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PRODUCTS CATALOGUE

Pressure and temperature monitoring solutions

traflet



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.

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



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Pressure transmitters

Trafag pressure transmitters are used for electronically measuring and evaluating pressure. Over the decades they have proven themselves in a multitude of demanding applications in harsh environments. They are available in many different designs to suit pressure and electrical connections, measuring procedures, electrical output signals and certifications (CE, EX, rail and ship). Superior technology and precise manufacturing ensure that the transmitters work perfectly. This is especially important in applications where high requirements are placed on long-term stability, vibration resistance, electromagnetic compatibility, shock resistance or temperature insensitivity.

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







Overview Pressure transmitter




	NAT 8252	NAH 8253	NAH 8254	NAE 8256	NSL 8257	
	page 22	page 30	page 26	page 29	page 25	
						
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 ... 10 to 0 ... 600 bar 0 ... 150 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, 1/4"NPT m, 7/16"-20UNF SAE J512 f, 7/16"-20UNF SAE4 m, R1/4" m, R1/8" m, M10x1 m, M12x1.5 m (DIN EN ISO 9974-2)	G1/4" m, 1/4"NPT m, 7/16"-20UNF m, 7/16"-20UNF f (valve opener)	G1/4" m, 1/4"NPT m, 7/16"-20UNF SAE J512 f, 7/16"-20UNF SAE4 m, R1/4" m, R1/8" m, M10x1 m, M12x1.5 m (DIN EN ISO 9974-2)	G1/4" m, 1/4"NPT m, M10x1 m	G1/4" m, 1/4"NPT m	
Electrical connections	Industrial standard, contact distance 9.4 mm; M12x1; Cable	Industrial standard, contact distance 9.4 mm; M12x1	Industrial standard, contact distance 9.4 mm; M12x1; 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 Hydraulics Railways 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	GL, DNV, RINA	
Data sheet	H72303	H72300	H72304	H72305	H72302	
Instructions	H73303	H73250	H73303	H73303	H73250	

ECT 8472	ECT 0.3 % (0.5 %, 1.0 %) 8473	ECTR 8471	ECTN 8477	EPI 8287	EPN/EPNCR 8298
page	page 18	page 21	page 42	page 32	page 36
					
Thick film on ceramic	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic	Thin film on steel	Thin film on steel
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	-1 ... 9 to 0 ... 40 bar 0 ... 15 to 0 ... 500 psi	0 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 2.5 to 0 ... 2500 bar
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, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric
± 0.5 % FS typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-40°C ... +125°C	-40°C ... +125°C
-25°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +85°C	-40°C ... +125°C	-40°C ... +125°C
Min. IP65	Min. IP65	Min. IP65	Min. IP65	IP65	IP65, IP67, IP69K
Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O 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	1.4305 (AISI303)	1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4542 (AISI630)	1.4542 (AISI630) 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	1.4305 (AISI303)	1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4542 (AISI630)	1.4301 (AISI304)
G1/4" f, G1/4" m, G1/2" m DIN3852-A, G1/2" m DIN3852-E, 1/4"NPT m, 7/16"-20UNF m SAE4, R1/4" m ISO-7-1 (DIN2999) G3/4" frontal membrane	G1/4" f, G1/4" m, G1/2" m, 1/4"NPT m, G3/4" frontal membrane	7/16"-20UNF m, 7/16"-20UNF SAE J512 f, 1/4"NPT m	G1/4" f, G1/4" m, G1/2" m, 1/4"NPT m	G1/4" m, G1/4" f, G1/2" m, 1/4"NPT m	G1/4" m, R1/4" m, G1/2" m (Manom.), 1/4"NPT m, 1/2"NPT m, M14x1.5 m, M18x1.5 m
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; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Cable IP67; Cable IP68	Industrial standard, contact distance 9.4 mm; M12x1; Packard Metri Pack	EN175301-803-A (DIN43650-A); DIN72585; Cable
Machine tools Hydraulics Water treatment	Machine tools Hydraulics Water treatment	HVAC Refrigeration	Shipbuilding Engine manufacturing	Machine tools Hydraulics Industrial applications	Shipbuilding Engine manufacturing Machine tools Hydraulics
			DNV, GL, KRS, RINA		ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS
H72324	H72326	H72323	H72322	H72317	H72312
H73324	H73324	H73324	H73324	H73317	H73311




Overview electronic pressure switches

	EPN-S 8320	DPC 8380	DPS 8381	DCS 8864		
	page 40	page 54	page 56	page 58		
						
Measuring principle	Thin film on steel	Thick film on ceramic	Thin film on steel	Thin film on steel		
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 1 to 0 ... 100 bar 0 ... 15 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		
Output signal	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		
Accuracy @ 25°C typ.	± 0.5 % FS typ. (Switchpoint)	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.		
Ambient temperature	Standard: -25°C ... +85°C Option: -40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +80°C (LCD display -10°C ... +70°C)		
Media temperature	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +125°C		
Protection	IP65 (IP67), IP69K	IP65	IP65	IP65		
Sensor (wetted parts)	1.4542 (AISI630)	Ceramic, Al ₂ O ₃ (96 %)	1.4542 (AISI630)	1.4542 (AISI630)		
Pressure connection (wetted parts)	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)		
Housing	1.4301 (AISI304)	Steel, die cast metal galvanised display housing plastic	Steel, die cast metal galvanised display housing plastic	1.4301 (AISI304)		
Pressure connections	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 ISO 7-1 (DIN 2999), 7/16"-20UNF m DIN 3866, 7/16"-20UNF f SAE J512 valve opener, 7/16"-20UNF f (SAE 4)	G1/4" m, R1/4" m, 1/4"NPT m, 1/2"NPT m	G1/4" m, G1/4" f, G1/2" m, Flange		
Electrical connections	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		
Applications	Shipbuilding Engine manufacturing Railways	Machine tools HVAC Refrigeration	Machine tools Hydraulics Process technology	Shipbuilding Machine tools Hydraulics		
Approval / conformity	GL			GL		
Data sheet	H72333	H72320	H72321	H72605		
Instructions	H73333	H73320	H73320	H73605		

Overview Pressure transmitter

EPR 8293	NPN 8264	FPT 8235	CMP 8270	N 8202	ND 8204
page 38	page 35	page 50	page 52	page 60	page 61
					
Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel
0 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 250 bar	0 ... 1 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	0 ... 1 to 0 ... 600 bar	0 ... 1.0 to 0 ... 600 bar	0 ... 1 to 0 ... 16 bar
4 ... 20 mA	4 ... 20 mA	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Bus protocol CANopen DS404	4 ... 20 mA	4 ... 20 mA (P1-P2)
± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.4 % FS	± 0.5 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.		
-40°C ... +125°C	-40°C ... +100°C	-40°C ... +85°C	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C
-40°C ... +125°C	-40°C ... +100°C	-40°C ... +125°C	-50°C ... +135°C	-25°C ... +125°C	-25°C ... +125°C
IP65, IP67	IP65, IP69K	Min. IP65	Min. IP67	Min. IP65	Min. IP65
1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4542 (AISI630)
1.4301 (AISI304) 1.4542 (AISI630)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated
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	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
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	M12x1	Terminal screw 0.75 ... 2.5 mm ²	Terminal screw 0.75 ... 2.5 mm ²
Railways	Shipbuilding Engine manufacturing	Engine manufacturing Machine tools	Engine manufacturing Railways	Shipbuilding Engine manufacturing	Shipbuilding Engine manufacturing
EN50155 (Railways)	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS			ABS, BV, CCS, DNV, GL, KRS, LRS, RINA	BV, DNV, RINA
H72311	H72313	H72316	H72614	H72206	H72218
H73311	H73313	H73316	H73614	H70722	H73218

Overview Ex Pressure transmitters

	EXNT 8292	EXNA 8854	EXL 8432	EXNAL 8858	
	page 64	page 62	page 66	page 63	
					
Measuring principle	Thin film on steel	Piezoresistive	Thick film on ceramic	Piezoresistive	
Measuring range	0 ... 0.4 to 0 ... 2000 bar	0 ... 0.1 to 0 ... 1000 bar	0 ... 0.2 to 0 ... 10 bar	0 ... 0.1 to 0 ... 25 bar	
Output signal	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		± 0.3 % FS typ. ± 0.5 % FS typ.		
Ambient temperature	Max. -40°C ... +120°C	-40°C ... +125°C	-20°C ... +70°C	-5°C ... +50°C	
Media temperature	Max. -40°C ... +120°C	-40°C ... +150°C	-20°C ... +70°C	-5°C ... +50°C	
Protection	IP65, IP67	Min. IP65	IP68 (25 bar; 250m)	Min. IP68	
Sensor (wetted parts)	1.4542 (AISI630), optional hydrogen-compatible steel	1.4435 (AISI316L) or titanium	Ceramic, Al ₂ O ₃ (96 %)	1.4435 (AISI316L)	
Pressure connection (wetted parts)	1.4542 (AISI630) 1.4301 (AISI304) optional hydrogen-compatible steel	1.4435 (AISI316L) or titanium	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	
Housing	1.4301 (AISI304)	1.4435 (AISI316L) or titanium	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	
Pressure connections	G1/4" m, 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	Type 1 f, M 10x1, Type 2 m, M 22x1	Open; Closed; G1/4" m	
Electrical connections	EN175301-803-A; M12x1; MIL-C 26482; Binder 723; Cable	EN175301-803-A; M12x1; MIL-C 26482; Binder 723; Cable	Cable PUR/FEP/PE	Cable PUR/Teflon/PE	
Applications	Shipbuilding Ex Zones 0, 1, 2 (gas); 20, 21, 22 (dust) and mining Hydrogen	Ex Zone 0, 1, 2 / Gas Ex Zone 20, 21, 22 / Dust Ex Underground Mining	Ex Zone 0, 1, 2 / Gas Ex Underground Mining	Shipbuilding Ex SEV 11 ATEX 0145 X	
Approval / conformity	GL, KRS ATEX / IECEx, according to the norm EN/IEC 60079-0/EN 60079-11/ EN 60079-26/ EN 50303	Ex according to standards, IEC/EN 60079-0 /-11/-26, EN 50303	GL, KRS Ex ATEX/IECEx, EN 60079-0/ EN 60079-11/EN 60079-26/ EN 50303	GL, KRS	
Type of protection		⊕ II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIC IP6xT145 ... T70°C I M1 Ex ia I		⊕ Ex ia IIC T3 ... T6	
Data sheet	H72329	H72334	H72330	H72231	
Instructions	H73329		H73329		

Overview Submersible pressure transmitters

ECL 8438	ECL 8439	NAL 8838	
page 48	page 46	page 45	
			
Thick film on ceramic	Thick film on ceramic	Piezoresistive	
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	
4 ... 20 mA	4 ... 20 mA	4 ... 20 mA 0 ... 10 VDC	
± 0.3 % FS typ. ± 0.5 % FS typ.	± 0.3 % FS typ. ± 0.5 % FS typ.		
-25°C ... +80°C (+70°C)	-10°C ... +70°C	-5°C ... +50°C	
-25°C ... +80°C (+70°C)	-10°C ... +70°C	-5°C ... +50°C	
IP68 (25 bar; 250m)	IP68 (2.0 bar; 20m)	Min. IP68	
Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96%)	1.4435 (AISI316L)	
1.4404/1.4435 (AISI316L)	1.4404 (AISI316L) or 1.4462 (AISI318LN)	1.4435 (AISI316L) or titanium	
1.4404/1.4435 (AISI316L)	1.4404 (AISI316L) or 1.4462 (AISI318LN)	1.4435 (AISI316L) or titanium	
Type 1 f, M 10x1, Type 2 m, M 22x1		Open, Closed, G1/4" m	
Cable PUR/FEP/PE	Cable PUR/Radox/PE	Cable PUR/Teflon/PE	
Shipbuilding Process technology Water treatment	Process technology Water treatment (wastewater, grey-water, drinking water)	Shipbuilding Process technology	
GL, KRS		GL, KRS	
H72328	H72336	H72228	
H73328	H73336		

ECT 8472

Industrial Pressure Transmitter



Features

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

Technical Data

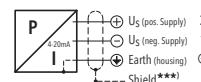
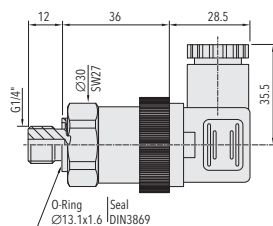
Measuring principle	Thick film on ceramic	Accuracy @ 25°C typ.	± 0.5 % FS typ.
Measuring range	0 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	Media temperature	-25°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Ambient temperature	-25°C ... +85°C (Cable PVC 22: -5°C ... +60°C)

Standard products (extra short lead time)

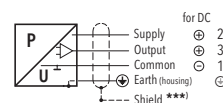
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
ECT1.0A	8472 71 5717 05 0000 0000 19 58 61	0 ... 1	3.2	4 ... 20 mA	9 ... 30
ECT2.5A	8472 75 5717 05 0000 0000 19 58 61	0 ... 2.5	5	4 ... 20 mA	9 ... 30
ECT6.0A	8472 77 5717 05 0000 0000 19 58 61	0 ... 6	12	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

Pressure peak damping element: see 'Accessories' or data sheet H72258

Dimensions see data sheet



ECT ... A (4 ... 20 mA)



ECT ... V (0 ... 10 V)

 Data sheet
Instructions

H72324
H73324

				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, 1.4305			57	Absolute pressure, 1.4305 ³⁾			87			
Relative pressure, 1.4404/1.4435 ⁴⁾			59	Absolute pressure, 1.4404/1.4435 ^{3) 4)}			89					
Relative pressure, 1.4462 ⁴⁾			52	Absolute pressure, 1.4462 ^{3) 4)}			82					
Relative pressure, titanium grade 5 ⁴⁾			53	Absolute pressure, titanium grade 5 ^{3) 4)}			83					
Pressure connection	G1/4" female			10	1/4" NPT male ⁴⁾			30				
	G1/4" male			17	7/16"-20UNF male SAE4 ^{4) 10)}			42				
	G1/2" male DIN3852-A ⁴⁾			21	R1/4" male ISO-7-1 (DIN2999)			19				
	G1/2" male DIN3852-E ⁴⁾			41	G3/4" frontal membrane, max. nominal pressure 60 bar ^{4) 7)}			52				
Electrical connection	Male electrical plug EN 175301-803-A, Mat. PA			05	Male electrical plug industrial standard (contact distance 9.4 mm) Mat. PBT			01				
	Male electrical plug M12x1, 5-pole, Mat. PA			35	Cable IP67, Mat. PVC (cable gland PA6-3), -5°C ... +60°C ^{5) 6)}			22				
	Male electrical plug Packard Metri Pack ⁹⁾			51	Cable IP68, max. 3m, medium +10°C...+35°C, Pmax. 1 bar rel./abs.			68				
Output signal	Signal output	Load resistance	I (supply)	U (supply)		Signal output	Load resistance	I (supply)	U (supply)			
	4 ... 20 mA	(U _{supply} -9 V) / 20 mA		9 ... 30 VDC	19	0 ... 10 VDC	≥ 5.0 kΩ	≤ 10 mA	15 ... 30 VDC	17		
	0 ... 5 VDC	≥ 2.5 kΩ	≤ 10 mA	10 ... 30 VDC	14	0.5 ... 4.5 VDC ratiometric	≥ 5.0 kΩ	≤ 10 mA	5 VDC ± 0.25 VDC ratiometric.	23		
	1 ... 6 VDC	≥ 5.0 kΩ	≤ 10 mA	10 ... 30 VDC	16							
Accessories	Seal FKM (-20°C ... +125°C)			61	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				
	Seal CR ≤ 100 bar (-25°C ... +100°C) ⁸⁾			62	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 out (only for output signals 14, 16, 17, 23 and male electrical plug EN175301-803-A / DIN43650-A)			97				
	Seal EPDM (-25°C ... +125°C)			63	Special electrical connection: Pin 1 +, Pin 3 - (only for output 4...20 mA and male electrical plug Packard Metri Pack 3-poles)			E4				
	Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)			40	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				
	Pressure peak damping element ø 0.3 mm (for pressure connections 17 and 30)			43	Cable length 1.5 m			1M				
	Pressure peak damping element ø 0.4 mm (for pressure connections 17 and 30)			44	Cable length 3.0 m			3M				
	Pressure peak damping element ø 0.5 mm (for pressure connections 17 and 30)			45	Cable length 5.0 m			5M				
	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...20mA 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 ... +125°C

³⁾ Absolute ranges max. 40 bar

⁴⁾ Please ask us

⁵⁾ Cable length see accessories

⁶⁾ More materials and cables with venting tubes for low pressure ranges upon request

⁷⁾ Not for sensors 57 and 87, only for pressure ranges ≤ 10 bar or 150 psi

⁸⁾ Only for pressure connections 10 and 30

⁹⁾ Pressure ranges > 16 bar (Pressure ranges ≤ 16 bar upon request)

¹⁰⁾ According to norm J1926, max. 35 MPa

ECT 0.3 % (0.5 %, 1.0 %) 8473

Industrial Pressure Transmitter



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)

Standard products (extra short lead time)

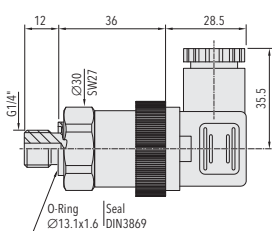
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Pressure connection	Signal output	Accuracy @ 25°C typ. [%]
ECT0.1A	8473 66 5417 05 0000 0000 19 58 61	0 ... 0.1	2	G1/4" male	4 ... 20 mA	1.0
ECT0.2A	8473 68 5417 05 0000 0000 19 58 61	0 ... 0.2	2	G1/4" male	4 ... 20 mA	0.5
ECT0.4A	8473 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

Pressure peak damping element: see 'Accessories' or data sheet H72258

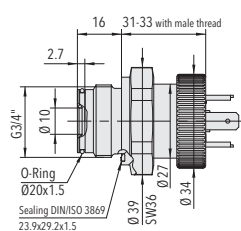
Dimensions & electrical connections see next page

Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]		8473 . XX	XX	XX	XX	XX	XX
		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, 1.4305			54	Absolute pressure, 1.4305 ^{2) 3)}				84					
	Relative pressure, 1.4404/1.4435 ²⁾			56	Absolute pressure, 1.4404/1.4435 ^{2) 3)}				86					
	Relative pressure, 1.4462 ²⁾			50	Absolute pressure, 1.4462 ^{2) 3)}				80					
	Relative pressure, titanium grade 5 ²⁾			51	Absolute pressure, titanium grade 5 ^{2) 3)}				81					
Pressure connection	G1/4" female													10
	G1/4" male													17
	G1/2" male ²⁾													21
	1/4" NPT male ²⁾													30
	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													35
	Male electrical plug industrial standard (contact distance 9.4 mm) Mat. PBT													01
	Male electrical plug Packard Metri Pack													51
	Cable IP67, Mat. PVC (cable gland PA6-3), -5°C ... +60°C ^{5) 6)}													22
	Cable IP68, max. 3m, medium +10°C...+35°C, Pmax. 1 bar rel./abs.													68
Output signal	Signal output	Load resistance	I (supply)	U (supply)										
	4 ... 20 mA	(U _{supply} -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

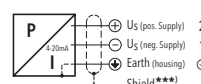
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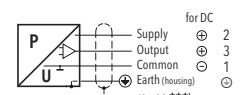
ECT ...



ECTF ...



ECT ... A/ECTF ... A (4 ... 20 mA)

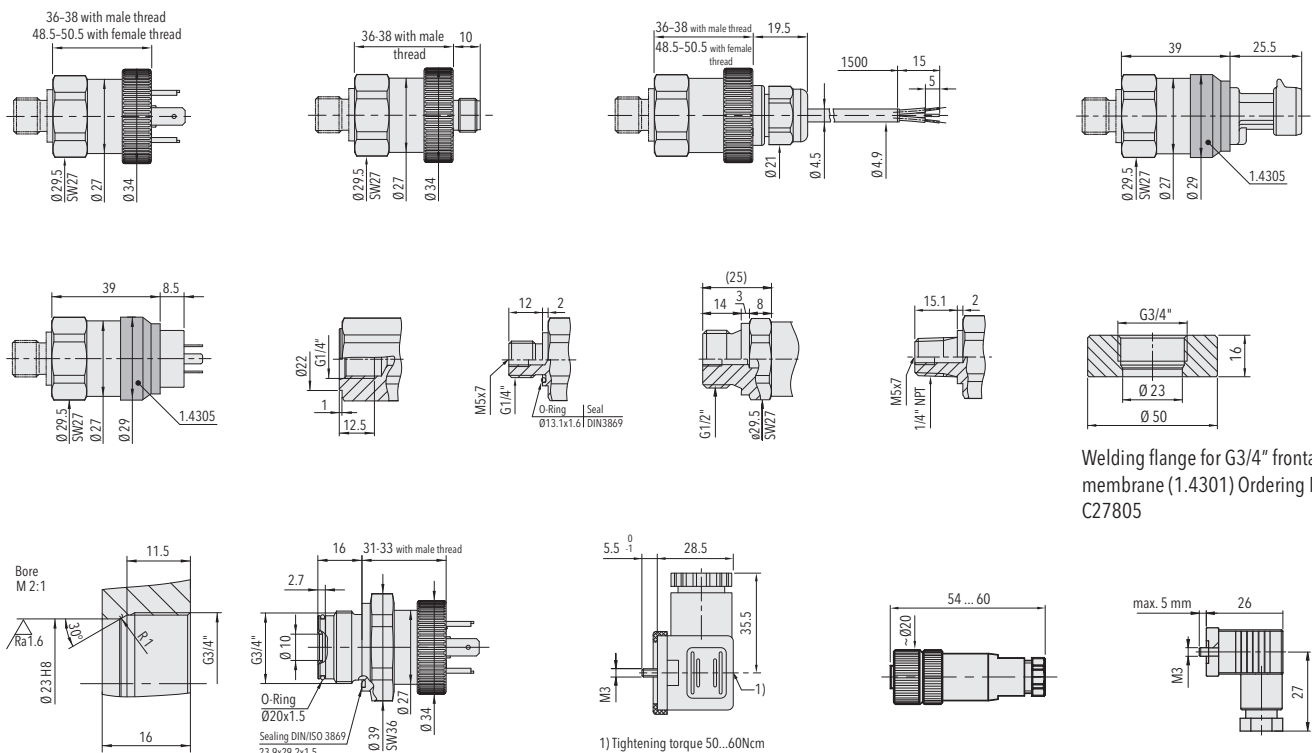


ECT ... V (0 ... 10 V)

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...20mA 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 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, 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

- 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
- ⁶⁾ More materials and cables with venting tubes for low pressure ranges upon request
- ⁷⁾ Only for pressure connections 10 and 30

i Identical construction for refrigeration:
Data sheet No. H72323



o Data sheet
Instructions

H72326
H73324

ECTR 8471

Economic Refrigeration Pressure Transmitter



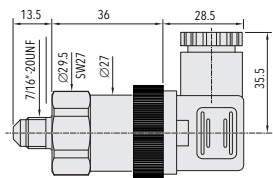
Features

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

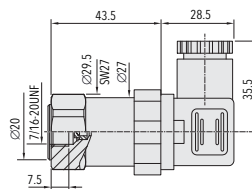
Technical Data			
Measuring principle	Thick film on ceramic	Accuracy @ 25°C typ.	± 0.5 % FS typ.
Measuring range	-1 ... 9 to 0 ... 40 bar 0 ... 15 to 0 ... 500 psi	Media temperature	-25°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Ambient temperature	-25°C ... +85°C (Cable PVC 22: -5°C ... +60°C)

Data sheet	H72323
Instructions	H73324

Standard products (extra short lead time)					
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
ECTR9.0A	8471 26 5718 05 0000 0000 19 58 62 01	-1 ... 9	20	4 ... 20 mA	9 ... 30
ECTR16.0A	8471 27 5718 05 0000 0000 19 58 62 01	-1 ... 16	32	4 ... 20 mA	9 ... 30
*ECTR25.0A	8471 80 5718 05 0000 0000 19 58 62	0 ... 25	50	4 ... 20 mA	9 ... 30
ECTR30.0A	8471 29 5718 05 0000 0000 19 58 62 01	0 ... 30	50	4 ... 20 mA	9 ... 30
ECTR9.0A	8471 26 5724 05 0000 0000 19 58 62 01	-1 ... 9	20	4 ... 20 mA	9 ... 30
ECTR16.0A	8471 27 5724 05 0000 0000 19 58 62 01	-1 ... 16	32	4 ... 20 mA	9 ... 30
ECTR25.0A	8471 80 5724 05 0000 0000 19 58 62	0 ... 25	50	4 ... 20 mA	9 ... 30



ECTR ...



ECTRV ...



ECTR ... A (4 ... 20 mA)
ECTRV ... A (4 ... 20 mA)

NAT 8252

Industrial Pressure Transmitter



Features

- Smallest design
- Completely welded steel sensor system without additional seals
- Excellent long-term stability
- Optional: fivefold overpressure resistance

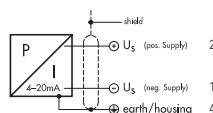
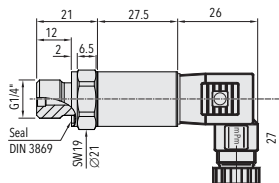
Technical Data

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)

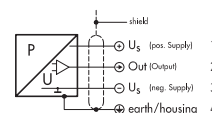
Standard products (extra short lead time)

Product No.	Type Code	Signal output	Pressure range [bar]	Product No.	Type Code	Signal output	Pressure range [bar]
NAT2.5A	8252 75 2517 01 19 34 44 61	4 ... 20 mA	0 ... 2.5	NAT2.5V	8252 75 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 2.5
NAT4.0A	8252 76 2517 01 19 34 44 61	4 ... 20 mA	0 ... 4	NAT4.0V	8252 76 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 4
NAT6.0A	8252 77 2517 01 19 34 44 61	4 ... 20 mA	0 ... 6	NAT6.0V	8252 77 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 6
NAT10.0A	8252 78 2517 01 19 34 44 61	4 ... 20 mA	0 ... 10	NAT10.0V	8252 78 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 10
NAT16.0A	8252 79 2517 01 19 34 44 61	4 ... 20 mA	0 ... 16	NAT16.0V	8252 79 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 16
NAT25.0A	8252 80 2517 01 19 34 44 61	4 ... 20 mA	0 ... 25	NAT25.0V	8252 80 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 25
NAT40.0A	8252 81 2517 01 19 34 44 61	4 ... 20 mA	0 ... 40	NAT40.0V	8252 81 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 40
NAT100.0A	8252 83 2517 01 19 34 44 61	4 ... 20 mA	0 ... 100	NAT100.0V	8252 83 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 100
NAT250.0A	8252 74 2517 01 19 34 44 61	4 ... 20 mA	0 ... 250	NAT250.0V	8252 74 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 250
NAT400.0A	8252 84 2517 01 19 34 44 61	4 ... 20 mA	0 ... 400	NAT400.0V	8252 84 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 400
NAT600.0A	8252 86 2517 01 19 34 44 61	4 ... 20 mA	0 ... 600	NAT600.0V	8252 86 2517 01 17 34 44 61	0 ... 10 VDC	0 ... 600

Pressure peak damping element integrated



NAT ... A (4 ... 20 mA)



NAT ... V (0 ... 10 VDC)

Data sheet
Instructions

H72303
H73303

				8252 . XX	XX	XX	XX	XX	XX	
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]							
	0 ... 2.5	7.5	50	75						
	0 ... 4	12	60	76						
	0 ... 6	18	100	77						
	0 ... 10	30	200	78						
	0 ... 16	48	200	79						
	0 ... 25	75	300	80						
	0 ... 40	120	300	81						
	0 ... 60	180	400	82						
	0 ... 100	300	500	83						
	0 ... 160	480	750	85						
	0 ... 250	750	1000	74						
	0 ... 400	1000	2000	84						
	0 ... 600	1500	2500	86						
	Option 5P:	Fivefold overpressure								
	0 ... 2.5	12.5	60	55						
	0 ... 4	20	100	56						
	0 ... 6	30	200	57						
	0 ... 10	50	200	58						
	0 ... 16	80	300	59						
	0 ... 25	125	300	60						
	0 ... 40	200	400	61						
	0 ... 60	300	500	62						
	0 ... 100	500	750	63						
0 ... 160	800	1000	65							
Sensor	Relative pressure								25	
Pressure connection	G1/4" male, seal: DIN 3869 (accessories 61/63/83)		17	R1/4" male ISO 7-1 (DIN 2999) ⁵⁾					19	
	1/4" NPT male		30	R1/8" male ISO 7-1 (DIN 2999) ⁵⁾					16	
	7/16"-20UNF female SAE J512 with valve opener ⁴⁾		24	M10x1 male					32	
	7/16"-20UNF SAE4 male, seal: accessory 61 ⁸⁾		42	M12x1.5 male (DIN EN ISO 9974-2), upon request					49	
Electrical connection	Male electrical plug, industrial standard, contact distance 9.4 mm, Mat. PA		01	Cable IP67, Mat. PVC ⁷⁾					22	
	Male electrical plug M12x1, 4-pole, Mat. PA		32	Cable IP67, Mat. PUR ⁷⁾					24	
	Male electrical plug M12x1, 5-pole, Mat. PA		35	Cable IP67, Mat. EPD Raychem FDR25 ⁷⁾					08	
Output signal	Signal output	Load resistance		I (supply)		U (supply)				
	4 ... 20mA	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		

Continuation on next page

Accessories	Female electrical plug M12x1, 5-pole ²⁾	33
	Female electrical connector industrial standard (for electrical connection 01)	34
	Pressure peak damping element \varnothing 1.0 mm ⁴⁾	40
	Pressure peak damping element \varnothing 0.4 mm ⁴⁾	44
	Seal FPM, -18°C ... +125°C	61
	Seal EPDM, -40°C ... +125°C	63
	Seal NBR, -25°C ... +100°C	83
	Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 - (only for output signal 19 and male electrical plug 01, industrial standard)	90
	Special electrical connection: Pin 1 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 -, 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
	Cable length 0.5 m	EM
	Cable length 1.0 m	1M
	Cable length 2.0 m	2M
	Parameterisation according to customer specification (see table parameter), for output signal PS, T1 ³⁾	ZC

¹⁾ Customized pressure ranges upon request

²⁾ For electrical connections 32 and 35

³⁾ Only with electrical connection 32

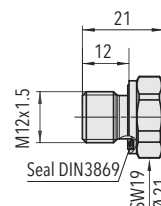
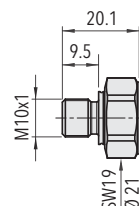
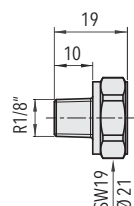
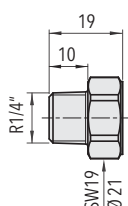
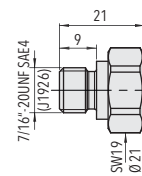
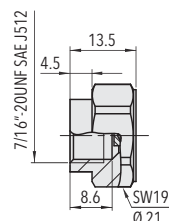
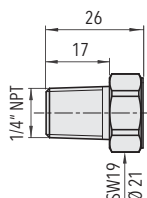
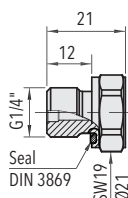
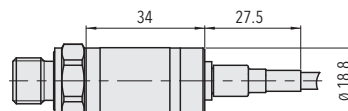
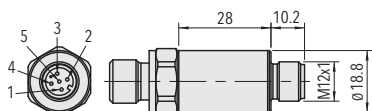
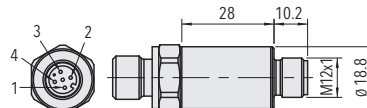
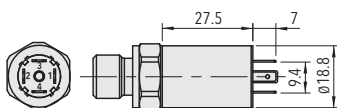
⁴⁾ Max. allowable pressure range 60 bar at 120 bar overpressure

⁵⁾ Max. allowable pressure range 160 bar at 500 bar overpressure

⁶⁾ Only for pressure connections 17, 30, 32

⁷⁾ Cable length see accessories

⁸⁾ According to norm J1926, max. 35 MPa



NSL 8257

Low Pressure Transmitter



Features

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

Technical Data

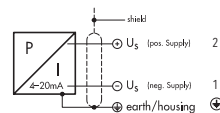
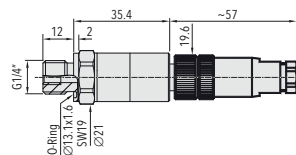
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	Approval / conformity	GL, DNV, RINA
Accuracy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

Data sheet H72302
 Instructions H73250

Additional dimensions see data sheet

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



NSL ... A (4 ... 20 mA)

Pressure peak damping element integrated

NAH 8254

Hydraulic Pressure Transmitter



Features

- Measuring accuracy 0.3 %
- Completely welded steel sensor system without additional seals
- Smallest design
- Excellent long-term stability
- Optional: fivefold overpressure resistance

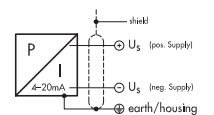
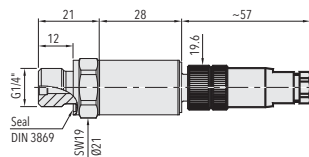
Technical Data

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)

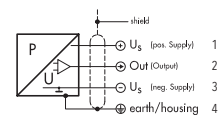
Standard products (extra short lead time)

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

Pressure peak damping element integrated



NAH ... A (4 ... 20 mA)



NAH ... V (0 ... 10 VDC)

Data sheet
Instructions

H72304
H73303

				8254 . XX	XX	XX	XX	XX	XX	
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]			
	0 ... 2.5	7.5	50	75	0 ... 30	90	700	G5		
	0 ... 4	12	60	76	0 ... 50	150	850	G6		
	0 ... 6	18	100	77	0 ... 100	300	1450	G7		
	0 ... 10	30	200	78	0 ... 150	450	2500	G8		
	0 ... 16	48	200	79	0 ... 200	600	2500	GA		
	0 ... 25	75	300	80	0 ... 250	750	2500	G9		
	0 ... 40	120	300	81	0 ... 300	900	4000	HA		
	0 ... 60	180	400	82	0 ... 400	1200	4000	H0		
	0 ... 100	300	500	83	0 ... 500	1500	4000	H1		
	0 ... 160	480	750	85	0 ... 1000	3000	5000	H2		
	0 ... 250	750	1000	74	0 ... 1500	4500	7000	H3		
	0 ... 400	1000	2000	84	0 ... 2000	6000	10000	H5		
	0 ... 600	1500	2500	86	0 ... 3000	9000	14500	G4		
	Option 5P:	Fivefold overpressure				0 ... 5000	12500	21750	H4	
	0 ... 2.5	12.5	60	55	0 ... 7500	18750	29000	H6		
	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	R1/4" male ISO 7-1 (DIN 2999) ⁵⁾	19						
	1/4" NPT male	30	R1/8" male ISO 7-1 (DIN 2999) ⁵⁾	16						
	7/16"-20UNF female SAE J512 with valve opener ⁴⁾	24	M10x1 male	32						
	7/16"-20UNF SAE4 male, seal: accessory 61 ⁸⁾	42	M12x1.5 male (DIN EN ISO 9974-2), upon request	49						
Electrical connection	Male electrical plug, industrial standard, contact distance 9.4 mm, Mat. PA	01	Cable IP67, Mat. PVC ⁷⁾	22						
	Male electrical plug M12x1, 4-pole, Mat. PA	32	Cable IP67, Mat. PUR ⁷⁾	24						
	Male electrical plug M12x1, 5-pole, Mat. PA	35	Cable IP67, Mat. EPD Raychem FDR25 ⁷⁾	08						
Output signal	Signal output	Load resistance	I (supply)	U (supply)						
	4 ... 20mA	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						

