2018

PRESSURE TRANSMITTERS

Pressure and temperature monitoring solutions

Pressure switches

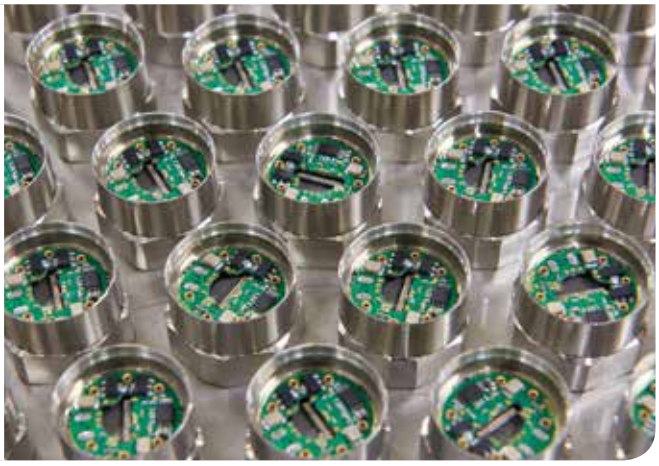
Thermostats

trafag
sensors controls


trafag

Trafag – Sensors and monitoring instruments for pressure and temperature

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.


Pressure
0...2.500 bar
www.trafag.com

Content

Pressure switches and accessories

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.

Our products are at home where you are

Shipbuilding

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

Hydraulics

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

Engines

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

Railways

- Brake systems
- Pantograph
- Air compressors

Water treatment

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

Various

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

trafag sensors controls

Pressure transmitters

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.

Technology

Thin-film-on-steel (welded and O-ring free) or thick-film-on-ceramic pressure sensors are key components of Trafag pressure transmitters. Both sensor technologies as well as the ASIC (application-specific microchip) are developed and produced in-house. As a result, compact 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. Trafag is a technological pioneer when it comes to miniaturising robust pressure transmitters.

Thin-film-on-steel 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 technology

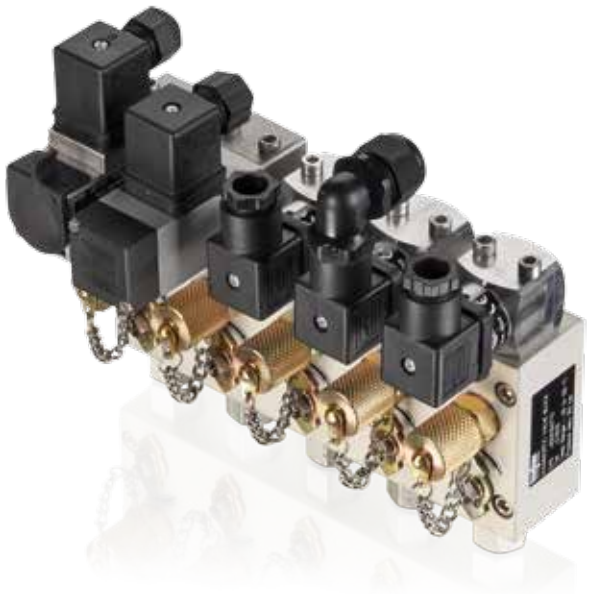
- Resistant to aggressive media
- Ideal for low pressure ranges and absolute measurement
- Economical

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 meet specific application requirements and also make installation easier. They include diagnostic valve manifolds, snubbers and pressure peak damping elements for measuring pressure, or protective pipes for thermostats.

Accessories for pressure measurement instruments

- SMI Sensor Master Interface
- 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



Overview pressure transmitter

	NAT 8252	NAH 8253	NAH 8254	NAE 8256	NSL 8257	
	page 21	page 31	page 36	page 46	page 52	
						
Measuring principle	Thin film on steel	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 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	
Output signal	4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC, 1 ... 5 VDC, 1 ... 6 VDC, 0 ... 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, 1 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.1 ... 10.1 VDC, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors	4 ... 20 mA	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	
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.	0.15 ... 0.8 % FS typ.	
Ambient temperature	–40°C ... +125°C	-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	-40°C ... +125°C	
Protection	IP65, IP67	Min. IP65	IP65, IP67	IP65, IP67	Min. IP65	
Sensor (wetted parts)	1.4542 (AISI630)	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)	1.4542 (AISI630)	
Housing	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	
Pressure connections	G1/4" m, G1/4" m (Manometer), 1/4"NPT m, 1/8"NPT m, 7/16"-20UNF SAE J512 f, 7/16"-20UNF SAE4 m, 7/16"-20UNF m DIN3866, R1/4" m DIN3858, R1/4" m DIN2999, R1/8" m, M10x1 m, M12x1.5 m	G1/4" m, 1/4"NPT m, 7/16"-20UNF m, 7/16"-20UNF f (valve opener), 7/16"-20UNF SAE4 m	G1/4" m, G1/4" m (Manometer), 1/4"NPT m, 1/8"NPT m, 7/16"-20UNF SAE J512 f, 7/16"-20UNF SAE4 m, 7/16"-20UNF m DIN3866, R1/4" m DIN3858, R1/4" m DIN2999, R1/8" m, M10x1 m, M12x1.5 m	G1/4" m, G1/4" m (Manometer EN 871), 1/4"NPT m, M10x1 m	G1/4" m, 1/4"NPT m	
Electrical connections	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; cable IP67	Industrial standard, contact distance 9.4 mm; M12x1	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; cable IP67	Industrial standard, contact distance 9.4 mm; M12x1	Industrial standard, contact distance 9.4 mm; M12x1	
Applications	Machine tools Hydraulics HVAC Refrigeration Process technology Water treatment	Machine tools HydraulicsProcess technology Process technology Water treatment Test benches	Machine tools Hydraulics HVAC Refrigeration Process technology Water treatment	Shipbuilding Engine manufacturing Hydraulics	Shipbuilding Engine manufacturing Machine tools Process technology Water treatment Test benches	
Approval / conformity				ABS, BV, DNV-GL, LRS, KRS, NKK, RINA, RMRS	DNV-GL, RINA	
Data sheet	www.trafag.com/H72303	www.trafag.com/H72300	www.trafag.com/H72304	www.trafag.com/H72305	www.trafag.com/H72302	
Instructions	www.trafag.com/H73303	www.trafag.com/H73250	www.trafag.com/H73303	www.trafag.com/H73303	www.trafag.com/H73250	

	NAR 8258	ECT 8472	ECT 0.3 % (0.5 %, 1.0 %) 8473	ECTN 8477	ECR 8478	EPI 8287
	page 57	page 66	page 73	page 80	page 86	page 92
						
	Thin film on steel	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic	Thin film on steel
	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi	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 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	0 ... 0.1 to 0 ... 60 bar 0 ... 1.5 to 0 ... 1000 psi	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi
	4 ... 20 mA, Switching output: 1 or 2 PNP transistors	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	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 … 4.5 VDC ratiometric
	± 0.3 % FS typ.	± 0.5 % FS typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.5 % FS typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.5 % FS typ. ± 0.3 % FS typ.
	–40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +125°C	–40°C ... +125°C
	–40°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +85°C	-25°C ... +125°C	–40°C ... +125°C
	IP65, IP67	IP65, IP67, IP68	IP65, IP67, IP68	min. IP65	IP65, IP67	IP65, IP67, IP68
	1.4542 (AISI630)	Ceramic, Al_2O_3 (96 %)	Ceramic, Al_2O_3 (96 %)	Ceramic, Al_2O_3 (96 %)	Ceramic, Al_2O_3 (96 %)	1.4542 (AISI630)
	1.4542 (AISI630)	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)	1.4542 (AISI630) or 1.4404 (AISI316L)
	1.4301 (AISI304)	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)	1.4542 (AISI630) or 1.4404 (AISI316L)
	G1/4" m, G1/4" m (Manometer), 1/4"NPT m, 1/8"NPT m, 7/16"-20UNF SAE J512 f, 7/16"-20UNF SAE4 m, 7/16"-20UNF m, R1/4" m, R1/8" m, M10x1 m, M12x1.5 m (DIN EN ISO 9974-2)	G1/4" f, G1/4" m, G1/2" m DIN3852-A, G1/2" m DIN3852-E, 1/4"NPT m ANSI B1.20.1, 1/8"NPT m ANSI B1.20.1, 7/16"-20UNF m SAE4, 7/16"-20UNF m, DIN3866, 7/16"-20UNF f SAE J512 with valve opener, R1/4" m DIN3858 G3/4" frontal membrane	G1/4" f, G1/4" m, G1/2" m DIN3852-A, G1/2" m DIN3852-E, 1/4"NPT m ANSI B1.20.1, 1/8"NPT m ANSI B1.20.1, 7/16"-20UNF m SAE4, R1/4" m DIN3858, G3/4" frontal membrane	G1/4" f, G1/4" m, G1/2" m, 1/4"NPT m	G1/4" m, G3/4" frontal membrane	G1/4" f; G1/4" m Seal; G1/2" m (Manometer); 1/4"NPT m; 1/2"NPT m; R1/4" m DIN3858; M14x1.5 m DIN6149-2; 7/16"-20UNF m, DIN3866; 7/16" -20UNF m SAE4 (J1926); 7/16"-20UNF f SAE J512, valve opener
	Industrial standard, contact distance 9.4 mm; M12x1	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Cable IP67; Cable IP68	EN175301-803-A (DIN43650-A); M12x1	Industrial standard, contact distance 9.4 mm; M12x1; Packard Metri Pack; cable IP68
	Railways	Machine tools Hydraulics Water treatment	Machine tools Hydraulics Water treatment	Shipbuilding Engine manufacturing	Railways	Machine tools Hydraulics Industrial applications
	EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 50121-3-2 (EMC)			DNV-GL, KRS, RINA	EN 50155 (Railway) EN 45545-2 (Fire protection)	
	www.trafag.com/H72307	www.trafag.com/H72324	www.trafag.com/H72326	www.trafag.com/H72322	www.trafag.com/H72337	www.trafag.com/H72317
	www.trafag.com/H73303	www.trafag.com/H73324	www.trafag.com/H73324	www.trafag.com/H73324	www.trafag.com/H73324	www.trafag.com/H73317

Overview pressure transmitter

	EPN 8288	EPN/EPNCR 8298	EPR 8293	NPN 8264	FPT 8235	
	page 100	page 105	page 111	page 116	page 122	
						
Measuring principle	Thin film on steel	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 ... 2500 bar	0 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 250 bar	0 ... 0.3 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	
Output signal	4 ... 20 mA, 0 ... 10 VDC 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	
Accuracy @ 25°C typ.	± 0.5 % FS 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. ± 0.3 % FS typ.	± 0.4 % FS	
Ambient temperature	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +100°C	-40°C ... +85°C (Cable PVC 22: -5°C ... +60°C)	
Media temperature	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +125°C	-40°C ... +100°C	-40°C ... +125°C	
Protection	IP65	IP65, IP67, IP69K	IP65, IP67	IP65, IP69K	IP65, IP67, IP68	
Sensor (wetted parts)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	
Pressure connection (wetted parts)	1.4542 (AISI630) or 1.4404 (AISI316L)	1.4542 (AISI630)	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4542 (AISI630)	
Housing	1.4542 (AISI630) or 1.4404 (AISI316L)	1.4301 (AISI304) 1.4542 (AISI630)	1.4301 (AISI304) 1.4542 (AISI630)	1.4301 (AISI304)	1.4301 (AISI304)	
Pressure connections	G1/4" m, R1/4" m, G1/2" m (Manom.), 1/4" NPT a, 1/2" NPT a, M14x1.5 a	G1/4" m, R1/4" m, G1/2" m (Manom.), 1/4"NPT m, 1/2"NPT m, M14x1.5 m, M18x1.5 m	G1/4" m, R1/4" m, 1/4"NPT m, 1/2"NPT m	G1/4" f, M10x1 f, G1/8" f	G1/2" m, flush membrane	
Electrical connections	Industrial standard EN175301-803A	EN175301-803-A (DIN43650-A); DIN72585; Cable	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A); Cable	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; Cable	
Applications	Shipbuilding Engine manufacturing Machine tools Hydraulics	Shipbuilding Engine manufacturing Machine tools	Railways	Shipbuilding Engine manufacturing Railways	Engine manufacturing Machine tools Hydraulics	
Approval / conformity		ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS	EN 50155 (Railways)	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS		
Data sheet	www.trafag.com/H72318	www.trafag.com/H72312	www.trafag.com/H72311	www.trafag.com/H72313	www.trafag.com/H72316	
Instructions	www.trafag.com/H73317	www.trafag.com/H73311	www.trafag.com/H73311	www.trafag.com/H73313	www.trafag.com/H73316	

	CMP 8270	N 8202	ND 8204	EXNT 8292	EXNA 8854
	page 127	page 132	page 136	page 140	page 146
					
	Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel	Piezoresistive
	0 ... 0.2 to 0 ... 600 bar	0 ... 1.0 to 0 ... 600 bar	0 ... 1 to 0 ... 16 bar	0 ... 0.4 to 0 ... 2000 bar 0 ... 5 to 0 ... 30000 psi	0 ... 0.1 to 0 ... 1000 bar
	Bus protocol CANopen DS404	4 ... 20 mA	4 ... 20 mA (P1–P2)	4 ... 20 mA	4 ... 20 mA
	± 0.5 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	± 0.5 % FS typ.	± 0.8 % FS typ	± 0.5 % FS typ. ± 0.3 % FS typ.	
	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	Max. –40°C ... +120°C	T3: -40°C ... +125°C T4: -40°C ... +85°C T6: -40°C ... +50°C
	-50°C ... +135°C	-25°C ... +125°C	-25°C ... +125°C	Max. –40°C ... +120°C	T3: -40°C ... +150°C T4: -40°C ... +100°C T6: -40°C ... +50°C
	Min. IP67	Min. IP65	Min. IP65	IP65, IP67	Min. IP65
	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630), optional hydrogen-compatible steel	1.4435 (AISI316L) or titanium
	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630) 1.4301 (AISI304) Optional hydrogen-compatible steel	1.4435 (AISI316L) or titanium
	1.4301 (AISI304)	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	1.4301 (AISI304)	1.4435 (AISI316L) or titanium
	G1/4" m, 1/4"NPT m, 7/16"-20UNF m, 7/16"-20UNF f (valve opener)	G1/4" f, G1/2" m	G1/4" f	G1/4" m, G1/4" m (Manom.), G1/4" f, G1/2" m, G1/2" m (Manom.), R1/4" m, 1/4"NPT m, M18x1.5 m	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
	M12x1	Terminal screw 0.75 ... 2.5 mm²	Terminal screw 0.75 ... 2.5 mm²	EN175301-803-A; M12x1; MIL-C 26482; Binder 723; Cable	EN175301-803-A; M12x1; MIL-C 26482; Binder 723; Cable
	Engine manufacturing Railways Machine tools	Shipbuilding Engine manufacturing	Shipbuilding Engine manufacturing	Shipbuilding Ex Zones 0, 1, 2 (gas); 20, 21, 22 (dust) and mining	Ex Zone 0, 1, 2 / Gas Ex Zone 20, 21, 22 / Dust
		ABS, BV, CCS, DNV-GL, KRS, LRS, RINA	BV, DNV, RINA	GL, KRS ATEX / IECEx, according to the norm EN/IEC 60079-0/ EN 60079-11/ EN 60079-26/ EN 50303	DNV-GL Ex according to standards, IEC/EN 60079-0 /-11/-26, EN 50303
	www.trafag.com/H72614	www.trafag.com/H72206	www.trafag.com/H72218	www.trafag.com/H72329	www.trafag.com/H72334
	www.trafag.com/H73614	www.trafag.com/H70722	www.trafag.com/H73218	www.trafag.com/H73329	

Overview submersible pressure transmitters

	EXL 8432	EXNAL 8858	ECL 8438	ECL 8439	NAL 8838	
	page 151	page 156	page 160	page 164	page 170	
						
Measuring principle	Thick film on ceramic	Piezoresistive	Thick film on ceramic	Thick film on ceramic	Piezoresistive	
Measuring range	0 ... 0.2 to 0 ... 10 bar	0 ... 0.1 to 0 ... 25 bar	0 ... 0.1 to 0 ... 10 bar	0 ... 0.1 to 0 ... 2.0 bar 0 ... 1.5 to 0 ... 30 psi	0 ... 0.1 to 0 ... 25 bar	
Output signal	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA 0 ... 10 VDC	
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	T4: -20°C ... +70°C T6: -20°C ... +65°C	T4/T6: -5°C ... +50°C	-25°C ... +80°C (+70°C)	max. -25°C ... +70°C	-5°C ... +50°C	
Media temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C	T4/T6: -5°C ... +50°C	-25°C ... +80°C (+70°C)	max. -25°C ... +70°C	-5°C ... +50°C	
Protection	IP68 (25 bar; 250m)	Min. IP68	IP68 (25 bar; 250m)	IP68 (2.0 bar/20 m)	Min. IP68	
Sensor (wetted parts)	Ceramic, Al_2O_3 (96 %)	1.4435 (AISI316L)	Ceramic, Al_2O_3 (96 %)	Ceramic, Al_2O_3 (96%)	1.4435 (AISI316L)	
Pressure connection (wetted parts)	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	1.4404/1.4435 (AISI316L)	1.4404 (AISI316L) or 1.4462 (AISI318LN)	1.4435 (AISI316L) or titanium	
Housing	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	1.4404/1.4435 (AISI316L)	1.4404 (AISI316L) or 1.4462 (AISI318LN)	1.4435 (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/FEP/PE	Cable PUR/Teflon/PE	Cable PUR/FEP/PE	Cable PUR/Radox/PE	Cable PUR/Teflon/PE	
Applications	Ex Zone 0, 1, 2 / Gas Ex Underground Mining	Shipbuilding Ex SEV 11 ATEX 0145 X	Shipbuilding Process technology Water treatment	Process technology Water treatment (wastewater, grey-water, drinking water) Seawater Level of oils and fuels	Shipbuilding Process technology Water treatment	
Approval / conformity	GL, KRS Ex ATEX/IECEx, EN 60079-0/ EN 60079-11/EN 60079-26/ EN 50303	GL, KRS	GL, KRS		GL, KRS	
Data sheet	www.trafag.com/H72330	www.trafag.com/H72231	www.trafag.com/H72328	www.trafag.com/H72336	www.trafag.com/H72228	
Instructions	www.trafag.com/H73329		www.trafag.com/H73328	www.trafag.com/H73336		

Overview electronic pressure switches

	EPN-S 8320	DPC 8380	DPS 8381	DCS 8864	NAT / NAH 8252 / 8254	NAR 8258
	page 175	page 180	page 187	page 194	page 21 / 36	page 57
						
	Thin film on steel	Thick film on ceramic	Thin film on steel	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 50 ... 100 % FS	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi adjustable 50 ... 100 % FS	0 ... 1 to 0 ... 600 bar	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	4 ... 20 mA, 0 ... 10 VDC 2 Relays, electrically isolated 30W (max.1A), 36 VAC/ DC	4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC, 1 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.1 ... 10.1 VDC, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors	4 ... 20 mA, Switching output: 1 or 2 PNP transistors
	± 0.5 % FS typ. (Switchpoint)	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	NAT: ± 0.5 % FS typ. NAH: ± 0.3 % FS typ.	± 0.3 % FS typ.
	Standard: -25°C ... +85°C Option: -40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +80°C (LCD display active -10°C ... +70°C)	–40°C ... +125°C	–40°C ... +125°C
	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +125°C	–40°C ... +125°C	–40°C ... +125°C
	IP65 (IP67), IP69K	IP67	IP67	IP65	IP65, IP67	IP65, IP67
	1.4542 (AISI630)	Ceramic, Al_2O_3 (96 %)	1.4542 (AISI630)	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) 1.4404 (AISI316L)	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)	1.4301 (AISI304)
	G1/4" m, 1/4"NPT m, G1/2" m, M14x1.5 m, 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 f SAE J512 valve opener, 7/16"-20UNF f (SAE 4), G3/4" frontal membrane	G1/4" f; G1/4" m Seal; G1/2" m (Manometer); 1/4"NPT m; 1/2"NPT m; R1/4" m DIN3858; M14x1.5 m DIN6149-2; 7/16"-20UNF m, DIN3866; 7/16" -20UNF m SAE4 (J1926); 7/16"-20UNF f SAE J512, valve opener	G1/4" m, G1/4" f, G1/2" m, Flange	G1/4" m, G1/4" m (Manometer), 1/4"NPT m, 1/8"NPT m, 7/16"-20UNF SAE J512 f, 7/16"-20UNF SAE4 m, 7/16"-20UNF m DIN3866, R1/4" m DIN3858, R1/4" m DIN2999, R1/8" m, M10x1 m, M12x1.5 m	G1/4" m, G1/4" m (Manometer), 1/4"NPT m, 1/8"NPT m, 7/16"-20UNF SAE J512 f, 7/16"-20UNF SAE4 m, 7/16"-20UNF m, R1/4" m, R1/8" m, M10x1 m, M12x1.5 m (DIN EN ISO 9974-2)
	EN175301-803-A (DIN43650-A); Cable	Male electrical plug M12x1, 5-pole; Male electrical plug M12x1, 4-pole	Male electrical plug M12x1, 5-pole; Male electrical plug M12x1, 4-pole	M12x1, 8-pole	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; cable IP67	Industrial standard, contact distance 9.4 mm; M12x1
	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics HVAC	Machine tools HVAC Refrigeration Water treatment Process technology	Machine tools Hydraulics Process technology Industrial applications	Shipbuilding Machine tools Hydraulics Process technology	Machine tools Hydraulics HVAC Refrigeration Process technology Water treatment	Railways
	DNV-GL			DNV-GL		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	www.trafag.com/H72605	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/H73605	www.trafag.com/H73303	www.trafag.com/H73303

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) [± % d.S. typ.]	Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % d.S. 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) [± % d.S. typ.]	Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % d.S. 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) [± % FS typ.]	Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % FS typ.]
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
0 ... 60	120	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

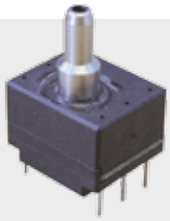
Features

- 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.

Pressure and temperature measuring instruments

Pressure switches

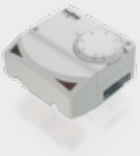




Trafag's electromechanical pressure switches provide high vibration resistance and switch point precision in combination with an extremely robust and durable design. This results in switches that can be operated for decades without requiring maintenance, even under harsh conditions. Various designs with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

Pressure switches

Thermostats






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. Various sensor and casing designs cover a wide range of temperatures and possible applications. Thermostats are available with Ex- and ship approvals as well as with railway conformity.

Thermostats

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: fivefold 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, 1 ... 5 VDC, 1 ... 6 VDC, 0 ... 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)

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]	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**
Option 5P:	**Fivefold overpressure**			0 ... 7500	18750	29000	**H6**
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**				

Sensor

Relative pressure	**25**

Pressure connection

G1/4" male, seal: DIN 3869 (accessories 61/63/83)	**17**
G1/4" male (Manometer) EN 871 [8)]	**53**
1/4" NPT male	**30**
1/8" NPT male [5) 9)]	**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, seal: accessory 61 [8)]	**42**
R1/4" male, DIN3858 [5)]	**19**
R1/4" male, DIN2999 [5) 9)]	**20**
R1/8" male, DIN3858 [5)]	**16**
M10x1 male, DIN EN ISO 6149-2	**32**
M12x1.5 male, DIN EN ISO 9974-2 [9)]	**49**

Electrical connection

Male electrical plug, industrial standard, contact distance 9.4 mm, Mat. PA	**01**
Male electrical plug M12x1, 4-pole, Mat. PA	**32**
Male electrical plug M12x1, 5-pole, Mat. PA	**35**
Male electrical plug MIL-C 26482, 6-pole, metal	**02**
Cable IP67, Mat. PVC [7)]	**22**
Cable IP67, Mat. PUR [7)]	**24**
Cable IP67, Mat. EPD Raychem FDR25 [7)]	**08**

8252 . XX XX XX XX XX XX

	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**
	1 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC	**25**
	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**
	0.1 ... 10.1 VDC	≥ 5.0 kΩ to Us-	≤ 15 mA	24 (15 ... 32) VDC	**13**
	0.5 ... 4.5 VDC ratiometric	≥ 5.0 kΩ to Us-	≤ 10 mA	5 (4.75 ... 5.25) VDC	**23**
	2 PNP transistors [3]		≤ 10 mA	24 (9 ... 32) VDC	**PS**
	1 PNP transistor [3]		≤ 10 mA	24 (9 ... 32) VDC	**T1**

Accessories	Female electrical plug M12x1, 5-pole [2]	**33**
	Female electrical connector industrial standard (for electrical connection 01)	**34**
	Pressure peak damping element ø 1.0 mm [6]	**40**
	Pressure peak damping element ø 0.4 mm [6]	**44**
	Seal FPM, -18°C ... +125°C	**61**
	Seal EPDM, -40°C ... +125°C	**63**
	Seal NBR, -25°C ... +100°C	**83**
	Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 - (only for output signal 19 and male electrical plug 01, industrial standard)	**90**
	Special electrical connection: Pin 1 out, Pin 2 +, Pin 3 ground, Pin 4 - (only for output signals 14, 16, 17, 23 and male electrical plug 01, industrial standard)	**91**
	Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 3 Out, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 23, 25 and male electrical plug 32, M12x1, 4-pole)	**95**
	Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 3 -, Pin 4 Out (only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)	**96**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground (only for output signal 19 and male electrical plug 01, industrial standard)	**92**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)	**E1**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 out, Pin 4 ground (only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)	**E2**
	Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 +, Pin 4 ground (only for output signals 13, 14, 16, 17, 20, 23, 25 and male electrical plug 01, industrial standard)	**E3**
	Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 4 - (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)	**E6**
	Cable length 0.5 m	**EM**
	Cable length 1.0 m	**1M**
	Cable length 2.0 m	**2M**
	Parameterisation according to customer specification for output signal PS, T1 (see table parameter)	**ZC**

[1] Customized pressure ranges upon request
[2] For electrical connections 32 and 35
[3] Only with electrical connections 32, 22, 24, 08
[4] Max. allowable pressure range 60 bar at 120 bar overpressure
[5] Max. allowable pressure range 160 bar at 500 bar overpressure
[6] Only for pressure connections 17, 30, 32
[7] Cable length see accessories
[8] According to norm J1926, max. 35 MPa
[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

Parameter				
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 Hysteresis ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	0; 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; 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 (available from the 2nd quarter of 2018)
- 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 1 ... 5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 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 strenght @ 25°C during 5 min.	4...20 mA: to U_s = 32 VDC 0.5...4.5 VDC, 0...5 VDC, 1...5 VDC, 1...6 VDC, 0...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)
	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) [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

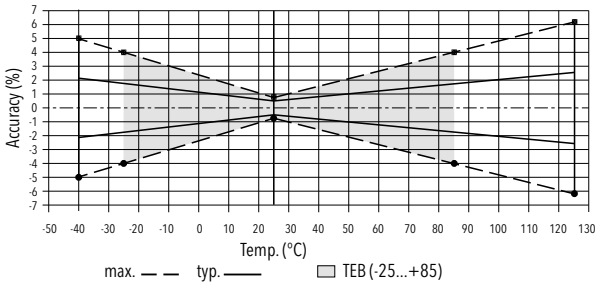
[1)] See electrical connection

[2)] For electrical connections 32 and 35

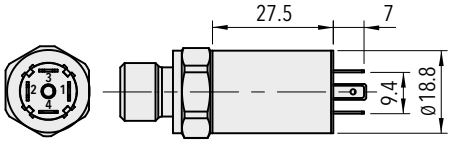
Analogue output			
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03
	Long term stability 1 year	[% FS typ.]	± 0.1
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure		

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; 2^x[ms], x = 3, 4 ... 16		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

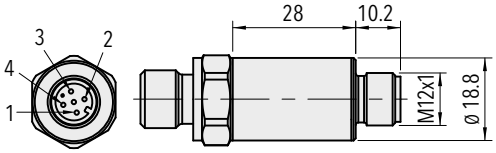
Measuring accuracy



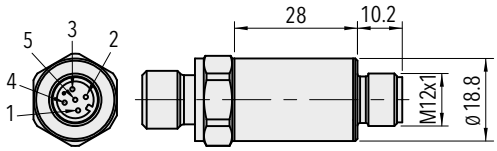
Dimensions



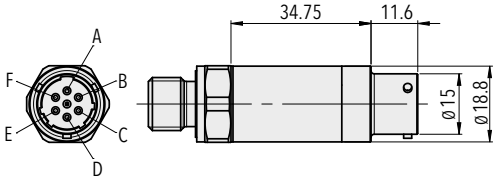
8252.XX.XXXX.**01**.XX.XX



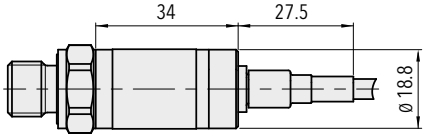
8252.XX.XXXX.**32**.XX.XX



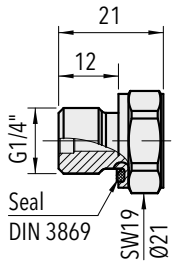
8252.XX.XXXX.**35**.XX.XX



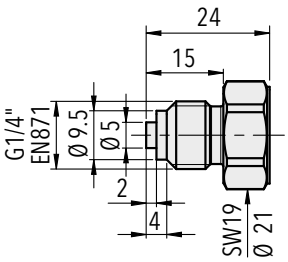
8252.XX.XXXX.**02**.XX.XX



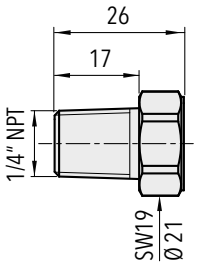
8252.XX.XXXX.**22/24/08**.XX.XX



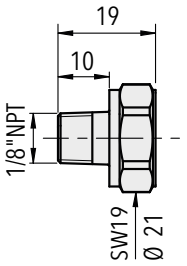
8252.XX.XX**17**.XX.XX.XX



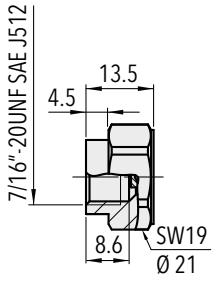
8252.XX.XX**53**.XX.XX.XX



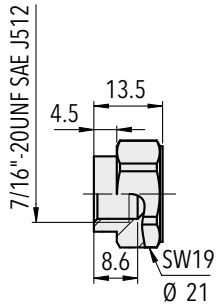
8252.XX.XX**30**.XX.XX.XX



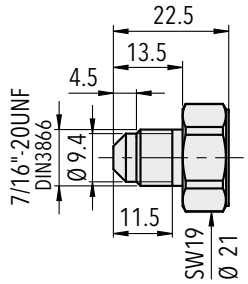
8252.XX.XX**43**.XX.XX.XX



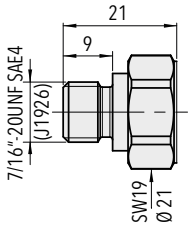
8252.XX.XX**24**.XX.XX.XX



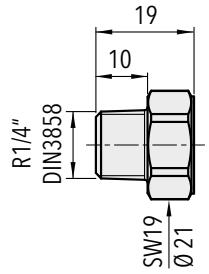
8252.XX.XX**44**.XX.XX.XX



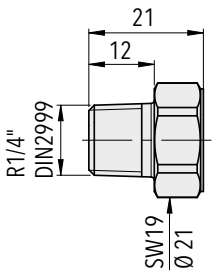
8252.XX.XX**18**.XX.XX.XX



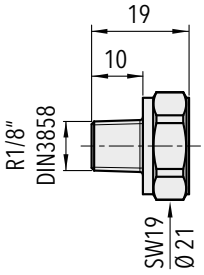
8252.XX.XX**42**.XX.XX.XX



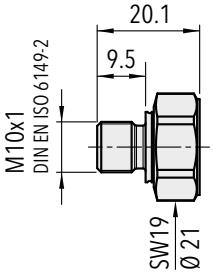
8252.XX.XX**19**.XX.XX.XX



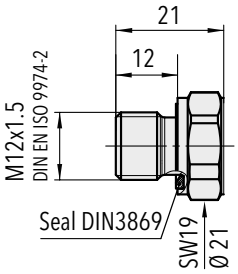
8252.XX.XX**20**.XX.XX.XX



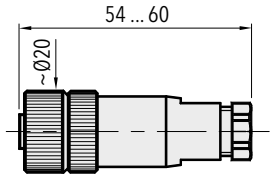
8252.XX.XX**16**.XX.XX.XX



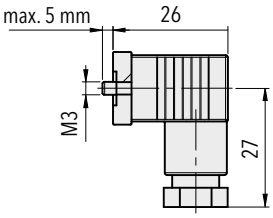
8252.XX.XX**32**.XX.XX.XX



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

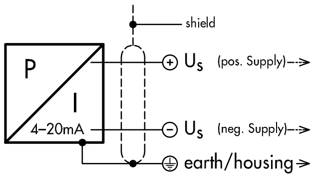


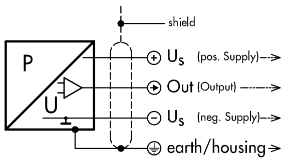
8252.XX.XXXX.XX.XX.**33**



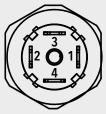
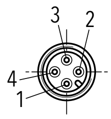
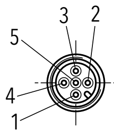
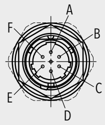
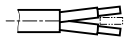
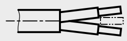
8252.XX.XXXX.XX.XX.**34**

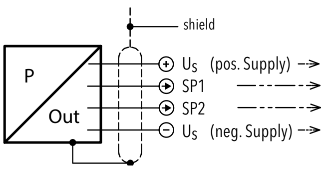
Electrical connection



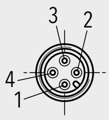
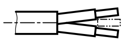
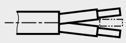


Protection / electrical connection

Output signal	IP65 *) **) Industrial standard Contact distance 9.4 mm **01** 			IP67 *) **) M12x1 4-pole **32** 				IP67 *) **) M12x1 5-pole **35** 	IP67*) **) MIL-C 26482 **02** 	IP67**) Cable **22/24** 	IP67**) Cable **08** 
8252.xx.xxxx.xx.**19**		**90**	**92**		**E1**	**E6**					
	2 1 4	2 4 3	1 2 4	1 3 4	1 2 4	1 4 2		4 1 5	A B E	white brown yellow	red black green
8252.xx.xxxxxx.**13/14/16/17/20/ 23/25**		**91**	**E3**		**95**	**96**	**E2**				
	1 2 3 4	2 1 4 3	3 1 2 4	1 2 3 4	1 3 4 2	1 4 3 2	1 3 2 4	2 4 3 5		white green brown yellow	red white black green



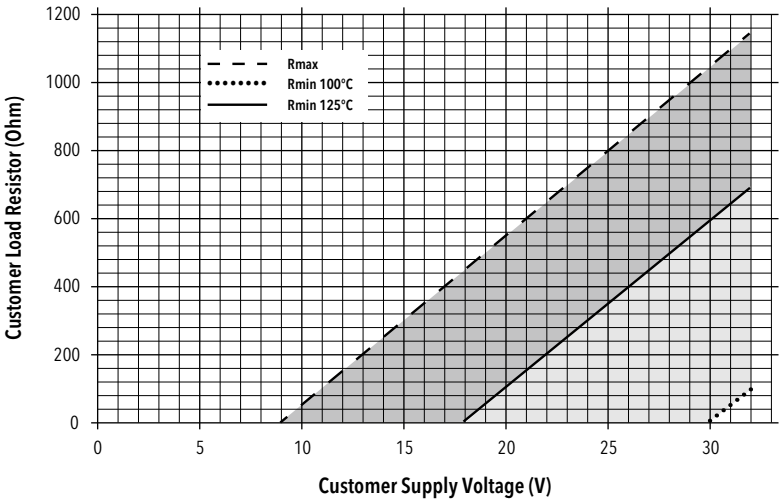
Protection / electrical connection

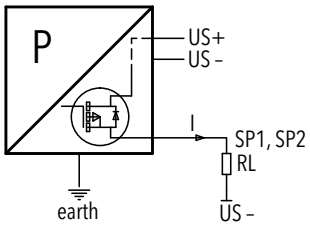
Output signal	IP67 *) **) M12x1 4-pole **32** 		IP67**) Cable **22/24** 		IP67**) Cable **08** 	
8252.xx.xxxx.xx.**PS/T1**	**PS**	**T1**	**PS**	**T1**	**PS**	**T1**
	1 4 2 3	1 4 – 3	white green yellow brown	white green – brown	red white green black	red white – black

*) Provided female connector is mounted according to instructions

**) Ventilation via male electric plug/cable end

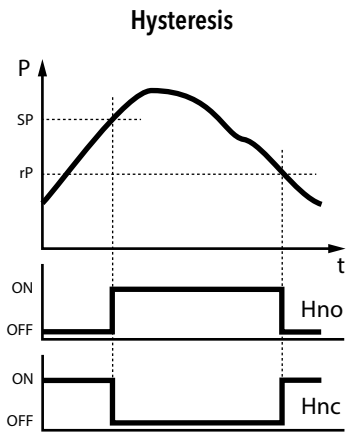
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%

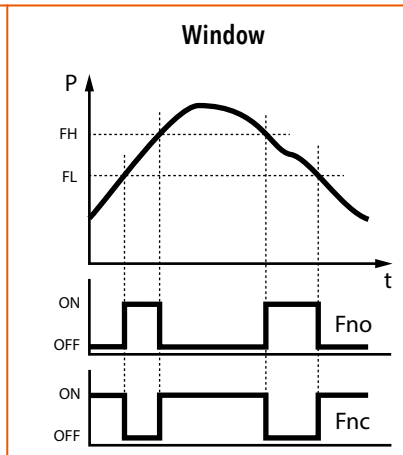


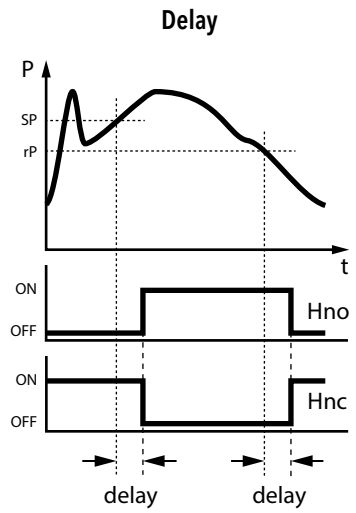


Connection of loads to switch contacts

Functions switching output







Additional information		
Documents	Data sheet	www.trafag.com/H72303
	Instructions	www.trafag.com/H73303
	Flyer	www.trafag.com/H70666

