	U	U	U	U	U	Copper sulfate
S	S	S	S	S	S					S	S	S	S	S	S	S		S					U	F	F			F	F	U		U			U	Copper sulfate (elect. pl. sol.)

trafag sensors controls

Fluid resistance guide

CODES: S - SATISFACTORY F - FAIR U - UNSATISFACTORY T - TEST FOR SPECIFIC APPLICATION

RESILIENT MATERIALS													PLASTICS																		METALS												
BUNA-N (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON (CSM)	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM	
S	U	F	F	T	S	S	F	T	S	F	F		T	S	S	S	S			U			S	S		S	S			S	S	S		S	U	F	S	Corn oil
S	T		S	T	S	T		T		S						S							S	F	S	S	F	T	S	S		S	S	F	F	Corn starch slurrys
S	T	S	U	T	S	F	U	T	T	S	S		S	S	S	S	S	S	S				S	S	S			S	S	S	S	T	S	U	S	Cottonseed oil
U	U	U	U	T	U	S	U	T	U	U	U		U	U	T	S	U	U	S	U		F	S	F	S			F	U	F	S	F	S	F	S	Creosote
U	U	U	U	U	U	F	U		U	U	U		U			S	U	U		U		T	U	F	S	F		F	U	F		F	F	U	F	Cresylic acids (alkyl phenols)
F					S																		U	U	U			U			U			U	U	Cupric chlorides 5%
U	S	U	U	U	T	S	U	U	T	F	F	U	T	F	U	S	F	U	S	U		T	U		T	T		T			T	T	T	T	F	Dibutyl phthalate
S	U		U	U	U	S	U	T	T	S			S	S		S	S	U	S	S		S	S	S	S	S	S	S	S	S	S	S	S	S	S	Diesel fuel
U	U			U	U	S				S			S			S		U				S	S	S	S	S	S	S	S	S	S	S	S	S	F	Diesel oil, light
U	U	U	U	S	U	U				F													F	F	F			F		F		F	F	F	F	Diethyl ether
U	U		U	U	U	F	U	U	U	T	T		U			S	T	U		U		F	U	T	F	T		S			F	T		U		Dichlorethane
																S						F	U		F			S	F	F		F	F	F	F	Difluoroethane (dow chem. #200)
F			S		S					S			S		S	S	S							S	S	S		S		U						S	Distilled water
F	U		T	S	U	S	U	T	F	S			S			S						S	S	S	S	S	S	S	S	S	S	S	S	S	S	D.T.E. Lubricating oil
U	U	U	U	U	U	S	U	S	T	S	T		U	U		S	U		S	T		S	S	S	S					U			T	T	T	Dowtherm A or E
T			S	F					T	S	S	T	S		U	S						S	S	S	S	S	S	S		S	S	S	S	S	S	T	Enamel
S	U		F	S	S	S	U	T					S			S						S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	Esso # 90 line
S	U	F	F	U	U	S	U	T		S	S	U	S		U	S	U					S	S	S	S	S		S		S		S	S	S	S	Ethane
U	U	U	T	U	U	U				S			S		U	S	U						S	F	S	S		F	F	F	S	F	S	F	S	Ether
U	T	U	U	U	U	U	T	U		F	F	U	S	U	U	S	S	U	S	U	U	U	S	S	F	S	S		F		T	T	F	S	F	T	Ethyl acetate
U	U	U	U	U	U	F	U	F		F	F		S	U		S	U	U		U		F	T	F	F	S						F	F	F	T	Ethyl benzene
S	F	F	F	F	F	U	T	U	T	S	S	U	S		T	S						F	T	F	F	S						F	F	F	F	Ethyl cellulose
S	S	U	U	U	U	S	T	T	U	S	S	U	S	U	U	S	U	U	S	U		T	T	T	T	S		F		F	T	T	T	T	Ethyl chloride
U	U	U	F			S				T													F	F	F	U						U	U	U	F	Ethyl metcaptan
U	S		S	U	T	U	T	U		S			S			S	T					U	F					T				F	F	F		Ethyl sulfate
S	U		U	T	U	S	T	T		S			S		F	S						S	S	S	S	S		S		S		S	S	S	S	Ethylene
										S					U		U	U					T			F		F	F	T		T	T	T	T	Ethylene bromide
	T	T	U	U	T	T				S				U		S			S				T	T	T	F		F		T		T	F	F	T	Ethylene chloride
U	U	U	U	U	U	S	U	U		S			S			S	T					T	U	T	T	F		T		U		T	T	T	U	Ethylene dibromide
U	U	U	U	U	U	T	U	U	U	T	T		S	U	U	S	U	U	S	U		F	T	T	F	S		F	F	T	T	U	F	F	F	Ethylene dichloride
S	S	S	F	U	T	S	S	S	T	S	S		S	S	S	S	S	S	S			F	S	F	S	S		F	F	F	S	F	F	F	F	Ethylene glycol
U	T	U	U	U	U	U	T	U	T	S	S		S	S	U	S	U	U	U	U		F	S	S	F	T		S		F		T	T	T	U	Ethylene oxide
F																							T	F	S	S		F	F	T		F	S	F	U	Embalming fluid
																																					Ethanol (see alcohol-ethyl)
S	T	U	U		T	S				S			S		S	S	T						U	S	S	S		T	U	U	S	U	U	U	S	Fatty acids
S	S	F	F	S	F	S	F	T	F	F	S	S	U	S	S	S	S	S	S	S		U	U	U	U	U		U	U	T	U	U	U	U	U	Ferric chloride
T	S	S	S	S	U	S	T	T		F			T	S	S	S	S	S	S	T		S	U	F	S	U		U		U	U	U	U	U	U	Ferric nitrate
S	F		S	T	S	S	F	T	T	F	F		S	S	S	S	S	S	S	T		T	U	T	T	T		T	F	U	F	U	U	U	U	Ferric sulfate
			T			T										S							U			U			F	U		U	U	U	F	Ferrous ammonium sulfate
S	S		S	T	S	S	F		T	F	F	S	U	S	S	S	S	S	S	U		U	U	U	U	F		U	U	U	U	T	U	T	U	Ferrous chloride
S	S		S	T	S	S	F	T	T	F	F	S	S	S	S	S	S	S	S	T		F	U	S	S	U		T	T	U	F	T	T	U	S	Ferrous sulfate
S	U		F	S	T	S		T					S			S	S	S		T		S	S	S	S			S		S		S	S		U	Fish oil
S	S	S	S	U	T	S	U	T	U					S		S	S	F	S			T		S	S			T			T		T		T	Fluoboric acid
U	T	T	U	U	U	T	U		U	U	U		U	U		T	U	U	U	U		T	U	F	F	S		S	F		F	T	T	T	F	Fluorine
S	S	S	S	U	S	U	T	U	F	U	U			S		S	S	T	S			S	T	F	S	S		S			T	T	U	U	U	Fluosilic acid
S	S	T	T	U	S	U	T	U	U	S	T	U	S	T		S	S	T	T	S		S	T	F	S	S		F	U	T	S	F	F	F	S	Formaldehyde
U	F	S	S	U	S	U	F	U	U	U	U	S	U	F	T	S	S	U	S	T	T	F	U	U	T			F	U	U	F	T	U	T	U	Formic acid
F	U	S	F	U	U	U	U	F	T	S			S	U	T	S	U	U	U	U		S	U	S	S	S		F		U	T	S	S	S	S	Freon 11
S	U	S	S	S	U	T	U	U	T	S			S	U	S	S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 12
S	U	S	S	U	U	U	U	U		S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 13
U	U	T	T		U	U	U			S			S	U	U	S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 21
U	T	T	T	U	U	U	U	U	U	S			S	U	U	S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 22
U	T		F			U	T			S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 31
S	T	S	S				T			S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 32
F	U	F	T	F	U	T	U			S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 112
S	U	S	S		U	U	U	U	S	S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 113
S	U	S	S	T	U	F	U	F	T	S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 114
S	S		S		U	T	T			S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 115
S			S							S			S			S							U	S	S	S				U		S	S	S	S	Freon 218
U			S			U				S			S	U		S	U	U	T	U		S	U	S	S	S		T		U	T	S	S	S	S	Freon 502
S	S		S	U	U	S	S	U	U	F	F		U	U		S	U	U	U	U		S	T	S	S	S		F			S	S	S	S	T	Freon 503
S													S											S	S							S		S			Freon 13B1
S			S							S			S			S							U	S	S	S			U		S	S	S	S	Freon 6316
S			S							S			S			S							U	S	S	S			U		S	S	S	S	Freon 6318
S	U	S	S	T	U	S	U	U	S	S	S		U	T		S	T	U		T	S	S	T	S	S	S		F			S	S	S	S	T	Freon TF (solvent)
T	T	S	T	S	U	S	T			S	S					S	T	U		T		U	U	S	T						S	S	S	S	T	Freon TWD 602 (solvent)
F		F	T			S	T			S	S					S	T	U		T		S	T	F	F			F			F	S	F	S	F	Freon TE 35