Continuation on next page

Accessories		
Female electrical plug M12x1, 5-pole ²⁾		33
Female electrical connector industrial standard (for electrical connection 01)		34
Pressure peak damping element \varnothing 1.0 mm ⁴⁾		40
Pressure peak damping element \varnothing 0.4 mm ⁴⁾		44
Seal FPM, -18°C ... +125°C		61
Seal EPDM, -40°C ... +125°C		63
Seal NBR, -25°C ... +100°C		83
Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 - (only for output signal 19 and male electrical plug 01, industrial standard)		90
Special electrical connection: Pin 1 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 -, 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
Cable length 0.5 m		EM
Cable length 1.0 m		1M
Cable length 2.0 m		2M
Parameterisation according to customer specification (see table parameter), for output signal PS, T1 ³⁾		ZC

¹⁾ Customized pressure ranges upon request

²⁾ For electrical connections 32 and 35

³⁾ Only with electrical connection 32

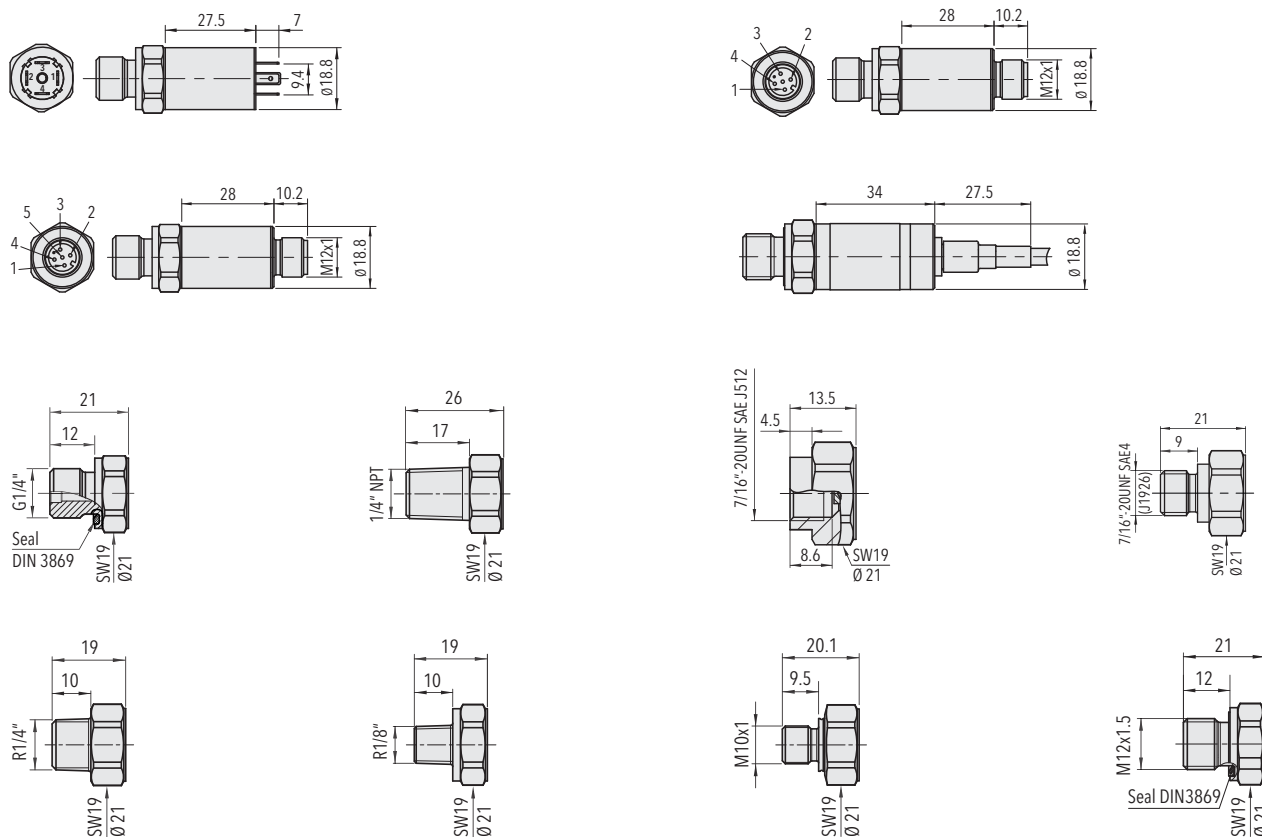
⁴⁾ Max. allowable pressure range 60 bar at 120 bar overpressure

⁵⁾ Max. allowable pressure range 160 bar at 500 bar overpressure

⁶⁾ Only for pressure connections 17, 30, 32

⁷⁾ Cable length see accessories

⁸⁾ According to norm J1926, max. 35 MPa



NAE 8256

Engine Pressure Transmitter



Features

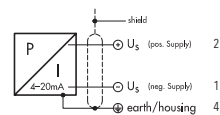
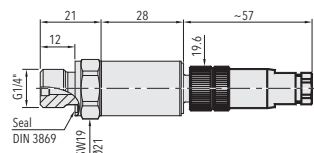
- Measuring accuracy 0.3 %, 0.5 %
- Completely welded steel sensor system without additional seals
- Smallest design
- High resistance to over pressure
- Excellent long-term stability

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 10 to 0 ... 600 bar 0 ... 150 to 0 ... 7500 psi	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA	Approval / conformity	ABS, BV, DNV, GL, LRS, KRS, NKK, RINA, RMRS
Accuracy @ 25°C typ.	0.5 %: ± 0.5 % FS typ. 0.3 %: ± 0.3 % FS typ.		

Data sheet H72305
 Instructions H73303

Additional dimensions see data sheet

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



NAE... A (4 ... 20 mA)

Pressure peak damping element integrated

NAH 8253

Hydraulic Pressure Transmitter

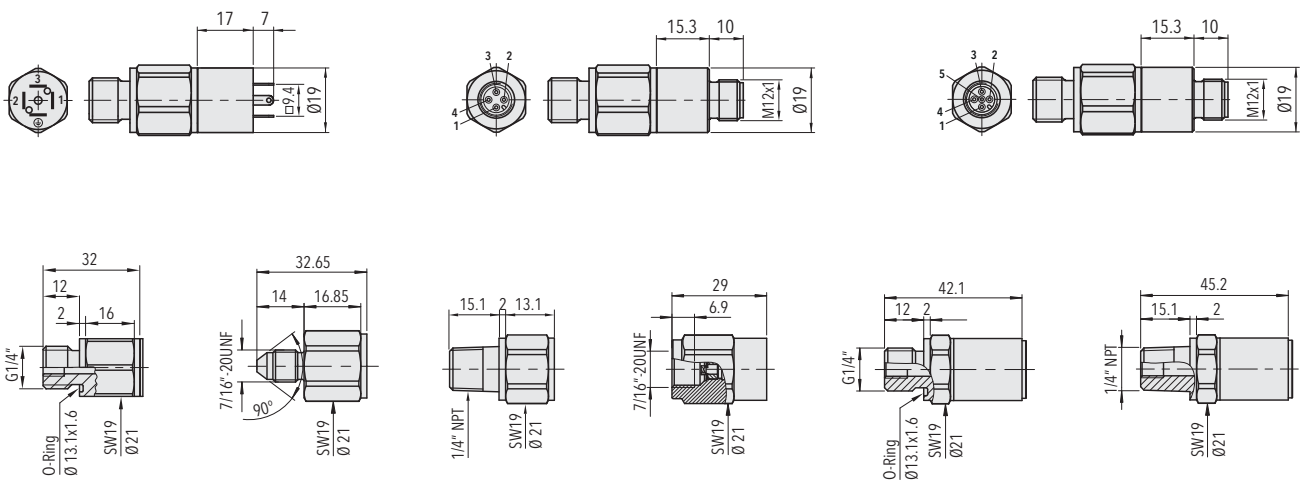


Features

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

Technical Data

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



				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	0 ... 30	90	700	G5				
	0 ... 4	8	60	0 ... 50	150	850	G6					
	0 ... 6	12	100	0 ... 100	300	1450	G7					
	0 ... 10	20	200	0 ... 150	450	2500	G8					
	0 ... 16	32	200	0 ... 200	600	2500	GA					
	0 ... 25	50	300	0 ... 250	750	2500	G9					
	0 ... 40	80	300	0 ... 300	900	4000	HA					
	0 ... 60	120	400	0 ... 400	1200	4000	H0					
	0 ... 100	200	500	0 ... 500	1500	4000	H1					
	0 ... 160	320	750	0 ... 1000	3000	5000	H2					
	0 ... 250	500	1000	0 ... 1500	4500	7000	H3					
	0 ... 400	800	1500	0 ... 2000	6000	10000	H5					
	0 ... 600	1000	2000	0 ... 3000	9000	14500	G4					
				0 ... 5000	12500	21750	H4					
				0 ... 7500	18750	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				
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	(U _{supply} -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



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

EPI 8287

Industrial Pressure Transmitter



Features

- Excellent long-term stability
- High resistance to over pressure
- Completely welded steel sensor system without additional seals
- Compact design

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 VDC, 1 ... 6 VDC, 0 ... 10 VDC	Ambient temperature	-40°C ... +125°C

Standard products (extra short lead time)

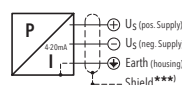
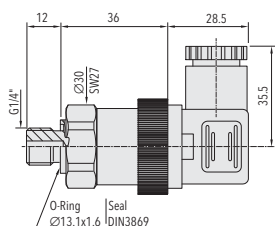
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
EPI4.0A	8287 76 2517 05 0000 0000 19 44 58 61	0 ... 4	12	4 ... 20 mA	9 ... 32
EPI6.0A	8287 77 2517 05 0000 0000 19 44 58 61	0 ... 6	18	4 ... 20 mA	9 ... 32
EPI10.0A	8287 78 2517 05 0000 0000 19 44 58 61	0 ... 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



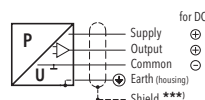
Data sheet
Instructions

H72317
H73317

				8287 . XX	XX	XX	XX	XX	XX	
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]							
	0 ... 2.5	7.5	50	75						
	0 ... 4	12	60	76						
	0 ... 6	18	100	77						
	0 ... 10	30	200	78						
	0 ... 16	48	200	79						
	0 ... 25	75	300	80						
	0 ... 40	120	300	81						
	0 ... 60	180	400	82						
	0 ... 100	300	500	83						
	0 ... 160	480	750	85						
	0 ... 250	750	1000	74						
	0 ... 400	1000	2000	84						
	0 ... 600	1500	2500	86						
	Option 5P:	Fivefold overpressure								
	0 ... 2.5	12.5	60	55						
	0 ... 4	20	100	56						
	0 ... 6	30	200	57						
	0 ... 10	50	200	58						
	0 ... 16	80	300	59						
	0 ... 25	125	300	60						
	0 ... 40	200	400	61						
	0 ... 60	300	500	62						
	0 ... 100	500	750	63						
	0 ... 160	800	1000	65						
	Sensor	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) ³⁾				35				
Pressure connection	G1/4" female				10					
	G1/4" male (Seal)				17					
	R1/4" male				19					
	G1/2" male DIN16288-8 (Manometer)				11					
	1/4" NPT male ²⁾				30					
	1/2" NPT male				51					
	M14x1.5 male DIN6149-2				31					
Electrical connection	Male electrical plug EN 175301-803-A, Mat. PA				05					
Output signal	Signal output	Load resistance	I (supply)	U (supply)						
	4 ... 20 mA	(U _{supply} -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					



EPI ... A (4 ... 20 mA)



EPI ... V (0 ... 10 VDC)

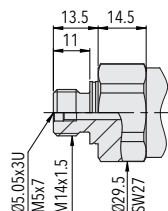
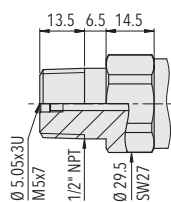
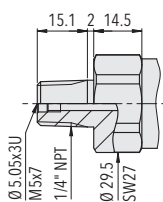
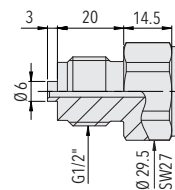
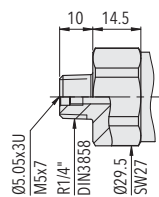
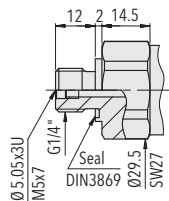
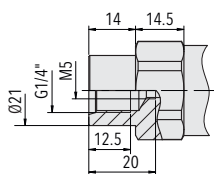
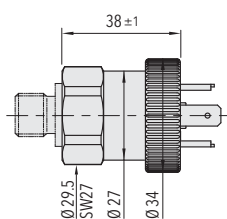
Continuation on next page

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 \varnothing 1.0 mm (for pressure connections 17 and 30)	40
	Pressure peak damping element \varnothing 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...20mA and male electrical plug EN175301-803-A / DIN43650-A)	92
	Special electrical connection: Pin 1 + , Pin 2 - , Pin 3 out (only for output signals 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 EN175301-803-A / DIN43650-A)	97

¹⁾ Customized pressure ranges upon request

²⁾ Upon request

³⁾ Only with pressure connection 17 (G1/4")



NPN 8264

Picotrans

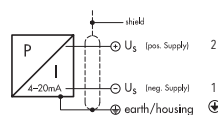
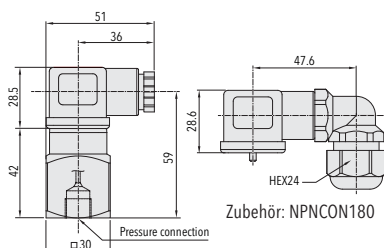


Features

- 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.		

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)



NPN ... A4 (4 ... 20 mA)
NPN ... AF4 (4 ... 20 mA)

Data sheet
Instructions

H72313
H73313

Additional dimensions see data sheet

EPN/EPNCR 8298

Engine Pressure Transmitter



Features

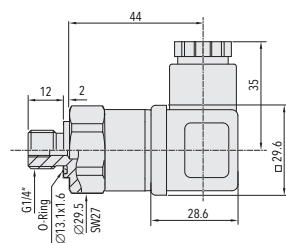
- Nominal pressure up to 2500 bar (Common Rail) with high pressure threaded connection
- High vibration resistance
- Good temperature resistance
- Different accuracy classes
- Completely welded steel sensor system without additional seals

Technical Data

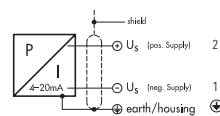
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 2500 bar	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS
Accuracy @ 25°C typ.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

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



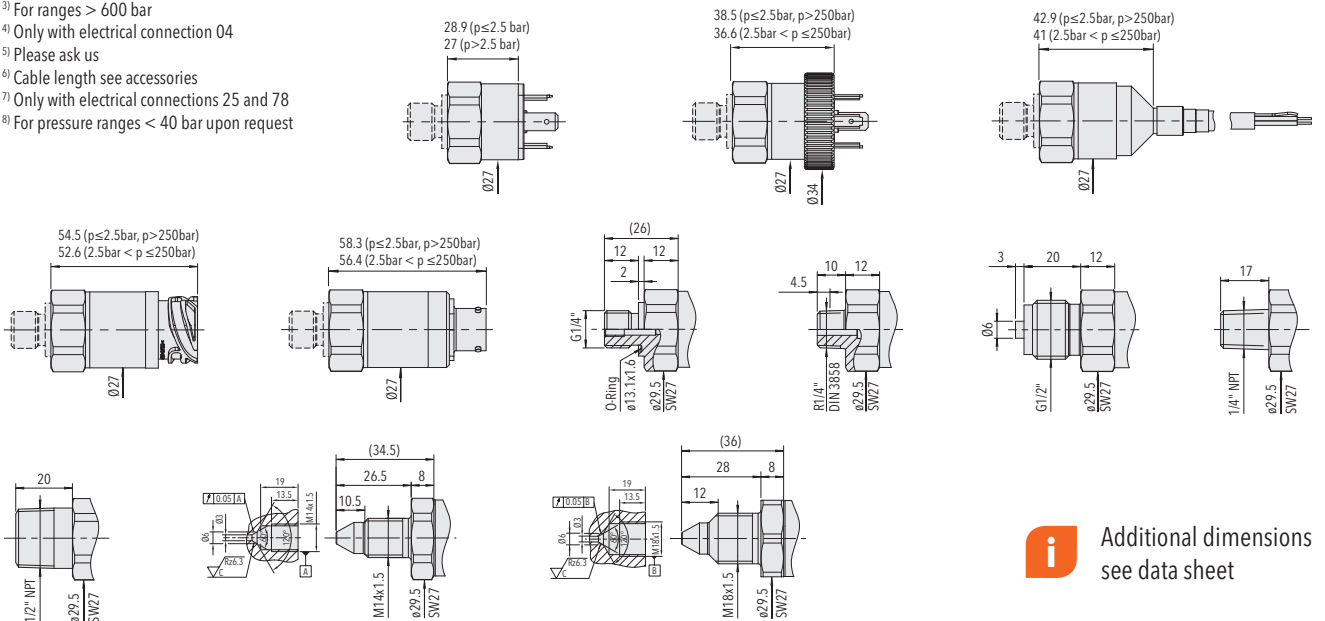
Pressure peak damping element integrated



EPN ... A (4 ... 20 mA)

				8298 . 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 ... 2.5	5	100	75	0 ... 100	200	500	83				
	0 ... 4	8	100	76	0 ... 160	320	1000	85				
	0 ... 6	12	100	77	0 ... 250	500	1000	74				
	0 ... 10	20	200	78	0 ... 400	800	1500	84				
	0 ... 16	32	200	79	0 ... 600	1000	2000	86				
	0 ... 25	50	300	80	0 ... 1600	3000	4000	89				
	0 ... 40	80	300	81	0 ... 2000	3000	4000	90				
	0 ... 60	120	500	82	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	1/2" NPT male ^{2) 5)}	51								
	R1/4" male ^{2) 4)}	19	M14x1.5 male (conical seal: 58°) ³⁾	28								
	G1/2" male DIN16288-8 (Manometer) ²⁾	11	M18x1.5 male (conical seal: 58°) ³⁾	29								
	1/4" NPT male ^{2) 5)}	30										
Electrical connection	Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA, normal vibration resistance ≤ 600 bar							04				
	Male electrical plug EN 175301-803-A (DIN43650-A), Mat. PA, extended vibration resistance							05				
	Male electrical plug: DIN72585 Code 1, Mat.: PBT (Contacts Mat.: Sn)							25				
	Male electrical plug MIL-C 26482, 6-pole, metal ⁸⁾							02				
	Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm ^{2) 6)}							78				
Output signal	Signal output	Load resistance	I (supply)	U (supply)								
	4 ... 20mA	(U _{supply} -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	Special electrical connection: Pin 1 + , Pin 2 -			
	Pressure peak damping element ø 0.3 mm							43	(only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A)			92
	Pressure peak damping element ø 0.5 mm							45	Cable length 1.5 m			1M
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40...90°C							58	Cable length 3.0 m			3M
	Female electrical connector MIL-C 26482, 6-pole, metal							32	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



i Additional dimensions see data sheet

EPR 8293

Railway Pressure Transmitter

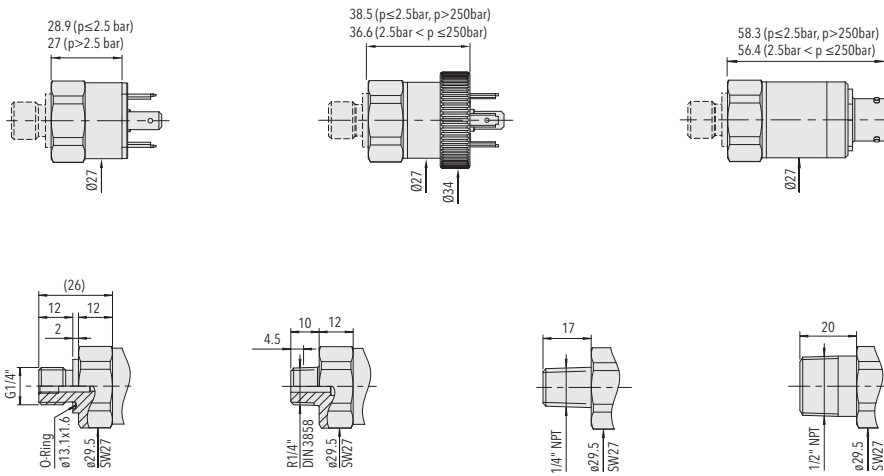


Features

- 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.		



Ordering information/type code

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

EPN-S 8320

Electronic Pressure Switch

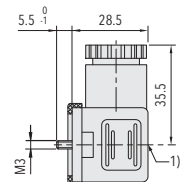
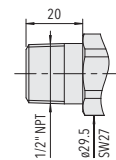
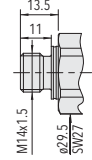
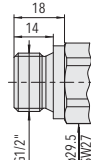
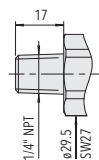
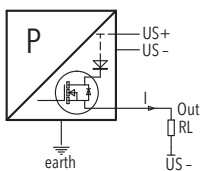
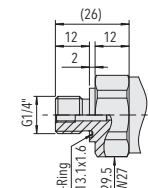
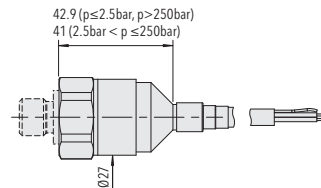
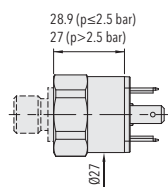
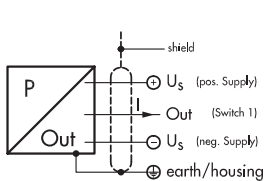


Features

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

Technical Data

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



Connection of loads to switch contacts

1) Tightening torque 50...60Ncm

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



Data sheet
Instructions

H72333
H73333

Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [ps]	Over pressure [ps]	Burst pressure [ps]		8320 . XX	XX	XX	XX	XX	XX
		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 0.5mm ² , -40°C ... +125°C, (Cable length see "Accessories")												78	
	Cable with shield: Material: Radox Tenuis-TW 600V MM S (EN45545), 4 x 0.5mm ² , -40°C ... +120°C, (Cable length 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...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

i Programming device Sensor Communicator SC

Ordering No.

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

Manuals:

- Sensor Communicator SC: H73699 (EN) / H73698 (DE)



ECTN 8477

Marine Pressure Transmitter



Features

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

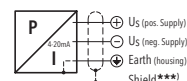
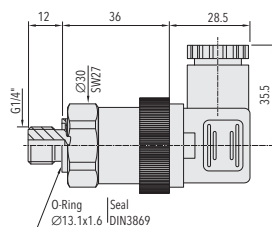
Technical Data

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.		

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

Pressure peak damping element: see 'Accessories' or data sheet H72258



ECTN ... A (4 ... 20 mA)

 Data sheet
Instructions

H72322
H73324

Additional dimensions see data sheet

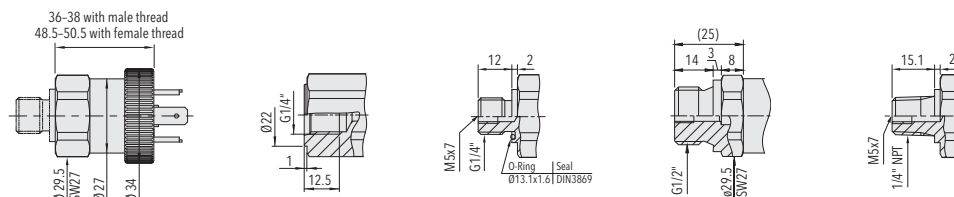
				8477 . XX				XX	XX	XX	XX	XX
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]					
	0 ... 1.0	2	3	71	0 ... 15	30	45	G1				
	0 ... 1.6	3.2	4.8	73	0 ... 20	40	70	G3				
	0 ... 2.5	5	7.5	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	Relative pressure, 1.4404/1.4435							59				
	Relative pressure, 1.4462 ⁴⁾							52				
	Relative pressure, titanium grade 5 ⁴⁾							53				
	Absolute pressure, 1.4404/1.4435 ³⁾							89				
	Absolute pressure, 1.4462 ^{3) 4)}							82				
	Absolute pressure, titanium grade 5 ^{3) 4)}							83				
Pressure connection	G1/4" female ⁴⁾								10			
	G1/4" male								17			
	G1/2" male ⁴⁾								21			
	1/4" NPT male ⁴⁾								30			
Electrical connection	Male electrical plug EN 175301-803-A, Mat. PA									05		
Output signal	Signal output	Load resistance	I (supply)		U (supply)							
	4 ... 20 mA	(U _{supply} -9 V) / 20 mA			9 ... 30 VDC						19	
Accessories	Seal FKM (-20°C ... +125°C)											61
	Seal EPDM (-25°C ... +125°C)											63
	Female electrical connector EN 175301-803-A (DIN43650-A)											58
	Pressure peak damping element ø 0.4 mm											44
	Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)											40
	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4...20mA 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



NAP 8842/8843

Pressure Transmitter



Features

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

Technical Data

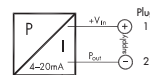
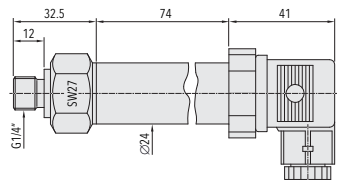
Measuring principle	Piezoresistive	Media temperature	0°C ... +80°C (opt. -25 ... +100°C/-25 ... +150°C)
Measuring range	0 ... 0.1 to 0 ... 1000 bar	Ambient temperature	0°C ... +70°C (opt. -25 ... +85°C)
Output signal	4 ... 20 mA 0 ... 10 VDC	Approval / conformity	GL, KRS



Data sheet H72230
Instructions H73208

Standard products (extra short lead time)

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



NAP ... A (4 ... 20 mA)

NAL 8838

Submersible Pressure Transmitter



Features

- Pressure ranges from 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

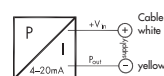
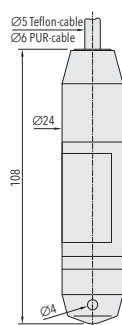


Data sheet
Instructions

H72228

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



NAL ... A (4 ... 20 mA)

ECL 8439

Submersible Pressure Transmitter

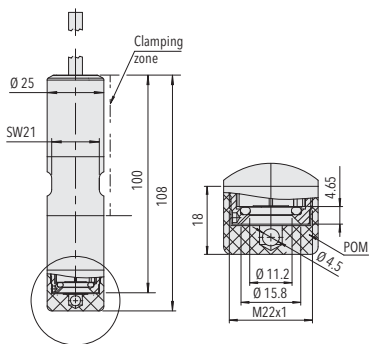


Features

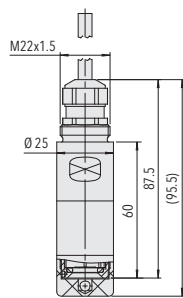
- Suitable for thick and viscous media
- Different materials for optimum media compatibility
- Lightning protection integrated

Technical Data

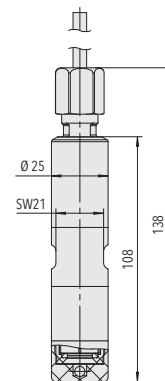
Measuring principle	Thick film on ceramic	Accuracy @ 25°C typ.	± 0.3 % FS typ. Range 0 ... 0.1 to 0 ... 0.2 bar: ± 0.5 % FS typ.
Measuring range	0 ... 0.1 to 0 ... 2.0 bar 0 ... 1.5 to 0 ... 30 psi	Media temperature	-10°C ... +70°C (Cable PE: -10°C ... +65°C)
Output signal	4 ... 20 mA	Ambient temperature	-10°C ... +70°C (Cable PE: -10°C ... +65°C)



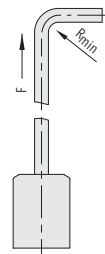
Standard version



OEM version



Serto adapter



Serto adapter SO 50021-12
for stainless steel tubes with
outer diameter 12 mm
inner diameter 8 mm

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					
Sensor	Relative pressure							23					
Housing	Housing AISI316L, standard version ²⁾			58	Housing 1.4462, OEM-version ^{2) 3)}			50					
	Housing 1.4462, standard version ^{2) 3)}			55	Housing AISI316L, Serto Connection ^{2) 3)}			60					
	Housing AISI316L, OEM-version ²⁾			56									
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. 50m)			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. 50m)			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. 50m)			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

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

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

¹⁾ Extra short lead time

ECL 8438

Submersible Pressure Transmitter



Features

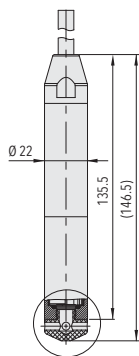
- Good media compatibility
- Economical
- Cable PUR/PE or FEP
- Lightning protection integrated

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.		