HYDRAULIC PRESSURE TRANSMITTER

New generation available - refer to www.trafag.com/H72304

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

Applications

- Machine tools
- Hydraulics
- Process technology
- Water treatment
- Test benches

Features

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

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

Subject to change

Ordering information/type code

8253 . XX XX XX XX XX XX

Measuring range [1]

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

Sensor

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

Pressure connection

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

Electrical connection

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

Output signal

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

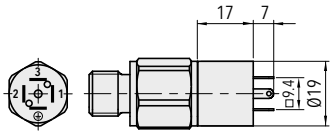
Accessories

Female electrical plug M12x1, 5-pole, for electrical connections 32 and 35	**33**
Female electrical connector industrial standard	**34**
Meets EN50155 (railways) dielectrical strength: 500 VAC, 50 Hz [5]	**11**
Pressure peak damping element ø 1.0 mm [6]	**40**
Pressure peak damping element ø 0.3 mm [6]	**43**
Pressure peak damping element ø 0.5 mm [6]	**45**
Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 3 -, Pin 4 Out (only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)	**96**

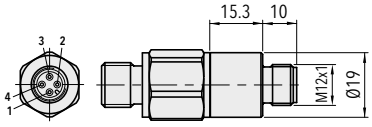
[1] Extended overpressure as well as customized pressure ranges upon request
[2] Measuring accuracy 0.3 %
[3] Relative pressure only
[4] Max. allowable pressure range 40 bar
[5] Only with output 19
[6] Only for pressure connections 17 and 30
[7] According to norm J1926, max. 35 MPa

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

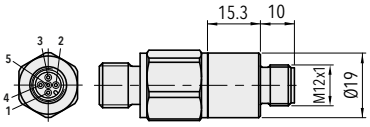
Dimensions



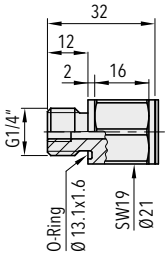
8253.XX.XXXX.**01**.XX.XX



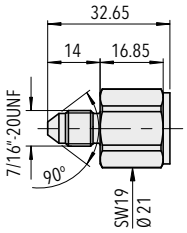
8253.XX.XXXX.**32**.XX.XX



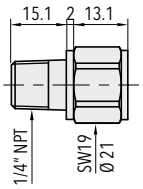
8253.XX.XXXX.**35**.XX.XX



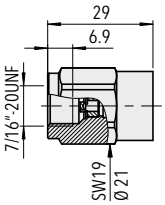
8253.XX.**2317**.XX.XX.XX
8253.XX.**2117**.XX.XX.XX



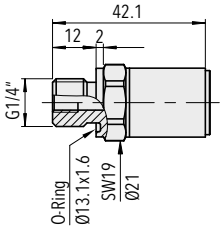
8253.XX.**2318**.XX.XX.XX
8253.XX.**2118**.XX.XX.XX



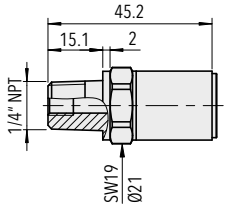
8253.XX.**2330**.XX.XX.XX
8253.XX.**2130**.XX.XX.XX



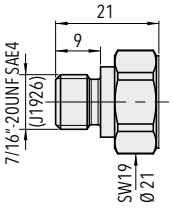
8253.XX.**2324**.XX.XX.XX
8253.XX.**2124**.XX.XX.XX



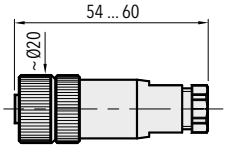
8253.XX.**4317**.XX.XX.XX
8253.XX.**4117**.XX.XX.XX



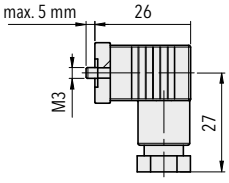
8253.XX.**4330**.XX.XX.XX
8253.XX.**4130**.XX.XX.XX



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



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



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

Specifications

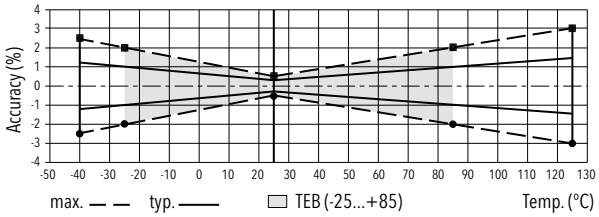
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0 ... 5 VDC: 24 (9 ... 32) VDC 1 ... 6 VDC: 24 (9 ... 32) VDC 0 ... 10 VDC: 24 (15 ... 32) VDC 0.5 ... 4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	1 s
Environmental conditions	Media 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 plug	See ordering information
	Weight	~ 50 g
	Mounting torque	25 Nm

[1)] See electrical connection

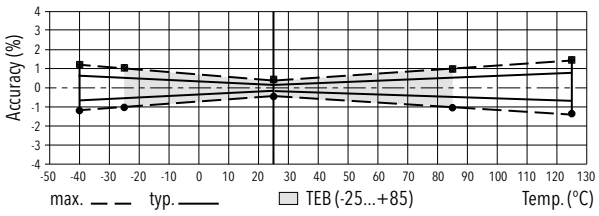
Accuracy

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

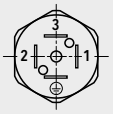
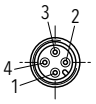
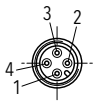
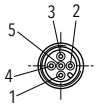
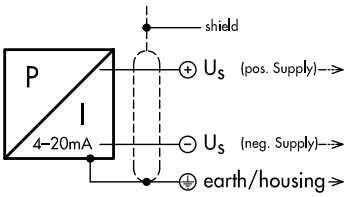
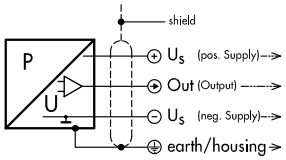
Measuring accuracy 0.3 %



Measuring accuracy 0.15 %



Electrical Connection

		Protection / electrical connection			
		IP65*)	IP67*)		
		Industrial standard EN175301-803A	M12x1 4-pole	M12x1 4-pole	M12x1 5-pole
		01	**32**	**96**	**35**
					
Output signal	 **8253**.xx.xxxx.xx.**19**	2 1 ⏚	1 3 4	– – –	4 1 5
	 **8253**.xx.xxxx.xx.**14/16/17/23**	1 2 3 ⏚	1 2 3 4	1 4 3 2	2 4 3 5

*) Provided female connector is mounted according to instructions

Additional information

Documents	Data sheet	www.trafag.com/H72300
	Instructions	www.trafag.com/H73250
	Flyer	www.trafag.com/H70670

HYDRAULIC PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The hydraulic 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
- HVAC
- Refrigeration
- Process technology
- Water treatment

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 ... 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, 1 ... 5 VDC, 1 ... 6 VDC, 0 ... 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)

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]	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 [8)]	75	300	**80**	0 ... 250	750	2500	**G9**
0 ... 40 [8)]	120	300	**81**	0 ... 300 [8)]	900	4000	**HA**
0 ... 60 [8)]	180	400	**82**	0 ... 400 [8)]	1200	4000	**H0**
0 ... 100 [8)]	300	500	**83**	0 ... 500	1500	4000	**H1**
0 ... 160 [8)]	480	750	**85**	0 ... 1000 [8)]	3000	5000	**H2**
0 ... 250	750	1000	**74**	0 ... 1500 [8)]	4500	7000	**H3**
0 ... 400	1000	2000	**84**	0 ... 2000 [8)]	6000	10000	**H5**
0 ... 600	1500	2500	**86**	0 ... 3000	9000	14500	**G4**
				0 ... 5000	12500	21750	**H4**
Option 5P:	**Fivefold overpressure**			0 ... 7500	18750	29000	**H6**
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**				

Sensor

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

Pressure connection

G1/4" male, seal: DIN 3869 (accessory 61/63/83)	**17**
G1/4" male (Manometer) EN 871 [8)]	**53**
1/4" NPT male	**30**
1/8" NPT male [5)] [9)]	**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, seal: accessory 61 [7)]	**42**
R1/4" male, DIN3858 [5)]	**19**
R1/4" male, DIN2999 [5)] [9)]	**20**
R1/8" male, DIN3858 [5)]	**16**
M10x1 male, DIN EN ISO 6149-2	**32**
M12x1.5 male, DIN EN ISO 9974-2 [8)]	**49**

Electrical connection

Male electrical plug, industrial standard, contact distance 9.4 mm, Mat. PA	**01**
Male electrical plug M12x1, 4-pole, Mat. PA	**32**
Male electrical plug M12x1, 5-pole, Mat. PA	**35**
Male electrical plug: MIL-C 26482, 6-pole, metal	**02**
Cable IP67, Mat. PVC [7)]	**22**
Cable IP67, Mat. PUR [7)]	**24**
Cable IP67, Mat. EPD Raychem FDR25 [7)]	**08**

trafag sensors controls

					8254 . XX	XX	XX	XX	XX	XX
Output signal	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**						
	4 ... 20 mA	See graphic		24 (9 ... 32) VDC					**19**	
	0.5 ... 4.5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC					**20**	
	0 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC					**14**	
	1 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC					**25**	
	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**	
	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**	

Accessories	Female electrical plug M12x1, 5-pole [2]	**33**
	Female electrical connector industrial standard (for electrical connection 01)	**34**
	Pressure peak damping element ø 1.0 mm [6]	**40**
	Pressure peak damping element ø 0.4 mm [6]	**44**
	Seal FPM, -18°C ... +125°C	**61**
	Seal EPDM, -40°C ... +125°C	**63**
	Seal NBR, -25°C ... +100°C	**83**
	Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 - (only for output signal 19 and male electrical plug 01, industrial standard)	**90**
	Special electrical connection: Pin 1 out, Pin 2 +, Pin 3 ground, Pin 4 - (only for output signals 14, 16, 17, 23 and male electrical plug 01, industrial standard)	**91**
	Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 3 Out, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 23, 25 and male electrical plug 32, M12x1, 4-pole)	**95**
	Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 3 -, Pin 4 Out (only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)	**96**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground (only for output signal 19 and male electrical plug 01, industrial standard)	**92**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)	**E1**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 out, Pin 4 ground (only for output signals 14, 16, 17, 23 and male electrical plug 32, M12x1, 4-pole)	**E2**
	Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 +, Pin 4 ground (only for output signals 13, 14, 16, 17, 20, 23, 25 and male electrical plug 01, industrial standard)	**E3**
	Special electrical connection: Pin 1 + , Pin 2 Ground, Pin 4 - (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)	**E6**
	Cable length 0.5 m	**EM**
	Cable length 1.0 m	**1M**
	Cable length 2.0 m	**2M**
	Parameterisation according to customer specification for output signal PS, T1 (see table parameter)	**ZC**
	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
[4] Max. allowable pressure range 60 bar at 120 bar overpressure
[5] Max. allowable pressure range 160 bar at 500 bar overpressure
[6] Only for pressure connections 17, 30, 32
[7] Cable length see accessories
[8] According to norm J1926, max. 35 MPa
[9] Upon request
[10] Only with electrical connections 32, 35 with shielded cable and 22, 24, 08

Signal processing, 4 ... 20 mA, 0.5 ... 4.5 VDC ratiometric

Code	Cut-off frequency f_G	Rise time (10 ... 90 % nominal pressure)
GA [9]	11 Hz	32 ms
GU [9] [10]	20 kHz	18 µs

Standard products (extra short lead time)

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

Parameter				
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 Hysteresis ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	0; 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; 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 (available from the 2nd quarter of 2018)
- 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 1 ... 5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 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
	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, 1...5 VDC, 1...6 VDC, 0...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)
	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) [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

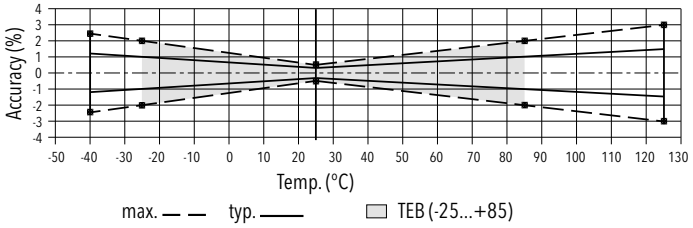
[1] See electrical connection

[2] For electrical connections 32 and 35

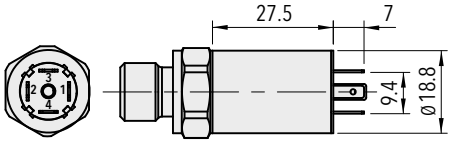
Analogue output			
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.01
	Long term stability 1 year	[% FS typ.]	± 0.1
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure		

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 +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; 2^x[ms], x = 3, 4 ... 16		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

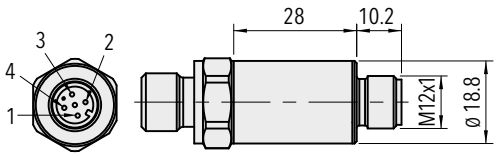
Measuring accuracy



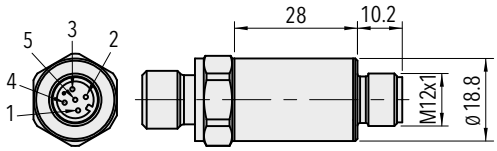
Dimensions



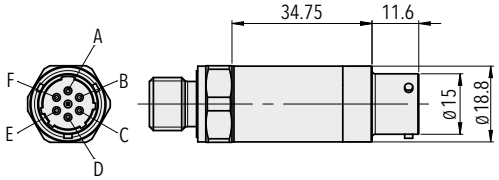
8254.XX.XXXX.**01**.XX.XX



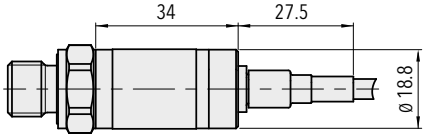
8254.XX.XXXX.**32**.XX.XX



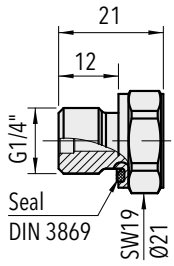
8254.XX.XXXX.**35**.XX.XX



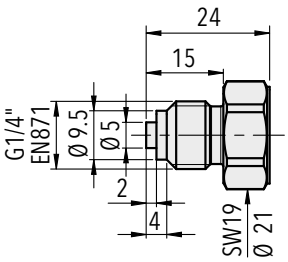
8254.XX.XXXX.**02**.XX.XX



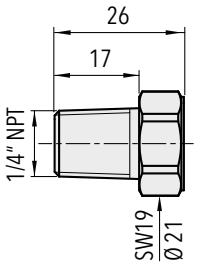
8254.XX.XXXX.**22/24/08**.XX.XX



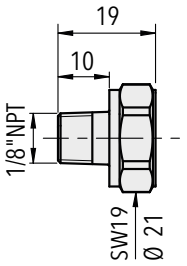
8254.XX.XX**17**.XX.XX.XX



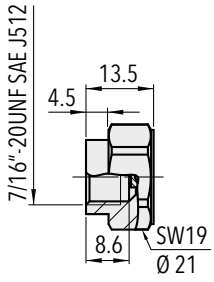
8254.XX.XX**53**.XX.XX.XX



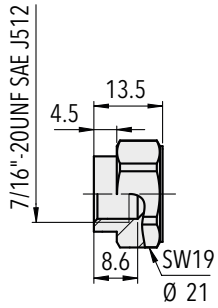
8254.XX.XX**30**.XX.XX.XX



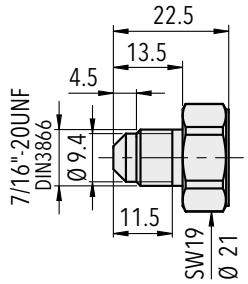
8254.XX.XX**43**.XX.XX.XX



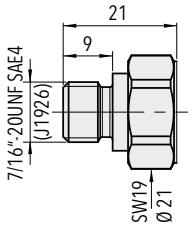
8254.XX.XX**24**.XX.XX.XX



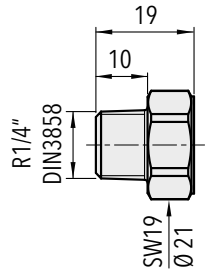
8254.XX.XX**44**.XX.XX.XX



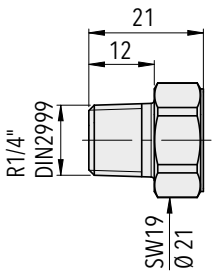
8254.XX.XX**18**.XX.XX.XX



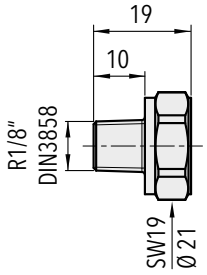
8254.XX.XX**42**.XX.XX.XX



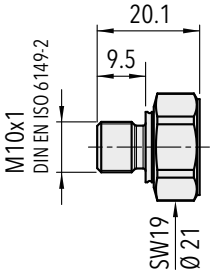
8254.XX.XX**19**.XX.XX.XX



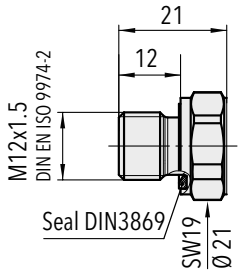
8254.XX.XX**20**.XX.XX.XX



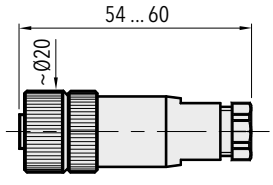
8254.XX.XX**16**.XX.XX.XX



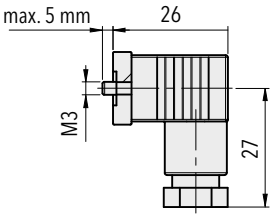
8254.XX.XX**32**.XX.XX.XX



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

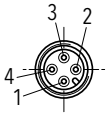
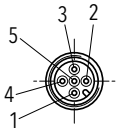
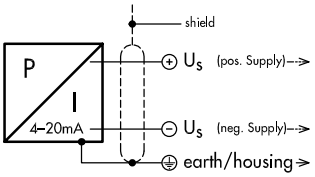
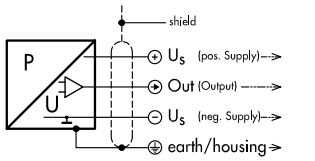


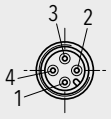
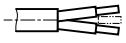
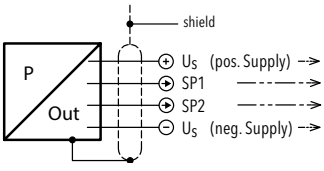
8254.XX.XXXX.XX.XX.**33**



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

Electrical connection

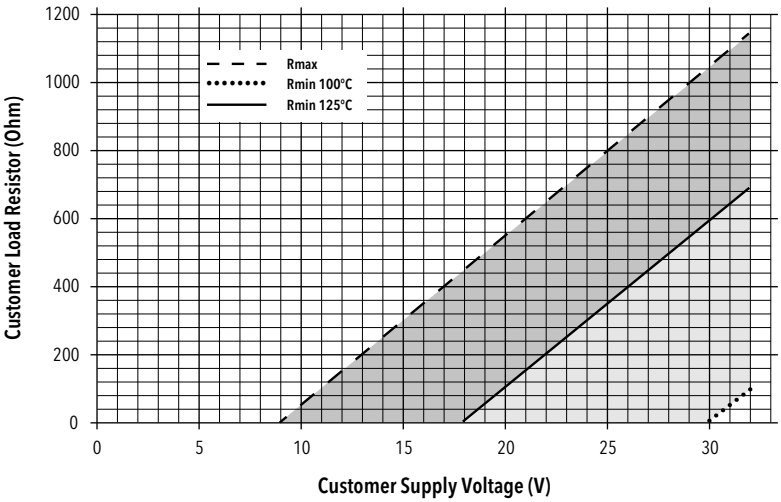
	Protection / electrical connection									
	IP65 *)**)	IP67 *)**)						IP67*)**)	IP67**)	IP67**)
	Industrial standard Contact distance 9.4 mm	M12x1						MIL-C 26482	Cable	Cable
		4-pole					5-pole			
	01	**32**					**35**	**02**	**22/24**	**08**
										
Output signal  **8254**.xx.xxxx.xx.**19**		**90**	**92**		**E1**	**E6**				
	2	2	1	1	1	1	4	A	white	red
	1	4	2	3	2	4	1	B	brown	black
	4	3	4	4	4	2	5	E	yellow	green
 **8254**.xx.xxxxxx.**13/14/16/17/20/23/25**		**91**	**E3**		**95**	**96**	**E2**			
	1	2	3	1	1	1	1	2		white	red
	2	1	1	2	3	4	3	4		green	white
	3	4	2	3	4	3	2	3		brown	black
	4	3	4	4	2	2	4	5		yellow	green

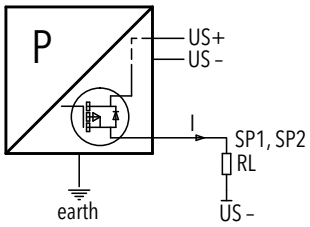
	Protection / electrical connection					
	IP67 *)**)		IP67**)		IP67**)	
	M12x1 4-pole		Cable		Cable	
	32		**22/24**		**08**	
						
Output signal  **8254**.xx.xxxx.xx.**PS/T1**	**PS**	**T1**	**PS**	**T1**	**PS**	**T1**
	1	1	white	white	red	red
	4	4	green	green	white	white
	2	–	yellow	–	green	–
	3	3	brown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

*) Nur mit vorschriftsmässig montierter Kabeldose gültig

**) Entlüftung über Stecker/Kabel

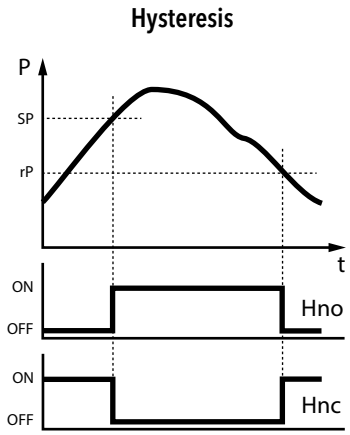
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%

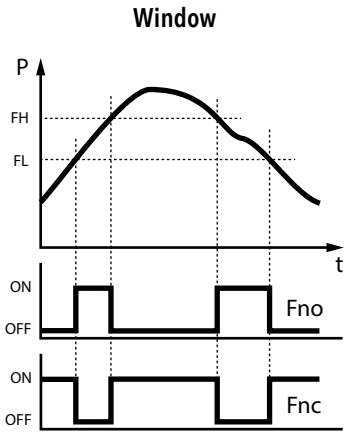


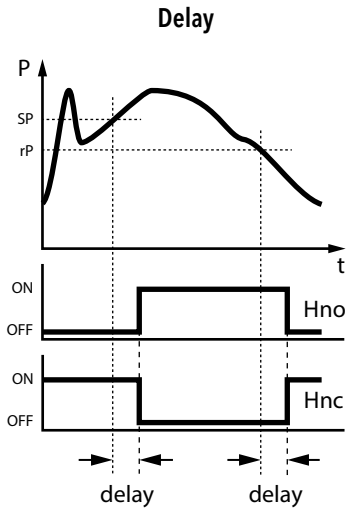


Connection of loads to switch contacts

Functions switching output







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

ENGINE PRESSURE TRANSMITTER

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

Applications

- Shipbuilding
- Engine manufacturing
- Hydraulics

Features

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

Technical Data			
Measuring principle	Thin film on steel	Media temperature	–40°C ... +125°C
Measuring range	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi	Ambient temperature	–40°C ... +125°C
Output signal	4 ... 20 mA	Approval / conformity	ABS, BV, DNV-GL, KRS, LRS, NKK, RINA, RMRS
Accuracy @ 25°C typ.	0.5 %: ± 0.5 % FS typ. 0.3 %: ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

8256 . XX XX XX XX XX XX

Measuring range [1)]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 6 [5) 6)]	18	100	**77**	0 ... 100 [5) 6)]	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	1200	4000	**H1**
0 ... 160	480	750	**85**	0 ... 1000	3000	5000	**H2**
0 ... 250	750	1000	**74**	0 ... 1500	4500	7000	**H3**
0 ... 400	1000	2000	**84**	0 ... 2000	6000	10000	**H5**
0 ... 600	1500	2500	**86**	0 ... 3000	9000	14500	**G4**
				0 ... 5000	12500	21750	**H4**
				0 ... 7500	18750	29000	**H6**

Sensor

Relative pressure, accuracy: 0.5 %	**25**
Relative pressure, accuracy: 0.3 %	**23**

Pressure connection

G1/4" male, seal: DIN 3869 (accessories 61/63/83)	**17**
G1/4" male (Manometer) EN 871 [6)]	**53**
1/4" NPT male	**30**
M10x1 male	**32**

Electrical connection

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

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	See graphic		24 (9 ... 32) VDC	**19**

Accessories

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

[1)] Customized pressure ranges upon request
[2)] For electrical connections 32 and 35
[3)] For electrical connection 01
[4)] Only with pressure connection 17 (G1/4")
[5)] Only with sensor 23 (accuracy 0.3 %)
[6)] Only with ship approval DNV-GL

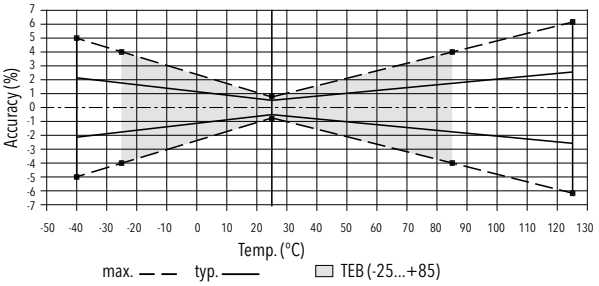
Standard products (extra short lead time)

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

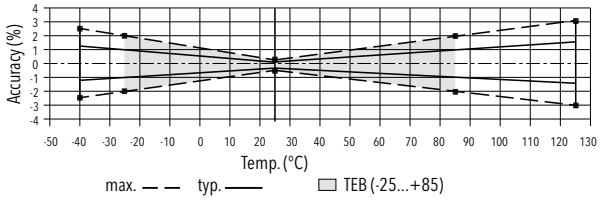
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	0.5 %: ± 1.75 % FS typ. 0.3 %: ± 1.0 % FS typ.
	Accuracy @ 25°C typ.	0.5 %: ± 0.5 % FS typ. 0.3 %: ± 0.3 % FS typ.
	NLH @ 25°C (BSL) typ.	0.5 %: ± 0.2 % FS typ. 0.3 %: ± 0.2 % FS typ.
	TC zero point and span typ.	0.5 %: ± 0.03 % FS/K typ. 0.3 %: ± 0.01 % 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	Max. 95% relative
	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

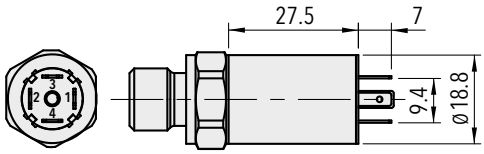
Measuring accuracy 0.5 %



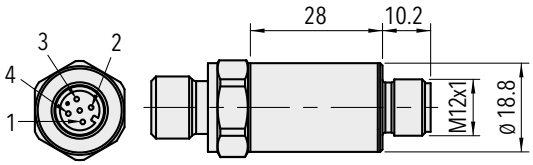
Measuring accuracy 0.3 %



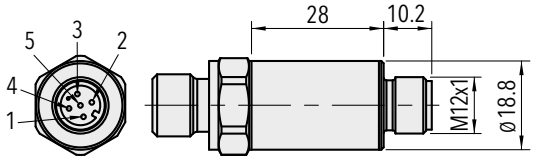
Dimensions



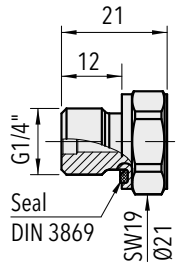
8256.XX.XXXX.**01**.XX.XX



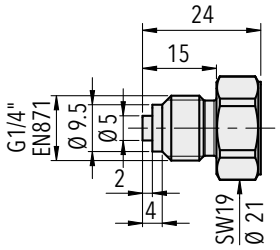
8256.XX.XXXX.**32**.XX.XX



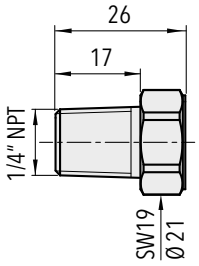
8256.XX.XXXX.**35**.XX.XX



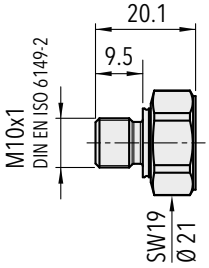
8256.XX.XX**17**.XX.XX.XX



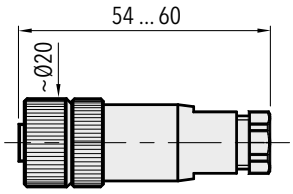
8256.XX.XX**53**.XX.XX.XX



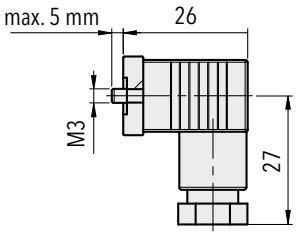
8256.XX.XX**30**.XX.XX.XX



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

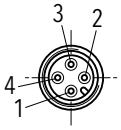
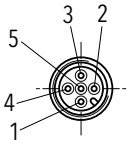
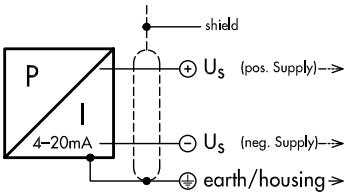


8256.XX.XXXX.XX.XX.**33**



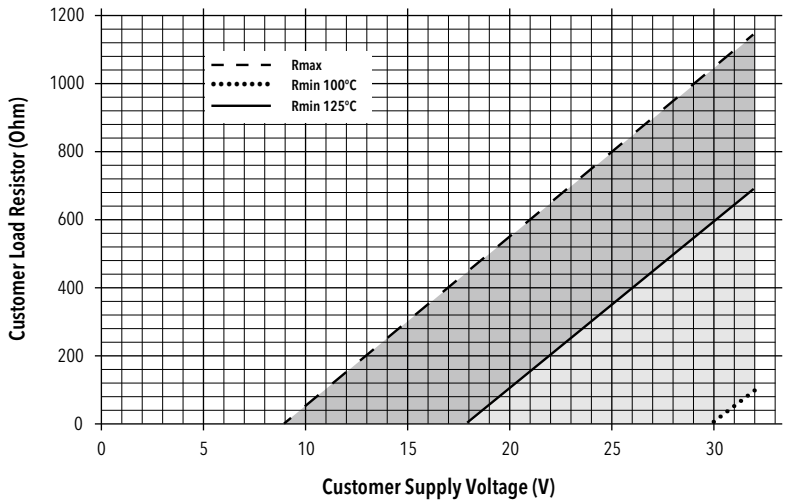
8256.XX.XXXX.XX.XX.**34**

Electrical connection

	Protection / electrical connection				
	IP65*)	IP67*)			
	Industrial standard Contact distance 9.4 mm	M12x1			
	4-pole			5-pole	
	01	**90**	**32**	**E1**	**35**
					
Output signal  **8256**.xx.xxxx.xx.**19**					
shield					
P / I, 4–20mA, 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

*) Provided female connector is mounted according to instructions

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



Additional information

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

LOW PRESSURE TRANSMITTER

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

Applications

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

Features

- Smallest design
- Relative or absolute pressure measurement
- Excellent temperature resistance
- Improved vibration resistance
- Completely welded steel sensor system without additional seals

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	Approval / conformity	DNV-GL, RINA
Accuracy @ 25°C typ.	0.15 ... 0.8 % FS typ.		

Subject to change

Ordering information/type code

8257 . XX . XX . XX . XX . XX . XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 0.2 [2]	1.2	25	**68**	0 ... 3 [3]	18	350	**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 (O-Ring)	**17**
	1/4"NPT male	**30**
Electrical connection	Male electrical plug, Industrial standard (contact distance 9.4mm), Mat. PBT	**01**
	Male electrical plug M12x1, 4-pole, Mat. PBT	**32**
	Male electrical plug M12x1, 5-pole, Mat. PBT	**35**

Output

Output	Load resistance	I (supply)	U (supply)	
4 ... 20mA	(Usupply-9V) / 20mA		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 executions 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**

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

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

Standard products (extra short lead time)

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

Specifications

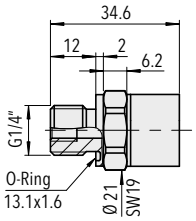
Electrical Data	Output / supply voltage	4...20 mA: 24 (9...32) VDC 0...5 VDC: 24 (9...32) VDC 0...10 VDC: 24 (15...32) VDC 0.5...4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms/10...90 % nominal pressure
	Switch-on-delay	1 s
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection [1)]	Min. IP65
	Humidity	Max. 95 % relative
	Vibration	25g (20...2000 Hz)
	Shock	100 g/11ms
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 plug	See ordering information
	Weight	~ 50 g
	Mounting torque	25 Nm (see "Accuracy")

[1)] See electrical connection

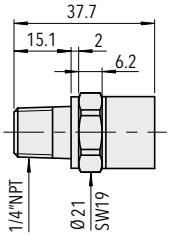
Accuracy

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

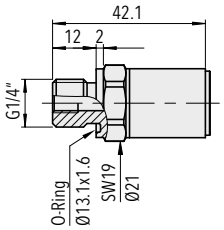
Dimensions



8257.XX.**2317**.XX.XX.XX
8257.XX.**2117**.XX.XX.XX



8257.XX.**2330**.XX.XX.XX
8257.XX.**2130**.XX.XX.XX



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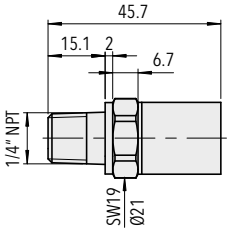
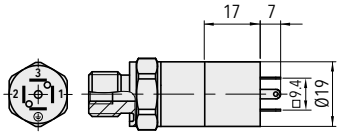
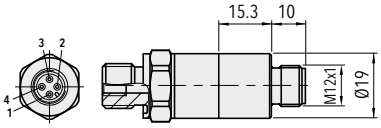
8257.XX.**4117**.XX.XX.XX



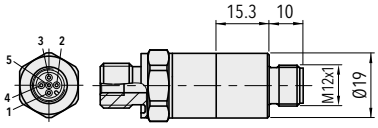
8257.XX.**4330**.XX.XX.XX
8257.XX.**4130**.XX.XX.XX



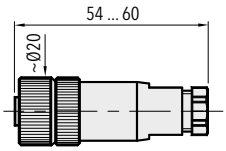
8257.XX.XXXX.**01**.XX.XX



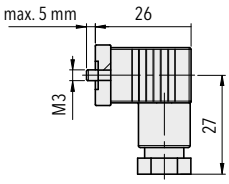
8257.XX.XXXX.**32**.XX.XX



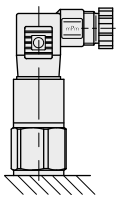
8257.XX.XXXX.**35**.XX.XX



8257.XX.XXXX.XX.XX.**33**

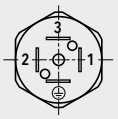
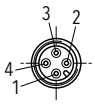
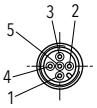
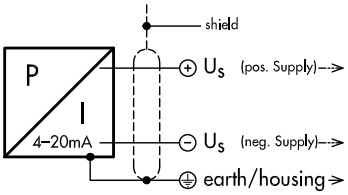
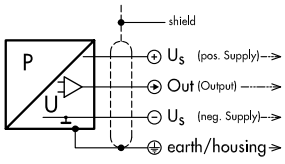


8257.XX.XXXX.XX.XX.**34**



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

Electrical Connection

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

*) Provided female connector is mounted according to instructions

Additional information

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

RAILWAY PRESSURE TRANSMITTER

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

Applications

- Railways

Features

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

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

Subject to change

Ordering information/type code

8258 . XX XX XX XX XX XX

Measuring 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 [8]	75	300	80
0 ... 40 [8]	120	300	81
0 ... 60 [8]	180	400	82
0 ... 100 [8]	300	500	83
0 ... 160 [8]	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 [8]	900	4000	HA
0 ... 400 [8]	1200	4000	H0
0 ... 1000 [8]	3000	5000	H2
0 ... 1500 [8]	4500	7000	H3
0 ... 2000 [8]	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 (Manometer) EN 871 [8]	53
1/4" NPT male	30
7/16"-20UNF SAE4 male, seal: accessory 61 [7]	42
M10x1 male, DIN EN ISO 6149-2	32
M12x1.5 male, DIN EN ISO 9974-2 [8]	49

Electrical connection

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

Output signal

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

Accessories

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

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

Parameter				
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 Hysteresis ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	0; 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; 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 (available from the 2nd quarter of 2018)
- Data sheet SMI Sensor Master Interface: H72618

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 1 or 2 PNP transistors: 24 (9...32) VDC
	Switch-on-delay pressure transmitters	100 ms
	Switch-on-delay pressure switches	50 ms + switching delay time
	Inverse-polarity protection, short-circuit strenght @ 25°C during 5 min.	4...20 mA: to U_s = 32 VDC 1 or 2 PNP transistors: to U_s = 32 VDC
Environmental conditions	Media temperature	–40°C ... +125°C
	Ambient temperature	–40°C ... +125°C
	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)	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

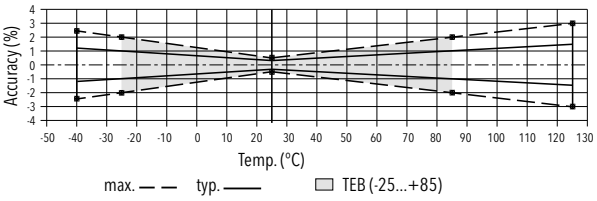
[2] Surge voltage on shield, shield connected on both sides

[3] For electrical connections 32 and 35

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 +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; 2^x[ms], x = 3, 4 ... 16		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

Measuring accuracy

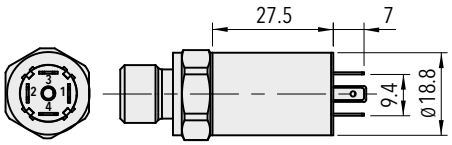


Additional specifications railways			
Environmental conditions	Cold	EN 60068-2-1	Ab: -40°C, 2 h (not in operation) Ae: -40°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclical	EN 60068-2-30	Db: 55°C, variant 1, 2 cycles (2 x 24 h)
	Ambient temperature	EN 50155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

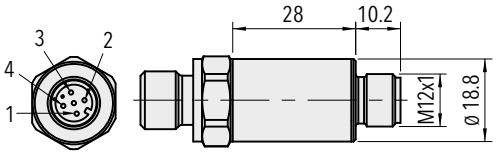
[1)] In Category 3 the 2010 versions' higher severity levels apply in each case

