2015

PRODUCTS CATALOGUE

Pressure and temperature monitoring solutions

trafag
sensors controls

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 short time.

Competent and customer-oriented

Technological prowess, manufacturing expertise and a customer oriented outlook form the three cornerstones of the independent Trafag company. Trafag is headquartered in Bubikon, Switzerland and boasts more than 200 employees. 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 wide-ranging 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 produce 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.

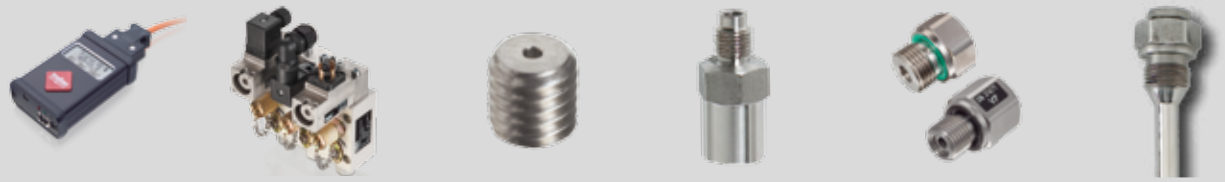
Content

Pressure Transmitters

Pressure Switches

Thermostats

Accessories



General Information

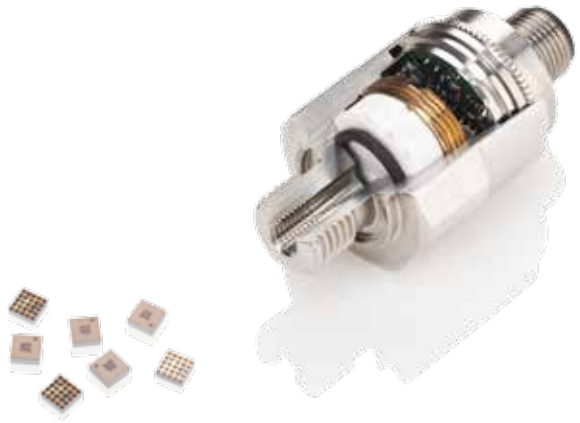

Pressure
0...2.500 bar
www.trafag.com

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 areas 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) have been 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 at 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 transmitters

	NAT 8252	NAH 8253	NAE 8255	NSL 8257	EPN/EPNCR 8298	EPR 8293	
	page 16	page 18	page 20	page 21	page 22	page 25	
							
Measuring principle	Thin film on steel	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 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 600 bar	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	0 ... 2.5 to 0 ... 2500 bar	0 ... 2.5 to 0 ... 600 bar	
Output signal	4 ... 20 mA 0 ... 5 VDC 1 ... 6 VDC 0 ... 10 VDC	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA	
Accuracy @ 25°C typ.	± 0.5 % FS typ.	± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	± 0.3 % FS typ. ± 0.15 % FS typ.	0.15 ... 0.8 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	
Ambient temperature	–40°C ... +125°C	-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	-40°C ... +125°C	
Protection	Min. IP65	Min. IP65	Min. IP65	Min. IP65	IP65, IP69K	IP65	
Sensor	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	
Housing / Pressure connection	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4542 (AISI630), 1.4301 (AISI304)	1.4542 (AISI630), 1.4301 (AISI304)	
Applications	Machine tools Hydraulics HVAC Refrigeration Process technology Water treatment	Machine tools Hydraulics Process technology Water treatment Test benches	Shipbuilding Engine manufacturing Test benches	Shipbuilding Engine manufacturing Machine tools Process technology Water treatment Test benches	Shipbuilding Engine manufacturing Machine tools Hydraulics	Railways	
Data sheet	H72303	H72300	H72301	H72302	H72312	H72311	
Instructions	H73303	H73250	H73250	H73250	H73311	H73311	
Approval			ABS, BV, DNV, GL, KRS, LRS, NKK, RINA	GL, DNV, RINA	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS	EN50155 (Railways)	
Type of protection							

	EPI 8297	NPN 8264	FPT 8235	ECTR 8471	ECT 8472	ECT 0.3% (0.5%, 1.0%) 8473	ECON 8498
	page 24	page 28	page 34	page 15	page 10	page 12	page 29
							
	Thin film on steel	Thin film on steel	Thin film on steel	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic
	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	-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 ... 0.1 to 0 ... 40 bar 0 ... 1.5 to 0 ... 500 psi	0 ... 1 to 0 ... 250 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.	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
	± 0.5 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.4 % FS	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.5 % FS typ.
	-40°C ... +125°C	-40°C ... +100°C	-40°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C
	-40°C ... +125°C	-40°C ... +100°C	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +125°C	-25°C ... +125°C	<60 bar: -25°C ... +85°C >60 bar: -10°C ... +85°C
	IP65	IP65, IP69K	IP65	Min. IP65	Min. IP65	Min. IP65	Min. IP65
	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	Ceramic, Al2O3(96%)	Ceramic, Al2O3(96%)	Ceramic, Al2O3(96%)	Ceramic, Al2O3(96%)
	1.4542 (AISI630), 1.4301 (AISI304)	1.4542 (AISI630), 1.4301 (AISI304)	1.4301 (AISI304)	1.4305 (AISI303), 1.4462 (AISI318LN), Titanium Grade 5	1.4305 (AISI303), 1.4462 (AISI318LN), Titanium Grade 5	1.4305 (AISI303), 1.4462 (AISI318LN), Titanium Grade 5	1.4435 (AISI316L)
	Machine tools Hydraulics HVAC Refrigeration Process technology Water treatment	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics	Engine manufacturing Machine tools Hydraulics Process technology Water treatment Food Industry Chemical and pharmaceutical industry	HVAC Refrigeration	Machine tools Hydraulics Water treatment	Machine tools Hydraulics Water treatment	Shipbuilding Engine manufacturing
	H72314	H72313	H72316	H72323	H72324	H72326	H72239
	H73311	H73313	H73316	H73324	H73324	H73324	H73212
		ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS					BV, DNV, GL, KRS, LRS, NKK

Overview pressure transmitters

	ECL 8438	NAL 8838	CMP 8270	EPN-S 8320	DCS 8864	N 8202	
	page 32	page 31	page 36	page 26	page 38	page 40	
							
Measuring principle	Thick film on ceramic	Piezoresistive	Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel	
Measuring range	0 ... 0.1 to 0 ... 25 bar	0 ... 0.1 to 0 ... 25 bar	0 ... 1 to 0 ... 600 bar	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0...2.5 to 0...600 bar	0 ... 1.0 to 0 ... 600 bar	
Output signal	4 ... 20 mA	4 ... 20 mA 0 ... 10 VDC	Bus protocol CANopen DS404	Transistor (open source)	4 ... 20 mA, 0 ... 10 VDC 2 Relays (electrically isolated, 30W (max.1A), 36 VAC/ DC)	4 ... 20 mA	
Accuracy @ 25°C typ.	± 0.3 % FS typ. Range 0...0.1 to 0...0.4 bar: ± 0.5 % FS typ.		± 0.5 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	±0.5% FS typ. (Switchpoint)	± 0.5 % FS typ.	± 0.5 % FS typ.	
Ambient temperature	-25°C ... +80°C (+70°C)	-5°C ... +50°C	-40°C ... +125°C	-25°C ... +85°C Option -40 ... +125°C	-25°C ... +80°C	-25°C ... +85°C	
Media temperature	-25°C ... +80°C (+70°C)	-5°C ... +50°C	-50°C ... +135°C	-40°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	
Protection	IP68 (25 bar; 250m)	Min. IP68	Min. IP67	IP65, IP69K	IP65	Min. IP65	
Sensor	Ceramic, Al2O3 (96%)	1.4435 (AISI316L)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4435/1.4542 (AISI316L/630)	
Housing / Pressure connection	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	1.4301 (AISI304)	1.4542 (AISI630), 1.4301 (AISI304)	1.4301/1.4306 (AISI304/304L)	AlSi10Mg/ Epoxy coated	
Applications	Process technology Water treatment	Shipbuilding Process technology Water treatment	Engine manufacturing Railways Machine tools Hydraulics Process technology Test benches	Shipbuilding Engine manufacturing Railways Machine tools Hydraulics HVAC	Shipbuilding Machine tools Hydraulics Process technology	Shipbuilding Engine manufacturing	
Data sheet	H72328	H72228	H72614	H72333	H72605	H72206	
Instructions	H73328		H73614	H73333	H73605	H70722	
Approval	GL, KRS	GL, KRS		GL	GL	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA	
Type of protection							

	ND 8204	EXNT 8292	EXNA 8854	EXL 8432	EXNAL 8858
	page 41	page 44	page 42	page 46	page 43
					
	Thin film on steel	Thin film on steel	Piezoresistive	Thick film on ceramic	Piezoresistive
	0 ... 1 to 0 ... 16 bar	0 ... 0.4 to 0 ... 2000 bar	0 ... 0.1 to 0 ... 1000 bar	0 ... 0.2 to 0 ... 25 bar	0...0.1 to 0...25 bar
	4 ... 20 mA (P1–P2)	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA
	± 0.8 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		± 0.3 % FS typ. ± 0.5 % FS typ.	
	-25°C ... +85°C	–40°C ... +120°C	-40°C ... +125°C	-20°C ... +70°C	-5°C ... +50°C
	-25°C ... +125°C	–40°C ... +120°C	-40°C ... +150°C	-20°C ... +70°C	-5°C...+50°C
	Min. IP65	Min. IP65	Min. IP65	IP68 (25 bar; 250m)	Min. IP68
	1.4542 (AISI630)	1.4542 (AISI630)	1.4435 (AISI316L) opt. titanium	Ceramic, Al2O3(96%)	1.4435 (AISI316L)
	AlSi10Mg/ Epoxy coated	1.4542 (AISI630), 1.4301 (AISI304)	1.4435 (AISI316L) opt. titanium	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium
	Shipbuilding Engine manufacturing	Shipbuilding Ex Zones 0, 1, 2 (gas); 20, 21, 22 (dust) and mining	Ex Zone 0, 1, 2 / Gas Ex Zone 20, 21, 22 / Dust Ex Underground Mining	Ex Zone 0, 1, 2 / Gas Ex Underground Mining	Shipbuilding Ex SEV 11 ATEX 0145 X
	H72218	H72329	H72334	H72330	H72231
	H73218	H73329		H73329	
	BV, DNV, RINA	GL, KRS Ex according to standards: IEC/ EN 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
			⟨Ex⟩ II 1G Ex ia IIC T3...T6 Ga II 1D Ex ia IIIC IP6x T145...T70°C I M1 Ex ia I		

ECT 8472

Industrial Pressure Transmitter

Features

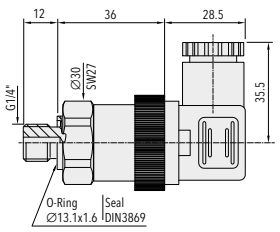
- Economical
- Good media compatibility
- Relative or absolute pressure measurement
- Titanium version optional

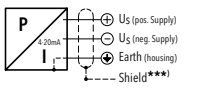
Technical Data			
Measuring principle	Thick film on ceramic	Accuracy @ 25°C typ.	± 0.5 % FS typ.
Measuring range	0 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	Media temperature	-25°C ... +125°C 400 bar/5000 psi: -10°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC,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

Standard products (extra short lead time)

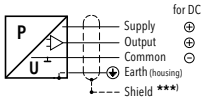
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
ECT1.0A	8472 71 5717 05 0000 0000 19 58 61	0...1.0	3.2	4...20 mA	9...30
ECT2.5A	8472 75 5717 05 0000 0000 19 58 61	0...2.5	5	4...20 mA	9...30
ECT6.0A	8472 77 5717 05 0000 0000 19 58 61	0...6	12	4...20 mA	9...30
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
ECT100.0A	8472 83 5717 05 0000 0000 19 58 61	0...100	200	4...20 mA	9...30
ECT250.0A	8472 74 5717 05 0000 0000 19 58 61	0...250	500	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
ECT100.0V	8472 83 5717 05 0000 0000 17 58 61	0...100	200	0...10 VDC	15...30
ECT250.0V	8472 74 5717 05 0000 0000 17 58 61	0...250	500	0...10 VDC	15...30

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





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



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

Ordering information/type code

8472 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 1.0	3.2	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**
0 ... 160	320	480	**85**	0 ... 2000	4000	6000	**H5**
0 ... 250	500	750	**74**	0 ... 3000	6000	9000	**G4**
0 ... 400 [2]	800	1000	**84**	0 ... 5000 [2]	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	**52**	Absolute pressure, 1.4462 [3]	**82**
Relative pressure, Titanium Grade 5	**53**	Absolute pressure, Titanium Grade 5 [3]	**83**

Pressure connection

G1/4" female	**10**	G1/2" male [4]	**21**
G1/4" male	**17**	1/4"NPT male [4]	**30**

Electrical connection

Male electrical plug EN 175301-803-A, Mat. PA	**05**	Male electrical plug industrial standard (contact distance 9.4mm) Mat.: PBT	**01**
Male electrical plug M12x1, 5-pole, Mat. PA	**35**	Cable IP67, Mat.: PVC (cable gland PA6-3) [5] [6]	**22**
Male electrical plug Packard Metri Pack	**51**	Cable IP68 max. 3m, Medium +10°C...+35°C, max. 1 bar rel./ abs.	**68**

Output

Output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-9V) / 20mA		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 ratiometric	**23**

Accessories

O-Ring FKM (-20°C ... +125°C)	**61**	Special electrical connection: Pin 1 + , Pin 2 - (Only for output 4...20mA and male electrical plug EN175301-803-A / DIN43650-A)	**92**
O-Ring CR ≤ 100 bar (-25°C ... +100°C)	**62**	Special electrical connection: Pin 1 out , Pin 2 -, Pin 3 + (Only for output 0...5VDC, 1...6VDC, 0...10VDC, 0.5...4.5VDC and male electrical plug EN175301-803-A / DIN43650-A)	**98**
O-Ring EPDM (-25°C ... +125°C)	**63**	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)	**97**
Pressure peak damping element ø 1.0 mm (for pressure connections 17 and 30)	**40**	Special electrical connection: Pin 1 + , Pin 2 - (Only for male electrical plug Packard Metri Pack 3-pol.)	**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 0.5 mm (for pressure connections 17 and 30)	**45**	Cable length 3.0 m	**3M**
Female electrical connector EN 175301-803-A (DIN 43650-A)	**58**	Cable length 5.0 m	**5M**
Female electrical plug M12x1, 5-pole	**33**		
Female electrical connector industrial standard	**34**		

[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

Identical construction for refrigeration: Data sheet No. H72323

Dimensions see ECT 8473

Data sheet www.trafag.com/H72324
Instructions www.trafag.com/H73324

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

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		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
ECTF25.0A	8473 80 5652 05 0000 0000 19 58 61	0 ... 25	50	G3/4" frontal membrane	4 ... 20 mA	0.3
ECTF40.0A	8473 81 5652 05 0000 0000 19 58 61	0 ... 40	80	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

Ordering information/type code

8473 . XX XX XX XX XX XX

Measuring range [1]	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
	0 ... 0.1	2	3	**66**	0 ... 1.5	30	45	**F6**
	0 ... 0.16	2	3	**67**	0 ... 2	30	45	**F7**
	0 ... 0.2	2	3	**68**	0 ... 2.5	30	45	**F8**
	0 ... 0.4	2	3	**69**	0 ... 5	30	45	**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**

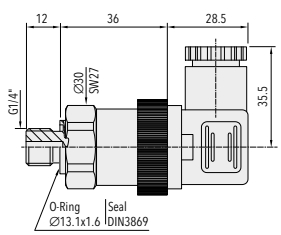
Sensor		
	Relative pressure, 1.4305	**54**
	Relative pressure, 1.4404/1.4435 [2]	**56**
	Relative pressure, 1.4462	**50**
	Relative pressure, Titanium Grade 5	**51**
	Absolute pressure, 1.4305 [2] [3]	**84**
	Absolute pressure, 1.4404/1.4435 [2] [3]	**86**
	Absolute pressure, 1.4462 [3]	**80**
	Absolute pressure, Titanium Grade 5 [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**

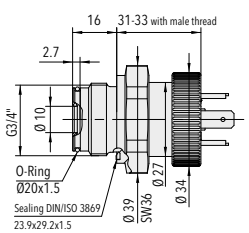
Electrical connection		
	Male electrical plug EN 175301-803-A, Mat. PA	**05**
	Male electrical plug M12x1, 5-pole, Mat. PA	**35**
	Male electrical plug industrial standard (contact distance 9.4mm) (Mat.: PBT)	**01**
	Male electrical plug Packard Metri Pack	**51**
	Cable IP67, Mat.: PVC (cable gland PA6-3) [5] [6]	**22**
	Cable IP68 max. 3m, Medium +10°C...+35°C, max. 1 bar rel./abs.	**68**

Output	Output	Load resistance	I (supply)	U (supply)	
	4 ... 20 mA	(USupply–9V)/ 20mA		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 V ratiometric	**23**

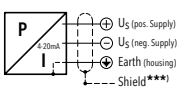
Continuation on next page



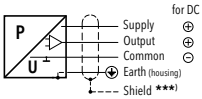
ECT ...



ECTF ...