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Fluid resistance guide

CODES: S - SATISFACTORY F - FAIR U - UNSATISFACTORY T - TEST FOR SPECIFIC APPLICATION

BUNA 'N' (NBR)	ETHYLENE-PROPYLENE (EPDM)	HYPALON (CSM)	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM	
																																				Freon TM
T	T		T	T	U	S	T			S	S			U		S	T	U		U		S	T	F	T			F			F	F		S	U	Freon TMC (solvent)
F	U		U	U	U	U	U	T	T	F	F			U		S	U	U	U	U		S	T	S	S	S		F			S	S	S	S	T	Freon MF (solvent)
F	U		U	T	U	S	U			F	F			U		S	U	U	U	U		S	T	S	S	S		F			S	S	S	S	T	Freon BF (solvent)
S	S	S	S	S	S	S		S	T	T	T	S	S		S	S	S	S	S				S	U	F	F			S		U		F	F	U	T	Fruit juices
T	U		U	T	U	S	U	T	T	S	S	S	S	F	S	S			S				T	S	S	S			S	S	T	S	T	S	S	S	Fuel oils
U	F	U	U	U	U	U	S	U	T	F	F	S	U	U	U	S	U	U	S	U		S	S	S	S	S	F		F	T	T	F	F	S	F	S	Furfural
T			S				S			F	F			U		S	U	U	U	U		S	T	S	S			F			S	S	S	S	T	Freon 123
U	S		S	U	U	U	U	U	U	F	F		T	U		S	U	U	U	U		S	T	S	S			F			S	S	S	S	T	Freon 134A
S	U	T	U	U	U	F	U	T	F	U	U		S	F	S	S	T	U	S	T		S	U	F	S	S		F			S	F	S	F	S	Gallic acid
T	U	U	U	T	U	S	U	S	T	S	F	S	S	T	S	S	U	U	S	T	S	S	S	S	S	S	S		S	S	T	S	T	S	S	F	Gasoline
S	S	S	S	U	S	S	T	T		S	S		S	S	S	S	S	S	S				S	U	S	S			S		U		S	S	F	S	Gelatin
S	S	S	S	U	S	S	F	T	F	S	S	S	S	S	S	S	S	S		T		S	S	S	S	S			S		S		S	S	F	S	Glucose, edible
S	S	S	S	U	S					S	S	S	S	S	S	S							S	T	S				S		S		S	S	F	S	Glue (non acid)
S	S	S	S	U	S	S	F	T	T	S	S	S	S	S	S	S	S	S	S			S	S	S	S	S	S		S	F	F	S	F	S	S	S	Glycerine (Glycerol)
S	U		U	S	U	S	U	T	T	S	S		S			S	T					S	S	S	S	S	S		S		S		S	S	S	S	Grease, petroleum base
S			S	S	S	S							S			S						S	S	S	S	S	S	S	F	S		S	S	S	U	Goulac (core binder)
S	S		S	T	T	S	F	T	U					U	S		S						F	T	U	F			F	U	T		U	U	U	U	Green sulfate liquid
S	S	S	S	U	S					S								S						S	S	S							S	S	S		Glycol solution
U	U		U	U		F		U	U	U	U		U	U		S	U	U	U	U		S	U	S	S	S							S		F	U	Halon 1011
F			U			U												U																	S		Halon 1202
T						S		T										U				S	S	S	S								S	S	S	S	Halon 2402
T			S	T	F	F	S	U		S	S		S			T		U				S	T	T	S						S	S		S	T	Halon 1301
T			U			F		U					S									U	S	S	S								S	S	S	S	Halon 1211
S	U	F	F	F	U	S	U	T	T	S	S		S	U		S	U	U	S	U		S	S	S	S	S	S		S				S	S	S	S	Heptane (liquid)
F	U	S	F	S	U	S	U	T	T	S	S		T	S		S	U	U	S	U	S	S	S	S	S	S	S		S		F		F	F	S	F	Hexane
S	U	S	T	F	U	S		T	S	S	S		T	S		S	T	U	S	T		S	S	S	S	S	S	S	S	S	S		S	S	S	S	Hydraulic oil
F	S		F	U	U	U	S	U	U	F		S	S		S	S	U					S	U	F	S	U			U	U	U		U	U	U	S	Hydrazine
U	S	S	U	U	U	F	T	U		U	U	S	U	S		S	S	T	U	U		U	U	U	U			U			U	U	U	U	U	Hydrobromic acid
T	U	T	U	T	U	F						U	U	U	U	S								F	F	F		S				S	S	S	S	Hydrocarbons (chlorinated)
T	F	T	T	U	U	T	T	T	U	U	U	S	U	S	S	F	T	T	T	T	T	U	U	U	U	T		U	U	U	F	U	U	U	U	Hydrochloric acid (aerated)
T	F	T	U	U	U	T	T	T	U	U	U	S	U	S	S	F	T	T	T	T	T	U	U	U	U	F		U	U	U	T	U	U	U	U	Hydrochloric acid (air free)
S	S	S	S	U	U	S	F	T	U	U	U	S	U	S	S	S	S	S			F	U	S	S	T			F		U	T	U	U	U	S	Hydrocyanic acid
T	T	S	U	T	U	S	U	U	U	U	S	U	S			S	T	T	T	T		T	T	U	U	F		U	U	U	U	U	U	U	U	Hydrofluoric acid (aerated)
U	T		U	T	U	S	U	U	U	U	U	S	U	S		S	T	T	T	T		T	T	U	U	S		F	T	U	T	T	U	U		Hydrofluoric acid (air free)
S	S	S	S		U					U	U	S		S	S								U	U	U			S			S			U	U	Hydrofluosilicic acid
S	S	S	S	S	T	S	S	U	F	U	U	S	S	U	S	S	S	S	S	S		S	S	S	S	S		T	S	S		S	S	S	S	Hydrogen 377
U	T		U	U	U	S	F	U		U	U			T		S	F		T	U		T	T	U	U	U		U	U		U	U	U	U	U	Hydrogen bromide(anhydrous)
U	S		T		S	T	T	U		U	U		U			S	S	S				S	T	U	T	F		T	F	T	S	T	T	T	U	Hydrogen chloride(anhydrous)
T	F		U	U	U	S	U	U		U						F	T	T					F	F	F	F		S			S	T	T	T	U	Hydrogen ßoride
U	T	U	U	T	T	T	T	T	U	T	U		U	T	S	S	T	T	T	T		T	T	T	T	U		T	U	T	F	U	U	U	F	Hydrogen peroxide
T	S	T	F	U	T	U	F	U	T	U	U	S	U	S	S	S	S	S	S	T		T	T	T	T	U		T	F	T	S	U	U	U	F	Hydrogen sulfide
T		S	T	S		S							F		S	S							S	S	T			S		U					T	Ink (non aniline)
U	F	F	U	U	U	S	T	T	T	U	U		S	S	U	S	T	U	U			T	T	T	T	U		T	U	U	S	T	T	U	U	Iodine
																							U	U	U			T	F	U		T			U	Iron potassium sulfate
T	U		F	T	U	F	U	T		S			S			S						S	S	S	F	S	S	S	S	S	S	S	S	S	S	Isobutane
S	U	S	F	S	U	S	U	S	S	S	F	S	T		S	S	T	T	S	T		S	S	S	S	S	S	S	S	S	S	S	S	S	S	Isooctane
U	F	U	U	U	U	U	F	U	U	S			T	U		S	T	T		U		F	S	T	F	U		T				U		T	T	Isopropyl acetate
F	S	S	F	U	S	S	F	T	T	S	S		S	F		S	S	F	S	S	S	F		S	S	S		S			F	S	S	S	S	Isopropyl alcohol (Isopropanol)
F	U		U	U	U	S	U	T					U					U																			JP-1, JP-A, JP-A1
F	U		U	U	U	S	U	T					U					U																			JP-2
F	U		U	U	U	S	U	T		T	T		U	S		S	T	U	S	T		S	S	S	S			S			S	S	S	S	S	JP-3
T	U	U	U	U	T	S	U	T	S	F	F	S	S	S	S	S	T	U	S	T	S	S	S	S	S	S	S	S	S	F	S	F	S	F	S	JP-4
S	U		U	T	U	S	U	T		F	F			S		S	T	U	S	T		S	S	S	S			S			S	S	S	S	S	JP-5
T	U		U	U	U	S	U	T										U				S	S	S				S				S	S	S		JP-6
																		U																			JP-7
T	U		U	U	U	S	U	T										U				S	S	S	S			S				S	S	S		JP-8
S	U	U	F	F	U	S	U	T	F	S	S	S	S	F	S	S	U	U	S	T	S	S	S	S	S	S		S	S	S	S	S	S	S	S	Kerosene
S	T	S	S	S	T	S		T					S		S	S						S	U	S	S			S		U			U		U	Ketchup
T			U		U		U	S										U																			JP-B
T	U		U		U	S	U	U										U																			JP-X
U	U	U	U	U	U	U	U	U	U	S			S			S	U	T		U		S	T	F	F	S		S		T		S	S	S	S	Lacquers & Lacquer solvents
T	T	T	T	U	S	F	T	T	U	U	U		T	S	T	S	S	T	S	F		U	U	T	T	F		T	U	U	S	T	U	U	U	Lactic acid
S	F	U	U	U	F	S	U	T	T	F	F		S			F	T	T		S		S	T	F	S			F	U			U	U	T	U	Lard
S	S	T	S	U	U	U	F	U		F	S	U	S	S	S	S	S	S	S			F	U	F	F	F		S			F	U	U	U	U	Lead acetate
U	S														S	S								S	S												Light water (fire ext.)