[2)] Chapter 5.1 Voltage supply

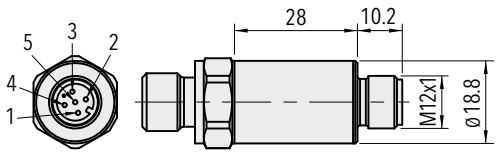
Dimensions



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



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



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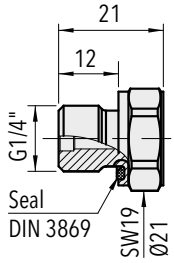
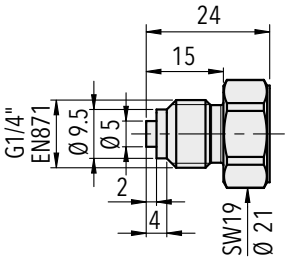
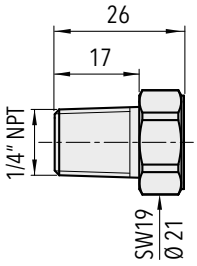


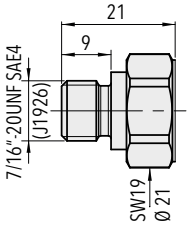
8258.XX.XX**17**.XX.XX.XX



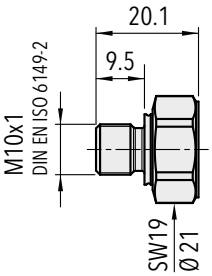
8258.XX.XX**53**.XX.XX.XX



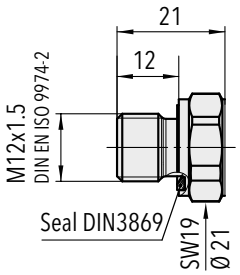
8258.XX.XX**30**.XX.XX.XX



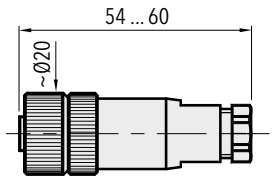
8258.XX.XX**42**.XX.XX.XX



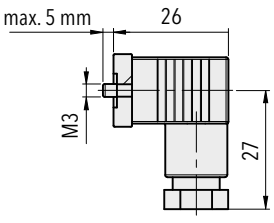
8258.XX.XX**32**.XX.XX.XX



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

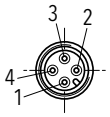
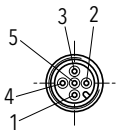
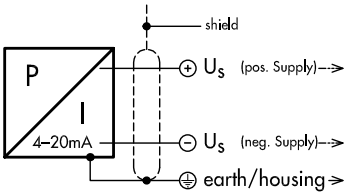
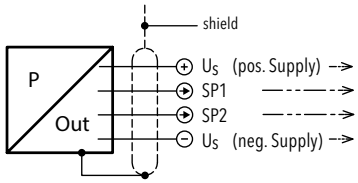


8258.XX.XXXX.XX.XX.**33**



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

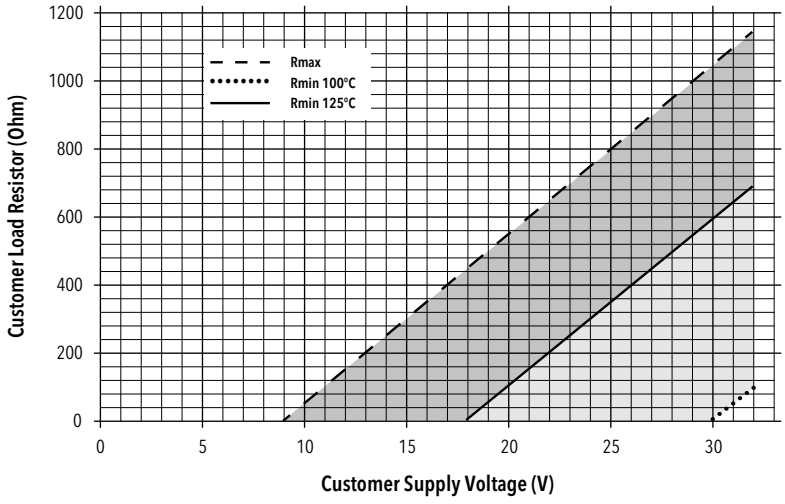
Electrical connection

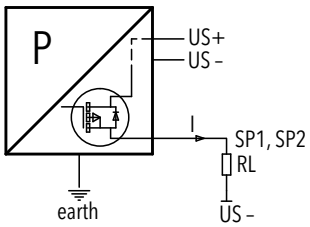
		Protection / electrical connection					
		IP65 *)**			IP67 *)**		
		Industrial standard Contact distance 9.4 mm			M12x1 4-pole		5-pole
		01			**32**		**35**
							
Output signal	 **8258**.xx.xxxx.xx.**19**		**90**	**92**		**E1**	
		2	2	1	1	1	4
		1	4	2	3	2	1
		4	3	4	4	4	5
	 **8258**.xx.xxxx.xx.**PS/T1**				**PS**	**T1**	
					1	1	
					4	4	
					2	–	
					3	3	

*) Provided female connector is mounted according to instructions

**) Ventilation via male electric plug/cable end

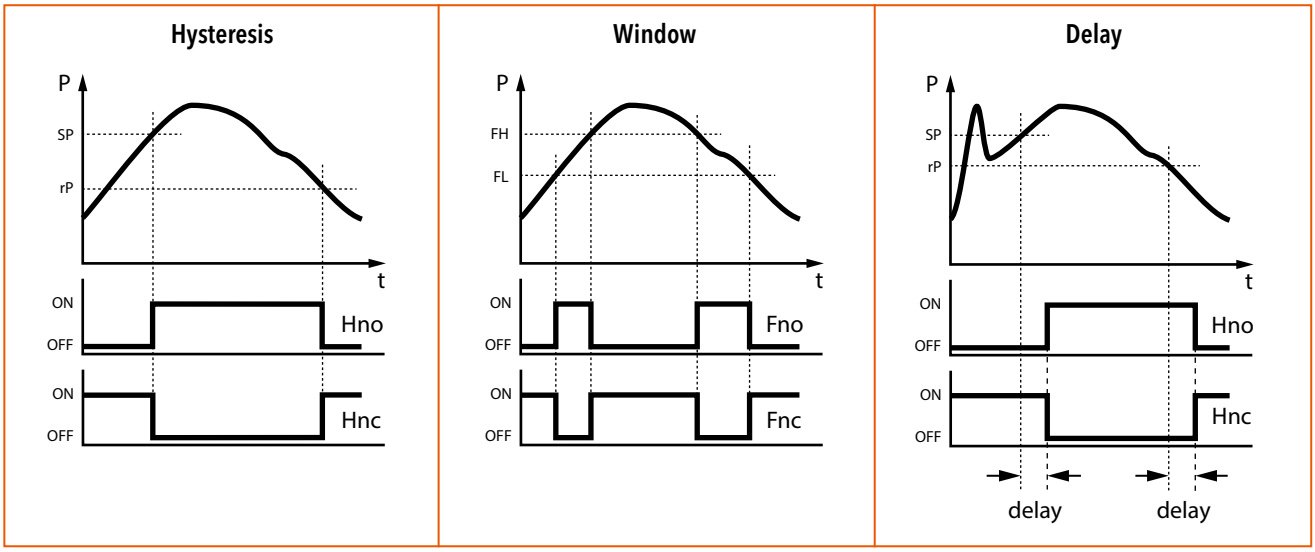
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%





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

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

- Relative or absolute pressure measurement
- Titanium version optional
- Excellent media compatibility
- Wide selection of designs and options

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 ... +85°C Cable PVC 22: -5°C ... +60°C Cable PUR 24: -20°C ... +70°C Cable Raychem 08: -20°C ... +100°C

Subject to change

Ordering information/type code

8472 . XX XX XX XX XX XX

Measuring 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	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 [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**

Sensor

Relative pressure, Material pressure connection and housing: 1.4305 (AISI303)	**57**	Absolute pressure, Material pressure connection and housing: 1.4305 (AISI303) [3]	**87**
Relative pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [4]	**59**	Absolute pressure, Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [3] [4]	**89**
Relative pressure, Material pressure connection and housing: 1.4462 (AISI318LN) [4]	**52**	Absolute pressure, Material pressure connection and housing: 1.4462 (AISI318LN) [3] [4]	**82**
Relative pressure, titanium grade 5 [4]	**53**	Absolute pressure, titanium grade 5 [3] [4]	**83**

Pressure connection

G1/4" female	**10**
G1/4" male	**17**
G1/2" male DIN3852-A [4]	**21**
G1/2" male DIN3852-E [4]	**41**
1/4" NPT male, ANSI B1.20.1 [4]	**30**
1/8" NPT male, ANSI B1.20.1 [11]	**43**
7/16" -20UNF male SAE4 [4] [10]	**42**
7/16"-20UNF male, DIN3866, max. 40 bar	**18**
7/16"-20UNF female SAE J512 with valve opener, max. 40 bar	**24**
R1/4" male, DIN3858	**19**
G3/4" frontal membrane [4] [7]	**52**

Electrical connection

Male electrical plug EN 175301-803-A, Mat. PA	**05**
Male electrical plug M12x1, 5-pole, Mat. PA (Old shape), Mat. PBT (New shape)	**35**
Male electrical plug Packard Metri Pack, Mat. PBT [9]	**51**
Male electrical plug industrial standard (contact distance 9.4 mm) Mat. PBT	**01**
Cable PUR, cable gland PA 6-3, -20°C ... +70°C [5] [6]	**24**
Cable PVC, cable gland PA 6-3, -5°C ... +60°C [5] [6] [9]	**22**
Cable Raychem, cable gland PA 6-3, -20°C ... +100°C [5] [6] [9]	**08**
Cable IP68, Mat. PVC, max. 3m, Medium +10°C … +35°C, Pmax. 1 bar rel./abs. (old version)	**68**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 30 VDC	**19**
0 ... 5 VDC	≥ 2.5 kΩ	≤ 10 mA	10 ... 30 VDC	**14**
1 ... 6 VDC	≥ 5.0 kΩ	≤ 10 mA	10 ... 30 VDC	**16**
0 ... 10 VDC	≥ 5.0 kΩ	≤ 10 mA	15 ... 30 VDC	**17**
0.5 ... 4.5 VDC ratiometric	≥ 5.0 kΩ	≤ 10 mA	5 VDC ± 0.25 VDC ratiom.	**23**

		8472 . XX	XX	XX	XX	XX	XX
Accessories	Seal FKM (-20°C ... +125°C)						61
	Seal CR ≤ 100 bar (-25°C ... +100°C) [8]						62
	Seal EPDM (-25°C ... +125°C)						63
	Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)						40
	Pressure peak damping element ø 0.3 mm (for pressure connections 17 and 30)						43
	Pressure peak damping element ø 0.4 mm [7]						44
	Pressure peak damping element ø 0.5 mm (for pressure connections 17 and 30)						45
	Female electrical connector EN 175301-803-A (DIN43650-A)						58
	Female electrical plug M12x1, 5-pole						33
	Female electrical connector industrial standard						34
	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)						92
	Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 + (only for output 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A)						98
	Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 Out (only for output signals 14, 16, 17, 23 and male electrical plug EN 175301-803-A / DIN 43650-A)						97
	Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical plug Packard Metri Pack 3-poles)						E4
	Special electrical connection: Pin 1 + , Pin 2 Out Pin 3 - (only for output signals 14, 16, 17, 23 and male electrical plug Packard Metri Pack 3-poles)						99
	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

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Media -10°C ... +125°C
[3] Absolute ranges max. 40 bar
[4] Please ask us
[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 ≤ 10 bar or 150 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] According to norm J1926, max. 35 MPa
[11] Only for sensors 59 and 89 and electrical connections 01, 35, 51 (others on request)

Identical construction for refrigeration: Data sheet No. H72323

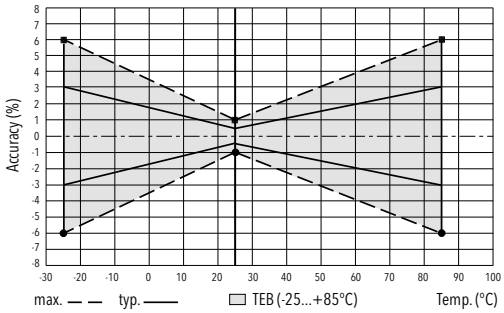
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
ECT1.0A	8472 71 5717 05 0000 0000 19 58 61	0 ... 1	3.2	4 ... 20 mA	9 ... 30
ECT2.5A	8472 75 5717 05 0000 0000 19 58 61	0 ... 2.5	5	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
ECT1.0V	8472 71 5717 05 0000 0000 17 58 61	0 ... 1	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
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

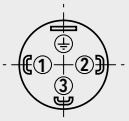
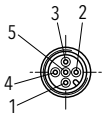
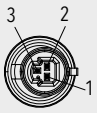
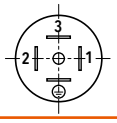
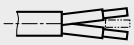
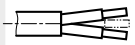
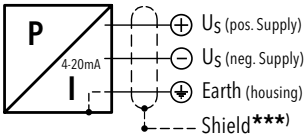
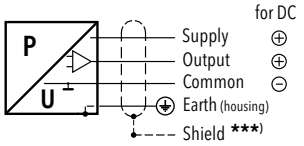
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 3.0 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.
	TC zero point and span typ.	± 0.03 % FS/K typ.
	Long term stability 1 year typ.	± 0.3 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 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 strenght @ 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 ... +85°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	IP67/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**	**24/22/68**	**08**
									
Output signal	 **8472**.xx.xxxx.xx.**19**	Standard	**92**			**E4**			
		2	1	4	1	1	2	white	red
		1	2	1	2	3	1	brown	black
		⏚	⏚	5			⏚	yellow	green
	 **8472**.xx.xxxx.xx.**14/16/17/23**	Standard	**98**	**97**		**99**			
		2	3	1	2	1	1	white	red
		3	1	3	4	3	2	green	white
		1	2	2	3	2	3	brown	black
		⏚	⏚	⏚	5	3	⏚	yellow	green

*) Provided female connector is mounted according to instructions

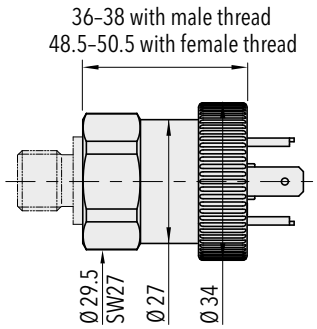
**) Ventilation via male electric plug/cable end

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

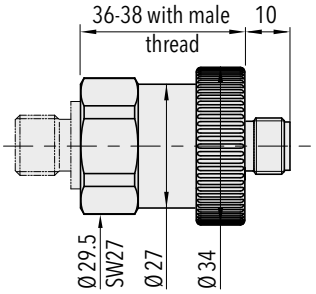
Additional information

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

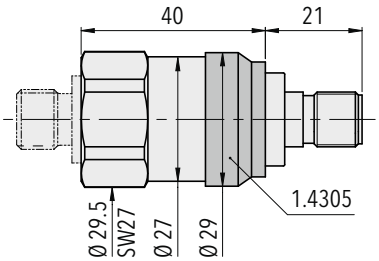
Dimensions



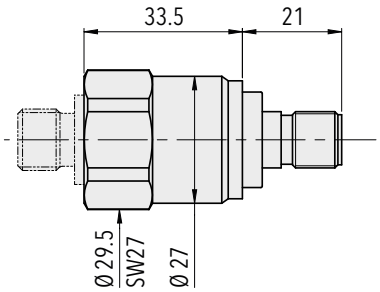
8472.XX.XXXX.**05**.XX.XX



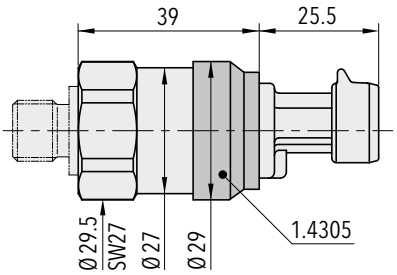
8472.XX.XXXX.**35**.XX.XX Old shape



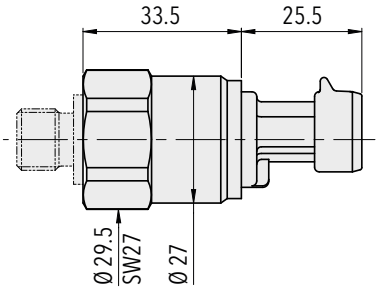
8472.XX.XXXX.**35**.XX.XX New shape



8472.XX.X**717**.**35**.XX.XX
8472.XX.X**942**.**35**.XX.XX



8472.XX.XXXX.**51**.XX.XX



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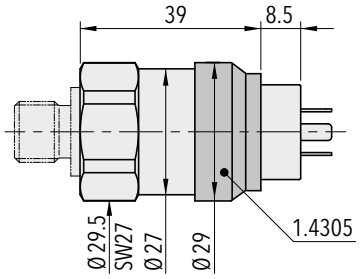
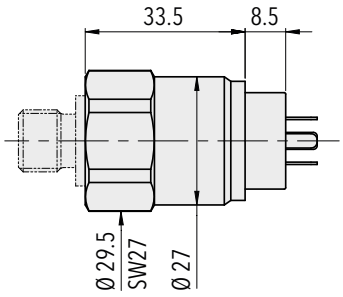
8472.XX.X**942**.**51**.XX.XX



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



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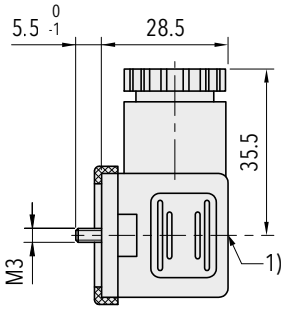
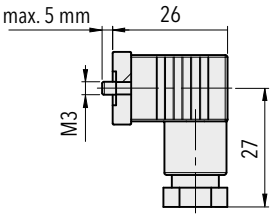
8472.XX.X**942**.**01**.XX.XX

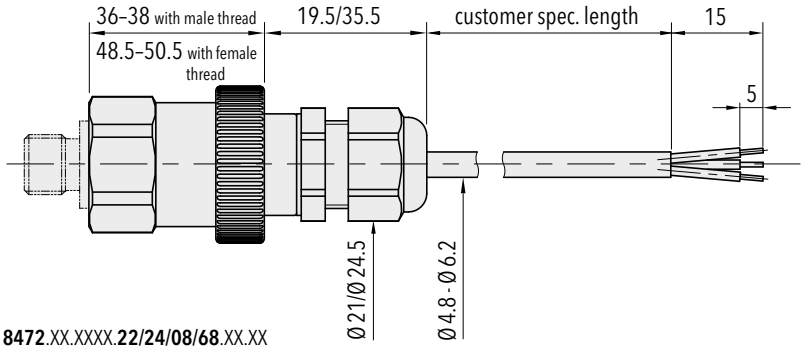


1) Tightening torque 50...60Ncm

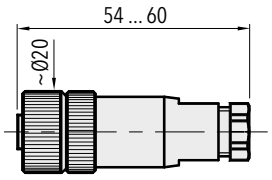
8472.XX.XXXX.XX.XX.**58**



8472.XX.XXXX.XX.XX.**34**

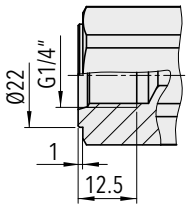


8472.XX.XXXX.**22**/**24**/**08**/**68**.XX.XX

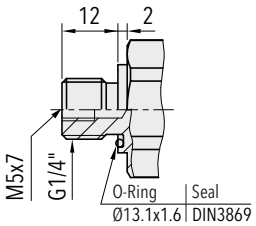


8472.XX.XXXX.XX.XX.**33**

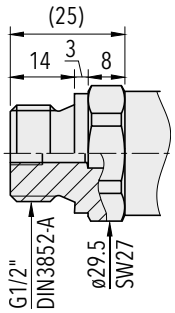
Dimensions



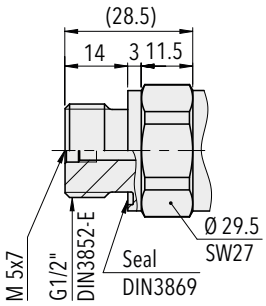
8472.XX.XX**10**.XX.XX.XX



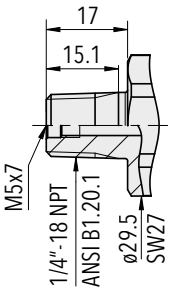
8472.XX.XX**17**.XX.XX.XX



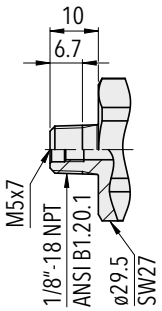
8472.XX.XX**21**.XX.XX.XX



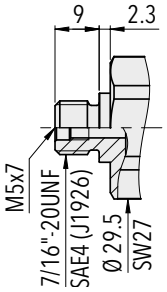
8472.XX.XX**41**.XX.XX.XX



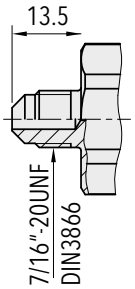
8472.XX.XX**30**.XX.XX.XX



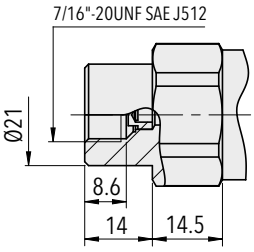
8472.XX.**X943**.XX.XX.XX



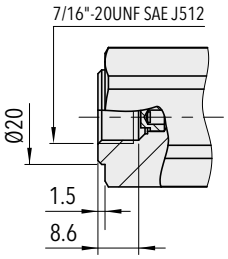
8472.XX.XX**42**.XX.XX.XX



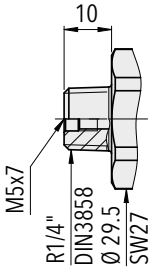
8472.XX.XX**18**.XX.XX.XX



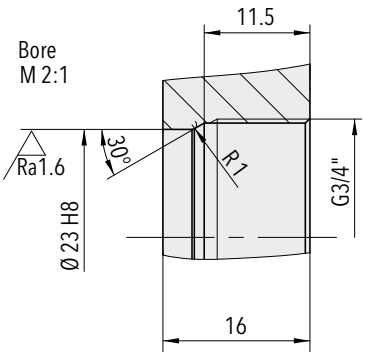
8472.XX.XX**24.05**.XX.XX.XX



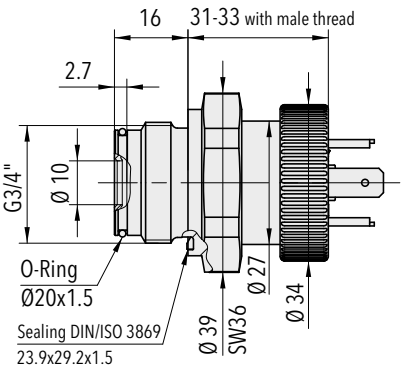
8472.XX.XX**24**.XX.XX.XX

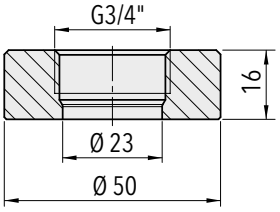


8472.XX.XX**19**.XX.XX.XX



8472.XX.XX**52**.XX.XX.XX





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

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

- Economical
- Good 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 ... +85°C Cable PVC 22: -5°C ... +60°C Cable PUR 24: -20°C ... +70°C Cable Raychem 08: -20°C ... +100°C

Subject to change

trafag sensors controls

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	2	3	**70**	0 ... 7.5	30	45	**G0**
0 ... 1.0	2	3	**71**	0 ... 15	30	45	**G1**
0 ... 1.6	3.2	4.8	**73**	0 ... 20	40	60	**G3**
0 ... 2.5	5	7.5	**75**	0 ... 30	60	90	**G5**
0 ... 4	8	12	**76**	0 ... 50	100	150	**G6**
0 ... 6	12	15	**77**	0 ... 100	200	250	**G7**
0 ... 10	20	25	**78**	0 ... 150	300	375	**G8**
0 ... 16	32	40	**79**	0 ... 250	500	625	**G9**
0 ... 25	50	75	**80**	0 ... 400	800	1200	**H0**
0 ... 40	80	100	**81**	0 ... 500	1000	1250	**H1**

Sensor

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

Pressure connection

G1/4" female	**10**
G1/4" male	**17**
G1/2" male DIN3852-A [2]	**21**
G1/2" male DIN3852-E [2]	**41**
1/4" NPT male, ANSI B1.20.1 [2]	**30**
1/8" NPT male, ANSI B1.20.1 [10]	**43**
7/16" -20UNF male SAE4 [2] [8]	**42**
R1/4" male, DIN3858	**19**
G3/4" frontal membrane [2] [4]	**52**

Electrical connection

Male electrical plug EN 175301-803-A, Mat. PA	**05**
Male electrical plug M12x1, 5-pole, Mat. PA (Old shape), Mat. PBT (New shape)	**35**
Male electrical plug industrial standard (contact distance 9.4 mm) Mat. PBT	**01**
Male electrical plug Packard Metri Pack, Mat. PBT [9]	**51**
Cable PUR, cable gland PA 6-3, -20°C ... +70°C [5] [6]	**24**
Cable PVC, cable gland PA 6-3, -5°C ... +60°C [5] [6] [9]	**22**
Cable Raychem, cable gland PA 6-3, -20°C ... +100°C [5] [6] [9]	**08**
Cable IP68, Mat. PVC, max. 3m, Medium +10°C … +35°C, Pmax. 1 bar rel./abs. (old version)	**68**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 30 VDC	**19**
0 ... 5 VDC	≥ 2.5 kΩ	≤ 10 mA	10 ... 30 VDC	**14**
1 ... 6 VDC	≥ 5.0 kΩ	≤ 10 mA	10 ... 30 VDC	**16**
0 ... 10 VDC	≥ 5.0 kΩ	≤ 10 mA	15 ... 30 VDC	**17**
0.5 ... 4.5 VDC	≥ 5.0 kΩ	≤ 10 mA	5 VDC ± 0.25 VDC ratiom.	**23**

	8473 . XX XX XX XX XX XX
Accessories	
Seal FKM (-20°C ... +125°C)	61
Seal CR ≤ 100 bar (-25°C ... +100°C) [7]	62
Seal EPDM (-25°C ... +125°C)	63
Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)	40
Pressure peak damping element ø 0.3 mm (for pressure connections 17 and 30)	43
Pressure peak damping element ø 0.5 mm (for pressure connections 17 and 30)	45
Female electrical connector EN 175301-803-A (DIN43650-A)	58
Female electrical plug M12x1, 5-pole	33
Female electrical connector industrial standard	34
Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)	92
Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 + (only for output 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A)	98
Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 Out (only for output signals 14, 16, 17, 23 and male electrical plug EN 175301-803-A / DIN 43650-A)	97
Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical plug Packard Metri Pack 3-poles)	E4
Special electrical connection: Pin 1 + , Pin 2 Out Pin 3 - (only for output signals 14, 16, 17, 23 and male electrical plug Packard Metri Pack 3-poles)	99
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

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Please ask us
[3] Only for ranges: ≥ 400 mbar or 5 psi
[4] Not for sensors 54 and 84, only for pressure ranges ≤ 10 bar or 150 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 and 30
[8] According to norm J1926, max. 35 MPa
[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)

Identical construction for refrigeration: Data sheet No. H72323

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Pressure connection	Signal output	Accuracy @ 25°C typ. [%]
ECT0.1A	8473 66 5417 05 0000 0000 19 58 61	0 ... 0.1	2	G1/4" male	4 ... 20 mA	1.0
ECT0.2A	8473 68 5417 05 0000 0000 19 58 61	0 ... 0.2	2	G1/4" male	4 ... 20 mA	0.5
ECT0.4A	8473 69 5417 05 0000 0000 19 58 61	0 ... 0.4	2	G1/4" male	4 ... 20 mA	0.5
ECT0.6A	8473 70 5417 05 0000 0000 19 58 61	0 ... 0.6	2	G1/4" male	4 ... 20 mA	0.3
ECT0.1V	8473 66 5417 05 0000 0000 17 58 61	0 ... 0.1	2	G1/4" male	0 ... 10 VDC	1.0
ECT0.2V	8473 68 5417 05 0000 0000 17 58 61	0 ... 0.2	2	G1/4" male	0 ... 10 VDC	0.5
ECT0.4V	8473 69 5417 05 0000 0000 17 58 61	0 ... 0.4	2	G1/4" male	0 ... 10 VDC	0.5
ECT0.6V	8473 70 5417 05 0000 0000 17 58 61	0 ... 0.6	2	G1/4" male	0 ... 10 VDC	0.3
ECTF0.1A	8473 66 5652 05 0000 0000 19 58 61	0 ... 0.1	2	G3/4" frontal membrane	4 ... 20 mA	1.0
ECTF0.2A	8473 68 5652 05 0000 0000 19 58 61	0 ... 0.2	2	G3/4" frontal membrane	4 ... 20 mA	0.5
ECTF0.4A	8473 69 5652 05 0000 0000 19 58 61	0 ... 0.4	2	G3/4" frontal membrane	4 ... 20 mA	0.5
ECTF0.6A	8473 70 5652 05 0000 0000 19 58 61	0 ... 0.6	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

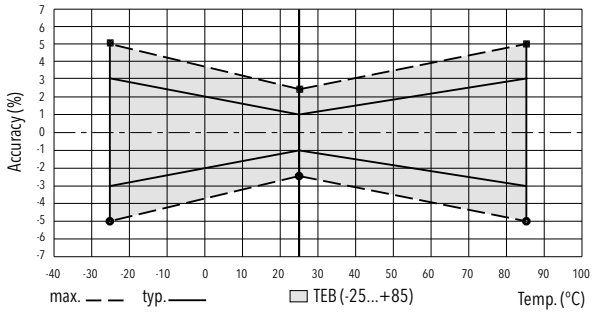
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC 0 ... 5 VDC: 24 (10 ... 30) VDC 1 ... 6 VDC: 24 (10 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC 0.5 ... 4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
	Inverse-polarity protection, short-circuit strenght @ 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 ... +85°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

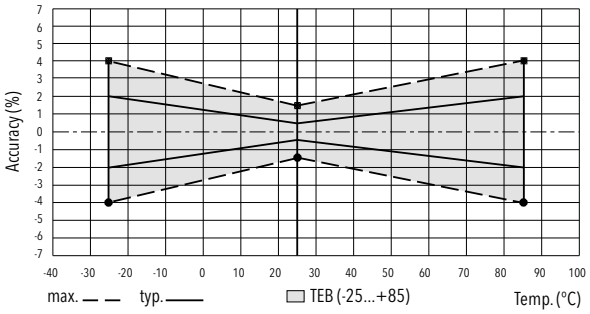
Accuracy

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

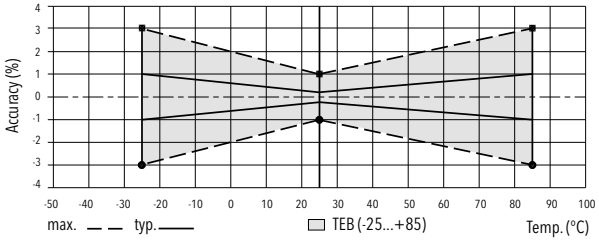
Measuring accuracy 1.0 %



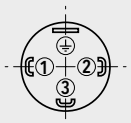
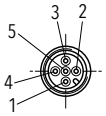
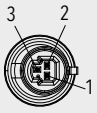
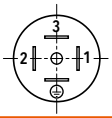
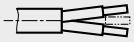
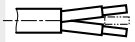
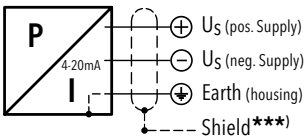
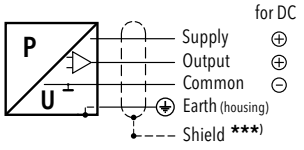
Measuring accuracy 0.5 %



Measuring accuracy 0.3 %



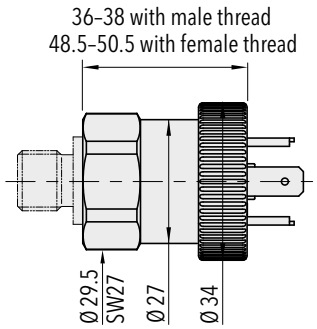
Electrical connection

		Protection / electrical connection							
		IP65*)		IP67*)	IP67*)		IP65	IP67/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**	**24/22/68**	**08**
									
Output signal	 **8473**.xx.xxxx.xx.**19**	Standard	**92**			**E4**			
		2	1	4	1	1	2	white	red
		1	2	1	2	3	1	brown	black
		⏚	⏚	5			⏚	yellow	green
	 **8473**.xx.xxxx.xx.**14/16/17/23**	Standard	**98**	**97**			**99**		
		2	3	1	2	1	1	1	white	red
		3	1	3	4	3	2	2	green	white
		1	2	2	3	2	3	3	brown	black
		⏚	⏚	⏚	5		⏚		yellow	green

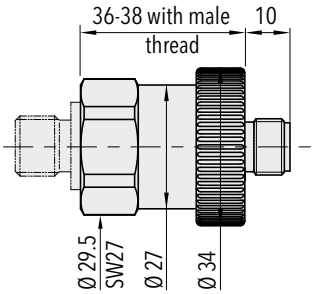
*) Provided female connector is mounted according to instructions
**) Ventilation via male electric plug/cable end
***) Only cable versions or female electrical plug with shield connection

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

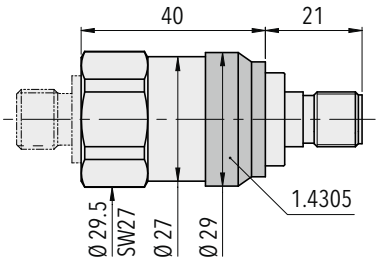
Dimensions



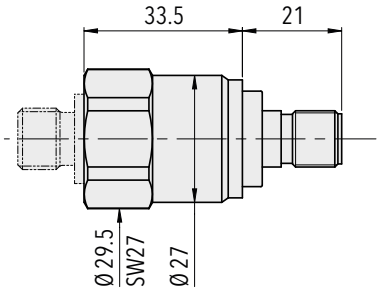
8473.XX.XXXX.**05**.XX.XX



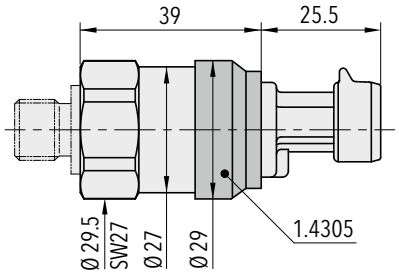
8473.XX.XXXX.**35**.XX.XX Old shape



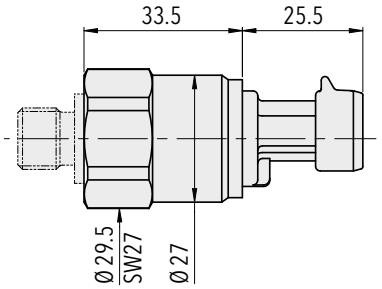
8473.XX.XXXX.**35**.XX.XX New shape



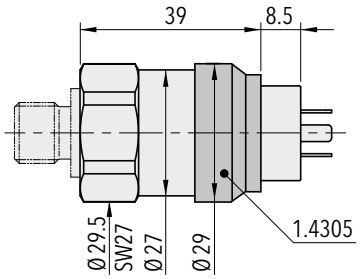
8473.XX.X**717.35**.XX.XX
8473.XX.X**942.35**.XX.XX



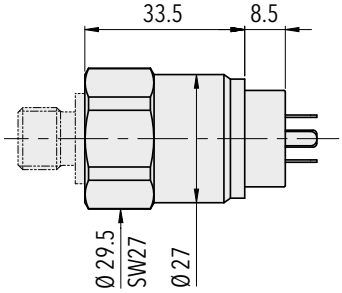
8473.XX.XXXX.**51**.XX.XX



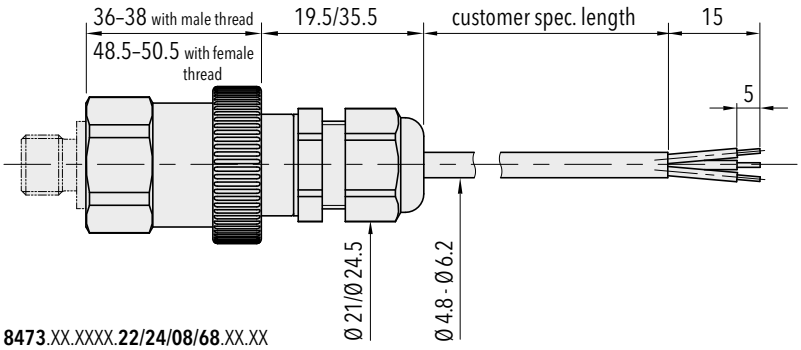
8473.XX.X**717.51**.XX.XX
8473.XX.X**942.51**.XX.XX