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	5 m
ECL0.5A	8438 21 2346 22 0000 0000 19 61 8M 01	0 ... 0.5	2	9 ... 30	10 m



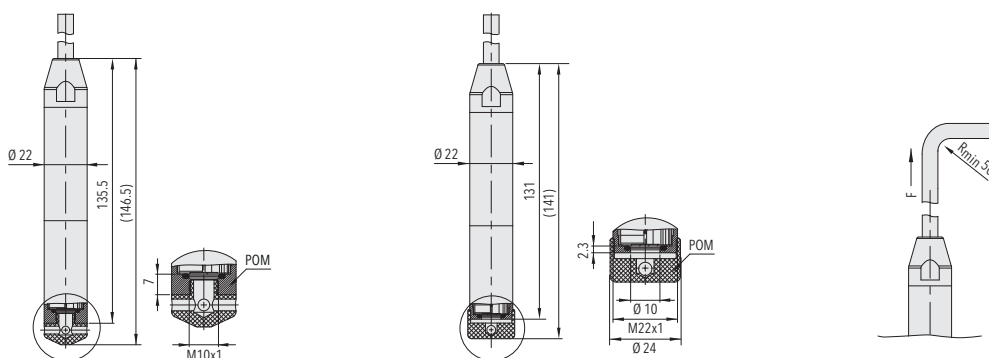
ECL ... A (4 ... 20 mA)

				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	Signal output	Load resistance	I (supply)	U (supply)					
	4 ... 20mA	(U _{supply} -9 V) / 20 mA		9 ... 30 VDC				19	
Accessories	Seal FKM								61
	Seal CR								62
	Seal EPDM								63

¹⁾ Extended overpressure as well as customized pressure ranges upon request

²⁾ Please specify cable length when ordering (cable lengths >50 m up to 120 m upon request)

³⁾ For level measurement applications on ships under certification GL (German Lloyd), the cable of such transmitters must be installed inside the tank only



FPT 8235

Flush Membrane Transmitter



Features

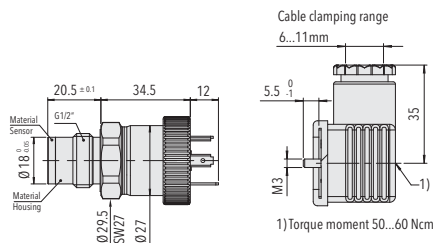
- Flush membrane with smooth and plain surface
- Completely welded sensor system
- Very compact design
- Accuracy NLH 0.1% FS typ.
- Excellent long-term stability

Technical Data

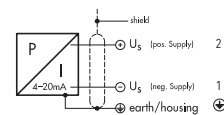
Measuring principle	Thin film on steel	Accuracy @ 25°C typ.	± 0.4 % FS
Measuring range	0 ... 1 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Ambient temperature	-40°C ... +85°C (Cable PVC 22: -5°C ... +60°C)

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	2	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



FPT ... A Female electrical plug included

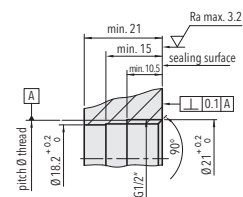
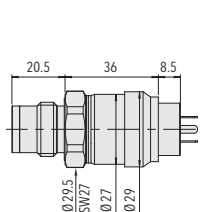
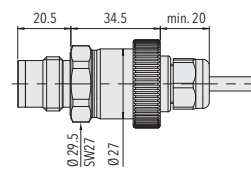
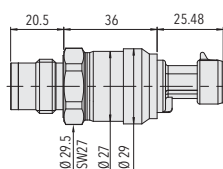
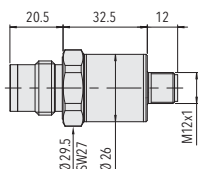
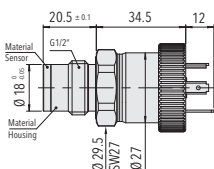


FPT ... A (4 ... 20 mA)

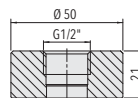
				8235 . XX			XX	XX	XX	XX	XX
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]				
	0 ... 1.0	2	3	71	0 ... 15	30	40	G1			
	0 ... 2.5	5	7.5	75	0 ... 30	70	100	G5			
	0 ... 4	8	12	76	0 ... 50	115	170	G6			
	0 ... 6	12	18	77	0 ... 100	150	260	G7			
	0 ... 10	20	30	78	0 ... 150	290	430	G8			
	0 ... 16	32	48	79	0 ... 250	450	690	G9			
	0 ... 25	50	75	80	0 ... 400	725	1080	H0			
	0 ... 40	80	120	81	0 ... 500	1100	1740	H1			
0 ... 100	200	300	83	0 ... 1450	2900	4350	H3				
Sensor	Relative pressure							23			
Pressure connection	G1/2" male, flush membrane								91		
Electrical connection	Male electrical plug EN 175301-803-A (DIN 43650-A) Mat. PA	05	Male electrical plug Packard Metri Pack				51				
	Male electrical plug M12x1, 5-pol., Mat. PA	35	Cable IP67 (cable length see "Accessories") Mat. PVC (cable gland PA6-3), -5°C ... +60°C ²⁾				22				
	Male electrical plug, Industrial standard (contact distance 9.4 mm) Mat. PBT	01	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	(U _{supply} -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	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				
	Sealing Ring DIN 3869, Mat. NBR, -25°C ... +100°C	69	Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 GR (Only for output 4...20mA and male electrical plug M12x1, 5-pol.) ²⁾				94				
	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40...90°C	58	Special electrical connection: Pin 1 + , Pin 2 - (Only for male electrical plug Packard Metri Pack 3-pol.) ²⁾				99				
	Female electrical plug M12x1, 5-pole	33	Membrane electropolished Ra=0.4µm				EP				
	Female electrical connector industrial standard	34	Cable length 1.5 m				1M				
	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A) ²⁾	92	Cable length 3.0 m				3M				
	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	Cable length 5.0 m				5M				

¹⁾ Extended overpressure as well as customized pressure ranges upon request

²⁾ Details see electrical connection



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



Welding flange for G1/2" (1.4301)

CMP 8270

CANopen Miniature Pressure Transmitter



Features

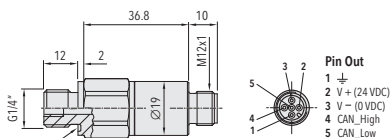
- Small and rugged construction
- Different accuracy classes
- Measurement of pressure and temperature
- CANopen bus protocol DS301/DS404 supports CAN 2.0A/B
- LSS (DS 305 V2.0)

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 ... 1 to 0 ... 600 bar	Media temperature	-50°C ... +135°C
Output signal	Bus protocol CANopen DS404	Ambient temperature	-40°C ... +125°C

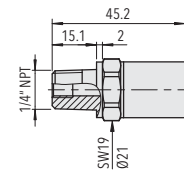
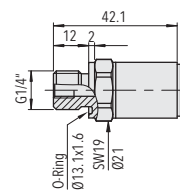
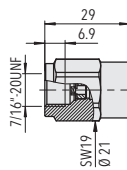
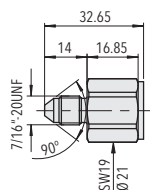
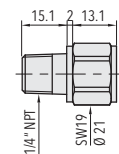
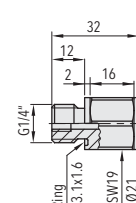
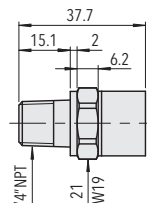
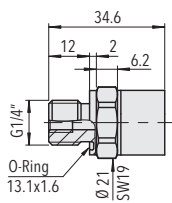
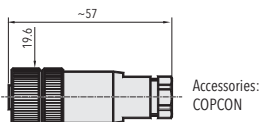
Standard products (extra short lead time)

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



CMP ... M

Pressure peak damping element integrated



Data sheet
Instructions

H72614
H73614

				8270 . XX	XX	XX	XX	XX	XX
Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]						
	0 ... 1 ²⁾	2	25	71	0 ... 40	80	300	81	
	0 ... 1.6 ²⁾	3.5	50	73	0 ... 60	120	400	82	
	0 ... 2.5 ²⁾	5	50	75	0 ... 100	200	500	83	
	0 ... 4	12	100	76	0 ... 160	320	750	85	
	0 ... 6	12	100	77	0 ... 250	500	1000	74	
	0 ... 10	20	200	78	0 ... 400	800	1500	84	
	0 ... 16	32	200	79	0 ... 600	1200	2000	86	
	0 ... 25	50	300	80					
Sensor	Relative pressure, accuracy: 0.5 %			25	Absolute pressure, accuracy: 0.5 %				45
	Relative pressure, accuracy: 0.15 %			21	Absolute pressure, accuracy: 0.15 %				41
	Relative pressure, accuracy: 0.1 %			24	Absolute pressure, accuracy: 0.1 %				44
Pressure connection	G1/4" male (Seal)								17
	1/4" NPT male								30
	7/16"-20UNF male ³⁾								18
	7/16"-20UNF female, DIN3866 (valve opener) ³⁾								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 measurement, max. allowable pressure range 40 bar



CANopen Features

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

DPC 8380

Display Pressure Switch

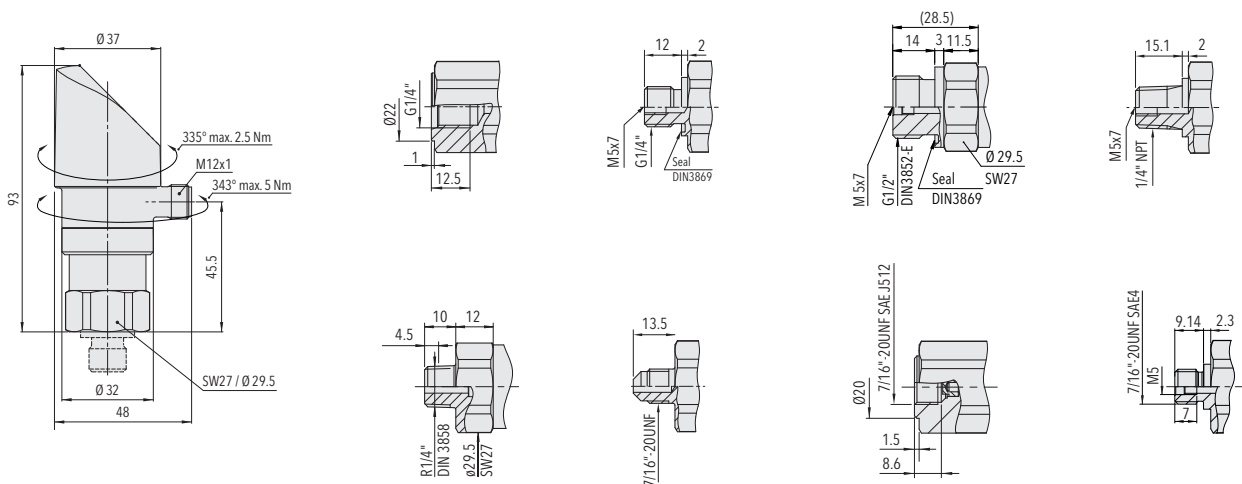


Features

- Analogue output switchable mA or V
- 2 Switching outputs PNP
- Relative or absolute pressure measurement, measuring principle thick film on ceramic
- Parametrisation also via NFC-smartphone App (Android)
- Display and electrical connection are independently rotatable 335°/343°

Technical Data

Measuring principle	Thick film on ceramic	Media temperature	-25°C ... +85°C
Measuring range	0 ... 1 to 0 ... 100 bar 0 ... 15 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.		



Pressure peak damping element: see 'Accessories' or data sheet H72258

 Data sheet
Instructions

H72320
H73320

				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 ... 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	R1/4" male ISO 7-1 (DIN 2999) ⁴⁾			19				
	G1/4" male			17	7/16"-20UNF male, DIN3866 ⁴⁾			18				
	G1/2" male DIN3852-E ⁴⁾			41	7/16"-20UNF female SAE J512 with valve opener ⁴⁾			24				
	1/4" NPT male ⁴⁾			30	7/16"-20UNF female SAE4 ⁴⁾			42				
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)										Z5	
	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

DPS 8381

Display Pressure Switch

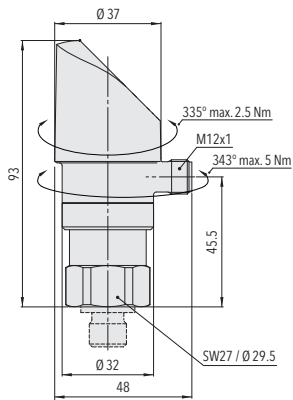


Features

- Analogue output switchable mA or V
- 2 Switching outputs PNP
- Parametrisation also via NFC-smartphone App (Android)
- Threefold overpressure resistance, measuring principle thin film on steel
- Display and electrical connection are independently rotatable 335°/343°

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.		



Pressure peak damping element: see 'Accessories' or data sheet H72258

 Data sheet
Instructions

H72321
H73320

Additional dimensions see data sheet

				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" male									17		
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

³⁾ For electrical connections 32 and 35

DCS 8864

Display Control Switch



Features

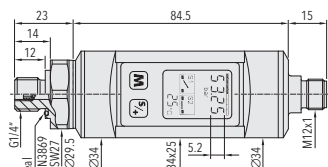
- Simple adjustment of switchpoints
- Back-lit LCD-Display
- Measurement and indication of pressure (incl. switch state) and sensor temperature in various units
- High resistance to pressure cycling
- Output signal 2 relays, electrically isolated

Technical Data

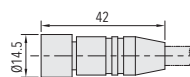
Measuring principle	Thin film on steel	Media temperature	-25°C ... +125°C
Measuring range	0 ... 1 to 0 ... 600 bar	Ambient temperature	-25°C ... +80°C (LCD display active -10°C ... +70°C)
Output signal	4 ... 20 mA, 0 ... 10 VDC 2 Relays, electrically isolated 30W (max.1A), 36 VAC/ DC	Approval / conformity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

Standard products (extra short lead time)

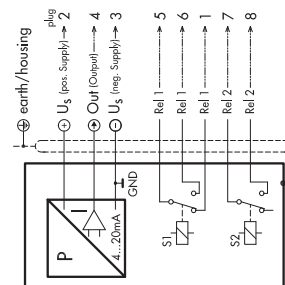
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output
DCS2.5AR	8864 75 2315 38 0000 0000 19 23	0...2.5	6	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC
DCS4.0AR	8864 76 2315 38 0000 0000 19 23	0...4	10	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC
DCS6.0AR	8864 77 2315 38 0000 0000 19 23	0...6	15	4...20 mA; 2 relays 30 W (max. 1 A)/36 VAC/DC
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
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
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
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
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
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
DCSCON2	Female electrical connector, cable included, length 2 m (PUR)			
DCSCON5	Female electrical connector, cable included, length 5 m (PUR)			
DCSCON10	Female electrical connector, cable included, length 10 m (PUR)			



DCS ... AR
Pressure peak damping element integrated



DCSCON ...

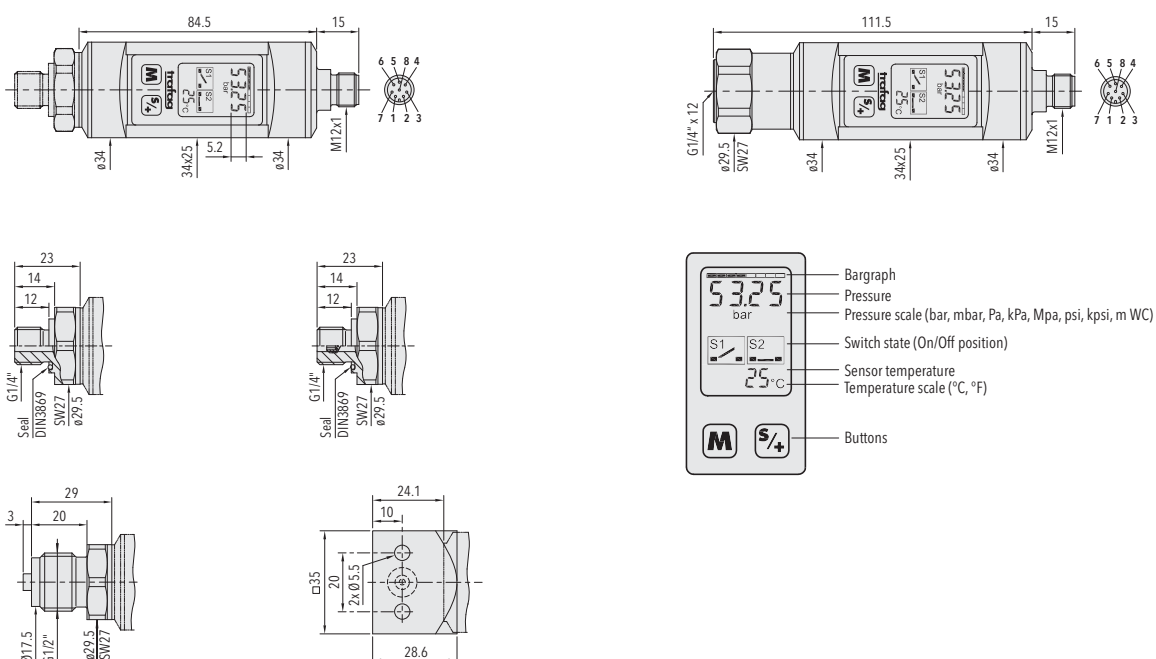


Data sheet
Instructions

H72605
H73605

				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-poles						38		
Output signal	Signal output	Load resistance	U (supply)						
	4 ... 20mA	≤ 250W	11 ... 32 VDC				19		
	0 ... 10 VDC	≥ 5.0 kW	15 ... 30 VDC				17		
Accessories	2 Relays Female electrical connector: M12x1, 8-pol., incl. 2m PUR-cable Ordering code: DCS CON								23

¹⁾ Customized pressure ranges upon request



N 8202

Navitrag



Features

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

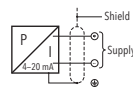
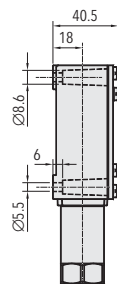
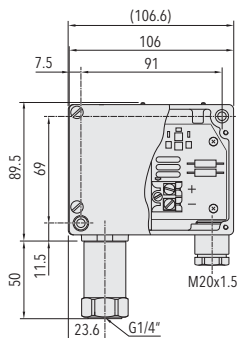
Technical Data

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.		

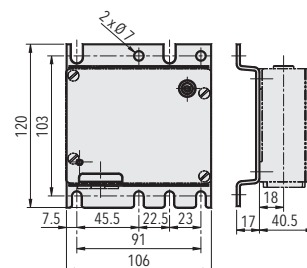
Data sheet H72206
Instructions H70722

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



N ... (4 ... 20 mA)



Mounting plate MB31 see chapter 'Accessories'

ND 8204

Differential Pressure Transmitter



Features

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

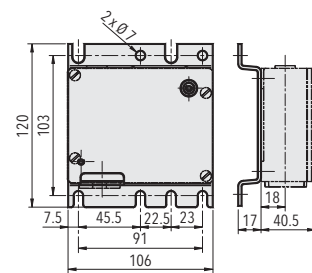
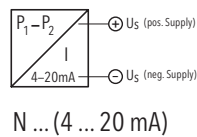
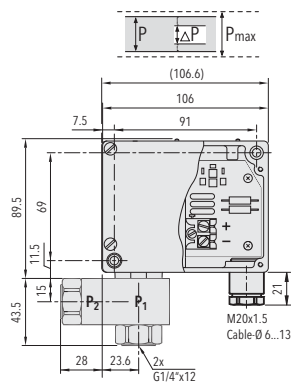
Technical Data

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		

Data sheet	H72218
Instructions	H73218

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	32	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



Mounting plate MB31 see chapter 'Accessories'

Potentially hazardous areas: Ex-approved products for pressure measurement



Trafag offers a wide range of EX-, ATEX- and IECEx approved products for pressure and temperature monitoring.



i Further information see "Terminology"

Ex brochure H70659

EXNA 8854

Ex Pressure Transmitter



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
Measuring range	0 ... 0.1 to 0 ... 1000 bar
Output signal	4 ... 20 mA
Media temperature	T3: -40°C ... +150°C T4: -40°C ... +100°C T6: -40°C ... +50°C
Approval / conformity	Ex according to standards, IEC/EN 60079-0 /-11/-26, EN 50303
Type of protection	Ex II 1G Ex ia IIC T3 ... T6 Ga II 1D Ex ia IIIC IP6x T145 ... T70°C I M1 Ex ia I

Data sheet H72334

EXNA 8852/8853

Ex Pressure Transmitter

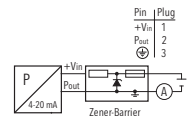
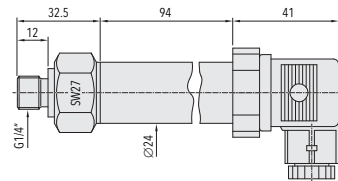


Features

- Explosion-proof Ex ia IIC T3 ... T6
- Pressure ranges from 100 mbar
- Versions with frontal flush diaphragm
- Media temperature to 150°C
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 μs)

Technical Data

Measuring principle	Piezoresistive
Measuring range	0 ... 0.1 to 0 ... 1000 bar
Output signal	4 ... 20 mA
Media temperature	T3: -25°C ... +150°C T4: -25°C ... +100°C T6: -25°C ... +55°C
Approval / conformity	GL, KRS



EXNA ... A (4 ... 20 mA)

Data sheet

H72227

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
EXNA0.2A	8852 68 P515 04 0000 0000 19 58 T4	0 ... 0.2	3	10 ... 30	±0.5

EXNAL 8858

Ex Tauchdrucktransmitter



Features

- Pressure ranges from 100 mbar
- PUR 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
Measuring range	0 ... 0.1 to 0 ... 25 bar
Output signal	4 ... 20 mA
Media temperature	T4/T6: -5°C ... +50°C
Approval / conformity	GL, KRS
Type of protection	Ex ia IIC T3 ... T6

Data sheet

H72231

EXNT 8292

Ex Pressure Transmitter



Features

- II 1G Ex ia IIC T4/T6 Ga
- II 1D Ex ia IIIC IP6x 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

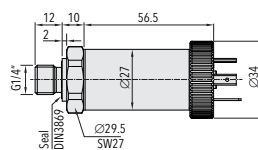
Technical Data

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	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.		

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

Pressure peak damping element: see 'Accessories' or data sheet H72258



EXNT ... A



EXNT ... A (4 ... 20 mA)



Data sheet
Instructions

H72329
H73329

				8292 . 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 ... 0.4 ²⁾	1.2	25	69	0 ... 40	80	300	81				
	0 ... 0.6 ²⁾	1.5	25	70	0 ... 60	120	500	82				
	0 ... 1.0 ²⁾	2.0	25	71	0 ... 100	200	500	83				
	0 ... 1.6	3.5	80	73	0 ... 160	320	1000	85				
	0 ... 2.5	5	100	75	0 ... 250	500	1000	74				
	0 ... 4	8	100	76	0 ... 400	800	1500	84				
	0 ... 6	12	100	77	0 ... 600	1000	2000	86				
	0 ... 10	20	200	78	0 ... 1000	1600	3000	88				
	0 ... 16	32	200	79	0 ... 1600	3000	4000	89				
0 ... 25	50	300	80	0 ... 2000	3000	4000	90					
Sensor	Relative pressure, accuracy: 0.3% (> 1 bar)			23	Relative pressure, accuracy: 0.5 %, wetted parts hydrogen compatible ⁷⁾			35				
	Relative pressure, accuracy: 0.5% (> 1 bar)			25	Relative pressure, accuracy: 0.3 %, wetted parts hydrogen compatible ⁷⁾			33				
	Relative pressure, accuracy: 0.5% (≤ 1 bar)			26								
Pressure connection	G1/4" male ³⁾			17	R1/4" male ³⁾			19				
	G1/4" female ³⁾			10	1/4" NPT male ³⁾			30				
	G1/2" male ³⁾			21	M18x1.5 male (conical seal: 58°) ⁴⁾			29				
	G1/2" male DIN16288-8 (Manometer) ³⁾			11								
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 0.5mm ² (cable length see "Accessories") - not ship approved										78	
	Cable intrinsically safe with shield, material PVC, 2 x 0.75mm ² (-40...+80°C), (cable length see "Accessories") - not ship approved										80	
Output signal	Signal output	Load resistance			I (supply)		U (supply)					
	4 ... 20mA	(U _{supply} -10 V) / 20 mA			10 ... 30 VDC		10 ... 30 VDC				19	
Accessories	Female electrical connector EN 175301-803-A (DIN43650-A), plastic (only zones 1, 2 (gas) and 20, 21 (dust))			58	Cable length 1.5 m ⁶⁾			1M				
	Female electrical plug M12x1, 5-pole, plastic (only zones 1, 2 (gas) and 20, 21 (dust))			33	Cable length 3.0 m ⁶⁾			3M				
	Female electrical plug M12x1, 5-pole, plastic (only zones 1, 2 (gas) and 20, 21 (dust))			33	Cable length 5.0 m ⁶⁾			5M				
	Female electrical plug M12x1, 5-pole, metal			35	Special electrical connection: Pin 1 + , Pin 2 - (only for output signal 4...20mA and male electrical plug EN175301-803-A / DIN43650-A)			92				
	Female electrical connector MIL-C 26482, 6-pole, metal			32	Zener barrier 28V/93mA; R ≈ 300Ω: Ordering no ZEN28VDC							
	Female electrical connector Binder 723, 5-pole, metal			37	Damping elements and snubber see data sheet H72258							
	Pressure peak damping element ø 0.4 mm			44								
	Pressure peak damping element ø 1.0 mm			40								

¹⁾ Extended overpressure as well as customized pressure ranges upon request

²⁾ Only with sensor 26 (0.5%)

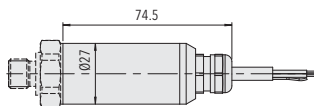
³⁾ For pressure ranges ≤ 600 bar

⁴⁾ For pressure ranges > 600 bar

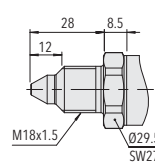
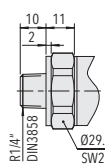
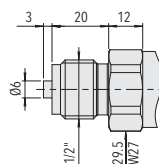
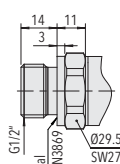
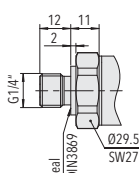
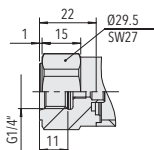
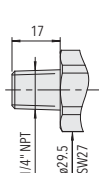
⁵⁾ For pressure ranges < 40 bar upon request

⁶⁾ Other cable lengths upon request

⁷⁾ Pressure ranges 0 ... 40 to 0 ... 1000 bar



Additional dimensions see data sheet



EXL 8432

Ex Submersible Pressure Transmitter

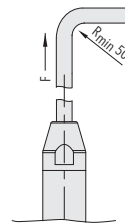
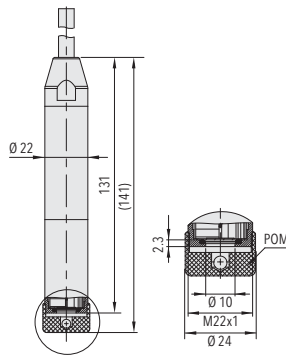
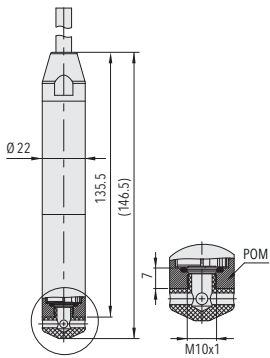


Features

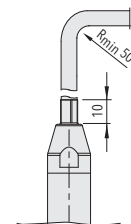
- II 1G Ex ia IIC T4/T6 Ga
I M1 Ex ia I Ma
- Good media compatibility
- Cable PUR/PE or FEP
- EMC protection, IEC 61000

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.		



PUR



PE/FEP

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, 5x0.22mm ^{2 2) 3)}							22		
	Cable with shield: FEP ø 6 mm, 5x0.22mm ^{2 2) 3)}							32		
	Cable with shield: PE ø 6 mm, 5x0.22mm ^{2 2) 3)}							42		
Output signal	Signal output	Load resistance	I (supply)	U (supply)						
	4 ... 20mA	(U _{supply} -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

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

H72205

OEM Pressure sensor 8421



Features

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

Technical Data

Sensor material	Al ₂ O 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

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

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 seamlessly 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 is 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 an 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



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



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.

Technical data pressure transmitters

	NAT 8252	NAH 8253	NAH 8254	NAE 8256	NSL 8257	
Main characteristics						
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 ... 10 to 0 ... 600 bar 0 ... 150 to 0 ... 7500 psi	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	
Accuracy						
TEB typ. @ -25 ... +85°C	± 1.75 % FS typ.	± 1.0 % FS typ. ± 0.5 % FS typ.	± 1.0 % FS typ.	0.5 %: ± 1.75 % FS typ. 0.3 %: ± 1.0 % FS typ.	0.5 ... 2 % FS typ.	
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.	
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	± 0.2 % FS typ.	0.5 %: ± 0.2 % FS typ. 0.3 %: ± 0.2 % FS typ.	0.2 % FS typ.	
TC zero point and span typ.	± 0.03 % .FS/K typ.	± 0.01 % FS/K typ. ± 0.002 % FS/K typ.	± 0.01 % .FS/K typ.	0.5 %: ± 0.03 % FS/K typ. 0.3 %: ± 0.01 % FS/K typ.	0.002 ... 0.02 % FS typ./K	
Electrical data						
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	
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	
Switch-on-delay	100 ms	1 s	100 ms	100 ms	1 s	
Environmental conditions						
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	
Vibration	15 g RMS (20...2000 Hz) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C)	40 g (20...2000 Hz)	15 g RMS (20...2000 Hz) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C)	15 g RMS (20...2000 Hz) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C)	25 g (20...2000 Hz)	
Shock	50 g / 11 ms 100 g / 6 ms	100 g / 11 ms	50 g / 11 ms 100 g / 6 ms	50 g / 11 ms	100 g / 11 ms	
EMC Protection						
Emission	EN/IEC 61000-6-3	EN/IEC 61000-6-4	EN/IEC 61000-6-3	EN/IEC 61000-6-3	EN/IEC 61000-6-4	
Immunity	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	
Mechanical data						
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)	
Sealing	FPM/EPDM/NBR	FKM 70 Sh	FPM/EPDM/NBR	FPM/NBR/EPDM	FKM 70 Sh	
Weight	~ 50 g	~ 50 g	~ 50 g	~ 50 g	~ 50 g	

	ECT 8472	ECT 0.3 % (0.5 %, 1.0 %) 8473	ECTR 8471	ECTN 8477	EPI 8287	EPN/EPNCR 8298
	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic	Thin film on steel	Thin film on steel
	0 ... 1 to 0 ... 60 bar 0 ... 15 to 0 ... 1000 psi	0 ... 0.1 to 0 ... 40 bar 0 ... 1.5 to 0 ... 500 psi	-1 ... 9 to 0 ... 40 bar 0 ... 15 to 0 ... 500 psi	0 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 2.5 to 0 ... 2500 bar
	± 3.0 % FS typ.	± 1.0 % FS typ. ± 2.0 % FS typ.	± 3.0 % FS typ.	± 3.0 % FS typ.	± 1.75 % FS typ.	± 2.0 % FS typ. ± 0.5 % FS typ.
	± 0.5 % FS typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
	± 0.2 % FS typ.	± 0.2 FS typ. (± 0.3 FS typ.)	± 0.2 % FS typ.	± 0.2 % FS typ.	± 0.2 % FS typ.	± 0.2 % FS typ. ± 0.1 % FS typ.
	± 0.03 % FS/K typ.	± 0.02 % FS/K typ.	± 0.03 % FS/K typ.	± 0.03 % FS/K typ.	± 0.03 % FS/K typ.	± 0.03 % FS/K typ. ± 0.005 % FS/K typ.
	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, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric
	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure
	Max. 1.5 s	Max. 1.5 s	Max. 1.5 s	100 ms	100 ms	
	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-40°C ... +125°C	-40°C ... +125°C
	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +85°C	-40°C ... +125°C	-40°C ... +125°C
	Min. IP65	Min. IP65	Min. IP65	min. IP65	IP65	IP65, IP67, IP69K
	4 g (10...2000 Hz)	4 g (10...2000 Hz)	4 g (10...2000 Hz)	20 g (10...2000 Hz)	15 g RMS (20...2000 Hz) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C)	10 g (50...2000 Hz) 15 g (50...2000 Hz) 15 g RMS / 20 g RMS
	50 g / 8 ms	50 g / 8 ms	50 g / 8 ms	50 g / 3 ms	500 g / 1 ms acc. to EN 60068-2-27	50 g / 3 ms
	EN/IEC 61000-6-3	EN/IEC 61000-6-3	EN/IEC 61000-6-3	EN/IEC 61000-6-3	EN/IEC 61000-6-3	EN/IEC 61000-6-4
	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2
	Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O 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	1.4305 (AISI303)	1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4542 (AISI630)	1.4542 (AISI630) 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	1.4305 (AISI303)	1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4542 (AISI630)	1.4301 (AISI304)
	FKM 70 Sh, CR, EPDM	FKM 70 Sh, CR, EPDM	FKM 70 Sh, CR, EPDM	FKM 70 Sh, EPDM	FPM/EPDM/NBR	FKM 70 Sh
	~ 110 g	~ 110 g	~ 110 g	~ 110 g	~ 80 ... 110 g	~ 80...110 g

Technical data electronic pressure switches

	EPN-S 8320	DPC 8380	DPS 8381	DCS 8864		
Main characteristics						
Measuring principle	Thin film on steel	Thick film on ceramic	Thin film on steel	Thin film on steel		
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 1 to 0 ... 100 bar 0 ... 15 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		
Accuracy						
TEB typ. @ -25 ... +85°C		± 2.0 % FS typ.	± 1.75 % FS typ.	± 1.0 % FS typ.		
Accuracy @ 25°C typ. (Switchpoint)	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.		
NLH @ 25°C (BSL) typ.		± 0.2 % FS typ.	± 0.2 % FS typ.	± 0.25 % FS typ.		
TC zero point and span typ.		± 0.03 % FS/K typ.	± 0.03 % FS/K typ.	± 0.01 % FS/K typ.		
Electrical data						
Output signal	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		
Rise time				Typ. 1 ms / 10 ... 90 % nominal pressure		
Switch-on-delay		Typ. 200 ms	Typ. 200 ms			
Environmental conditions						
Ambient temperature	Standard: -25°C ... +85°C Option: -40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +80°C (LCD display -10°C ... +70°C)		
Media temperature	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +125°C		
Protection	IP65 (IP67), IP69K	IP65	IP65	IP65		
Vibration	15 g (50...2000 Hz)	10 g (10 ... 2000 Hz)	10 g (10 ... 2000 Hz)	10 g (25...2000 Hz)		
Shock	50 g / 11 ms	50 g / 3 ms	50 g / 3 ms	50 g / 1 ms		
EMC Protection						
Emission	EN/IEC 61000-6-3	EN/IEC 61000-6-3	EN/IEC 61000-6-3	EN/IEC 61000-6-3		
Immunity	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2		
Mechanical data						
Sensor (wetted parts)	1.4542 (AISI630)	Ceramic, Al ₂ O ₃ (96 %)	1.4542 (AISI630)	1.4542 (AISI630)		
Pressure connection (wetted parts)	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)		
Housing	1.4301 (AISI304)	Steel, die cast metal galvanised display housing plastic	Steel, die cast metal galvanised display housing plastic	1.4301 (AISI304)		
Sealing	FKM 70 Sh	FPM, EPDM	FPM, NBR, EPDM	NBR 70 Sh		
Weight	~ 85 ... 110 g	~ 189 g	~ 189 g	~ 200 g		

Technical data pressure transmitters

EPR 8293	NPN 8264	FPT 8235	CMP 8270	N 8202	ND 8204
Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel
0 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 250 bar	0 ... 1 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	0 ... 1 to 0 ... 600 bar	0 ... 1.0 to 0 ... 600 bar	0 ... 1 to 0 ... 16 bar
± 2.0 % FS typ. ± 0.5 % FS typ.	± 2.0 % FS typ. ± 0.5 % FS typ.	± 0.5 % FS typ.	± 2.0 % FS typ. ± 0.2 % FS typ. ± 0.1 % FS typ.	± 2 % FS typ.	± 3.5 % FS typ.
± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.4 % FS	± 0.5 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	± 0.5 % FS typ.	± 0.8 % FS typ.
± 0.2 % FS typ. ± 0.1 % FS typ.	± 0.3 % FS typ. ± 0.1 % FS typ.	± 0.1 % FS typ.	± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	± 0.3 % FS typ.	± 0.5 % FS typ.
± 0.03 % FS/K typ. ± 0.005 % FS/K typ.	± 0.03 % FS/K typ. ± 0.005 % FS/K typ.	± 0.005 % FS/K typ.	± 0.03 % FS/K typ. ± 0.002 % FS/K typ.	± 0.02 % FS/K typ.	± 0.04 % FS/K typ.
4 ... 20 mA	4 ... 20 mA	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Bus protocol CANopen DS404	4 ... 20 mA	4 ... 20 mA (P1-P2)
Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure max. 1.5 s	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms/10...90 % nominal pressure	Typ. 1 ms/10...90 % nominal pressure
-40°C ... +125°C	-40°C ... +100°C	-40°C ... +85°C	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C
-40°C ... +125°C	-40°C ... +100°C	-40°C ... +125°C	-50°C ... +135°C	-25°C ... +125°C	-25°C ... +125°C
IP65, IP67	IP65, IP69K	Min. IP65	Min. IP67	Min. IP65	Min. IP65
10 g (20...2000 Hz)/ 5 g RMS 15 g (20...2000 Hz)	10 g (50...2000 Hz) 15 g (50...2000 Hz) 15 g RMS	15 g (50...2000 Hz)	40 g (20...2000 Hz)	6 g (25...2000 Hz)	6 g (25...2000 Hz)
50 g / 11 ms	50 g / 3 ms	50 g / 3 ms	100 g / 11 ms	50 g / 11 ms	50 g / 1 ms
EN/IEC 61000-6-4	EN/IEC 61000-6-4	EN/IEC 61000-6-3	EN/IEC 61000-6-4	EN/IEC 61000-6-3	EN/IEC 61000-6-3
EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2	EN/IEC 61000-6-2
1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4542 (AISI630)
1.4301 (AISI304) 1.4542 (AISI630)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated
FKM 70 Sh	NBR	FPM (FKM) NBR	FKM 70 Sh	NBR 70 Sh	NBR 70 Sh
~ 80...110 g	~ 190...220 g	~ 80 ... 110 g (without cable)	~ 60 g	~ 520 g	~ 720 g

Technical data Ex pressure transmitters

	EXNT 8292	EXNA 8854	EXL 8432	EXNAL 8858	
Main characteristics					
Measuring principle	Thin film on steel	Piezoresistive	Thick film on ceramic	Piezoresistive	
Measuring range	0 ... 0.4 to 0 ... 2000 bar	0 ... 0.1 to 0 ... 1000 bar	0 ... 0.2 to 0 ... 10 bar	0 ... 0.1 to 0 ... 25 bar	
Accuracy					
TEB typ. @ -25 ... +85°C	± 2.0 % FS typ. ± 0.5 % FS typ.		± 0.75 % FS typ. ± 1.5 % FS typ.		
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		± 0.3 % FS typ. ± 0.5 % FS typ.		
NLH @ 25°C (BSL) typ.	± 0.3 % FS typ. ± 0.1 % FS typ.		± 0.2 % FS typ. ± 0.3 % FS typ.		
TC zero point and span typ.	± 0.03 % FS/K typ. ± 0.005 % FS/K typ.		± 0.02 % FS /K typ. ± 0.02 % FS /K typ.		
Electrical data					
Output signal	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	
Switch-on-delay	Max. 1.5 s		max. 1.5 s		
Environmental conditions					
Ambient temperature	Max. -40°C ... +120°C	-40°C ... +125°C	-20°C ... +70°C	-5°C ... +50°C	
Media temperature	Max. -40°C ... +120°C	-40°C ... +150°C	-20°C ... +70°C	-5°C ... +50°C	
Protection	Min. IP65, IP67	Min. IP65	IP68 (25 bar; 250m)	Min. IP68	
Vibration	10 g (50...2000 Hz)	EN 60068-2-6: 10 g (4...2000 Hz)	10 g (50...2000 Hz)	6 g (25...2000 Hz)	
Shock	50 g / 3 ms	EN 60068-2-27: 100 g / 6 ms	50 g / 3 ms	50 g / 1 ms	
EMC Protection					
Emission	IEC 61000-6-4	EN 61000-4-3: 10 V/m	IEC 61000-6-4	EN/IEC 61000-6-3	
Immunity	IEC 61000-6-2	IEC 61000-4-2: 8 kV K./15 kV L.	IEC 61000-6-2	EN/IEC 61000-6-2	
Mechanical data					
Sensor (wetted parts)	1.4542 (AISI630), optional hydrogen-compatible steel	1.4435 (AISI316L) or titanium	Ceramic, Al ₂ O ₃ (96 %)	1.4435 (AISI316L)	
Pressure connection (wetted parts)	1.4542 (AISI630) 1.4301 (AISI304) optional hydrogen-compatible steel	1.4435 (AISI316L) or titanium	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	
Housing	1.4301 (AISI304)	1.4435 (AISI316L) or titanium	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	
Sealing	FKM 70 Sh	FKM 70 Sh; EPDM / Kalrez	FKM 70 Sh	FKM	
Weight	~ 165 g	~ 220 g	~ 200 g	~ 200 g	

Technical data submersible pressure transmitters

ECL 8438	ECL 8439	NAL 8838	
Thick film on ceramic	Thick film on ceramic	Piezoresistive	
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	
± 1.0 % FS typ. ± 2.0 % FS typ.	± 1.0 % FS typ. ± 2.0 % FS typ.		
± 0.3 % FS typ. ± 0.5 % FS typ.	± 0.3 % FS typ. ± 0.5 % FS typ.		
± 0.2 % FS typ. ± 0.3 % FS typ.	± 0.2 % FS typ. ± 0.3 % FS typ.		
± 0.02 % FS/K typ.	± 0.02 % FS/K typ.		
4 ... 20 mA	4 ... 20 mA	4 ... 20 mA 0 ... 10 VDC	
Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	Typ. 1 ms / 10 ... 90 % nominal pressure	
Max. 1.5 s	100 ms		
-25°C ... +80°C (+70°C)	-10°C ... +70°C	-5°C ... +50°C	
-25°C ... +80°C (+70°C)	-10°C ... +70°C	-5°C ... +50°C	
IP68 (25 bar; 250m)	IP68 (2.0 bar; 20m)	Min. IP68	
6 g (25...2000 Hz)	6 g (25...2000 Hz)	6 g (25...2000 Hz)	
50 g / 8 ms	50 g / 8 ms	50 g / 11 ms	
EN/IEC 61000-6-3	EN/IEC 61000-6-3 / GL2012, IV, Part 7	EN/IEC 61000-6-3	
EN/IEC 61000-6-2	EN/IEC 61000-6-2 / GL2012, IV, Part 7	EN/IEC 61000-6-2	
Ceramic, Al ₂ O ₃ (96 %)	Ceramic, Al ₂ O ₃ (96%)	1.4435 (AISI316L)	
1.4404/1.4435 (AISI316L)	1.4404 (AISI316L) or 1.4462 (AISI318LN)	1.4435 (AISI316L) or titanium	
1.4404/1.4435 (AISI316L)	1.4404 (AISI316L) or 1.4462 (AISI318LN)	1.4435 (AISI316L) or titanium	
FKM 70 Sh CR, EPDM	FKM / FPM / Viton / EPDM / TPE	FKM	
~ 200 g	~ 200 g (without cable) / OEM ~ 150 g	~ 220 g	



trafag
sensors & controls

CE

S/N 1 999999-001
Type : 9M4.4279
Range : 1...16 bar (kg/cm²)
0...1.6 MPa
p-max : 200 bar/20 MPa
250V AC 6(1)A 24V DC 3(2)A

04/13
IP65
-25T85

3 2 1
P



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.