Fluid resistance guide

CODES: S - SATISFACTORY F - FAIR U - UNSATISFACTORY T - TEST FOR SPECIFIC APPLICATION

RESILIENT MATERIALS									PLASTICS													METALS														
BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON (CSM)	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM	
S	S		S		S	S							S			S								F	F	S		S				S	S	S	F	Lime slurry
S	S	T	S	T	S	S	F	T					S			S	S	S				S	S	F	S			S		S		U	U	U	U	Lime sulfur
	S	U	U	U	T	U				S																										Lindol (TCP)
S	U	F	U	S	S	S	F	T	T	S	S		S	T	S	S	S	U	S	S		S	S	S	S	S		S		S		U	S	S	S	Linseed oil
F	U	U	U	U	U	S	U	T	T	S	S		F			S	U		S			S	S	S	S	S		T				S	S	S	S	Liquid petroleium gas (LPG)
S	S		F	U	T	S		T							S	F							F	S	S				S			F	F	F		Lithium bromide
S	F		S	T		S	T			S			S		S	S	S	S		F		S	F	F	F	T		F	U	F		F	F	F	U	Magnesium carbonate 437
S	S	S	S	S	S	S	F	T	T	S	S	S	T	S	S	S	S	S	S	S		T	U	U	T	F		F	U	T	S	U	U	U	U	Magnesium chloride
S	S	S	S	U	S	S	F		U	S	S	U	S	S	S	S	S	S	S	F		S	S	S	S	T		S	U	F	S	F	S	F	U	Magnesium hydroxide
S	T		S		S	T										S						S	S	S	S	S		S					S	S	S	Magnesium oxide
S	S	S	S	U	S	S	F	T	T	S			S	S	S	S	S	S	S	F		F	S	F	S	F		S	F	F	F	T	T	T	F	Magnesium sulfate
S	S	S	S		S	S	S	S		S			S									S	U	T	T	S		U	F	U		U	U	U	F	Magnesium sulfite
S	S	S	S	S	S	S	S						S			S						S	F	S	S			S		U		F	F	U	S	Malt beverages
S	S		F	T	U	S	F			F	F	S		S	S	S	T			T			U			F		F		U	F	F				Manganese sulfate
S		S	S	S	S	S				S			S			S							F	S	S			S		U		F	F	U	S	Margarine
S	U	S	S	U	S	S				S			S			S	S					S	F	S	F			S		U		F	F	U	U	Mayonnaise
S	S	S	S	T	T	S	F	T		F	F	S	U	S	S	S	S	S		S		U	U	U	U	U		U	U	U	U	U	U	U	U	Mercuric chloride
F	T		F			T	F			S					S	S	S	S				F	U	U	F			U			F	U	U	U	U	Mercuric cyanide
S	S	S	S	T	S	S	T	U	T	U	U	F	S	S	S	S	S	S				S	S	S	S	U		U	U	S	S	U	U	U	U	Mercury
S		S	S		S	S							S			S								T	U			F		U		U	U	U	U	Mercury salts
U	T					U										S							T	F	F			U		F		U	U	U	F	Methallylamine
T				S	U								U		U	S							T	F	U	F		F		S	S	F	S	S	U	Methallyl chloride
S	U	T	F	U	U	S	U	U	T	S			F		S	S	T	U				S	S	S	S	S		S	S	S		S	S	S	S	Methane
																																				Methanol (see alcohol-methyl)
U	F	U	F	U	U	U	T	U	U	F	F		F	U	U	S	T					S	S		T	T				S		F			T	Methyl acetate
U	U	U	U	U	U	F	U	T	U	F	F	F	S	U	U	S	U	U	T	U		T	T	T	T	F		F		S	T	F	S	T	U	Methyl chloride
U	F	U	U	U	U	U	F	U	T	F	T		S	U	U	S	U	U	S	U	U	S	S	F	F	F		S	S	S		S	S	S	S	Methyl ethyl ketone (MEK)
U	U	U	U	U	U	F	U	F	U	S			U	U	U	S	T	U	S	U	U	F	T	T	T	S		F	T	F	T	T	U	S	U	Methylene chloride
S													S			S								S	S	S						S		S		MIL-F-5516
S													S			S								S	S	S						S		S		MIL-F-5572
S													S			S								S	S	S						S		S		MIL-F-5624
S						S																		S	S	S						S		S		MIL-F-25558
S	U		S	S		S							S			S								S	S	S						S		S		MIL-H-5606
S	U		S	S		S																	S	S	S	S						S		S	S	MIL-L-7808
S	S	S	S	U	S	S	U	T	F	S	F	S	S	U	S	S	F	S		S		S	S	S	S	U		U		S	S	U	U	U	S	Milk 474
S			S		S	U				U	T	S	S	S	S	S								U	F		F	S	T	U		U	U	U	F	Mine water (acid)
S	U		F	F	S	S	U	T	T	S			S	S	S	S	U	U	S	F		S	S	S	S	S		S	S	S	S	S		S	S	Mineral oil, USP
F	U		U		U	S				S							U							S	S	S						S		S	S	Mineral spirits
										U			U			S								F	F	U		U	U			U	U	U	U	Mixed acids (H_2SO_4 & HNO_3)
S	T	S	S	T	S	S	F	T	T	S	S	S	S		S	S	S	S	S			S	S	S	S	S		S		S	S	S	S	F	S	Molasses
S	U	S	T	T		S			T	S			T	S	S	S	U	U	S	S	S	S	S	S	S	S		S			S	S	S	S	S	Motor oil - sae #10, etc.
F	U	U	U	U	U	S	U	T	T	S		F	S	T	T	S	U	U	S			S	S	S	S	S		F		T	S	F	F	F	S	Naphtha
U	U	U	U	T	U	S	U	T	T	S			S		U	S	F	U	S			S	S	S	S	S		F	F	F		F	F	F	F	Naphthlene
F	U	U	U		U	S	U	T		U						S						T	T	F	T	S		T		T		F	U	F	F	Naphthenic acid
S	U	S	S	U	U	S	U	U	T	S			S		S	S	S	U				S	S	S	S	S		S		S		F		S	S	Natural gas
S	S	S	F	U	S	S	F	T	U	F	F	S	U	S	S	S	S	S	S	S		T	U	U	T			T	F	U	F	U	U	U	U	Nickel chloride
S	S		S		S	S	F			F			S		S	S	S	S	T	S		T	T	F	F			T			U	U	U	U	U	Nickel nitrate
S	S	S	S	U	S	S	F	T	U	F	F	S	U	S	S	S	S	S	S	S		F	U	T	F			T	F	U	F	T	T	T	U	Nickel sulfate
U	T	T	U	U	U	U	T	U	U	U	U	S	U	U	T	S	T	T	T		T		U	T	S	U		U	U	U	F	U	U	U	T	Nitric acid with 40% H_2O 493
U	T	U	U	U	U	F	T	T	U	U	U	S	U	U		S	T	T	S	U	T	S	U	T	T	U		U		U	T	U	U	U	U	Nitric acid vapors
U	U	U	U	U	U	U	U	U	U	U	U	S	U	U		S	S	U	T	U		T	U	T	T	U		U		U	F	U	U	U	T	Nitric acid (red ßuming)
										U	U		U	U									U	U	U			U	U	U		U	U	U	U	Nitric + HCL acids
													U										S	S	S					S		S				Nitriding gases
U	F	U	U	U	U	U	T	U	U	S	S	U	S	U	U	S	S		S	U		T	S	S	S	S		F	U	F		T	F	F	T	Nitrobenzene
U	T	U	U	U	U	U			U	F			U			S							F	F	F	U	U	U	U	U		U	U	U	S	Nitrogen tetroxide-dry
		S	S				T			U												T	S	F	F	T		F	U	S	S	F	F	F	S	Nitroglycerine
U	T	S				T				U			U			S	U	U				T	U	U	U			U	U		F	U	U	U	U	Nitrous acid
F	F	U	F	S	F	U	T	T		S			S			S	U	U				T	S	F	F	U		U			U	F	F	F	T	Nitrous oxide
																							S	S	S		S					S	S	S	S	Nyval (Mobil)
S	S		S	S	S	S	F	T	F	S	S		S	S		S	S	S	S			S	S	S	S	S					S	S	S	S	S	Nitrogen
S	U	U	S	S	U	S																	S	S	S	S						S	S	S	S	Oronite 8200
											S																	S								Oakite
F	U	U	T	T	T	S	U	S	T	F			S	S	S	S	F	U	F	F		T	F	F	S	S		F	U	F	T	T	T	T	T	Oleic acid
U		U	U							U			S		U	S	U						S	S			F								F	Oleum
S	F	U	S	S	S	S	T	T		S			T	U		S	S	T		S		S		S	S			S		S	S	T		S	S	Olive oil 514