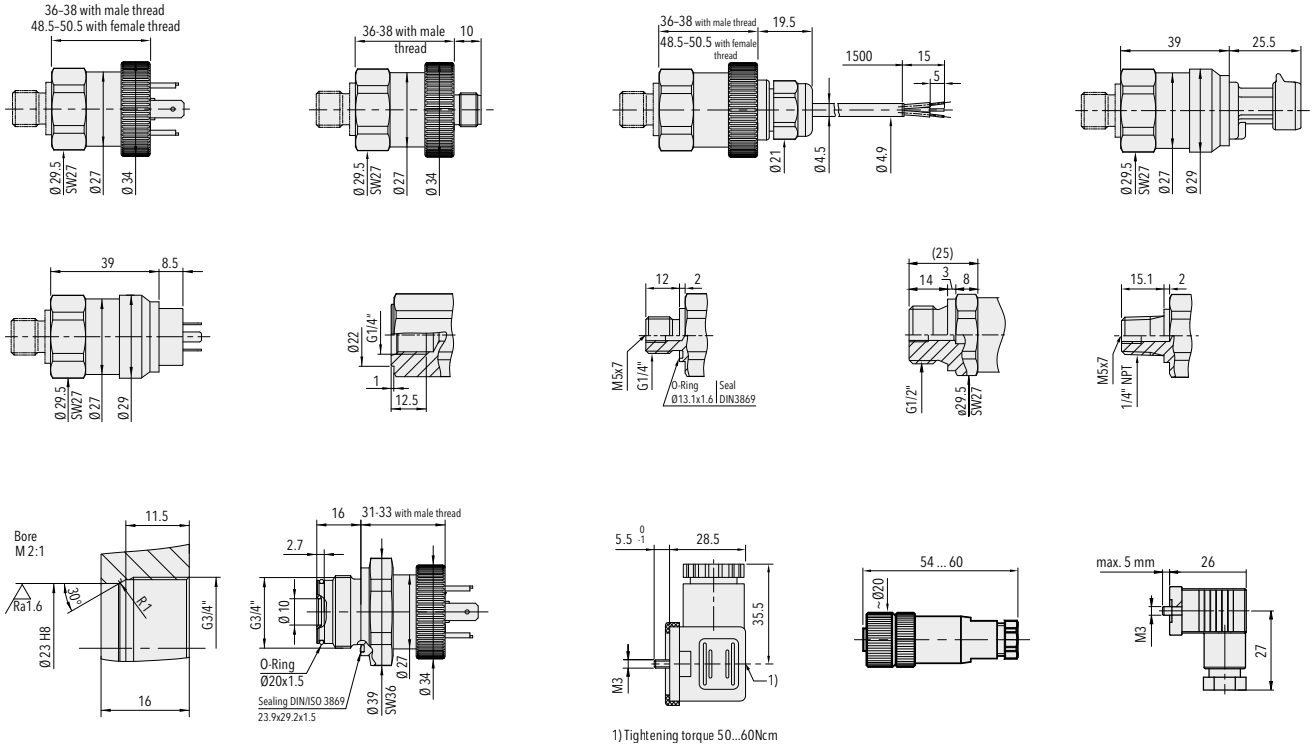
ECT ... A/ECTF ... A (4 ... 20 mA)



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

		8473 . XX XX XX XX XX XX
Accessories	O-Ring FKM (-20°C ... +125°C)	**61**
	O-Ring CR ≤ 100 bar (-25°C ... +100°C) [7]	**62**
	O-Ring 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 (DIN 43650-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 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 0...5VDC, 1...6VDC, 0...10VDC, 0.5...4.5VDC and male electrical plug EN175301-803-A / DIN43650-A)	**98**
	Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 out (Only for output 0...5VDC, 1...6VDC, 0...10VDC, 0.5...4.5VDC and male electrical plug EN175301-803-A / DIN43650-A)	**97**
	Special electrical connection: Pin 1 + , Pin 2 - (Only for male electrical plug Packard Metri Pack 3-pol.)	**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
[5] Cable length see accessories
[6] More materials and cables with venting tubes for low pressure ranges upon request
[7] Not for pressure connection G3/4" frontal membrane



1) Tightening torque 50...60Ncm

Data sheet www.trafag.com/H72326
Instructions www.trafag.com/H73324

ECTR 8471

Economic Refrigeration Pressure Transmitter

Features

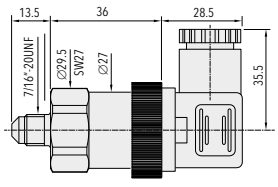
- Economical
- Good media compatibility
- Relative or absolute pressure measurement
- Titanium version optional

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 ... +85°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

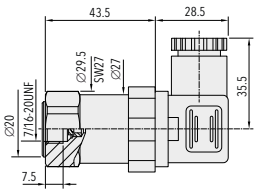
Data sheet www.trafag.com/H72323
Instructions www.trafag.com/H73324

Standard products (extra short lead time)

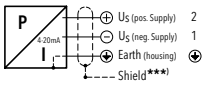
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
ECTR9.0A	8471 26 5718 05 0000 0000 19 58 62 01	-1 ... 9	20	4 ... 20 mA	9 ... 30
ECTR16.0A	8471 27 5718 05 0000 0000 19 58 62 01	-1 ... 16	32	4 ... 20 mA	9 ... 30
ECTR25.0A	8471 80 5718 05 0000 0000 19 58 62	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
ECTRV9.0A	8471 26 5724 05 0000 0000 19 58 62 01	-1 ... 9	20	4 ... 20	9 ... 30
ECTRV16.0A	8471 27 5724 05 0000 0000 19 58 62 01	-1 ... 16	32	4 ... 20	9 ... 30
ECTRV25.0A	8471 80 5724 05 0000 0000 19 58 62	0 ... 25	50	4 ... 20	9 ... 30



ECTR ...



ECTRV ...



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

NAT 8252

Industrial Pressure Transmitter

Features

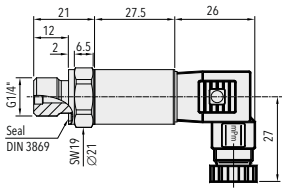
- Smallest design
- Completely welded steel sensor system without additional seals
- Excellent long-term stability
- High resistance to over pressure

Technical Data

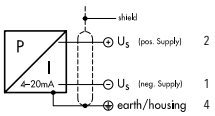
Measuring principle	Thin film on steel	Accuracy @ 25°C typ.	± 0.5 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 600 bar	Media temperature	–40°C ... +125°C
Output signal	4 ... 20 mA 0 ... 5 VDC 1 ... 6 VDC 0 ... 10 VDC	Ambient temperature	–40°C ... +125°C (Cable PVC 22: -5°C ... +60°C) (Cable PUR 24: -40°C ... +70°C)

Standard products (extra short lead time)

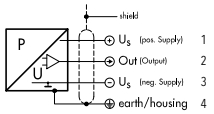
Product Nr.	Typecode	Pressure range [bar]	Product Nr.	Typecode	Pressure range [bar]
NAT2.5A	8252 75 2517 01 0000 0000 19 34 44 61	0 ... 2.5	*NAT2.5V	8252 75 2517 01 0000 0000 17 34 44 61	0 ... 2.5
NAT4.0A	8252 76 2517 01 0000 0000 19 34 44 61	0 ... 4	*NAT4.0V	8252 76 2517 01 0000 0000 17 34 44 61	0 ... 4
NAT6.0A	8252 77 2517 01 0000 0000 19 34 44 61	0 ... 6	*NAT6.0V	8252 77 2517 01 0000 0000 17 34 44 61	0 ... 6
NAT10.0A	8252 78 2517 01 0000 0000 19 34 44 61	0 ... 10	*NAT10.0V	8252 78 2517 01 0000 0000 17 34 44 61	0 ... 10
NAT16.0A	8252 79 2517 01 0000 0000 19 34 44 61	0 ... 16	*NAT16.0V	8252 79 2517 01 0000 0000 17 34 44 61	0 ... 16
NAT25.0A	8252 80 2517 01 0000 0000 19 34 44 61	0 ... 25	*NAT25.0V	8252 80 2517 01 0000 0000 17 34 44 61	0 ... 25
NAT40.0A	8252 81 2517 01 0000 0000 19 34 44 61	0 ... 40	*NAT40.0V	8252 81 2517 01 0000 0000 17 34 44 61	0 ... 40
NAT100.0A	8252 83 2517 01 0000 0000 19 34 44 61	0 ... 100	*NAT100.0V	8252 83 2517 01 0000 0000 17 34 44 61	0 ... 100
NAT250.0A	8252 74 2517 01 0000 0000 19 34 44 61	0 ... 250	*NAT250.0V	8252 74 2517 01 0000 0000 17 34 44 61	0 ... 250
NAT400.0A	8252 84 2517 01 0000 0000 19 34 44 61	0 ... 400	*NAT400.0V	8252 84 2517 01 0000 0000 17 34 44 61	0 ... 400
NAT600.0A	8252 86 2517 01 0000 0000 19 34 44 61	0 ... 600	*NAT600.0V	8252 86 2517 01 0000 0000 17 34 44 61	0 ... 600



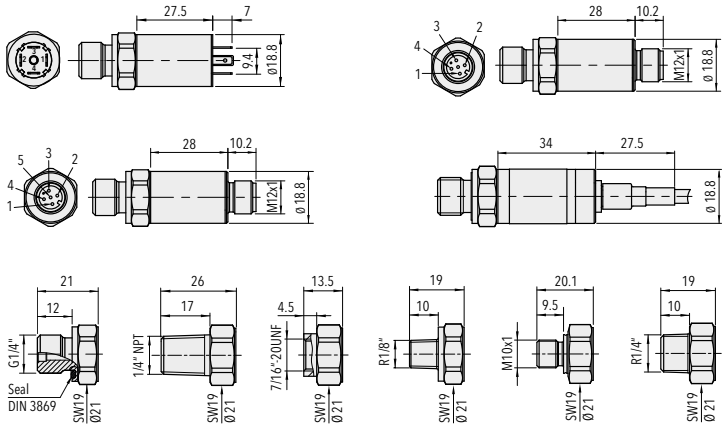
Pressure peak damping element integrated



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



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



Data sheet www.trafag.com/H72303
Instructions www.trafag.com/H73303

Ordering information/type code

8252 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	
0 ... 2.5	7.5	50	**75**
0 ... 4	12	60	**76**
0 ... 6	18	100	**77**
0 ... 10	30	200	**78**
0 ... 16	48	200	**79**
0 ... 25	75	300	**80**
0 ... 40	120	300	**81**
0 ... 60	180	400	**82**
0 ... 100	300	500	**83**
0 ... 160	480	750	**85**
0 ... 250	750	1000	**74**
0 ... 400	1000	2000	**84**
0 ... 600	1500	2500	**86**
Option 5P: [8]	**Fivefold overpressure**		
0 ... 2.5	12.5	60	**55**
0 ... 4	20	100	**56**
0 ... 6	30	200	**57**
0 ... 10	50	200	**58**
0 ... 16	80	300	**59**
0 ... 25	125	300	**60**
0 ... 40	200	400	**61**
0 ... 60	300	500	**62**
0 ... 100	500	750	**63**
0 ... 160	800	1000	**65**

Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 30	90	700	**G5**
0 ... 50	150	850	**G6**
0 ... 100	300	1450	**G7**
0 ... 150	450	2500	**G8**
0 ... 250	750	2500	**G9**
0 ... 400	1200	4000	**H0**
0 ... 500	1500	4000	**H1**
0 ... 1000	3000	5000	**H2**
0 ... 1500	4500	7000	**H3**
0 ... 2000	6000	10000	**H5**
0 ... 3000	9000	14500	**G4**
0 ... 5000	12500	21750	**H4**
0 ... 7500	18750	29000	**H6**

Sensor

Relative pressure	**25**

Pressure connection

G1/4" male, seal: DIN 3869 (accessory 61/83)	**17**
1/4"NPT male	**30**
7/16"-20UNF female DIN 3866 (valve opener) [4]	**24**
R1/4" male ISO 7-1 (DIN 2999) [5]	**19**
R1/8" male ISO 7-1 (DIN 2999) [5]	**16**
M10x1 male	**32**

Electrical connection

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

Output

Output	Load resistance	I (supply)	U (supply)	
4 ... 20mA	See graphic		24 (9 ... 32) VDC	**19**
0 ... 5 VDC	≥ 5.0 kΩ to Us-	≤ 20 mA	24 (9 ... 32) VDC	**14**
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**

Accessories

Female electrical plug M12x1, 5-pole [2]	**33**
Female electrical connector industrial standard [3]	**34**
Pressure peak damping element ø 0.4 mm [6]	**44**
Seal FPM, -18...+125°C [8]	**61**
Seal NBR, -25...+100°C [8]	**83**
Special pin configuration: Pin 2: +, Pin 3: Ground, Pin 4: - (Only for output signal 19 and male electrical plug 01, industrial standard)	**90**
Special pin configuration: Pin 1: Out, Pin 2: +, Pin 3: Ground, Pin 4: - (Only for output signals 14, 16, 17 and male electr. plug 01, ind. standard)	**91**
Special pin configuration: Pin 1: +, Pin 2: Ground, Pin 3: -, Pin 4: Out (Only for output signals 14, 16, 17 and male electrical plug 32, M12x1, 4-pole)	**96**
Special pin configuration: Pin 1: +, Pin 2: -, Pin 4: Ground (Only for output signal 19 and male electrical plug 32, M12x1, 4-pole)	**E1**
Special pin configuration: Pin 1: +, Pin 2: -, Pin 3: Out, Pin 4: Ground (Only for output signals 14, 16, 17 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**

[1] Customized pressure ranges upon request
[2] For electrical connections 32 and 35
[3] For electrical connection 01
[4] Max. allowable pressure range 60 bar at 120 bar overpressure
[5] Max. allowable pressure range 160 bar
[6] Only for pressure connections 17, 30, 32
[7] Cable length see accessories
[8] Only with pressure connection 17 (G1/4" m)

NAH 8253

Hydraulic Pressure Transmitter

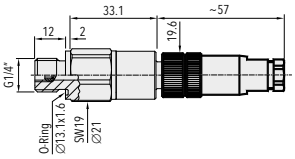
Features

- Smallest design
- Different accuracy classes
- Excellent temperature resistance
- Improved vibration resistance
- Completely welded steel sensor system without additional seals

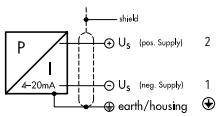
Technical Data			
Measuring principle	Thin film on steel	Accuracy @ 25°C typ.	± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 600 bar	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Ambient temperature	-40°C ... +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. [%]
NAH2.5A	8253 75 2317 32 0000 0000 19 33 43	0...2.5	5	9...32	± 0.3
NAH4.0A	8253 76 2317 32 0000 0000 19 33 43	0...4.0	8	9...32	± 0.3
NAH6.0A	8253 77 2317 32 0000 0000 19 33 43	0...6.0	12	9...32	± 0.3
NAH10.0A	8253 78 2317 32 0000 0000 19 33 43	0...10	20	9...32	± 0.3
NAH16.0A	8253 79 2317 32 0000 0000 19 33 43	0...16	32	9...32	± 0.3
NAH25.0A	8253 80 2317 32 0000 0000 19 33 43	0...25	50	9...32	± 0.3
NAH40.0A	8253 81 2317 32 0000 0000 19 33 43	0...40	80	9...32	± 0.3
NAH100.0A	8253 83 2317 32 0000 0000 19 33 43	0...100	200	9...32	± 0.3
NAH250.0A	8253 74 2317 32 0000 0000 19 33 43	0...250	500	9...32	± 0.3
NAH400.0A	8253 84 2317 32 0000 0000 19 33 43	0...400	800	9...32	± 0.3
NAH600.0A	8253 86 2317 32 0000 0000 19 33 43	0...600	1000	9...32	± 0.3



Pressure peak damping element integrated



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

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

Ordering information/type code

8253 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	
0 ... 2.5 [2]	5	50	**75**	0 ... 60	120	400	**82**
0 ... 4	8	60	**76**	0 ... 100	200	500	**83**
0 ... 6	12	100	**77**	0 ... 160	320	750	**85**
0 ... 10	20	200	**78**	0 ... 250	500	1000	**74**
0 ... 16	32	200	**79**	0 ... 400	800	1500	**84**
0 ... 25	50	300	**80**	0 ... 600	1000	2000	**86**
0 ... 40	80	300	**81**				

Sensor

Relative pressure, accuracy: 0.3%	**23**	Absolute pressure, accuracy: 0.3%	**43**
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 (O-Ring)	**17**
1/4"NPT male	**30**
7/16"-20UNF male [3] [4]	**18**
7/16"-20UNF female (Valve opener) [3] [4]	**24**

Electrical connection

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

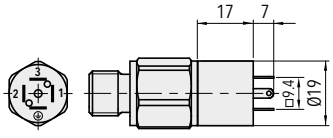
Output

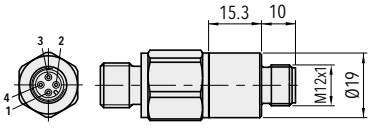
Output	Load resistance	I (supply)	U (supply)	
4 ... 20mA	(Usupply-9V) / 20mA		24 (9 ... 32) VDC	**19**
0 ... 5 VDC	≥ 2.0 kΩ	≤ 10 mA	24 (9 ... 32) VDC	**14**
1 ... 6 VDC	≥ 2.0 kΩ	≤ 10 mA	24 (9 ... 32) VDC	**16**
0 ... 10 VDC	≥ 5.0 kΩ	≤ 10 mA	24 (15 ... 32) VDC	**17**
0.5 ... 4.5 VDC	≥ 2.0 kΩ	≤ 10 mA	5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

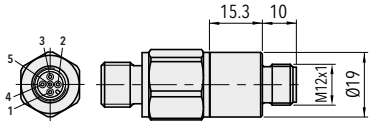
Accessories

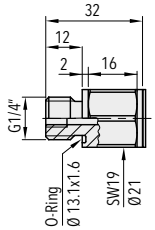
Female electrical plug M12x1, 5-pole, for execution 32 and 35	**33**
Female electrical plug industrial standard	**34**
Meets EN50155 (railways) dielectrical strength: 500 VAC, 50Hz [5]	**11**
Pressure peak damping element ø 1.0 mm [6]	**40**
Pressure peak damping element ø 0.3 mm [6]	**43**
Pressure peak damping element ø 0.5 mm [6]	**45**
Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 GR (Only for output 4...20mA and male electrical plug M12x1, 5-pol.)	**96**

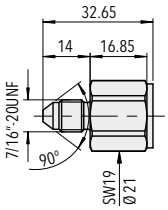
[1] Extended overpressure as well as customized pressure ranges upon request
[2] Measuring accuracy 0.3%
[3] Relative pressure only
[4] Max. allowable pressure range 40 bar
[5] Only with output 19
[6] Only for pressure connections 17 and 30

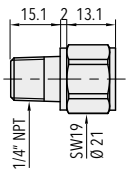


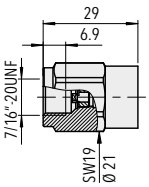


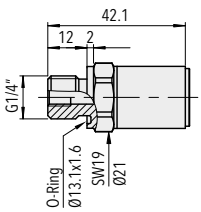


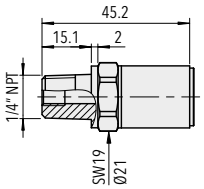












NAE 8255

Engine Pressure Transmitter

Features

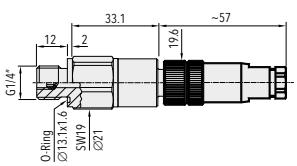
- Smallest design
- Different accuracy classes
- Excellent temperature resistance
- Improved vibration resistance
- Completely welded steel sensor system without additional seals

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 600 bar	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	Approval	ABS, BV, DNV, GL, KRS, LRS, NKK, RINA
Accuracy @ 25°C typ.	± 0.3 % FS typ. ± 0.15 % FS typ.		