8473.XX.XXXX.**01**.XX.XX

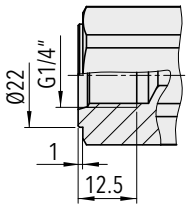


8473.XX.X**717.01**.XX.XX
8473.XX.X**942.01**.XX.XX

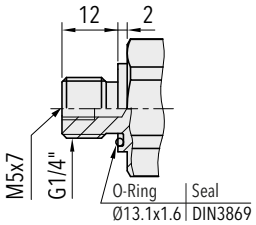


8473.XX.XXXX.**22/24/08/68**.XX.XX

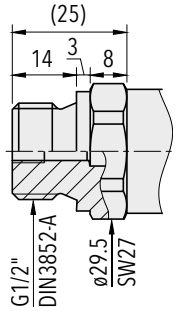
Dimensions



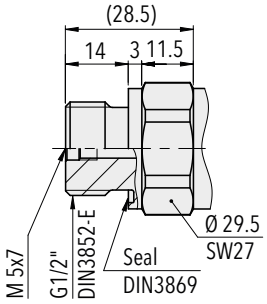
8473.XX.XX**10**.XX.XX.XX



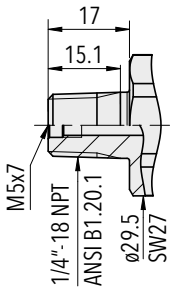
8473.XX.XX**17**.XX.XX.XX



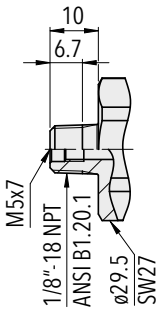
8473.XX.XX**21**.XX.XX.XX



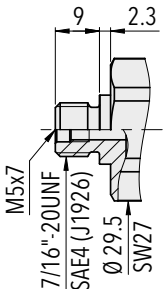
8473.XX.XX**41**.XX.XX.XX



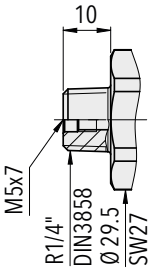
8473.XX.XX**30**.XX.XX.XX



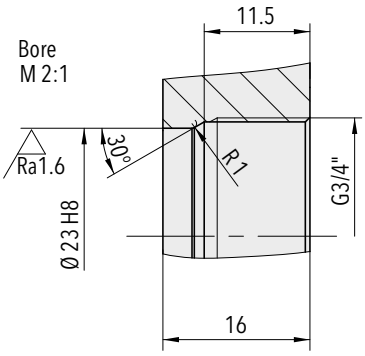
8473.XX.X643.XX.XX.XX



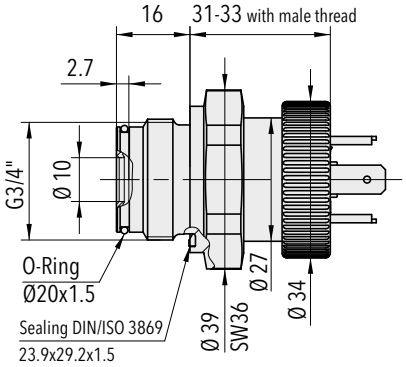
8473.XX.XX**42**.XX.XX.XX

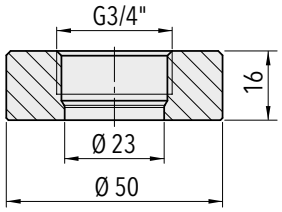


8473.XX.XX**19**.XX.XX.XX

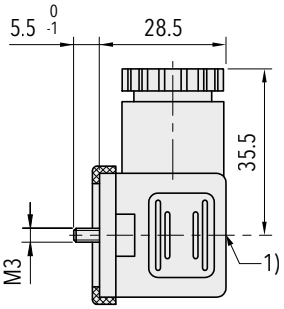


8473.XX.XX**52**.XX.XX.XX



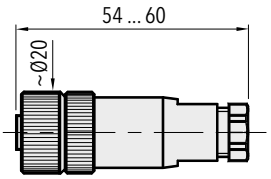


Welding flange for G3/4"
frontal membrane (1.4301)
Ordering No. C27805

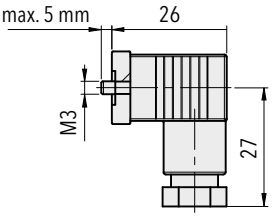


1) Tightening torque 50...60 Ncm

8473.XX.XXXX.XX.XX.**58**



8473.XX.XXXX.XX.XX.**33**



8473.XX.XXXX.XX.XX.**34**

MARINE PRESSURE TRANSMITTER

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

Applications

- Shipbuilding
- Engine manufacturing

Features

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

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

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

Sensor

Sensor	Code
Relative pressure, 1.4404/1.4435	**59**
Relative pressure, 1.4462 [4)]	**52**
Relative pressure, titanium grade 5 [4)]	**53**
Absolute pressure, 1.4404/1.4435 [3)]	**89**
Absolute pressure, 1.4462 [3) 4)]	**82**
Absolute pressure, titanium grade 5 [3) 4)]	**83**

Pressure connection

Pressure connection	Code
G1/4" female [4)]	**10**
G1/4" male	**17**
G1/2" male DIN3852-A [4)]	**21**
G1/2" male DIN3852-E [4)]	**41**
1/4" NPT male [4)]	**30**

Electrical connection

Electrical connection	Code
Male electrical plug EN 175301-803-A, Mat. PA	**05**

Output signal

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

Accessories

Accessories	Code
Seal FKM (-20°C ... +125°C)	**61**
Seal EPDM (-25°C ... +125°C)	**63**
Female electrical connector EN 175301-803-A (DIN43650-A)	**58**
Pressure peak damping element ø 0.4 mm	**44**
Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)	**40**
Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)	**92**

[1)] Extended overpressure as well as customized pressure ranges upon request
[2)] Media -10°C ... +85°C
[3)] Absolute ranges max. 40 bar
[4)] Upon request

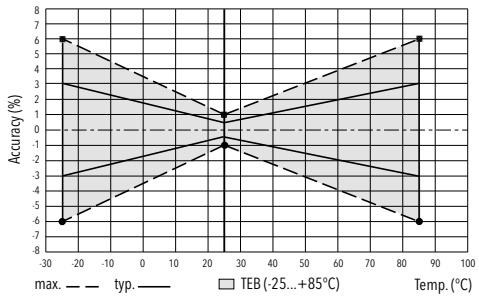
trafag sensors controls

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

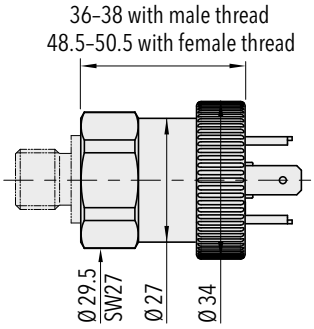
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 3.0 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.
	TC zero point and span typ.	± 0.03 % FS/K typ.
	Long term stability 1 year typ.	± 0.3 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
	Inverse-polarity protection, short-circuit strenght @ 25°C during 5 min.	4...20 mA: to U_s = 30 VDC
Environmental conditions	Media temperature	-25°C ... +85°C 400 bar/5000 psi: -10°C ... +85°C
	Ambient temperature	-25°C ... +85°C
	Protection [1)]	min. IP65
	Humidity	Max. 95 % relative
	Vibration	20 g (10...2000 Hz)
	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

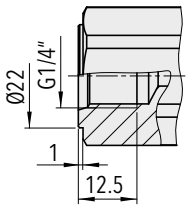
Measuring accuracy 0.5 %



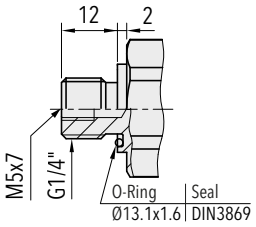
Dimensions



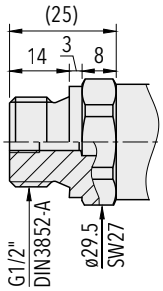
8477.XX.XXXX.**05**.XX.XX



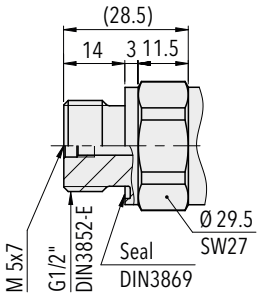
8477.XX.XX**10**.XX.XX.XX



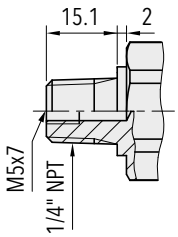
8477.XX.XX**17**.XX.XX.XX



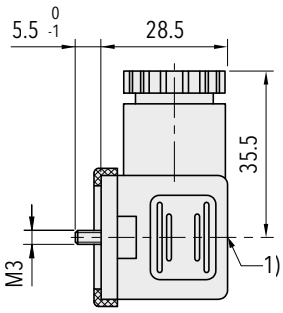
8477.XX.XX**21**.XX.XX.XX



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



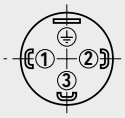
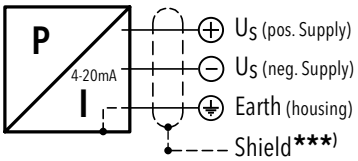
8477.XX.XX**30**.XX.XX.XX



1) Tightening torque 50...60Ncm

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

Electrical connection

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

*) Provided female connector is mounted according to instructions

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

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

RAILWAY PRESSURE TRANSMITTER

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

Applications

- Railways

Features

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

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

Subject to change

Ordering information/type code

8478 . XX XX XX XX XX XX

Measuring range [1]

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

Sensor

Relative pressure, accuracy class: 0.3 %; Material pressure connection and housing: 1.4305 (AISI303) [3] [5]	**54**	Relative pressure, accuracy class: 0.5 %; Material pressure connection and housing: 1.4305 (AISI303) [4] [5]	**57**
Relative pressure, accuracy class: 0.3 %; Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [3]	**56**	Relative pressure, accuracy class: 0.5 %; Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [4]	**59**
Absolute pressure, accuracy class: 0.3 %; Material pressure connection and housing: 1.4305 (AISI303) [3] [5]	**84**	Absolute pressure, accuracy class: 0.5 %; Material pressure connection and housing: 1.4305 (AISI303) [4] [5]	**87**
Absolute pressure, accuracy class: 0.3 %; Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [3]	**86**	Absolute pressure, accuracy class: 0.5 %; Material pressure connection and housing: 1.4404/1.4435 (AISI316L) [4]	**89**

Pressure connection

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

Electrical connection

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

Output signal

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

Accessories

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

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

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

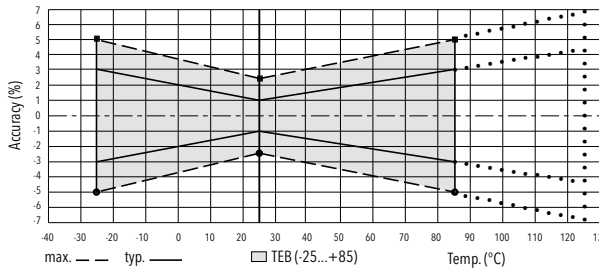
[2)] Surge voltage on shield, shield connected on both sides

[3)] For electrical connection 35

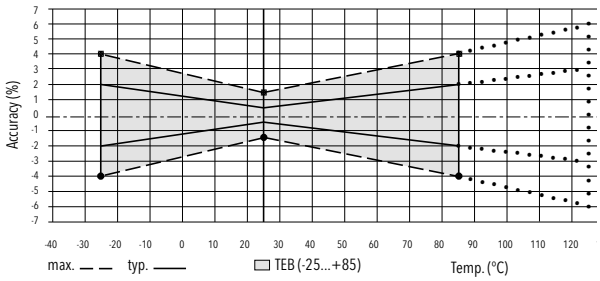
Accuracy

		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

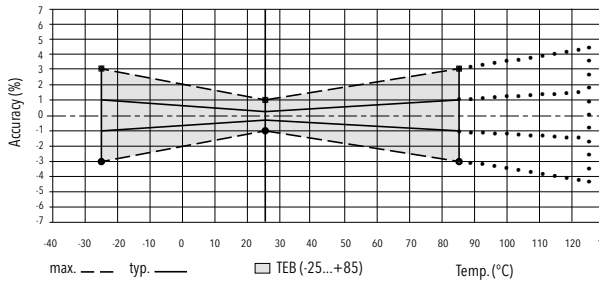
Sensors 54/84/56/86
0 ... 0.1 to 0 ... 0.16 bar



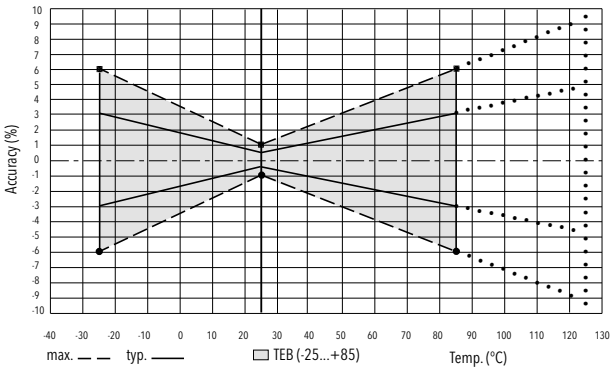
Sensors 54/84/56/86
0 ... 0.2 to 0 ... 0.4 bar



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



Sensors 57/87/59/89
≥ 0 ... 1 bar



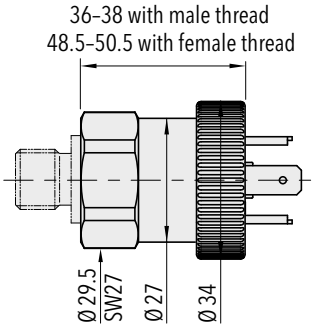
Additional specifications railways			
Environmental conditions	Cold	EN 60068-2-1	Ab: -25°C, 2 h (not in operation) Ae: -25°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclical	EN 60068-2-30	Db: 55°C, variant 1, 2 cycles (2 x 24 h)
	Vibration and shock	EN 61373	Vibration: category 3 Shock: category 3 [1) 3)]
	Dielectrical strength	EN 50155	710 VDC
	Resistance of insulation	EN 50155	>100 MΩ, 500 VDC
	Behavior in case of fire (electrical connections 01, 32, 35)	EN 45545-2	Weight: < 10 g Surface: < 0.2 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

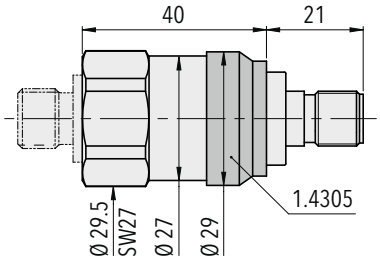
[2)] Chapter 5.1 Voltage supply

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

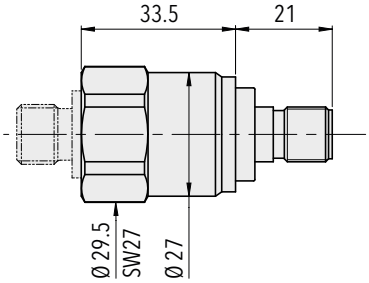
Dimensions



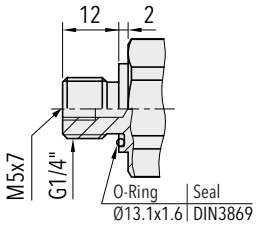
8478.XX.XXXX.**05**.XX.XX



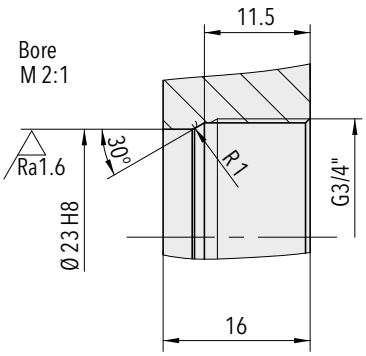
8478.XX.XXXX.**35**.XX.XX

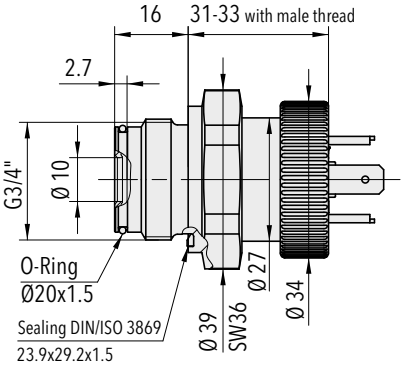


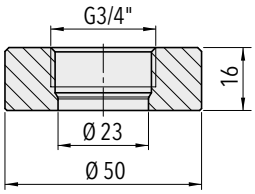
8478.XX.X**717**.**35**.XX.XX



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

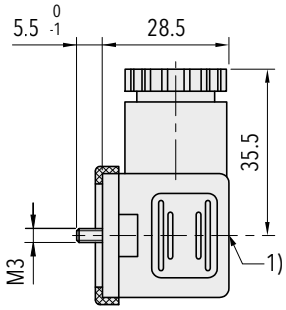






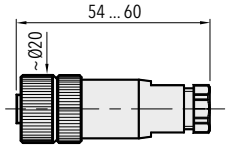
Welding flange for G3/4" frontal membrane (1.4301) Ordering No. C27805

8478.XX.XX**52**.XX.XX.XX



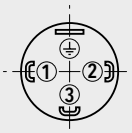
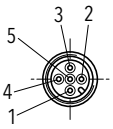
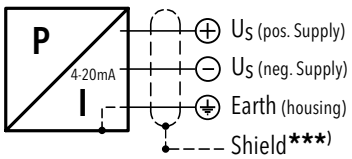
1) Tightening torque 50...60 Ncm

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



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

Electrical connection

	Protection / electrical connection			
	IP65*)		IP67*)	
	Industrial standard EN175301-803A **05** 		M12x1 5-pole **35** 	
Output signal	Standard	**92**	Standard	**94**
 **8478**.xx.xxxx.xx.**19**	2	1	4	1
	1	2	1	3
	⏚	⏚	5	5

*) 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/H72337
	Instructions	www.trafag.com/H73324
	Flyer	www.trafag.com/H70603

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
- High resistance to over pressure
- Completely welded steel sensor system without additional seals
- Compact design
- 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 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 … 4.5 VDC ratiometric	Ambient temperature	–40°C ... +125°C Cable PVC: -5°C ... +60°C Cable PUR: -20°C ... +70°C Cable Raychem: -20°C ... +100°C

Subject to change

Ordering information/type code

8287 . XX XX XX XX XX XX

Measuring range [1)]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	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**
Option 5P:	**Fivefold overpressure**			0 ... 7500	18750	29000	**H6**
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**				

Sensor

Description	Code
Relative pressure, accuracy: 0.5 %; Material pressure connection and housing: 1.4542 (AISI630)	**25**
Relative pressure, accuracy: 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: 0.3 %; Material pressure connection and housing: 1.4404 (AISI316L) [2) 3) 5)]	**33**

Pressure connection

Description	Code
G1/4" female [2)]	**10**
G1/4" male (Seal)	**17**
R1/4" male, DIN3858 [2)]	**19**
G1/2" male (Manometer) [2)]	**11**
1/4" NPT male	**30**
1/2" NPT male [2)]	**51**
M14x1.5 male DIN6149-2 [2)]	**31**
7/16"-20UNF male, DIN3866 [2) 6)]	**18**
7/16"-20UNF male SAE4 (J1926) [2) 7)]	**42**
7/16"-20UNF female SAE J512 with valve opener [6)]	**24**

Electrical connection

Description	Code
Male electrical plug EN 175301-803-A, Mat. PA	**05**
Male electrical plug M12x1, 5-pole, Mat. PBT	**35**
Male electrical plug Packard Metri Pack, Mat. PBT [4)]	**51**
Male electrical plug industrial standard, contact distance 9.4 mm, Mat. PBT	**01**
Cable PUR, IP68 (Screwed cable gland PA 6-3), -20°C … +70°C [8) 9)]	**24**
Cable PVC, IP68 (Screwed cable gland PA 6-3), -5°C … +60°C [8) 9) 10)]	**22**
Cable Raychem, IP68 (Screwed cable gland PA 6-3), -20°C … +100°C [8) 9) 10)]	**08**

trafag sensors controls

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	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 [3]	**61**
	Seal EPDM, -40°C ... +125°C [3]	**63**
	Seal NBR, -25°C ... +100°C [3]	**83**
	Pressure peak damping element ø 1.0 mm (for pressure connections 17, 19, 30, 31, 51)	**40**
	Pressure peak damping element ø 0.4 mm (for pressure connections 17, 19, 30, 31, 51)	**44**
	Female electrical connector EN 175301-803-A (DIN43650-A)	**58**
	Female electrical plug M12x1, 5-pole	**33**
	Female electrical connector industrial standard	**34**
	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)	**92**
	Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 + (only for output 14, 16, 17 and male electrical plug EN175301-803-A / DIN43650-A)	**98**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 Out (only for output 14, 16, 17 and male electrical plug EN175301-803-A / DIN43650-A)	**97**
	Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical plug Packard Metri Pack 3-poles)	**E4**
	Special electrical connection: Pin 1 + , Pin 2 out Pin 3 - (only for output signals 14, 16, 17 and male electrical plug Packard Metri Pack 3-poles)	**99**
	Housing nut for electrical connection EN175301-803-A (DIN43650-A) secured with Loctite (max. 85°C)	**L9**
	Cable length 1.5 m	**1M**
	Cable length 3.0 m	**3M**
	Cable length 5.0 m	**5M**

[1] Customized pressure ranges upon request
[2] Upon request
[3] Only with pressure connection 17 (G1/4")
[4] Pressure ranges > 16 bar (Pressure ranges ≤ 16 bar upon request)
[5] Only for pressure ranges ≥ 10 bar
[6] Max. allowable pressure range 60 bar at 120 bar overpressure
[7] According to norm J1926, max. 35 MPa
[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

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
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
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
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
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

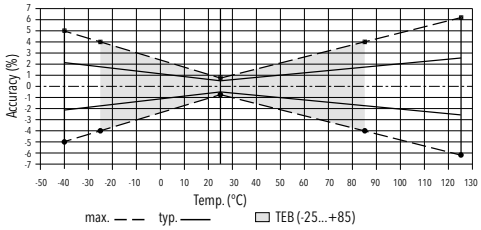
Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 0 ... 5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 10 VDC: 24 (15...32) VDC 0.5 ... 4.5 VDC ratiometric 10 ... 90 % U_{supply}: 5 ± 0.25 VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay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

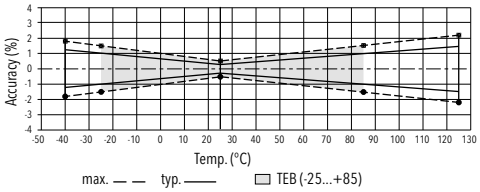
Accuracy

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

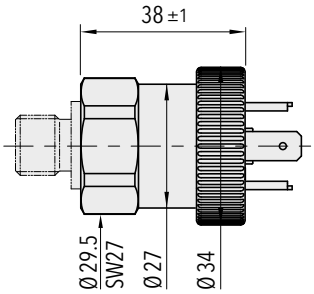
Measuring accuracy 0.5 %



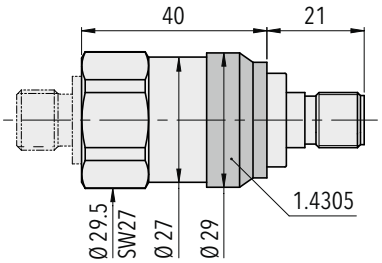
Measuring accuracy 0.3 %



Dimensions



8287.XX.XXXX.**05**.XX.XX



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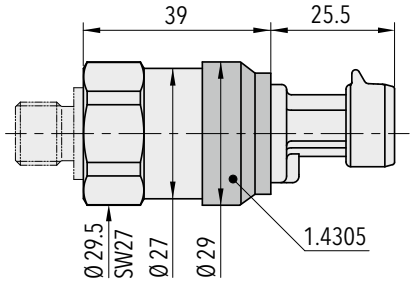
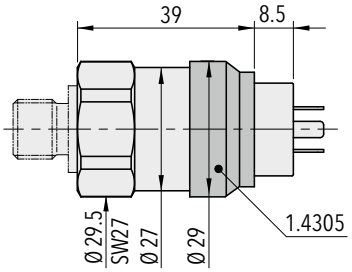
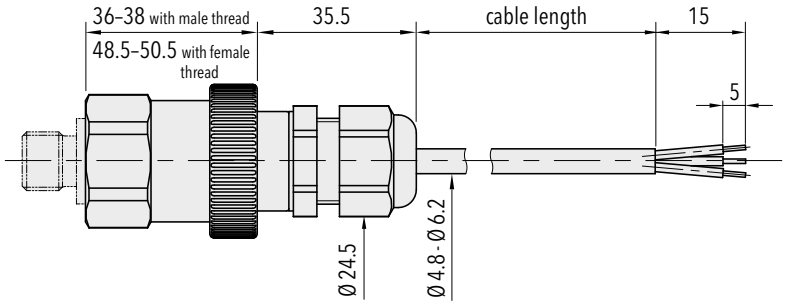


8287.XX.XXXX.**51**.XX.XX



8287.XX.XXXX.**01**.XX.XX



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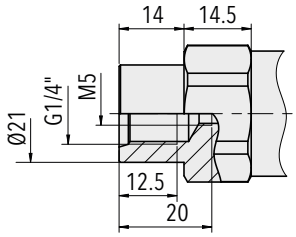
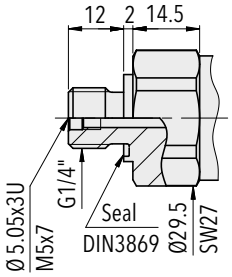
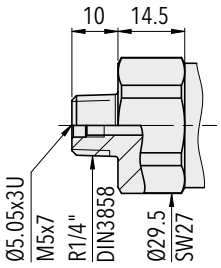


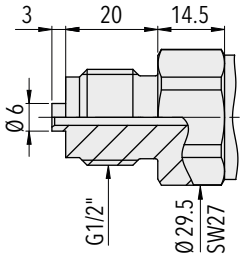
8287.XX.XX**10**.XX.XX.XX



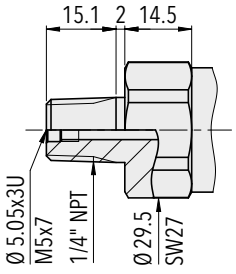
8287.XX.XX**17**.XX.XX.XX



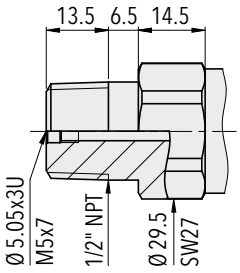
8287.XX.XX**19**.XX.XX.XX



8287.XX.XX**11**.XX.XX.XX



8287.XX.XX**30**.XX.XX.XX



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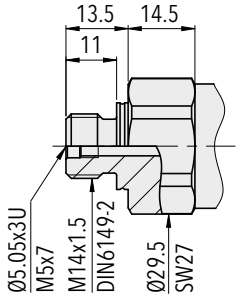
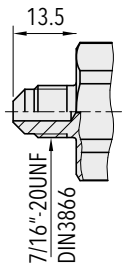
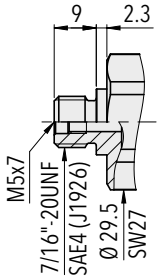


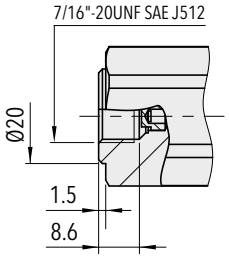
8287.XX.XX**31**.XX.XX.XX



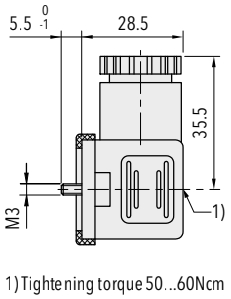
8287.XX.XX**18**.XX.XX.XX



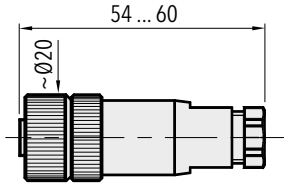
8287.XX.XX**42**.XX.XX.XX



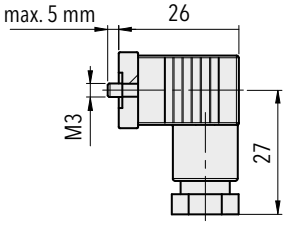
8287.XX.XX**24**.XX.XX.XX



8287.XX.XXXX.XX.XX.**58**

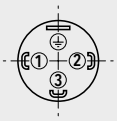
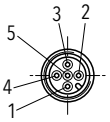
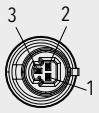
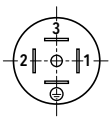
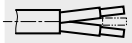
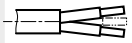
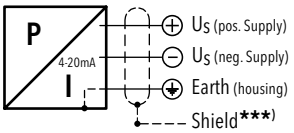
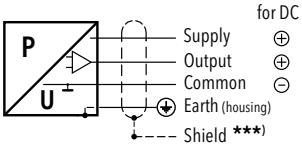


8287.XX.XXXX.XX.XX.**33**



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

Electrical connection

		Protection / electrical connection						
		IP65*)	IP67*)	IP67*)	IP65	IP68 max. 3 m	IP68 max. 3 m
		Industrial standard EN175301-803A**)	M12x1 **) 5-pole	Packard Metri Pack **) 3-pole	Industrial standard Contact distance 9.4 mm **)	Cable**)	Cable**)
		05	**35**	**51**	**01**	**24/22**	**08**
							
Output signal	 **8287**.xx.xxxx.xx.**19**	Standard	**92**			**E4**		
		2	1	4	1	1	2	white	red
		1	2	1	2	3	1	brown	black
		⏚	⏚	5			⏚	yellow	green
	 **8287**.xx.xxxx.xx.**14/16/17/23**	Standard	**98**	**97**		**99**			
		2	3	1	2	1	1	2	white	red
		3	1	3	4	3	2	3	green	white
		1	2	2	3	2	3	⏚	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/H72317
	Instructions	www.trafag.com/H73317
	Flyer	www.trafag.com/H70692

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 0.5 ... 4.5 VDC ratiometric	Ambient temperature	–40°C ... +125°C

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]	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

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: 0.3 %; Material pressure connection and housing: 1.4404 (AISI316L) [2]	**33**
Relative pressure, accuracy: 0.5 %; Material pressure connection and housing: 1.4404 (AISI316L) [2]	**35**

Pressure connection

G1/4" male (Seal)	**17**
1/4" NPT male [3]	**30**
R1/4" male, DIN3858 [3]	**19**
1/2" NPT male [3]	**51**
M14x1.5 male DIN6149-2 [3]	**31**
G1/2" male (Manometer) [3]	**11**

Electrical connection

Male electrical plug EN 175301-803-A, Mat. PA	**05**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	Code
4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 32 VDC	**19**
0 ... 10 VDC	> 5 kΩ	< 10 mA	15 ... 32 VDC	**17**
0.5 ... 4.5 VDC ratiometric	≥ 15.0 kΩ	≤ 12 mA	5 VDC ± 0.25 VDC ratiom.	**23**

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 (for pressure connections 17 and 30)	**40**
Pressure peak damping element ø 0.4 mm (for pressure connections 17 and 30)	**44**
Female electrical connector EN 175301-803-A (DIN43650-A)	**58**
Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)	**92**
Special electrical connection: Pin 1 out , Pin 2 -, Pin 3 + (Only for output 0.5 ... 4.5 VDC and male electrical plug EN175301-803-A / DIN43650-A)	**98**
Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 out (Only for output 0.5 ... 4.5 VDC and male electrical plug EN175301-803-A / DIN43650-A)	**97**

[1] Customized pressure ranges upon request
[2] Only for pressure ranges ≥ 0 … 10 bar
[3] Upon request

trafag sensors controls

Specifications

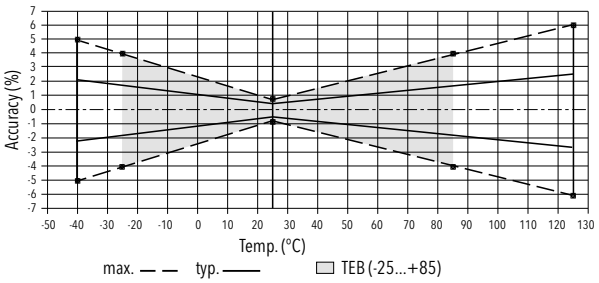
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0 ... 10 VDC 24 (15 ... 32 VDC) 0.5 ... 4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
	Inverse-polarity protection, short-circuit strenght @ 25°C during 5 min.	4...20 mA: to U_s = 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	Max. 95 % relative
	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

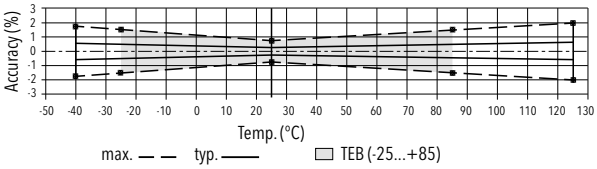
Accuracy

		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 %



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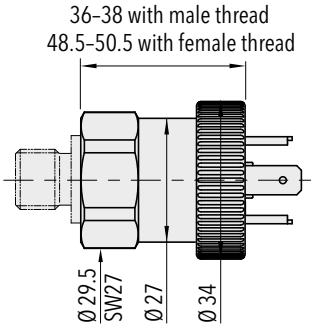
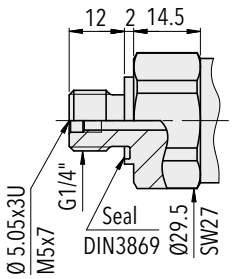


8288.XX.XXXX.**05**.XX.XX



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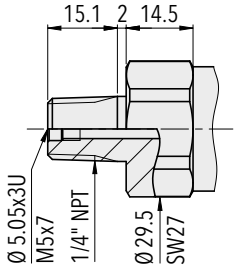

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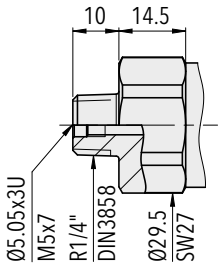

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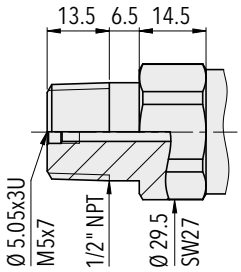
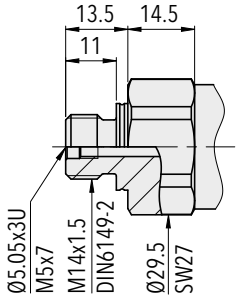
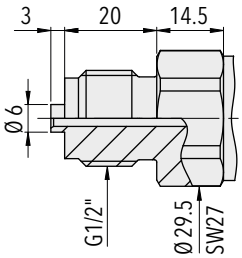


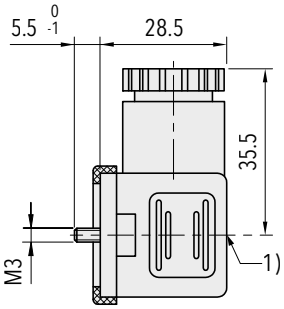
8288.XX.XX**51**.XX.XX.XX



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



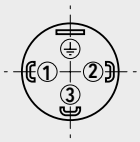
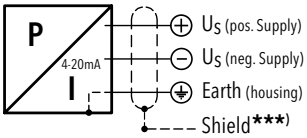
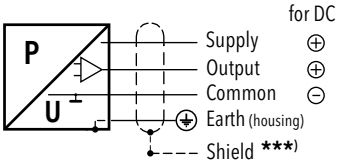
8288.XX.XX**11**.XX.XX.XX



1) Tightening torque 50...60Ncm

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

Electrical connection

		Protection / electrical connection		
		IP65*)		
		Industrial standard EN175301-803A **) **05** 		
Output signal	 **8288**.xx.xxxx.xx.**19**	Standard 2 1 ⏚	**92** 1 2 ⏚	
	 **8288**.xx.xxxx.xx.**17/23**	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/H73318
	Flyer	www.trafag.com/H70693

ENGINE PRESSURE TRANSMITTER

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

Applications

- Shipbuilding
- Engine manufacturing
- Machine tools
- Hydraulics

Features

- Nominal pressure up to 2500 bar (Common Rail) with high pressure threaded connection
- High vibration resistance
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 2500 bar	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

				8298 . XX	XX	XX	XX	XX	XX
Measuring 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	3000	4000	**91**					
Sensor	Relative pressure, accuracy: 0.3 %				**23**				
	Relative pressure, accuracy: 0.5 %				**25**				
Pressure connection	G1/4" male (Seal) [2]					**17**			
	R1/4" male DIN3858 [2] [4]					**19**			
	G1/2" male (Manometer) [2]					**11**			
	1/4" NPT male [2] [5]					**30**			
	1/2" NPT male [2] [5]					**51**			
	M14x1.5 male (conical seal: 58°) [3]					**28**			
	M18x1.5 male (conical seal: 58°) [3]					**29**			
Electrical connection	Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA, normal vibration resistance ≤ 600 bar						**04**		
	Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA, extended vibration resistance						**05**		
	Male electrical plug: DIN72585 Code 1, Mat.: PBT (Contacts Mat.: Sn)						**25**		
	Male electrical plug MIL-C 26482, 6-pole, metal [8]						**02**		
	Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm² [6]						**78**		
Output signal	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**					
	4 ... 20mA	(Usupply-9 V) / 20 mA		9 ... 32 VDC				**19**	
	0.5 ... 4.5 VDC [7]	≥ 15.0 kΩ	≤ 12 mA	5 VDC ± 0.25 VDC ratiom.				**23**	
Accessories	Pressure peak damping element ø 1.0 mm								**40**
	Pressure peak damping element ø 0.3 mm								**43**
	Pressure peak damping element ø 0.5 mm								**45**
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C								**58**
	Female electrical connector MIL-C 26482, 6-pole, metal								**32**
	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)								**92**
	Cable length 1.5 m								**1M**
	Cable length 3.0 m								**3M**
	Cable length 5.0 m								**5M**

[1] Extended overpressure as well as customized pressure ranges upon request
[2] For Ranges ≤ 600 bar
[3] For ranges > 600 bar
[4] Only with electrical connection 04
[5] Please ask us
[6] Cable length see accessories
[7] Only with electrical connections 25 and 78
[8] For pressure ranges < 40 bar 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. [%]
EPN4.0A	8298 76 2517 04 0000 0000 19 43 58	0 ... 4	8	9 ... 32	± 0.5
EPN6.0A	8298 77 2517 04 0000 0000 19 43 58	0 ... 6	12	9 ... 32	± 0.5
EPN10.0A	8298 78 2517 04 0000 0000 19 43 58	0 ... 10	20	9 ... 32	± 0.5
EPN16.0A	8298 79 2517 04 0000 0000 19 43 58	0 ... 16	32	9 ... 32	± 0.5
EPN25.0A	8298 80 2517 04 0000 0000 19 43 58	0 ... 25	50	9 ... 32	± 0.5
EPN40.0A	8298 81 2517 04 0000 0000 19 43 58	0 ... 40	80	9 ... 32	± 0.5
EPN60.0A	8298 82 2517 04 0000 0000 19 43 58	0 ... 60	120	9 ... 32	± 0.5
EPN100.0A	8298 83 2517 04 0000 0000 19 43 58	0 ... 100	200	9 ... 32	± 0.5
EPN250.0A	8298 74 2517 04 0000 0000 19 43 58	0 ... 250	500	9 ... 32	± 0.5
EPN400.0A	8298 84 2517 04 0000 0000 19 43 58	0 ... 400	800	9 ... 32	± 0.5

Specifications

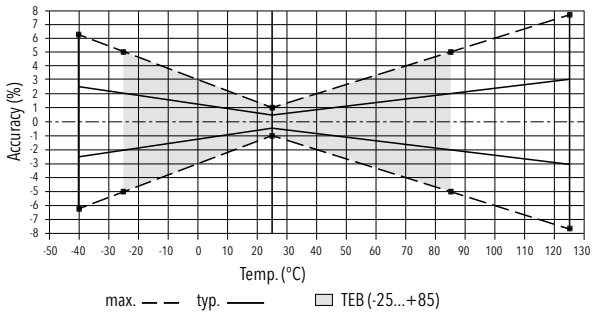
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC 0.5 ... 4.5 VDC: 5 VDC ratiom.
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection [1)]	IP65, IP67, IP69K
	Humidity	Max.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