Fluid resistance guide

CODES: S - SATISFACTORY F - FAIR U - UNSATISFACTORY T - TEST FOR SPECIFIC APPLICATION

RESILIENT MATERIALS | PLASTICS | METALS

BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON (CSM)	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49. NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINIUM	
T	U		T	S	U	S	U	T	S														S	S	S	S						F	S	S	S	Oronite hydraulic fluid
F	S	T	F	T	F	U	F	T	U	U			S	S		S	S	T	S	T		T	U	T	T	F		T	U	U	S	T	F	T	T	Oxalic acid
										U													T	T	T			T	F	T		T	T	T	F	Oxidizing gases
U	T	T	S	T	T	S	F	T	F	U	U	T	T	T	T	T	U	U	S	T		S	S	S	S	F		S		S		S	S	S	S	Oxygen
U	S	S	T	S	S	T	F	S	U	U	U		U	T	T	S	U	U		T		F	U	F	F	F									F	Ozone
F			F	F		U	U						S	T	S	F						S	S		S			S					S	T	T	Paint, oil base
T			T		T								S			S												S								Paint vechicles (except soya)
S	U		U	T	T	S	U	T														S	S	S	S			S					S	T	S	Palm oil
F	F	U	U	T	U	F	T	T	T				U	S		S	F	T				S	S	S	S	T		F				F	F	U	S	Palmitic acid
S	U		U	F	T	S	U			F	F	S	S	S	S	S	T	U		T		S	S	S	S			S			S	S	S	S	S	Paraffin
S			S	F	T	S				F						S		U				S		S	S			S				S	S	S	S	Paraffin oil
S			S		F			F								S												T							S	Pencillin solution
F	U	F	S	U	U	S	U	U		S						S		U		S		F	F	F	F	S	F	S				F	F	F	S	Pentane
U	F	T	F	U	U	F	T	S	U	U	U		U	U		S	T	U	S	U		T	U	T	T			U		U		U	U	U	T	Perchloric acid
U	U	U	U	U	U	S	U	T	U	F	F		T	U	U	S	U	U	T	U	U	F	F	F	F	S		F	T	F	S	F	F	F	T	Perchloroethylene 539
S	U	T	T	T	T	S				S													S	S		S		S		S		S	S	S	S	Petroleum oils
				S																																Petroleum residue from distillation
U	U	U	U	U	T	F	F	T	U	U	U	S	U	U	T	S	U		S	U	U	T	U	F	S	S		F	F	T	T	F	S	F	T	Phenol
	S		F	F	F	F				U	U		T	U	U	S							S	S	S	S	S	S	S	S		F	S	S	F	Phosphate ester non-inflammable oils
T	F	S	T	T	U	S	F	T	U	U	U	S	U	S	S	S	S	T	S	T	T	T	U	U	T	F		U	T	U	S	U	U	U	T	Phosphoric acid (aerated)
T	F	S	T	T	T	S	F	T	U	U	U	S	U	S	S	S	S	T	S	F	T		U	U	T	F		T	T	U	T	T	T	T	U	Phosphoric acid (air free)
U										U					S	S	T					T	F		S			S	S	F		T	T	T	S	Phosphorous
	F		T			S				U	U	S	U			S	S						U	U	T			U	U	U		U	U	U	U	Phosphoric acid vapors
	T	U	U	U	U	U				U																										Pickling solution
F	F	S	S	T	T	U	U	T	U	U	T	F	S	S	S	S	T	T				F	U	F	S	S		U	T	U	U	U	U	U	U	Picric acid
F	U	U	U	S	U	S	U	S					S			S						S			S			S		S			U		S	Pine oil
S	S	U	F	U	U	U	F	U		F			T			S	T	T				F	S	F	F	S		F		S		F	F	F	U	Potassium acetate
S	S		S		S	S				S			S		S	S							U		S			F	F	U		F				Potassium aluminum sulfate
S	S		F	U	F	S	T	T		F			T		S	S	S	S				F	F	F	S			F	U	F		F	F	F	U	Potassium bicarbonate
S	S		S		S	S	T			S			T		S							T	U		U	S		U	F	U	U	F	U	U	F	Potassium bisulfate
S	S		S	U	S	S	T	T		T			T	S	S	S	S	S	S	T		F	U	U	F	U		F	F	U	S	F	F	F	U	Potassium bromide
S	S		S	U	S	S	F	T	U	F	F	U	U	S	S	S	S	S	S		T	T	F	F	S	F		F	U	T	S	U	U	U	U	Potassium carbonate
T	S		S	S	S	S	F			U	F	F	S	S	S	S	S	S	S			F	F	F	S	F		U			S	T	U	U	U	Potassium chlorate
S	S	S	S	S	S	S	F	T	T	S	F	F	U	F	S	S	S	S	S	T		F	T	T	T	U		F	U	T	F	F	F	T	U	Potassium chloride
S	S		T	T	S	S	T			U			S		S	S	S	S				F	T	F	F	F		F	F	F	S	F	S	F	F	Potassium chromates
S	S	S	S	S	S	S	S	S	T	U	U	F	S	F	S	S	S	S	S			F	S	S	S	U		F	U	T	F	U	U	U	U	Potassium cyanide
	S	S	S	S	S	S	F	T	T	U			T	S	S	S	S	S	S	T		T	F	F	F	S		F	F	F	S	F	F	F	F	Potassium dichromate
U	T		T			S	T			S			T		S	S	S	S				T	U	U	F	U		F	F	U	T	F	F	F	S	Potassium ferricyanide
S	S	S	F	U	T	T	F	U		S	F	F	F	F	S	S	T	F	T	U	S	T	T	F	S	F		F	U	T	S	T	T	U	U	Potassium hydroxide
F	S		F	T		U	U						T			S	U	U	S			T	T	U	U	U		U			U	U	U	U	U	Potassium hypochlorite
S	S	S	S	S	S	S	S	S	T	F	F	F	S	F	S	F	S	S	S	S		T	F	F	F	T		F	F	F	T	F	F	F	F	Potassium nitrate
U	S	S	S	U	S	S				U	S		U	S		S	S	S	S	S		F	F	S	S	U		F	U	F	F	F	F	F	F	Potassium permanganate
										U												F	T	T	F	U		F	U	U		U	U	U	U	Potassium peroxide
S	S		U	T		S	T			S			T			S	S	S				T	T	S	S	U		U	U	U		U	U	U	U	Potassium persulfate
S	S	F	S	S	S	S	S	S	T	S	F	F	S	S	S	S	S	S	S	T		T	S	S	S	F		F	F	U	S	F	F	U	S	Potassium sulfate
S	S		S	S	S	S	S						S			S	S	S	S			F	U	F	F	U		U			S	U	U	U	U	Potassium sulfide
F	S	F	S	S	S	S	F	T					T			S	S	S				T	T	U	T	S		U	F	U		F	F	U	U	Potassium sulfite
S	S	S	U	U	U	S	T	T	T	S			S			S						S		F	S	S		S				F	F	F	S	Prestone anti-freeze
S	U	F	F	S	F	S				F	F	F			S	S							S												S	Producer gas
S	U	S	U	U	U	S	U	T	T	S	S		S	U	S	S	U	U		U		S	S	S	S	S		S	S	S	S	S	S	S	S	Propane
U	S		U	U	T	U	T			U						F						T	T		F	S		T	U	U		T	T	T	T	Propionic acid
S	S	S	S		S	S				S					S		S						S	S	S	S		S		S		S	S	S	T	Propyl alcohol
U	U		U	U	U	S	U	T							U	S	U	U				T	T	S	T			S				S	S	F	U	Propylene dichloride
U	U		F	T	U	S	U	T					T			S	T		S			S	S	S	S	S	S	U	S	F	U	U	U	U	U	Pyranol (dielectric)
U	T	U	U	U	F	S	T	U	U				T			S		U		U		S	S	S	S	S	S	S	S	S		F	S	S	F	Pydraul (mansanto)
U	F	T	U	U	U	U	F	U	U	F	F	U	S	U	U	S		T	S			T	T	F	F			F	F	U		T	F	F	F	Pyridine
		T				U				U						S							F	F	F			S			F			F	F	Pyrogallic acid
F	S	U	U	U	U											S																S				Pyrogard (mobil) 5%
	F	U	U	U						U													T		F			T		U		T			F	Pyroligneous acid
																												(see Sodium thiosulfate)								Photo solution
U						F										S							S	S	S	S						S		S	S	Propylene
S	S		U	T	T	S	U	T		S				U		S	S	F		T	S	F	T	S	S	S		F			F	S	F	S	F	Propylene glycol
F			S			S							F			S							T	F	F			S		T	S	F	F	F	F	Rosin emulsion
F	T		F	U	T	T	F			F						S						T	T	F	F			F	F	T		F	F	F	F	Sacchrin solution
F	S		U		S	S				U			S		S	S	S	F		F		F	U	F	F	S		F	F	U	F	F	F	F	T	Salicylic acid
S	S	S	F	U	S	S	T	T	T	S	T	S	S	S	S	S	S	S				T	U	U	T			T			T	F	F	U	U	Sewage
T	S	S	U	U		U				F	F	U	S		U	S	T	T				S	S	S	S			S		S		S	S	S	S	Shellac