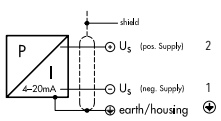
Data sheet www.trafag.com/H72301
Instructions www.trafag.com/H73250

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
NAE2.5A	8255 75 2317 32 0000 0000 19 33 43	0...2.5	5	9...32	±0.3
NAE4.0A	8255 76 2317 32 0000 0000 19 33 43	0...4.0	8	9...32	±0.3
NAE6.0A	8255 77 2317 32 0000 0000 19 33 43	0...6.0	12	9...32	±0.3
NAE10.0A	8255 78 2317 32 0000 0000 19 33 43	0...10	20	9...32	±0.3
NAE16.0A	8255 79 2317 32 0000 0000 19 33 43	0...16	32	9...32	±0.3
NAE25.0A	8255 80 2317 32 0000 0000 19 33 43	0...25	50	9...32	±0.3
NAE40.0A	8255 81 2317 32 0000 0000 19 33 43	0...40	80	9...32	±0.3
NAE100.0A	8255 83 2317 32 0000 0000 19 33 43	0...100	200	9...32	±0.3
NAE250.0A	8255 74 2317 32 0000 0000 19 33 43	0...250	500	9...32	±0.3
NAE400.0A	8255 84 2317 32 0000 0000 19 33 43	0...400	800	9...32	±0.3
NAE600.0A	8255 86 2317 32 0000 0000 19 33 43	0...600	1000	9...32	±0.3



Pressure peak damping element integrated



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

NSL 8257

Low Pressure Transmitter

Features

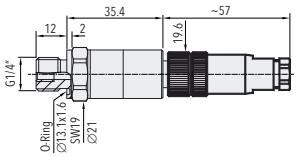
- Smallest design
- Relative or absolute pressure measurement
- Excellent temperature resistance
- Improved vibration resistance
- Completely welded steel sensor system without additional seals

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	GL, DNV, RINA

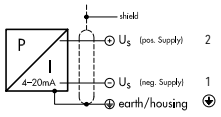
Data sheet www.trafag.com/H72302
Instructions www.trafag.com/H73250

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



Pressure peak damping element integrated



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

EPN/EPNCR 8298

Engine Pressure Transmitter

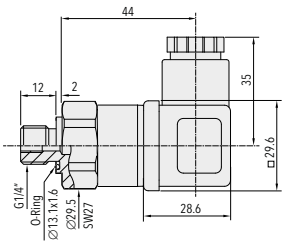
Features

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

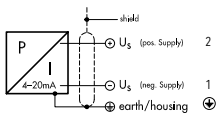
Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 2500 bar	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS
Accuracy @ 25°C 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	±0.2
EPN6.0A	8298 77 2517 04 0000 0000 19 43 58	0...6	12	9...32	±0.2
EPN10.0A	8298 78 2517 04 0000 0000 19 43 58	0...10	20	9...32	±0.2
EPN16.0A	8298 79 2517 04 0000 0000 19 43 58	0...16	32	9...32	±0.2
EPN25.0A	8298 80 2517 04 0000 0000 19 43 58	0...25	50	9...32	±0.2
EPN40.0A	8298 81 2517 04 0000 0000 19 43 58	0...40	80	9...32	±0.2
EPN60.0A	8298 82 2517 04 0000 0000 19 43 58	0...60	120	9...32	±0.2
EPN100.0A	8298 83 2517 04 0000 0000 19 43 58	0...100	200	9...32	±0.2
EPN250.0A	8298 74 2517 04 0000 0000 19 43 58	0...250	500	9...32	±0.2
EPN400.0A	8298 84 2517 04 0000 0000 19 43 58	0...400	800	9...32	±0.2



Pressure peak damping element integrated



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

Data sheet www.trafag.com/H72312
Instructions www.trafag.com/H73311

Ordering information/type code

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 (O-Ring) [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 (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.: Zn)	**25**
Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm² [6]	**78**

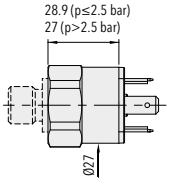
Output

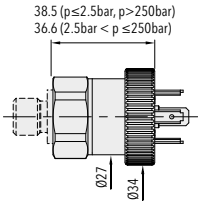
Output	Load resistance	I (supply)	U (supply)		Output	Load resistance	I (supply)	U (supply)	
4 ... 20mA	(Usupply-9V) / 20mA		9 ... 32 VDC	**19**	0.5 ... 4.5 VDC [7]	≥ 15.0 kΩ	≤ 12 mA	5 VDC ± 0.25 VDC ratiometric	**23**

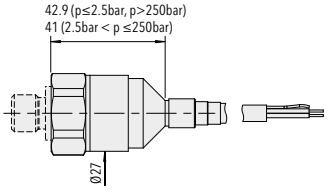
Accessories

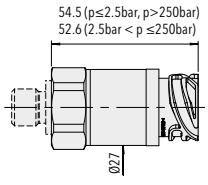
Pressure peak damping element ø 1.0 mm	**40**
Pressure peak damping element ø 0.3 mm	**43**
Pressure peak damping element ø 0.5 mm	**45**
Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, -40...90°C	**58**
Special electrical connection: Pin 1 + , Pin 2 - (Only for output 4...20mA and male electrical plug EN175301-803-A / DIN43650-A)	**92**
Cable length 1.5 m	**1M**
Cable length 3.0 m	**3M**
Cable length 5.0 m	**5M**

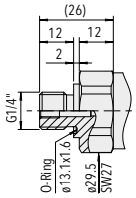
[1] Extended overpressure as well as customized pressure ranges upon request
[2] For Ranges ≤ 600 bar
[3] For ranges > 600 bar
[4] Only with electrical connection 04
[5] Please ask us
[6] Cable length see accessories
[7] Only with electrical connections 25 and 78

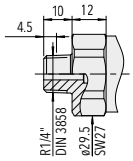


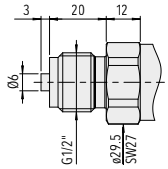


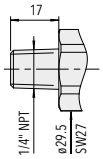


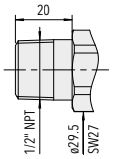


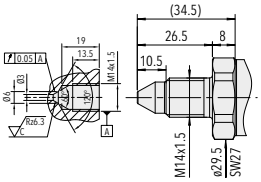


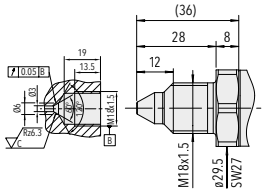












Additional dimensions see data sheet

EPI 8297

Industrial Pressure Transmitter

Features

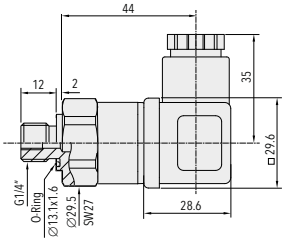
- Different accuracy classes
- Compact design
- Good temperature resistance
- Completely welded steel sensor system without additional seals

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

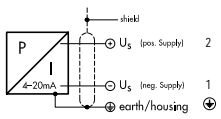
Data sheet www.trafag.com/H72314
Instructions www.trafag.com/H73311

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Signal output	Supply [VDC]
EPI4.0A	8297 76 2517 04 0000 0000 19 43 VM	0...4	10	4...20 mA	9...32
EPI6.0A	8297 77 2517 04 0000 0000 19 43 VM	0...6	15	4...20 mA	9...32
EPI10.0A	8297 78 2517 04 0000 0000 19 43 VM	0...10	20	4...20 mA	9...32
EPI16.0A	8297 79 2517 04 0000 0000 19 43 VM	0...16	32	4...20 mA	9...32
EPI25.0A	8297 80 2517 04 0000 0000 19 43 VM	0...25	80	4...20 mA	9...32
EPI40.0A	8297 81 2517 04 0000 0000 19 43 VM	0...40	80	4...20 mA	9...32
EPI60.0A	8297 82 2517 04 0000 0000 19 43 VM	0...60	200	4...20 mA	9...32
EPI100.0A	8297 83 2517 04 0000 0000 19 43 VM	0...100	200	4...20 mA	9...32
EPI250.0A	8297 74 2517 04 0000 0000 19 43 VM	0...250	500	4...20 mA	9...32
EPI400.0A	8297 84 2517 04 0000 0000 19 43 VM	0...400	800	4...20 mA	9...32



Pressure peak damping element integrated



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

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	EN50155 (Railways)
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		

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

Dimensions see EPN/EPNCR

Ordering information/type code

8293 . 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 ... 60	120	500	**82**
0 ... 4	8	100	**76**	0 ... 100	200	500	**83**
0 ... 6	12	100	**77**	0 ... 160	320	1000	**85**
0 ... 10	20	200	**78**	0 ... 250	500	1000	**74**
0 ... 16	32	200	**79**	0 ... 400	800	1500	**84**
0 ... 25	50	300	**80**	0 ... 600	1000	2000	**86**
0 ... 40	80	300	**81**				

Sensor

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

Pressure connection

G1/4" male (O-Ring)	**17**	1/4"NPT male [3]	**30**
R1/4" male [2]	**19**	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**

Output

Output	Load resistance	I (supply)	U (supply)	
4 ... 20mA	(Usupply-9V) / 20mA		9 ... 32 VDC	**19**

Accessories

Pressure peak damping element ø 1.0 mm	**40**	Female electrical connector EN 175301-803-A (DIN43650-A)/NBR, –40°C ... +90°C	**58**
Pressure peak damping element ø 0.3 mm	**43**	Special electrical connection: Pin 1 + , Pin 2 - (Only for output 4...20mA and male electrical plug EN175301-803-A / DIN43650-A)	**92**
Pressure peak damping element ø 0.5 mm	**45**		
Female electrical connector: EN 175301-803-A (DIN43650-A)/Silicone, –40°C ... +125°C	**56**		

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

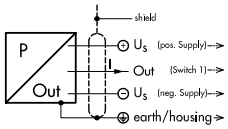
EPN-S 8320

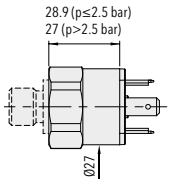
Electronic Pressure Switch

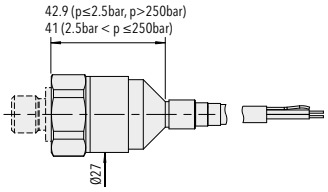
Features

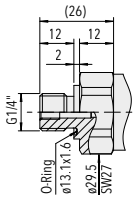
- Rugged design for harsh environments
- Wide temperature range
- Excellent long-term stability
- Very compact design
- Switchpoint factory set or programmable on site with Trafag's Sensor Communicator SC

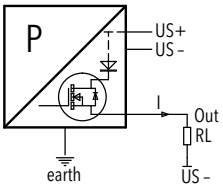
Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	Ambient temperature	Standard: -25°C ... +85°C Option (Ordering no. 67): -40°C ... +125°C
Output signal	Transistor (open source)	Approval	GL
Accuracy @ 25°C typ.	±0.5% FS typ. (Switchpoint)		



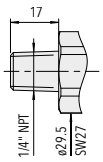


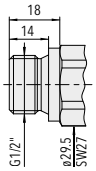


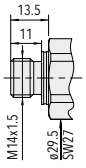


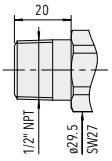


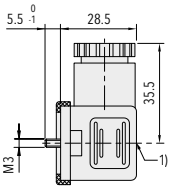
Connection of loads to switch contacts











1) Tightening torque 50...60Ncm

Output	
Output signal	1 transistor (open source)
Switchpoint setting	Factory set or programmable on site with Trafag's 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)
Switch resistance	≤ 3Ω
Delay time	Standard adjustment: 5ms Adjustable with Trafag Sensor Communicator (only electrical connection 04): 5ms ... 10s

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

Ordering information/type code

8320 . XX XX XX XX XX XX

Measuring range [1)]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Code	Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	Code
0 ... 2.5	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 (O-Ring)	**17**
1/4"NPT male	**30**
G1/2" male (DIN3852-A) [2)]	**21**
M14x1.5 male (DIN3852-A) [2)]	**22**
1/2"NPT male [2)]	**51**

Electrical connection

Male electrical plug: EN 175301-803-A (DIN43650-A)	**04**
Cable with shield: Material: FDR 25 (Raychem) 4 x 0.5mm² (Cable lenght see "Accessories")	**78**

Output

1 Transistor out: Switchpoint "ON": ... (bar)/Switchpoint "OFF": ... (bar)/Delay time: Standard 5 (ms)/... (ma) 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

Programming device Sensor Communicator SC

Ordering No.

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

Manual see

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

NPN 8264

Picotrans

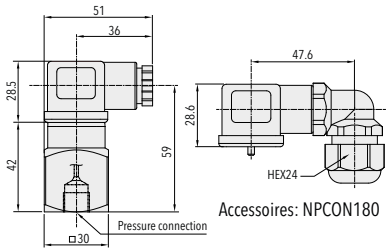
Features

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

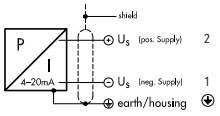
Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +100°C
Measuring range	0 ... 2.5 to 0 ... 250 bar	Ambient temperature	-40°C ... +100°C
Output signal	4 ... 20 mA	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS
Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 %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

Data sheet www.trafag.com/H72313
Instructions www.trafag.com/H73313

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)



Accessoires: NPCON180



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

ECON 8498

Marine Pressure Transmitter

Features

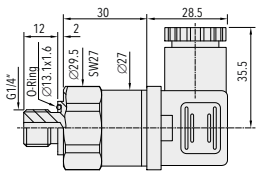
- Economical
- Good media compatibility
- EMC protection, IEC 61000
- Relative or absolute pressure measurement

Technical Data			
Measuring principle	Thick film on ceramic	Media temperature	<60 bar: -25°C ... +85°C >60 bar: -10°C ... +85°C
Measuring range	0 ... 1 to 0 ... 250 bar	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA	Approval	BV, DNV, GL, KRS, LRS, NKK
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

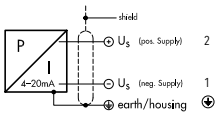
Data sheet www.trafag.com/H72239
Instructions www.trafag.com/H73212

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
ECON4.0A	8498 76 2917 04 0000 0000 29 58 61	0...4	10	9...32	±0.5
ECON6.0A	8498 77 2917 04 0000 0000 29 58 61	0...6	15	9...32	±0.5
ECON10.0A	8498 78 2917 04 0000 0000 29 58 61	0...10	25	9...32	±0.5
ECON16.0A	8498 79 2917 04 0000 0000 29 58 61	0...16	40	9...32	±0.5
ECON40.0A	8498 81 2917 04 0000 0000 29 58 61	0...40	80	9...32	±0.5



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



ECON ... A (4 ... 20 mA)

NAP 8842/8843

Pressure Transmitter

Features

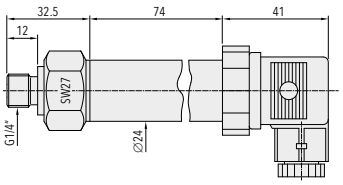
- Low pressure ranges (to 100 mbar)
- Media temperature to 150°C
- EMC protection, IEC 61000
- Option: Lightning protection (IEC 61000-4-5), 10kA (8/20 µs)

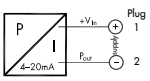
Technical Data			
Measuring principle	Piezoresistive	Media temperature	0°C ... +80°C (opt. -25°C...+100°C/-25°C ...+150°C)
Measuring range	0 ... 0.1 to 0 ... 1000 bar	Ambient temperature	0°C ... +70°C (opt. -25°C ... +85°C)
Output signal	4 ... 20 mA 0 ... 10 VDC	Approval	GL, KRS

Data sheet www.trafag.com/H72230
Instructions www.trafag.com/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

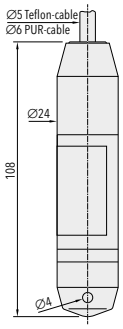
- Low pressure ranges (to 100 mbar)
- No media contacting O-rings
- PUR or Teflon cables
- Option: Chemical resistant material, e.g. titanium
- Option: Lightning protection (IEC 61000-4-5)

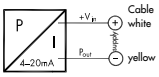
Technical Data			
Measuring principle	Piezoresistive	Media temperature	-5°C ... +50°C
Measuring range	0 ... 0.1 to 0 ... 25 bar	Ambient temperature	-5°C ... +50°C
Output signal	4 ... 20 mA 0 ... 10 VDC	Approval	GL, KRS