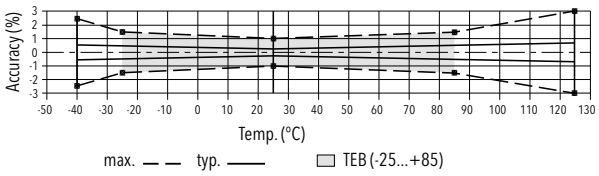
Accuracy

		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 %



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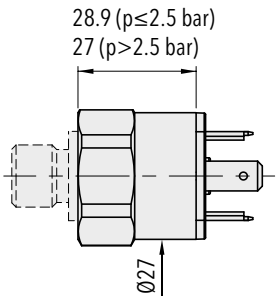
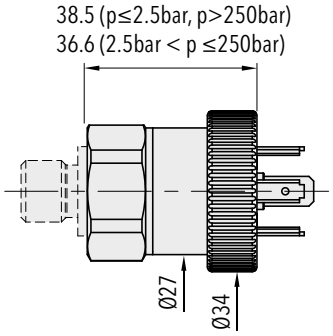
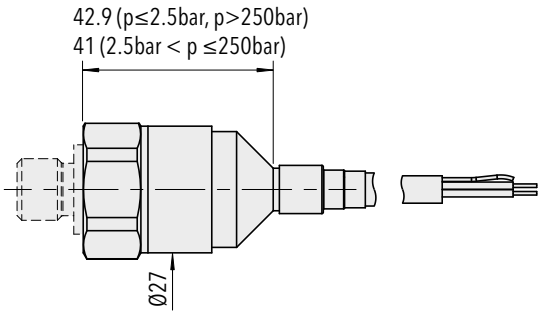


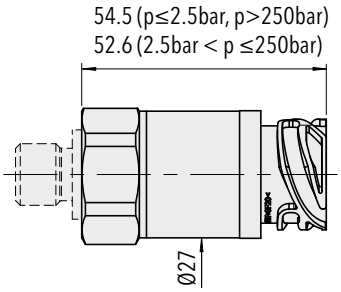
8298.XX.XXXX.**04**.XX.XX



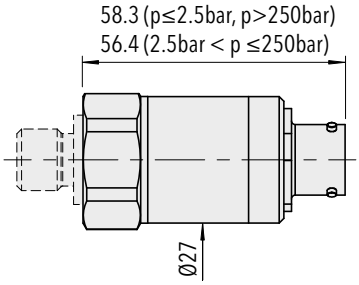
8298.XX.XXXX.**05**.XX.XX



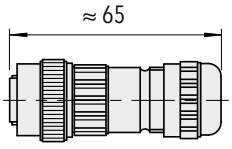
8298.XX.XXXX.**78**.XX.XX



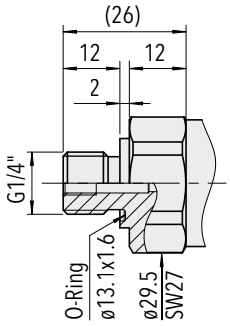
8298.XX.XXXX.**25**.XX.XX



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

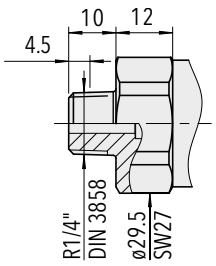


8298.XX.XXXX.02.XX.**32**



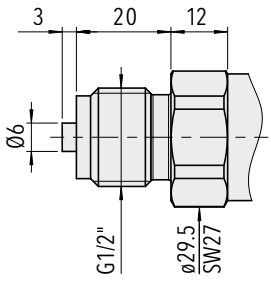
8298.XX.XX**17**.XX.XX.XX

Pressure ranges: ≤ 600 bar



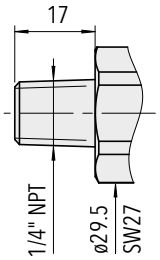
8298.XX.XX**19**.XX.XX.XX

Pressure ranges: ≤ 600 bar

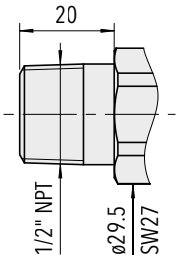


8298.XX.XX**11**.XX.XX.XX

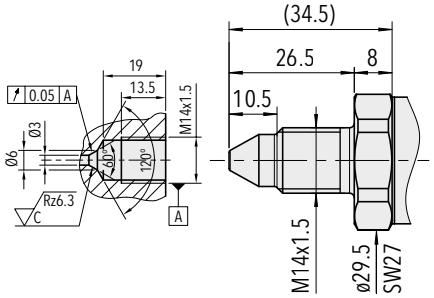
Pressure ranges: ≤ 600 bar



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

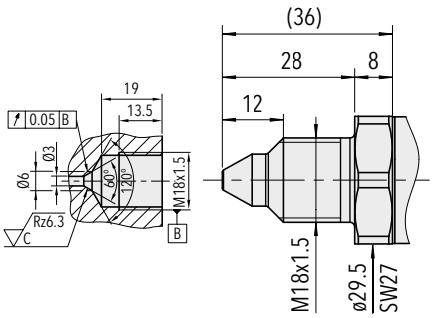


8298.XX.XX**51**.XX.XX.XX



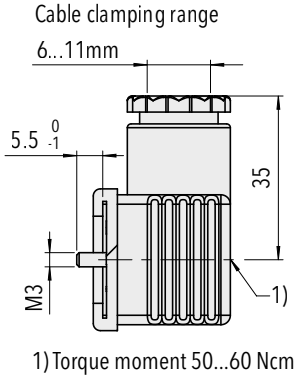
8298.XX.XX**28**.XX.XX.XX

Pressure ranges: ≤ 2500 bar



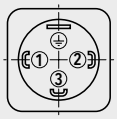
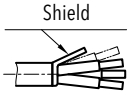
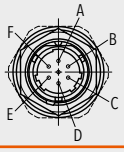
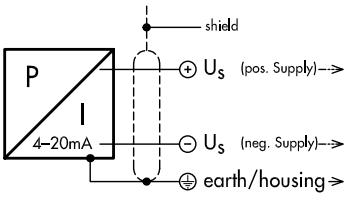
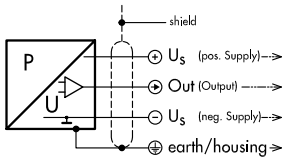
8298.XX.XX**29**.XX.XX.XX

Pressure ranges: ≤ 2500 bar



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

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

RAILWAY PRESSURE TRANSMITTER

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

Applications

- Railways

Features

- Dielectrical strength: 500 VAC, 50 Hz, meets EN50155 (Railways)
- Compact design
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 600 bar	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA	Approval / conformity	EN50155 (Railways)
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

Subject to change

Ordering information/type code

				8293 . XX	XX	XX	XX	XX	XX
Measuring 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 (O-Ring)					**17**			
	R1/4" male [2]					**19**			
	1/4"NPT male [3]					**30**			
	1/2"NPT male [3]					**51**			
Electrical connection	Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA						**04**		
	Male electrical plug EN 175301-803-A, Mat. PA, Extended vibration resistance						**05**		
	Male electrical plug MIL-C 26482, 6-pole, metal [4]						**02**		
Output signal	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**					
	4 ... 20mA	(Usupply-9V) / 20mA		9 ... 32 VDC				**19**	
Accessories	Pressure peak damping element ø 1.0 mm								**40**
	Pressure peak damping element ø 0.3 mm								**43**
	Pressure peak damping element ø 0.5 mm								**45**
	Female electrical connector: EN 175301-803-A (DIN43650-A)/Silicone, -40°C ... +125 °C								**56**
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C								**58**
	Female electrical connector MIL-C 26482, 6-pole, metal								**32**
	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)								**92**

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

Specifications

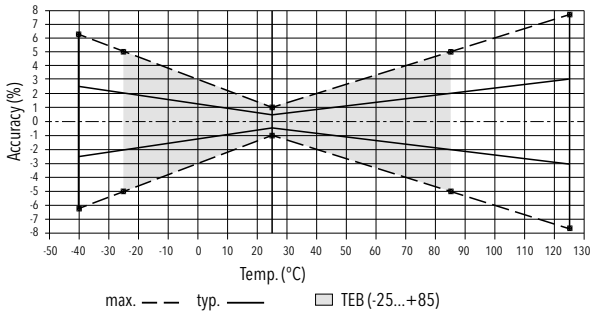
Electrical Data	Dielectric strength	500 VAC, 50 Hz
	Resistance of insulation	> 10 MΩ, 500 VDC
	Output / supply voltage	4...20 mA: 24 (9...32) VDC
	Rise time	Typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection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

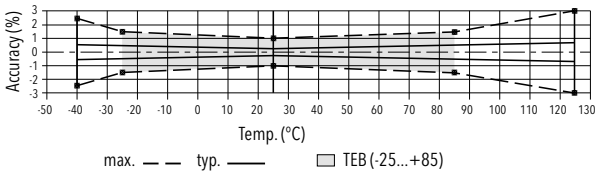
Accuracy

		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

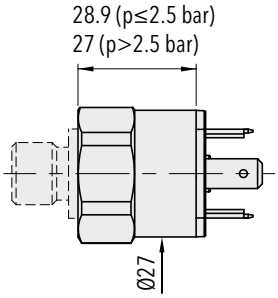
Measuring accuracy 0.5 %



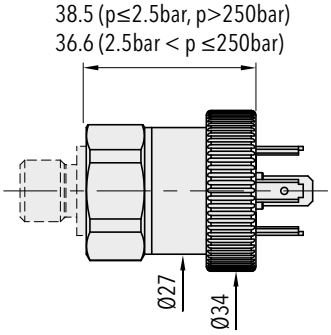
Measuring accuracy 0.3 %



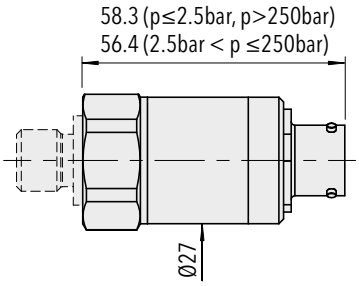
Dimensions



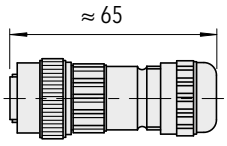
8293.XX.XXXX.**04**.XX.XX



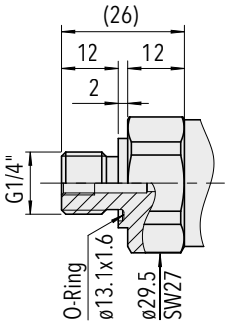
8293.XX.XXXX.**05**.XX.XX



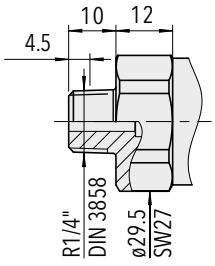
8293.XX.XXXX.**02**.XX.XX



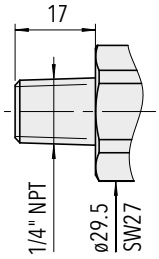
8293.XX.XXXX.02.XX.**32**



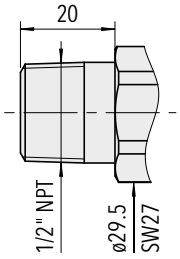
8293.XX.XX**17**.XX.XX



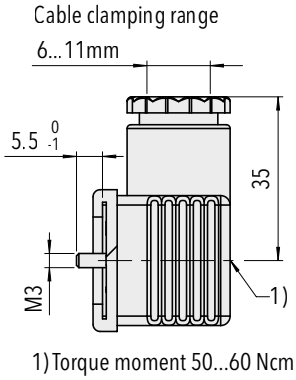
8293.XX.XX**19**.XX.XX



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

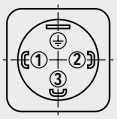
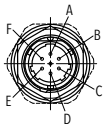
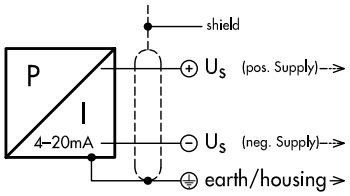


8293.XX.XX**51**.XX.XX



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

PICOTRANS

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

Applications

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

Features

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

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

Subject to change

Ordering information/type code

				8264 . XX	XX	XX	XX	XX	XX
Measuring 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 plug: 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 ... 20mA	(Usupply-9 V) / 20 mA		24 (9 ... 32) VDC				**19**	
Accessories	Flange connection with O-Ring [3]								**41**
	Pressure peak damping element ø 1.0 mm								**40**
	Pressure peak damping element ø 0.3 mm								**43**
	Pressure peak damping element ø 0.5 mm								**45**
	Welsh plug G1/8"								**57**
	Welsh plug G1/4"								**74**
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C								**58**
	Elbow connector female: 90° EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C								**55**
	Fixing set								**V3**
	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)								**92**
	Cable length 1.5 m								**1M**
	Cable length 3.0 m								**3M**
	Cable length 5.0 m								**5M**

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

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

Specifications

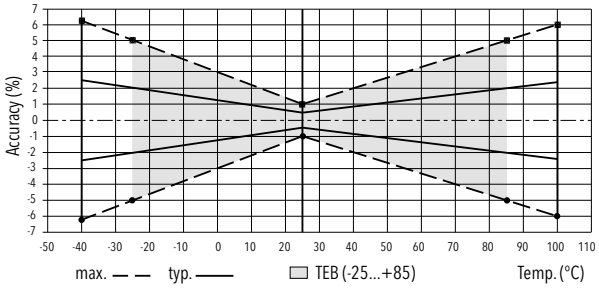
Electrical Data	Output / supply voltage	4...20 mA: 24 (9...32) VDC
	Rise time	typ. 1 ms/10...90 % nominal pressure
Environmental conditions	Media temperature	-40°C ... +100°C
	Ambient temperature	-40°C ... +100°C
	Protection [1)]	Electrical connection 04: IP65 Electrical connection 78: IP69K
	Humidity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

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

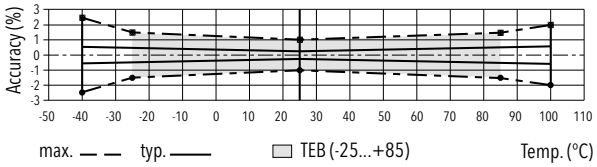
Accuracy

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

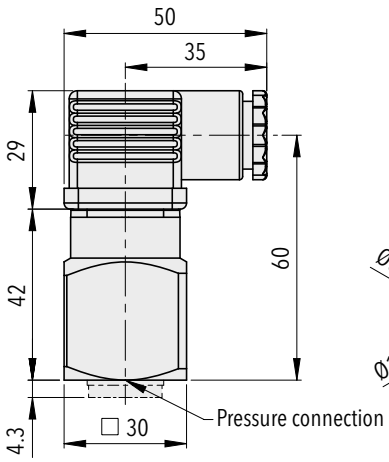
Measuring accuracy 0.5%

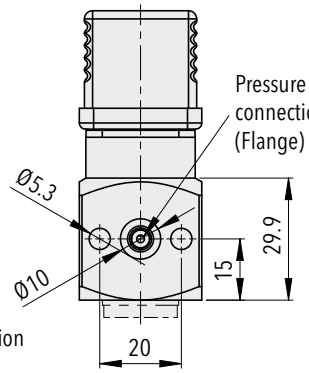


Measuring accuracy 0.3%

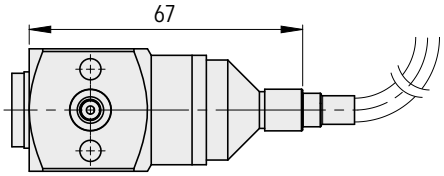


Dimensions

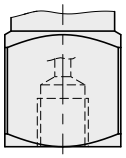




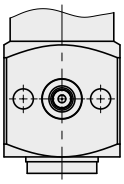
8264.XX.XXXX.**04**.XX.XX



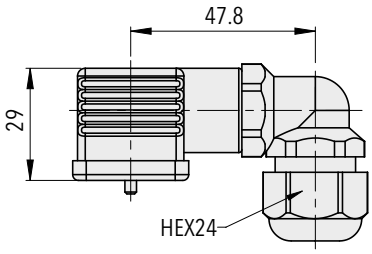
8264.XX.XXXX.**78**.XX.XX



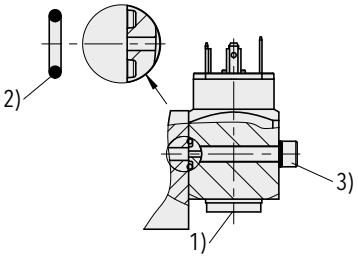
G 1/4"x12: **8264**.XX.XX**10**.XX.XX.XX
G 1/8"x10: **8264**.XX.XX**18**.XX.XX.XX
M10x1x10: **8264**.XX.XX**17**.XX.XX.XX



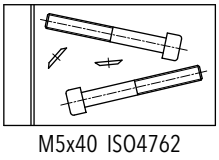
Flange: 8264.XX.XXXX.XX.XX.**41**



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

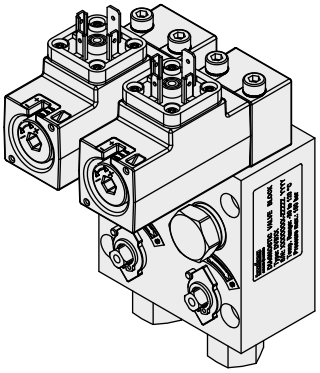


8264.XX.XXXX.XX.XX.**41**



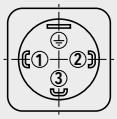
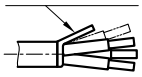
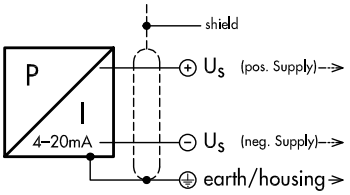
8264.XX.XXXX.XX.XX.**V3**

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



Diagnostic Valve Bloc (DVB)
see specification sheet H72361

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

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 ... 0.3 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Ambient temperature	-40°C ... +85°C (Cable PVC 22: -5°C ... +60°C)

Subject to change

Ordering information/type code

8235 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 0.3	3	6	**65**	0 ... 15	85	170	**G1**
0 ... 0.4	3	6	**69**	0 ... 30	85	170	**G5**
0 ... 0.6	3	6	**70**	0 ... 50	115	170	**G6**
0 ... 1	6	12	**71**	0 ... 100	170	260	**G7**
0 ... 2.5	6	12	**75**	0 ... 150	290	430	**G8**
0 ... 4	8	12	**76**	0 ... 250	450	690	**G9**
0 ... 6	12	18	**77**	0 ... 400	725	1080	**H0**
0 ... 10	20	30	**78**	0 ... 500	1100	1740	**H1**
0 ... 16	32	48	**79**	0 ... 1450	2900	4350	**H3**
0 ... 25	50	75	**80**				
0 ... 40	80	120	**81**				
0 ... 100	200	300	**83**				

Sensor

Relative pressure	**23**

Pressure connection

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

Electrical connection

Male electrical plug EN 175301-803-A (DIN 43650-A) Mat. PA	**05**
Male electrical plug M12x1, 5-pol., Mat. PA	**35**
Male electrical plug, Industrial standard (contact distance 9.4 mm) Mat. PBT	**01**
Male electrical plug Packard Metri Pack	**51**
Cable IP67 (cable length see "Accessories") Mat. PVC (cable gland PA6-3), -5°C ... +60°C [2]	**22**
Cable IP68 max. 3m, medium +10°C...+35°C, max. 1 bar relative	**68**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20mA	(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**

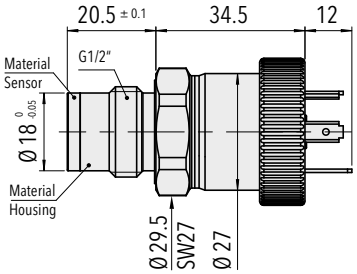
Accessories

Sealing Ring DIN 3869, Mat. FPM (FKM) -15°C ... +125°C	**61**
Sealing Ring DIN 3869, Mat. NBR, -25°C ... +100°C	**69**
Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C	**58**
Female electrical plug M12x1, 5-pole	**33**
Female electrical connector industrial standard	**34**
Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A) [2]	**92**
Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 + (only for output 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A) [2]	**98**
Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 out (Only for output 0...5VDC, 1...6VDC, 0...10VDC, 0.5...4.5VDC and male electrical plug EN175301-803-A / DIN43650-A) [2]	**97**
Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 GR (Only for output 4...20mA and male electrical plug M12x1, 5-pol.) [2]	**94**
Special electrical connection: Pin 1 + , Pin 2 - (Only for male electrical plug Packard Metri Pack 3-pol.) [2]	**99**
Membrane electropolished Ra=0.4µm	**EP**
Cable length 1.5 m	**1M**
Cable length 3.0 m	**3M**
Cable length 5.0 m	**5M**

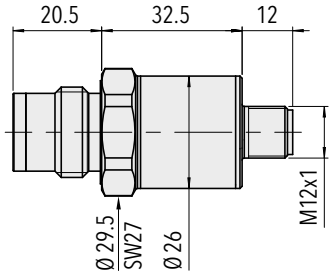
Standard products (extra short lead time)

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

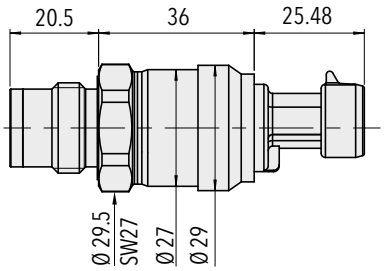
Dimensions



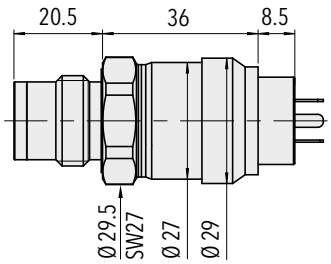
8235.XX.XX91.**05**.XX.XX



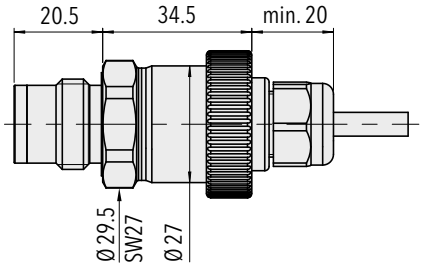
8235.XX.XX91.**35**.XX.XX



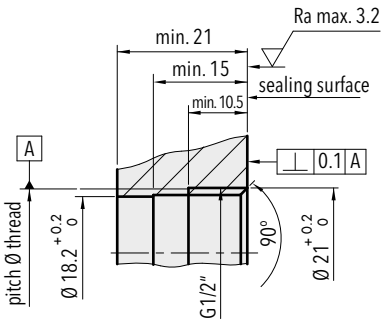
8235.XX.XX91.**51**.XX.XX



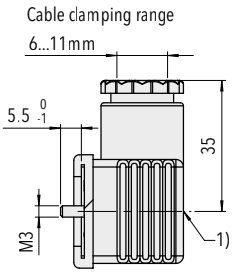
8235.XX.XX91.**01**.XX.XX



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

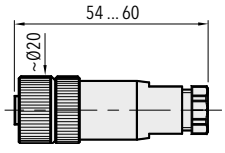


Mounting thread G1/2"
DIN EN ISO 1179-1

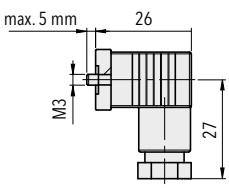


1) Torque moment 50...60 Ncm

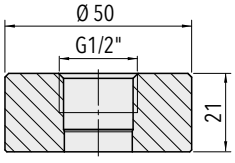
8235.XX.XXXX.XX.XX.**58**



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



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

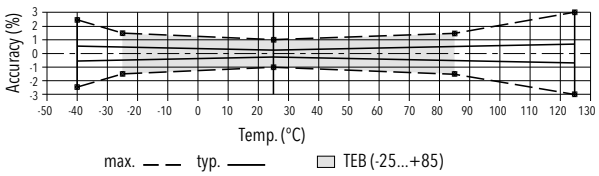


Welding flange for G1/2"
(1.4301)
Ordering No. C27804

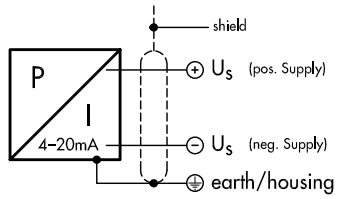
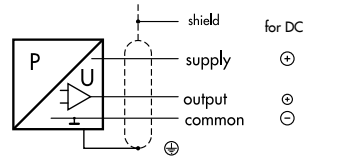
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 0.5 % FS typ.
	Accuracy @ 25°C typ.	± 0.4 % FS
	NLH @ 25°C (BSL) typ.	± 0.1 % FS typ.
	TC zero point and span typ.	± 0.005 % FS/K typ.
	Long term stability 1 year typ.	± 0.2 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 30) VDC 0 ... 5 VDC: 24 (10 ... 30) VDC 1 ... 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
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**		Packet Metri Pak 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.**14/16/17/23**	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 connector is mounted according to instructions

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

Additional information

Documents	Data sheet	www.trafag.com/H72316
	Instructions	www.trafag.com/H73316
	Flyer	www.trafag.com/H70648

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. ± 0.15 % FS typ. ± 0.1 % FS typ.
Measuring range	0 ... 0.2 to 0 ... 600 bar	Media temperature	-50°C ... +135°C
Output signal	Bus protocol CANopen DS404	Ambient temperature	-40°C ... +125°C

Subject to change

Ordering information/type code

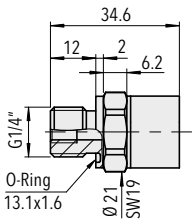
				8270 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**						
	0 ... 0.2 [2] [3] [5]	1.2	25	**68**					
	0 ... 0.4 [2] [5]	1.2	25	**69**					
	0 ... 0.6 [2] [5]	1.5	25	**70**					
	0 ... 1 [2]	2	25	**71**					
	0 ... 1.6 [2]	3.5	50	**73**					
	0 ... 2.5 [2]	5	50	**75**					
	0 ... 4	12	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	400	**82**					
	0 ... 100	200	500	**83**					
	0 ... 160	320	750	**85**					
	0 ... 250	500	1000	**74**					
	0 ... 400	800	1500	**84**					
	0 ... 600	1200	2000	**86**					
Sensor	Relative pressure, accuracy: 0.5 %			**25**					
	Relative pressure, accuracy: 0.15 %			**21**					
	Relative pressure, accuracy: 0.1 %			**24**					
	Absolute pressure, accuracy: 0.5 % [4]			**45**					
	Absolute pressure, accuracy: 0.15 % [4]			**41**					
	Absolute pressure, accuracy: 0.1 % [4]			**44**					
Pressure connection	G1/4" male (Seal)				**17**				
	1/4" NPT male				**30**				
	7/16"-20UNF male [3] [4]				**18**				
	7/16"-20UNF female, DIN3866 (valve opener) [3] [4]				**24**				
Electrical connection	Male electrical plug M12x1, 5-pole, Mat. PA					**35**			
Output signal	CANopen bus protocol with pre-adjustment Node-ID = 1, baudrate = 20 kbps						**52**		
	CANopen bus protocol with pre-adjustment, Node-ID: 1, automatic baudrate detection						**53**		
Accessories	Female electrical plug M12x1, 5-pole								**33**
	Pressure peak damping element ø 1.0 mm								**40**
	Pressure peak damping element ø 0.3 mm								**43**
	Pressure peak damping element ø 0.5 mm								**45**

[1] Extended overpressure as well as customized pressure ranges upon 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
[5] Only for sensors 0.5 % accuracy (Ordering no. 25 and 45)

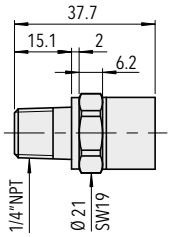
Standard products (extra short lead time)					
Product No.	**Type Code**	**Pressure range [bar]**	**Over pressure max. [bar]**	**Supply [VDC]**	**Accuracy @ 25°C typ. [%]**
CMP4.0M	8270 76 2517 35 0000 0000 52 43	0 ... 4	12	8 ... 32	± 0.5
CMP6.0M	8270 77 2517 35 0000 0000 52 43	0 ... 6	12	8 ... 32	±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

Dimensions

≤ 0 ... 2.5 bar

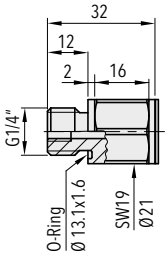


8270.XX.XX**17**.XX.XX.XX

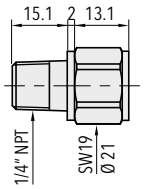


8270.XX.XX**30**.XX.XX.XX

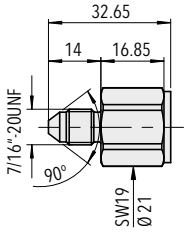
> 0 ... 2.5 bar



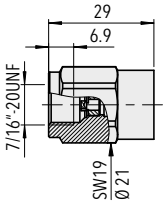
8270.XX.XX**17**.XX.XX.XX



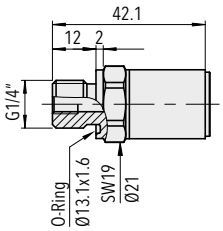
8270.XX.XX**30**.XX.XX.XX



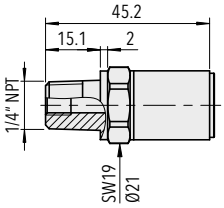
8270.XX.XX**18**.XX.XX.XX



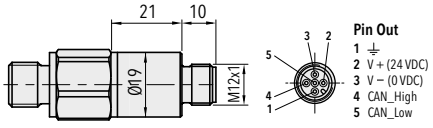
8270.XX.XX**24**.XX.XX.XX



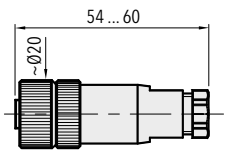
8270.XX.**4417**.XX.XX.XX



8270.XX.**4430**.XX.XX.XX



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



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

Specifications

Electrical Data	Output / supply voltage	Bus protocol CANopen / 12/24 (8...32) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Current consumption	ca. 20 mA
Environmental conditions	Media temperature	-50°C ... +135°C
	Ambient temperature	-40°C ... +125°C
	Protection [1)]	Min. IP67
	Humidity	Max. 95 % relative
	Vibration	40 g (20 ... 2000 Hz)
	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

Accuracy

		Measuring accuracy 0.5 % Ordering No. 25/45	**Measuring accuracy 0.15 %** Ordering No. 21/41	**Measuring accuracy 0.1 %** Ordering No. 24/44
TEB @ -25 ... +85°C	[% FS typ.]	± 2.0	± 0.2	± 0.1
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.15	± 0.1
NLH @ +25°C (BSL)	[% FS typ.]	± 0.3	± 0.15	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.002	± 0.002
Long term stability 1 year @ +25°C	[% FS typ.]	< ± 0.2	± 0.1	< ± 0.1
Signal of pressure sensor				
Resolution		11 bit @ 1 ms 13 bit @ ≥ 5 ms	11 bit @ 1 ms 13 bit @ ≥ 5 ms	11 bit @ 1 ms 13 bit @ ≥ 5 ms
Sampling rate (fix)		1ms (1 kHz)	1ms (1 kHz)	1ms (1 kHz)
Measuring filter (moving average)	[ms]	1 ... 65'000	1 ... 65'000	1 ... 65'000
Signal of temperature sensor				
Total error @ -25 ... +85°C	[°C typ.]	not calibrated	± 1	± 1
Sampling rate (fix)			10x100 ms (1 Hz)	10x100 ms (1 Hz)
Measuring filter (moving average)	[s]		0.1 ... 6500	0.1 ... 6500

CANopen Features

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

Additional information

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

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, RINA
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							

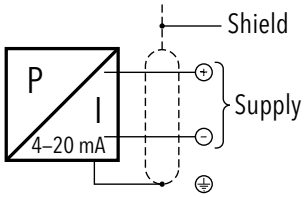
[1] Customized pressure ranges upon request

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

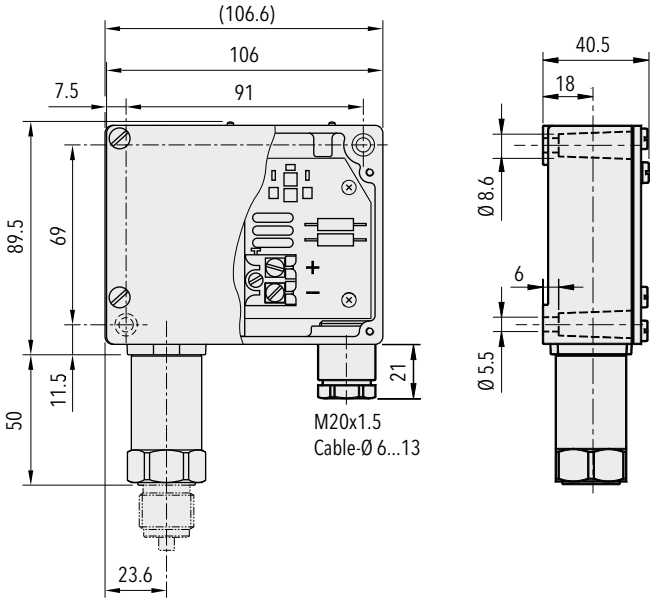
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 2 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.3 % FS typ.
	TC zero point and span typ.	± 0.02 % FS/K typ.
	Long term stability 1 year typ.	± 0.2 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (12 ...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

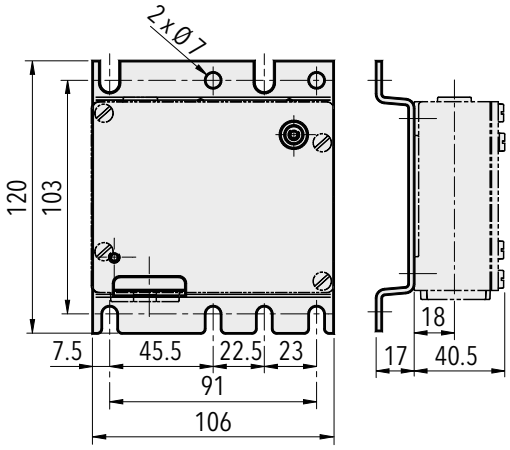


Additional information		
Documents	Data sheet	www.trafag.com/H72206
	Instructions	www.trafag.com/H70722
	Flyer	www.trafag.com/H70677

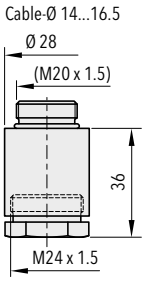
Dimensions



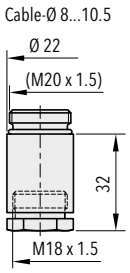
8202.XX.XXXX.XX.XX



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	Media temperature	-25°C ... +125°C
Measuring range	0 ... 1 to 0 ... 16 bar	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA (P1–P2)	Approval / conformity	BV, DNV, RINA
Accuracy @ 25°C typ.	± 0.8 % 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	Fixing Standard					**00**	
	Wall mounting bracket					**31**	
Accessories	Connector with marine cable gland DIN89280, M24x1.5 (Cable -ø 14...16.5)						**27**
	Connector with marine cable gland DIN89280, M18x1.5 (Cable -ø 8...10.5)						**40**
	Damping elements and Snubber: See specification sheet H72258						

[1] Customized pressure ranges upon request

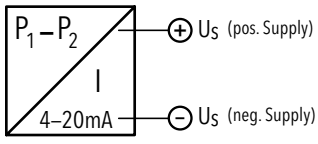
Standard products (extra short lead time)

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

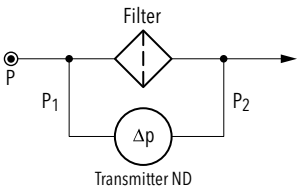
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 3.5 % FS typ.
	Accuracy @ 25°C typ.	± 0.8 % FS typ
	NLH @ 25°C (BSL) typ.	± 0.5 % FS typ.
	TC zero point and span typ.	± 0.04 % FS/K typ.
	Long term stability 1 year typ.	± 0.4 % FS typ.
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (12 ...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

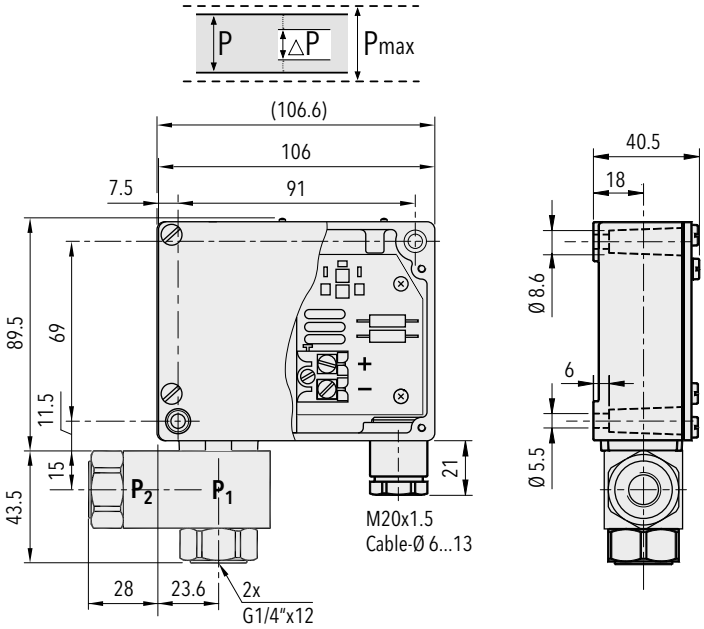


Functional diagram

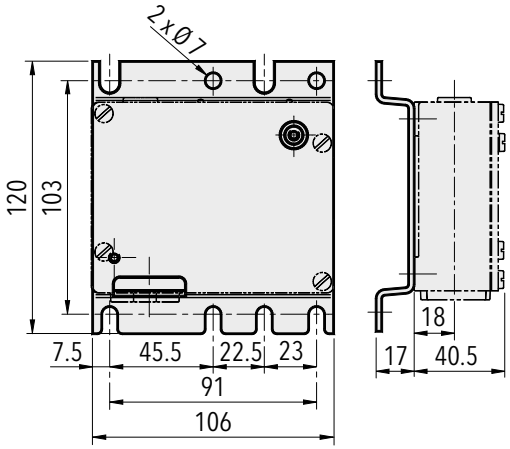


Δp = Differential Pressure
P_1 = Higher pressure
P_2 = Lower pressure
P = System pressure