trafag sensors controls

Fluid resistance guide

CODES: S - SATISFACTORY F - FAIR U - UNSATISFACTORY T - TEST FOR SPECIFIC APPLICATION

RESILIENT MATERIALS														PLASTICS																			METALS										
BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON (CSM)	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM	
S	S	S	S	S	U	S	S	S	T	S	S	S	T	S	S	S	S		T	S		S	S	S	S	S						S	S	S	S	Silicone oil
					S	S										S						T	U	T	S			F			T	U	U	U	U	Silver bromide
																S	F	F		S		U	U	U	U			F			T	T	T	U	U	Silver chloride 602
U	S	S	U	S	S	S	F	T		F	F	F	S	F	S	S	S	S	S	S		T	U	F	S			U	U	U	S	U	U	U	U	Silver nitrate
S		S		S	S	S				S	S	T	S	S	S	S	S						S	S	S			T	S	S		S	S	F	F	Soap (molten)
U	F	U	U	U	T	U	T	U	U					T				U			T	S	S	S	S	S						U	U	U	S	Skydrol
F	S					U				U	U	U			U	U						S	S	S	S			S			S	U	U	U	S	Sodium
F	S	U	F	U	U	U	T	U		S			S	S	S	S	S	S	S	S	F		T	U	F	S	F		T	T	T	S	F	F	F	S	Sodium acetate
S			S		S	S	T						S			S						S	T	F	S	T		S	U	S		S	F	U	U	Sodium aluminate
S	S	S	S	T	S	S	F	T	T	F	U	U	S	S	S	S	S	S	S	S	S		T	F	F	T		F	F	T	U	F	F	T	U	Sodium bicarbonate
													S		S	S							F	F	F							U	U	U	F	Sodium bichromate
S	F		S	T	S	S	F	T	U	F	F	S	U	S	S	S	S	S	S	S	T		T	T	T	T	F	S	T	F	U	F	T	T	U	U	Sodium bisulfate
S			S		S	S					S	S		S	S		S	S						U	S		S									Sodium bisulfate 10%
S	S		S	T	S	S	F	T	T	U	U		S		S	S	S	S		T		T	U	T	T	F	S	F	F	U	T	F	F	U	T	Sodium bisulfite
S	S	S	S	T	S	S	F	T	T	S			S	S		S	F	S	S	T		T	F	F	T			F			T	F	T	T	U	Sodium borate
S	T		T			T	T			S			F		S	F	S	S				T	U	U	T	U		F		U	F	T	T	T	S	Sodium bromide
S	S		S	T	S	S	F	T	T	S	S	U	S	S	S	S	S	S	S	S	S		T	F	F	F	S		F	T	F	S	F	F	U	U	Sodium carbonate (soda ash)
S	S	S	S	S	S	S	F	T	T	S	T		S	S	S	S	S	S	S	F		T	T	T	T	F		F	F	T	S	F	F	T	T	Sodium chloride
S			T		S	S	T			U			S	S		S	S		S	S		F	F	F	F	F		F		F		T	F	F	F	Sodium chromate
																S						T	T	F	F	U		F		U	F	U	T		U	Sodium citrate
S	S	S	S	S	S	S	F	T	T	F	F	S	S	S	S	S	S	S	S			T	F	S	F	U		T	U	F	U	U	U	U	U	Sodium cyanide
T	T	S	T	T	S	T	T	U					T		S	S	S	S	T			F	U	F	F			T			T	U	U	U	T	Sodium dichromate
S	S		T			S	T			S			T		S	F	S	S				T	F	F	F	U				F		U	U	U	T	Sodium ferricyanide
S	S		S	T	S	S	T			S			S		S	S	S	S				T	T	U	U	S		S		F	T	T	S	F	F	Sodium fluoride
T	S	S	T	S	S	T	T	T	U	S	U	F	S	S	S	S	F	F	T	T	T	T	F	F	S	S	S	T	U	T	S	U	T	T	U	Sodium hydroxide (caustic soda)
U	F	T	U	U	T	S	T	T	T	U	U		U	S	T	S	F	F	S	T		T	U	U	F			U	U	U	T	U	U	U	U	Sodium hypochlorite
																S						U	U	F				S			F	U	U	U	U	Sodium hyposulfite
S	S	F	F	T	T	S	T	T		F	F	S	T	F	F	S	T	T				S	U	F	F	S		T				F	F	U	U	Sodium metaphosphate
S	S		S	T	S	S	F			F	F	S	F	S	S	F						S	F	F	F	S		F		F	S	F	F	F	T	Sodium metasilicate 563
F	S	S	F	T	U	S	F		T	S	F	S	S	F	S	S	S	S	S			T	T	F	T	F		F	U	F	S	T	T	U	F	Sodium nitrate
S	S		T		S	S	T			S			S		S	S	S	S				F	F	F	F	T		S		F		F	F	F	F	Sodium nitrite
F	S	S	F	T	S	S	F	T	T	F	F	S	T	F	S	S	S	T				F	F	F	F	U		F	U	F	S	F	T	U	U	Sodium perborate
T	S	S	T	U	U	S	S	S	T	T	U	U		T		S	S	F	F		S	S	U	T	F	U		F	U	F	S	U	U	U	U	Sodium peroxide
																						S	U	S	S	S				S		T	T		U	Sodium phenolate
S	S	S	F	S	U	S	T	T	T	F	F	S	U	S	S	F	S	S				F	F	F	F	S		F		F	T	F	F	F	U	Sodium phosphate
F	S	S	U	S	T	S	T	T	T				T			S	S	S				F	F	F	F	F		F	U	F	S	F	T	T	U	Sodium phosphate (tri-basic)
T				T		T	T						T									F	F	F				F		F	S				U	Sodium plumbite
S			S		S		S			S			S			S						F	F		F			F								Sodium resinate 642
																						F	U	F	F	T		F		F		T		T	T	Sodium salicylate
S	S	S	S	F	S	S	T		T	S	S	S	S	S	S	S	S	S	S			S	T	F	F	F		F	U	F	S	F	F	F	U	Sodium silicate
S	S	S	S	S	S	S	F	T	T	S	S	S	S	S	S	S	S	S	S	S	S	T	T	T	T	S		F	F	F	F	F	F	T	S	Sodium sulfate
F	S	S	S	S	S	S	S	T	T	T	S	S	S	S	S	S	S	S	S	S	U	T	T	U	S	U		F	F	U	S	U	U	U	U	Sodium sulfide
S	S	S	S	S	S					S	S	S	S	S	S	S							F	T	F			F	F	U	T	T	F	U	F	Sodium sulfite
S	T		S	T	S	S	F		T	U	U		S	S		S	F	S	S	T		F	F	T	F			F		F	F	F	T	T	U	Sodium tetraborate
F	S		T	T	F	S	F	T	T		T		S																					U		Sodium thiophosphate (aeroßoat)
F	S	S	S	S	S	S	F			T	T	S	S	U	S	S	S	F	S	S		S	U	T	F	U		F			F	U	U	U	F	Sodium thiosulfate
S			S	S	S	S							S			S																				Solvac (socony)
S	U	F	F	F	U	S	U	T					S			S																				Sovasol #1
S	U	F	F	F	U	S	U	T					S			S																				Sovasol #2
S	U	F	F	F	U	S	U	T					S			S																				Sovasol #3
S	U	F	F	F	U	S	U	T					S			S																				Sovasol #73
S	U	F	F	F	U	S	U	T					S			S																				Sovasol #74
S	S	U	U	T	T	S	F	T	T	F		S	U	S	S	S	S	S	S	S		T	T	U	U	T		T		U	U	U	U	U	Stannic chloride
F	U	S	S	U	F	T	F	T	T	F			U			S	S	F	T	T		T	T	U	U			T	U	T	F	U	U	U	U	Stannous chloride
S	F	S	S	T	S	S			T	F	F	S	S	S	S	S	S	F	S			S	S	F	S	S		S		T		S	T		S	Starch
U	T	U	U	U	U	T	T	U	U	U	U	U	U	T	U	T	U	U	T	U		S	F	S	S	F		F		F	S	F	S	F	T	Steam
S	S		S	U	U	U		U		T																		F						S		Steam condensate 663
F	F		S	T	S	T	T	U	T	F			S	U	S	S	S	S		F		T	T	T	T	S	S	F	U	U		U	U	U	U	Stearic acid
S	U	U	F	S	U	S								S	U		S		S					S	S								S	S		Stoddards solvent
	F			T						F	F	S		S	S	T						F	U	F	F	F		F		U		F	F	F	F	Stronitium nitrate
U	U	T	U	U	U	T				S						S							S	S	S			S				F	F	F		Styrene 666
T	T					T				U			T			S	T					F	F		U	F						F	F	F	T	Succinic acid
																																				Sul (dil)
T	F		F		T	S	T	T	U				U			S	T	S				F	U	F	T		S	S		S		U	U	U	U	Sulfate liquor
U	S		U	T	S	S	T	T	F	S			S		S	S	S	S	S	T		T	T	F	F	U		T	U	T	S	U	U	T	S	Sulfur
U	U	U	U	U	U	S	U	T	U	U	U		U	T	S	S	U	U		U		T	U	T	T	U		U	F	U	F	U	U	U	U	Sulfur chloride
U	S		F	U	F	S	F	F	U	F			U	U	U	S	T	T	S	T		T	T	T	T	T		T	F	T	U	T	T	T	F	Sulfur dioxide