Data sheet www.trafag.com/H72228
Instructions www.trafag.com/

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 8438

Submersible Pressure Transmitter

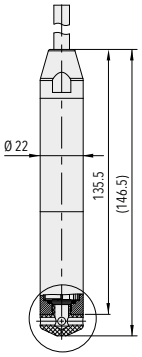
Features

- Good media compatibility
- Economical
- PUR/PE or FEP cable
- EMC protection, IEC 61000
- For OEM use

Technical Data			
Measuring principle	Thick film on ceramic	Media temperature	-25°C ... +80°C (+70°C)
Measuring range	0 ... 0.1 to 0 ... 25 bar	Ambient temperature	-25°C ... +80°C (+70°C)
Output signal	4 ... 20 mA	Approval	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	5m
ECL0.5A	8438 21 2346 22 0000 0000 19 61 8M 01	0...0.5	2	9...30	10m



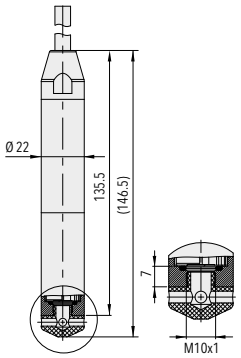
ECL ... A (4 ... 20 mA)

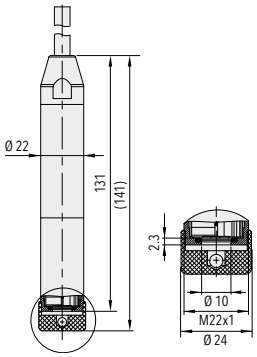
Data sheet www.trafag.com/H72328
Instructions www.trafag.com/H73328

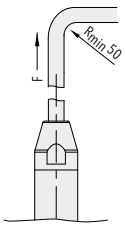
Ordering information/type code

					8438 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**							
	0 ... 0.1	2	3	**66**						
	0 ... 0.16	2	3	**67**						
	0 ... 0.2	2	3	**68**						
	0 ... 0.4	2	3	**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**						
	0 ... 16	32	40	**79**						
	0 ... 25	50	75	**80**						
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	**Output**	**Load resistance**	**I (supply)**	**U (supply)**						
	4 ... 20mA	(Usupply-9V) / 20mA		9 ... 30 VDC					**19**	
Accessories	O-Ring FKM									**61**
	O-Ring CR									**62**
	O-Ring EPDM									**63**

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

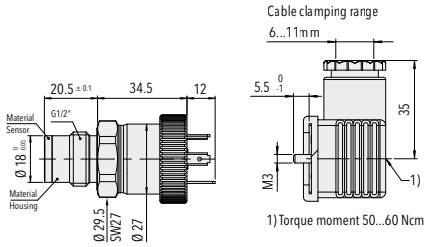
Features

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

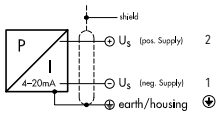
Technical Data			
Measuring principle	Thin film on steel	Accuracy @ 25°C typ.	± 0.4 % FS
Measuring range	0 ... 1 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	Media temperature	-40°C ... +125°C (-40°F ... +257°F)
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	Ambient temperature	-40°C ... +85°C (-40°F ... +185°F)

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...1.0	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...4.0	8	4...20 mA	±0.4
FPT6.0A	8235 77 2391 05 0000 0000 19 58 61	0...6.0	12	4...20 mA	±0.4
FPT10.0A	8235 78 2391 05 0000 0000 19 58 61	0...10.0	20	4...20 mA	±0.4
FPT16.0A	8235 79 2391 05 0000 0000 19 58 61	0...16.0	32	4...20 mA	±0.4
FPT25.0A	8235 80 2391 05 0000 0000 19 58 61	0...25.0	50	4...20 mA	±0.4
FPT40.0A	8235 81 2391 05 0000 0000 19 58 61	0...40.0	80	4...20 mA	±0.4
FPT100.0A	8235 83 2391 05 0000 0000 19 58 61	0...100.0	200	4...20 mA	±0.4



FPT ... A Female electrical plug included



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

Data sheet www.trafag.com/H72316
Instructions www.trafag.com/H73316

Ordering information/type code

							8235 .	XX	XX	XX	XX	XX	XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 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	**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) [2]	**22**
Male electrical plug Industrial standard (contact distance 9.4mm) Mat.: PBT	**01**	Cable IP68 max. 3m, Medium +10°C ... +35°C, max. 1 bar rel./abs.	**68**

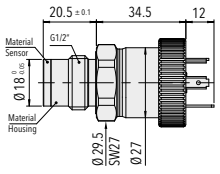
Output

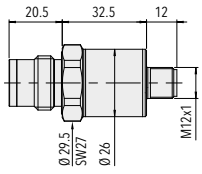
Output	Load resistance	I (supply)	U (supply)	
4 ... 20mA	(Usupply-9V) / 20mA		9 ... 30 VDC	**19**
0 ... 5 VDC	> 2.5 kΩ	< 10 mA	10 ... 30 VDC	**14**
1 ... 6 VDC	> 5.0 kΩ	< 10 mA	10 ... 30 VDC	**16**
0 ... 10 VDC	> 5.0 kΩ	< 10 mA	15 ... 30 VDC	**17**
0.5 ... 4.5 VDC	> 5.0 kΩ	< 10 mA	5 VDC ± 0.25 VDC ratiometric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

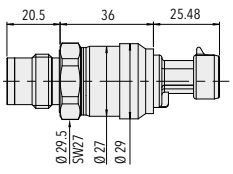
Accessories

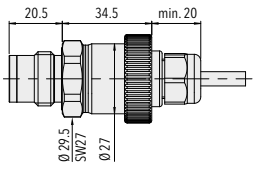
Sealing Ring DIN 3869, Mat. FPM (FKM) -15°C ... +125°C	**61**	Special electrical connection: Pin 1 + , Pin 2 -, Pin 3 out (Only for output 0...5VDC, 1...6VDC, 0...10VDC, 0.5...4.5VDC and male electrical plug EN175301-803-A / DIN43650-A) [2]	**97**
Sealing Ring DIN 3869, Mat. NBR, -25°C ... +100°C	**69**	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)	**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 4...20mA and male electrical plug EN175301-803-A / DIN43650-A) [2]	**92**	Cable length 3.0 m	**3M**
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]	**98**	Cable length 5.0 m	**5M**

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

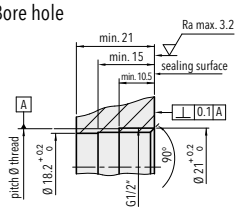








Bore hole



CMP 8270

CANopen Miniature Pressure Transmitter

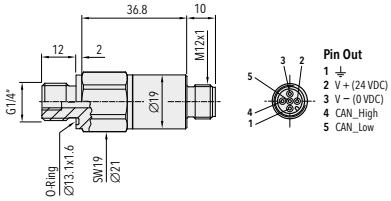
Features

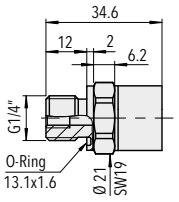
- Small and rugged construction
- Different accuracy classes
- Measurement of pressure and temperature
- CANopen bus protocol DS301/DS404 supports CAN 2.0A/B
- LSS (DS 305 V2.0)

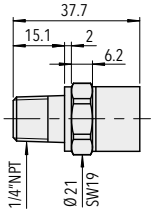
Technical Data			
Measuring principle	Thin film on steel	Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.
Measuring range	0 ... 1 to 0 ... 600 bar	Media temperature	-50°C ... +135°C
Output signal	Bus protocol CANopen DS404	Ambient temperature	-40°C ... +125°C

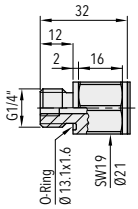
Standard products (extra short lead time)

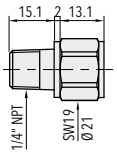
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
CMP4.0M	8270 76 2517 35 0000 0000 52 43	0...4	12	8...32	±0.5
CMP6.0M	8270 77 2517 35 0000 0000 52 43	0...6	12	8...32	±0.5
CMP10.0M	8270 78 2517 35 0000 0000 52 43	0...10	20	8...32	±0.5
CMP16.0M	8270 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





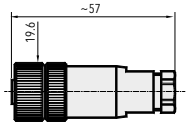




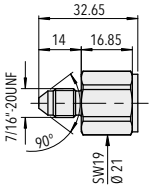


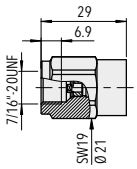
CMP ... M

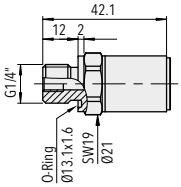
Pressure peak damping element integrated

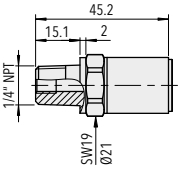


Accessories:
COPCON









Data sheet www.trafag.com/H72614
Instructions www.trafag.com/H73614

Ordering information/type code

8270 . XX XX XX XX XX XX

Measuring range 1)

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

Option	Description	Code
Sensor	Relative pressure, accuracy: 0.5%	**25**
	Relative pressure, accuracy: 0.15%	**21**
	Relative pressure, accuracy: 0.1%	**24**
	Absolute pressure, accuracy: 0.1%	**44**
Pressure connection	G 1/4" male, O-Ring	**17**
	1/4"NPT male	**30**
	7/16"-20UNF male 3)	**18**
	7/16"-20UNF female, valve opener 3)	**24**
Electrical connection	Male electrical plug M12x1, 5-pole, Mat. PA	**35**
Output	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 0.5mm	**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
- Supports11/29 bit identifiers: CAN 2.0 A/B
- Frequency of measurement and transmission upto 1kHz
- Moving average filter: 1ms...65s (pressure)
- Additional PDO mode: delta and limit triggered
- All standardised data types for PDO's Floating point, integer with 32, 24, 16 bits
- Eligible, prefix adjustable units pressure: bar, Pa, psi, mmHg, mmWg, atm, at; temperature: °C, °F, K
- Auto-zero function
- Auto-Start-Mode for operation without master
- 4 Pressure - and 4 temperature tresholds with 8 free definable CAN messages
- Separate storage of parameters for communication and application
- Flash-Update
- Baudrate detection

CANopen- Bus Protocol

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

DCS 8864

Display Control Switch

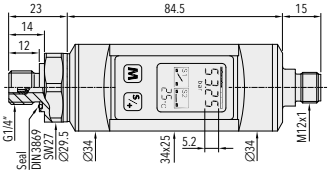
Features

- Simple adjustment of switching points
- 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

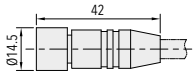
Technical Data			
Measuring principle	Thin film on steel	Media temperature	-25°C ... +125°C
Measuring range	0 ... 2.5 to 0 ... 600 bar	Ambient temperature	-25°C ... +80°C (LCD display active -10°C ... +70°C)
Output signal	4 ... 20 mA, 0 ... 10 VDC 2 Relays, electrically isolated 30W (max.1A), 36 VAC/ DC	Approval	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 V AC/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 V AC/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 V AC/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 V AC/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 V AC/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 V AC/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 V AC/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 V AC/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 V AC/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)			

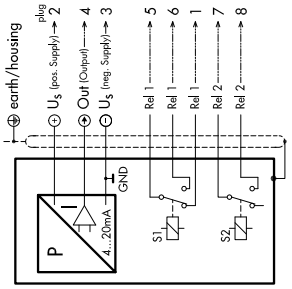


DCS ... AR



DCSCON ...

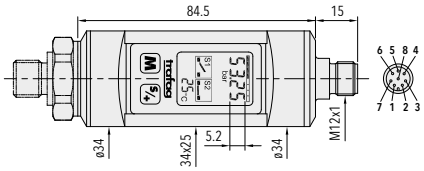
Pressure peak damping element integrated

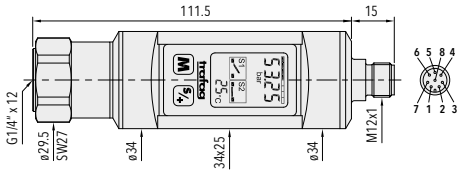


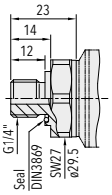
Data sheet www.trafag.com/H72605
Instructions www.trafag.com/H73605

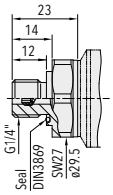
Ordering information/type code

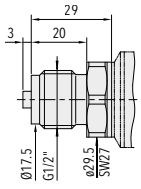
				8864 . XX	XX	XX	XX	XX	XX
Measuring range [1]	**Pressure measurement range [bar]**	**Over pressure [bar]**	**Burst pressure [bar]**						
	0 ... 1.0	2	30	**71**					
	0 ... 2.5	5	100	**75**					
	0 ... 4	8	100	**76**					
	0 ... 6	12	100	**77**					
	0 ... 10	20	200	**78**					
	0 ... 16	32	200	**79**					
	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-pol.						**38**		
Output	**Output**	**Load resistance**	**U (supply)**						
	4 ... 20mA	≤ 250W	11 ... 32 VDC					**19**	
	0 ... 10 VDC	≥ 5.0 kW	15 ... 30 VDC					**17**	
Accessories	2 Relay								**23**
	Female electrical connector: M12x1, 8-pol., incl. 2m PUR-cable Ordering code: DCS CON								

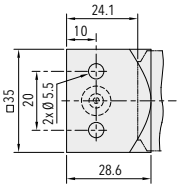


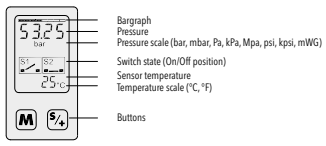












N 8202

Navitrag

Features

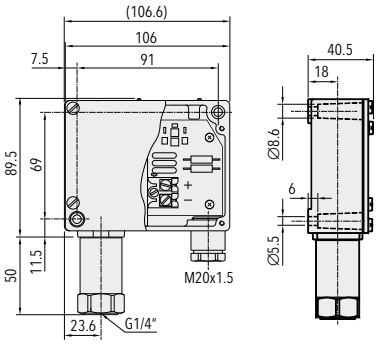
- Excellent long-term stability
- Protection IP65
- EMC protection, IEC 61000
- Excellent resistance to pressure peaks and dynamic pressure changes

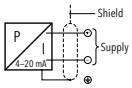
Technical Data			
Measuring principle	Thin film on steel	Media temperature	-25°C ... +125°C
Measuring range	0 ... 1.0 to 0 ... 600 bar	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA
Accuracy @ 25°C typ.	± 0.5 % FS typ.		

Data sheet www.trafag.com/H72206
Instructions www.trafag.com/H70722

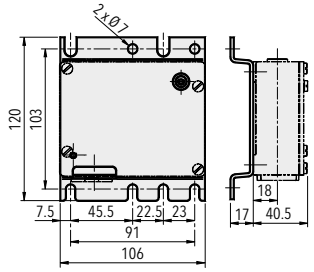
Standard products (extra short lead time)

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

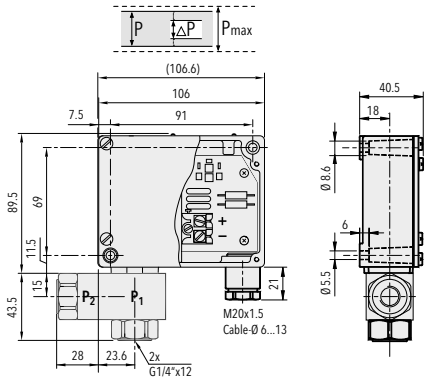
- High zero point stability
- High resistance to pressure cycling
- EMC protection, IEC 61000

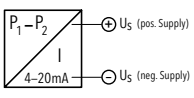
Technical Data			
Measuring principle	Thin film on steel	Media temperature	-25°C ... +125°C
Measuring range	0 ... 1 to 0 ... 16 bar	Ambient temperature	-25°C ... +85°C
Output signal	4 ... 20 mA (P1–P2)	Approval	BV, DNV, RINA
Accuracy @ 25°C typ.	± 0.8 % FS typ.		

Data sheet www.trafag.com/H72218
Instructions www.trafag.com/H73218

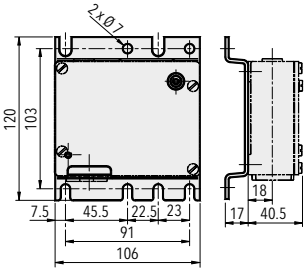
Standard products (extra short lead time)

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





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



Mounting plate MB31 see chapter 'Accessories'

Potentially hazardous areas: Ex-approved products for pressure measurement

Trafag offers a wide range of EX-, ATEX- and IECE approved products for pressure and temperature monitoring providing reliable functionality in various hazardous zones.

Further information see "Terminology"

Ex-Brochure www.trafag.com/H70659

EXNA 8854

Ex Pressure Transmitter

Features

- Ex ATEX / IECEx
- Low pressure ranges (to 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	Ex according to standards, IEC/EN 60079-0 /-11/-26, EN 50303
Type of protection	II 1G Ex ia IIC T3...T6 Ga II 1D Ex ia IIIC IP6x T145...T70°C I M1 Ex ia I

Data sheet www.trafag.com/H72334

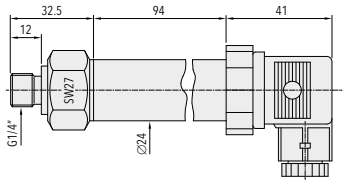
EXNA 8852/8853

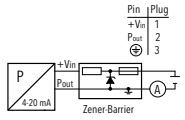
Ex Pressure Transmitter

Features

- Explosion-proof Ex ia IIC T3...T6
- Low pressure ranges (to 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	GL, KRS





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

Data sheet www.trafag.com/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 Submersible Pressure Transmitter

Features

- Low pressure ranges (to 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	GL, KRS

Data sheet www.trafag.com/H72231

EXNT 8292

Ex Pressure Transmitter

Features

- II 1G Ex ia IIC T4/T6 Ga
  II 1 D 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
- High stability by DMS-technology
- ATEX and IECEX

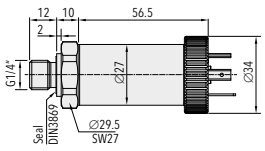
Technical Data

Measuring principle	Thin film on steel	Media temperature	–40°C ... +120°C
Measuring range	0 ... 0.4 to 0 ... 2000 bar	Ambient temperature	–40°C ... +120°C
Output signal	4 ... 20 mA	Approval	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.		