Bellows sensors

- High switching point precision and repeatability
- Stainless steel, bronze and brass designs
- Optionally welded/soldered design for absolute impermeability
- Measure liquid, vaporous and gaseous media



Piston sensors

- Suitable for high pressure ranges
- Not sensitive to pressure surges
- Suitable for applications with many load cycles
- Ideal for hydraulic systems







Membrane sensors

- Resistant to high overpressures and not sensitive to pressure surges
- Suitable for applications with many load cycles
- Measure liquid, vaporous and gaseous media



Overview Pressure switches

	PST4B 9B4	PST4K 9K4	PST4M 9M4	PSTD 9D0	P/PS 900/904/912	PV/PVF 903/907/915/940/941/942	
	page 82	page 84	page 86	page 88	page 89	page 90	
							
Measuring principle	Bellow	Piston	Membrane	Bellow	Bellow	Bellow	
Measuring range	-0.6 ... 3.4 to 4 ... 40 bar -8 ... 45 to 60 ... 500 psi	1 ... 10 to 40 ... 400 bar 14 ... 150 to 580 ... 5800 psi	1 ... 10 to 10 ... 100 bar 14 ... 150 to 150 ... 1500 psi	-1 ... 6 and -1 ... 8 bar	-0.9 ... 1.5 to 10 ... 100 bar 5 ... 50 to 125 ... 1500 psi	-0.9 ... 1.5 to 4 ... 40 bar 5 ... 50 to 50 ... 500 psi	
Output signal	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	
Pressure connections	G1/8" f, G1/4" f, M10x1.0 f	G1/8" f, G1/4" f, M10x1.0 f	G1/8" f, G1/4" f, M10x1.0 f	G1/4" f	G1/4" f, G1/2" m, 1/4" NPT f	G1/4" f, G1/2" m, 1/4" NPT f	
Electrical connections	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	Screw terminal	Screw terminal	
Switching differential	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Adjustable	
Media temperature	-25°C ... +125°C -40°C ... +125°C	-25°C ... +125°C	0°C ... +80°C	-25°C ... +120°C	-40°C ... +150°C	-40°C ... +150°C	
Ambient temperature	-25°C ... +125°C -40°C ... +125°C	-25°C ... +85°C	0°C ... +80°C	-25°C ... +85°C	-25°C ... +70°C	-25°C ... +70°C	
Protection	IP65	IP65	IP65	IP65	IP65	IP65	
Housing	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	Aluminium EN AW-6082 AlMgSi1 anodized	Brass CuZn39Pb3	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	
Sealing	HNBR 75 Sh	PTFE	FKM	-	NBR	NBR	
Applications	Shipbuilding Engine manufacturing Railways Machine tools	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics	Shipbuilding Engine manufacturing Machine tools Hydraulics	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics	
Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS, EN60730-1/ EN60730-2-6: Typ 2.B.H	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Typ 2.B.H	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Typ 2.B.H	GL EN60730-1/ EN60730-2-6: Typ 2.B.H	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H	ABS, BV, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H	
Type of protection							
Data sheet	H72367	H72369	H72368	H72273	H72252	H72257	
Instructions	H73367	H73367	H73367	H73273	H71261	H71261	

PK 944/947	PD 920/924/932	901/902/905/906	987/988	EXP 900/904/912	EXPK 944/947/953	EXPD 920/924/932
page 91	page 92	page 93	page 94	page 96	page 98	page 99
						
Piston	Bellow	Membrane	Bellow	Bellow	Piston	Bellow
1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar	30 ... 600 and 50 ... 1000 mbar	-0.3 ... 1.3 to 1 ... 10 bar	-0.9 ... 1.5 to 4 ... 40 bar	1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar
1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 or 2 floating change- over contacts (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)
G1/4" f, G1/2" m	G1/4" f, G1/8" f, G1/2" m	G1/4" f, G1/2" m	G1/4" m	G1/4" f, G1/2" m	G1/4" f, G1/2" m	G1/4" f, G1/8" f, G1/2" m
Screw terminal	Screw terminal	Screw terminal	Blade connector	Screw terminal	Screw terminal	Screw terminal
Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable
NBR: -30°C ... +100°C FKM: -15°C ... +150°C	-40°C ... +150°C	-40°C ... +150°C	-25°C ... +80°C	-40°C ... +150°C	NBR: -30°C ... +100°C FKM: -15°C ... +150°C	-50°C ... +150°C
-20°C ... +70°C	-25°C ... +70°C	-25°C ... +70°C	-25°C ... +70°C	-50°C ... +65°C	-50°C ... +65°C	-50°C ... +65°C
IP65	IP65	IP65	IP40 (Microswitch IP67)	IP66 Accessory 06: IP66	IP66 Accessory 06: IP66	IP66
AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	PBTP, Crastin	AlSi10Mg/ Epoxy coated Accessory 06: 1.4301 (AISI 304)	AlSi10Mg/ Epoxy coated Accessory 06: 1.4301 (AISI 304)	AlSi10Mg/ Epoxy coated
NBR/FKM	NBR	NBR	-	NBR	NBR / FKM	NBR
Shipbuilding Engine manufacturing Railways Machine tools Hydraulics	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics	Machine tools HVAC	Machine tools Medium voltage switchgear	⊕ II 2 G / D	⊕ II 2 G / D	⊕ II 2 G / D
ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H	EN60730-1/ EN60730-2-6: Typ 2.B.H	EN60730-1/ EN60730-2-6: Typ 2.B.H	SEV 15 ATEX 0157 X	SEV 15 ATEX 0157 X	SEV 15 ATEX 0157 X
				Areas with gaz explosion hazards: II 2 G Ex d e IIC T6 Gb Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db	Areas with gas explosion hazards: II 2 G Ex d e IIC T6 Gb; Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db	Areas with gas explosion hazards: II 2 G Ex d e IIC T6 Gb; Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db
H72259	H72253	H72269	H72272	H72263	H72270	H72256
H71261	H73256		H73272	H73171	H73171	H73171

PST4B 9B4

Picostat Pressure Switch



Features

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

Technical Data

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

Standardprodukte (extra kurze Lieferfrist)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]
PST4B3.44	9B4 4274 769 04 0000 0000 15 46 V3	-0.6 ... 3.4	12	0.2 ± 0.1 (fixed)
PST4B64	9B4 4277 770 04 0000 0000 15 46 V3	0 ... 6	12	0.2 ± 0.1 (fixed)
PST4B164	9B4 4279 771 04 0000 0000 15 46 V3	1 ... 16	24	0.4 ± 0.2 (fixed)
PST4B254	9B4 4280 772 04 0000 0000 15 46 V3	2 ... 25	40	1.0 ± 0.6 (fixed)
*PST4B404	9B4 4281 772 04 0000 0000 15 46 V3	4 ... 40	50	1.2 ± 0.8 (fixed)
PST4B3.4F4	9B4 4274 769 04 0000 0000 11 15 46 74 V3	-0.6 ... 3.4	12	0.2 ± 0.1 (fixed)
PST4B6F4	9B4 4277 770 04 0000 0000 11 15 46 74 V3	0 ... 6	12	0.2 ± 0.1 (fixed)
PST4B16F4	9B4 4279 771 04 0000 0000 11 15 46 74 V3	1 ... 16	24	0.4 ± 0.2 (fixed)
*PST4B25F4	9B4 4280 772 04 0000 0000 11 15 46 74 V3	2 ... 25	40	1.0 ± 0.6 (fixed)
*PST4B40F4	9B4 4281 772 04 0000 0000 11 15 46 74 V3	4 ... 40	50	1.2 ± 0.8 (fixed)
PST4B6S4	9B4 4277 753 04 0000 0000 15 46 V3	0 ... 6	12	0.2 ± 0.1 (fixed)
PST4B16S4	9B4 4279 754 04 0000 0000 15 46 V3	1 ... 16	24	0.4 ± 0.2 (fixed)

PST4B...4 / PST4B...F4:

Sensor: Bronze bellow CuSn6

Housing / pressure connection:

Aluminium EN AW-6026 AlMgSiPb0.4 anodized

PST4B...S4:

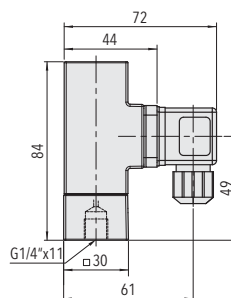
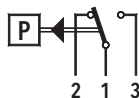
Sensor: Bellows stainless steel (1.4404/AISI316L)

Housing / pressure connection: Stainless steel

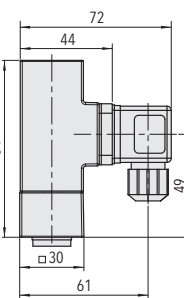
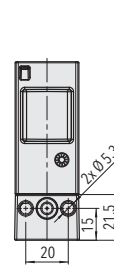
AC 250 V, 6 (1) A

DC 24 V, 3 (2) A

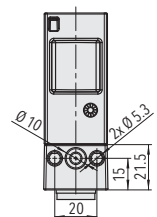
DC 220 V, 0.25 (0.1) A











PST4B ... 4 / PST4B ... S4



PST4B ... F4



Ordering information/type code

		9B4 .	XX	XX	XXX	XX	XX
Microswitch	Standard ¹⁾		42				
	Standard  ¹⁾		33				
	Gold plated contacts ¹⁾		84				
Range	Range [bar]	Over pressure [bar]		Range [si]	Over pressure [si]		
	-0.6 ... 3.4	12	74	-8 ... 45	174	G4	
	0 ... 4	12	76	0 ... 50	174	G6	
	0 ... 6	12	77	0 ... 100	174	G7	
	1 ... 10	24	78	14 ... 150	348	G8	
	1 ... 16	24	79	14 ... 250	348	G9	
	2 ... 25	40	80	30 ... 400	580	H0	
	4 ... 40	50	81	60 ... 500	725	H1	
Sensor	Sensor material	Sensor housing material		Range			
	Bronze bellow (CuSn6)  ²⁾	Aluminium EN AW-6026 AlMgSiPb0.4 anodized		74	769		
	Bronze bellow (CuSn6)  ²⁾	Aluminium EN AW-6026 AlMgSiPb0.4 anodized		76, 77	770		
	Bronze bellow (CuSn6)  ²⁾	Aluminium EN AW-6026 AlMgSiPb0.4 anodized		78, 79	771		
	Bronze bellow (CuSn6)  ²⁾	Aluminium EN AW-6026 AlMgSiPb0.4 anodized		80, 81	772		
	Bronze bellow (CuSn6)  ^{3) 4)}	Brass (CuZn39Pb3)		74	789		
	Bronze bellow (CuSn6)  ^{3) 4)}	Brass (CuZn39Pb3)		76, 77	790		
	Bronze bellow (CuSn6)  ^{3) 4)}	Brass (CuZn39Pb3)		78, 79	791		
	Bellows stainless steel (1.4404/AISI316L) ⁴⁾	Stainless steel		76, 77	753		
Bellows stainless steel (1.4404/AISI316L) ⁴⁾	Stainless steel		78, 79	754			
Pressure connection	G1/8" female						02
	G1/4" female						04
	M10x1.0" female ⁵⁾						03
Accessories	Flange with O-Ring ⁴⁾	11		Lead seal (manipulation protection)			16
	Female electrical connector EN175301-803-A (DIN43650-A)	46		Switch point adjustment on customers request			
	Welsh plug G1/4"	74		Please indicate when ordering:			
	Fixing set	V3		- Switchpoint including measurement unit (kPa, bar, MPa, psi, abs. or rel.)			88
	Covering cap	15		- Increasing or decreasing			
				Damping elements and snubber see data sheet H72258			

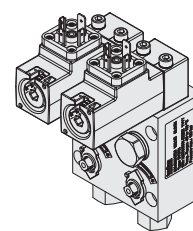
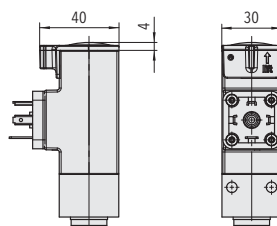
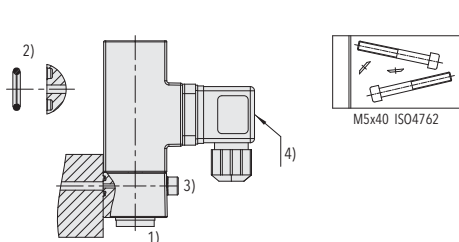
¹⁾ Switching differential not adjustable

²⁾ Media contacting O-Ring

³⁾ O-Ring not media contacting

⁴⁾ Only with pressure connection 04 (G1/4") others upon request

⁵⁾ Please ask us



Diagnostic Valve Bloc (DVB)
see specification sheet H72361

1) Torque: G 1/4": $M_A = 32 \dots 40 \text{ Nm}$

2) O-Ring: $\varnothing 6.75 \times 1.78 \text{ NBR 90 Sh}$

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

4) Torque connector center screw: max. 0.4 Nm

 Data sheet H72367
Instructions H73367

PST4K 9K4

Picostat Pressure Switch



Features

- Compact design
- Rugged housing
- Protection IP65 (with plug connector)
- Any mounting position possible

Technical Data

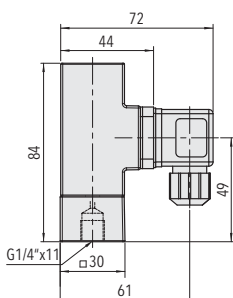
Measuring principle	Piston	Repeatability	± 1.0 % FS typ.
Measuring range	1 ... 10 to 40 ... 400 bar 14 ... 150 to 580 ... 5800 psi	Media temperature	-25°C ... +125°C
Output signal	1 Floating change-over contact (SPDT)	Ambient temperature	-25°C ... +85°C
Switching differential	Not adjustable	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Typ 2.B.H

Standard products (extra short lead time)

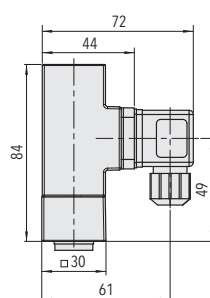
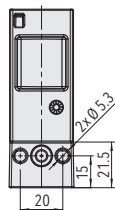
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]
PST4K164	9K4 4279 756 04 0000 0000 15 46 V3	1 ... 16	100	0.4 ... 2.4 (fixed)
PST4K404	9K4 4281 757 04 0000 0000 15 46 V3	4 ... 40	100	1 ... 6 (fixed)
PST4K1004	9K4 4283 758 04 0000 0000 15 46 V3	10 ... 100	200	5 ... 15 (fixed)
PST4K2504	9K4 4285 759 04 0000 0000 15 46 V3	25 ... 250	400	12 ... 40 (fixed)
PST4K4004	9K4 4286 759 04 0000 0000 15 46 V3	40 ... 400	600	15 ... 50 (fixed)
PST4K16F4	9K4 4279 756 04 0000 0000 11 15 46 74 V3	1 ... 16	100	0.4 ... 2.4 (fixed)
PST4K40F4	9K4 4281 757 04 0000 0000 11 15 46 74 V3	4 ... 40	100	1 ... 6 (fixed)
PST4K100F4	9K4 4283 758 04 0000 0000 11 15 46 74 V3	10 ... 100	200	5 ... 15 (fixed)
PST4K250F4	9K4 4285 759 04 0000 0000 11 15 46 74 V3	25 ... 250	400	12 ... 40 (fixed)
PST4K400F4	9K4 4286 759 04 0000 0000 11 15 46 74 V3	40 ... 400	600	15 ... 50 (fixed)

Sensor: Piston 1.4035, sealing PTFE

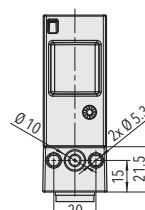
Housing / pressure connection: Aluminium EN AW-6026 AlMgSiPb0.4 anodized



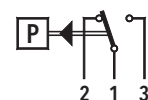
PST4K ... 4



PST4K ... F4




AC 250 V, 6 (1) A
DC 24 V, 3 (2) A
DC 220 V, 0.25 (0.1) A



Data sheet
Instructions

H72369
H73367

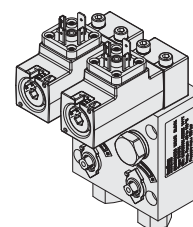
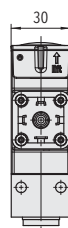
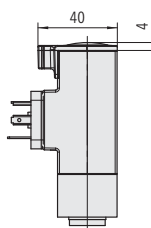
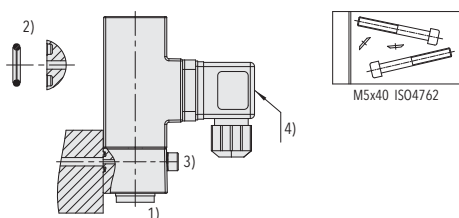
Ordering information/type code

				9K4 . XX	XX	XXX	XX	XX
Microswitch	Standard ¹⁾			42				
	Standard  ¹⁾			33				
	Gold plated contacts ¹⁾			84				
Range	Range [bar]	Over pressure [bar]		Range [psi]	Over pressure [psi]			
	1 ... 10	100	78	14 ... 150	1450		G8	
	1 ... 16	100	79	14 ... 250	1450		G9	
	2 ... 25	100	80	30 ... 400	1450		H0	
	4 ... 40	100	81	60 ... 500	1450		H1	
	6 ... 60	200	82	85 ... 850	2900		H2	
	10 ... 100	200	83	150 ... 1500	2900		H3	
	16 ... 160	400	84	250 ... 2500	5800		H4	
	25 ... 250	400	85	350 ... 3500	5800		H5	
40 ... 400	600	86	580 ... 5800	8700		H6		
Sensor	Sensor material	Sensor housing material		Range				
	Piston 1.4035, sealing PTFE ²⁾	Aluminium EN AW-6026 AlMgSiPb0.4 anodized		78, 79			756	
	Piston 1.4035, sealing PTFE ²⁾	Aluminium EN AW-6026 AlMgSiPb0.4 anodized		80, 81			757	
	Piston 1.4035, sealing PTFE	Aluminium EN AW-6026 AlMgSiPb0.4 anodized		82, 83			758	
Piston 1.4035, sealing PTFE	Aluminium EN AW-6026 AlMgSiPb0.4 anodized		84, 85, 86			759		
Pressure connection	G1/8" female							02
	G1/4" female							04
	M10x1.0" female ²⁾							03
Accessories	Flange with O-Ring ³⁾							11
	Female electrical connector EN175301-803-A (DIN43650-A)							46
	Welsh plug G1/4"							74
	Fixing set							V3
	Covering cap							15
	Sealing switchpoint (manipulation protection)							16
	Switch point adjustment on customers request							
	Please indicate when ordering:							
	- Switchpoint including measurement unit (kPa, bar, MPa, psi, abs. or rel.)							88
	- Increasing or decreasing							
Damping elements and snubber see data sheet H72258								

¹⁾ Switching differential not adjustable

²⁾ Please ask us

³⁾ Only with pressure connection 04 (G1/4"), others upon request



1) Torque: G 1/4": $M_A = 32 \dots 40 \text{ Nm}$

2) O-Ring: $\varnothing 6.75 \times 1.78 \text{ NBR 90 Sh}$

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

4) Torque connector center screw: max. 0.4 Nm

Diagnostik Ventil Block (DVB)
siehe Datenblatt H72361

PST4M 9M4

Picostat Pressure Switch



Features

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

Technical Data

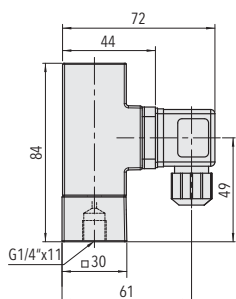
Measuring principle	Membrane	Repeatability	± 2.0 % FS typ.
Measuring range	1 ... 10 to 10 ... 100 bar 14 ... 150 to 150 ... 1500 psi	Media temperature	0°C ... +80°C
Output signal	1 Floating change-over contact (SPDT)	Ambient temperature	0°C ... +80°C
Switching differential	Not adjustable	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Typ 2.B.H

Standard products (extra short lead time)

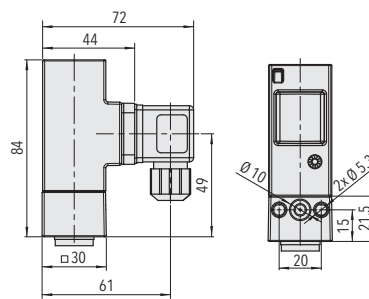
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]
PST4M164	9M4 4279 761 04 0000 0000 15 46 V3	1 ... 16	200	0.2 ... 1.7 (fixed)
PST4M404	9M4 4281 762 04 0000 0000 15 46 V3	4 ... 40	200	1.2 ... 4.5 (fixed)
PST4M1004	9M4 4283 763 04 0000 0000 15 46 V3	10 ... 100	200	4 ... 16 (fixed)
PST4M16F4	9M4 4279 761 04 0000 0000 11 15 46 74 V3	1 ... 16	200	0.2 ... 1.7 (fixed)
PST4M40F4	9M4 4281 762 04 0000 0000 11 15 46 74 V3	4 ... 40	200	1.2 ... 4.5 (fixed)
PST4M100F4	9M4 4283 763 04 0000 0000 11 15 46 74 V3	10 ... 100	200	4 ... 16 (fixed)

Sensor: FKM Membrane

Housing / pressure connection: Aluminium EN AW-6082 AlMgSi1 anodized

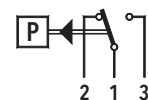


PST4M ... 4



PST4M ... F4


AC 250 V, 6 (1) A
DC 24 V, 3 (2) A
DC 220 V, 0.25 (0.1) A



 Data sheet
Instructions

H72368
H73367

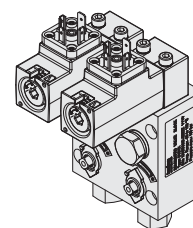
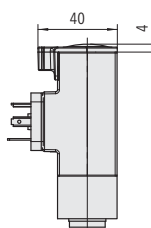
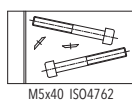
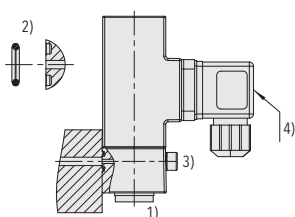
Ordering information/type code

		9M4 .	XX	XX	XXX	XX	XX
Microswitch	Standard ¹⁾		42				
	Standard  ¹⁾		33				
	Gold plated contacts ¹⁾		84				
Range	Range [bar]	Over pressure [bar]		Range [si]	Over pressure [si]		
	1 ... 10	200	78	14 ... 150	2900	G8	
	1 ... 16	200	79	14 ... 250	2900	G9	
	2 ... 25	200	80	30 ... 400	2900	H0	
	4 ... 40	200	81	60 ... 500	2900	H1	
	6 ... 60	200	82	85 ... 850	2900	H2	
	10 ... 100	200	83	150 ... 1500	2900	H3	
Sensor	Sensor material	Sensor housing material	Range				
	FKM Membrane	Aluminium EN AW-6082 AlMgSi1 anodized	78, 79		761		
	FKM Membrane	Aluminium EN AW-6082 AlMgSi1 anodized	80, 81		762		
	FKM Membrane	Aluminium EN AW-6082 AlMgSi1 anodized	82, 83		763		
Pressure connection	G1/8" female						02
	G1/4" female						04
	M10x1.0" female ²⁾						03
Accessories	Flange with O-Ring ³⁾						11
	Female electrical connector EN175301-803-A (DIN43650-A)						46
	Welsh plug G1/4"						74
	Fixing set						V3
	Covering cap						15
	Sealing switchpoint (manipulation protection)						16
	Switch point adjustment on customers request Please indicate when ordering: - Switchpoint including measurement unit (kPa, bar, MPa, psi, abs. or rel.) - Increasing or decreasing						88
	Damping elements and snubber see data sheet H72258						

¹⁾ Switching differential not adjustable

²⁾ Please ask us

³⁾ Only with pressure connection 04 (G1/4"), others upon request



1) Torque: G 1/4": $M_A = 32 \dots 40 \text{ Nm}$

2) O-Ring: $\varnothing 6.75 \times 1.78 \text{ NBR 90 Sh}$

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

4) Torque connector center screw: max. 0.4 Nm

Diagnostic Valve Bloc (DVB)
see specification sheet H72361

PSTD 9D0

Differential Pressure Picostat



Features

- Compact design
- Rugged housing
- High repeatability
- Protection IP65 (with plug connector)
- Any mounting position possible

Technical Data

Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-1 ... 6 and -1 ... 8 bar	Media temperature	-25°C ... +120°C
Differential pressure	0 ... 4 and 0 ... 6 bar	Ambient temperature	-25°C ... +85°C
Output signal	1 Floating change-over contact (SPDT)	Approval / conformity	GL EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching differential	Not adjustable		

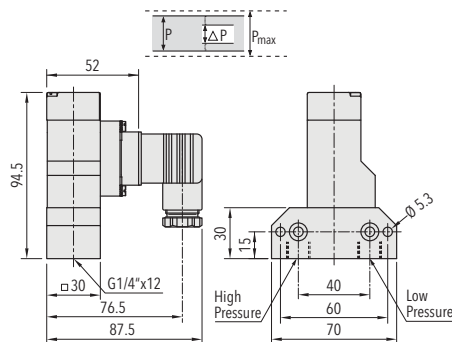
Data sheet H72273
Instructions H73273

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Differential pressure [bar]	Over pressure max. [bar]	Switching differential [bar]
PSTD4	9D0 2076 770 04 0000 0000 15 58 V3	-1 ... 6	0 ... 4	8	0.2 (fixed)
PSTD6	9D0 2077 771 04 0000 0000 15 58 V3	-1 ... 8	0 ... 6	12	0.3 (fixed)

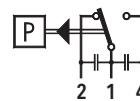
Sensor: Bronze (CuSn8)

Housing / pressure connection: Brass (CuZn39Pb3)



PSTD ...

AC 250 V, 10 (3) A
DC 250 V, 0.1 (0.05) A
DC 220 V, 0.25 (0.2) A
DC 110 V, 0.5 (0.3) A
DC 24 V, 2 (1) A



P/PS 900/904/912

Pressostat



Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

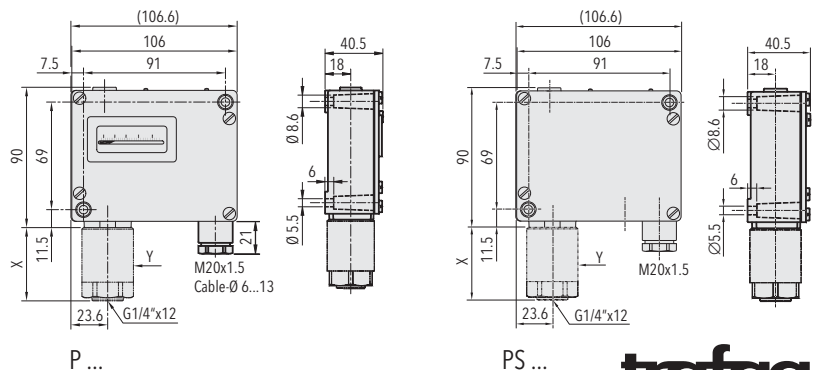
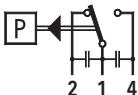
Technical Data			
Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-0.9 ... 1.5 to 10 ... 100 bar 5 ... 50 to 125 ... 1500 psi	Media temperature	-40°C ... +150°C
Output signal	1 Floating change-over contact (SPDT)	Ambient temperature	-25°C ... +70°C
Switching differential	Not adjustable	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet	H72252
Instructions	H71261

Standard products (extra short lead time)						
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]	Diameter Y [mm]	Length X [mm]
P1.5	900 2672 900	-0.9 ... 1.5	10	0.1 (fixed)	45	56.5
P2.5	900 2675 901	0.2 ... 2.5	10	0.1 (fixed)	45	56.5
P4	900 2376 903	0 ... 4	12	0.2 (fixed)	33	47
P6	900 2377 903	0 ... 6	12	0.2 (fixed)	33	47
P10	900 2378 905	1 ... 10	24	0.4 (fixed)	27	42.5
P16	900 2379 905	1 ... 16	24	0.4 (fixed)	27	42.5
P25	900 2380 907	2 ... 25	40	1 (fixed)	33	47
P40	900 2381 907	4 ... 40	40	1 (fixed)	33	47
PS1.5	904 2672 900	-0.9 ... 1.5	10	0.1 (fixed)	45	56.5
PS2.5	904 2675 901	0.2 ... 2.5	10	0.1 (fixed)	45	56.5
PS6	904 2377 903	0 ... 6	12	0.2 (fixed)	33	47
PS16	904 2379 905	1 ... 16	24	0.4 (fixed)	27	42.5
PS40	904 2381 907	4 ... 40	40	1 (fixed)	27	42.5

Sensor: Bronze (CuSn8)
Housing / pressure connection: Brass (CuZn39Pb3)

AC 500 V, 10 (0.75) A
DC 30 V, 15 (1.5) A
DC 250 V, 0.3 (0.2) A



PV/PVF 903/907/915/940/941/942

Vari Pressostat



Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

Technical Data

Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-0.9 ... 1.5 to 4 ... 40 bar 5 ... 50 to 50 ... 500 psi	Media temperature	-40°C ... +150°C
Output signal	1 Floating change-over contact (SPDT)	Ambient temperature	-25°C ... +70°C
Switching differential	Adjustable	Approval / conformity	ABS, BV, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching point	Calibration for decreasing pressure		

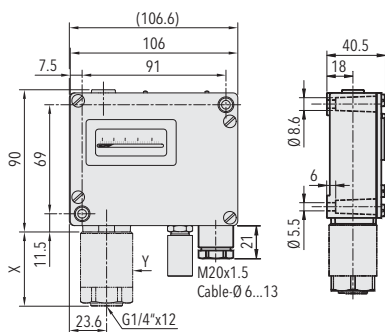
Data sheet H72257
Instructions H71261

Standard products (extra short lead time)

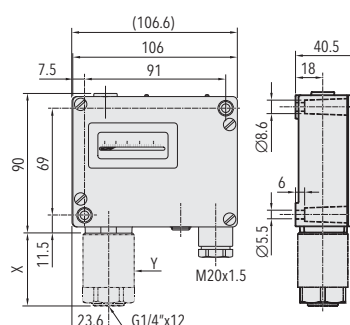
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]	Diameter Y [mm]	Length X [mm]
PV6	903 2377 903	0 ... 6	12	0.4 ... 3.2 (adjustable)	33	47
PV16	903 2379 905	1 ... 16	24	1 ... 7.5 (adjustable)	27	42.5
PV40	903 2381 907	4 ... 40	40	3 ... 18 (adjustable)	27	42.5
PVF1.5	940 2372 900	-0.9 ... 1.5	10	0.06 ... 0.2 (adjustable)	45	56.5
PVF2.5	940 2375 901	0.2 ... 2.5	10	0.06 ... 0.2 (adjustable)	45	56.5
PVF6	940 2377 903	0 ... 6	12	0.2 ... 0.6 (adjustable)	33	47
PVF16	940 2379 905	1 ... 16	24	0.5 ... 1.6 (adjustable)	27	42.5

Sensor: Bronze (CuSn8)

Housing / pressure connection: Brass (CuZn39Pb3)

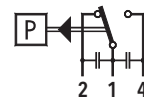


PV ...