Back to overview

Fluid resistance guide

CODES: S - SATISFACTORY F - FAIR U - UNSATISFACTORY T - TEST FOR SPECIFIC APPLICATION

RESILIENT MATERIALS | PLASTICS | METALS

BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON (CSM)	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM	
T	S		F	S	U	U	T	T	T		S		T			S							T	T	S	T					S	S		S		Sulfur hexaßuoride
	U					S											T					F	F	F	F	U		F		F		F	F	F	F	Sulfur oils
U	F	U	U	T	F	S	U	T	U	U			S			S	U	U				T	T	T	T	U		F	F	T		T	T	T	F	Sulfur trioxide dry
T	T	T	U	U	U	S	T	U	T	U	U	S	U	U	T	S	T	T	T	T	T	T	T	T	T	T		U	U	U	U	U	U	U	U	Sulfuric acid
T	F	S	T	U	U	S	F		U	U	U	S	U	U	S	S	S	S	S			T	U	U	U	F		U	F	U	U	U	U	U	T	Sulfurous acid
S	T	S	S		T					F	F	S	S	F	F	S									S			S		F		F		F	S	Soybean oil
T	U		U	T	T	S				S	S		S	T	U	S	T	T	S			S	S	S	S	S						S		S	S	(Synthetic lubricant -diester type)
S			S		S					S			S			S												S								Talc slurry
S	U	F	U	T	U	S	U	T							S	F	S	F				T	U	U	T			F		U	T	U		U	U	Tall oil
S	F		S		S	S				F	F	T	S		S	S												S		S						Tallow, molten
T	S		T	F	S	S	T	F	T	U			S	S	S	S	S	S	S	U		T	T	F	F	S		F		F	F	T	T	T	T	Tannic acid 686
T	U	U	T		U	F				F	F	F	S		S	S							S	F	S			S		S	S	S	S	F	S	Tar
																																				Water (see types below)
S	S		S	T	S	S		T					S			S								S	S			S				F	F	F	F	Carbonated
T	S	S	F			S	F			S	S		S	S	S	S	S	S	S		T	S	U	S	S	S		S	U	U	S	T	T	T	S	Distilled, demineralized, deionized
S	S	S	T	T	S	S	T	S	T	S	S		S	S	S	S	S	S	S	S		S	T	S	S	S		S		U	S	S	S	F	F	Fresh
T	S		U	U	U	U		T		S			T			S						S	T	S	S	S		S			S	F	F	T	F	Boiler feed
S	S		T	U	S	T				S			T			S							T	S	S	S						F	F	T	F	Return condensate
T	T		T	U	T	S	F									S		S	S			F	T	F	F	S		S	S	U	S	S	S	U	U	Brackish
S	S	S	S	U	F	S	F	T	T	S	S	F	S	S	S	S	S	S	S			U	U	U	T	S	U	S	S	U	F	F	S	U	U	Sea
			S							S				S	S													S							S	Wax molten
T	T	T	U	U	S	T		T		S	S	F	S	S	S	S	S	U				S	U	F	F			S		U		S	T	F	U	Whiskey and wines
T	T	T	T	U	S	T	F	T	T	S	S	F	S	S	S	S	S	S		T		S	U	S	S			U			S	F	F	F	T	Wine
S	S		U	U	T	S	F	T					T			S						S	S	S	S							U	T	T	S	Xanthates
			S							S			S			F								S	S											X-ray development solution
U	U	U	U	U	U	U				S	S	U	S	S	U	S	U	U					S	S	F		S	S		S		S	S	S	F	Xlol (dry & no alkalies)
U	U	U	U	T	U	F	U	T	U	S	S	U	S	U	T	S	U	U	S	U	U	S	F	S	S	S		S			S	S	S	S	S	Xylene
T	S	S	T	T	S	S	F	T	T	F	S	F	U	S	S	S	S	S	S	S	T	T	T	U	U	F		T	T	T	F	U	U	U	U	Zinc chloride
S	S	S	S	T	S	S	F	T	U		S	F	U	S	S	S	S	S		S		T	U	T	F	S		T	F	U	F	T	T	U	U	Zinc sulfate
T	U	S	T	T	S	F	F	T	T	U			S	S	S	S	S	F	S	T		T	U	T	T	S		T	U	U	S	T	T	U	T	Tartaric acid
		S																																		Tetrabutyl titrate
	U	U	U	U	U																		T	S	S	S						S	S	S	T	Tetrachloroethylene
U	U	U	U	U	U	U	T	U	U	S			T	U		S	U	S	S	U		S													F	Tetrahydrofuran
										U	U					S			S			T	U	U	T			U	U	U		U	U	U	U	Tetraphosphoric acid
										U												U	U	U	U					U		U	U	U		Tin ammonium chloride
S	T									U	S	U			U	S							S		U			T		U						Tin tetrachloride
S																F						T	U	T	F			T	F	U		T	T	U	U	Titanium sulfate
U	U	U	U	U	U	S	U	T								S	U	U		S		T	T	T	T			T				T	T	U	U	Titanium tetrachloride
U	U	U	U	T	U	S	U	T	U	F	F		S	U	U	S	U	U	S	U	U	S	S	S	S	S		S	S	S	S	S	S	S	S	Toluene (Toluol)
S										S													S	S	S	S						S		S	S	Transmission fluid (type A)
U	U	U	U	U	U	U	T	U	U	F	F	F	F		U	S	F	U				S	S		S											Tributyl phosphate
U	F	U	U	U	T	U	T	U	U	U			U			S	F	U	S	T		U	U	U	U			T	U	U	T	U	U	U	U	Trichloroacetic acid
U	U	U	U	U	U	F	U	U	U	S	F	U	U	U	U	S	U	U	S	U		T	T	F	F			F	U	T	S	T	T	T	F	Trichloroethylene
S			S	S		S	U									S						S	T		S	T		S		S		F	S	S		Trichloropropane