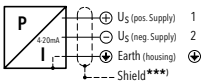
Standard products (extra short lead time)

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 www.trafag.com/H72329
Instructions www.trafag.com/H73329

Ordering information/type code

8292 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [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% (> 1 bar)	**25**
Relative pressure, accuracy: 0.5% (≤ 1 bar)	**26**

Pressure connection

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

Electrical connection

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

Output

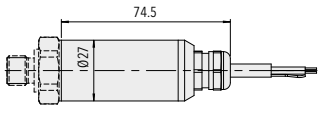
Output	Load resistance	I (supply)	U (supply)	
4 ... 20mA	(Usupply-10V) / 20mA		10 ... 30 VDC	**19**

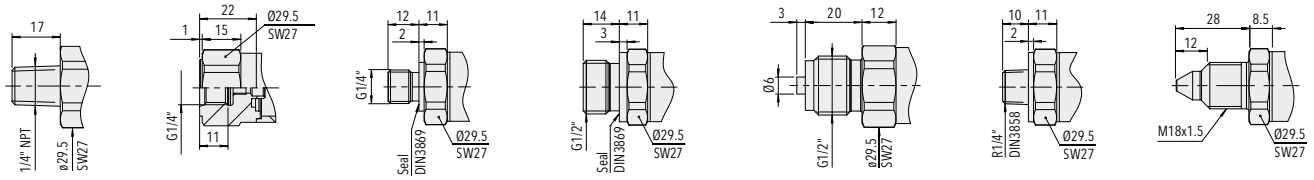
Accessories

Female electrical connector EN 175301-803-A (DIN43650-A), plastic (only zones 1, 2 (gas) and 20, 21 (dust))	**58**
Female electrical plug M12x1, 5-pole, plastic (only zones 1, 2 (gas) and 20, 21 (dust))	**33**
Female electrical plug M12x1, 5-pole, Metal	**35**
Female electrical connector MIL-C 26482, 6-pole, Metal	**32**
Female electrical connector Binder 723, 5-pole, Metal	**37**
Pressure peak damping element ø 0.4 mm	**44**
Pressure peak damping element ø 1.0 mm	**40**

Cable length 1.5 m [6]	**1M**
Cable length 3.0 m [6]	**3M**
Cable length 5.0 m [6]	**5M**
Special electrical connection: Pin 1 + , Pin 2 - (Only for output 4...20mA and male electrical plug EN175301-803-A / DIN43650-A)	**92**
Zener barrier 28V/93mA; R ≈300Ω: Ordering no F90138	
Damping elements and Snubber: See specification sheet H72258	

[1] Extended overpressure as well as customized pressure ranges upon request
[2] Only with sensor 26 (0.5%)
[3] For ranges ≤ 600 bar
[4] For ranges > 600 bar
[5] For pressure ranges < 40 bar upon request
[6] Other cable lengths upon request





Additional dimensions see data sheet

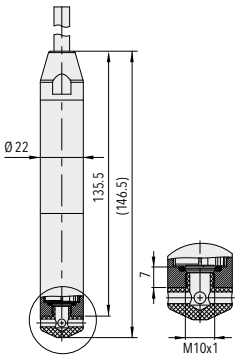
EXL 8432

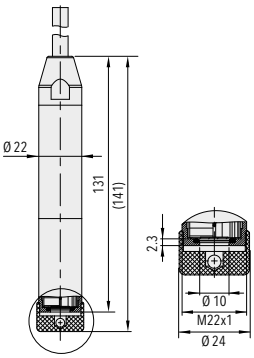
Ex Submersible Pressure Transmitter

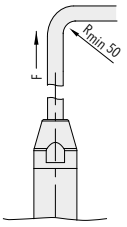
Features

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

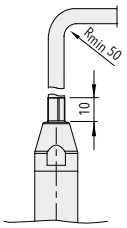
Technical Data			
Measuring principle	Thick film on ceramic	Media temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
Measuring range	0 ... 0.2 to 0 ... 25 bar	Ambient temperature	T4: -20°C ... +70°C T6: -20°C ... +65°C
Output signal	4 ... 20 mA	Approval	GL, KRS Ex ATEX/IECEx, EN 60079-0/ EN 60079-11/EN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







PUR



PE/FEP

Data sheet www.trafag.com/H72330
Instructions www.trafag.com/H73329

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	2	3		**68**					
	0 ... 0.4	2	3		**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**					
	0 ... 16	32	40		**79**					
	0 ... 25	50	75		**80**					
Sensor	Relative pressure					**23**				
	Relative pressure, accuracy: 0.5% (≤ 1 bar)					**26**				
Pressure connection	Type 1, female, M 10x1, 1.4404/1.4435						**46**			
	Type 2, male, M 22x1, 1.4404/1.4435						**48**			
Electrical connection	Cable with shield: PUR ø 6 mm, 5x0.22mm² [2] [3]							**22**		
	Cable with shield: FEP ø 6 mm, 5x0.22mm² [2] [3]							**32**		
	Cable with shield: PE ø 6 mm, 5x0.22mm² [2] [3]							**42**		
Output	**Output**	**Load resistance**	**I (supply)**	**U (supply)**						
	4 ... 20mA	(Usupply-10V) / 20mA		10 ... 30 VDC					**19**	
Accessories	O-Ring FKM									**61**
	O-Ring EPDM									**63**
	Zener barrier 28V/93mA; R ≈300Ω: Ordering no F90138									

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

Trafag pressure transmitters rely on the pressure sensors for their outstanding reliability and durability. 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 technology
- Excellent long-term stability
- Other versions available

Technical Data	
Sensor material	1.4542/630
Output (10 VDC supply)	1.4 ... 2.8 mV/V
Media temperature	-25°C ... +125°C
Operating temperature	-25°C ... +100°C

Product Description

Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % FS typ.]	Range [bar]	Max. working pressure [bar]	U-supply [VDC]	Accuracy NLH (BSL) [± % FS typ.]
0 ... 40	80	10 ... 15	0.7	0 ... 400	800	10 ... 15	0.7
0 ... 100	200	10 ... 15	0.7	0 ... 600	1000	10 ... 15	0.7
0 ... 250	500	10 ... 15	0.7				

Data sheet www.trafag.com/H72205

OEM pressure sensor 8421

Features

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

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

Product Description

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

Data sheet www.trafag.com/ H72233

Transducer 8822

Features

- Thin-film-on steel technology
- Excellent long-term stability
- Pressure measurement abs/rel

Technical Data	
Sensor material	1.4542/630
Output (ratiometric)	1.7 ... 2mV/V
Media temperature	-25°C ... +125°C
Operating 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 ... 1	2	10 ... 15	0.5	0 ... 40	80	10 ... 15	0.5
0 ... 2.5	5	10 ... 15	0.5	0 ... 60	120	10 ... 15	0.5
0 ... 4	8	10 ... 15	0.5	0 ... 100	200	10 ... 15	0.5
0 ... 6	12	10 ... 15	0.5	0 ... 160	320	10 ... 15	0.5
0 ... 10	20	10 ... 15	0.5	0 ... 250	500	10 ... 15	0.5
0 ... 16	32	10 ... 15	0.5	0 ... 400	800	10 ... 15	0.5
0 ... 25	50	10 ... 15	0.5	0 ... 600	1000	10 ... 15	0.5

Data sheet www.trafag.com/ H72315

Customer specific design for OEMs

If the requirements of an application cannot be met with an existing product, Trafag is able to efficiently adapt its standard products to the specific needs of customers and to develop special OEM solutions. Thanks to their modular design, Trafag products can be efficiently customized to fit seamless into the targeted environment, providing the high performance and reliability of all Trafag products which are based on the proprietary sensor technologies.

A team of experienced and highly skilled engineers in development and production guarantees excellent products. An efficient project management minimizes risks and ensures a short time to market.

Tank pressure transmitter with temperature sensor

Features

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

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

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

Crank case pressure transmitter

Features

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

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

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

Transmitter 8x overpressure safety, 0.3% accuracy

Features

- For low pressure measurement
- Overpressure max. 80 bar

Technical Data	
Temperature range	-40°C ... +125°C
Measuring range rel.	0 ... 10 bar
Burst pressure min.	300 bar
Accuracy @ +25°C	±0.3% FS typ.

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

On-board pressure transmitter OPT

Features

- Miniature pressure transmitter
- Completely welded
- Stainless steel

Technical Data	
Sensor material	1.4542/630
Ambient temperature	-25°C ... +100°C
Sensor temperature max.	-25°C ... +100°C
Output (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	NAE 8255	NSL 8257	EPN/EPNCR 8298	EPR 8293	
Main characteristics							
Measuring principle	Thin film on steel	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 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 600 bar	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	0 ... 2.5 to 0 ... 2500 bar	0 ... 2.5 to 0 ... 600 bar	
Accuracy							
TEB typ. @ -25 ... +85°C	± 1.75 % FS typ.	± 1.0 % FS typ. ± 0.5 % FS typ.	± 1.0 % FS typ. ± 0.5 % FS typ.	0.5 ... 2 % FS typ.	± 2.0 % FS typ. ± 0.5 % FS typ.	± 2.0 % FS typ. ± 0.5 % 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. ± 0.15 % FS typ.	0.15 ... 0.8 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	0.2 % FS typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	± 0.2 % FS typ. ± 0.1 % FS typ.	
TC zero point and span typ.	± 0.03 % .FS/K typ.	± 0.01 % FS/K typ. ± 0.002 % FS/K typ.	± 0.2 % FS typ. ± 0.002 % FS/K typ.	0.002 ... 0.02 % FS typ./K	± 0.03 % FS/K typ. ± 0.005 % FS/K typ.	± 0.03 % FS/K typ. ± 0.005 % FS/K typ.	
Electrical data							
Output signal	4 ... 20 mA 0 ... 5 VDC 1 ... 6 VDC 0 ... 10 VDC	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	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	Typ. 1 ms/10...90% nominal pressure	Typ. 1 ms/10...90% nominal pressure	
Switch-on-delay	100 ms	1 s	1 s	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	-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	-40°C ... +125°C	
Protection	Min. IP65	Min. IP65	Min. IP65	Min. IP65	IP65, IP69K	IP65	
Vibration	15 g RMS (20...2000 Hz) 25 g sin (80...2000 Hz), 1 Okt./min, (1x @ 25°C)	40g (20...2000 Hz)	40g (20...2000 Hz)	25g (20...2000 Hz)	Max. 15g (50...2000 Hz) Max. 20g rms	Max. 15g (20...2000 Hz)	
Shock	50g / 11 ms	100g/ 11 ms	100g/ 11ms	100g/ 11ms	50g/ 3 ms	50g/ 11 ms	
EMC Protection							
Emission	EN/IEC 61000-6-4	EN/IEC 61000-6-4	EN/IEC 61000-6-4	EN/IEC 61000-6-4	EN/IEC 61000-6-4	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	EN/IEC 61000-6-2	
Mechnical data							
Sensor	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	
Housing / Pressure connection	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4542 (AISI630), 1.4301 (AISI304)	1.4542 (AISI630), 1.4301 (AISI304)	
Sealing	FPM/NBR	FKM 70 Sh	FKM 70 Sh	FKM 70 Sh	FKM 70 Sh	FKM 70 Sh	
Weight	~ 50 g	~ 50 g	~ 50 g	~ 50 g	~ 80...110 g	~ 80...110 g	

	EPI 8297	NPN 8264	FPT 8235	ECTR 8471	ECT 8472	ECT 0.3% (0.5%, 1.0%) 8473	ECON 8498
	Thin film on steel	Thin film on steel	Thin film on steel	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic	Thick film on ceramic
	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	-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 ... 0.1 to 0 ... 40 bar 0 ... 1.5 to 0 ... 500 psi	0 ... 1 to 0 ... 250 bar
	± 2.0 % FS typ.	± 2.0 % FS typ. ± 0.5 % FS typ.	± 0.5 % FS typ.	± 3.0 % FS typ.	± 3.0 % FS typ.	± 1.0 % FS typ. Range 0 ... 0.2 and 0 ... 0.4 bar: ± 2.0 % FS typ.	± 3.0 % FS typ.
	± 0.5 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.4 % FS	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.5 % FS typ.
	± 0.2 % FS typ.	± 0.3 % FS typ. ± 0.1 % FS typ.	± 0.1 % FS typ.	± 0.2 % FS typ.	± 0.2 % FS typ.	± 0.2 FS typ. (± 0.3 FS typ.)	≤ 160 bar: ± 0.3 % FS typ. > 160 bar: ± 0.5 % FS typ.
	± 0.03 % FS/K typ.	± 0.03 % FS/K typ. ± 0.005 % FS/K typ.	± 0.005 % FS/K typ.	± 0.03 % FS/K typ.	± 0.03 % FS/K typ.	± 0.02 % FS/K typ.	± 0.03 % 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.	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
	Typ. 1 ms/10...90% nominal pressure	Typ. 1 ms/10...90% nominal pressure	Typ. 1 ms/ 10...90% pression nominale	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	Max. 1.5 s	
	-40°C ... +125°C	-40°C ... +100°C	-40°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C
	-40°C ... +125°C	-40°C ... +100°C	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +125°C 400 bar/5000 psi: -10°C ... +125°C	-25°C ... +125°C	<60 bar: -25°C...+85°C >60 bar: -10°C...+85°C
	IP65	IP65, IP69K	Min. IP65	Min. IP65	Min. IP65	Min. IP65	Min. IP65
	15g (20...2000 Hz)	Max. 15g (50...2000 Hz) Max. 15g rms	15g (50...2000 Hz)	4g (10...2000 Hz)	4g (10...2000 Hz)	4g (10...2000 Hz)	4g (10...2000 Hz)
	50g/ 11 ms	50g/ 3 ms	50g/ 3 ms	50g/ 8 ms	50g/ 8 ms	50g/ 8 ms	50g/ 11 ms
	EN/IEC 61000-6-4	EN/IEC 61000-6-4	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 61000-6-2	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	EN/IEC 61000-6-2
	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	Ceramic, Al_2O_3(96%)	Ceramic, Al_2O_3(96%)	Ceramic, Al_2O_3(96%)	Ceramic, Al_2O_3(96%)
	1.4542 (AISI630), 1.4301 (AISI304)	1.4542 (AISI630), 1.4301 (AISI304)	1.4301 (AISI304)	1.4305 (AISI303), 1.4462 (AISI318LN), Titanium Grade 5			1.4435 (AISI316L)
	FKM 70 Sh	NBR	FPM (FKM) NBR	FKM 70 Sh, CR, EPDM	FKM 70 Sh, CR, EPDM	FKM 70 Sh CR, EPDM	FKM 70 Sh, CR, EPDM
	~ 80...110 g	~ 190...220 g	~ 80...110 g (without cable)	~ 110 g	~ 110 g	~ 110 g	~ 110 g

Technical data pressure transmitters

	ECL 8438	NAL 8838	CMP 8270	EPN-S 8320	DCS 8864	N 8202	
Main characteristics							
Measuring principle	Thick film on ceramic	Piezoresistive	Thin film on steel	Thin film on steel	Thin film on steel	Thin film on steel	
Measuring range	0 ... 0.1 to 0 ... 25 bar	0 ... 0.1 to 0 ... 25 bar	0 ... 1 to 0 ... 600 bar	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0...2.5 to 0...600 bar	0 ... 1.0 to 0 ... 600 bar	
Accuracy							
TEB typ. @ -25 ... +85°C	± 1.0 % FS typ. Range 0...0.1 to 0...0.4 bar: ± 2.0 % FS typ.		± 2.0 % FS typ. ± 0.2 % FS typ. ± 0.1 % FS typ.		± 1.0 % FS typ.	± 2 % FS typ.	
Accuracy @ 25°C typ.	± 0.3 % FS typ. Range 0...0.1 to 0...0.4 bar: ± 0.5 % FS typ.		± 0.5 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	±0.5% FS typ. (Switchpoint)	± 0.5 % FS typ.	± 0.5 % FS typ.	
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ. Range 0...0.1 to 0...0.4 bar: ± 0.3 % FS typ.		± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.		±0.25% FS typ.	± 0.3 % FS typ.	
TC zero point and span typ.	± 0.02 % FS/K typ.		±0.03 % FS/K typ. ±0.002 % FS/K typ.		±0.01% FS/K typ.	± 0.02 % FS/K typ.	
Electrical data							
Output signal	4 ... 20 mA	4 ... 20 mA 0 ... 10 VDC	Bus protocol CANopen DS404	Transistor (open source)	4 ... 20 mA, 0 ... 10 VDC 2 Relays (electrically isolated, 30W (max.1A), 36 VAC/ DC)	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	Typ. 1 ms/10...90% nominal pressure	
Switch-on-delay	Max. 1.5 s						
Environmental conditions							
Ambient temperature	-25°C ... +80°C (+70°C)	-5°C ... +50°C	-40°C ... +125°C	-25°C ... +85°C Option -40°C ... +125°C	-25°C ... +80°C	-25°C ... +85°C	
Media temperature	-25°C ... +80°C (+70°C)	-5°C ... +50°C	-50°C ... +135°C	-40°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	
Protection	IP68 (25 bar; 250m)	Min. IP68	Min. IP67	IP65, IP69K	IP65	Min. IP65	
Vibration	6g (25...2000 Hz)	6g (25...2000 Hz)	40g (20...2000 Hz)	15g (50...2000 Hz)	10g (25...2000 Hz)	6g (25...2000 Hz)	
Shock	50g/ 8 ms	50g/ 11 ms	100g/ 11 ms	50g/ 11 ms	50g/ 1 ms	50g/ 11 ms	
EMC Protection							
Emission	EN/IEC 61000-6-3	EN/IEC 61000-6-3	EN/IEC 61000-6-4	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	EN/IEC 61000-6-2	EN/IEC 61000-6-2	
Mechnical data							
Sensor	Ceramic, Al_2O_3 (96%)	1.4435 (AISI316L)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4435/1.4542 (AISI316L/630)	
Housing / Pressure connection	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium	1.4301 (AISI304)	1.4542 (AISI630), 1.4301 (AISI304)	1.4301/1.4306 (AISI304/304L)	AlSi10Mg/ Epoxy coated	
Sealing	FKM 70 Sh CR, EPDM	FKM	FKM 70 Sh	FKM 70 Sh	NBR 70 Sh	NBR 70 Sh	
Weight	~ 200 g	~ 220 g	~ 60 g	~ 85...110 g	~ 200 g	~ 520 g	