PVF ...

AC 500 V, 10 (0.75) A
DC 30 V, 15 (1.5) A
DC 250 V, 0.3 (0.2) A



PK 944/947

Pressostat



Features

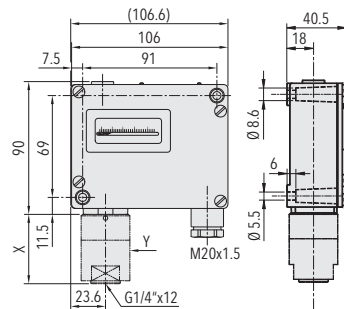
- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

Technical Data			
Measuring principle	Piston	Repeatability	± 1.0 % FS typ.
Measuring range	1 ... 10 to 60 ... 600 bar	Media temperature	O-Ring NBR: -30°C ... +100°C O-Ring FKM: -15°C ... +150°C
Output signal	1 Floating change-over contact (SPDT)	Ambient temperature	-20°C ... +70°C
Switching differential	Not adjustable	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet	H72259
Instructions	H71261

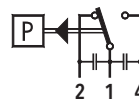
Standard products (extra short lead time)						
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]	Diameter Y [mm]	Length X [mm]
PK10	944 2378 700	1 ... 10	100	0.45 ... 0.9 (fixed)	33	47
PK40	944 2381 704	4 ... 40	200	1.8 ... 3.4 (fixed)	27	42.5
PK100	944 2383 708	10 ... 100	200	3.2 ... 7.5 (fixed)	27	42.5
PK250	944 2385 712	25 ... 250	400	5.2 ... 16 (fixed)	27	42.5

Sensor: 1.4435, O-ring NBR
Housing / pressure connection: 1.4435



PK ...

AC 500 V, 10 (0.75) A
DC 30 V, 15 (1.5) A
DC 250 V, 0.3 (0.2) A



PD 920/924/932

Differential Pressure Pressostat



Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

Technical Data

Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-1 ... 6 to -1 ... 18 bar	Media temperature	-40°C ... +150°C
Differential pressure	-0.6 ... 3.4 to 1 ... 16 bar	Ambient temperature	-25°C ... +70°C
Output signal	1 Floating change-over contact (SPDT)	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching differential	Not adjustable		

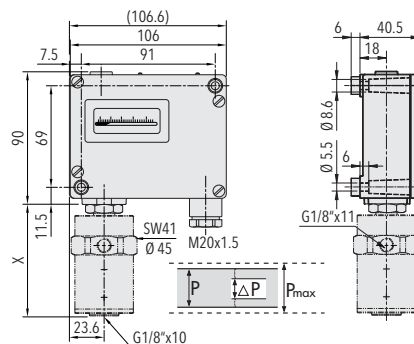
Data sheet	H72253
Instructions	H73256

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Differential pressure [bar]	Over pressure max. [bar]	Switching differential [bar]	Length X [mm]
PD3.4	920 2374 931	-1 ... +6	-0.6 ... +3.4	12	0.16 (fixed)	77
PD6	920 2377 933	-1 ... +8	0 ... 6	12	0.16 (fixed)	77
PD16	920 2379 935	-1 ... 18	1 ... 16	24	0.4 (fixed)	87

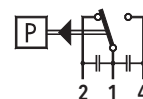
Sensor: Bronze

Housing / pressure connection: Brass



PK ...

AC 500 V, 10 (0.75) A
DC 30 V, 15 (1.5) A
DC 250 V, 0.3 (0.2) A



901/902/905/906

Limi Pressostat



Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

Technical Data

Measuring principle	Bellow
Measuring range	-0.9 ... 1.5 to 4 ... 40 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Ambient temperature	-25°C ... +70°C
Approval / conformity	EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet

H72254

901/902/905/906

Limi Membrane Pressostat



Features

- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

Technical Data

Measuring principle	Membrane
Measuring range	30 ... 600 and 50 ... 1000 mbar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Ambient temperature	-25°C ... +70°C
Approval / conformity	EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet

H72269

987/988

Pressostat

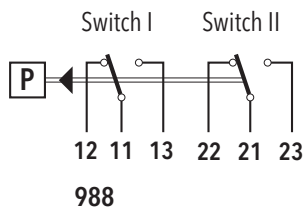
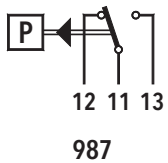
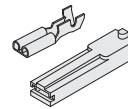
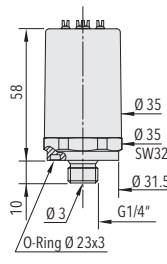
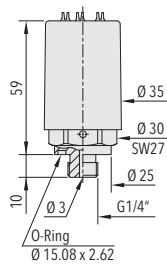
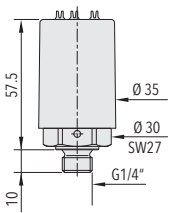


Features

- Steel or bronze bellows
- Blade connector (IEC) 2.8 x 0.5 mm
- Compact design
- Adjustment in factory

Technical Data

Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-0.3 ... 1.3 to 1 ... 10 bar	Media temperature	-25°C ... +80°C
Output signal	1 or 2 floating change-over contacts (SPDT)	Ambient temperature	-25°C ... +70°C
Switching differential	Not adjustable	Approval / conformity	EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching point	Adjustment in factory		



Data sheet
Instructions

H72272
H73272

Ordering information/type code

		XXX	XX	XX	XXX	XX	XX	XX
Custom build code	1 Floating change-over contact (SPDT)	987						
	2 Floating change-over contacts (SPDT)	988						
Microswitch	Standard contacts, switching differential not adjustable		42					
	With gold plated contacts, switching differential not adjustable		84					
Range	Range [bar]	Over pressure [bar]	Burst pressure [bar]					
	-0.3 ... 1.3	-1 ... 4	10		72			
	0 ... 1.6	-1 ... 4	10		73			
	0 ... 2.5	-1 ... 4	10		75			
	0 ... 4	-1 ... 6	10		76			
	1 ... 10	-1 ... 15	15		78			
Sensor	Sensor material	Pressure connection	Range					
	Bellows: 1.4301 (AISI 304)	1.4301 (AISI 304), with groove for O-ring	73, 75		847			
	Bellows: 1.4301 (AISI 304)	1.4301 (AISI 304), with groove for O-ring	76		846			
	Bellows: Bronze (CuSn6)	Brass (CuZn39Pb3), without groove for O-ring	72, 73, 75		947			
	Bellows: Bronze (CuSn6)	Brass (CuZn39Pb3), without groove for O-ring	76		946			
	Bellows: Bronze (CuSn6)	Brass (CuZn39Pb3), without groove for O-ring	78		945			
	Bellows: Bronze (CuSn6)	Brass (CuZn39Pb3), with groove for O-ring	72, 73, 75		949			
	Bellows: Bronze (CuSn6)	Brass (CuZn39Pb3), with groove for O-ring	76		948			
Bellows: Bronze (CuSn6)	Brass (CuZn39Pb3), with groove for O-ring	78		939				
Code number	Specified by Trafag						XX	
Fixing	Direct on sensor or housing							00
Accessories	Blade receptacle (2.8 x 0.5 mm) and insulator for flat plugs (2 x 6 pcs.)							09
	Switchpoint fixed and sealed upon customer's request							88
	Switchpoint preset upon customer's request, no guarantee on switching accuracy							83
	Switchpoint adjustment switch I (lower switchpoint) and switch II (upper switchpoint) Please indicate for each switch when ordering: - Switchpoint [bar] - Increasing or decreasing							
	Routine test of leakage rate <math> < 10^{-7}</math> mbar-l/s							05
	Damping elements and snubber see data sheet H72258							

Switching differential typ. @ 25°C

Measuring range bellows sensor	[bar]	-0.3 ... 1.3	0 ... 1.6	0 ... 2.5	0 ... 4	1 ... 10
Microswitch 42/84: Switching differential not adjustable	[bar]	0.1	0.1	0.2	0.3	0.6
Setting tolerance	[bar]	±0.08	±0.08	±0.12	±0.16	±0.2
Adjustment range of switch-points, increasing	[bar]	-0.3 ... 1.4	0.2 ... 1.7	0.3 ... 3.2	0.4 ... 4.8	0.5 ... 11*
Adjustment range of switch-points, decreasing	[bar]	-0.4 ... 1.3	0.1 ... 1.6	0.1 ... 3.0	0.1 ... 4.5	0.2 ... 10*

* Pressure range 1 ... 10 bar: Max. 2 bar switchpoint difference

EXP 900/904/912

Ex Pressostat



Features

- Rugged aluminium housing, option: housing stainless steel
- Protection IP66
- Any mounting position possible
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db

Technical Data

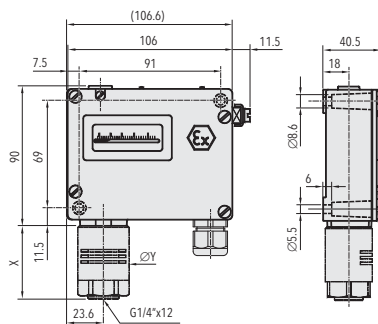
Measuring principle	Bellow	Media temperature	-40°C ... +150°C
Measuring range	-0.9 ... 1.5 to 4 ... 40 bar	Ambient temperature	-50°C ... +65°C
Output signal	1 Floating change-over contact (SPDT)	Approval / conformity	SEV 15 ATEX 0157 X
Switching differential	Not adjustable	Type of protection	Areas with gaz explosion hazards: II 2 G Ex d e IIC T6 Gb Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db
Repeatability	± 1.0 % FS typ.		

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]	Diameter Y [mm]	Length X [mm]
EXP1.5	900 9172 850 00 0000 0000 02	-0.9 ... 1.5	10	0.2 (fixed)	45	56.5
EXP2.5	900 9175 851 00 0000 0000 02	0.2 ... 2.5	10	0.2 (fixed)	45	56.5
EXP6	900 9177 853 00 0000 0000 02	0 ... 6	12	0.4 (fixed)	33	47
EXP16	900 9179 855 00 0000 0000 02	1 ... 16	24	0.9 (fixed)	27	42.5

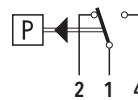
Sensor: 1.4435

Housing / pressure connection: Brass nickel plated



EXP ...

AC 250 V, 5 (5) A
DC 30 V, 5 (3) A
DC 250 V, 0.25 (0.03) A

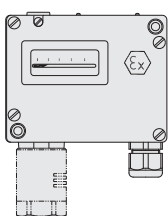
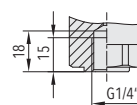
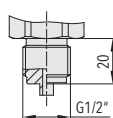
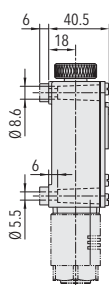
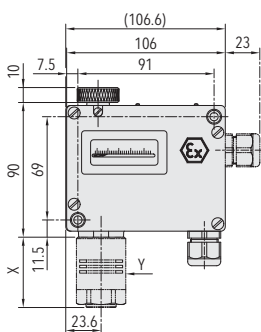


Data sheet
Instructions

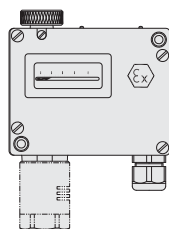
H72263
H73171

Ordering information/type code

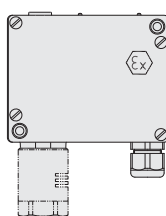
		XXX	XX	XX	XXX	XX	XX			
Custom build code	With display and adjusting screw	900								
	Without display, with adjusting screw	904								
	With display and adjusting knob	912								
Microswitch	Standard, switching differential not adjustable		91							
Range	Range [bar]	Over pressure [bar]	Burst pressure [bar]		Range [bar]	Over pressure [bar]	Burst pressure [bar]			
	-0.9 ... 1.5	10	13	72	1 ... 10	24	36	78		
	0.2 ... 1.6	10	13	73	1 ... 16	24	36	79		
	0.2 ... 2.5	10	13	75	2 ... 25	40	75	80		
	0 ... 4	12	26	76	4 ... 40	40	75	81		
	0 ... 6	12	26	77						
Sensor	Sensor material	Sensor housing material	Thread	Range		Sensor material	Sensor housing material	Thread	Range	
	1.4435	Brass nickel plated	G1/4" female	72	850	1.4435	Brass nickel plated	G1/2" male	76, 77	854
	1.4435	Brass nickel plated	G1/2" male	72	859	1.4435	Brass nickel plated	G1/4" female	78, 79	855
	1.4435	Brass nickel plated	G1/4" female	73, 75	851	1.4435	Brass nickel plated	G1/2" male	78, 79	856
	1.4435	Brass nickel plated	G1/2" male	73, 75	852	1.4435	Brass nickel plated	G1/4" female	80, 81	857
	1.4435	Brass nickel plated	G1/4" female	76, 77	853	1.4435	Brass nickel plated	G1/2" male	80, 81	858
	Fixing				Direct on sensor or housing					00
					With mounting bracket					31
	Accessories				Housing stainless steel					06
					Damping elements and snubber see data sheet H72258					



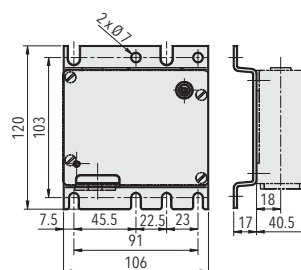
900



912



904



Mounting plate MB31 see chapter 'Accessories'

EXPK 944/947/953

Ex Pressostat



Features

- Rugged aluminium housing, option: housing stainless steel
- Protection IP66
- Any mounting position possible
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db

Technical Data

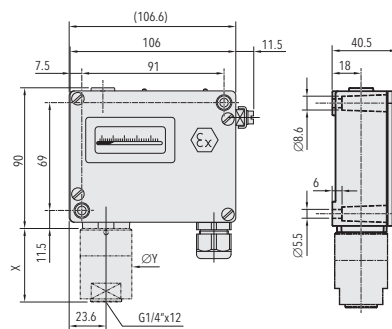
Measuring principle	Piston	Media temperature	NBR: -30°C ... +100°C FKM: -15°C ... +150°C
Measuring range	1 ... 10 to 60 ... 600 bar	Ambient temperature	-50°C ... +65°C
Output signal	1 Floating change-over contact (SPDT)	Approval / conformity	SEV 15 ATEX 0157 X
Switching differential	Not adjustable	Type of protection	Areas with gas explosion hazards: II 2 G Ex d e IIC T6 Gb; Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db
Repeatability	± 1.0 % FS typ.		

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]	Diameter Y [mm]	Length X [mm]
EXPK10	944 9178 700 00 0000 0000 02	1 ... 10	100	0.4 ... 0.8 (fixed)	33	47
EXPK40	944 9181 704 00 0000 0000 02	4 ... 40	200	2 ... 5 (fixed)	27	42.5
EXPK100	944 9183 708 00 0000 0000 02	10 ... 100	200	4 ... 11 (fixed)	27	42.5
EXPK250	944 9185 712 00 0000 0000 02	25 ... 250	400	8 ... 26 (fixed)	27	42.5

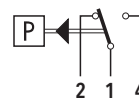
Sensor: 1.4435, O-ring NBR

Housing / pressure connection: 1.4435



EXPK ...

AC 250 V, 5 (5) A
DC 30 V, 5 (3) A
DC 250 V, 0.25 (0.03) A



Data sheet
Instructions

H72270
H73171

EXPD 920/924/932

Ex Differential Pressostat



Features

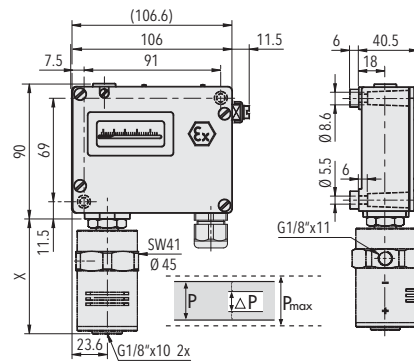
- Rugged aluminium housing
- Protection IP66
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db
- Any mounting position possible

Technical Data			
Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-1 ... 6 to -1 ... 18 bar	Media temperature	-50°C ... +150°C
Differential pressure	-0.6 ... 3.4 to 1 ... 16 bar	Ambient temperature	-50°C ... +65°C
Output signal	1 Floating change-over contact (SPDT)	Approval / conformity	SEV 15 ATEX 0157 X
Switching differential	Not adjustable	Type of protection	Areas with gas explosion hazards: II 2 G Ex d e IIC T6 Gb; Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db

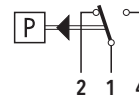
Standard products (extra short lead time)						
Product No.	Type Code	Pressure range [bar]	Differential pressure [bar]	Over pressure max. [bar]	Switching differential [bar]	Length X [mm]
EXPD3.4	920 9174 992 00 0000 0000 02	-1 ... +6	-0.6 ... +3.4	12	0.4 (fixed)	77
EXPD6	920 9177 993 00 0000 0000 02	-1 ... +8	0 ... 6	12	0.4 (fixed)	77
EXPD16	920 9179 994 00 0000 0000 02	-1 ... +18	1 ... 16	24	0.7 (fixed)	87

Sensor: Bronze

Housing / pressure connection: Brass nickel plated



AC 250 V, 5 (5) A
DC 30 V, 5 (3) A
DC 250 V, 0.25 (0.03) A



EXPD ...

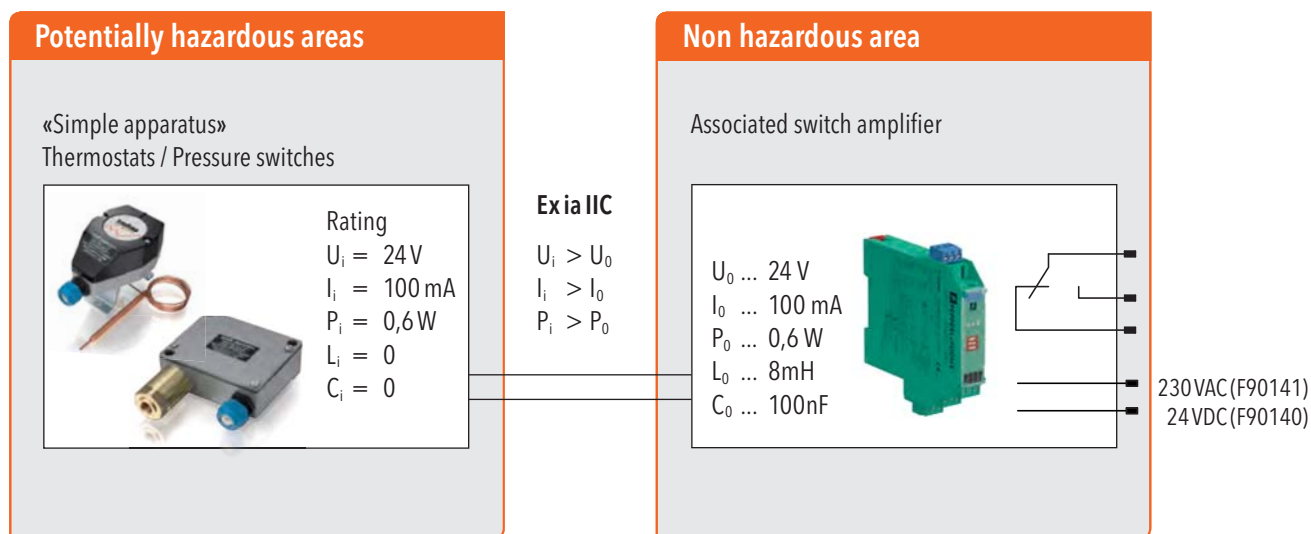
 Data sheet
Instructions

H72256
H73171

Simple Apparatus

Pressostats and Thermostats, when combined with a certified switch amplifier (Zener barrier/Zener relay), can be used as «simple electrical apparatus» in Zone 1 and 2, as well as in Zone 21 and 22, according to IEC/EN 60079-14. These pressostats and thermostats are not suitable for Zone 0 and Zone 20. The use in safety relevant applications (approved electrical apparatus) is not permitted.

Switch amplifiers are suitable for intrinsically safe applications. The device transmits signals from the hazardous area into the safe area.



Recommended switch amplifier (see chapter "Accessories"):

Trafag parts no.: ZEN230VAC (230 VAC)

ZEN24VDC (24 VDC)

If another type of switch amplifier is used, make sure its electrical rating limits are within the specification of the simple apparatus thermostat or pressostat.

«Simple Apparatus» 904 conformity to ATEX

Pressostat



Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

Technical Data

Measuring principle	Bellow
Measuring range	-0.9 ... 1.5 to 10 ... 100 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Ambient temperature	-25°C ... +70°C
Approval / conformity	EN60730-1/ EN60730-2-6: Typ 2.B.H EN60079-0, EN60079-11 Zone 1 and 2, 21 and 22

Switch amplifier See chapter "Accessories"



Data sheet

H72364

«Simple Apparatus» 924 conformity to ATEX

Differential Pressure Pressostat



Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

Technical Data

Measuring principle	Bellow
Measuring range	-1 ... 6 to -1 ... 18 bar
Differential pressure	-0.6 ... 3.4 to 1 ... 16 bar
Output signal	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Approval / conformity	EN60730-1/ EN60730-2-6: Typ 2.B.H EN60079-0, EN60079-11 Zone 1 and 2, 21 and 22

Switch amplifier See chapter "Accessories"



Data sheet

H72365

Technical data pressure switches

	PST4B 9B4	PST4K 9K4	PST4M 9M4	PSTD 9D0	P/PS 900/904/912	PV/PVF 903/907/915/940/941/942
Main characteristics						
Measuring principle	Bellow	Piston	Membrane	Bellow	Bellow	Bellow
Measuring range	-0.6 ... 3.4 to 4 ... 40 bar -8 ... 45 to 60 ... 500 psi	1 ... 10 to 40 ... 400 bar 14 ... 150 to 580 ... 5800 psi	1 ... 10 to 10 ... 100 bar 14 ... 150 to 150 ... 1500 psi	-1 ... 6 and -1 ... 8 bar	-0.9 ... 1.5 to 10 ... 100 bar 5 ... 50 to 125 ... 1500 psi	-0.9 ... 1.5 to 4 ... 40 bar 5 ... 50 to 50 ... 500 psi
Output signal	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)
Switching differential	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Adjustable
Accuracy						
Repeatability	± 0.5 % FS typ.	± 1.0 % FS typ.	± 2.0 % FS typ.	± 1.0 % FS typ.	± 1.0 % FS typ.	± 1.0 % FS typ.
Resistance of insulation	500 VDC > 10 MΩ	500 VDC > 10 MΩ	500 VDC > 10 MΩ	> 2 MΩ	> 2 MΩ	500 VDC/100 MΩ
Dielectric strength	>1.5 kV AC/60 s terminal ground >500 VAC/60 s via open contacts	(IEC/EN 60730-1) >1.5 kV AC/60 s terminal ground >500 VAC/60 s via open contacts	(IEC/EN 60730-1) >1.5 kV AC/60 s terminal ground >500 VAC/60 s via open contacts	1.45 kV terminal ground	U ≤ 250V: 1.45 kV / U ≤ 500V: 2 kV terminal ground	2 kV terminal ground
Cable gland					M20x1.5 Cable-Ø 6...13 mm	M20x1.5 Cable-Ø 6...13 mm
Terminal screw					3 x 1.5...4 mm ²	3 x 1.5...4 mm ²
Electrical connections	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	Screw terminal	Screw terminal
Environmental conditions						
Media temperature	-25°C ... +125°C -40°C ... +125°C	-25°C ... +125°C -40°C ... +125°C	0°C ... +80°C	-25°C ... +120°C	-40°C ... +150°C	-40°C ... +150°C
Ambient temperature	-25°C ... +125°C -40°C ... +125°C	-25°C ... +125°C -40°C ... +125°C	0°C ... +80°C	-25°C ... +85°C	-25°C ... +70°C	-25°C ... +70°C
Protection	IP65	IP65	IP65	IP65	IP65	IP65
Humidity	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative
Vibration	Switch: IEC/EN 60068-2-6 10...59 Hz: ±0.75 mm Ampl. 59...500 Hz: 5 g	Switch IEC/EN 60068-2-6: 10...59 Hz: ±0.75 mm Ampl. 59...500 Hz: 5 g	Switch IEC/EN 60068-2-6: 10...59 Hz: ±0.75 mm Ampl. 59...500 Hz: 5 g	5...25 Hz: ±1.6 mm 25...100 Hz: 4 g	Switch 23/26: 5...25 Hz: ±1.6 mm 25...100 Hz: 4 g Ranges 72, 73, 75, 5...50 Hz: 20 mm/sec.	5...25 Hz: ±1.6 mm 25...100 Hz: 4 g Ranges 72, 73, 75 5...50 Hz: 20 mm/sec.
Shock	50 g / 3 ms	50 g / 3 ms	50 g / 3 ms	50 g / 11 ms	50 g / 11 ms	50 g / 11 ms
Mechanical data						
Housing	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	Aluminium EN AW-6082 AlMgSi1 anodized	Brass CuZn39Pb3	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated
Sealing	HNBR 75 Sh	PTFE	FKM	-	NBR	NBR
Weight	~ 160 g	~ 200 g	~ 200 g	~ 800 g	~ 710 g	~ 710 g

PK 944/947	PD 920/924/932	901/902/905/906	987/988	EXP 900/904/912	EXPK 944/947/953	EXPD 920/924/932
Piston	Bellow	Membrane	Bellow	Bellow	Piston	Bellow
1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar	30 ... 600 and 50 ... 1000 mbar	-0.3 ... 1.3 to 1 ... 10 bar	-0.9 ... 1.5 to 4 ... 40 bar	1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar
1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 or 2 floating change-over contacts (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)
Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable
± 1.0 % FS typ.	± 1.0 % FS typ.	± 1.0 % FS typ.	± 1.0 % FS typ.	± 1.0 % FS typ.	± 1.0 % FS typ.	± 1.0 % FS typ.
500 VDC / 100 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ, 500 VDC	> 2 MΩ	> 2 MΩ	> 2 MΩ
U ≤ 250V: 1.45 kV / U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV/ U ≤ 500V: 2 kV terminal ground	2 kV terminal ground	2 kV terminal ground	1.5 kV	1.5 kV	1.5 kV
M20x1.5 Cable-Ø 6...13 mm	M20x1.5 Cable-Ø 6...13 mm	M20x1.5 Cable-Ø 6...13 mm		M20x1.5/SW24 Cable-Ø 5.5-13 mm Approval: PTB 99 ATEX 3128 X	M20x1.5/SW24 Cable-Ø 5.5...13 mm Approval: PTB 99 ATEX 3128 X	M20x1.5/SW24 Cable-Ø 5.5...13 mm Approval: PTB 99 ATEX 3128 X
3 x 1.5...4 mm ²	3 x 1.5...4 mm ²	3 x 0.5...4 mm ²		3 x 0.5...1.5 mm ²	3 x 0.5...1.5 mm ²	3 x 0.5...1.5 mm ²
Screw terminal	Screw terminal	Screw terminal	Blade connector	Screw terminal	Screw terminal	Screw terminal
NBR: -30°C ... +100°C FKM: -15°C ... +150°C	-40°C ... +150°C	-40°C ... +150°C	-25°C ... +80°C	-40°C ... +150°C	NBR: -30°C ... +100°C FKM: -15°C ... +150°C	-50°C ... +150°C
-20°C ... +70°C	-25°C ... +70°C	-25°C ... +70°C	-25°C ... +70°C	-50°C ... +65°C	-50°C ... +65°C	-50°C ... +65°C
IP65	IP65	IP65	IP40 (Microswitch IP67)	IP66	IP66	IP66
Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative
Switch 23/26: 5...25 Hz: ±1.6 mm 25...100 Hz: 4 g	Switch 23/26: 5...25 Hz: ±1.6 mm 25...100 Hz: 4 g	5...25 Hz: ±1.6 mm 25...100 Hz: 4 g	5 ... 100 Hz: 2 g	5...25 Hz: ±1.6 mm 25...100 Hz: 4 g Ranges 72, 73, 75: 5...50 Hz: 20 mm/sec.	5...25 Hz: ±1.6 mm 25...100 Hz: 4 g	5...25 Hz: ±1.6 mm 25...100 Hz: 4 g
50 g / 11 ms	50 g / 11 ms	50 g / 11 ms	50 g / 11 ms	50 g / 11 ms	50 g / 11 ms	50 g / 11 ms
AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	PBTP, Crastin	AlSi10Mg/ Epoxy coated Accessory 06: 1.4301 (AlSi 304)	AlSi10Mg/ Epoxy coated Accessory 06: 1.4301 (AlSi 304)	AlSi10Mg/ Epoxy coated
NBR/FKM	NBR	NBR	-	NBR	NBR / FKM	NBR
~ 710 g	~ 610 g	~ 850 g	~ 110 g	~ 710 g	~ 710 g	~ 610 g



Thermostats

For 70 years, Trafag thermostats have proven their robustness in the most adverse environmental conditions. Industry usage ranges from air conditioning applications to engine manufacturing and ship building 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.

Measurement principle

A capillary tube filled with liquid reacts to a temperature change as a result of the principle of thermal expansion. This expansion is detected using a precision structure which switches one or multiple microswitches.