U	S	U	U	U	U	S	F	T	U				T			S	F	T	S			S	S	S	S							S	S	S	U	Tricresyl phosphate
			F							T						S							U	U	U			U	U	U		U	U	U	U	Trifluoroacetic acid
S			S		S					S			S			S	S						S	F	F	F		F	U	S		T			U	Trisodium phosphate
S	U	T	S	U	U	T	U	T	T				S			S	S					S	F		S			T			T	T	T	T	S	Tung oil
						S																														Turco # 2976
		T																																		Turco oil # 15
S	U	U	T	U	U	F	U	T	T	S			S	U		S	U	U	T	U		S	F	F	F	S		F	F	F	S	F	F	F	F	Turpentine
U	S		U		U	U							S			S							S		S			S		U		U	U	U	S	Udmh (Hydrazine)
F	F	S	S	T	S	F	F		T	S	T	F	S	F	S	S	S	S	S	U		T	T	F	F	S		T	S	F		T	S	T	F	Urea
					T	T										S						T	S		T		T	S				T	T	T	S	Uranium hexafluoride
																								S	S											Vanadium pentoxide
F	U	U	U	U	U	T	U	T					S	U	U	S	T	U				S	T	T	S			S		T	S	S	T	F	S	Varnish
S			S			S										S						F		F	F	F						F	F	F		Varsol # 1 & # 2 (mineral spirits)
F	S	S	U	T	S	S	F	T		F	F	S	S	S	S	S						S	S	F	S			F			S			U	S	Vegetable oils
T	S	S	T	U	S	S	T	U	T		F	T	T	S		S	S	S	S	S		S	U	F	F	S		S		T	S	F	F	U	T	Vinegar
	T	U	S	S			U			S						S						T	T	T	T	S		F	U	T	T	U	U	U	T	Vinyl chloride

trafag sensors controls

Conversion of pressure units

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

Conversion of temperature units

[°F] to [°C]
Formula: °C = 5/9·(°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: °F = 9/5·(°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

Trafag international

Europe

Headquarters, Switzerland
Trafag AG
Industriestrasse 11
CH - 8608 Bubikon
Tel. +41 44 922 32 32
www.trafag.com
e-mail: trafag@trafag.com

Austria
Trafag GmbH
Konrad-Doppelmayr-Strasse 17
AT - 6922 Wolfurt
Tel. +43 5574 20866
www.trafag.at
e-mail: trafagat@trafag.com

Belgium
Marktechnical B.V.B.A.
Boxtelstraat 11
BE - 2320 Hoogstraten
Tel. +32 3 311 8864
www.marktechnical.be
e-mail: info@marktechnical.be

Croatia
Albania, Bosnia-Herzegovina, Macedonia, Montenegro, Serbia, Slovenia
VARGA ELEKTRONIK d.o.o.
Draškovićeva 12
Draškovec
HR - 40323 Prelog
Tel. +385 40 643 189
www.varga-elektronik.hr
e-mail: info@varga-elektronik.hr

Cyprus
ACTech Ltd.
60 Mesologiou Str, 185-45
GR - Piraeus
Tel. +30 210 4630 825
www.actech.gr
e-mail: actech1@otenet.gr

Czech Republic
Trafag spol. s r.o.
Vilémovská 2129
CZ - 347 01 Tachov
Tel. +420 374 723 250
www.trafag.cz
e-mail: trafagcz@trafag.com

Denmark
OEM Automatic Klitsø A/S
Engholm Parkvej 4
DK - 3450 Allerød
Tel. +45 70 10 64 00
www.oemklitso.dk
e-mail: info@oemklitso.dk

Estonia, Latvia
Wermundsen OÜ
Mustamäe tee 55
EE - 10620 Tallinn
Tel. +372 601 4202
www.wermundsen.ee
e-mail: wermundsen@wermundsen.ee

Finland
Wexon OY
Turvekuja 6
FI - 00700 Helsinki
Tel. +358 9 290 440
www.wexon.com
e-mail: wexon@wexon.com

France
Trafag S.A.R.L.
2 Boulevard Westinghouse
FR - 93270 Sevran
Tel. +33 1 4863 0101
www.trafag.fr
e-mail: trafagfr@trafag.com

Germany
Trafag GmbH
Kelterstrasse 59
DE - 72669 Unterensingen
Tel. +49 7022 40590-0
www.trafag.de
e-mail: info@trafag.de

Great Britain
Trafag (UK) Ltd.
Unit 6 First Quarter
Blenheim Rd
GB - Epsom, KT19 9QN
Tel. +44 (0) 203 968 0020
www.trafag.co.uk
e-mail: enquiries.uk@trafag.com

Greece
ACTech Ltd.
60 Mesologiou Str, 185-45
GR - Piraeus
Tel. +30 210 4630 825
www.actech.gr
e-mail: actech1@otenet.gr

Hungary
OEM Automatic Kft.
Gyár u.2.
HU - 2040 Budaörs
Tel. +36 23 880 895
www.oemautomatic.hu
e-mail: info@oemautomatic.hu

Iceland
Samey ehf.
Lyngas 13
IS - 210 Gardabaer
Tel. +354 510 5200
www.samey.is
e-mail: sala@samey.is