	ND 8204	EXNT 8292	EXNA 8854	EXL 8432	EXNAL 8858
	Thin film on steel	Thin film on steel	Piezoresistive	Thick film on ceramic	Piezoresistive
	0 ... 1 to 0 ... 16 bar	0 ... 0.4 to 0 ... 2000 bar	0 ... 0.1 to 0 ... 1000 bar	0 ... 0.2 to 0 ... 25 bar	0 ... 0.1 to 0 ... 25 bar
	± 3.5 % FS typ.	± 2.0 % FS typ. ± 0.5 % FS typ.		± 0.75 % FS typ. ± 1.5 % FS typ.	
	± 0.8 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		± 0.3 % FS typ. ± 0.5 % FS typ.	
	± 0.5 % FS typ.	± 0.3 % FS typ. ±0.1 % FS typ.		± 0.2 % FS typ. ± 0.3 % FS typ.	
	± 0.04 % FS/K typ.	± 0.03 % FS/K typ. ± 0.005 % FS/K typ.		± 0.02 % FS /K typ. ± 0.02 % FS /K typ.	
	4 ... 20 mA (P1–P2)	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA
	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	
	-25°C ... +85°C	–40°C ... +120°C	-40°C ... +125°C	-20°C ... +70°C	-5°C ... +50°C
	-25°C ... +125°C	–40°C ... +120°C	-40°C ... +150°C	-20°C ... +70°C	-5°C ... +50°C
	Min. IP65	Min. IP65	Min. IP65	IP68 (25 bar; 250m)	Min. IP68
	6g (25...2000 Hz)	10g (50...2000 Hz)	EN 60068-2-6: 10g (4...2000 Hz)	10g (50...2000 Hz)	6g (25...2000 Hz)
	50g/ 1 ms	50g/ 3 ms	EN 60068-2-27: 100g/ 6 ms	50g / 3 ms	50g/ 1 ms
	EN/IEC 61000-6-3	IEC 61000–6–4	EN 61000-4-3: 10V/m	IEC 61000–6–4	EN/IEC 61000-6-3
	EN/IEC 61000-6-2	IEC 61000–6–2	IEC 61000-4-2: 8 kV K./15kV A.	IEC 61000–6–2	EN/IEC 61000-6-2
	1.4542 (AISI630)	1.4542 (AISI630)	1.4435 (AISI316L) opt. titanium	Ceramic, Al_2O_3(96%)	1.4435 (AISI316L)
	AlSi10Mg/ Epoxy coated	1.4542 (AISI630), 1.4301 (AISI304)	1.4435 (AISI316L) opt. titanium	1.4404/1.4435 (AISI316L)	1.4435 (AISI316L) or titanium
	NBR 70 Sh	FKM 70 Sh	FKM 70 Sh; EPDM/ Kalrez	FKM 70 Sh	FKM
	~ 720 g	~ 165 g	~ 220 g	~ 200 g	~ 200 g


trafag
S/N : 999999-001
Type : 9M4.4279
Range : 1...16 bar (wka/cm2)
0.1...1.6 MPa
p-max : 200 bar/20 MPa
250V AC 6(1)A 24V DC 3(2)A
04/13
IP65
-25T85

Pressure switches

The electromechanical pressure switches from Trafag 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 60	page 62	page 64	page 66	page 67	page 68
						
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	-0.9 ... 1.5 to 4 ... 40 bar 5 ... 50 to 50 ... 500 psi
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
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	G1/4" f, G1/2" m, 1/4" NPT
Electrical connection	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	Terminal screw	Terminal screw
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	EN AC-AlSi10Mg (A360) chemically nickel plated	EN AC-AlSi10Mg (A360) chemically nickel plated	EN AC-AlSi10Mg (A360) chemically nickel plated	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
Data sheet	H72367	H72369	H72368	H72273	H72252	H72257
Instructions	H73367	H73367	H73367	H73273	H71261	H71261
Approval	ABS, BV, CCS, DNV, GL, KRS, LRS,NKK, RINA, RMRS, 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	ABS, BV, 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						

	PK 944/947	PD 920/924/932	901/902/905/906	901/902/905/906	987/988	EXPK 944/947/953	EXPD 920/924/932
	page 69	page 70	page 71	page 71	page 72	page 76	page 77
							
	Piston	Bellow	Bellow	Membrane	Bellow	Piston	Bellow
	1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar	-0.9...1.5 to 4...40 bar	30 ... 600 and 50 ... 1000 mbar	-0.3 ... 1.3 to 1 ... 10 bar	1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar
	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
	G1/4" f, G1/2" m	G1/4" f, G1/8" f, G1/2" m	G1/4" f, G1/2" m	G1/4" f, G1/2" m	G1/4" m	G1/4" f, G1/2" m	G1/4" f, G1/8" f, G1/2" m
	Terminal screw	Terminal screw	Terminal screw	Terminal screw	Receptacle for tabs (IEC) 2.8 x 0.5 mm	Terminal screw	Terminal screw
	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	-40°C ... +150°C	-25°C ... +80°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	-25°C ... +70°C	-50°C ... +65°C	-50°C ... +65°C
	IP65	IP65	IP65	IP65	IP40 (Micro switch IP67)	IP66 Accessory 06: IP66	IP66
	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	PBTP, Crastin	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	Engine manufacturing Railways Machine tools Hydraulics	Machine tools HVAC	Machine tools Medium voltage switchgear	Ex PTB 10 ATEX 1026	Ex PTB 10 ATEX 1026
	H72259	H72253	H72254	H72269	H72272	H72270	H72256
	H71261	H73256			H73272	H73171	H73171
	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	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
						Areas with gaz explosion hazards: II 2 G Ex de IIC T6 Areas with dust explosion hazards: II 2 D Ex tD A21 IP66 T80°C	Areas with gaz explosion hazards: II 2 G Ex de IIC T6 Areas with dust explosion hazards: II 2 D Ex tD A21 IP66 T80°C

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...+125°C
Output signal	Floating change-over contact	Ambient temperature	Standard: –25°C ... +125°C with sensor 789/790/791: –40...+125°C
Switching differential	Not adjustable	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS,NKK, RINA, RMRS, EN60730-1/ EN60730-2-6: Typ 2.B.H

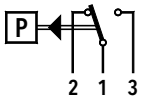
Standard products (extra short lead time)

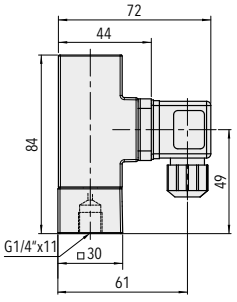
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]
PST4B3.44	9B4 4274 769 04 0000 0000 15 46 V3	0.6 ... 3.4	12	0.3 (fixed)
PST4B64	9B4 4277 770 04 0000 0000 15 46 V3	0 ... 6	12	0.3 (fixed)
PST4B164	9B4 4279 771 04 0000 0000 15 46 V3	1 ... 16	24	0.6 (fixed)
PST4B254	9B4 4280 772 04 0000 0000 15 46 V3	2 ... 25	40	1.5 (fixed)
PST4B404	9B4 4281 772 04 0000 0000 15 46 V3	4 ... 40	50	1.8 (fixed)
PST4B3.4F4	9B4 4274 769 04 0000 0000 11 15 46 74 V3	0.6 ... 3.4	12	0.3 (fixed)
PST4B6F4	9B4 4277 770 04 0000 0000 11 15 46 74 V3	0 ... 6	12	0.3 (fixed)
PST4B16F4	9B4 4279 771 04 0000 0000 11 15 46 74 V3	1 ... 16	24	0.6 (fixed)
PST4B25F4	9B4 4280 772 04 0000 0000 11 15 46 74 V3	2 ... 25	40	1.5 (fixed)
PST4B40F4	9B4 4281 772 04 0000 0000 11 15 46 74 V3	4 ... 40	50	1.8 (fixed)
PST4B6S4	9B4 4277 753 04 0000 0000 15 46 V3	0 ... 6	12	0.3 (fixed)
PST4B16S4	9B4 4279 754 04 0000 0000 15 46 V3	1 ... 16	24	0.6 (fixed)

PST4B...4 / PST4B...F4:
Sensor: Bronze bellow CuSn6)
Housing / Pressure connection:
EN AC-AlSi10Mg (A360) chemically nickel plated

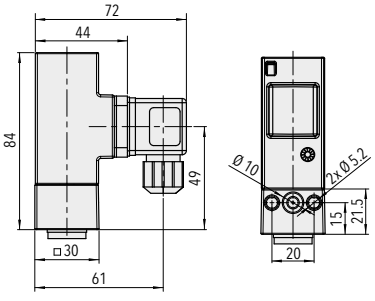
PST4B...S4:
Sensor: Bellows stainless steel (1.4404/AISI316L)
Housing / Pressure connection: Stainless steel

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
Micro switch	Standard [1]	**42**				
	Gold plated contacts [1]	**84**				

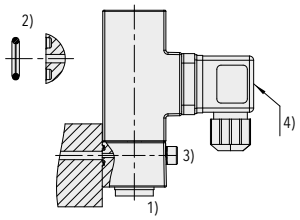
Range	Range [bar]	Over pressure [bar]		Range [psi]	Over pressure [psi]	
	-0.6 ... 3.4	12	**74**	-8 ... 45	174	**G4**
	0 ... 4	12	**76**	0 ... 50	174	**G6**
	0 ... 6	12	**77**	0 ... 100	174	**G7**
	1 ... 10	24	**78**	14 ... 150	348	**G8**
	1 ... 16	24	**79**	14 ... 250	348	**G9**
	2 ... 25	40	**80**	30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

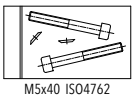
Sensor	Sensor material	Sensor housing material	Range	
	Bronze bellow CuSn6) [2]	EN AC-AlSi10Mg (A360) chemically nickel plated	74	**769**
	Bronze bellow CuSn6) [2]	EN AC-AlSi10Mg (A360) chemically nickel plated	76, 77	**770**
	Bronze bellow CuSn6) [2]	EN AC-AlSi10Mg (A360) chemically nickel plated	78, 79	**771**
	Bronze bellow CuSn6) [2]	EN AC-AlSi10Mg (A360) chemically nickel plated	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**

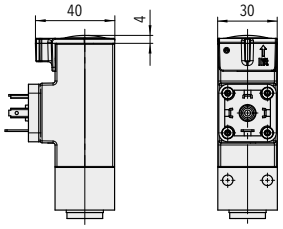
Pressure connection		
	G1/8" female	**02**
	G1/4" female	**04**
	M10x1.0" female [5]	**03**

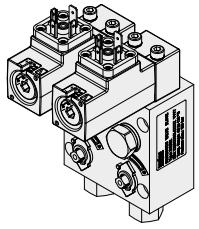
Accessory				
	Flange with O-Ring [4]	**11**	Lead seal (manipulation protection)	**16**
	Female electrical connector EN175301-803-A (DIN43650-A)	**46**	Switch point adjustment on customers request Please indicate when ordering: - Switchpoint including measurement unit (kPa, bar, MPa, psi, abs. or rel.) - Increasing or decreasing	**88**
	Welsh plug G1/4"	**74**		
	Fixing set	**V3**		
	Covering cap	**15**	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









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

Diagnostic Valve Bloc (DVB)
see specification sheet H72361

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

PST4K 9K4

Picostat Pressure Switch

Features

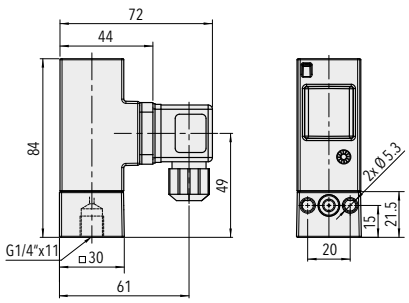
- Compact design
- Rugged housing
- Protection IP65 (with plug connector)
- Any mounting position possible

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	Floating change-over contact	Ambient temperature	-25°C ... +85°C
Switching differential	Not adjustable	Approval	ABS, BV, DNV, GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Typ 2.B.H

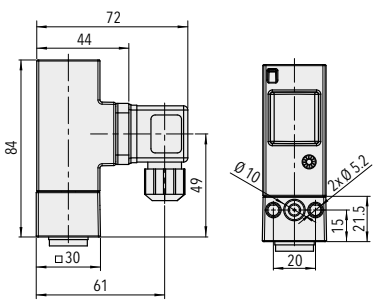
Standard products (extra short lead time)

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	0.8 ... 2.4 (fixed)
PST4K404	9K4 4281 757 04 0000 0000 15 46 V3	4 ... 40	100	2 ... 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	0.8 ... 2.4 (fixed)
PST4K40F4	9K4 4281 757 04 0000 0000 11 15 46 74 V3	4 ... 40	100	2 ... 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 EM AW-6026, hard anodized/ematal anodized

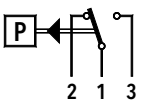


PST4K ... 4



PST4K ... F4

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



Data sheet www.trafag.com/H72369
Instructions www.trafag.com/H73367

Ordering information/type code

		9K4 . XX	XX	XXX	XX	XX
Micro switch	Standard [1]	**42**				
	Gold plated contacts [1]	**84**				

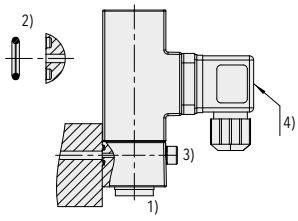
Range	Range [bar]	Over pressure [bar]		Range [psi]	Over pressure [psi]	
	1 ... 10	100	**78**	14 ... 150	1450	**G8**
	1 ... 16	100	**79**	14 ... 250	1450	**G9**
	2 ... 25	100	**80**	30 ... 400	1450	**H0**
	4 ... 40	100	**81**	60 ... 500	1450	**H1**
	6 ... 60	200	**82**	85 ... 850	2900	**H2**
	10 ... 100	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**

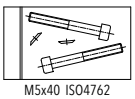
Sensor	Sensor material	Sensor housing material	Range	
	Piston 1.4035, sealing PTFE [2]	Aluminium EM AW-6026, hard anodized/ematal anodized	78, 79	**756**
	Piston 1.4035, sealing PTFE [2]	Aluminium EM AW-6026, hard anodized/ematal anodized	80, 81	**757**
	Piston 1.4035, sealing PTFE	Aluminium EM AW-6026, hard anodized/ematal anodized	82, 83	**758**
	Piston 1.4035, sealing PTFE	Aluminium EM AW-6026, hard anodized/ematal anodized	84, 85, 86	**759**

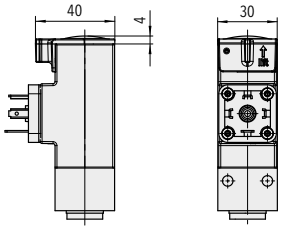
Pressure connection		
	G1/8" female	**02**
	G1/4" female	**04**
	M10x1.0" female [2]	**03**

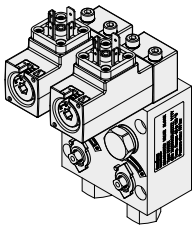
Accessory		
	Flange with O-Ring [3]	**11**
	Female electrical connector EN175301-803-A (DIN43650-A)	**46**
	Welsh plug G1/4"	**74**
	Fixing set	**V3**
	Covering cap	**15**
	Sealing switchpoint (manipulation protection)	**16**
	Switch point adjustment on customers request Please indicate when ordering: - 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 ... 40 Nm
2) O–Ring: ø 6.75x1.78 NBR 90 Sh
3) Fixing screw: M5;
property class: 8.8;
torque: 4.5...6 Nm
4) Torque connector center screw: max. 0.4 Nm

Diagnostic Valve Bloc (DVB)
see specification sheet H72361

PST4M 9M4

Picostat Pressure Switch

Features

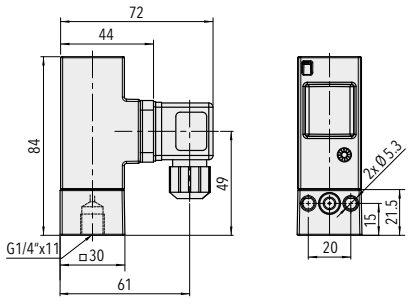
- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

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	Floating change-over contact	Ambient temperature	0°C ... +80°C
Switching differential	Not adjustable	Approval	ABS, BV, DNV, GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Typ 2.B.H

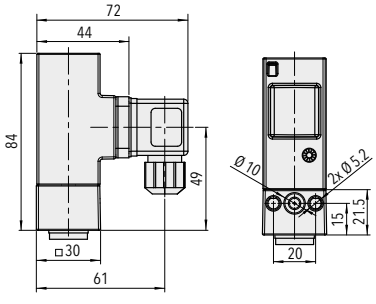
Standard products (extra short lead time)

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	0.4 ... 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	0.4 ... 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 EM AW-602 anodized

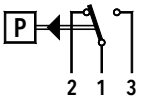


PST4M ... 4



PST4M ... F4

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



Data sheet www.trafag.com/H72368
Instructions www.trafag.com/H73367

Ordering information/type code

		9M4 . XX	XX	XXX	XX	XX
Micro switch	Standard [1]	**42**				
	Gold plated contacts [1]	**84**				