Design variations

- With internal or external temperature set-point adjustment
- Internal or external measuring scale
- With or without a manual reset switch
- With or without switching differential adjustment
- Switch designs for inside or outside applications
- Optional capillary tube safeguard
- Single or double-step circuit
- CE, EX or ship certifications



Sensor systems and accessories







- Sensors that are fixed or can be mounted freely
- Copper (Cu), Cu nickel-plated or stainless steel sensor material
- Nickel-plated bronze or stainless steel protective sensor tube
- Additional capillary tube protection

Overview Thermostats

	A/AS/ASE 645/650	ADS 319	A2/A2S 198/199	IA/IAS 409/419	MSK 624/634	MP/MSP 663/664	
	page 110	page 111	page 112	page 113	page 114	page 115	
							
Designation of application	Room thermostat	Double room thermostat	Multistage room thermostat	Industrial room thermostat	Duct thermostat	Pipe mounting thermostat	
Measuring range	-45°C ... +15°C to 0°C ... +60°C	-30°C ... +30°C to 0°C ... +60°C	-45°C ... +15°C to 0°C ... +60°C	-30°C ... +30°C to 0°C ... +60°C	-30°C ... +40°C to +20°C ... +110°C	-10°C ... +35°C to +20°C ... +110°C	
Output signal	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	
Switching differential	Adjustable / not adjustable	Adjustable / not adjustable	Not adjustable	Adjustable / not adjustable	Adjustable / not adjustable	Adjustable / not adjustable	
Ambient temperature	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	
Protection	IP54	IP54	IP54	IP65	IP54	IP54	
Applications	HVAC Refrigeration	HVAC Refrigeration	HVAC Refrigeration	HVAC	HVAC	Process technology Water treatment	
Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	
Type of protection							
Data sheet	H72170	H72146	H72137	H72116	H72177	H72175	
Instructions	H73624	H73170	H70311	H73111	H73624	H73663	

MST 624/634	M/MS 624/634	MS...R 630/632	F/F...R 990/991/992/993	GS 657/658	D...R 302	M2S 104/114
page 116	page 118	page 117	page 123	page 120	page 121	page 122
						
Direct mounting thermostat	Remote sensing thermostat	Remote sensing thermostat with limiter	Frost protection thermostat	Remote sensing thermostat	Double thermostat with remote sensor and limiter	Multistage thermostat with remote sensor
-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	-5°C ... +15°C	+5°C ... +95°C and +20°C ... +150°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C
Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact
Adjustable / not adjustable	Adjustable / not adjustable	Not adjustable	Not adjustable	Not adjustable	Adjustable / not adjustable	Not adjustable
-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	Max. operating temperature: +70°C Min. operating temperature: switch point + 2°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C
IP54	IP54	IP54	IP 54	IP54	IP54	IP54
Machine tools HVAC Process technology Water treatment	Railways Machine tools HVAC Refrigeration Process technology	Railways Machine tools HVAC Refrigeration Process technology	HVAC Refrigeration	Process technology	HVAC Refrigeration	Machine tools HVAC Refrigeration Process technology
EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H
H72174	H72172	H72173	H72123	H72179	H72142	H72139
H73624	H73624	H73624	H70821	H73624	H73170	H70311

Overview Thermostats

	L/LF 736/754	L...R 755	I/IS 404/414	IS...R 410/412	ISN/ISNT 471/472	ISP/ISPT 474	
	page 124	page 125	page 126	page 129	page 130	page 132	
							
Designation of application	Remote sensing thermostat, skeleton type	Remote sensing thermostat with limiter, skeleton type	Industrial thermostat with remote sensor	Industrial thermostat with remote sensor and limiter	Thermostat for shipbuilding	Compact thermostat for shipbuilding	
Measuring range	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	+20°C ... +110°C to +40°C ... +300°C	+5°C ... +95°C to +20°C ... +150°C	
Output signal	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	
Switching differential	Adjustable / not adjustable	Not adjustable	Adjustable / not adjustable	Not adjustable	Not adjustable	Not adjustable	
Ambient temperature	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	
Protection	IP00	IP00	IP65	IP65	IP65	IP65	
Applications	Machine tools	Machine tools	Railways Machine tools	Machine tools Process technology	Shipbuilding Engine manufacturing Railways	Shipbuilding Engine manufacturing Railways Hydraulics HVAC	
Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	EN60730-1/ EN60730-2-9: Typ 2.B.H	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, RMRS EN60730-1/ EN60730-2-9: Typ 2.B.H	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS EN60730-1/ EN60730-2-9: Typ 2.B.H	
Type of protection							
Data sheet	H72122	H72124	H72110	H72138	H72111	H72113	
Instructions	H70211	H70211	H73111	H73111	H73111	H73113	

EXS 404/414	EXAS 409/419	«Simple Apparatus» conformity to ATEX 414	«Simple Apparatus» conformity to ATEX 419
page 134	page 137	page 138	page 138
			
Ex Industrial thermostat with remote sensor	Ex Industrial room thermostat	Industrial room thermostat with remote sensor	Industrial room thermostat
-30°C ... +40°C to +70°C ... +350°C	-30°C ... +30°C to 0°C ... +60°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +30°C to 0°C ... +60°C
Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact
Not adjustable	Not adjustable	Not adjustable	Not adjustable
-30°C ... +70°C	-30°C ... +60°C	-30°C ... +70°C	-30°C ... max. +65°C
IP65	IP65	IP65	IP65
⊕ II 2 G / D	⊕ II 2 G / D	Hazardous area	Hazardous area
SEV 15 ATEX 0156 X	SEV 15 ATEX 0156 X	EN60730-1/ EN60730-2-9: Typ 2.B.H EN60079-0, EN60079-11 Zone 1 and 2, 21 and 22	EN60730-1/ EN60730-2-9: Typ 2.B.H EN60079-0, EN60079-11 Zone 1 and 2, 21 and 22
Areas with gas explosion hazards: II 2 G Ex d e IICT6 Gb; Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db	Areas with gas explosion hazards: II 2 G Ex d e IICT6 Gb; Areas with dust explosion hazards: II 2 D Ex tb IIIC T80°C Db		
H72108	H72128	H72183	H72182
H73172	H73172	H73173	H73173

A/AS/ASE 645/650

Ambistat



Features

- Switching differential adjustable or fixed
- Short response time
- Protection IP54
- Electrical connection on terminal screw

Technical Data

Designation of application	Room thermostat	Switching differential	Adjustable / not adjustable
Measuring range	-45°C ... +15°C to 0°C ... +60°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

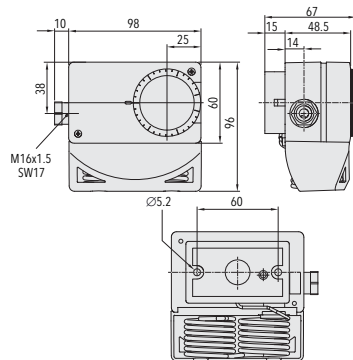
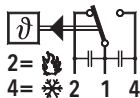
Data sheet H72170
Instructions H73624

Standard products (extra short lead time)

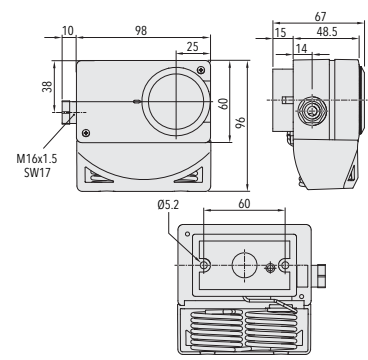
Product No.	Type Code	Temperature range [°C]	Switching differential [°C]	Operating temperature [°C]
A30	645 2503 402 19	0 ... +30	0.7 ... 6 (adjustable)	-30 ... +50
A33	645 2502 402 19	-30 ... +30	0.7 ... 6 (adjustable)	-30 ... +40
A40	645 2504 402 19	+10 ... +40	0.7 ... 6 (adjustable)	-30 ... +70
A60	645 2512 402 19	0 ... +60	0.7 ... 6 (adjustable)	-30 ... +70
AS30	650 2503 402 19	0 ... +30	0.7 ... 6 (adjustable)	-30 ... +50
AS33	650 2502 402 19	-30 ... +30	0.7 ... 6 (adjustable)	-30 ... +40
AS40	650 2504 402 19	+10 ... +40	0.7 ... 6 (adjustable)	-30 ... +70
AS60	650 2512 402 19	0 ... +60	0.7 ... 6 (adjustable)	-30 ... +70
ASE40	650 2404 402 19 0000 0000 00 00 00 01	+10 ... +40	5 (fixed)	-30 ... +70

Sensor: Sensor coil
Sensor material: Copper
Electrical connection: Screw terminal

AC 500 V, 10 (0.75) A
DC 30 V, 6 (1.5) A
DC 250 V, 0.25 (0.03) A



A ...
External switchpoint adjustment



AS ... / ASE ...
Internal switchpoint adjustment

ADS 319

Ambi Duostat



Features

- Two individual measuring systems
- Protection IP54
- Electrical connection on terminal screw

Technical Data

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

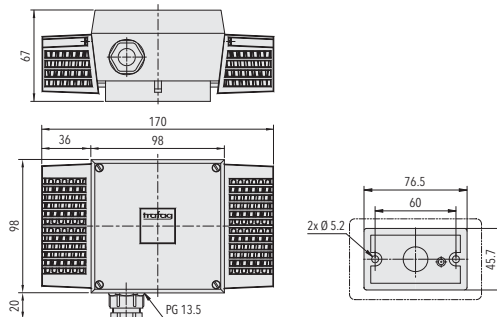
 Data sheet H72146
 Instructions H73170

Standard products (extra short lead time)

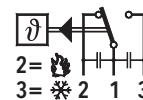
Product No.	Type Code	Temperature range [°C]	Set point adjustment	Operating temperature [°C]
ADS30	319 2503 402 19	0 ... +30	Internal switchpoint adjustment	-30 ... +50
ADS33	319 2502 402 19	-30 ... +30	Internal switchpoint adjustment	-30 ... +40
ADS60	319 2512 402 19	0 ... +60	Internal switchpoint adjustment	-30 ... +70

Sensor: Sensor coil
 Sensor material: Copper
 Electrical connection: Screw terminal

Switching differential [°C]: 0.7 ... 6 (adjustable)



AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



ADS ...
 Internal switchpoint adjustment

A2/A2S 198/199

Altero Ambistat



Features

- With 1 adjustable step between 2 stages
- Short response time
- Protection IP54
- Electrical connection on terminal screw

Technical Data

Designation of application	Multistage room thermostat	Switching differential	Not adjustable
Measuring range	-45°C ... +15°C to 0°C ... +60°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

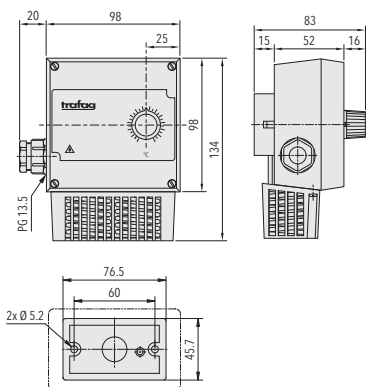
Data sheet H72137
 Instructions H70311

Standard products (extra short lead time)

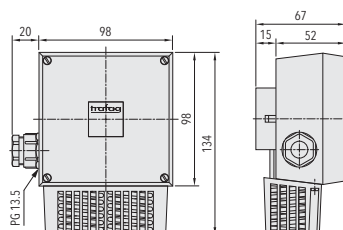
Product No.	Type Code	Temperature range [°C]	Set point adjustment	Operating temperature [°C]
A233	199 1102 402 19	-30 ... +30	External switchpoint adjustment	-30 ... +40
A230	199 1103 402 19	0 ... +30	External switchpoint adjustment	-30 ... +50
A260	199 1112 402 19	0 ... +60	External switchpoint adjustment	-30 ... +70
A2S33	198 1102 402 19	-30 ... +30	Internal switchpoint adjustment	-30 ... +40
A2S30	198 1103 402 19	0 ... +30	Internal switchpoint adjustment	-30 ... +50
A2S60	198 1112 402 19	0 ... +60	Internal switchpoint adjustment	-30 ... +70

Sensor: Sensor coil
 Sensor material: Copper
 Electrical connection: Screw terminal

Switching differential [°C]: 0.7 (fixed)
 Smallest stage difference [°C]: -6
 Largest stage difference [°C]: 15

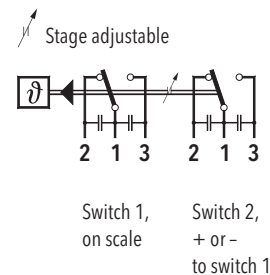


A2 ...
External switchpoint adjustment



A2S ...
Internal switchpoint adjustment

AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



IA/IAS 409/419

Indu Ambistat



Features

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

Technical Data

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

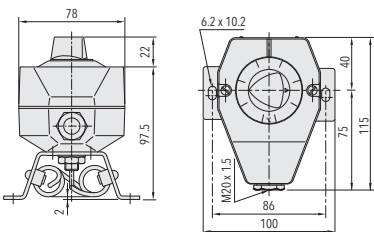
Data sheet	H72116
Instructions	H73111

Standard products (extra short lead time)

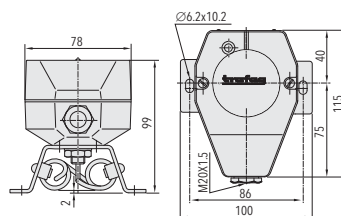
Product No.	Type Code	Temperature range [°C]	Set point adjustment	Operating temperature [°C]
IA33	409 2502 522 27	-30 ... +30	External switchpoint adjustment	-30 ... +40
IA35	409 2510 522 27	+5 ... +35	External switchpoint adjustment	-30 ... +50
IA60	409 2512 522 27	0 ... +60	External switchpoint adjustment	-30 ... +70
IAS33	419 2502 522 27	-30 ... +30	Internal switchpoint adjustment	-30 ... +40
IAS35	419 2510 522 27	+5 ... +35	Internal switchpoint adjustment	-30 ... +50
IAS60	419 2512 522 27	0 ... +60	Internal switchpoint adjustment	-30 ... +70

Sensor: Sensor coil
 Sensor material: Copper
 Electrical connection: Screw terminal

Switching differential [°C]: 0.7 ... 6 (adjustable)

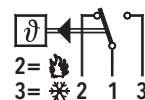


IA ...
External switchpoint adjustment



IAS ...
Internal switchpoint adjustment

AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



MSK 624/634

Duct Thermostat



Features

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

Technical Data

Designation of application	Duct thermostat	Switching differential	Adjustable / not adjustable
Measuring range	-30°C ... +40°C to +20°C ... +110°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

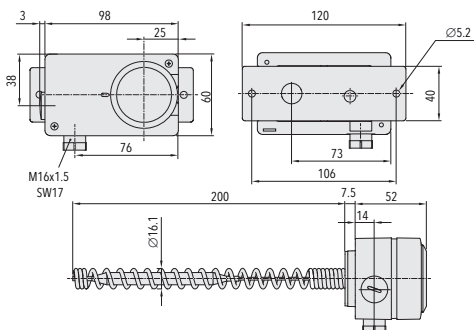
Data sheet	H72177
Instructions	H73624

Standard products (extra short lead time)

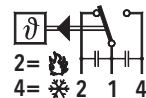
Product No.	Type Code	Temperature range [°C]	Set point adjustment	Sensor max. [°C]
MSK35	634 2509 432 30	0 ... +35	Internal switchpoint adjustment	50
MSK40	634 2501 432 30	-30 ... +40	Internal switchpoint adjustment	45
MSK80	634 2513 432 30	+10 ... +80	Internal switchpoint adjustment	100

Sensor: Capillary tube with direct mounted sensor
 Sensor material: Copper
 Electrical connection: Screw terminal

Switching differential [°C]: 0.7 ... 10 (adjustable)



AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



MSK ...
 Internal switchpoint adjustment
 Accessories: K200 / W200 See chapter "Accessories"

MP/MSP 663/664

Pipe Mounting Thermostat



Features

- For pipe or barrel mounting
- Short response time
- Protection IP54
- Electrical connection on terminal screw

Technical Data

Designation of application	Pipe mounting thermostat	Switching differential	Adjustable / not adjustable
Measuring range	-10°C ... +35°C to +20°C ... +110°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

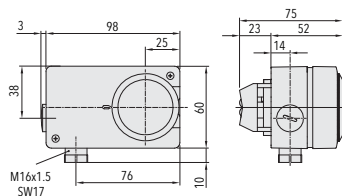
Data sheet	H72175
Instructions	H73663

Standard products (extra short lead time)

Product No.	Type Code	Temperature range [°C]	Set point adjustment	Sensor max. [°C]
MSP35	664 2594 502 00	-10 ... +35	Internal switchpoint adjustment	50
MSP80	664 2595 502 00	-10 ... +80	Internal switchpoint adjustment	85
MSP95	664 2520 502 00	+5 ... +95	Internal switchpoint adjustment	105
MSP110	664 2523 502 00	+20 ... +110	Internal switchpoint adjustment	115

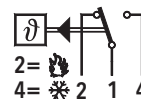
Sensor: Capillary tube with direct mounted sensor
 Sensor material: Copper
 Electrical connection: Screw terminal

Switching differential [°C]: 3.7 ... 14 (adjustable)



MSP ...
 Internal switchpoint adjustment

AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



MST 624/634

Ministat



Features

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

Technical Data

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

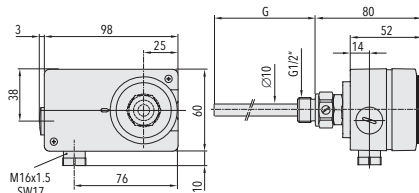
Data sheet H72174
 Instructions H73624

Standard products (extra short lead time)

Product No.	Type Code	Temperature range [°C]	Protection tube length [mm]	Switching differential [°C]	Sensor max. [°C]
MST8015	634 2595 322 12 1216 0150	-10 ... +80	150	2 ... 12 (adjustable)	105
MST8040	634 2595 322 12 1216 0400	-10 ... +80	400	2 ... 12 (adjustable)	85
MST9511	634 2520 332 12 1217 0110	+5 ... +95	110	2 ... 12 (adjustable)	85
MST9515	634 2520 322 12 1216 0150	+5 ... +95	150	2 ... 12 (adjustable)	105
MST9540	634 2520 322 12 1216 0400	+5 ... +95	400	2 ... 12 (adjustable)	105
MST15015	634 2531 322 12 1216 0150	+20 ... +150	150	2.5 ... 16 (adjustable)	165
MST15040	634 2531 322 12 1216 0400	+20 ... +150	400	2.5 ... 16 (adjustable)	165

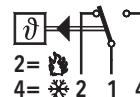
Sensor: Capillary tube with direct mounted sensor

Electrical connection: Screw terminal



MST ...
 Internal switchpoint adjustment

AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



MS...R 630/632

Mini Limistat



Features

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

Technical Data

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

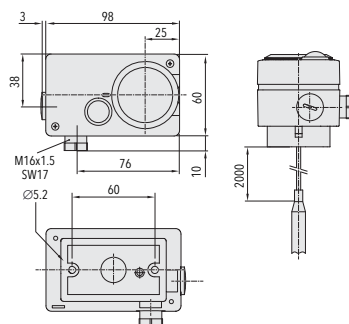
Data sheet	H72173
Instructions	H73624

Standard products (extra short lead time)

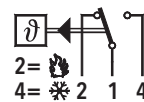
Product No.	Type Code	Sensor material	Temperature range [°C]	Sensor max. [°C]
MS95R	632 1220 322 19	Copper	+5 ... +95	105
MS150R	632 1231 322 19	Copper	+20 ... +150	165
MS230SR	632 1224 121 19	1.4435 (AISI316L)	+20 ... +230	250
MS350SR	632 1254 121 19	1.4435 (AISI316L)	+70 ... +350	380

Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A
 DC 30 V, 15 (1.5) A
 DC 250 V, 0.3 (0.2) A



MS ... R
 Internal switchpoint adjustment, external reset
 Calibrated for increasing temperatures

M/MS 624/634

Ministat



Features

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

Technical Data

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

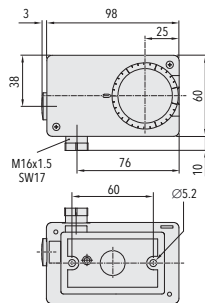
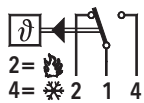
Standard products (extra short lead time)

Product No.	Type Code	Sensor material	Temperature range [°C]	Switching differential [°C]	Sensor max. [°C]
M35	624 2509 422 19	Copper	0 ... +35	0.7 ... 10 (adjustable)	70
M40	624 2501 422 19	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
M95	624 2520 322 19	Copper	+5 ... +95	2 ... 12 (adjustable)	105
M150	624 2531 322 19	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
M230S	624 2524 121 19	1.4435 (AISI316L)	+20 ... +230	3 ... 32 (adjustable)	250
M350S	624 2554 121 19	1.4435 (AISI316L)	+70 ... +350	4 ... 40 (adjustable)	380
MS35	634 2509 422 19	Copper	0 ... +35	0.7 ... 10 (adjustable)	70
MS40	634 2501 422 19	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
MS95	634 2520 322 19	Copper	+5 ... +95	2 ... 12 (adjustable)	105
MS150	634 2531 322 19	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
MS230S	634 2524 121 19	1.4435 (AISI316L)	+20 ... +230	3 ... 32 (adjustable)	250
MS350S	634 2554 121 19	1.4435 (AISI316L)	+70 ... +350	4 ... 40 (adjustable)	380

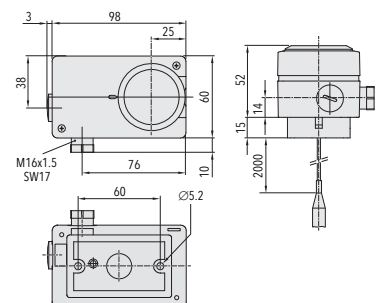
Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal

AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



M ...
 External switchpoint adjustment



MS ...
 Internal switchpoint adjustment



H72172
 H73624

Ordering information/type code

		XXX	XX	XX	XXX	XX	XXXXXXXXXX	XX	XX		
Custom build code	External adjustment	624									
	Internal adjustment	634									
Microswitch	Small switching differential, not adjustable	10	With gold plated contacts, switching differential not adjustable	21							
	Average switching differential, not adjustable	11	Adjustable large switching differential	24							
			Adjustable standard switching differential	25							
Range	Range [°C]	Sensor max. [°C]	Range [°C]	Sensor max. [°C]							
	-30 ... 40	45	-10 ... 80 ⁴⁾	85	01				95		
	-10 ... 25 ⁴⁾	60	5 ... 95	105	07				20		
	0 ... 35	70	20 ... 110 ⁴⁾	115	09				23		
	10 ... 45	85	20 ... 150	165	11				31		
	10 ... 80 ⁴⁾	100	20 ... 230	250	13				24		
	15 ... 30	60	40 ... 300 ⁴⁾	330	17				53		
	-10 ... 35	70	70 ... 350	380	94				54		
Sensor¹⁾	Range	Sensor diame- ter [mm]	Sensor material	Range	Sensor diame- ter [mm]	Sensor material					
	24, 53, 54	Ø4.7	Stainless steel	01, 07, 09, 11, 13, 17	Ø4.7	Copper	412				
	24, 53, 54	Ø7	Stainless steel	01, 07, 09, 11, 13, 17	Ø7	Copper	422				
	24, 53, 54	Ø9	Stainless steel	01, 07, 09, 11, 13, 17	Ø9	Copper	432				
	94, 95, 20, 23, 31	Ø4.7	Stainless steel	24, 53, 54	Ø4.7	Copper nickel plated	113				
	94, 95, 20, 23, 31	Ø7	Stainless steel	24, 53, 54	Ø7	Copper nickel plated	123				
	94, 95, 20, 23, 31	Ø9	Stainless steel	24, 53, 54	Ø9	Copper nickel plated	133				
	01, 07, 09, 11, 13, 17	Ø7	Stainless steel	94, 95, 20, 23, 31	Ø4.7	Copper nickel plated	313				
	24, 53, 54	Ø4.7	Copper	94, 95, 20, 23, 31	Ø7	Copper nickel plated	323				
	24, 53, 54	Ø7	Copper	94, 95, 20, 23, 31	Ø9	Copper nickel plated	333				
	24, 53, 54	Ø9	Copper	01, 07, 09, 11, 13, 17	Ø4.7	Copper nickel plated	413				
	94, 95, 20, 23, 31	Ø4.7	Copper	01, 07, 09, 11, 13, 17	Ø7	Copper nickel plated	423				
	94, 95, 20, 23, 31	Ø7	Copper	01, 07, 09, 11, 13, 17	Ø9	Copper nickel plated	433				
	94, 95, 20, 23, 31	Ø9	Copper								
	Fixing²⁾	Nut M10 (for remote sensing version)	10	Angle bracket (for remote sensing version)	17						
		Cap nut (for direct mounting version)	14	Grubscrew locked with spacer (cooling element) (for direct mounting version)	18						
		Grubscrew locked, lateral (direct mounting version)	12	Mounting bracket (for remote sensing version)	19						
	Protection tube	See data sheet H72114/H72163							XXXX.XXXX		
	Accessories	Switchpoint locking ⁴⁾	15	Condensators over Pin 1-2 / 1-3	23						
Switchpoint fixed and sealed upon customer's request		88	Railway version (UIC 616)	28							
Switchpoint preset upon customer's request, no guarantee on switching accuracy		83	Outdoor application (vented)	44							
Switchpoint adjustment please indicate when ordering: - Switchpoint [bar]			Cover with window	77							
- Increasing or decreasing			Capillary tube protection: Flexible metal tube, brass nickel plated	90							
Condensator over Pin 1-2		12	Capillary tube protection: Flexible metal tube 1.4541/V2A	91							
Condensator over Pin 1-3		13	Capillary tube protection: PVC tube	92							
Capillary tube length	Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L=XXXX ³⁾										

¹⁾ See data sheet H72114/H72163

³⁾ Overlengths upon request

²⁾ See data sheet H72106

⁴⁾ Only with type 634 internal adjustment

GS 657/658

Galvanostat



Features

- Short response time
- Protection IP54
- Electrical connection on terminal screw
- Coated capillary tube 1500 mm

Technical Data

Designation of application	Remote sensing thermostat	Switching differential	Not adjustable
Measuring range	+5°C ... +95°C and +20°C ... +150°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet H72179
Instructions H73624

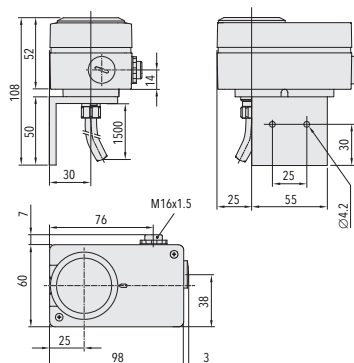
Standard products (extra short lead time)

Product No.	Type Code	Temperature range [°C]	Switching differential [°C]	Sensor max. [°C]
GS95	658 1120 326 26	+5 ... +95	2.5 (fixed)	105
GS150	658 1131 326 26	+20 ... +150	3.0 (fixed)	165

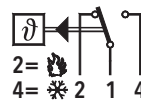
Sensor: Capillary tube with remote sensor

Sensor material: Copper with protection tube Teflon FEP

Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A
DC 30 V, 6 (1.5) A
DC 250 V, 0.25 (0.03) A



GS ...
Internal switchpoint adjustment

D...R 302

Duo Limistat



Features

- Two individual measuring systems
- Short response time
- Protection IP54
- Electrical connection on terminal screw

Technical Data

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

Data sheet	H72142
Instructions	H73170

Standard products (extra short lead time)

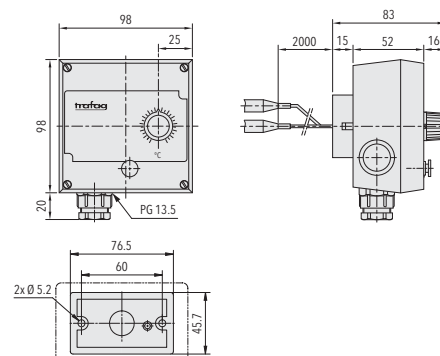
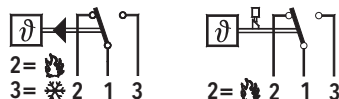
Product No.	Type Code	Temperature range [°C]	Switching differential [°C]	Measuring range limiter [°C]	Sensor max. [°C]
D95R	302 5836 362 19	+5 ... +95	2 ... 12 (adjustable)	+20 ... +110	105
D150R	302 5842 362 19	+20 ... +150	2.5 ... 16 (adjustable)	+35 ... +175	165
D300R	302 5839 162 19	+40 ... +300	4 ... 40 (adjustable)	+70 ... +350	380

Sensor: Capillary tube with remote sensor

Sensor material: Copper

Electrical connection: Screw terminal

AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



D ... R

External switchpoint adjustment

Calibrated for increasing temperatures

M2S 104/114

Alterostat



Features

- With 1 adjustable step between 2 stages
- Short response time
- Protection IP54
- Electrical connection on terminal screw

Technical Data

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

Data sheet H72139
Instructions H70311

Standard products (extra short lead time)

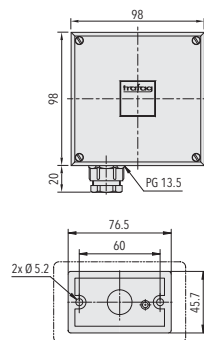
Product No.	Type Code	Temperature range [°C]	Switching differential [°C]	Smallest stage difference [°C]	Largest stage difference [°C]	Sensor max. [°C]
M2S40	114 1101 422 19	-30 ... +40	1.8 (fixed)	0.8	25	45
M2S35	114 1109 422 19	0 ... +35	1.8 (fixed)	0.8	15	50
M2S95	114 1120 322 19	+5 ... +95	2.5 (fixed)	1.2	35	105
M2S150	114 1131 322 19	+20 ... +150	3 (fixed)	1.5	40	165
M2S230S	114 1124 121 19	+20 ... +230	4.5 (fixed)	2	70	250
M2S350S	114 1154 121 19	+70 ... +350	5 (fixed)	2.5	80	380

M2S40 ... M2S150

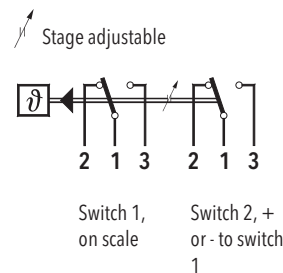
Sensor: Capillary tube with remote sensor
Sensor material: Copper
Electrical connection: Screw terminal

M2S230S ... M2S350S

Sensor: Capillary tube with remote sensor
Sensor material: 1.4435 (AISI316L)
Electrical connection: Screw terminal



M2S ...
Internal switchpoint adjustment



F/F...R 990/991/992/993

Froststat



Features

- Rugged aluminium housing
- Short response time
- Protection IP54
- Electrical connection on terminal screw

Technical Data

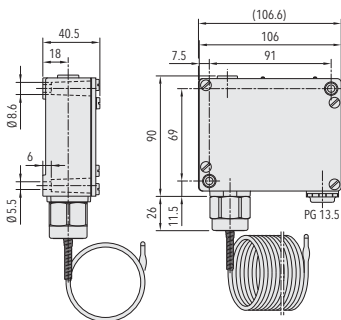
Designation of application	Frost protection thermostat	Switching differential	Not adjustable
Measuring range	-5°C ... +15°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet	H72123
Instructions	H70821

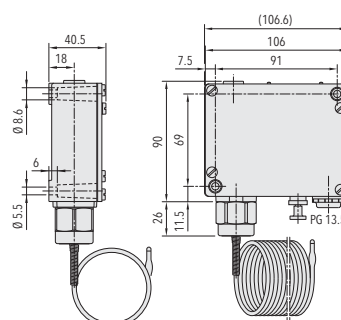
Standard products (extra short lead time)

Product No.	Type Code	Sensor material	Set point adjustment
F15	991 1299 000	Copper capillary tube, L=6m	Internal switchpoint adjustment
F153	990 1299	Copper capillary tube, L=3m	Internal switchpoint adjustment
F15R	993 1299 000	Copper capillary tube, L=6m	Internal switchpoint adjustment and external reset knob
F153R	992 1299	Copper capillary tube, L=3m	Internal switchpoint adjustment and external reset knob

Sensor: Capillary tube with remote sensor
 Electrical connection: Screw terminal

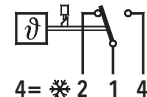


F ...
 Internal switchpoint adjustment



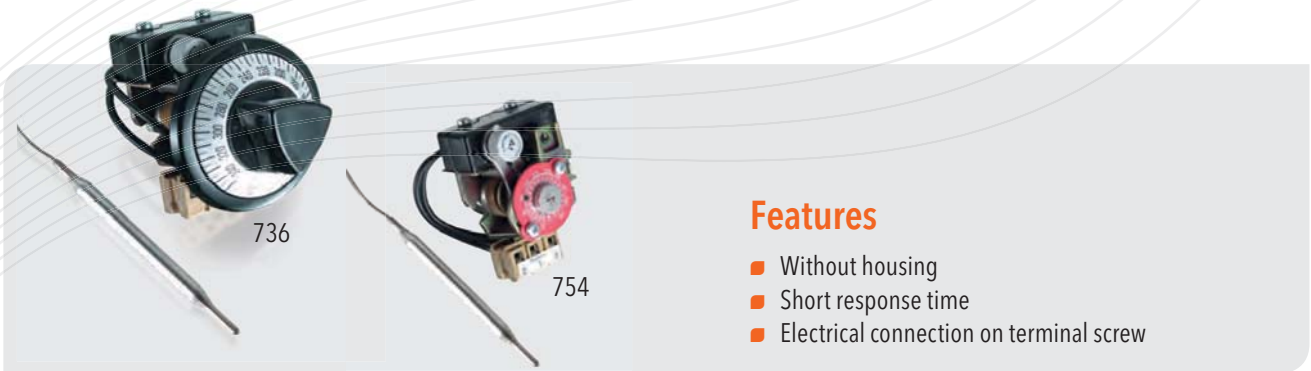
F ... R
 Internal switchpoint adjustment, external reset
 Calibrated for increasing temperatures

AC 500 V, 10 (0.75) A
 DC 30 V, 15 (1.5) A
 DC 250 V, 0.3 (0.2) A



L/LF 736/754

Laborstat



Features

- Without housing
- Short response time
- Electrical connection on terminal screw

Technical Data

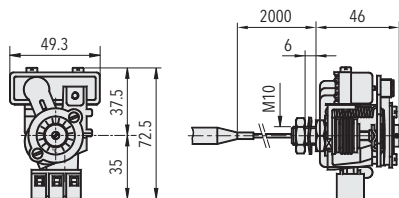
Designation of application	Remote sensing thermostat, skeleton type	Switching differential	Adjustable / not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

- Data sheet H72122
- Instructions H70211

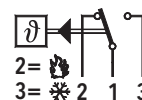
Standard products (extra short lead time)

Product No.	Type Code	Sensor material	Temperature range [°C]	Switching differential [°C]	Sensor max. [°C]
L35	754 2509 422 10	Copper	0 ... +35	0.7 ... 10 (adjustable)	60
L40	754 2501 422 10	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
L95	754 2520 322 10	Copper	+5 ... +95	2 ... 12 (adjustable)	105
L150	754 2531 322 10	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
L230S	754 2524 121 10	1.4435 (AISI316L)	+20 ... +230	3 ... 32 (adjustable)	250
L350S	754 2554 121 10	1.4435 (AISI316L)	+70 ... +350	4 ... 40 (adjustable)	380

Sensor: Capillary tube with remote sensor
 Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



L ...
 Internal switchpoint adjustment

L...R 755

Labor Limistat



Features

- Without housing
- Short response time
- Electrical connection on terminal screw

Technical Data

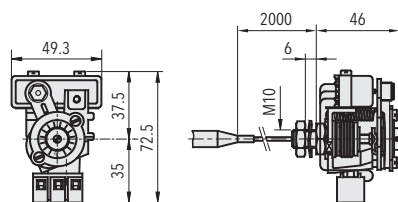
Designation of application	Remote sensing thermostat with limiter, skeleton type	Switching differential	Not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet	H72124
Instructions	H70211

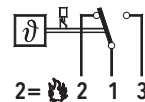
Standard products (extra short lead time)

Product No.	Type Code	Sensor material	Temperature range [°C]	Sensor max. [°C]
L95R	755 1220 322 10	Copper	+5 ... +95	105
L150R	755 1231 322 10	Copper	+20 ... +150	165
L230SR	755 1224 121 10	1.4435 (AISI316L)	+20 ... +230	250
L350SR	755 1254 121 10	1.4435 (AISI316L)	+70 ... +350	380

Sensor: Capillary tube with remote sensor
 Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A
 DC 30 V, 6 (1.5) A
 DC 250 V, 0.25 (0.03) A



L ... R
 Internal switchpoint adjustment and reset
 Calibrated for increasing temperatures

I/IS 404/414

Industat



Features

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

Technical Data

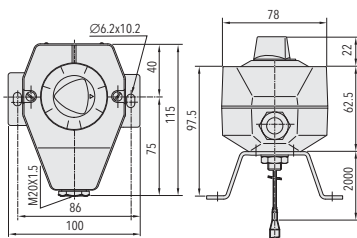
Designation of application	Industrial thermostat with remote sensor	Switching differential	Adjustable / not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Standard products (extra short lead time)

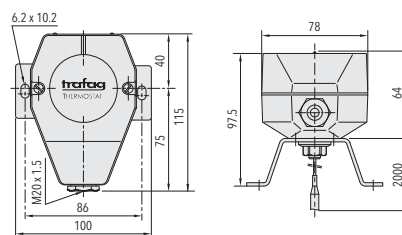
Product No.	Type Code	Sensor material	Temperature range [°C]	Switching differential [°C]	Sensor max. [°C]
I35	404 2509 422 27	Copper	0 ... +35	0.7 ... 10 (adjustable)	60
I40	404 2501 422 27	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
I95	404 2520 322 27	Copper	+5 ... +95	2 ... 12 (adjustable)	105
I150	404 2531 322 27	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
I230S	404 2524 121 27	1.4435 (AISI316L)	+20 ... +230	3 ... 32 (adjustable)	250
I350S	404 2554 121 27	1.4435 (AISI316L)	+70 ... +350	4 ... 40 (adjustable)	380
IS35	414 2509 422 27	Copper	0 ... +35	0.7 ... 10 (adjustable)	60
IS40	414 2501 422 27	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
IS95	414 2520 322 27	Copper	+5 ... +95	2 ... 12 (adjustable)	105
IS150	414 2531 322 27	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
IS230S	414 2524 121 27	1.4435 (AISI316L)	+20 ... +230	3 ... 32 (adjustable)	250
IS350S	414 2554 121 27	1.4435 (AISI316L)	+70 ... +350	4 ... 40 (adjustable)	380