Italy
Trafag Italia S.r.l.
c/o Tecnocity Altomilanese
Via Cremona, 1
IT - 20025 Legnano (MI)
Tel. +39 0 331 592 397
www.trafagitalia.com
e-mail: info.it@trafag.com

Lithuania
UAB Auregis
Savanorių pr. 271
Mituvos g. 2
LT - Kaunas 50131
Tel. +370 37 313426
www.auregis.lt
e-mail: info@auregis.lt

Netherlands
Marktechnical B.V.
Lage Ham 172-178
P.O. Box 324 / 5100 AH Dongen
NL - 5102 AE Dongen
Tel. +31 162 31 42 85
www.marktechnical.nl
e-mail: info@marktechnical.nl

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Europe

Norway
Stork AS
Brynsveien 100
NO - 1352 Kolsas
Tel. +47 67 17 64 00
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e-mail: stork@stork.no

Poland
POLTRAF Sp. z o. o.
ul.Bysewska 26C
PL - 80-298 Gdańsk
Tel. +48 58 557 52 07
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e-mail: info@poltraf.com.pl

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e-mail: info@trafag.es

Romania
Synchro Comp s.r.l.
ID Sarbu street no. 13 Camin 3
RO - Craiova 200561 Dolj
Tel. +40 317 800 000
www.synchro.ro
e-mail: office@synchro.ro

Russia
Ltd. POLTRAF CIS
Naberegnaya Obvodnogo Kanala
199-201, lit "P"
RU - 196105 St.-Petersburg
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e-mail: info@poltraf.ru

Slovakia
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Sweden
Regal Components AB
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Switzerland
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Ukraine
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India
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Tel. +91 124 404 47 20
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Indonesia
General Industry:
Please contact our headquarters
Switzerland
Tel. +41 44 922 32 32
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e-mail: trafag@trafag.com

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PT. HIGH VOLT TECHNOLOGY
Graha Mas Pemuda AD-7
Jln. Pemuda, Rawamangun
ID-Jakarta Timur, 13220
Tel. +62 21 4711898, 4711884
www.highvolt-technology.com
e-mail: sales@highvolt-technology.com

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Korea
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KR - Suwon-city, Gyeonggi-do
Tel. +82 31 243 10 35
www.www.gms-korea.com
e-mail: sales@gms-korea.com

Malaysia
General Industry:
ESEAN Engineering SDN BHD
No 9, Jalan TKK 2/2
Taman Puncak Kinrara
MY - 47180, Puchong, Selangor
Tel. +603 8070 1803
www.ese.com.my
e-mail: sales@ese.com.my

Malaysia
SF6 High Voltage Industry:
LIANEQUIP Sdn Bhd
C-37-3, Block C, 3rd Floor,
Jaya One, No 72A Jln Universiti
MY - 46200 Petaling Jaya, Selangor
Tel. +603 7956 7652
www.lianequip.com
e-mail: lianeq2014@gmail.com

Philippines
General Industry:
West Point Engineering Supplies
West Point Building, Bacood Street,
Barangay Patubig
Marilao Bulacan
Philippines 3019
Tel. +63 44 797 2524
www.westpointengineering.com.ph
sales@westpointengineering.com.ph

Philippines
SF_6 High Voltage Industry:
KVAR CORPORATION
No. 7 Villanueva Drive cor.,
Commonwealth Ave.
Old Balara 1119 Quezon City
Metro Manila
Tel. +632 921 86 99
www.kvar.com.ph
e-mail: admin@kvar.com.ph

Singapore
General Industry:
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Switzerland
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Shihlin 11145
TW - Taipei
Tel. +886 2 8866 1234
www.daybreak.com.tw
e-mail: day111@ms23.hinet.net

Thailand
General Industry:
Themtech Co., Ltd.
127 Soi Srimuang Anusorn
Sutthisarnvinijchai Rd., Dindaeng
TH - Bangkok 10400
Tel. +662 693 6767/693 6629
www.primusthai.com
e-mail: sales@themtech.co.th

Thailand
SF6 High Voltage Industry:
PACIFIC POWER TECHNOLOGY CO., LTD.
61/1 Soi Pattanakarn 54,
Pattanakarn Rd.,
Suanluang, Suanluang,
TH-Bangkok, 10250
Tel. +66 2320 0462-5
surasakpare@gmail.com

United Arab Emirates
Abdulla Bin Hamid Trading LLC
Po Box 30495
AE - Dubai
Tel. +971 4 2241464
www.accutech.ae
e-mail: sales@accutech.ae

Vietnam
GNN Co. Ltd
33 Hoa Hong 2, Ward 2
Nhu Nhuan Dist. HCMC
Tel. +84 8 3517 4923
www.gnnvietnam.com
e-mail: contact@gnnvietnam.com

America

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Trafag, Inc.
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US - Charlotte, NC 28217
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South America

Entire South America:
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e-mail: info@trafag.es

Africa

South Africa
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Instrumentation & Control Systems
1 Claerhout Crescent
ZA - Sasolburg, 1947 RSA
Tel. +27 82 900 83 12
www.instcon.co.za
e-mail: info@instcon.co.za

Australia, Oceania

Australia
Dart Instruments Pty. Ltd.
Unit 8, 15-17 Chaplin Drive
AU - Lane Cove NSW 2066
Tel. +61 2 9651 4220
www.dartinstruments.com.au
e-mail: sales@dartinstruments.com.au

New Zealand
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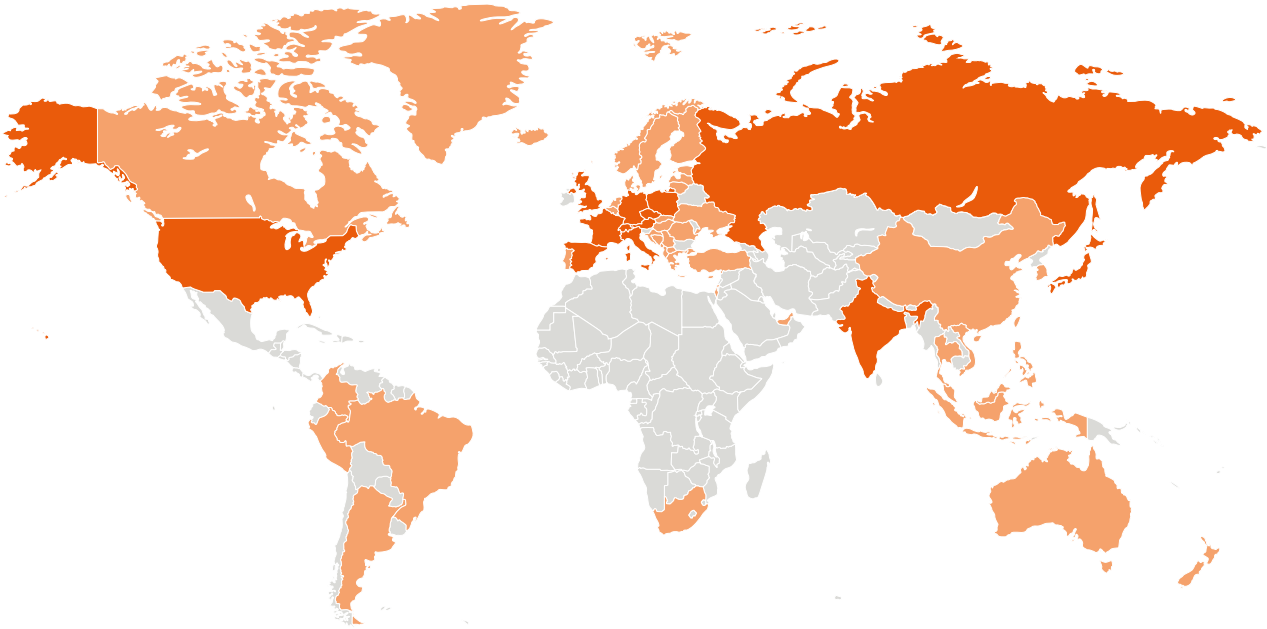

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Trafag sensors & controls
Switzerland

Industriestrasse 11
CH-8608 Bubikon

Tel. +41 44 922 32 32
Fax +41 44 922 32 33

www.trafag.com
trafag@trafag.com