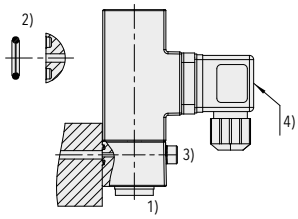
Range	Range [bar]	Over pressure [bar]		Range [psi]	Over pressure [psi]	
	1 ... 10	200	**78**	14 ... 150	2900	**G8**
	1 ... 16	200	**79**	14 ... 250	2900	**G9**
	2 ... 25	200	**80**	30 ... 400	2900	**H0**
	4 ... 40	200	**81**	60 ... 500	2900	**H1**
	6 ... 60	200	**82**	85 ... 850	2900	**H2**
	10 ... 100	200	**83**	150 ... 1500	2900	**H3**

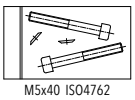
Sensor	Sensor material	Sensor housing material	Range	
	FKM Membrane	Aluminium EM AW-602 anodized	78, 79	**761**
	FKM Membrane	Aluminium EM AW-602 anodized	80, 81	**762**
	FKM Membrane	Aluminium EM AW-602 anodized	82, 83	**763**

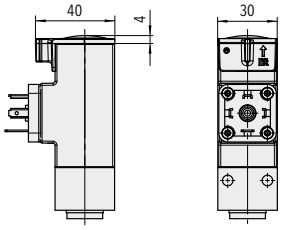
Pressure connection		
	G1/8" female	**02**
	G1/4" female	**04**
	M10x1.0" female [2]	**03**

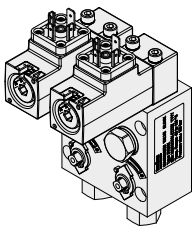
Accessory		
	Flange with O-Ring [3]	**11**
	Female electrical connector EN175301-803-A (DIN43650-A)	**46**
	Welsh plug G1/4"	**74**
	Fixing set	**V3**
	Covering cap	**15**
	Sealing switchpoint (manipulation protection)	**16**
	Switch point adjustment on customers request Please indicate when ordering: - 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 ... 40 Nm
2) O–Ring: ø 6.75x1.78 NBR 90 Sh
3) Fixing screw: M5;
property class: 8.8;
torque: 4.5...6 Nm
4) Torque connector center screw: max. 0.4 Nm

Diagnostic Valve Bloc (DVB)
see specification sheet H72361

PSTD 9D0

Differential Pressure Picostat

Features

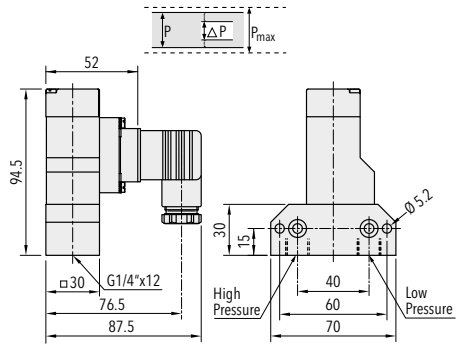
- Compact design
- Rugged housing
- High repeatability
- Protection IP65 (with plug connector)
- Any mounting position possible

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	Floating change-over contact	Approval	GL EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching differential	Not adjustable		

Data sheet www.trafag.com/H72273
Instructions www.trafag.com/H73273

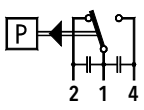
Standard products (extra short lead time)					
Product No.	**Type Code**	**Pressure range [bar]**	**Differential pressure [bar]**	**Over pressure max. [bar]**	**Switching differential [bar]**
PSTD4	9D0 2076 770 04 0000 0000 15 58 V3	-1 ... 6	0 ... 4	8	0.2 (fixed)
PSTD6	9D0 2077 771 04 0000 0000 15 58 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	Media temperature	-40°C ... +150°C
Output signal	Floating change-over contact	Ambient temperature	-25°C ... +70°C
Switching differential	Not adjustable	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H

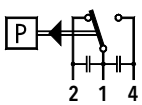
Data sheet www.trafag.com/H72252
Instructions www.trafag.com/H71261

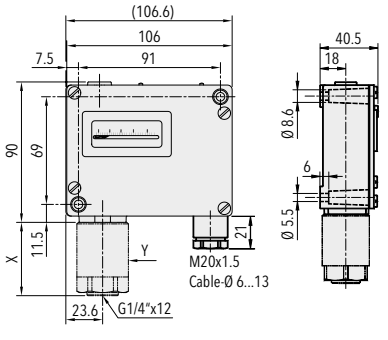
Standard products (extra short lead time)

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

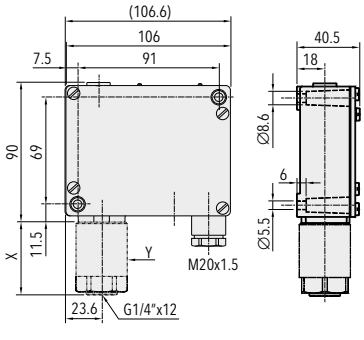
Sensor: Bronze (CuSn8)
Housing / Pressure connection: Brass (CuZn39Pb3)

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





P ...



PS ...

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

Vari Pressostat

Features

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

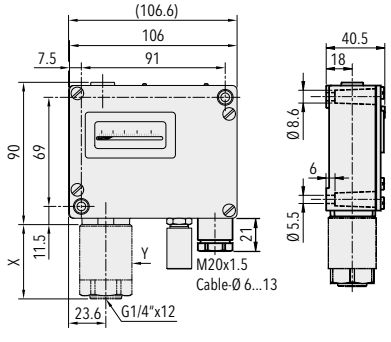
Technical Data			
Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-0.9 ... 1.5 to 4 ... 40 bar 5 ... 50 to 50 ... 500 psi	Media temperature	-40°C ... +150°C
Output signal	Floating change-over contact	Ambient temperature	-25°C ... +70°C
Switching differential	adjustable	Approval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

Data sheet www.trafag.com/H72257
Instructions www.trafag.com/H71261

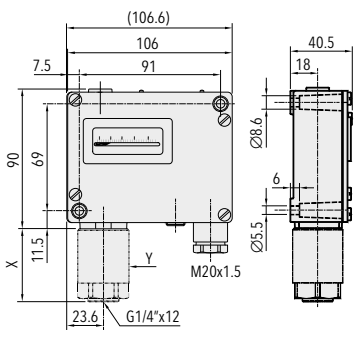
Standard products (extra short lead time)

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)

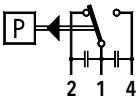


PV ...



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

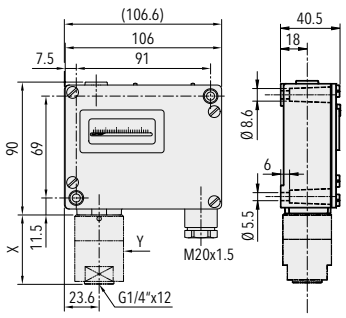
- Rugged aluminium housing
- Protection IP65
- Any mounting position possible

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	Floating change-over contact	Ambient temperature	-20°C ... +70°C
Switching differential	Not adjustable	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet www.trafag.com/H72259
Instructions www.trafag.com/H71261

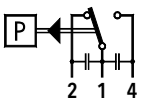
Standard products (extra short lead time)						
Product No.	**Type Code**	**Pressure range [bar]**	**Over pressure max. [bar]**	**Switching differential [bar]**	**Diameter Y [mm]**	**Length X [mm]**
PK10	944 2378 700	1 ... 10	100	0.45 ... 0.9 (fixed)	33	47
PK40	944 2381 704	4 ... 40	200	1.8 ... 3.4 (fixed)	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

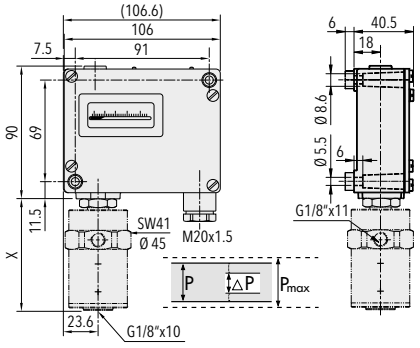
Technical Data			
Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-1 ... 6 to -1 ... 18 bar	Media temperature	-40°C ... +150°C
Differential pressure	-0.6 ... 3.4 to1 ... 16 bar	Ambient temperature	-25°C ... +70°C
Output signal	Floating change-over contact	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching differential	Not adjustable		

Data sheet www.trafag.com/H72253
Instructions www.trafag.com/H73256

Standard products (extra short lead time)

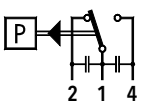
Product No.	Type Code	Pressure range [bar]	Differential pressure [bar]	Over pressure max. [bar]	Switching differential [bar]	Length X [mm]
PD3.4	920 2374 931	-1 ... +6	-0.6 ... +3.4	12	0.16 (fixed)	77
PD6	920 2377 933	-1 ... +8	0 ... 6	12	0.16 (fixed)	77
PD16	920 2379 935	-1 ... 18	1 ... 16	24	0.4 (fixed)	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	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Ambient temperature	-25°C ... +70°C
Approval	EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet www.trafag.com/H72254

901/902/905/906

Membrane Limi-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	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Ambient temperature	-25°C ... +70°C
Approval	EN60730-1/ EN60730-2-6: Typ 2.B.H

Data sheet www.trafag.com/H72269

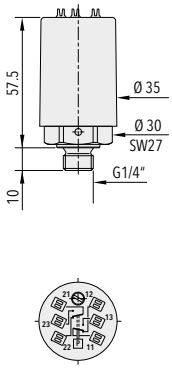
987/988

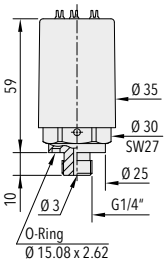
Pressostat

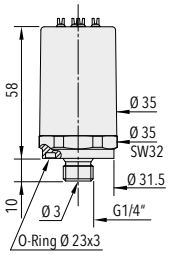
Features

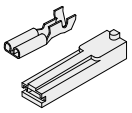
- Compact design
- Receptacle for tabs (IEC) 2.8 x 0.5 mm
- Any mounting position possible
- Adjustment in factory
- Leakage < 10^{-7} mbar·l/s

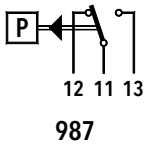
Technical Data			
Measuring principle	Bellow	Repeatability	± 1.0 % FS typ.
Measuring range	-0.3 ... 1.3 to 1 ... 10 bar	Media temperature	-25°C ... +80°C
Output signal	Floating change-over contact	Ambient temperature	-25°C ... +70°C
Switching differential	Not adjustable	Approval	EN60730-1/ EN60730-2-6: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



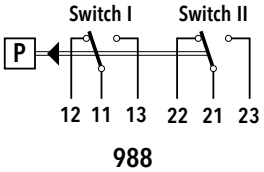








987



988

Data sheet www.trafag.com/H72272
Instructions www.trafag.com/H73272

Ordering information/type code

		XXX	XX	XX	XXX	XX	XX	XX
Custom build code	1-stage pressure switch	**987**						
	2-stage pressure switch	**988**						
Micro switch	Standard contacts, switching differential not adjustable		**42**					
	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**
Accessory	Receptacles for flat plugs (2.8 x 0.5 mm) and insulator for flat plugs (2 x 6 pcs.)							**09**
	Switch point adjustment switch I (lower switching point) and switch II (upper switching point) Please indicate for each switch when ordering: - Switching point including measurement unit (kPa, bar, MPa, psi, abs. or rel.) - Increasing or decreasing							
	Damping elements and snubber see data sheet H72258							

Switching differential typ.

Range of bellows sensor	**[bar]**	**-0.3 ... 1.3**	**0 ... 1.6**	**0 ... 2.5**	**0 ... 4**	**1 ... 10**
P max.	**[bar]**	-1 ... 4	-1 ... 4	-1 ... 4	-1 ... 6	-1 ... 15
Microswitch 33/35 Switching differential (fixed value, not adjustable)	**[bar]**	0.1	0.1	0.2	0.3	0.6
Tolerance of setting	**[bar]**	±0.08	±0.08	±0.12	±0.16	±0.2
Range of adjustable switch points increasing	**[bar]**	-0.3 ... 1.4	0.2 ... 1.7	0.3 ... 3.2	0.4 ... 4.8	0.5 ... 11*
Range of adjustable 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

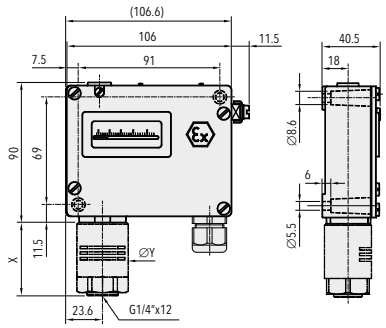
- Rugged aluminium housing Option: Housing stainless steel
- Protection IP66
- Any mounting position possible
- II 2 G Ex de IIC T6
- II 2 D Ex tD A21 IP66 T80°C

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	Floating change-over contact	Approval	EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching differential	Not adjustable	Type of protection	Areas with gaz explosion hazards: II 2 G Ex de IIC T6 Areas with dust explosion hazards: II 2 D Ex tD A21 IP66 T80°C
Repeatability	± 1.0 % FS typ.		

Standard products (extra short lead time)

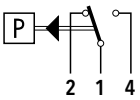
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]	Diameter Y [mm]	Length X [mm]
EXP1.5	900 9172 850 00 0000 0000 02	-0.9 ... 1.5	10	0.2 (fixed)	45	56.5
EXP2.5	900 9175 851 00 0000 0000 02	0.2 ... 2.5	10	0.2 (fixed)	45	56.5
EXP6	900 9177 853 00 0000 0000 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 www.trafag.com/H72263
Instructions www.trafag.com/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**					
Micro switch	Standard, not adjustable		**91**				

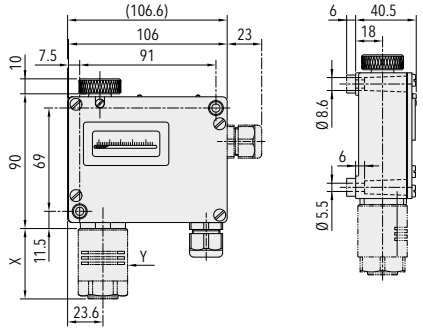
Range

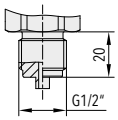
Range [bar]	Over pressure [bar]	Burst pressure [bar]		Range [bar]	Over pressure [bar]	Burst pressure [bar]	
-0.9 ... 1.5	10	13	**72**	1 ... 10	24	36	**78**
0.2 ... 1.6	10	13	**73**	1 ... 16	24	36	**79**
0.2 ... 2.5	10	13	**75**	2 ... 25	40	75	**80**
0 ... 4	12	26	**76**	4 ... 40	40	75	**81**
0 ... 6	12	26	**77**				

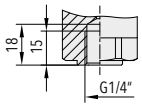
Sensor

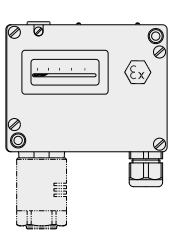
Sensor material	Sensor housing mat.	Thread	Range		Sensor material	Sensor housing mat.	Thread	Range	
1.4435	Brass nickel plated	G1/4" female	72	**850**	1.4435	Brass nickel plated	G1/2" male	76, 77	**854**
1.4435	Brass nickel plated	G1/2" male	72	**859**	1.4435	Brass nickel plated	G1/4" female	78, 79	**855**
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**	
Accessory	Housing stainless steel								**06**
	Damping elements and snubber see data sheet H72258								

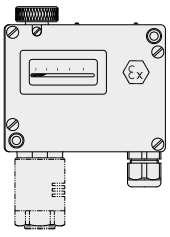




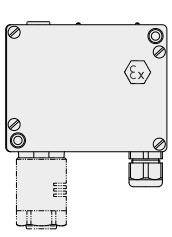




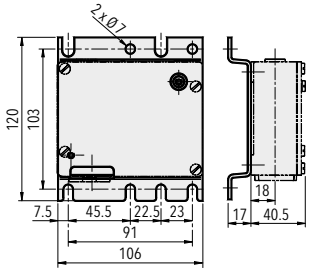
912



900



904



Mounting plate MB31 see chapter 'Accessories'

EXPK 944/947/953

Ex Pressostat

Features

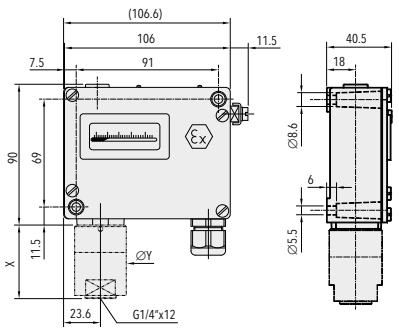
- Rugged aluminium housing Option: Housing stainless steel
- Protection IP66
- Any mounting position possible
- II 2 G Ex de IIC T6
- II 2 D Ex tD A21 IP66 T80°C

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	Floating change-over contact	Approval	EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching differential	Not adjustable	Type of protection	Areas with gaz explosion hazards: II 2 G Ex de IIC T6 Areas with dust explosion hazards: II 2 D Ex tD A21 IP66 T80°C
Repeatability	± 1.0 % FS typ.		