Sensor: Capillary tube with remote sensor

Electrical connection: Screw terminal

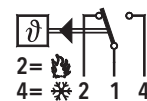


I ...
External switchpoint adjustment



IS ...
Internal switchpoint adjustment

AC 500 V, 10 (0.75) A
DC 30 V, 6 (1.5) A
DC 250 V, 0.25 (0.03) A



Data sheet
Instructions

H72110
H73111

Ordering information/type code

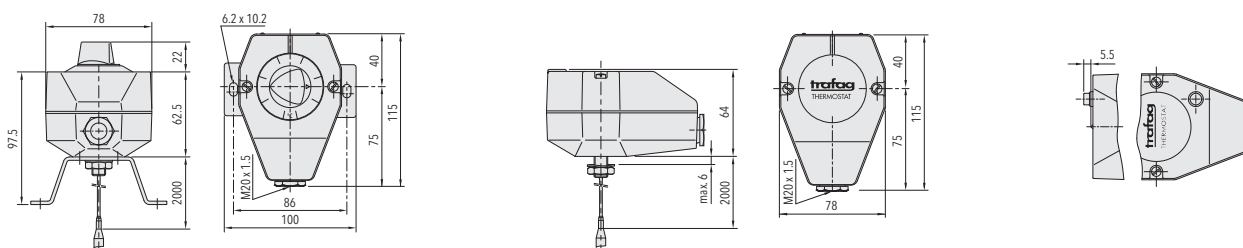
		XXX	XX	XX	XXX	XX	XXXXXXXXXX	XX	XX	
Custom build code	External adjustment	404								
	Internal adjustment	414								
Microswitch	Small switching differential, not adjustable		10							
	Average switching differential, not adjustable		11							
	With gold plated contacts, switching differential not adjustable		21							
	Adjustable large switching differential		24							
	Adjustable standard switching differential		25							
Range	Range [°C]	Sensor max. [°C]		Range [°C]	Sensor max. [°C]					
	-30 ... 40	50	01	-10 ... 80	85	95				
	-10 ... 25	60	07	5 ... 95	105	20				
	0 ... 35	70	09	20 ... 110	115	23				
	10 ... 45	85	11	20 ... 150	165	31				
	10 ... 80	100	13	20 ... 230	250	24				
	15 ... 30	60	17	40 ... 300	330	53				
	-10 ... 35	70	94	70 ... 350	380	54				
Sensor ¹⁾	Range	Sensor diame- ter [mm]	Sensor material	Range	Sensor diame- ter [mm]	Sensor material				
	01, 07, 09, 11, 13, 17	Ø7	Stainless steel	94, 95, 20, 23, 31	Ø9	Copper	421	332		
	01, 07, 09, 11, 13, 17	Ø4.7	Copper	94, 95, 20, 23, 31	Ø4.7	Copper nickel plated	412	313		
	01, 07, 09, 11, 13, 17	Ø7	Copper	94, 95, 20, 23, 31	Ø7	Copper nickel plated	422	323		
	01, 07, 09, 11, 13, 17	Ø9	Copper	94, 95, 20, 23, 31	Ø9	Copper nickel plated	432	333		
	01, 07, 09, 11, 13, 17	Ø4.7	Copper nickel plated	24, 53, 54	Ø4.7	Stainless steel	413	111		
	01, 07, 09, 11, 13, 17	Ø7	Copper nickel plated	24, 53, 54	Ø7	Stainless steel	423	121		
	01, 07, 09, 11, 13, 17	Ø9	Copper nickel plated	24, 53, 54	Ø9	Stainless steel	433	131		
	94, 95, 20, 23, 31	Ø4.7	Stainless steel	24, 53, 54	Ø4.7	Copper	311	112		
	94, 95, 20, 23, 31	Ø7	Stainless steel	24, 53, 54	Ø7	Copper	321	122		
	94, 95, 20, 23, 31	Ø9	Stainless steel	24, 53, 54	Ø9	Copper	331	132		
	94, 95, 20, 23, 31	Ø4.7	Copper	24, 53, 54	Ø4.7	Copper nickel plated	312	113		
	94, 95, 20, 23, 31	Ø7	Copper	24, 53, 54	Ø7	Copper nickel plated	322	123		
	94, 95, 20, 23, 31	Ø9	Copper	24, 53, 54	Ø9	Copper nickel plated	332	133		
	Fixing ²⁾	Nut M10 (for remote sensing version)								10
		Flange connection (for remote sensing version)								16
		Angle bracket (for remote sensing version)								17
		Bracket (for remote sensing version)								27
		Grubscrew locked, lateral (direct mounting version)								12
		Cap nut (for direct mounting version)								13
Cap nut (for direct mounting version)									14	
Grubscrew locked with spacer (cooling element) (for direct mounting version)									18	
Protection tube	See data sheet H72114/H72163							XXXX.XXXX		

Continuation on next page

Accessories	Signal lamp	14
	Switchpoint locking ⁴⁾	15
	Switchpoint fixed and sealed upon customer's request	88
	Switchpoint preset upon customer's request, no guarantee on switching accuracy	83
	Switchpoint adjustment please indicate when ordering:	
	- Switchpoint [bar]	
	- Increasing or decreasing	
	Condensator over Pin 1-2	12
	Condensator over Pin 1-4	13
	Condensators over Pin 1-2 / 1-4	23
	Railway version (UIC 616)	28
	Outdoor application (vented)	44
	Capillary tube protection: Flexible metal tube, brass nickel plated	90
	Capillary tube protection: Flexible metal tube 1.4541/V2A	91
	Capillary tube protection: PVC tube	92

Capillary tube length	Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L=XXXX ³⁾
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¹⁾ See data sheet H72114/H72163
²⁾ See data sheet H72106
³⁾ Overlengths upon request
⁴⁾ Only with type 414, internal adjustment



IS...R 410/412

Indu Limistat



Features

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

Technical Data

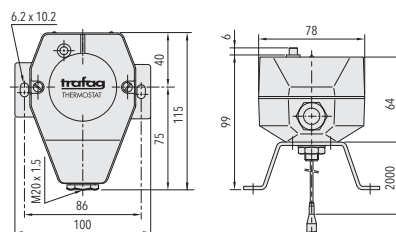
Designation of application	Industrial thermostat with remote sensor and limiter	Switching differential	Not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet	H72138
Instructions	H73111

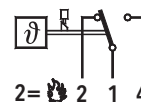
Standard products (extra short lead time)

Product No.	Type Code	Sensor material	Temperature range [°C]	Sensor max. [°C]
IS95R	412 1220 322 27	Copper	+5 ... +95	105
IS150R	412 1231 322 27	Copper	+20 ... +150	165
IS230SR	412 1224 121 27	1.4435 (AISI316L)	+20 ... +230	250
IS350SR	412 1254 121 27	1.4435 (AISI316L)	+70 ... +350	380

Sensor: Capillary tube with remote sensor
 Electrical connection: Screw terminal



AC 500 V, 10 (0.75) A
 DC 30 V, 15 (1.5) A
 DC 250 V, 0.3 (0.2) A



IS ... R
 Internal switchpoint adjustment, external reset
 Calibrated for increasing temperatures

ISN/ISNT 471/472

Navistat



Features

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

Technical Data

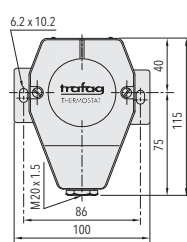
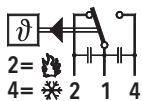
Designation of application	Thermostat for shipbuilding	Switching differential	Not adjustable
Measuring range	+20°C ... +110°C to +40°C ... +300°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, RMRS EN60730-1/ EN60730-2-9: Typ 2.B.H

Standard products (extra short lead time)

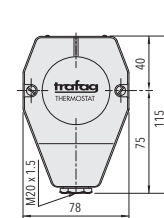
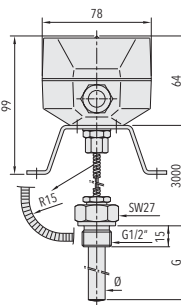
Product No.	Type Code	Temperature range [°C]	Protection tube diameter [mm]	Protection tube length [mm]	Switching differential [°C]	Sensor max. [°C]
ISN11011	471 2323 332 27 8317 0110 90	+20 ... +110	12	110	4.5 (fixed)	115
ISN11015	471 2323 322 27 8316 0150 90	+20 ... +110	10	150	4.5 (fixed)	115
ISN11065	471 2323 342 27 8319 0065 90	+20 ... +110	15	65	4.5 (fixed)	115
ISN15011	471 2331 332 27 8317 0110 90	+20 ... +150	12	110	5 (fixed)	165
ISN15015	471 2331 322 27 8316 0150 90	+20 ... +150	10	150	5 (fixed)	165
ISN15065	471 2331 342 27 8319 0065 90	+20 ... +150	15	65	5 (fixed)	165
ISNT11011	471 2323 332 14 1417 0110	+20 ... +110	12	110	4.5 (fixed)	115
ISNT11015	471 2323 322 14 1416 0150	+20 ... +110	10	150	4.5 (fixed)	115
ISNT11065	471 2323 342 14 1419 0065	+20 ... +110	15	65	4.5 (fixed)	115
ISNT15011	471 2331 332 14 1417 0110	+20 ... +150	12	110	5 (fixed)	165
ISNT15015	471 2331 322 14 1416 0150	+20 ... +150	10	150	5 (fixed)	165
ISNT15065	471 2331 342 14 1419 0065	+20 ... +150	15	65	5 (fixed)	165

Sensor: Capillary tube with remote sensor
Electrical connection: Screw terminal

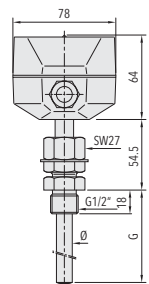
AC 500 V, 10 (0.75) A
DC 30 V, 15 (1.5) A
DC 250 V, 0.3 (0.2) A



ISN ...
Internal switchpoint adjustment



ISNT ...
Internal switchpoint adjustment



Data sheet
Instructions

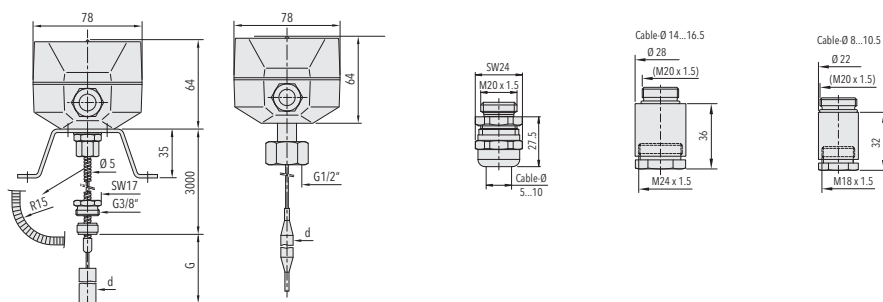
H72111
H73111

Ordering information/type code

		XXX . XX	XX	XXX	XX	XXXX	XXXX	XX	XX	
Custom build code	Controller, increased vibration resistance	471 . 23								
	Controller, high vibration resistance ¹⁾	471 . 26								
	Temperature switch with locking, high vibration resistance ²⁾	472 . 12								
Range	Range [°C]	Sensor max. [°C]								
	+20 ... 110	115						23		
	+20 ... 150	165						31		
	+40 ... 300	330						53		
Sensor	Range [°C]	Sensor diameter [mm]	Range [°C]	Sensor diameter [mm]						
	+20 ... 110	Ø7	+40 ... 300	Ø7				122		
	+20 ... 150	Ø9	+40 ... 300	Ø9				132		
	+20 ... 150	Ø12	+40 ... 300	Ø12				142		
Fixing	Version B (remote sensing version)								27	
	Version K (direct mounting version)								14	
Protection tube	Suitable for sensor	Protection tube diameter [mm]	Protection tube length [mm]	Electrical connection		Suitable for sensor	Protection tube diameter [mm]	Protection tube length [mm]	Electrical connection	
	322	10/8	min. 150	K, Stainless steel	1411	322	10/8	min. 150	B, Brass nickel plated	8316
	332	12/10	min. 110	K, Stainless steel	1412	332	12/10	min. 110	B, Brass nickel plated	8317
	342	15/13	min. 65	K, Stainless steel	1414	342	15/13	min. 65	B, Brass nickel plated	8319
	322	10/8	min. 150	K, Brass nickel plated	1416	322	10/8	min. 150	B, Stainless steel	8411
	332	12/10	min. 110	K, Brass nickel plated	1417	332	12/10	min. 110	B, Stainless steel	8412
	342	15/13	min. 65	K, Brass nickel plated	1419	342	15/13	min. 65	B, Stainless steel	8414
	142	15/13	min. 65	K, Brass nickel plated	1419	142	15/13	min. 65	B, Stainless steel	8414
Protection tube length	Length G, see data sheet H72114/H72163								XXXX	
Accessories	Switchpoint fixed and sealed upon customer's request									88
	Switchpoint preset upon customer's request, no guarantee on switching accuracy									83
	Switchpoint adjustment please indicate when ordering:									
	- Switchpoint [bar]									
	- Increasing or decreasing									
	Screwed cable gland M20x1.5 (EN 50262)									07
	Screwed cable gland M24x1.5 (DIN 89280)									27
	Screwed cable gland M18x1.5 (DIN 89280)									40
Capillary tube protection: Flexible metal tube, brass nickel plated									90	
Capillary tube length	Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L = XXXX Standard length: L = 3000 mm with flexible metal tube									

¹⁾ Without ship approval GL

²⁾ Without ship approval LRS



ISP/ISPT 474

Picotherm



Features

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

Technical Data

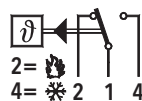
Designation of application	Compact thermostat for shipbuilding	Switching differential	Not adjustable
Measuring range	+5°C ... +95°C to +20°C ... +150°C	Repeatability	± 1 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS EN60730-1/ EN60730-2-9: Typ 2.B.H

Standard products (extra short lead time)

Product No.	Type Code	Temperature range [°C]	Protection tube diameter [mm]	Protection tube length [mm]	Switching differential [°C]	Sensor max. [°C]
ISPT9515	474 0320 322 14 1416 0150 58 V3	+5 ... +95	10	150	4 (fixed)	100
ISPT9565	474 0320 342 14 1419 0065 58 V3	+5 ... +95	15	65	4 (fixed)	100
ISPT11015	474 0323 322 14 1416 0150 58 V3	+20 ... +110	10	150	4 (fixed)	115
ISPT11065	474 0323 342 14 1419 0065 58 V3	+20 ... +110	15	65	4 (fixed)	115
ISPT15015	474 0331 322 14 1416 0150 58 V3	+20 ... +150	10	150	5 (fixed)	165
ISPT15065	474 0331 342 14 1419 0065 58 V3	+20 ... +150	15	65	5 (fixed)	165
ISP9515	474 0320 322 00 8316 0150 58 90 V3	+5 ... +95	10	150	4 (fixed)	100
ISP9565	474 0320 342 00 8319 0065 58 90 V3	+5 ... +95	15	65	4 (fixed)	100
ISP11015	474 0323 322 00 8316 0150 58 90 V3	+20 ... +110	10	150	4 (fixed)	115
ISP11065	474 0323 342 00 8319 0065 58 90 V3	+20 ... +110	15	65	4 (fixed)	115
ISP15015	474 0331 322 00 8316 0150 58 90 V3	+20 ... +150	10	150	6 (fixed)	165
ISP15065	474 0331 342 00 8319 0065 58 90 V3	+20 ... +150	15	65	6 (fixed)	165

External switchpoint adjustment
Electrical connection: EN175301-803-A

AC 250 V, 3 (1) A
DC 24 V, 2 (4) A
DC 250 V, 0.1 (0.05) A



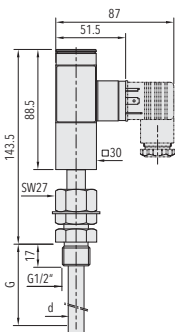
Data sheet
Instructions

H72113
H73113

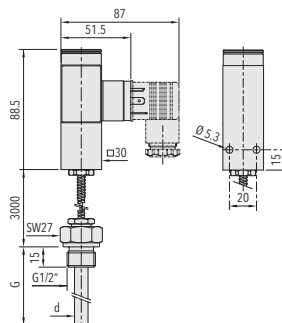
Ordering information/type code

		474 .	XX	XX	XXX	XX	XXXX	XXXX	XX	XX
Microswitch	Standard, switching differential not adjustable	03								
Range	Range [°C]	Sensor max. [°C]								
	+5 ... +95	100	20							
	+20 ... +110	115	23							
	+20 ... +150	165	31							
Sensor	Sensor diameter [mm]									
	Ø7		322							
	Ø12		342							
Fixing ²⁾	Flange connection (for remote sensing version)					00				
	Cap nut (for direct mounting version)					14				
Protection tube	Mounting	Suitable for sensor	Protection tube diameter [mm]	Protection tube length [mm]						
	For direct mounting on protection tube	322	10	150	1416					
	For direct mounting on protection tube	342	15	65	1419					
	For remote sensing version	322	10	150	8316					
	For remote sensing version	342	15	65	8319					
Protection tube length	Protection tube length [mm]									
	65				0065					
	150				0150					
Accessories	Female electrical connector EN 175301-803-A (DIN43650-A)									58
	Capillary tube protection: Flexible metal tube, brass nickel plated									90
	Fixing set									V3
	Cover with window									77
Capillary tube length	Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L = XXXX									
	Standard length: L = 3000 mm with flexible metal tube									

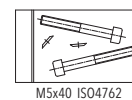
²⁾ See data sheet H72106



ISPT ...
Direct mounting version



ISP ...
For remote sensing version L = 3000 mm



M5x40 ISO4762

EXS 404/414

EX Industat



Features

- Compact design
- Rugged housing
- Any mounting position possible
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db

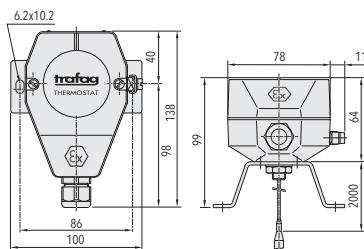
Technical Data

Designation of application	Ex Industrial thermostat with remote sensor	Switching differential	Not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	SEV 15 ATEX 0156 X

Standard products (extra short lead time)

Product No.	Type Code	Sensor material	Temperature range [°C]	Switching differential [°C]	Sensor max. [°C]
EXS35	414 9109 423 27 0000 0000 02	Copper nickel plated	0 ... +35	2.5 (fixed)	50
EXS40	414 9101 423 27 0000 0000 02	Copper nickel plated	-30 ... +40	2.5 (fixed)	45
EXS95	414 9120 323 27 0000 0000 02	Copper nickel plated	+5 ... +95	3.5 (fixed)	105
EXS150	414 9131 323 27 0000 0000 02	Copper nickel plated	+20 ... +150	5.5 (fixed)	165
EXS230S	414 9124 121 27 0000 0000 02	1.4435 (AISI316L)	+20 ... +230	8 (fixed)	250
EXS350S	414 9154 121 27 0000 0000 02	1.4435 (AISI316L)	+70 ... +350	10 (fixed)	380

Sensor: Capillary tube with remote sensor
Electrical connection: Screw terminal



AC 250 V, 5 (5) A
DC 30 V, 5 (3) A
DC 250 V, 0.25 (0.03) A



EXS ...
Internal switchpoint adjustment

Data sheet
Instructions

H72108
H73172

Ordering information/type code

		XXX	XX	XX	XXX	XX	XXXXXXXXXX	XX	XX
Custom build code	External adjustment	404							
	Internal adjustment	414							
Microswitch	Standard, switching differential not adjustable		91						
Range	Range [°C]	Sensor max. [°C]							
	-30 ... +40	50	01	-10 ... +80	85	95			
	-10 ... +25	60	07	+5 ... +95	105	20			
	0 ... +35	70	09	+20 ... +110	115	23			
	+10 ... +45	85	11	+20 ... +150	165	31			
	+10 ... +80	100	13	+20 ... +230	250	24			
	+15 ... +30	60	17	+40 ... +300	330	53			
	-10 ... +35	70	94	+35 ... +175	200	56			
	+10 ... +70	85	59	+20 ... +270	330	55			
	+20 ... +85	100	58	+70 ... +350	380	54			
	+20 ... +115	130	57						
	Sensor ¹⁾	Range	Sensor diameter [mm]	Sensor material					
01, 07, 09, 11, 13, 17, 58, 59		Ø7	Stainless steel	421					
94, 95, 20, 23, 31, 56, 57		Ø4.7	Stainless steel	311					
94, 95, 20, 23, 31, 56, 57		Ø7	Stainless steel	321					
94, 95, 20, 23, 31, 56, 57		Ø9	Stainless steel	331					
24, 53, 54, 55		Ø4.7	Stainless steel	111					
24, 53, 54, 55		Ø7	Stainless steel	121					
24, 53, 54, 55		Ø9	Stainless steel	131					
01, 07, 09, 11, 13, 17, 58, 59		Ø4.7	Copper	412					
01, 07, 09, 11, 13, 17, 58, 59		Ø7	Copper	422					
01, 07, 09, 11, 13, 17, 58, 59		Ø9	Copper	432					
94, 95, 20, 23, 31, 56, 57		Ø4.7	Copper	312					
94, 95, 20, 23, 31, 56, 57		Ø7	Copper	322					
94, 95, 20, 23, 31, 56, 57		Ø9	Copper	332					
24, 53, 54, 55		Ø4.7	Copper	112					
24, 53, 54, 55		Ø7	Copper	122					
24, 53, 54, 55		Ø9	Copper	132					
01, 07, 09, 11, 13, 17, 58, 59		Ø4.7	Copper nickel plated	413					
01, 07, 09, 11, 13, 17, 58, 59		Ø7	Copper nickel plated	423					
01, 07, 09, 11, 13, 17, 58, 59		Ø9	Copper nickel plated	433					
94, 95, 20, 23, 31, 56, 57		Ø4.7	Copper nickel plated	313					
94, 95, 20, 23, 31, 56, 57		Ø7	Copper nickel plated	323					
94, 95, 20, 23, 31, 56, 57		Ø9	Copper nickel plated	333					
24, 53, 54, 55		Ø4.7	Copper nickel plated	113					
24, 53, 54, 55		Ø7	Copper nickel plated	123					
24, 53, 54, 55		Ø9	Copper nickel plated	133					
Fixing ²⁾	Nut M10 (for remote sensing version)			10					
	Bracket (for remote sensing version)			27					
	Grubscrew locked, lateral (direct mounting version)			12					
	Cap nut (for direct mounting version)			14					
	Grubscrew locked with spacer (cooling element) (for direct mounting version)			18					

Continuation on next page

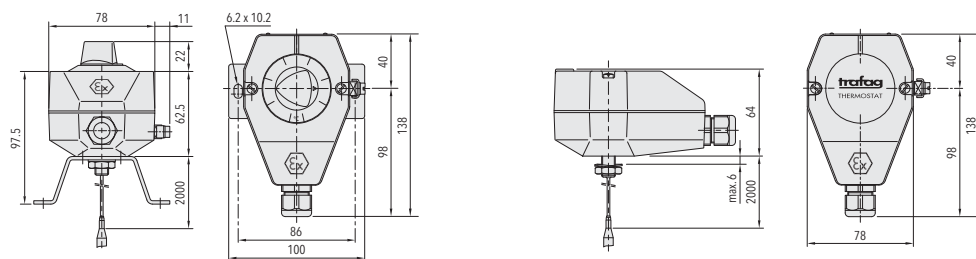
Protection tube	See data sheet H72114/H72163 XXXX.XXXX	
Accessories	Switchpoint locking ⁴⁾	15
	Switchpoint fixed and sealed upon customer's request	88
	Switchpoint preset upon customer's request, no guarantee on switching accuracy	83
	Switchpoint adjustment please indicate when ordering: - Switchpoint [bar] - Increasing or decreasing	
	Capillary tube protection: Flexible metal tube, brass nickel plated	90
	Capillary tube protection: Flexible metal tube 1.4541/V2A	91
Capillary tube length	Capillary tube length up to 5000 mm (no specification required for direct mounting on protection tube) L=XXXX ³⁾	

¹⁾ See data sheet H72114/H72163

²⁾ See data sheet H72106

³⁾ Overlengths upon request

⁴⁾ Only with type 414, internal adjustment



EXAS 409/419

Ex Indu Ambistat



Features

- Compact design
- Rugged housing
- Protection IP65
- Ex d e IIC T6 Gb
- Ex tb IIIC T80°C Db

Technical Data

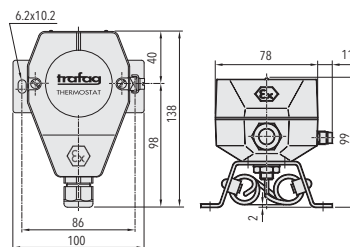
Designation of application	Ex Industrial room thermostat	Switching differential	Not adjustable
Measuring range	-30°C ... +30°C to 0°C ... +60°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval / conformity	SEV 15 ATEX 0156 X

Data sheet	H72128
Instructions	H73172

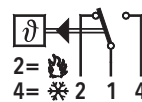
Standard products (extra short lead time)

Product No.	Type Code	Temperature range [°C]	Switching differential [°C]	Operating temperature [°C]
EXAS33	419 9102 523 27 0000 0000 02	-30 ... +30	2.5 (fixed)	-30 ... +40
EXAS35	419 9110 523 27 0000 0000 02	+5 ... +35	2.5 (fixed)	-30 ... +50
EXAS60	419 9112 523 27 0000 0000 02	0 ... +60	2.5 (fixed)	-30 ... +60

Sensor: Sensor coil
 Sensor material: Copper
 Electrical connection: Screw terminal



AC 250 V, 5 (5) A
 DC 30 V, 5 (3) A
 DC 250 V, 0.25 (0.03) A



EXAS ...
 Internal switchpoint adjustment

«Simple Apparatus» 414 conformity to ATEX

Industat



Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

Technical Data

Designation of application	Industrial room thermostat with remote sensor
Measuring range	-30°C ... +40°C to +70°C ... +350°C
Output signal	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H EN60079-0, EN60079-11 Zone 1 and 2, 21 and 22

Switch amplifier: See chapter "Accessories"
Further information for devices of the type "Simple Apparatus":
See chapter "Pressure Switches"

Data sheet H72183

«Simple Apparatus» 419 conformity to ATEX

Ambistat



Features

- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible
- May be used as „simple apparatus“ in zones at risk of explosions

Technical Data

Designation of application	Industrial room thermostat
Measuring range	-30°C ... +30°C to 0°C ... +60°C
Output signal	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 0.5 % FS typ.
Approval / conformity	EN60730-1/ EN60730-2-9: Typ 2.B.H EN60079-0, EN60079-11 Zone 1 and 2, 21 and 22

Switch amplifier: See chapter "Accessories"
Further information for devices of the type "Simple Apparatus":
See chapter "Pressure Switches"

Data sheet H72182

Safety temperature limiter KTSB

PTB 09
ATEX 1027



Features

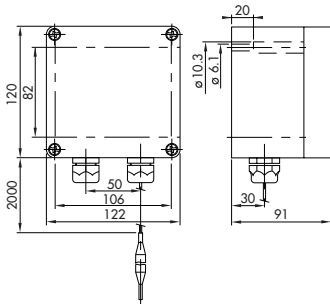
- High current ratings 16 A
- With mechanical reset
- Internal switchpoint adjustment

Technical Data

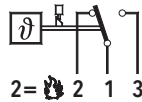
Sensor technology	Capillary tube with remote sensor
Sensor material	1.4435/316L
Output signal	Microswitch
Electrical connection	Screw terminal

Standard products (extra short lead time)

Product No.	Range T [°C]	Operating temperature [°C]	Media temperature [°C]	Capillary tube length [m]
KTSB150S	+20 ... +150	-50 ... +60	max. 165	2
KTSB230S	+20 ... +230	-50 ... +60	max. 250	2
KTSB350S	+70 ... +350	-50 ... +60	max. 380	2



AC 400 V, 16 A



- Areas with gas explosion hazards EX II 2 G Ex d e IIC T6
- Areas with dust explosion hazards EX II 2 D Ex tD A21 IP 66 T80°C



Data sheet H72181

Marine transmitter for PT100 sensors T...



Features

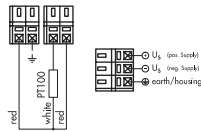
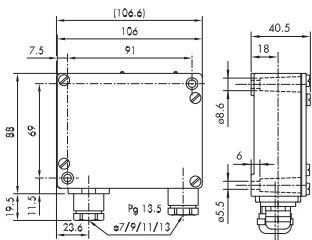
- For shipbuilding
- 4 ... 20 mA
- Protection IP65

Technical Data

Sensor type	PT100
Operating temperature	-40 ... +85 °C
Electrical connection	Screw terminal
Output signal	4 ... 20 mA

Standard products (extra short lead time)

Product No.	Type code	Range T [°C]	Supply [VDC]	Product No.	Type code	Range T [°C]	Supply [VDC]
T50	8100 01 0003 01	-50 ... +50	12 ... 30	T200	8100 05 0003 01	0 ... +200	12 ... 30
T100	8100 02 0003 01	0 ... +100	12 ... 30	T400	8100 06 0003 01	0 ... +400	12 ... 30



Data sheet
Instructions

H72102
H73102

Temperature sensor PT100



Features

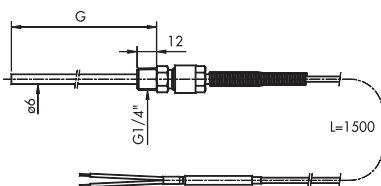
- 2-wire temperature sensor
- Incl. mounting stopper
- Protection IP65

Technical Data

Sensor type	PT100 (IEC751)
Protection tube material	1.4435/316L
Immersion	Adjustable
Electrical connection	2 wires

Standard products (extra short lead time)

Product No.	Range T [°C]	Protection tube length G [mm]	Class (IEC751)
PT100L15	-50 ... +250	150	B



Temperature sensor PT100/1000



Features

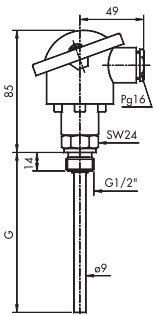
- 3-wire temperature sensor in DIN B head
- Protection IP65

Technical Data

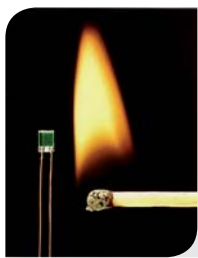
Sensor type	PT100 (IEC751) or 1000
Protection tube material	1.4435/316L
Immersion	Adjustable
Electrical connection	3 wires

Standard products (extra short lead time)

Product No.	Range T [°C]	Protection tube length G [mm]	Class (IEC751)	Product No.	Range T [°C]	Protection tube length G [mm]	Class (IEC751)
PT100L12	-50 ... +250	120	B	PT100L40	-50 ... +250	400	B
PT1000L12	-50 ... +250	120	B				



Temperature sensor



Features

- High Precision
- Compliant with DIN 43760
- Measuring current 5 mA

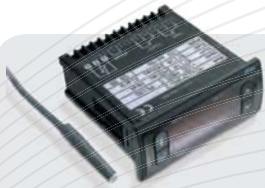
Technical Data

Sensor material	Nickel thin film on ceramic
Temperature range	-60°C ... +200°C
Response time water flow	0.3 s (@ 0.2m/s)
Response time airflow	27 s (@ 0.2m/s)

Description

Resistivity [Ohm]	R ₀ @ 0°C	Electrical connection
100		lead frames
1000		lead frames

Electronic thermostat with display and relay LTR



Features

- 1 Panel mounting
- Single stage thermostat with display
- 1 Relay (SPDT)
- Protection IP54

Technical Data

Sensor type	PTC1000
Output signal	1 Relay
Electrical connection	Screw terminal
Operating temperature	-10°C... +50°C

Standard products (extra short lead time)

Product No.	Range T [°C]	Relay Output	U-Supply [VAC]	Dimensions [mm]	Cutout of panel
LTR5TSRE	-50 ... +150	240V/16 (4)A	240	76 x 35 x 77	71 x 29

Electronic controller with display ATR



Features

- Supply voltage: 24 ... 230 VAC/VDC
- 17 Sensor inputs to select
- 2 Relays and 1 SSR output, configurable

Technical Data

Inputs (to be selected)	Thermocouples: K,S,R,J Thermoresistors: PT100, PT500, PT1000, NI100, PTC, NTC, Potentiometers Linear signals: 0...10V, 0...20mA, 4...20mA, 0...40mV
Protection	IP65 front panel (with gasket) IP30 housing IP20 terminals
Operating temperature	0°C ... +45°C

Standard products (extra short lead time)

Product No.	Output signal	Supply voltage	Dimensions [mm]	Cutout of panel [mm]
ATR142	Relay 1: 8A - 250 VAC Resistive Load Relay 2: 5A - 250 VAC Resistive Load SSR 1: Configurable as command output and / or alarm output 12 VDC, 30 mA	24 ... 230 VAC/VDC ±15 %	77 x 35 x 60	28.5 x 70.5

Hygrostat HMH



Features

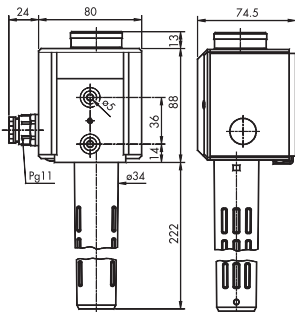
- With adjustable switch point
- rH 10 ... 100 %

Technical Data

Protection	IP54
Operating temperature	-20°C ... +60°C
Output signal	1 Microswitch 250 V / 10 A
Electrical connection	Screw terminal

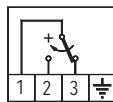
Standard products (extra short lead time)

Product No.	Humidity [%rH]	Hysteresis [d%rH]	Sensor T max. [°C]
HMH	10 ... 100	approx. 1.5	+70



AC 250 V, 10 A (25 °C)
8 A (60 °C)