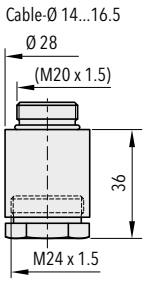
Dimensions



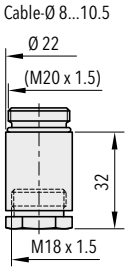
8204.XX.2210.XX.XX



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

EX PRESSURE TRANSMITTER

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

Applications

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

Features

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

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

Subject to change

Ordering information/type code

8292 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 0.4 [2]	1.2	25	**69**	0 ... 5 [2]	18	350	**F9**
0 ... 0.6 [2]	1.5	25	**70**	0 ... 10 [2]	25	350	**G0**
0 ... 1.0 [2]	2.0	25	**71**	0 ... 15 [2]	30	350	**G1**
0 ... 1.6	3.5	80	**73**	0 ... 25	50	1200	**G3**
0 ... 2.5	5	100	**75**	0 ... 30	30	720	**G5**
0 ... 4	8	100	**76**	0 ... 50	120	860	**G6**
0 ... 6	12	100	**77**	0 ... 100	170	1450	**G7**
0 ... 10	20	200	**78**	0 ... 150	290	2900	**G8**
0 ... 16	32	200	**79**	0 ... 250	460	2900	**G9**
0 ... 25	50	300	**80**	0 ... 400	730	4350	**H0**
0 ... 40	80	300	**81**	0 ... 500	1160	4350	**H1**
0 ... 60	120	500	**82**	0 ... 1000	1740	5800	**H2**
0 ... 100	200	500	**83**	0 ... 1500	2900	7250	**H3**
0 ... 160	320	1000	**85**	0 ... 2000	4640	10850	**H5**
0 ... 250	500	1000	**74**	0 ... 3000	7250	14500	**G4**
0 ... 400	800	1500	**84**	0 ... 5000	11600	21750	**H4**
0 ... 600	1000	2000	**86**	0 ... 7500	14500	29000	**H6**
0 ... 1000 [9]	1600	3000	**88**	0 ... 15000 [9]	25000	45000	**H8**
0 ... 1600	3000	4000	**89**	0 ... 25000	45000	60000	**H9**
0 ... 2000	3000	4000	**90**	0 ... 30000	45000	60000	**J0**

Sensor

Relative pressure, accuracy: 0.3% (> 1 bar)	**23**
Relative pressure, accuracy: 0.5% (> 1 bar)	**25**
Relative pressure, accuracy: 0.5% (≤ 1 bar)	**26**
Relative pressure, accuracy: 0.5 %, wetted parts hydrogen compatible [7] [8]	**35**
Relative pressure, accuracy: 0.3 %, wetted parts hydrogen compatible [7] [8]	**33**

Pressure connection

G1/4" male [3]	**17**
G1/4" male (Manometer) EN 871 [3] [8]	**53**
G1/4" female [3] [8]	**10**
G1/2" male [3] [8]	**21**
G1/2" male (Manometer) [3] [8]	**11**
R1/4" male [3] [8]	**19**
1/4" NPT male [3] [8]	**30**
M18x1.5 male (conical seal: 58°) [4] [8]	**29**

Electrical connection

Male electrical plug EN 175301-803-A, plastic (only zones 1, 2 (gas) and 20, 21 (dust))	**05**
Male electrical plug M12x1, 5-pole, metal	**35**
Male electrical plug MIL-C 26482, 6-pole, metal [5]	**02**
Male electrical plug Binder 723, 5-pole, metal	**14**
Cable with shield, material FDR 25 (Raychem), 4 x 0.5mm² (cable length see "Accessories") - not ship approved	**78**
Cable intrinsically safe with shield, material PVC, 2 x 0.75mm² (-40...+80°C), (cable length see "Accessories") - not ship approved	**80**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-10 V) / 20 mA		10 ... 30 VDC	**19**

		8292 . XX	XX	XX	XX	XX	XX
Accessories	Female electrical connector EN 175301-803-A (DIN43650-A), plastic (only zones 1, 2 (gas) and 20, 21 (dust))						58
	Female electrical plug M12x1, 5-pole, plastic (only zones 1, 2 (gas) and 20, 21 (dust))						33
	Female electrical plug M12x1, 5-pole, metal						35
	Female electrical connector MIL-C 26482, 6-pole, metal						32
	Female electrical connector Binder 723, 5-pole, metal						37
	Pressure peak damping element ø 0.4 mm						44
	Pressure peak damping element ø 1.0 mm						40
	Cable length 1.5 m [6]						1M
	Cable length 3.0 m [6]						3M
	Cable length 5.0 m [6]						5M
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical plug EN175301-803-A / DIN43650-A)						92
	Zener barrier 28V/93mA; R ≈300Ω: Ordering no ZEN28VDC						
	Damping elements and snubber see data sheet H72258						

[1] Extended overpressure as well as customized pressure ranges upon 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
[8] Upon request
[9] With sensors 33 and 35: Overpressure 1300 bar/19000 psi, Burst pressure 2600 bar/38000 psi

Standard products (extra short lead time)

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

Specifications

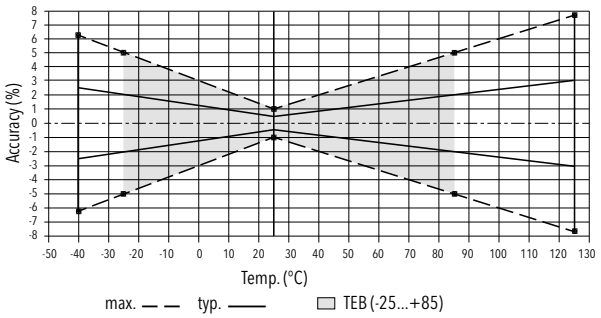
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (10 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
Environmental conditions	Media temperature	Max. –40°C ... +120°C (see electrical connection)
	Ambient temperature	Max. –40°C ... +120°C (see electrical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

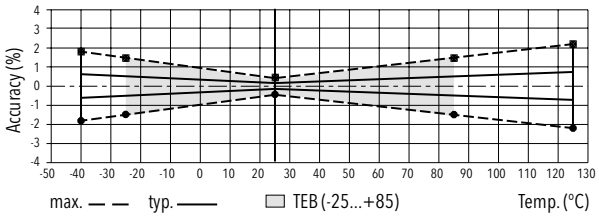
Accuracy

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

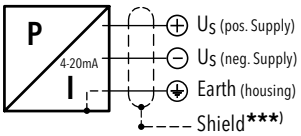
Class 0.5 %



Class 0.3 %



Electrical connection

		Protection / electrical connection						
		IP65*)		IP67	IP67	IP65*)	IP67*)	IP65*)
		Industrial standard EN175301-803A		Cable **) (4 x 0.5 mm²)	Cable **) (2 x 0.75 mm²)	Binder 723	MIL-C 26482	M12x1 5-pole
		05		**78** Shield	**80** Shield	**14**	**02**	**35**
Output signal	 **8292** .xx.xxxx.xx.**19**	Standard	**92**					
		2	1	brown	1 (black)	3	A	4
		1	2	black	2 (black)	1	C	1
		⏚	⏚	yellow / green (blue = not connected)	–	5	F	5
T-Range	Ambient and media temperature T4	–40 ... +120°C		–40 ... +120°C	–40 ... +80°C	–30 ... +95°C	–40 ... +120°C	–40 ... +120°C
	Ambient and media temperature T6	–40 ... +65°C		–40 ... +65°C	–40 ... +65°C	–30 ... +65°C	–40 ... +65°C	–40 ... +65°C

*) Provided female connector is mounted according to instructions

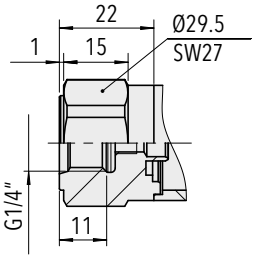
**) Ventilation via cable end

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

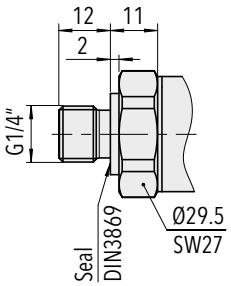
Additional information

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

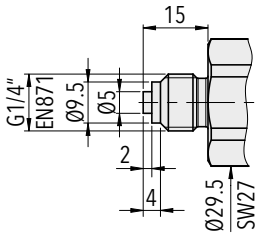
Dimensions



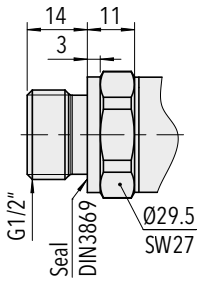
8292.XX.XX**10**.XX.XX.XX
(≤ 600 bar)



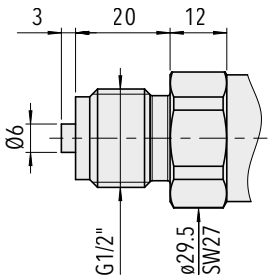
8292.XX.XX**17**.XX.XX.XX
(≤ 600 bar)



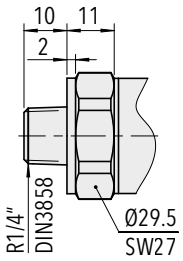
8292.XX.XX**53**.XX.XX.XX



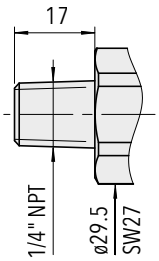
8292.XX.XX**21**.XX.XX.XX
(≤ 600 bar)



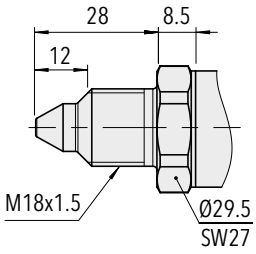
8292.XX.XX**11**.XX.XX.XX
(≤ 600 bar)



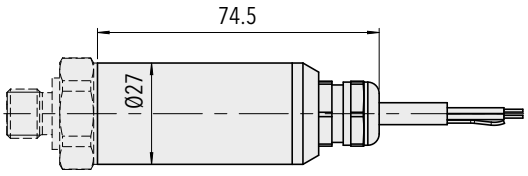
8292.XX.XX**19**.XX.XX.XX
(≤ 600 bar)



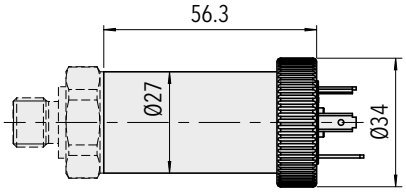
8292.XX.XX**30**.XX.XX.XX
(≤ 600 bar)



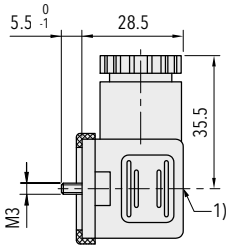
8292.XX.XX**29**.XX.XX.XX
(> 600 bar)



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

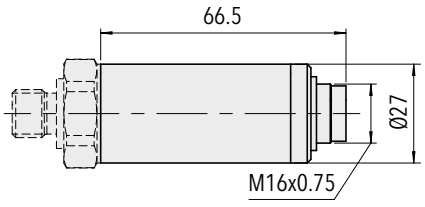


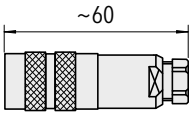
8292.XX.XXXX.**05**.XX.XX



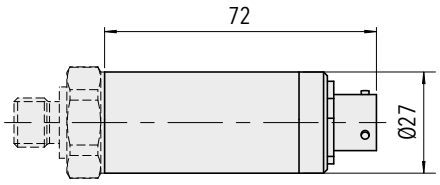
1) Tightening torque 50...60Ncm

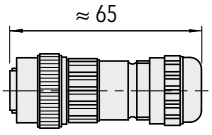
8292.XX.XXXX.XX.XX.**58**



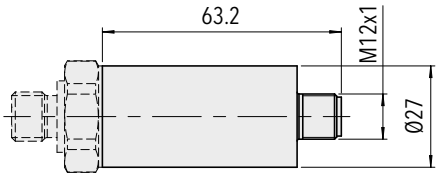


8292.XX.XXXX.**14**.XX.**37**

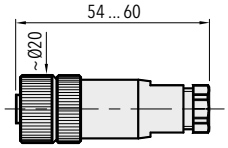




8292.XX.XXXX.**02**.XX.**32**



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



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

EX PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. 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	II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC IP6x T145 ... T70°C I M1 Ex ia I
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)	**P1**
Type 01 absolute (Accuracy NLH BSL ± 0.1 % FS)	**A1**

Pressure connection

1/4" NPT male	**30**
1/2" NPT male	**39**
G1/4" female	**10**
G1/4" male	**15**
G1/2" male	**21**
G1/2" male, frontal membrane	**31**
G1/2" male, flush membrane	**32**

Electrical connection

Male electrical plug EN 175301-803-A, Mat. plastic	**05**
Male electrical plug Binder 723, 5-pole, Metal	**14**
Male electrical plug MIL-C 26482, 6-pole, Metal	**02**
Female electrical plug M12x1, 5-pole, Metal	**35**
PUR cable, length ... mm (IP67) [5]	**22**
FEP cable, length ... mm (IP67)	**32**

Output

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 28 VDC	**19**

Accessories

Special oil filling: Aseol	**94**
Special oil filling: Halocarbon [3] [4]	**95**
Female electrical connector EN 175301-803-A (DIN43650-A)	**58**
Female electrical connector Binder 723, 5-pole, metal	**37**
Female electrical connector MIL-C 26482, 6-pole, metal	**32**
Temperature class T3	**T3**
Temperature class T4	**T4**
Temperaturklasse T6	**T6**
Pressure peak damping element [2]	**DE**
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

Specifications

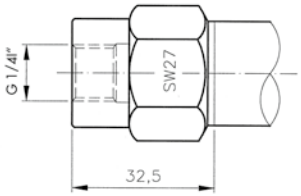
Electrical Data	Zener barrier	28 V/ 93 mA/ 0.65 W
	Output / supply voltage	4 ... 20 mA: 9 ... 28 VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
Environmental conditions	Media temperature	T3: -40°C ... +150°C T4: -40°C ... +100°C T6: -40°C ... +50°C
	Ambient temperature	T3: -40°C ... +125°C T4: -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

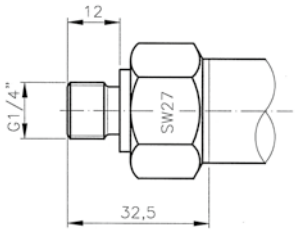
Accuracy

		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

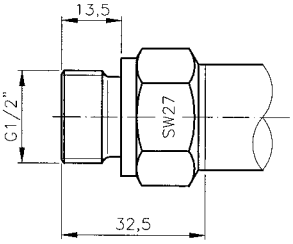
Dimensions



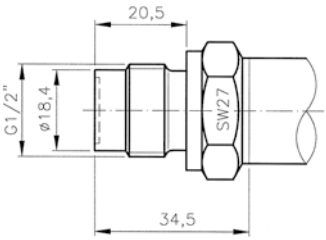
8854.XX.XX**10**.XX.XX.XX



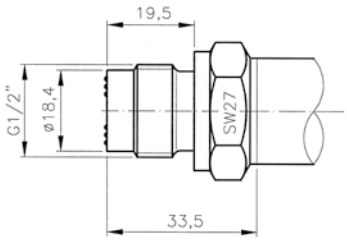
8854.XX.XX**15**.XX.XX.XX



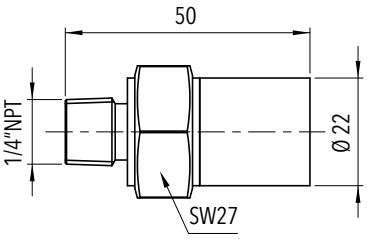
8854.XX.XX**21**.XX.XX.XX



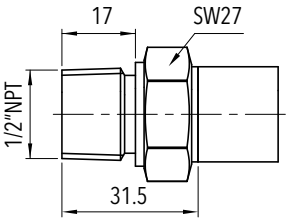
8854.XX.XX**31**.XX.XX.XX



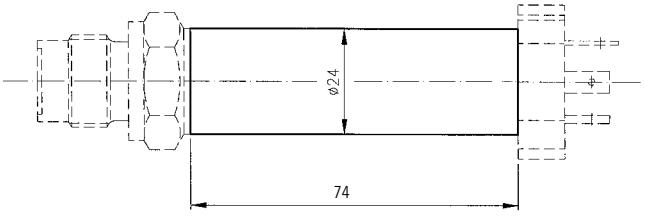
8854.XX.XX**32**.XX.XX.XX



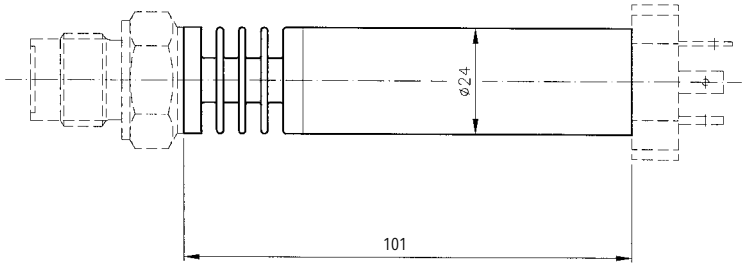
8854.XX.XX**30**.XX.XX.XX



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

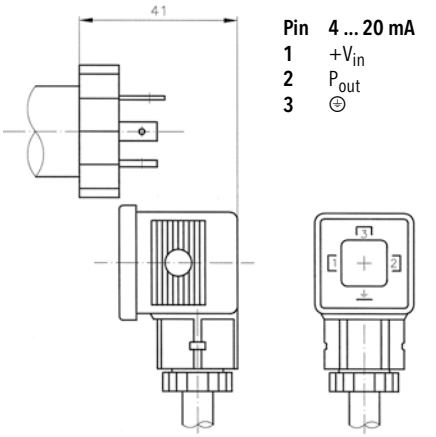


8854.XX.XXXX.XX.XX.**T4**
8854.XX.XXXX.XX.XX.**T6**



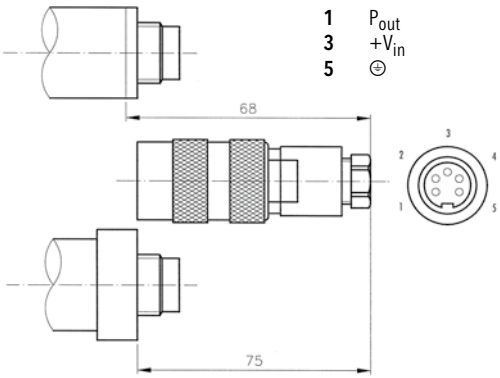
8854.XX.XXXX.XX.XX.**T3**

Dimensions



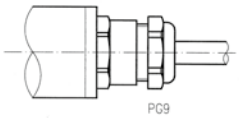
Pin	4 ... 20 mA
1	$+V_{in}$
2	P_{out}
3	⏚

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



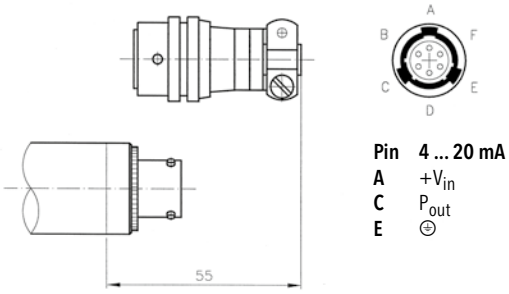
Pin	4 ... 20 mA
1	P_{out}
3	$+V_{in}$
5	⏚

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



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

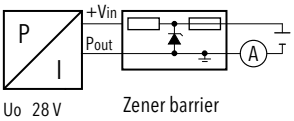
8854.XX.XXXX.**32**.XX.XX



Pin	4 ... 20 mA
A	$+V_{in}$
C	P_{out}
E	⏚

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

Electrical Connection



Zener barrier

Uo 28 V
Io 93 mA
Po 0.65 W

Additional information

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

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

Subject to change

Ordering information/type code

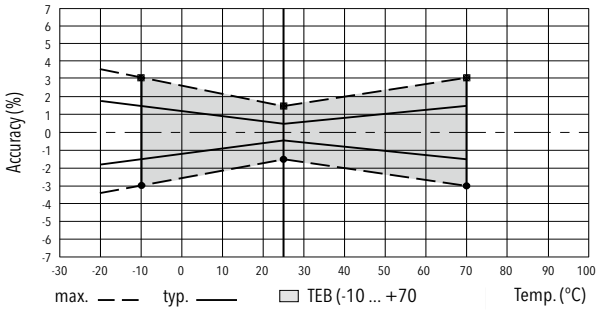
				8432 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**						
	0 ... 0.2	1.2	2	**68**					
	0 ... 0.4	1.2	2	**69**					
	0 ... 0.6	2	3	**70**					
	0 ... 1.0	3.2	4.8	**71**					
	0 ... 1.6	3.2	4.8	**73**					
	0 ... 2.5	5	7.5	**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] [3]						**22**		
	Cable with shield: FEP ø 6 mm, 5x0.22mm² [2] [3]						**32**		
	Cable with shield: PE ø 6 mm, 6x0.22mm² [2] [3]						**42**		
Output	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**					
	4 ... 20 mA	(Usupply-10 V) / 20 mA		10 ... 30 VDC				**19**	
Accessories	Seal FKM								**61**
	Seal EPDM								**63**
	Zener barrier 28V/93mA; R ≈300Ω: Ordering no ZEN28VDC								

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

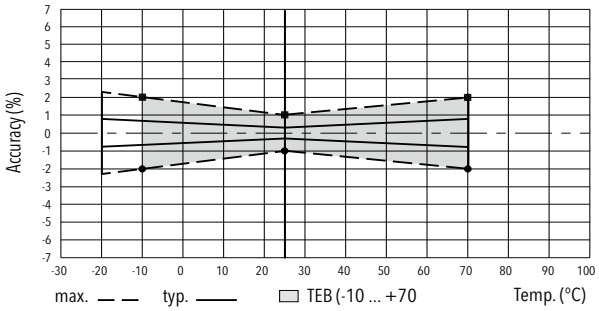
Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (10 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	max. 1.5 s
Environmental conditions	Media temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
	Ambient temperature	T4: -20°C ... +70°C T6: -20°C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

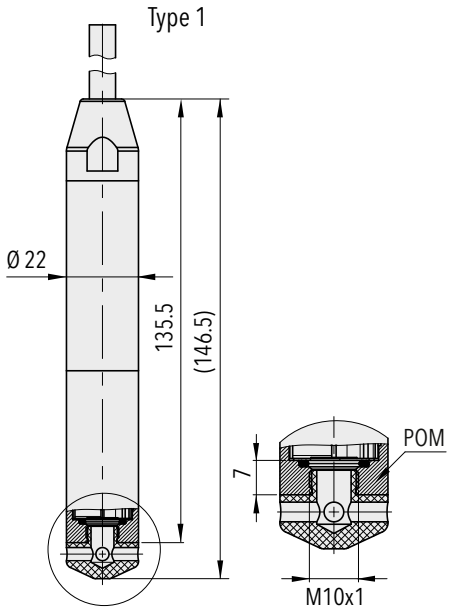
Measuring accuracy 0.5%



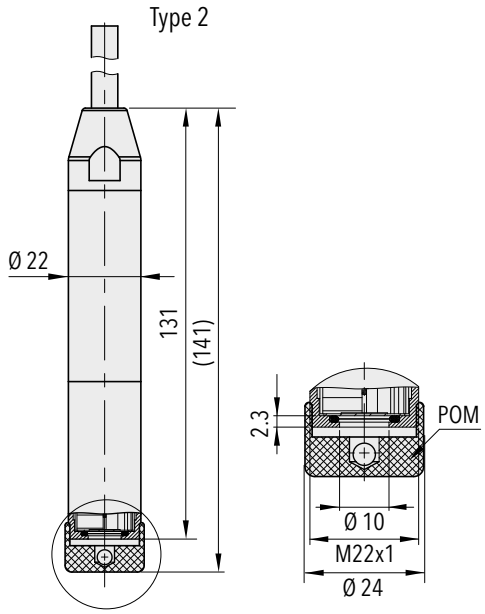
Measuring accuracy 0.3%



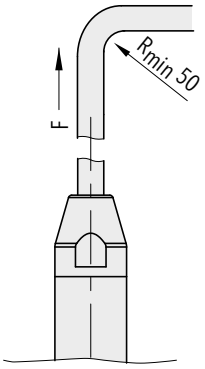
Dimensions



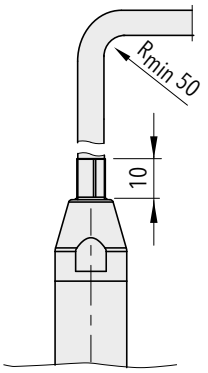
8432.XX.XX**46**.XX.XX.XX



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

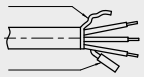
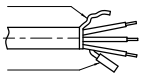
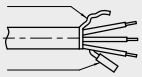
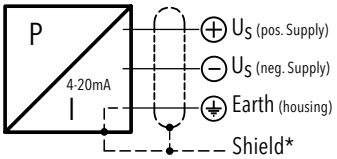


8432.XX.XXXX.**22**.XX.XX



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

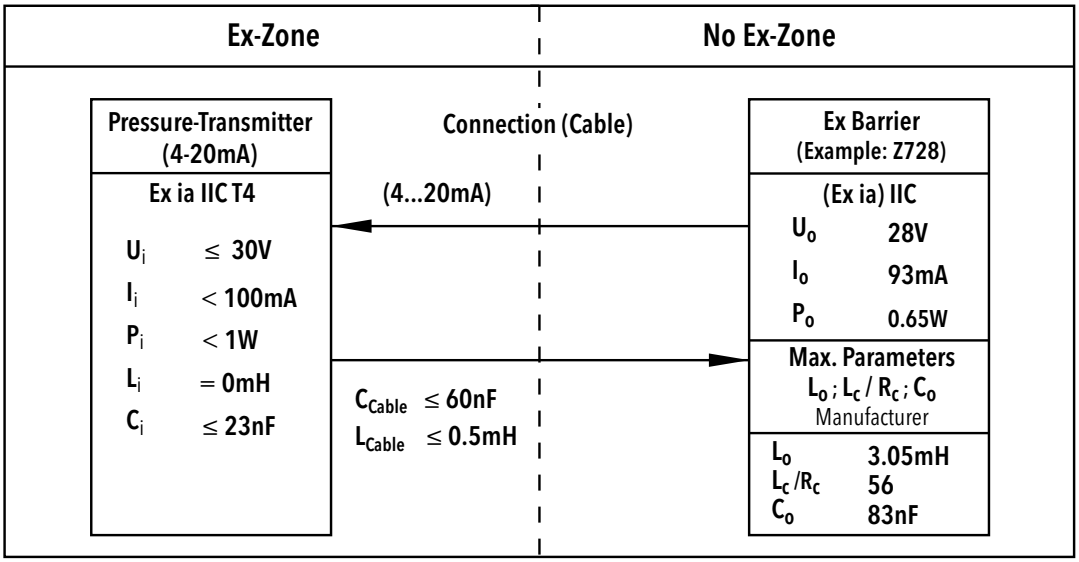
Electrical connection

		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
- PUR, PE or Teflon cables
- Chemical resistant material, e.g. titanium
- Explosion-proof Ex ia IIC T3 ... T6
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

Technical Data			
Measuring principle	Piezoresistive	Ambient temperature	T4/T6: -5°C ... +50°C
Measuring range	0 ... 0.1 to 0 ... 25 bar	Approval / conformity	GL, KRS
Output signal	4 ... 20 mA	Type of protection	Ex II 1G Ex ia IIC T3 ... T6 II 1D Ex ia IIIC IP6x T125°C ... T80°C I M1 Ex ia I
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]						**22**		
	Cable PE [3]						**29**		
	Cable Teflon [3]						**32**		
Output signal	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**					
	4 ... 20 mA							**19**	
	4 ... 20 mA with lightning protection (Surge)							**09**	
Accessories	Special oil filling: Aseol [4]								**94**
	Special oil filling: Halocarbon [4]								**95**
	Temperature class T4 [4]								**T4**
	Temperaturklasse T6 [4]								**T6**
	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	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	1.4435 (AISI316L) or titanium
	Sealing	FKM
	Male electrical plug	See ordering information
	Weight	~ 200 g
	Mounting torque	25 Nm

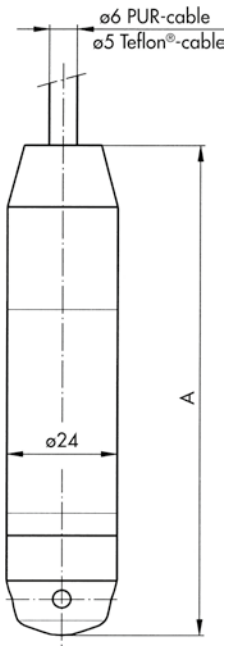
Accuracy

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

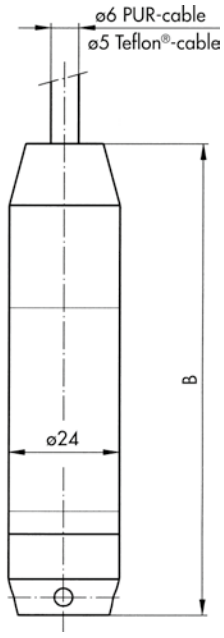
Additional information

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

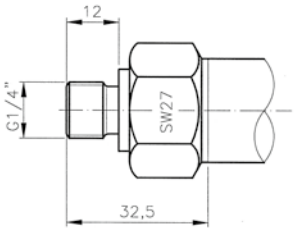
Dimensions



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



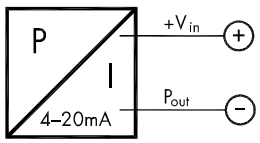
8858.XX.XX.**40**.XX.XX.XX



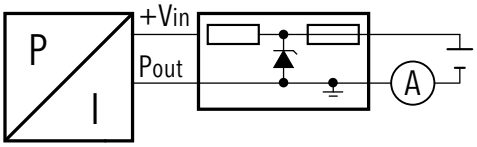
8858.XX.XX.15.XX.XX.XX

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

Electrical connection



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



Zener barrier

SUBMERSIBLE PRESSURE TRANSMITTER

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

Applications

- Process technology
- Water treatment

Features

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

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

Subject to change

Ordering information/type code

				8438 . XX	XX	XX	XX	XX	XX
Measuring 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] [3]						**22**		
	Cable: FEP ø 6 mm [2] [3]						**32**		
	Cable: PE ø 6 mm [2] [3]						**42**		
Output	**Signal output**	**Load resistance**	**I (supply)**	**U (supply)**					
	4 ... 20mA	(Usupply-9V) / 20mA		9 ... 30 VDC				**19**	
Accessories	Seal FKM								**61**
	Seal CR								**62**
	Seal EPDM								**63**

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

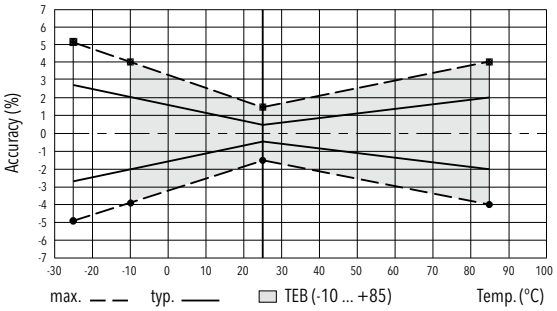
Standard products (extra short lead time)

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

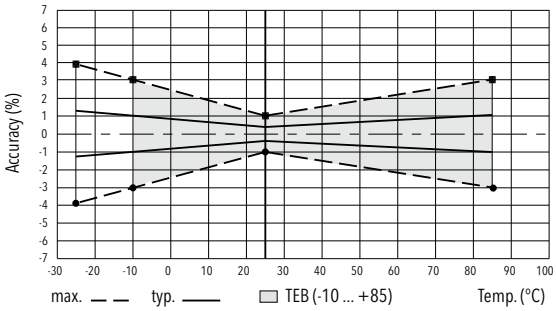
Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9 ... 32) VDC
	Rise time	Typ. 1 ms/10...90 % nominal pressure
	Switch-on-delay	Max. 1.5 s
Environmental conditions	Media temperature	-25°C ... +80°C (+70°C)
	Ambient temperature	-25°C ... +80°C (+70°C)
	Protection	IP68 (25 bar;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

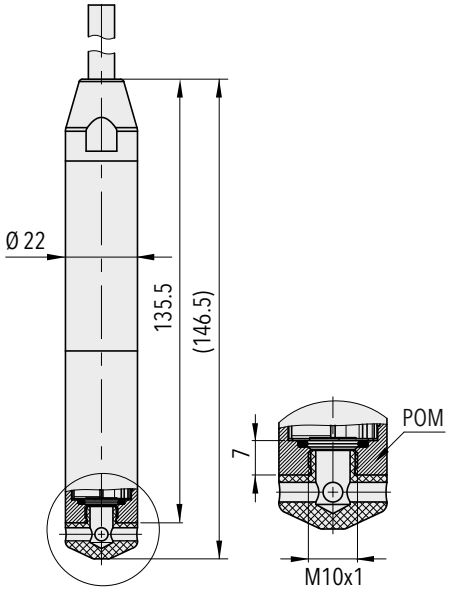
Measuring accuracy 0.5%



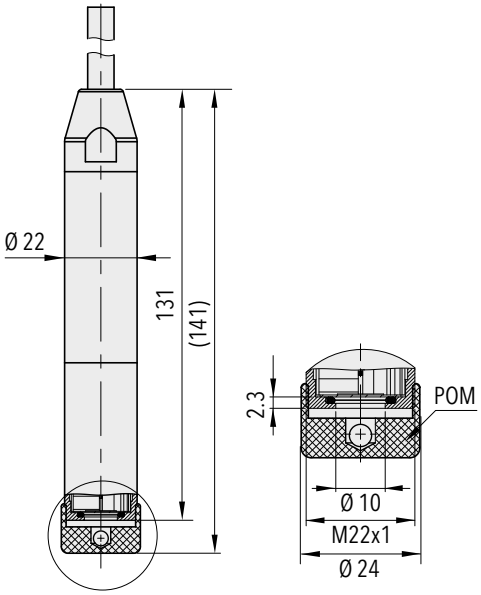
Measuring accuracy 0.3%



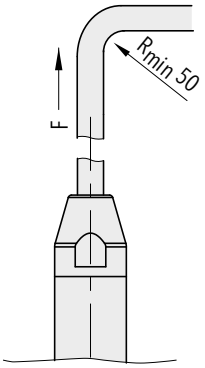
Dimensions



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

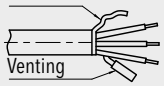
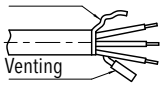
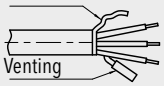
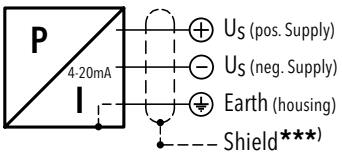


8438.XX.XX**48**.XX.XX.XX



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. 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

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

Features

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

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

Subject to change

Ordering information/type code

8439 . XX XX XX XX XX XX

Measuring 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	45	70	**G2**

Configurable measuring ranges Standard, see table on page 3

Sensor	Relative pressure	**23**
Housing	Housing AISI316L, standard version [2]	**58**
	Housing 1.4462, standard version [2] [3]	**55**
	Housing AISI316L, OEM-version [2]	**56**
	Housing 1.4462, OEM-version [2] [3]	**50**
	Housing AISI316L, Serto Connection [2] [3]	**60**

Electrical connection	Cable PUR, Ø 6 mm, L = 5 m	**21**	Cable Radox, Ø 6 mm, L = 25 m	**35**
	Cable PUR, Ø 6 mm, L = 10 m	**22**	Cable Radox, Ø 6 mm, L = 30 m	**36**
	Cable PUR, Ø 6 mm, L = 15 m	**23**	Cable Radox, Ø 6 mm, customized (L = max. 50 m)	**30**
	Cable PUR, Ø 6 mm, L = 20 m	**24**	Cable PE, Ø 6 mm, L = 5 m	**41**
	Cable PUR, Ø 6 mm, L = 25 m	**25**	Cable PE, Ø 6 mm, L = 10 m	**42**
	Cable PUR, Ø 6 mm, L = 30 m	**26**	Cable PE, Ø 6 mm, L = 15 m	**43**
	Cable PUR, Ø 6 mm, customized (L = max. 50 m)	**20**	Cable PE, Ø 6 mm, L = 20 m	**44**
	Cable Radox, Ø 6 mm, L = 5 m	**31**	Cable PE, Ø 6 mm, L = 25 m	**45**
	Cable Radox, Ø 6 mm, L = 10 m	**32**	Cable PE, Ø 6 mm, L = 30 m	**46**
	Cable Radox, Ø 6 mm, L = 15 m	**33**	Cable PE, Ø 6 mm, customized (L = max. 50 m)	**40**
	Cable Radox, Ø 6 mm, L = 20 m	**34**		
Output signal	4 ... 20 mA	**19**		
Accessories	Seal FKM / FPM / Viton	**61**		
	Seal EPDM / TPE	**63**		

[1] Extended overpressure as well as customized pressure ranges upon request
[2] See "Dimensions"
[3] Upon request

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

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

Configuration of the measuring ranges

All measurement 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 (available from the 2nd quarter of 2018)
- Data sheet SMI Sensor Master Interface: H72618

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

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

[1] Extra short lead time

[2] Cable PUR or PE only usable inside tank

Specifications		
Electrical Data	Output / supply voltage	4...20 mA: 24 (9...32) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay	100 ms
Environmental conditions	Media temperature [1]	max. -25°C ... +70°C
	Ambient temperature	max. -25°C ... +70°C
	Protection	IP68 (2.0 bar/20 m)
	Vibration	20 g (40 ... 2000 Hz) 15 grms (20 ... 2000 Hz)
	Shock	50 g / 8 ms
EMC Protection	Emission	EN/IEC 61000-6-3 / DNVGL-CG-0339
	Immunity	EN/IEC 61000-6-2 / DNVGL-CG-0339
Mechanical Data	Sensor (wetted parts)	Ceramic, Al_2O_3 (96%)
	Pressure connection (wetted parts)	1.4404 (AISI316L) or 1.4462 (AISI318LN)
	Housing	1.4404 (AISI316L) or 1.4462 (AISI318LN)
	Sealing	FKM (FPM, Viton), EPDM (TPE)
	Weight	~ 200 g (without cable) / OEM ~ 150 g