2= dehumidifying
3= humidifying



Data sheet

H72402

Technical Data Thermostats

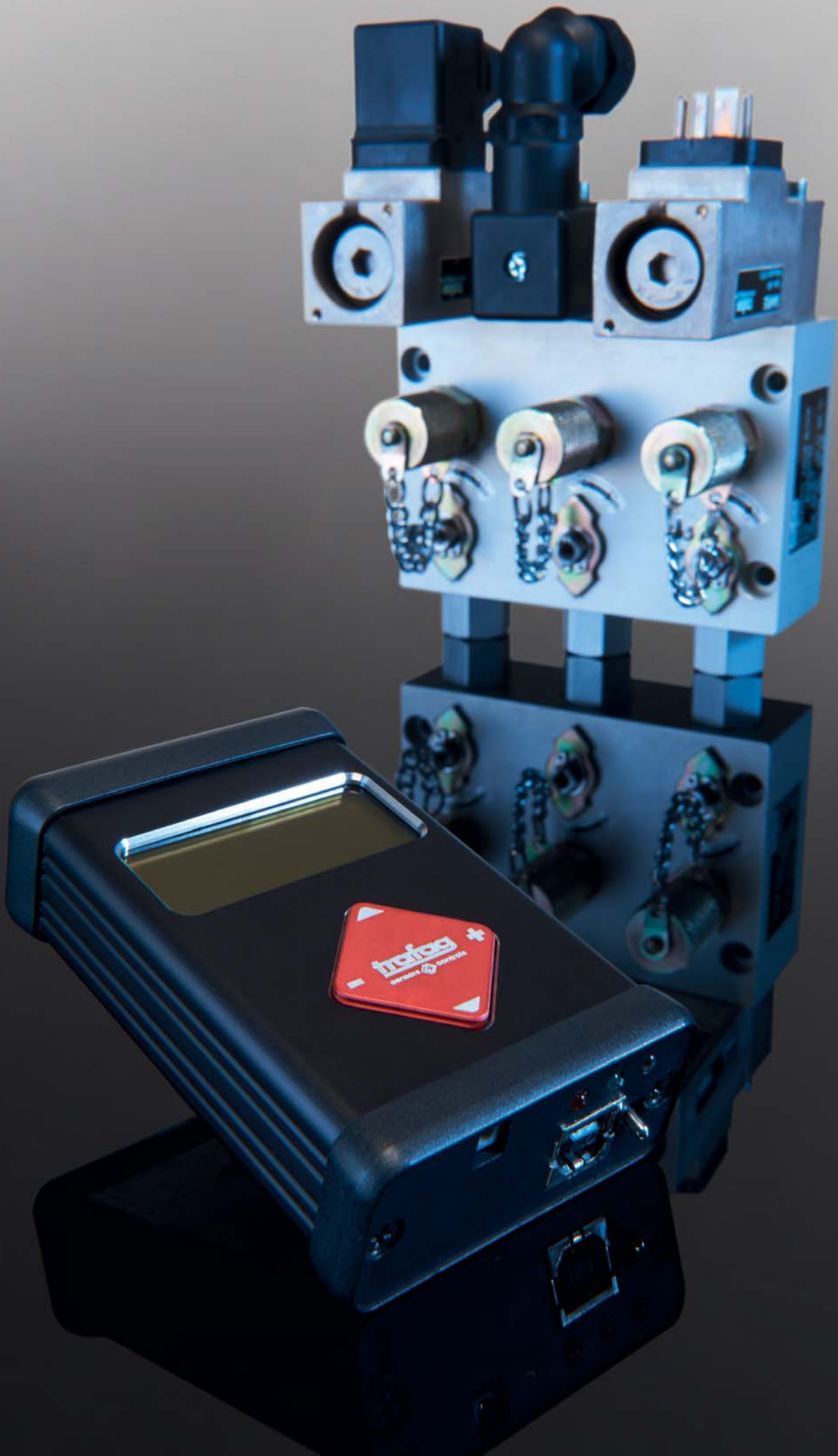
	A/AS/AESE 645/650	ADS 319	A2/A2S 198/199	IA/IAS 409/419	MSK 624/634	MP/MSP 663/664	
Main characteristics							
Designation of application	Room thermostat	Double room thermostat	Multistage room thermostat	Industrial room thermostat	Duct thermostat	Pipe mounting thermostat	
Measuring range	-45°C ... +15°C to 0°C ... +60°C	-30°C ... +30°C to 0°C ... +60°C	-45°C ... +15°C to 0°C ... +60°C	-30°C ... +30°C to 0°C ... +60°C	-30°C ... +40°C to +20°C ... +110°C	-10°C ... +35°C to +20°C ... +110°C	
Output signal	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	
Switching differential	Adjustable / not adjustable	Adjustable / not adjustable	Not adjustable	Adjustable / not adjustable	Adjustable / not adjustable	Adjustable / not adjustable	
Accuracy							
Repeatability	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	
Scale accuracy typ.	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	
Switching point					Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever	
Electrical data							
Resistance of insulation	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ	
Dielectric strength	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV / U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	
Cable gland	M16x1.5 Cable-Ø 4...9 mm	PG13.5 Cable-Ø 5 ... 12.5 mm	PG13.5 Cable-Ø 5 ... 12.5 mm	M20x1.5 Cable-Ø 4...10 mm	M16x1.5 Cable-Ø 4...9 mm	M16x1.5 Cable-Ø 4...9 mm	
Terminal screw	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	6 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	
Environmental conditions							
Ambient temperature	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	
Protection	IP54	IP54	IP54	IP65	IP54	IP54	
Humidity	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	
Mechanical data							
Housing	PC/ABS-Blend V0	Noryl	Noryl	AlSi9Cu3, coated	PC/ABS-Blend V0	PC/ABS-Blend V0	
Weight	~ 300 g	~ 220 g	~ 480 g	~ 950 g	~ 220 g	~ 220 g	

	MST 624/634	M/MS 624/634	MS...R 630/632	F/F...R 990/991/992/993	GS 657/658	D...R 302	M2S 104/114
	Direct mounting thermostat	Remote sensing thermostat	Remote sensing thermostat with limiter	Frost protection thermostat	Remote sensing thermostat	Double thermostat with remote sensor and limiter	Multistage thermostat with remote sensor
	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	-5°C ... +15°C	+5°C ... +95°C and +20°C ... +150°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C
	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact
	Adjustable / not adjustable	Adjustable / not adjustable	Not adjustable	Not adjustable	Not adjustable	Adjustable / not adjustable	Not adjustable
	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.
	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	± 1.5 % FS typ.	± 3 % FS typ.	± 2 % FS typ.	± 2 % FS typ.
	Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever		Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever
	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ
	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	2 kV terminal ground	2 kV terminal ground	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground
	M16x1.5 Cable-Ø 4...9 mm	M16x1.5 Cable-Ø 4...9 mm	M16x1.5 Cable-Ø 4...9 mm	M20x1.5 Cable-Ø 8...13 mm	M16x1.5 Cable-Ø 4...9 mm	PG13.5 Cable-Ø 5...12.5 mm	PG13.5 Cable-Ø 5 ... 12.5 mm
	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	6 x 1 ... 2.5 mm ²	6 x 1 ... 2.5 mm ²
	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	Max. operating temperature: +70°C Min. operating temperature: switch point + 2°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C
	IP54	IP54	IP54	IP 54	IP54	IP54	IP54
	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative
	PC/ABS-Blend V0	PC/ABS-Blend V0	PC/ABS-Blend V0	AlSi9Pb3	PC/ABS-Blend V0	Noryl	Noryl
	~ 430 g	~ 380 g	~ 250 g	~ 850 g	~ 380 g	~ 620 g	~ 480 g

Technical Data Thermostats

	L/LF 736/754	L...R 755	I/IS 404/414	IS...R 410/412	ISN/ISNT 471/472	ISP/ISPT 474	
Main characteristics							
Designation of application	Remote sensing thermostat, skeleton type	Remote sensing thermostat with limiter, skeleton type	Industrial thermostat with remote sensor	Industrial thermostat with remote sensor and limiter	Thermostat for shipbuilding	Compact thermostat for shipbuilding	
Measuring range	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +40°C to +70°C ... +350°C	+20°C ... +110°C to +40°C ... +300°C	+5°C ... +95°C to +20°C ... +150°C	
Output signal	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact	
Switching differential	Adjustable / not adjustable	Not adjustable	Adjustable / not adjustable	Not adjustable	Not adjustable	Not adjustable	
Accuracy							
Repeatability	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 1 % FS typ.	
Stability typ.					± 1 % FS typ.	± 1 % FS typ.	
Scale accuracy typ.	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	± 4 % FS typ.	
Switching point	Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever	Temperature compensated with bimetal switch lever	
Electrical data							
Resistance of insulation	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 10 MΩ	> 10 MΩ	
Dielectric strength	U ≤ 250V: 1.45 kV U ≤ 500V: 2 kV terminal ground	2 kV terminal ground	U ≤ 250V: 1.45 kV / U ≤ 500V: 2 kV terminal ground	2 kV terminal ground	2 kV terminal ground	2 kV terminal ground	
Cable gland			M20x1.5 Cable-Ø 4...10 mm	M20x1.5 Cable-Ø 4...10 mm	M20x1.5 Cable-Ø 4...10 mm	Cable-Ø: 6...13 mm	
Terminal screw	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	4 x 0.5...1.5 mm ²	
Environmental conditions							
Ambient temperature	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	
Protection	IP00	IP00	IP65	IP65	IP65	IP65	
Humidity	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	
Mechanical data							
Housing		See ordering information	AlSi9Cu3, coated	AlSi9Cu3, coated	AlSi9Cu3, coated	AlMgSi1 anodized	
Weight	754: ~ 250 g 736: ~ 300 g	~ 250 g	~ 950 g	~ 950 g	~ 950 g	~ 260 g	

	EXS 404/414	EXAS 409/419	«Simple Apparatus» conformity to ATEX 414	«Simple Apparatus» conformity to ATEX 419
	Ex Industrial thermostat with remote sensor	Ex Industrial room thermostat	Industrial room thermostat with remote sensor	Industrial room thermostat
	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +30°C to 0°C ... +60°C	-30°C ... +40°C to +70°C ... +350°C	-30°C ... +30°C to 0°C ... +60°C
	Floating change-over contact	Floating change-over contact	Floating change-over contact	Floating change-over contact
	Not adjustable	Not adjustable	Not adjustable	Not adjustable
	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.5 % FS typ.
	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.	± 2 % FS typ.
	Temperature compensated with bimetal switch lever			
	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ
	1.5 kV	1.5 kV	1.25 kV terminal ground	500 VAC terminal ground
	M20x1.5/SW24 Cable-Ø 5.5...13 mm Approval: PTB 99 ATEX 3128 X	M20x1.5/SW24 Cable-Ø 5.5...13 mm Approval: PTB 99 ATEX 3128 X	M20x1.5 Cable-Ø 4...10 mm, max. cable length according to EN60079-11	M20x1.5 Cable-Ø 4...10 mm, max. cable length according to EN60079-11
	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²	3 x 1 ... 2.5 mm ²
	-30°C ... +70°C	-30°C ... +60°C	-30°C ... +65°C	-30°C ... max. +65°C
	IP65	IP65	IP65	IP65
	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative	Max. 95 % relative
	AlSi9Cu3, coated	AlSi9Cu3, coated	AlSi9Cu3, coated	AlSi9Cu3, coated
	~ 950 g	~ 950 g	~ 950 g	~ 950 g



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

- Sensor Communicator
- CAN2USB Tool
- Diagnostic valve block
- Hand pump with precision manometer
- Zenerbarrier
- Venting box
- Cable hanger
- Pressure peak damping elements
- Snubbers
- Adapters for different pressure connections
- Stop valves

Accessories for thermostats

- Protection tubes for direct mounting and remote sensors
- Duct mounting bracket
- Capillary tube holder
- Mounting brackets
- Screwed cable glands, ship approved, for retrofit

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

Technische Daten

- 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



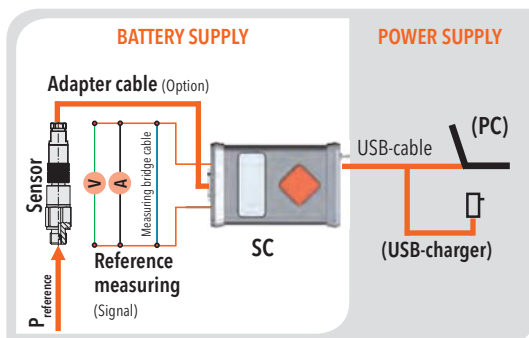
Instruction

H73699 en H73698 de

Compatible devices and adapter cables

Model	Connector	4 ... 20 mA	Output signal	
			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



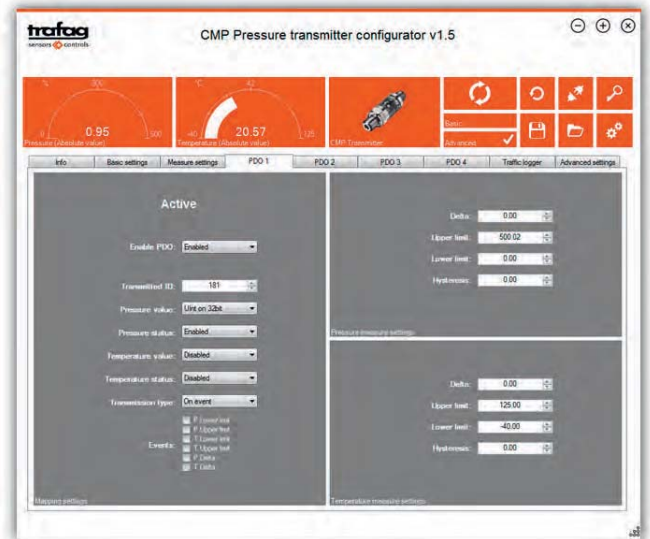
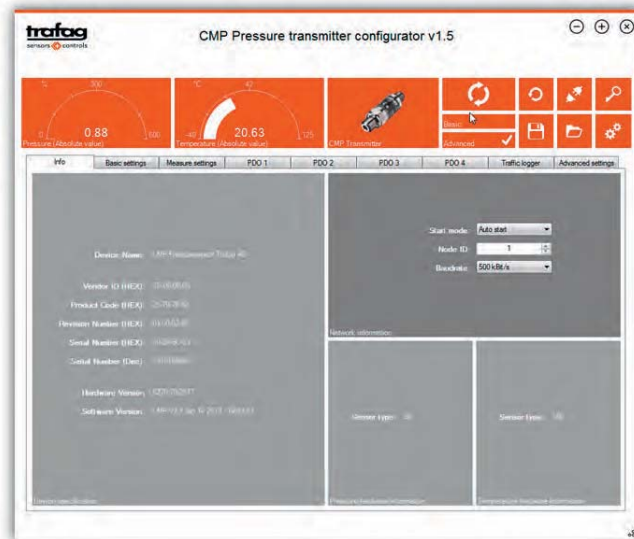
Features

- Configuration of Trafags pressure transmitter CMP 8270 via USB
- Easy to use visual user interface
- Integrated datalogger
- Complete set available 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 H73617



Content of delivery:

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

Recommended accessory (not included):

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



DVB

Diagnostic Valve Block

Features

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



Technical Data

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

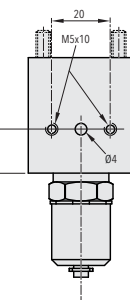
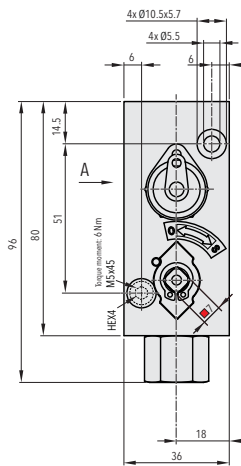
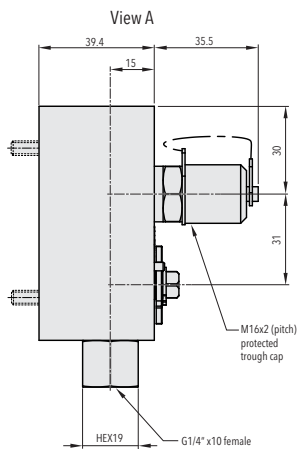
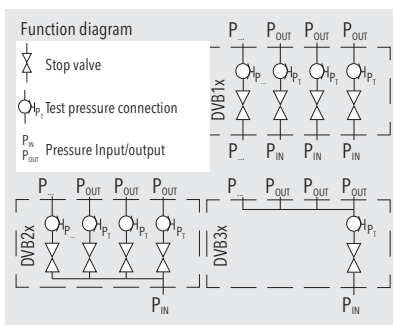


Data sheet
Instruction

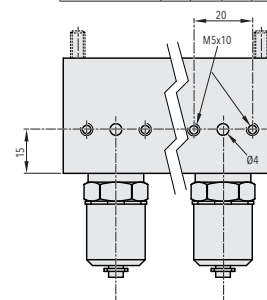
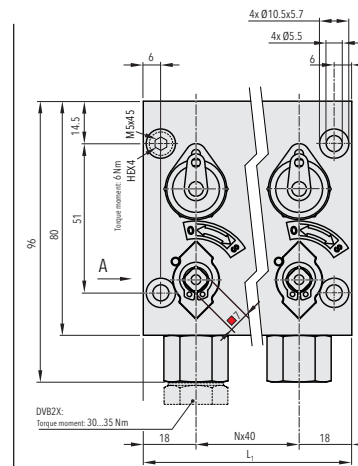
H72361 H73361

Standard products (extra short lead time)

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



DVB11



DVB X2... X5

THP...

Hand pump

Features

- For testing of pressure transmitters and pressure switches



THP30

THP700

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



Features

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



ZEN24VDC

ZEN230VAC

ZEN28VDC

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

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

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

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



Features

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

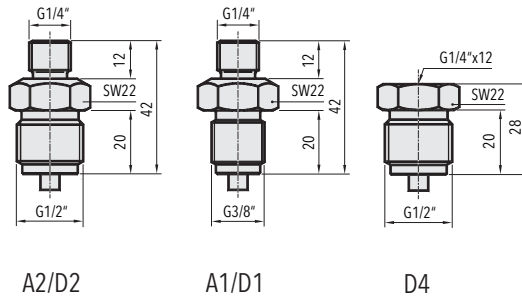
Technical Data

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

i Data sheet 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)



K.../F...

Snubber



Features

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

Technical Data

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

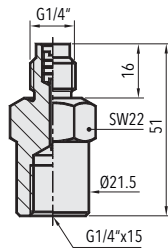


Data sheet

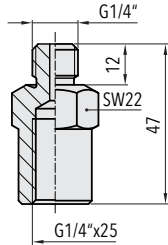
H72258

Standard products (extra short lead time)

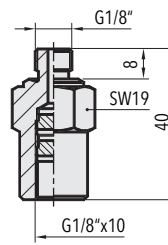
Product No		Connection	Material
F3	Snubber for heavy oil	G1/4" male - female	Brass
F4	Snubber for light oil	G1/4" male - female	Brass
F5	Snubber for water/air	G1/4" male - female	Brass
K1	Snubber for water/air/light oil	G1/4" male - female	1.4435 (AISI316L)
K2	Snubber for water/air/light oil	G1/8" male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



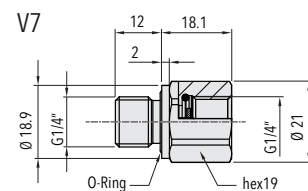
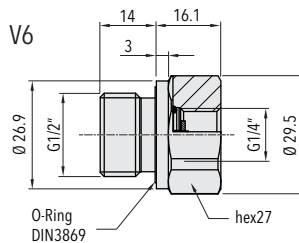
Features

- 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

i Data sheet 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



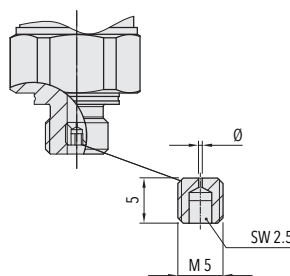
Features

- 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)

i Data sheet 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)



MB31

Mounting Plate

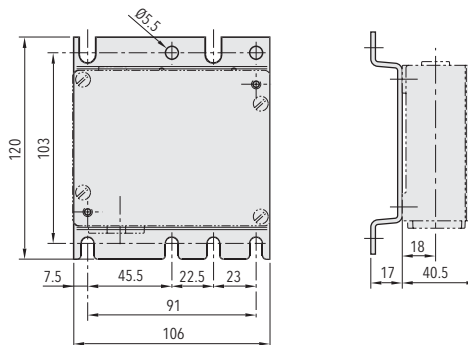


Features

- For pressure transmitters and pressure switches

Technical Data

Material	Steel galvanised
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Standard products (extra short lead time)

Product No	Suitable for type	Material
MB31	N, ND, P, PS, PV, PD, PK, PVF, EXP, EXPK, EXPD	Steel galvanised

CG

Screwed cable gland



Features

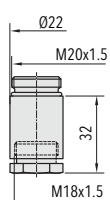
- DIN 8280 for shipbuilding
- Retrofit for pressure transmitters, pressure switches and thermostats

Technical Data

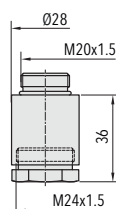
Material	Brass
Connection	M18x1.5, M24x1.5
Cable	Ø 10.5 mm, 16.5 mm

Standard products (extra short lead time)

Product No	Material
CG18	M18x1.5 for 8 ... 10.5 mm cable diameter
CG24	M24x1.5 for 14 ... 16.5 mm cable diameter



CG18



CG24

83../84..

Protection tubes for remote sensors

Features

- For liquid media
- Pressure proof up to 25 bar (types 83xx)
- Pressure proof up to 40 bar (types 84xx)



Technical Data

Material	Stainless steel 1.44435/316L, brass nickel plated
Media temperature	See table

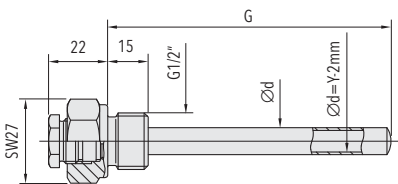


Data sheet

H72163

Standard products (extra short lead time)

Product No	Suitable for type	Material	Protection tube diameter [mm]	Protection tube length [mm]
83160110K	M, MS, M2S, L, I, IS, ISP	Brass nickel plated	10	110
83160150K	M, MS, M2S, L, I, IS, ISP, ISN	Brass nickel plated	10	150
83160200K	I, IS	Brass nickel plated	10	200
83160300K	M, MS, M2S, L, I, IS	Brass nickel plated	10	300
83160400K	M, MS, M2S, L, I, IS	Brass nickel plated	10	400
83170110	ISP, ISN	Brass nickel plated	12	110
83180150K	D ... R	Brass nickel plated	14	150
83190065	ISP, ISN	Brass nickel plated	15	65
84110110K	M, MS, M2S, L, I, IS, ISP	1.4435 (AISI316L)	10	110
84110150K	M, MS, M2S, L, I, IS, ISP, ISN	1.4435 (AISI316L)	10	150
84110200K	I, IS	1.4435 (AISI316L)	10	200
84110400K	M, MS, M2S, L, I, IS	1.4435 (AISI316L)	10	400
84120110	ISP, ISN	1.4435 (AISI316L)	12	110
84140065	ISP, ISN	1.4435 (AISI316L)	15	65



Operating temperature

Length G [mm]	Range T [°C]	Sensor-Ø [mm]
200	-30 ... +40, 0 ... +35, +10 ... +80	7
150	+5 ... +95, +20 ... +150, +20 ... +110	7
110	+20 ... +230, +70 ... +350	7
180	-30 ... +40, 0 ... +35	5.5/11
150	+5 ... +95, +20 ... +150	5.5/11
110	+20 ... +230, +70 ... +350	9
65	+5 ... +95, +20 ... +150, +20 ... +110	12

121.../141...

Protection tubes for direct mounting

Features

- For thermostats type MST and ISPT/ISNT
- Lateral clamp mounting (type MST)
- Pressure proof up to 40 bar (types 141x)
- With captive nut (types 141x)



Technical Data

Material	Stainless steel 1.44435/316L, brass nickel plated
Media temperature	See table

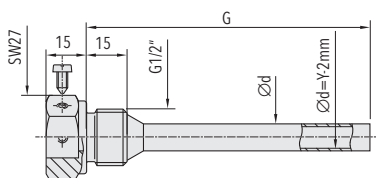


Data sheet

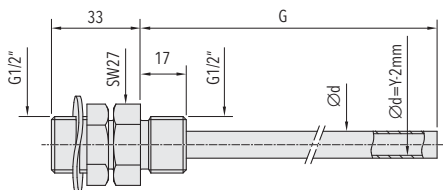
H72163

Standard products (extra short lead time)

Product No	Suitable for type	Material	Protection tube diameter [mm]	Protection tube length [mm]
12110150K	MST ... 15	1.4435 (AISI316L)	10	150
12110400K	MST ... 40	1.4435 (AISI316L)	10	400
12160150K	MST ... 15	Brass nickel plated	10	150
12160400K	MST ... 40	Brass nickel plated	10	400
14110150K	ISNT ... 150	1.4435 (AISI316L)	10	150
14120110K	ISNT ... 110	1.4435 (AISI316L)	12	110
14140065K	ISP/ISNT ... 65	1.4435 (AISI316L)	15	65



121X..



141X..

Operating temperature

Length G [mm]	Range T [°C]	Sensor-Ø [mm]
200	-30 ... +40, 0 ... +35, +10 ... +80	7
150	+5 ... +95, +20 ... +150, +20 ... +110	7
110	+20 ... +230, +70 ... +350	7
180	-30 ... +40, 0 ... +35	5.5/11
150	+5 ... +95, +20 ... +150	5.5/11
110	+20 ... +230, +70 ... +350	9
65	+5 ... +95, +20 ... +150, +20 ... +110	12

W.../K...


Thermostat sensor duct holder



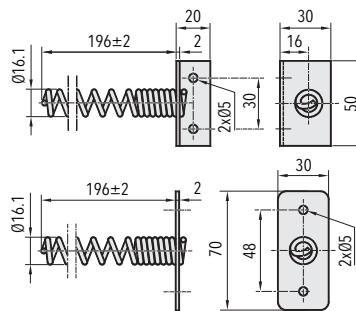
Features

- For HVAC
- For retrofitting of thermostats

Technical Data	
Material	Steel galvanised

 Data sheet	H72106
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Standard products (extra short lead time)		
Product No	Suitable for type	Material
K200	L, LF, M, MS	Steel galvanised
W200	I, IS, M2, M2S	Steel galvanised



K80140

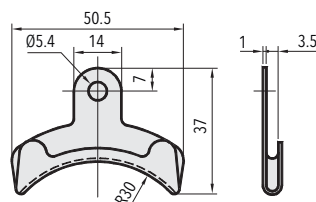
Capillary tube holder



Features

- For Froststats F/F...R

Technical Data	
Material	Steel galvanised



Standard products (extra short lead time)		
Product No	Material	
K80140	Steel galvanised	Package size 6 pcs.

Terminology for pressure measurement instruments

Relevant standards

DIN 16086, IEC 61298-2

Instrument types

Pressure sensors

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

Pressure transmitters

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

Pressure transducers

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

Types of pressure measurement

Differential pressure measurement

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

Absolute pressure measurement

The measuring result is always the deviation to the absolute zero (vacuum).

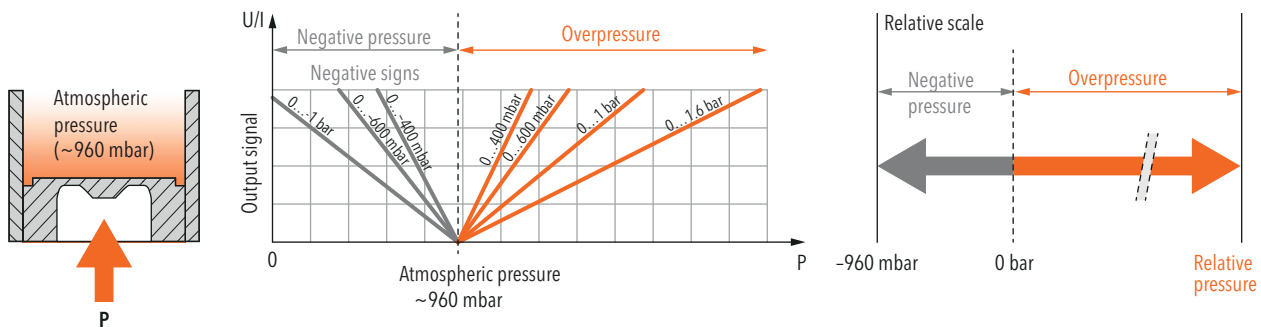
e.g. 4 mA = 0 bar (= vacuum); zero point (ZP): 0 bar

Relative pressure measurement DIN 16086: overpressure

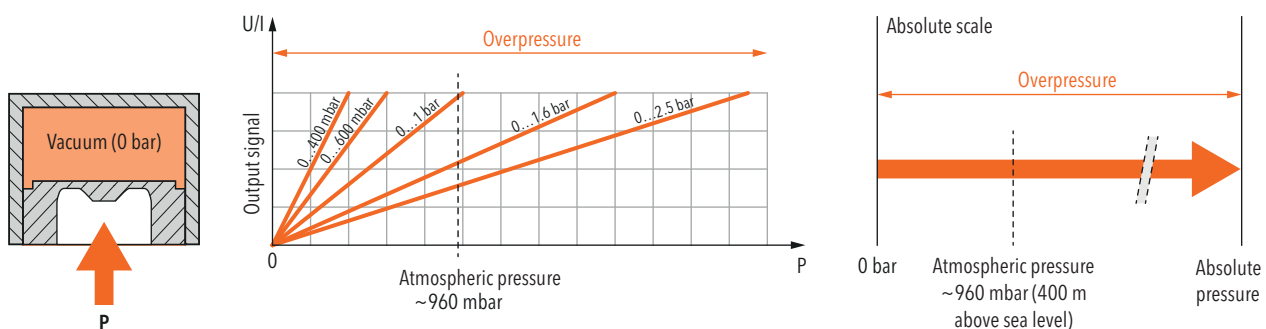
The measuring result is always the deviation to the current, absolute atmospheric pressure.

e.g. 4 mA = 960 mbar (= atmospheric pressure); zero point (ZP): 0 bar

Relative pressure measurement



Absolute pressure measurement



Terminology for pressure measurement instruments

Main features

Nominal pressure measuring range

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

Measuring span

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

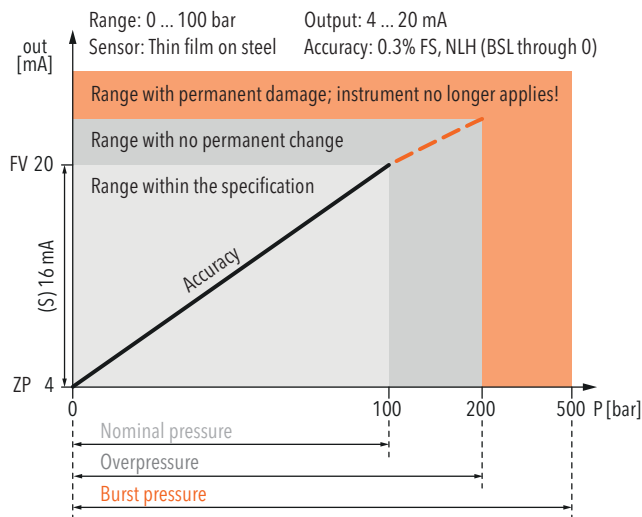
Overpressure Max. working pressure

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

Burst pressure

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

Example



Accuracy

Typ. accuracy

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

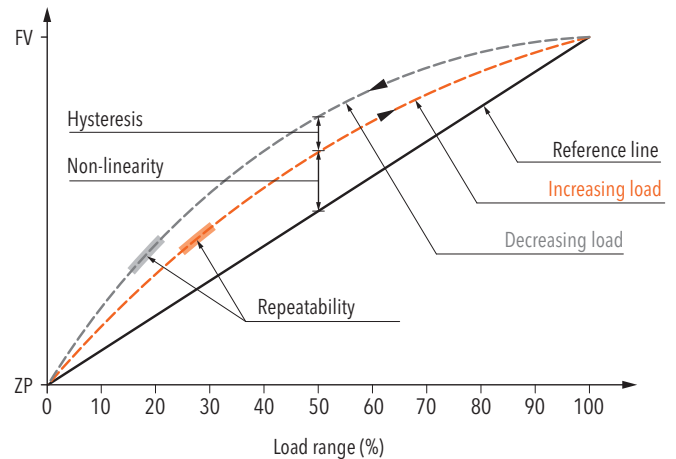
Max. accuracy

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

Non-linearity

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

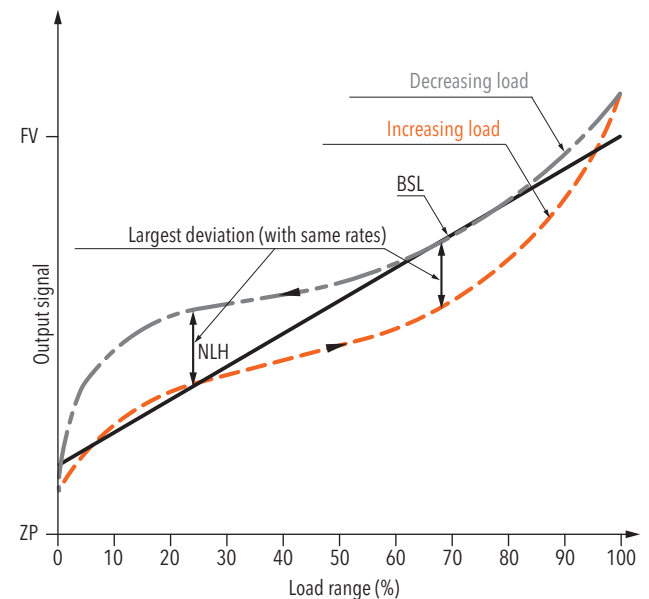
Specifications: Non-linearity, Hysteresis



BSL Best Straight Line

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

Specifications: Accuracy NLH (BSL)

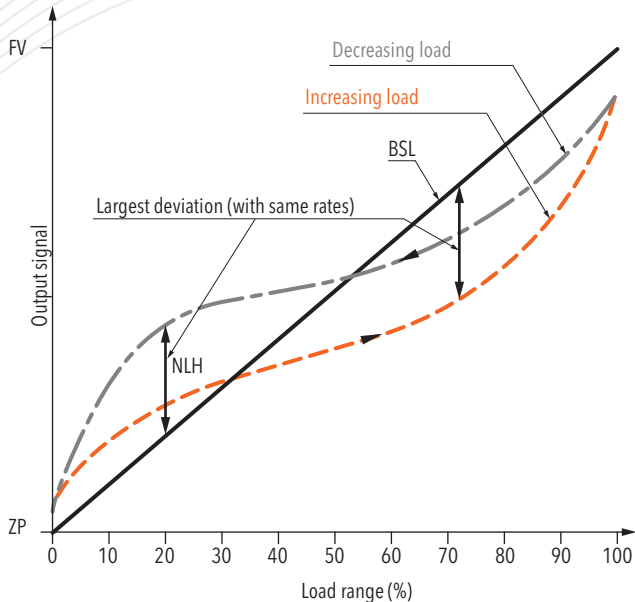


Terminology for pressure measurement instruments

BSL through zero

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

Specifications: Accuracy NLH (BSL through zero)



Non-linearity according to limit point adjustment

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

Hysteresis

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

Pressure hysteresis

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

Temperature hysteresis

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

NLH non-linearity and hysteresis

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

Accuracy DIN 16086: Measurement deviation

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

Repeatability DIN 16086: Non-repeatability

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

Temperature coefficient TC

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

Long-term stability Long-term drift

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

TEB Total error band

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

Scale accuracy

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

Electrical Data

Output signal

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

Rise time Step response

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

Zero point ZP

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

Terminology for pressure measurement instruments

Final value FV

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

Span S

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

Switching differential Pressostats

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

Example:

X...X = adjustable value

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

X = fixed value

Limiter Pressostats

Pressostat with manual micro-switch reset.

Environmental conditions

Media temperature

Permissible temperature range of the measuring media.

Operating temperature Ambient temperature

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

Storage temperature

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

Protection

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

EMC Protection

EMC Electromagnetic compatibility

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

Immision

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.

Ex-Product lines for pressure and temperature control

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 areas

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

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

Conversion of temperature units

[°F] to [°C] Formula: °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

По вопросам продаж и поддержки обращайтесь:

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