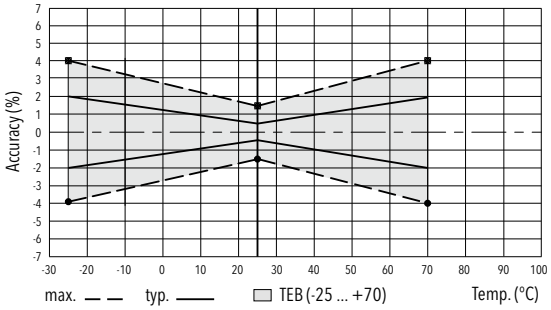
[1] see table Temperature ranges

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	

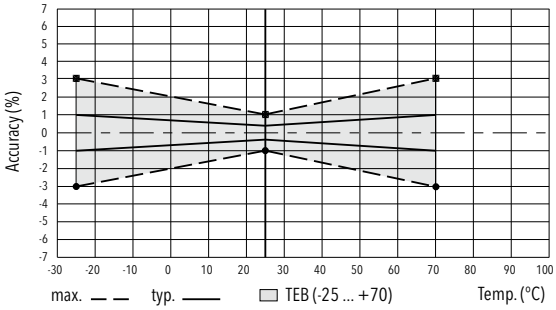
Accuracy		**Measuring accuracy 0.3 %** Measuring ranges ≥ 0.3 bar	**Measuring accuracy 0.5 %** Measuring ranges < 0.3 bar
TEB @ -25 ... +70°C	[% FS typ.]	± 1.0	± 2.0
Accuracy @ +25°C	[% FS typ.]	± 0.3	± 0.5
NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.3
TC zero point and span	[% FS/K typ.]	± 0.02	± 0.02
Long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

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

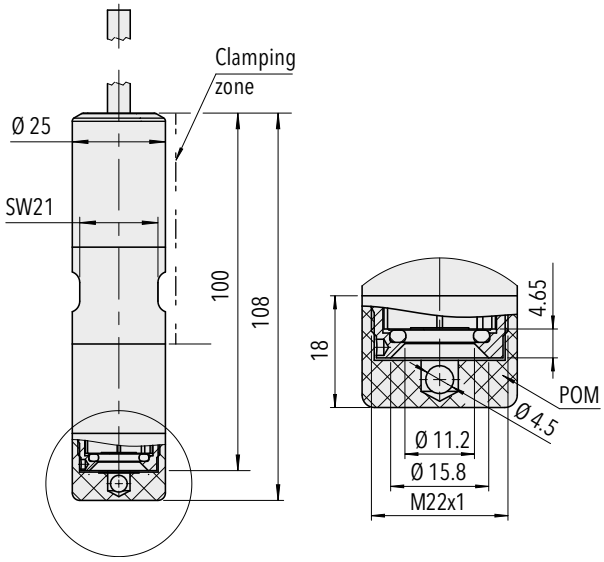
Measuring accuracy 0.5 %



Measuring accuracy 0.3 %

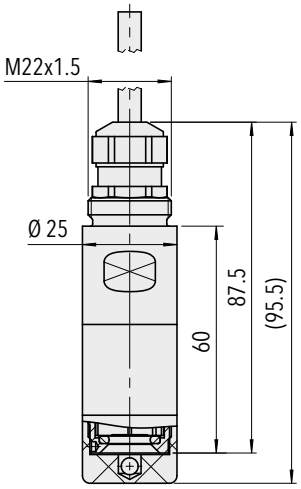


Dimensions



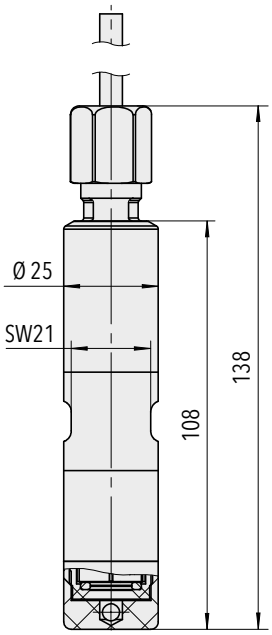
8439.XX.XX**58/55**.XX.XX.XX

Standard version



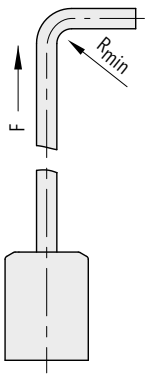
8439.XX.XX**56/50**.XX.XX.XX

OEM-version



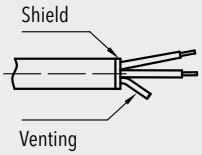
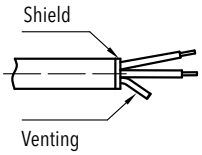
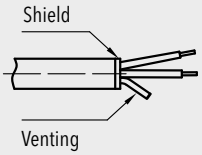
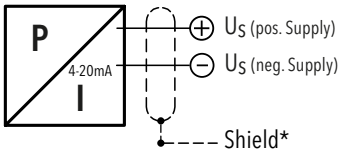
8439.XX.XX**60**.XX.XX.XX

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 (2.0 bar/20 m)	IP68 (2.0 bar/20 m)	IP68 (2.0 bar/20 m)
		Cable PUR Ø 6 mm (5x0.22mm²)	Cable Radox Ø 6 mm (5x0.22mm²)	Cable PE Ø 6 mm (5x0.22mm²)
		2X	**3X**	**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)	white brown (yellow = not connected) (green = not connected) (red = not connected)
T-Range	Minimum cable bending radius R_{min}	40 mm	60 mm	30 mm
	Ambient and media temperature	-25°C ... +70°C	-25°C ... +70°C	-20°C ... +65°C

* Shield not connected

Additional information

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

SUBMERSIBLE PRESSURE TRANSMITTER

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

Applications

- Shipbuilding
- Process technology
- Water treatment

Features

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

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

Subject to change

Ordering information/type code

				8838 . XX	XX	XX	XX	XX	XX
Measuring 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 Teflon [3]						**32**		
	Cable PE [3]						**29**		
Output	4 ... 20 mA							**19**	
	4 ... 20 mA with lightning protection (Surge)							**09**	
	0 ... 10 VDC							**17**	
Accessories	Detachable cable [4]								**37**
	Special oil filling Aseol [4]								**94**
	Special oil filling Halocarbon [4]								**95**
	Electronics packed in gel [4]								**96**
	Application for seawater [4]								**97**

[1] Customized pressure ranges upon request
[2] Accuracy NLH see table
[3] Please specify the cable length when ordering
[4] Please specify the measuring medium when ordering

Standard products (extra short lead time)

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

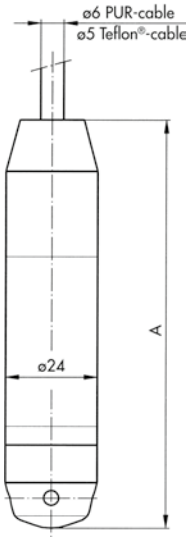
Specifications

Electrical Data	Output / supply voltage	4...20 mA: 9...33 VDC 0...10 VDC: 15...30 VDC
	Load	4...20 mA: $R_L \leq (U_S\text{-}9V)/20\ mA$ 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	6g (25...2000 Hz)
	Shock	50g/ 11 ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor	1.4435 (AISI316L)
	Housing / Pressure connection	1.4435 (AISI316L) or titanium
	Sealing	FKM
	Male electrical plug	See ordering information
	Weight	~ 220 g
	Mounting torque	25 Nm

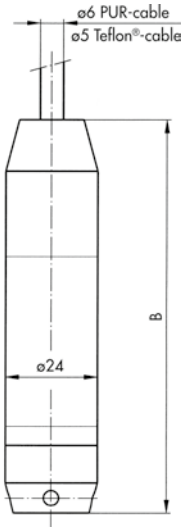
Accuracy

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

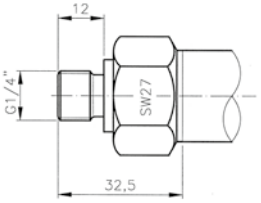
Dimensions



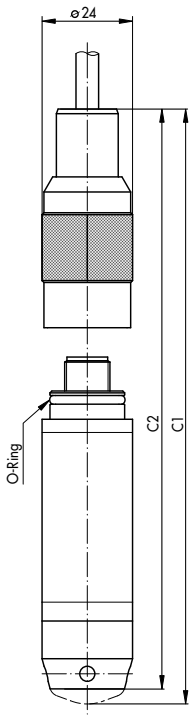
8838.XX.XX.**41**.XX.XX.XX



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



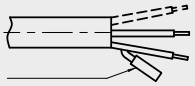
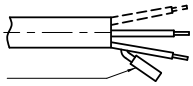
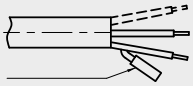
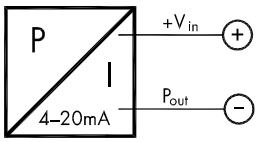
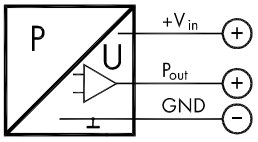
8838.XX.XX.**15**.XX.XX.XX



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
	 **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

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

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

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

Programming device Sensor Communicator SC

Ordering No.

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

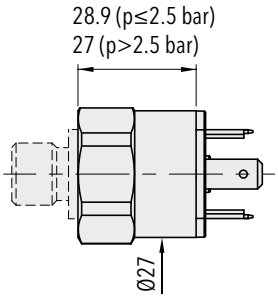
Manual see

- Sensor Communicator SC: www.trafag.com/H73699 (EN) and www.trafag.com/H73698 (DE)

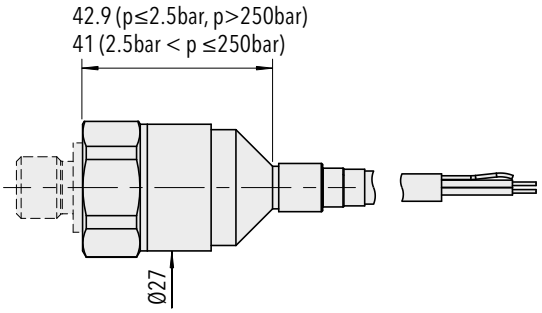
Specifications		
Accuracy	Accuracy @ 25°C typ.	± 0.5 % FS typ. (Switchpoint)
	Temperature dependence switching point	Switchpoint @ +25°C: ± 0.5 % FS typ. Switchpoint @ -25°C ... +85°C: ± 1.0 % FS typ. Switchpoint @ -40°C ... +125°C: ± 1.3 % FS typ. (Accessory 67: higher operating temperature -40°C ... +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

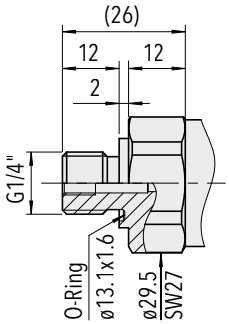
Dimensions



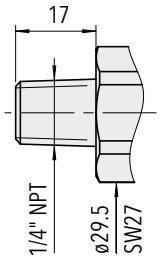
8320.XX.XXXX.**04**.XX.XX
Switchpoint factory set or programmable on site with Trafag Sensor Communicator SC



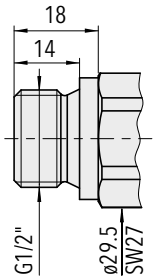
8320.XX.XXXX.**78**.XX.XX Switchpoint factory set
8320.XX.XXXX.**88**.XX.XX



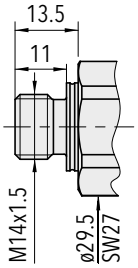
8320.XX.XX**17**.XX.XX.XX



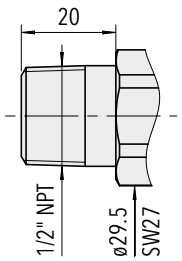
8320.XX.XX **30**.XX.XX.XX



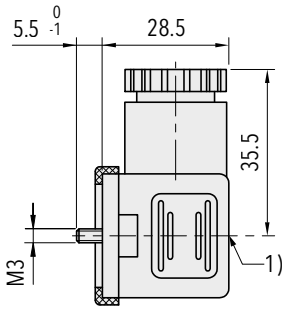
8320.XX.XX **21**.XX.XX.XX



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



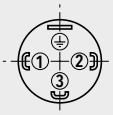
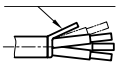
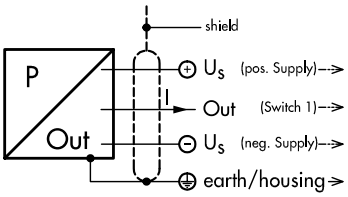
8320.XX.XX**51**.XX.XX.XX



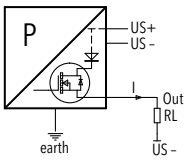
1) Tightening torque 50...60 Ncm

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

Electrical Connection

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

- Parametrisation also via NFC-smartphone App (Android)
- Display and electrical connection are independently rotatable 335°/343°
- Analogue output switchable mA or V
- Integrated datalogger
- Pressure range adjustable, 50 … 100 % of the nominal range

Technical Data			
Measuring principle	Thick film on ceramic	Media temperature	-25°C ... +85°C
Measuring range	0 ... 0.2 to 0 ... 100 bar 0 ... 2.5 to 0 ... 1500 psi adjustable 50 ... 100 % FS	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	Pressure unit for display	bar, psi, MPa, kPa, m WC, mm WC
Switching output	2 transistors PNP	Logger	Ring buffer: 3518 data points Sampling time: 0.1 ... 999.9 s, Off (0)
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

Subject to change

Ordering information/type code

							8380 .	XX	XX	XX	XX	XX	XX

Measuring 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	2	3	**70**	0 ... 7.5	30	45	**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 [4]	**18**
G1/4" male	**17**	7/16"-20UNF female SAE J512 with valve opener [4]	**24**
G1/2" male DIN3852-E [4]	**41**	7/16"-20UNF female SAE4 [4]	**42**
1/4" NPT male [4]	**30**	G3/4" frontal membrane [4] [6]	**52**
R1/4" male, DIN3858 [4]	**19**		

Electrical connection

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

Output signal

Switching output PNP, current output 4 ... 20 mA; 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 (for pressure connections 17 and 30)	**40**
Pressure peak damping element ø 0.4 mm (for pressure connections 17 and 30)	**44**
Seal FPM, -18°C ... +125°C	**61**
Seal EPDM, -40°C ... +125°C	**63**
Female electrical plug M12x1, 5-pole [5]	**33**
Parametrisation standard (see table Parameter)	**ZS**
Parametrisation according to customer specifications (see table Parameter)	**ZC**

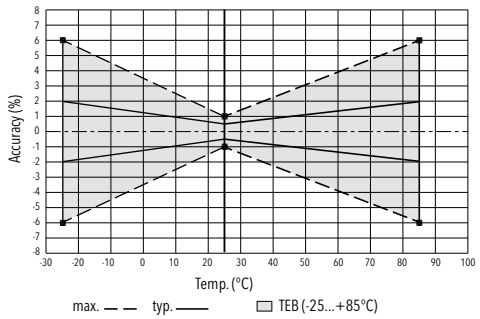
[1] Extended overpressure as well as customized pressure ranges upon request
[3] Absolute ranges max. 40 bar
[4] Please ask us
[5] For electrical connections 32 and 35
[6] Not for sensors 57 and 87, only for pressure ranges ≤ 10 bar or 150 psi

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

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (15 ... 30) VDC 0 ... 5 VDC: 24 (15 ... 30) VDC 1 ... 6 VDC: 24 (15 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC
	Switch-on-delay	Typ. 200 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	integrated
	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 plug	See ordering information
	Weight	~ 189 g
	Mounting torque	15 ... 20 Nm
	Housing alignment	Display 335° rotatable, max. 2.5 Nm Electrical connection 343° rotatable, max. 5 Nm

[1)] See electrical connection

Measuring accuracy 0.5 %

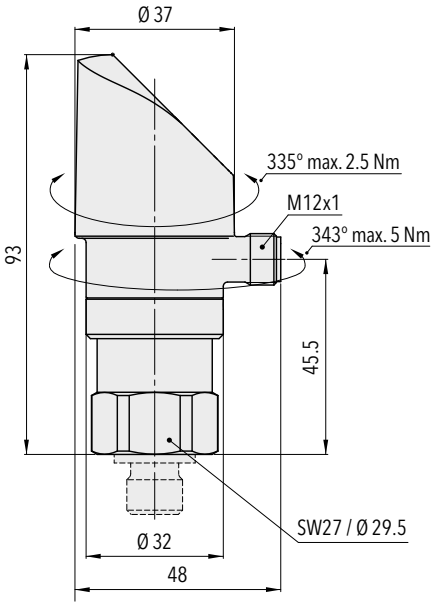


Analogue output			
Output signal	Switchable 4 ... 20 mA or voltage		
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 2.0
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03
	Long term stability 1 year	[% FS typ.]	± 0.3
Current limiting output signal	4 ... 20 mA: 25 mA (overload)		
	0 ... 10 VDC: < 40 mA (short-circuit)		
Damping (rise time)	0.01 ... 3.00 s / 10 ... 90 % Nominal pressure		

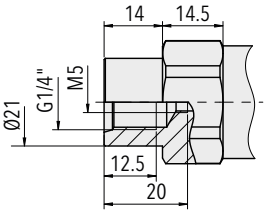
Switching output			
Accuracy	Accuracy @ +25°C	[% FS typ.]	± 0.5
	TEB @ -25 ... +85°C	[% FS typ.]	± 2.0
	Long term stability 1 year	[% FS typ.]	≤ ± 0.3
Adjustment range of switchpoints	0 … 100 % FS		
Switching hysteresis	≥ 1 % FS		
	Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
Output function	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 Parameter

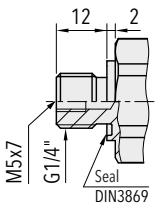
Dimensions



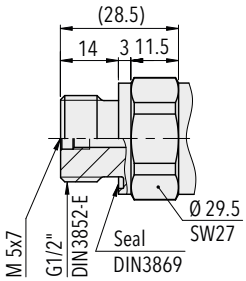
8380.XX.XXXX.**35/32**.XX.XX



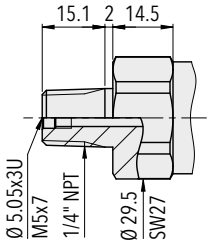
8380.XX.XX**10**.XX.XX.XX



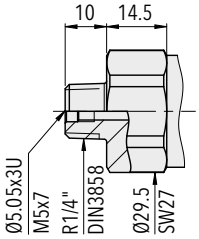
8380.XX.XX**17**.XX.XX.XX



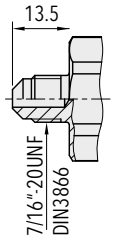
8380.XX.XX**41**.XX.XX.XX



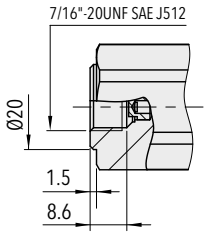
8380.XX.XX**30**.XX.XX.XX



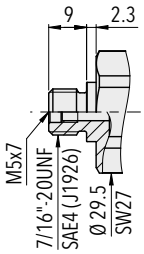
8380.XX.XX**19**.XX.XX.XX



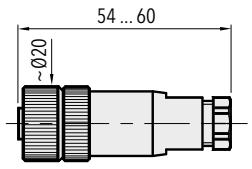
8380.XX.XX**18**.XX.XX.XX



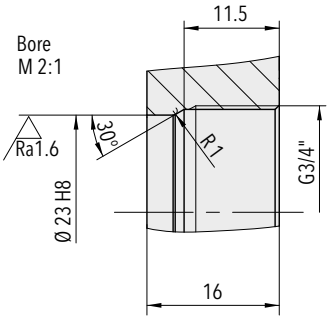
8380.XX.XX**24**.XX.XX.XX



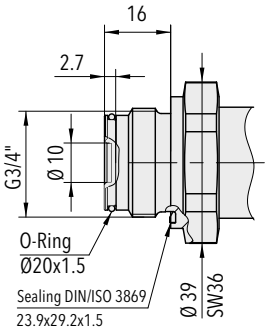
8380.XX.XX**42**.XX.XX.XX

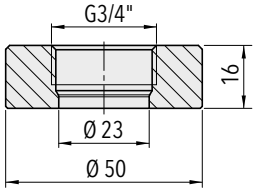


8380.XX.XXXX.XX.XX.**33**



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

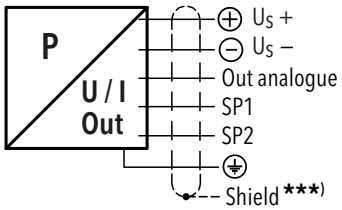




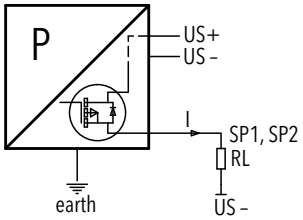
Welding flange for
G3/4" frontal membrane (1.4301)
Ordering No. C27805

Electrical connection

		Protection / electrical connection			
		IP67*)			
		M12x1			
		5-pole4-pole **35**		**32**	
Output signal		P1	P2	P3	P4
	PA	✓	✓	✓	
	PU	✓	✓	✓	
	PV	✓	✓	✓	
	PW	✓	✓	✓	
	PS				✓
Pin Configuration		P1	P2	P3	P4
		1	1	1	1
		3	3	3	3
		2	5	2	–
		4	4	4	4
		5	2		2
		Shield ***)		Shield ***)	



8380.xx.xxxx.xx.**PA/PU/PV/PW/PS**



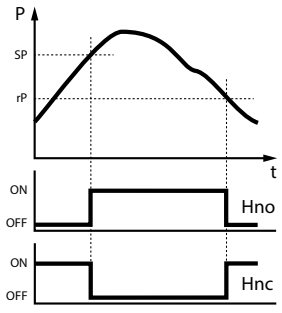
Connection of loads to switching output

*) Provided female connector is mounted according to instructions

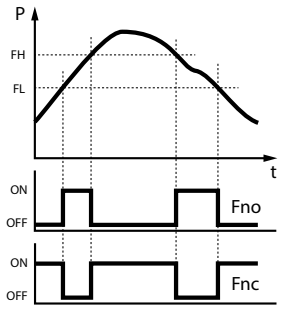
***) The use of a shielded cable is recommended

Functions switching output

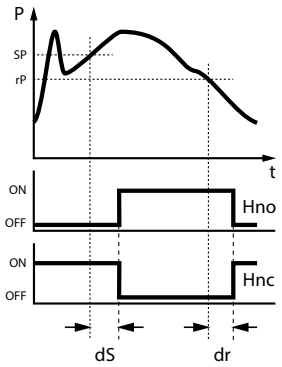
Hysteresis



Window



Delay



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 DPC 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

- Parametrisation also via NFC-smartphone App (Android)
- Display and electrical connection are independently rotatable 335°/343°
- Analogue output switchable mA or V
- Integrated datalogger
- Pressure range adjustable, 50 … 100 % of the nominal range

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-25°C ... +85°C
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi adjustable 50 ... 100 % FS	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	Pressure unit for display	bar, psi, MPa, kPa, m WC, mm WC
Switching output	2 transistors PNP	Logger	Ring buffer: 3518 data points Sampling time: 0.1 ... 999.9 s, Off (0)
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

Subject to change

Ordering information/type code

8381 . XX XX XX XX XX XX

Measuring 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 %	**25**

Pressure connection

G1/4" female [2]	**10**	1/2" NPT male [2]	**51**
G1/4" male (Seal)	**17**	M14x1.5 male DIN6149-2 [2]	**31**
R1/4" male, DIN3858 [2]	**19**	7/16"-20UNF male, DIN3866 [2] [4]	**18**
G1/2" male (Manometer) [2]	**11**	7/16"-20UNF male SAE4 (J1926) [2] [5]	**42**
1/4" NPT male [2]	**30**	7/16"-20UNF female SAE J512 with valve opener [2] [4]	**24**

Electrical connection

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

Output signal

Switching output PNP, current output 4 ... 20 mA; 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 (for pressure connections 17 and 30)	**40**
Pressure peak damping element ø 0.4 mm (for pressure connections 17 and 30)	**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**
Parametrisation standard (see table Parameter)	**ZS**
Parametrisation according to customer specifications (see table Parameter)	**ZC**

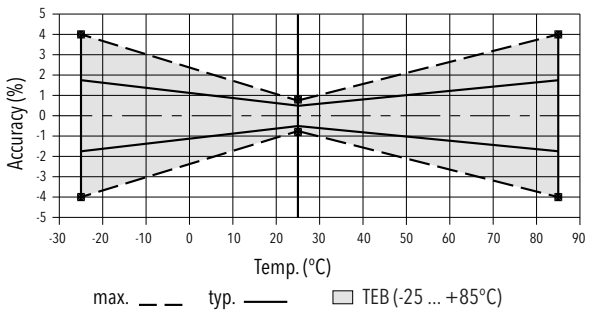
[1] Extended overpressure as well as customized pressure ranges upon request
[2] Upon request
[3] For electrical connections 32 and 35
[4] Max. allowable pressure range 60 bar at 120 bar overpressure
[5] According to norm J1926, max. 35 MPa

Parameter				
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, m WC	uni	
Measuring range adjustment	100 % Nominal pressure	50 ... 100 % Nominal	P-EP	
Damping (analogue output)	0.01 s	0.01 ... 3.00 s (time constant)	dAA	
Display rotation	No	no, yes (180°)	disr	
Display mode	Current pressure value	Pressure value: current, highest, lowest, display off Current value: decimal places selectable (max. 3)	dis	
Display actualisation	2	1, 2, 5, 20 Hz	duPd	

Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (15 ... 30) VDC 0 ... 5 VDC: 24 (15 ... 30) VDC 1 ... 6 VDC: 24 (15 ... 30) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC
	Switch-on-delay	Typ. 200 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	integrated
	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 %

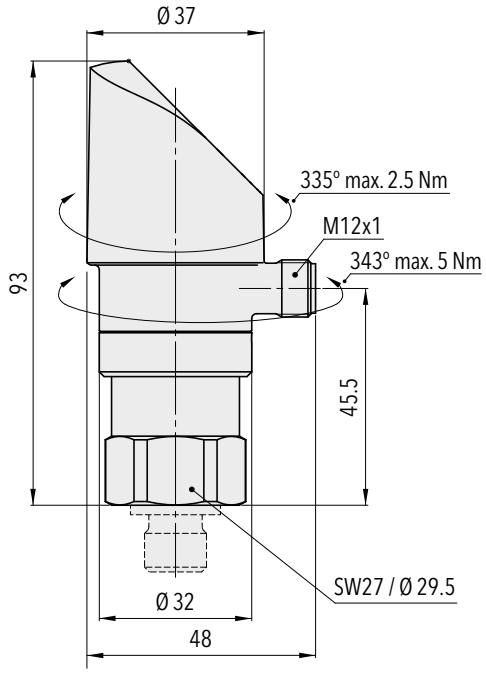


Analogue output			
Output signal	Switchable 4 ... 20 mA or voltage		
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03
	Long term stability 1 year	[% FS typ.]	± 0.1
Current limiting output 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		

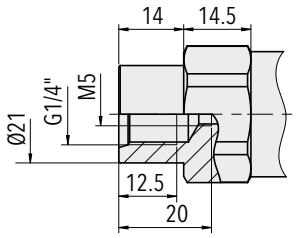
Switching output			
Accuracy	Accuracy @ +25°C	[% FS typ.]	± 0.5
	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Long term stability 1 year	[% FS typ.]	≤ ± 0.3
Adjustment range of switchpoints	0 … 100 % FS		
Switching hysteresis	≥ 1 % FS		
	Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
Output function	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 Parameter

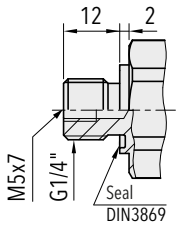
Dimensions



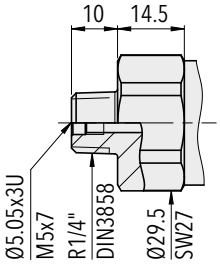
8381.XX.XXXX.**35/32**.XX.XX



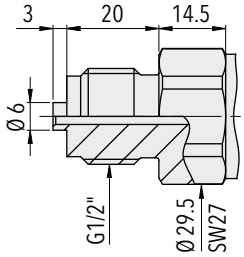
8381.XX.XX**10**.XX.XX.XX



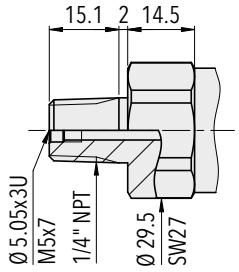
8381.XX.XX**17**.XX.XX.XX



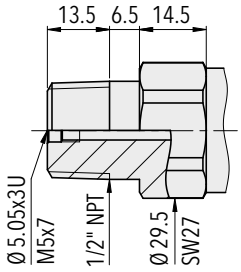
8381.XX.XX**19**.XX.XX.XX



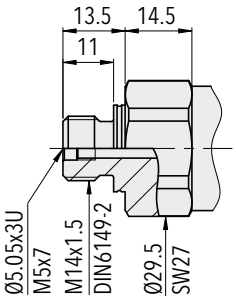
8381.XX.XX**11**.XX.XX.XX



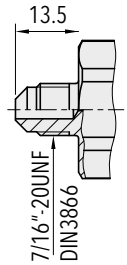
8381.XX.XX**30**.XX.XX.XX



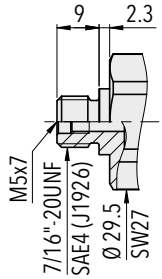
8381.XX.XX**51**.XX.XX.XX



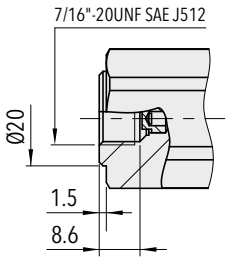
8381.XX.XX**31**.XX.XX.XX



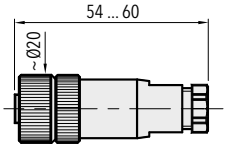
8381.XX.XX**18**.XX.XX.XX



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



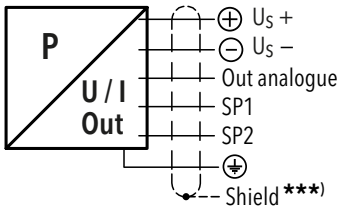
8381.XX.XX**24**.XX.XX.XX



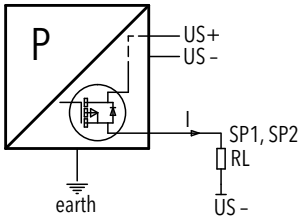
8381.XX.XXXX.XX.XX.**33**

Electrical connection

		Protection / electrical connection			
		IP67*)			
		M12x1			
		5-pole4-pole **35**		**32**	
Output signal		**P1**	**P2**	**P3**	**P4**
	PA	✓	✓	✓	
	PU	✓	✓	✓	
	PV	✓	✓	✓	
	PW	✓	✓	✓	
	PS				✓
Pin Configuration		**P1**	**P2**	**P3**	**P4**
		1	1	1	1
		3	3	3	3
		2	5	2	–
		4	4	4	4
		5	2		2
		Shield ***)		Shield ***)	



8381.xx.xxxx.xx.**PA/PU/PV/PW/PS**



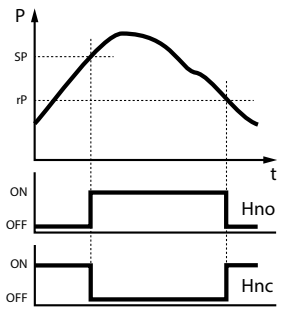
Connection of loads to switching output

*) Provided female connector is mounted according to instructions

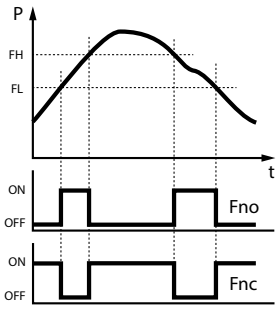
***) The use of a shielded cable is recommended

Functions switching output

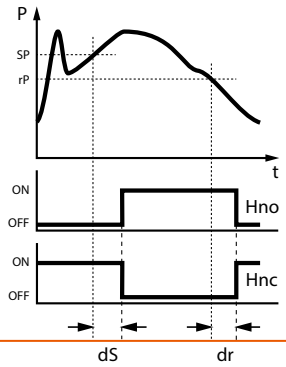
Hysteresis



Window



Delay



Additional information

Documents	Data sheet	www.trafag.com/H72321
	Instructions	www.trafag.com/H73320
	Flyer	www.trafag.com/H70694

DISPLAY CONTROL SWITCH

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
- Process technology

Features

- Simple adjustment of switchpoints
- Back-lit LCD-Display
- Measurement and indication of pressure (incl. switch state) and sensor temperature in various units
- High resistance to pressure cycling
- Output signal 2 relays, electrically isolated

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-25°C ... +125°C
Measuring range	0 ... 1 to 0 ... 600 bar	Ambient temperature	-25°C ... +80°C (LCD display active -10°C ... +70°C)
Output signal	4 ... 20 mA, 0 ... 10 VDC 2 Relays, electrically isolated 30W (max.1A), 36 VAC/ DC	Approval / conformity	DNV-GL
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

Subject to change

Ordering information/type code

				8864 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**						
	0 ... 1	2	30	**71**					
	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 ... 250	500	1000	**74**					
	0 ... 400	800	1500	**84**					
	0 ... 600	1200	2000	**86**					
Sensor	Relative pressure				**23**				
Pressure connection	G1/4" male (Seal DIN3869 and pressure peak damping element)					**15**			
	G1/4" male (seal DIN3869)					**17**			
	G1/4" female					**10**			
	G1/2" male DIN16288-B (Manometer)					**11**			
	Flange connection					**41**			
Electrical connection	Male electrical plug M12x1, 8-pole						**38**		
Output	**Signal output**	**Load resistance**	**U (supply)**						
	4 ... 20 mA	≤ 250 W	11 ... 32 VDC					**19**	
	0 ... 10 VDC	≥ 5.0 kW	15 ... 30 VDC					**17**	
Accessories	2 Relays								**23**
	Female electrical connector: M12x1, 8-pole, incl. 2m PUR-cable Ordering code: DCS CON								

[1] Customized pressure ranges upon request

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Accuracy @ 25°C typ. [%]
DCS2.5AR	8864 75 2315 38 0000 0000 19 23	0...2.5	6	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5
DCS4.0AR	8864 76 2315 38 0000 0000 19 23	0...4	10	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5
DCS6.0AR	8864 77 2315 38 0000 0000 19 23	0...6	15	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5
DCS10.0AR	8864 78 2315 38 0000 0000 19 23	0...10	20	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5
DCS16.0AR	8864 79 2315 38 0000 0000 19 23	0...16	32	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5
DCS25.0AR	8864 80 2315 38 0000 0000 19 23	0...25	80	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5
DCS40.0AR	8864 81 2315 38 0000 0000 19 23	0...40	80	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5
DCS100.0AR	8864 83 2315 38 0000 0000 19 23	0...100	200	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5
DCS250.0AR	8864 74 2315 38 0000 0000 19 23	0...250	500	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC	±0.5

Additional information

Documents	Data sheet	www.trafag.com/H72605
	Instructions	www.trafag.com/H73605
	Flyer	www.trafag.com/H70676

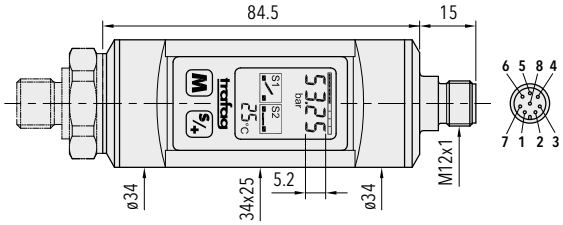
Specifications		
Accuracy	TEB typ. @ -25 ... +85°C	± 1.0 % FS typ.
	Accuracy @ 25°C typ.	± 0.5 % FS typ.
	NLH @ 25°C (BSL) typ.	± 0.25% FS typ.
	TC zero point and span typ.	± 0.01% FS/K typ.
	Long term stability 1 year typ.	± 0.2 % FS typ.
	Sensor temperature	± 2.5°C
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (11 ... 32) VDC 0 ... 10 VDC: 24 (15 ... 30) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Current consumption	< 70 mA
Environmental conditions	Media temperature	-25°C ... +125°C
	Ambient temperature	-25°C ... +80°C (LCD display active -10°C ... +70°C)
	Protection [1)]	IP65
	Humidity	Max. 95 % relative
	Vibration	10 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)	1.4542 (AISI630)
	Pressure connection (wetted parts)	Pressure ranges < 100 bar: 1.4542 (AISI630) Pressure ranges ≥ 100 bar: 1.4404 (AISI316L)
	Housing	1.4301 (AISI304)
	Sealing	NBR 70 Sh
	Male electrical plug	8-pole (PA) U_{max}:30 VAC/ 36 VDC
	Weight	~ 200 g
	Mounting torque	25 Nm

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

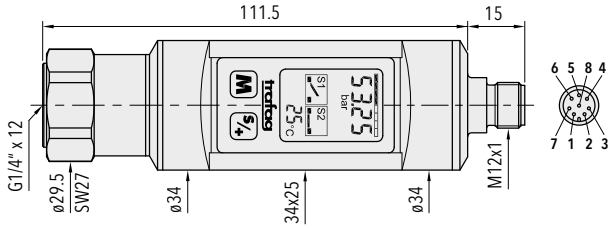
Display	
LCD Display	Back-lit
4-Digit resolution	≤ 0.2% FS
Display range	-5 ... 125 % FS
Operation	Menu selection with 2 buttons
Setting parameters	See dimensions

Relay output	
Output	2 Relays, electrically isolated 30W (max.1A), 36 VAC / DC
Switching time	5 ... 9999 ms, adjustable
Switching hysteresis	typ. 1 ... 99 % FS

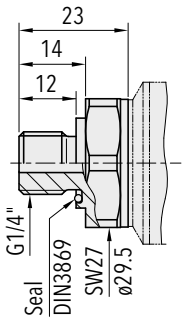
Dimensions



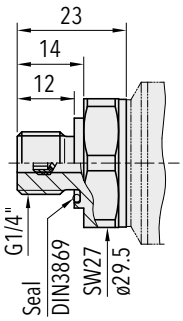
8864.XX.**23**XX.XX.XX.XX



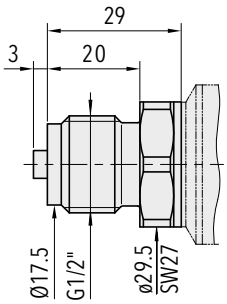
8864.XX.**2310**.XX.XX.XX



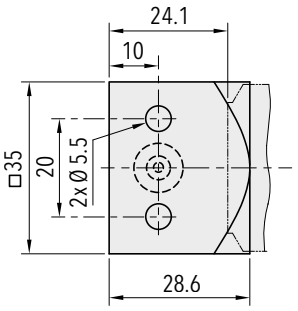
8864.XX.23**17**.XX.XX.XX



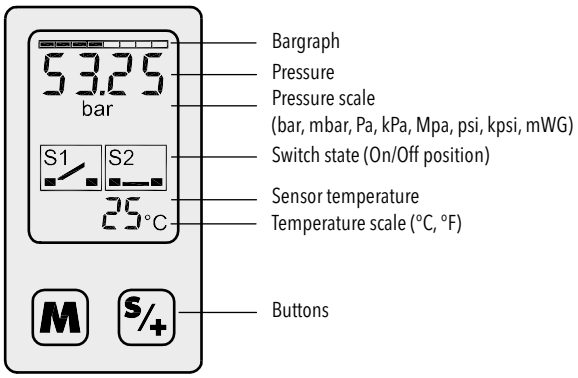
8864.XX.23**15**.XX.XX.XX



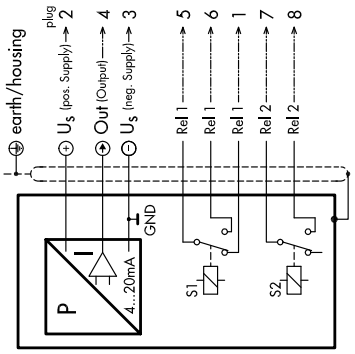
8864.XX.23**11**.XX.XX.XX



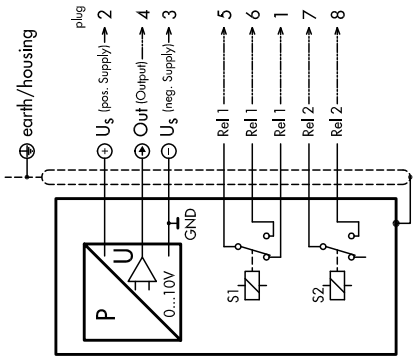
8864.XX.23**41**.XX.XX.XX



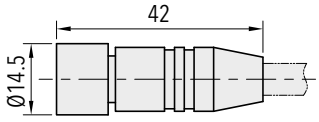
Adjustment parameters



4 ... 20 mA/ 2 relays
8864.XX.XXXX.XX.**19.23**



0 ... 10 VDC/ 2 Relays
8864.XX.XXXX.XX.**17.23**



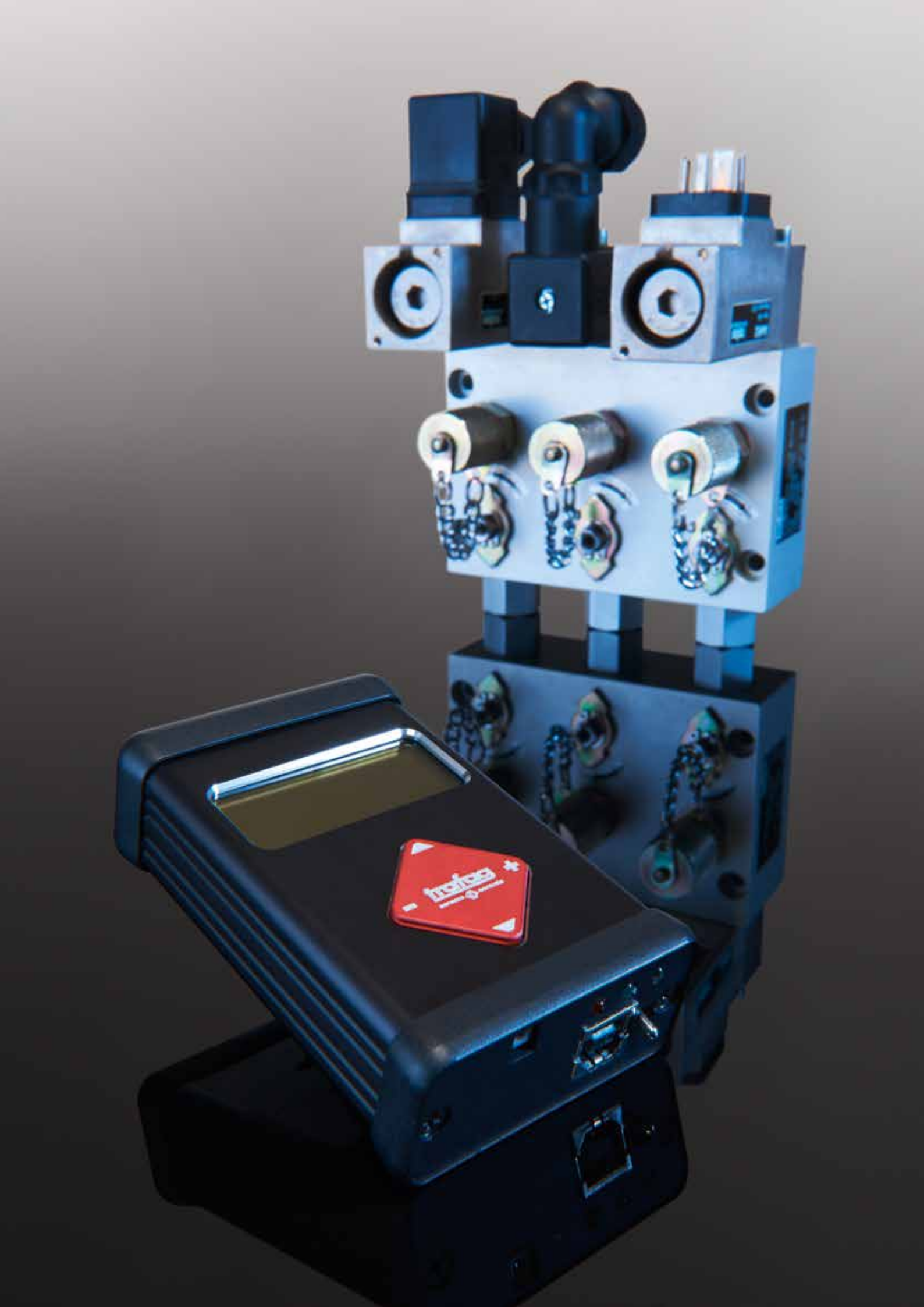
DCS CON

Cable length 2 m
Cable material PUR
Shield on screw

1 = white	5 = grey
2 = brown	6 = pink
3 = green	7 = blue
4 = yellow	8 = red

Accessories

trafag
sensors controls

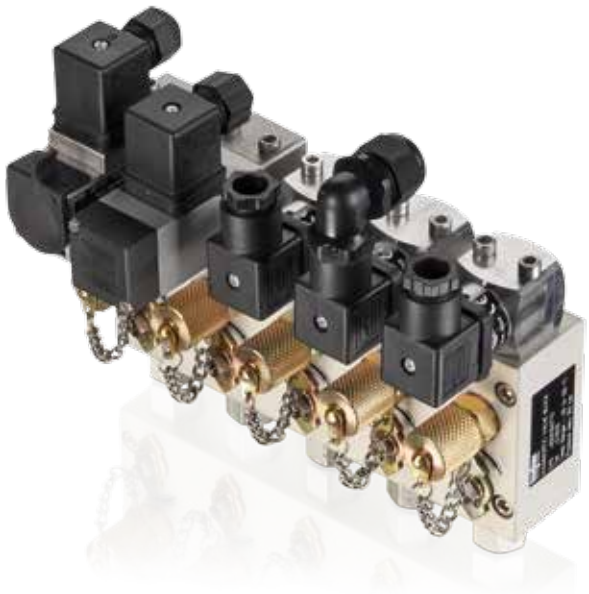


Accessories

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 meet specific application requirements and also make installation easier. They include diagnostic valve manifolds, snubbers and pressure peak damping elements for measuring pressure, or protective pipes for thermostats.

Accessories for pressure measurement instruments

- SMI Sensor Master Interface
- 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

(available from the 2nd quarter of 2018)

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

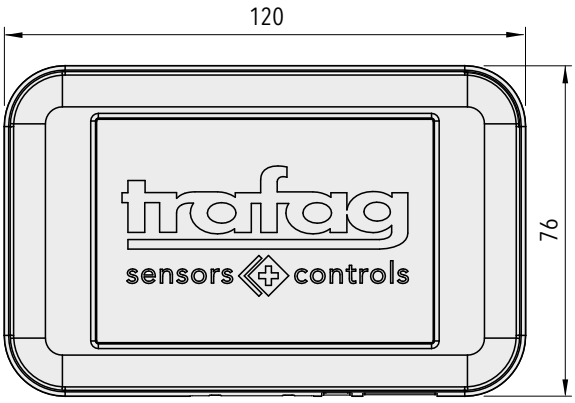
- Read out of sensor data
- Set switching points with pressure switch NAx
- Set measuring range with submersible pressure transmitter ECL
- Operation via Android App «Sensor Master Communicator SMC»
- Reset pressure measuring instruments to factory settings

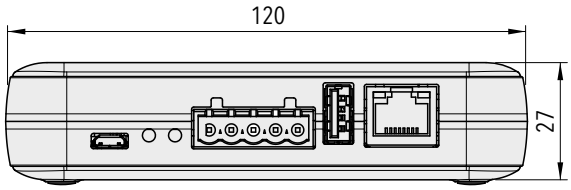
Technical Data			
Ambient temperature	-10°C ... +40°C	Storage temperature	-10°C ... +50°C
Supply voltage	5 VDC, 1 A (Supply via USB interface)	Dimensions LxBxH	120x76x27 mm
Protection	IP20	Communication SMC/SMI	via Bluetooth

SMI

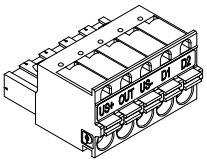
Ordering information	
	Ordering-No.
SMI Packet containing:	**F90170** (available from the 2nd quarter of 2018)
SMI	
USB Bluetooth Dongle BLED	F90172
Device connector SMI (5-pole, push-in)	F90171
Cable USB 2.0 A male, Micro-B 1.0m black	F90173
Accessories	
Cable PVC, M12x1 connector	F90174
Device connector SMI with housing (5-pole)	F90175
Case for SMI and accessories (325x248x50 mm)	H30782

Dimensions

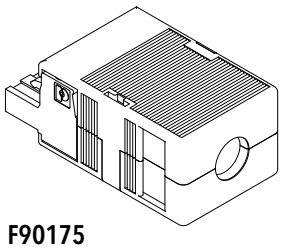




Accessories



F90171



F90175

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

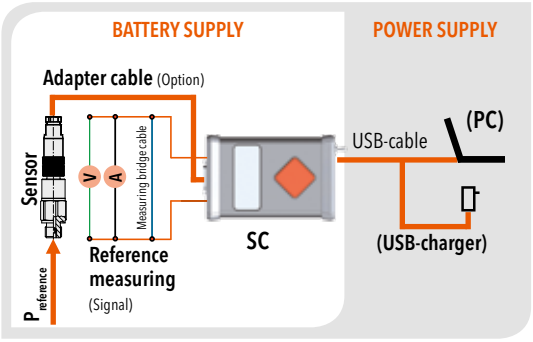
- Identification of device data: Model, signal output, type plate, manufacturing date
- Setting of switchpoint (8320 EPN-S)
- CANopen: Setting of Node-ID and baudrate
- Reset to factory settings

Instruction www.trafag.com/H73699 en
H73698 de

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 for non-experts a very difficult task. Common software is geared towards experts with a lot of background knowledge and routine in programming such devices. Neither the software user interface nor hardware like connectors and adapter cards are a comfortable solution 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

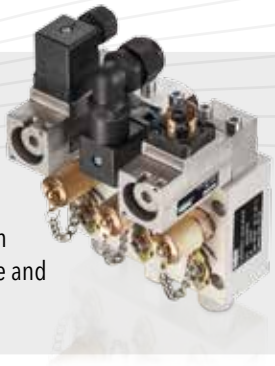
Recommended accessory (not included):

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

trafag sensors controls

DVB

Diagnostic Valve Block



Features

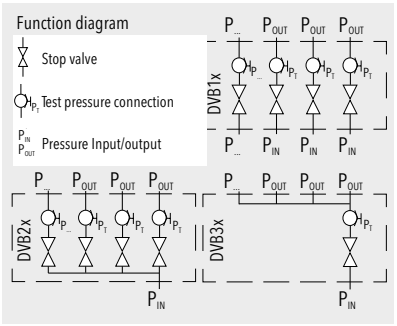
- Function tests during operation (no interruption necessary) with stop valve and test connection

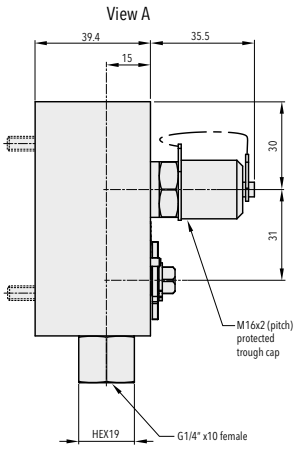
Technical Data	
Pressure	-0.8 ... 100 bar
Ambient temperature	-20°C ... +120°C

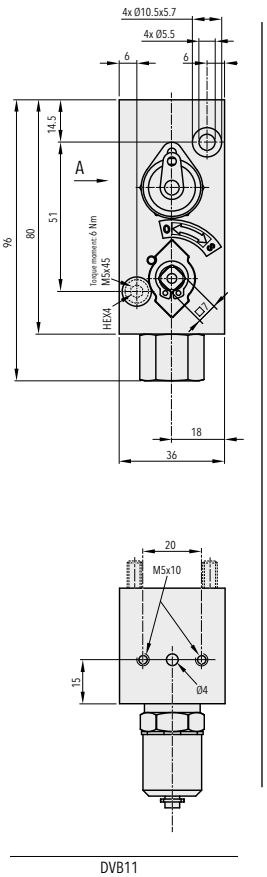
Data sheet www.trafag.com/H72361
Instruction www.trafag.com/H73361

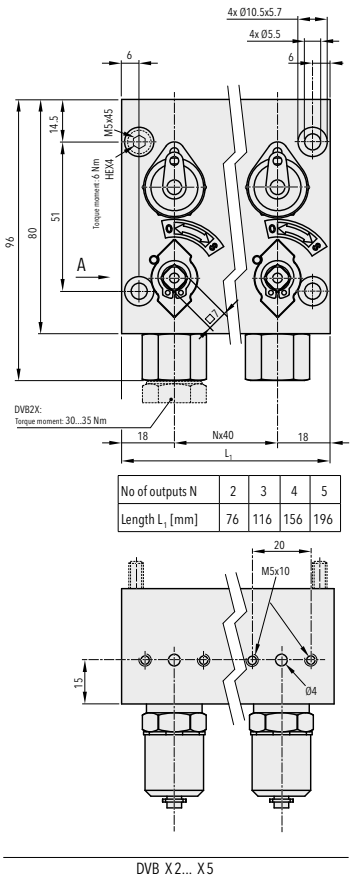
Standard products (extra short lead time)

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			









No of outputs N	2	3	4	5
Length L_1 [mm]	76	116	156	196

DVB11

DVB X2... X5

THP...

Hand pump


THP30


THP700

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

ZEN...

Switch amplifier


ZEN24VDC
ZEN230VAC


ZEN28VDC

Features

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

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

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

Standard products (extra short lead time)		
Product No	**Connection**	
ZEN24VDC	20 … 30 VDC, 20 … 23 mA	U_0 = 10.5 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

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

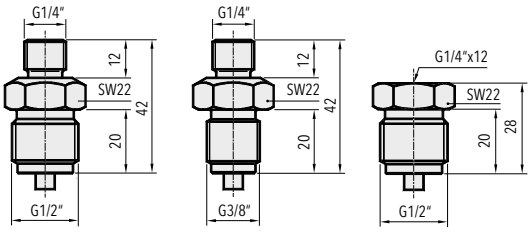
Features

- 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

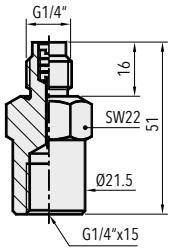
- Integrated in an adapter
- K1/K2: Pressure peak damping element integrated in an adapter

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

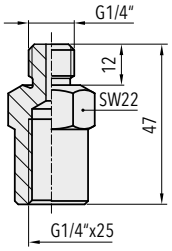
Data sheet www.trafag.com/H72258

Standard products (extra short lead time)

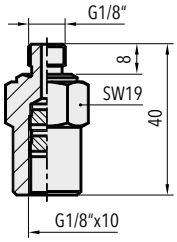
Product No		Connection	Material
F3	Snubber for heavy oil	G1/4" male - female	Brass
F4	Snubber for light oil	G1/4" male - female	Brass
F5	Snubber for water/air	G1/4" male - female	Brass
K1	Snubber for water/air/light oil	G1/4" male - female	1.4435 (AISI316L)
K2	Snubber for water/air/light oil	G1/8" male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

V6/V7

Stop valve

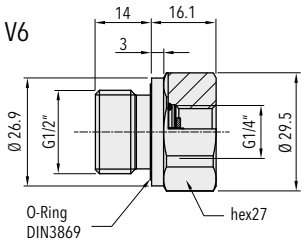
Features

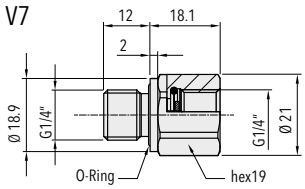
- Allows replacement of instruments without interruption of process (max. 40 bar)

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





DAMP...

Pressure peak damping element

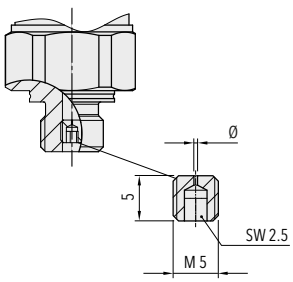
Features

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

Technical Data	
Material	1.4435 (AISI316L)

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	1.4435 (AISI316L)
DAMP0.4	With 0.4 mm hole, for water and light oil	1.4435 (AISI316L)



trafag sensors controls

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.

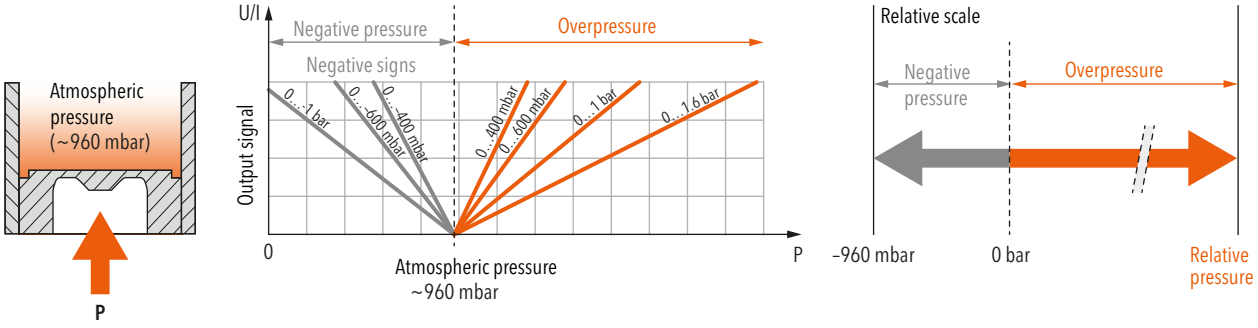
Types of pressure measurement

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

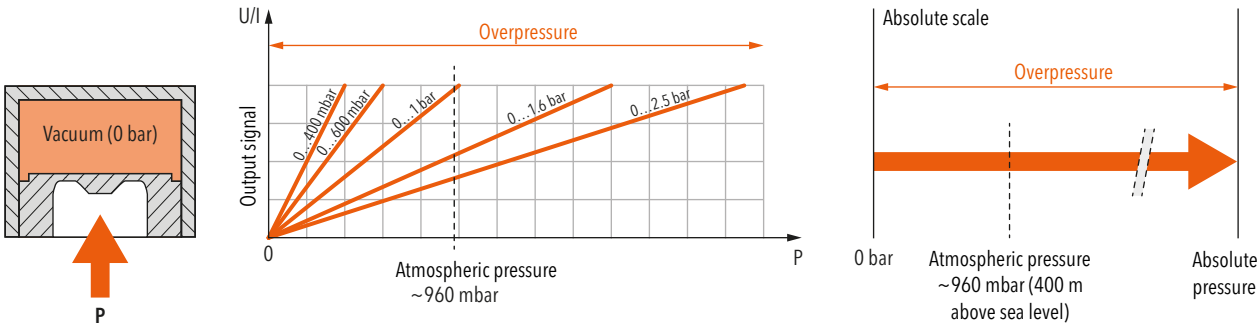
Absolute pressure measurement
The measuring result is always the deviation to the absolute zero (vacuum).
e.g. 4 mA = 0 bar (= vacuum); zero point (ZP): 0 bar

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

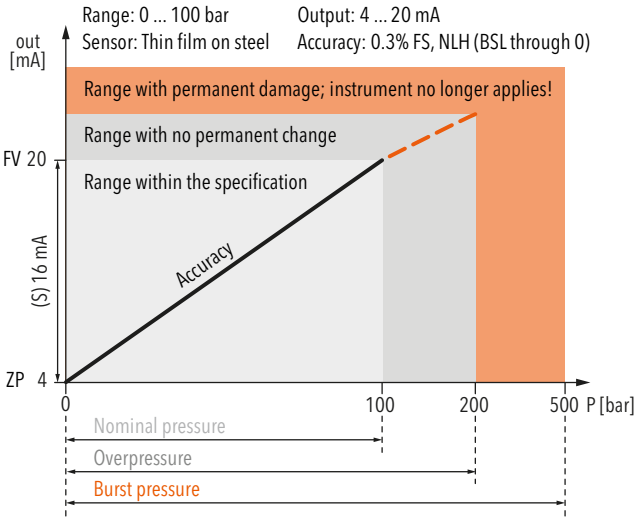
Nominal pressure measuring range
Range between the upper and lower limits of the size measured (operating pressure). The specified accuracy remains within this range.

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



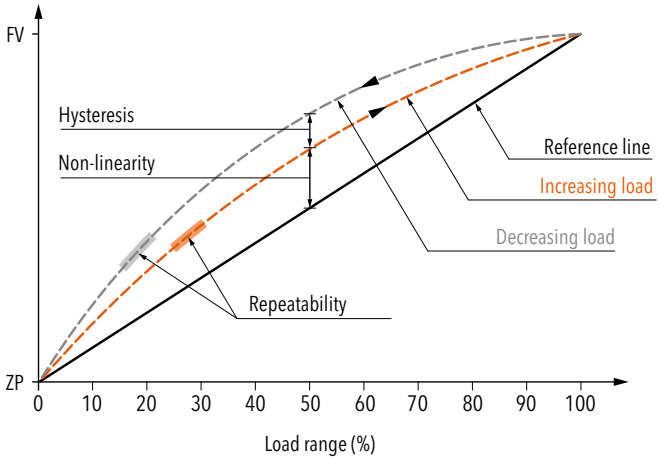
Accuracy

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.

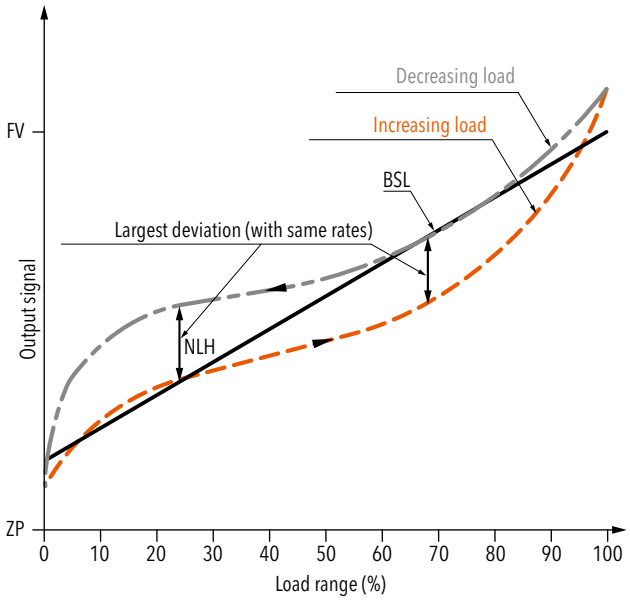
Non-linearity
The largest deviation from the effective characteristic line of an ideal reference line. The reference line can be defined as a limit point adjustment, a BSL or a BSL through 0.

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)

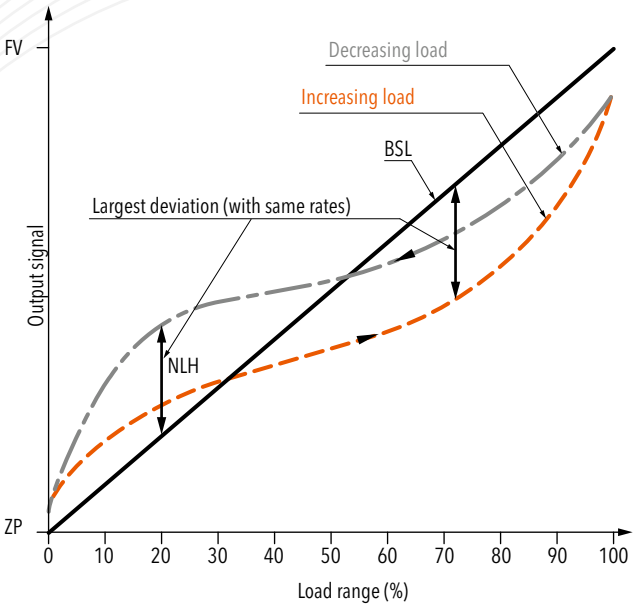


trafag sensors controls

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 on Ex products

Trafag offers a wide range of EX-, ATEX- and IECEx approved products for pressure and temperature monitoring. These products provide reliable functionality in various hazardous zones, with a guaranteed safety operation. In addition to both CE and ATEX-conformance, Trafag products are also extremely fail-safe.

CE - Designation and labelling

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 60079-8 – 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 IP6X T130 °C Da

Type of protection	Equipment groups (for dust)	IP protection	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)

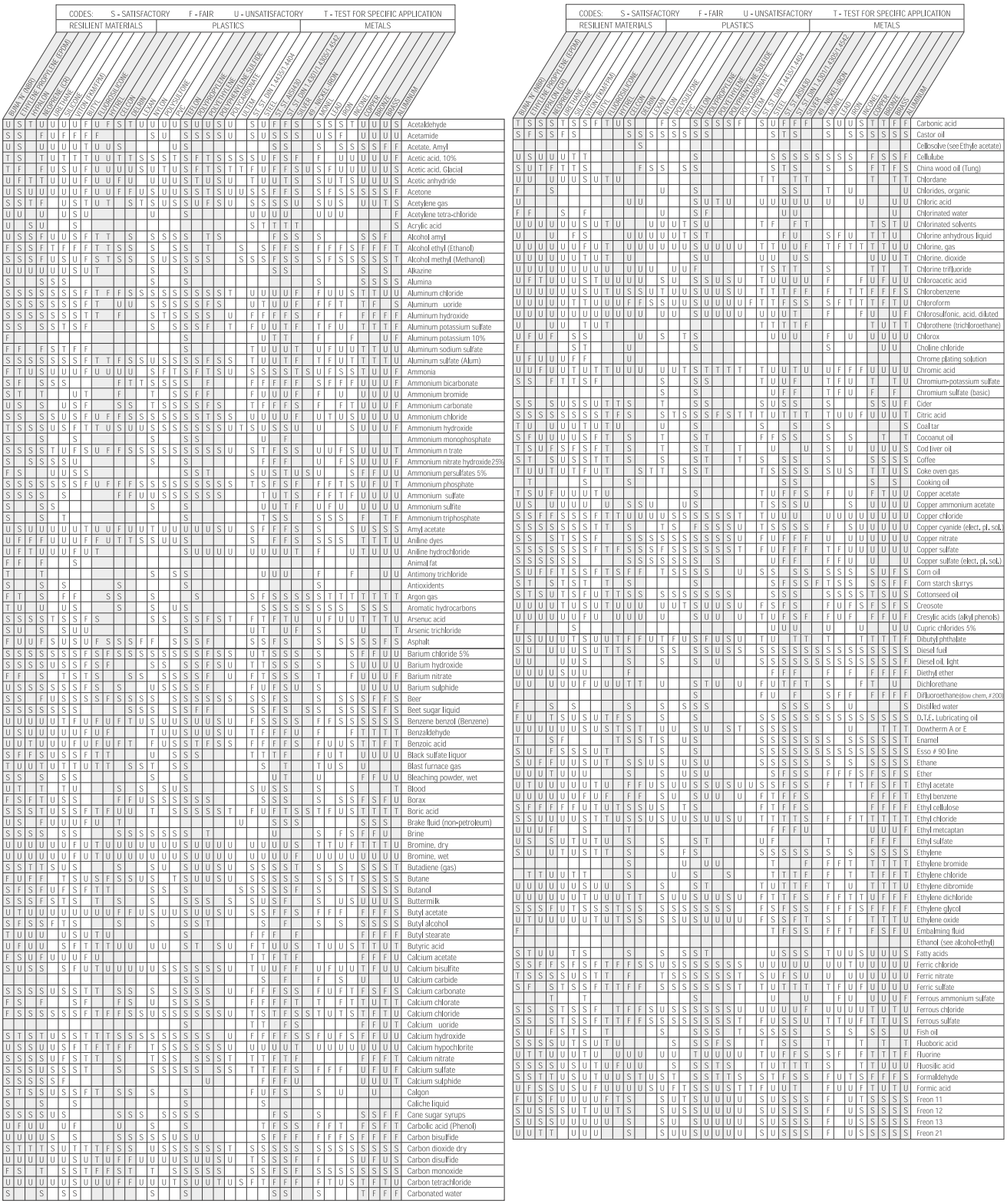
EN 50303 – Mining

Ex ia I Ma

Type of protection	Equipment for mining	Equipment protection level

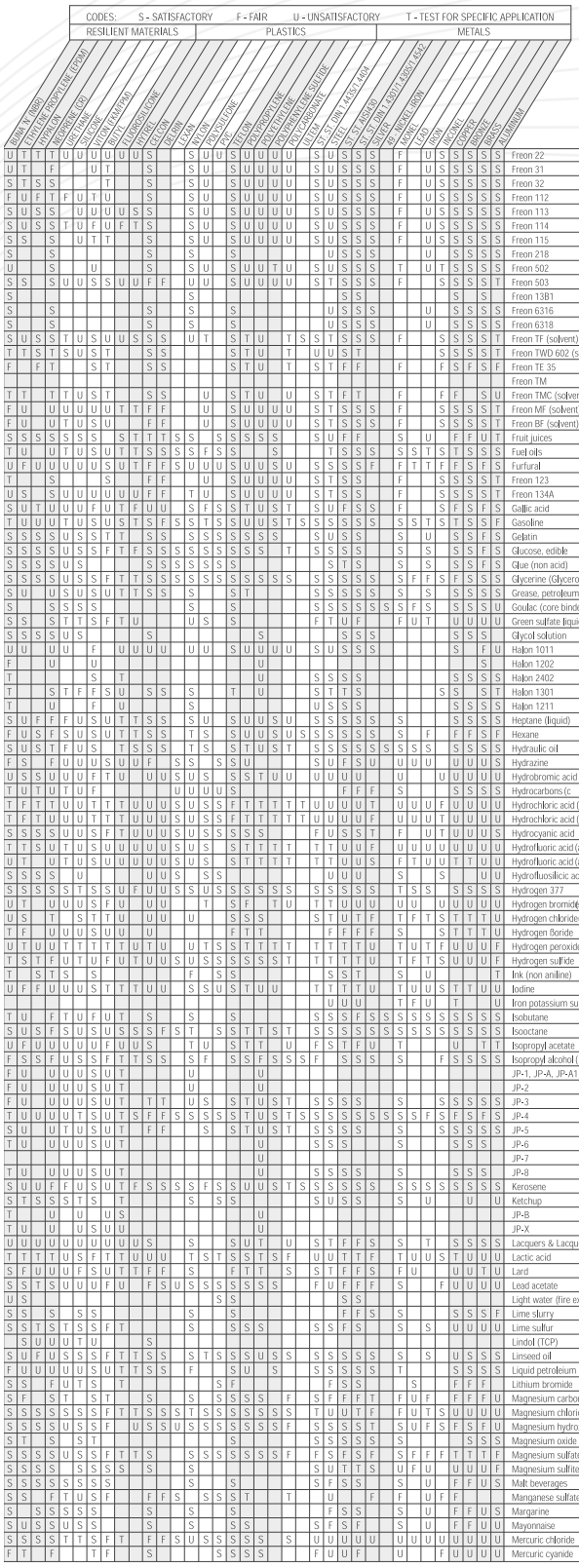
- Category and Protection level:
  - Category M1 / Protection level Ma: Fully functional and safe when explosive atmosphere is present. Requires means to cope with two independent failures
  - Category M2 / Protection level Mb: These products are intended to be deenergised in the presence of an explosive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

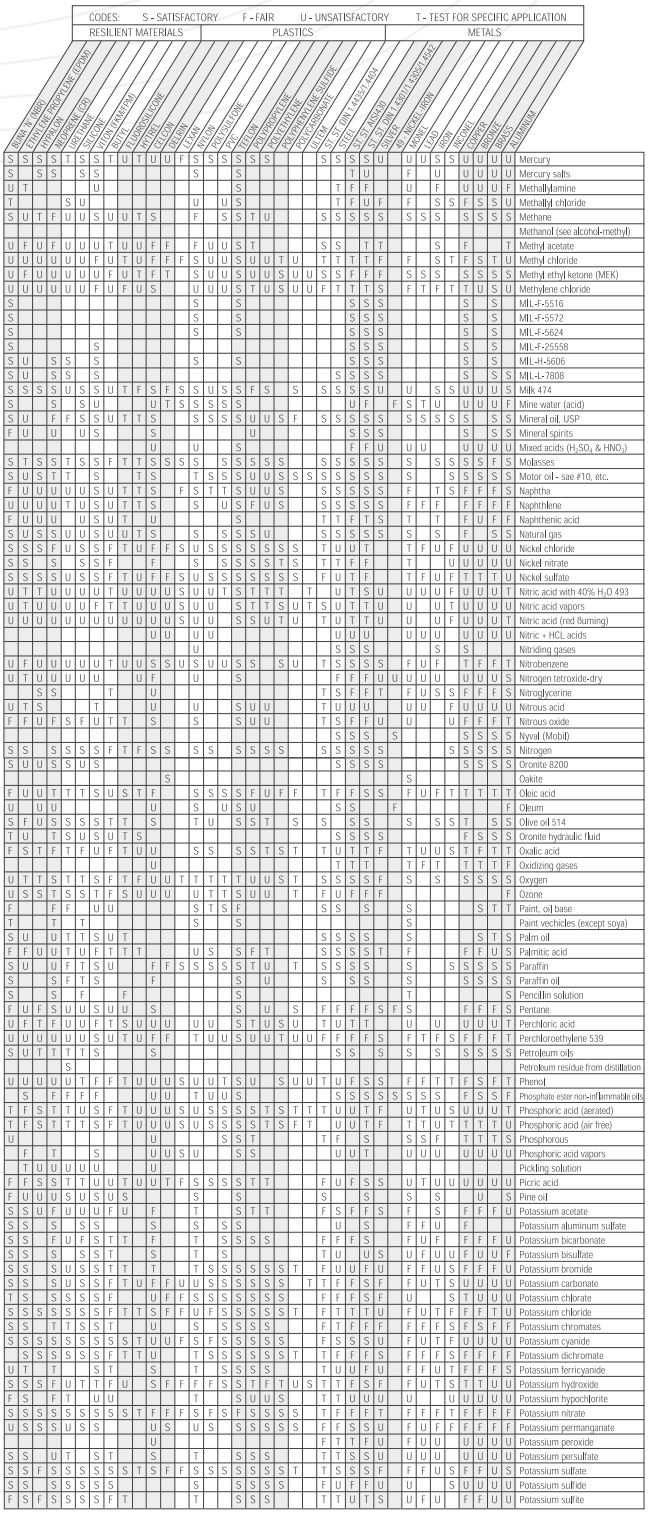
Fluid resistance guide



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





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	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	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
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	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		T	T	F	F	T		F	F	T	T	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	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		F	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		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	F	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	T	F	F	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	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	F	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	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		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		T	T	T	T	S		F	F	F	F	F	F	T	S	Sodium sulfate
F	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 sulÞde
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 sulÞte
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			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
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

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

RESILIENT MATERIALS | PLASTICS | METALS

BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON	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	
																																				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

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

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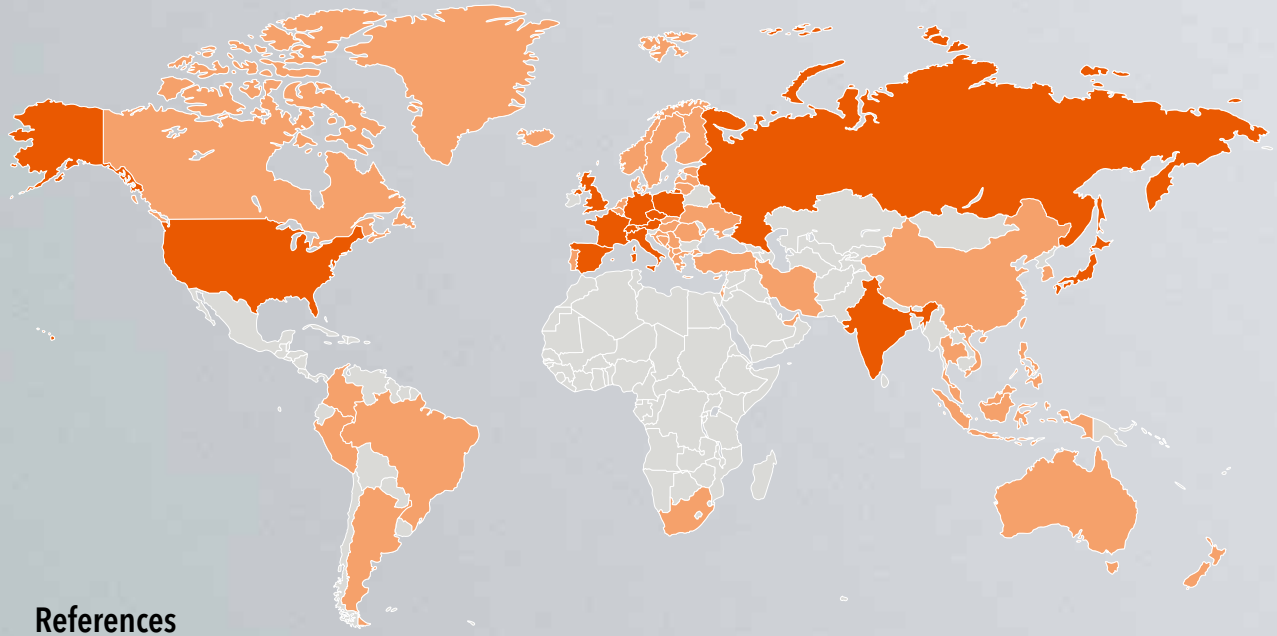

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