Standard products (extra short lead time)

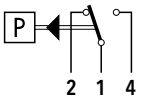
Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Switching differential [bar]	Diameter Y [mm]	Length X [mm]
EXPK10	944 9178 700 00 0000 0000 02	1 ... 10	100	0.4 ... 0.8 (fixed)	33	47
EXPK40	944 9181 704 00 0000 0000 02	4 ... 40	200	2 ... 5 (fixed)	27	42.5
EXPK100	944 9183 708 00 0000 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 www.trafag.com/H72270
Instructions www.trafag.com/H73171

EXPD 920/924/932

Ex Differential Pressostat

Features

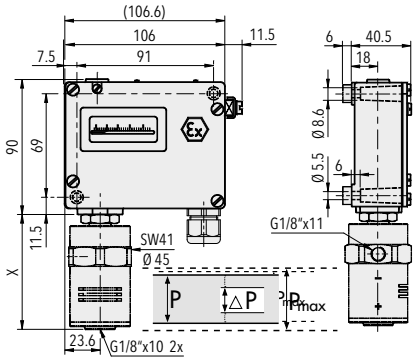
- Rugged aluminium housing
- Protection IP66
- II 2 G Ex de IIC T6
- II 2 D Ex tD A21 IP66 T80°C
- Any mounting position possible

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 to1 ... 16 bar	Ambient temperature	-50°C ... +65°C
Output signal	Floating change-over contact	Approval	EN60730-1/ EN60730-2-6: Typ 2.B.H
Switching differential	Not adjustable	Type of protection	Areas with gaz explosion hazards: II 2 G Ex de IIC T6 Areas with dust explosion hazards: II 2 D Ex tD A21 IP66 T80°C

Standard products (extra short lead time)

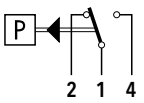
Product No.	Type Code	Pressure range [bar]	Differential pressure [bar]	Over pressure max. [bar]	Switching differential [bar]	Length X [mm]
EXPD3.4	920 9174 992 00 0000 0000 02	-1 ... +6	-0.6 ... +3.4	12	0.4 (fixed)	77
EXPD6	920 9177 993 00 0000 0000 02	-1 ... +8	0 ... 6	12	0.4 (fixed)	77
EXPD16	920 9179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

Sensor: Bronze
Housing / Pressure connection: Brass nickel plated



EXPD ...

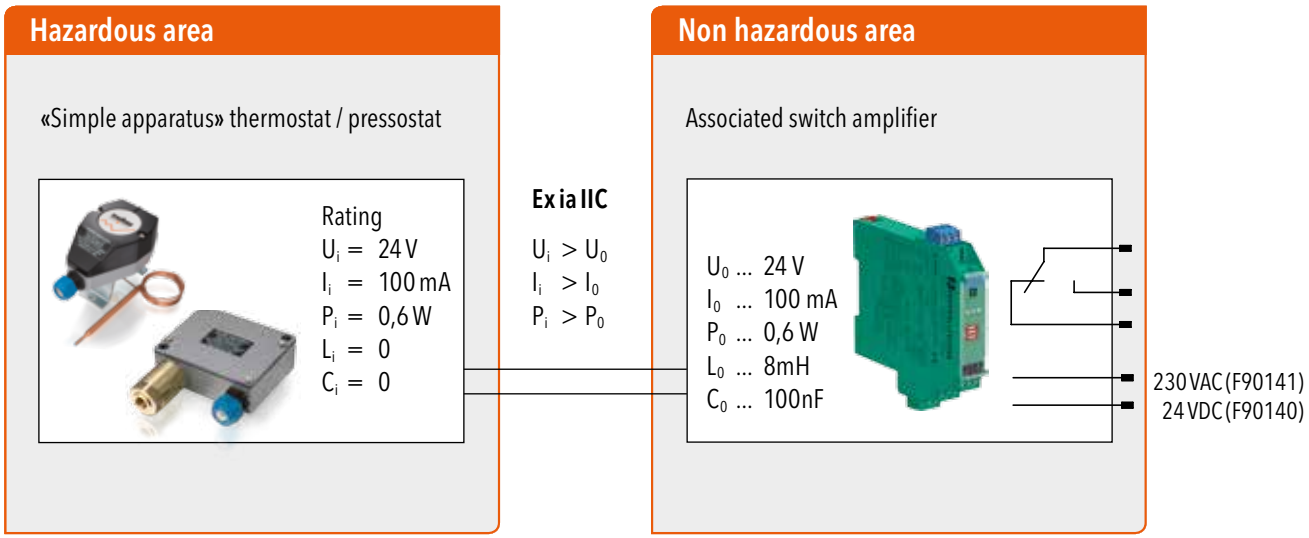
AC 250 V, 5 (5) A
DC 30 V, 5 (3) A
DC 250 V, 0.25 (0.03) A



Data sheet www.trafag.com/H72256
Instructions www.trafag.com/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:
Trafag part 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	Floating change-over contact
Switching differential	Not adjustable
Repeatability	± 1.0 % FS typ.
Media temperature	-40°C ... +150°C
Ambient temperature	-25°C ... +70°C
Approval	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 www.trafag.com/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 to1 ... 16 bar
Output signal	Floating change-over contact
Switching differential	Not adjustable
Media temperature	-40°C ... +150°C
Ambient temperature	-25°C ... +70°C
Approval	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 www.trafag.com/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	-0.9 ... 1.5 to 4 ... 40 bar 5 ... 50 to 50 ... 500 psi
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	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 V AC/60 s via open contacts	(IEC/EN 60730-1) >1.5 kV AC/60 s terminal ground >500 V AC/60 s via open contacts	(IEC/EN 60730-1) >1.5 kV AC/60 s terminal ground >500 V AC/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 mm²	3 x 1.5...4 mm²
Electrical connection	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	Terminal screw	Terminal screw
Environmental conditions						
Media temperature	–25°C ... +125°C –40°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	–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: ±0.75mm Ampl. 59...500 Hz: 5g	Switch IEC/EN 60068-2-6: 10...59 Hz: ±0.75mm Ampl. 59...500 Hz: 5g	Switch IEC/EN 60068-2-6: 10...59 Hz: ±0.75mm Ampl. 59...500 Hz: 5g	5...25 Hz: ±1.6 mm 25...100 Hz: 4g	Switch 23/26, 5...25 Hz: ±1.6 mm 25...100 Hz: 4g Ranges 72, 73, 75, 5...50 Hz: 20 mm/sec.	5...25 Hz: ±1.6 mm 25...100 Hz: 4g Ranges 72, 73, 75 5...50 Hz: 20 mm/sec.
Shock	50g/ 3 ms	50g/ 3 ms	50g/ 3 ms	50g/ 11ms	50g/ 11ms	50g/ 11ms
Mechnical data						
Housing	EN AC-AlSi10Mg (A360) chemically nickel plated	EN AC-AlSi10Mg (A360) chemically nickel plated	EN AC-AlSi10Mg (A360) chemically nickel plated	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	901/902/905/906	987/988	EXPK 944/947/953	EXPD 920/924/932
	Piston	Bellow	Bellow	Membrane	Bellow	Piston	Bellow
	1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar	-0.9 ... 1.5 to 4 ... 40 bar	30 ... 600 and 50 ... 1000 mbar	-0.3 ... 1.3 to 1 ... 10 bar	1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar
	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
	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	> 2 MΩ, 500 VDC	> 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	2 kV terminal ground	1.45 kV terminal ground	1.45 kV terminal ground
	M20x1.5 Cable-Ø 6...13 mm	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 Admission: PTB 99 ATEX 3128	M20x1.5/SW24 Cable-Ø 5.5-13 mm Admission: PTB 99 ATEX 3128
	3 x 1.5...4 mm²	3 x 1.5...4 mm²	3 x 1.5...4 mm²	3 x 0.5...4 mm²		3 x 0.5...1.5 mm²	3 x 0.5...1.5 mm²
	Terminal screw	Terminal screw	Terminal screw	Terminal screw	Receptacle for tabs (IEC) 2.8 x 0.5 mm	Terminal screw	Terminal screw
	NBR: -30°C ... +100°C FKM: -15°C ... +150°C	-40°C ... +150°C	-40°C ... +150°C	-40°C ... +150°C	-25°C ... +80°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	-25°C ... +70°C	-50°C ... +65°C	-50°C ... +65°C
	IP65	IP65	IP65	IP65	IP40 (Micro switch IP67)	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: 4g	Switch 23/26: 5...25 Hz: ±1.6 mm 25...100 Hz: 4g	5...25 Hz: ±1.6 mm 25...100 Hz: 4g Ranges 72, 73, 75 5...50 Hz: 20 mm/sec.	5...25 Hz: ±1.6 mm 25...100 Hz: 4g	5 ... 100 Hz: 2 g	5...25 Hz: ±1.6 mm 25...100 Hz: 4g	5...25 Hz: ±1.6 mm 25...100 Hz: 4g
	50g/ 11ms	50g/ 11ms	50g/ 11ms	50g/ 11ms	50g/ 11ms	50g/ 11ms	50g/ 11ms
	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	PBTP, Crastin	AlSi10Mg/ Epoxy coated Accessory 06: 1.4301 (AISI 304)	AlSi10Mg/ Epoxy coated
	NBR / FKM	NBR	NBR	NBR	-	NBR / FKM	NBR
	~ 710 g	~ 610 g	~ 610 g	~ 850 g	~ 110 g	~ 710 g	~ 610 g


trafag
sensors controls

Thermostats

For 70 years Trafag thermostats have proven their robustness in order to withstand the most adverse environmental conditions. Industry useage ranges from air conditioning applications to engine and ship manufacturing and even to offshore oil and gas platform production. The appeal of Trafag thermostats lies in their high switching point precision even after decades of operation under harsh conditions without maintenance. Various sensor and casing designs cover a wide range of temperatures and possible applications.

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 micro switches.

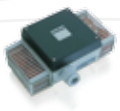
Design variations

- With internal or external temperature 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 88	page 89	page 90	page 91	page 92	page 93	
							
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	See ordering information	See ordering information	See ordering information	-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	
Data sheet	H72170	H72146	H72137	H72116	H72177	H72175	
Instructions	H73624	H73170	H70311	H73111	H73624	H73663	
Approval	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							

	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 94	page 96	page 95	page 101	page 98	page 99	page 100
							
	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 to +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
	H72174	H72172	H72173	H72123	H72179	H72142	H72139
	H73624	H73624	H73624	H70821	H73624	H73170	H70311
	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

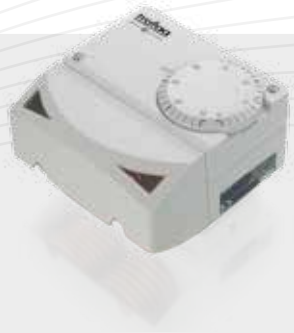
Overview thermostats

	L/LF 736/754	L...R 755	I/IS 404/414	IS...R 410/412	ISN/ISNT 471/472	ISP/ISPT 474	
	page 102	page 103	page 104	page 107	page 108	page 110	
							
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	
Data sheet	H72122	H72124	H72110	H72138	H72111	H72113	
Instructions	H70211	H70211	H73111	H73111	H73111	H73113	
Approval	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							

	EXS 404/414	EXAS 409/419	«Simple Apparatus» 414 conformity to ATEX	«Simple Apparatus» 419 conformity to ATEX
	page 112	page 115	page 116	page 116
				
	Ex Industrial thermostat with remote sensor	Ex Industrial room thermostat	Industrial room thermostat	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 ... +65°C	-30°C ...+70°C	-30°C ... +65°C
	IP65	IP65	IP65	IP65
	Ex PTB 09 ATEX 1027	Ex PTB 09 ATEX 1027	Potentially explosive atmosphere	Potentially explosive atmosphere
	H72108	H72128	H72183	H72182
	H73172	H73172	H73173	H73173
	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 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 gaz explosion hazards: II 2 G Ex de IIC T6 Areas with dust explosion hazards: II 2 D Ex tD A21 IP65 T80°C	Areas with gaz explosion hazards: II 2 G Ex de IIC T6 Areas with dust explosion hazards: II 2 D Ex tD A21 IP65 T80°C		

A/AS/ASE 645/650

Ambistat



Features

- 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	EN60730-1/ EN60730-2-9: Typ 2.B.H

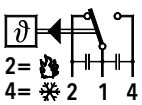
Data sheet www.trafag.com/H72170
Instructions www.trafag.com/H73624

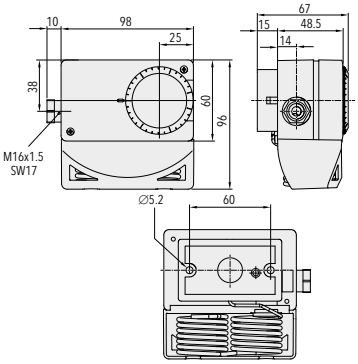
Standard products (extra short lead time)

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

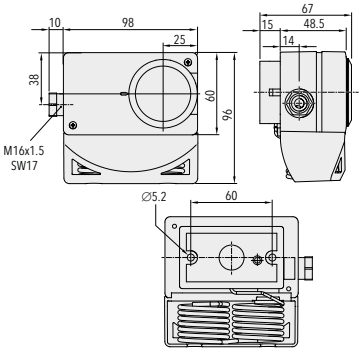
Sensor: Sensor coil
Sensor material: Copper
Electrical connection: Terminal screw

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





A ...
External set point adjustment



AS ... / ASE ...
Internal set point adjustment

ADS 319

Ambi Duostat

Features

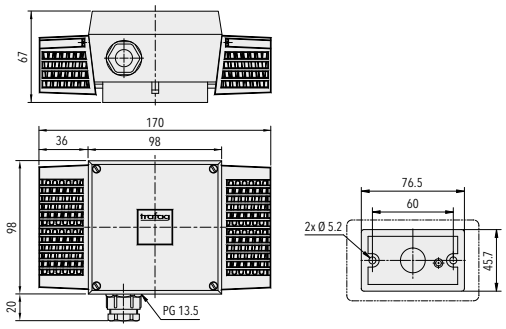
- With 2 individual measuring systems
- Protection IP54
- Electrical connection on terminal screw

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72146
Instructions www.trafag.com/H73170

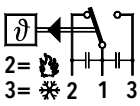
Standard products (extra short lead time)				
Product No.	**Type Code**	**Temperature range [°C]**	**Switching differential [°C]**	**Operating temperature [°C]**
ADS30	319 2503 402 19	0 ... +30	0.7 ... 6 (adjustable)	-30 ... +50
ADS33	319 2502 402 19	-30 ... +30	0.7 ... 6 (adjustable)	-30 ... +40
ADS60	319 2512 402 19	0 ... +60	0.7 ... 6 (adjustable)	-30 ... +70

Sensor: Sensor coil
Sensor material: Copper
Electrical connection: Terminal screw



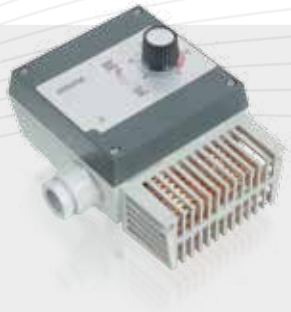
ADS ...
Internal set point adjustment

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



A2/A2S 198/199

Altero Ambistat



Features

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

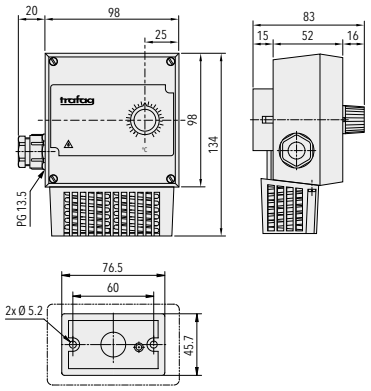
Technical Data			
Designation of application	Multistage room thermostat	Switching differential	Not adjustable
Measuring range	-45°C ... +15°C to 0°C ... +60°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72137
Instructions www.trafag.com/H70311

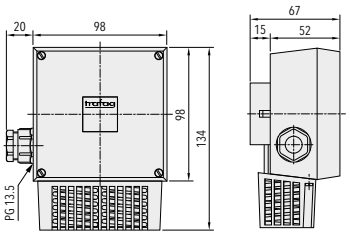
Standard products (extra short lead time)

Product No.	Type Code	Temperature range [°C]	Switching differential [°C]	Smallest stage difference [°C]	Larges stage difference [°C]	Operating temperature [°C]
A233	199 1102 402 19	-30 ... +30	0.7 (fixed)	-6	15	-30 ... +40
A230	199 1103 402 19	0 ... +30	0.7 (fixed)	-6	15	-30 ... +50
A260	199 1112 402 19	0 ... +60	0.7 (fixed)	-6	15	-30 ... +70
A2S33	198 1102 402 19	-30 ... +30	0.7 (fixed)	-6	15	-30 ... +40
A2S30	198 1103 402 19	0 ... +30	0.7 (fixed)	-6	15	-30 ...+50
A2S60	198 1112 402 19	0 ... +60	0.7 (fixed)	-6	15	-30 ... +70

Sensor: Sensor coil
Sensor material: Copper
Electrical connection: Terminal screw

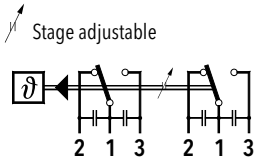


A2 ...
External set point adjustment



A2S ...
Internal set point adjustment

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



Switch 1, on scale
Switch 2, + or – to switch 1

IA/IAS 409/419

Indu Ambistat

Features

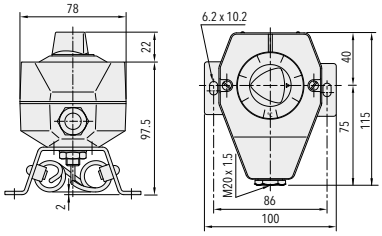
- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

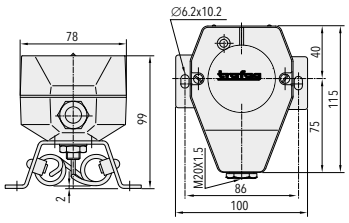
Data sheet www.trafag.com/H72116
Instructions www.trafag.com/H73111

Standard products (extra short lead time)				
Product No.	**Type Code**	**Temperature range [°C]**	**Switching differential [°C]**	**Operating temperature [°C]**
IA33	409 2502 522 27	-30 ... +30	0.7 ... 6 (adjustable)	-30 ... +40
IA35	409 2510 522 27	+5 ... +35	0.7 ... 6 (adjustable)	-30 ... +50
IA60	409 2512 522 27	0 ... +60	0.7 ... 6 (adjustable)	-30 ... +70
IAS33	419 2502 522 27	-30 ... +30	0.7 ... 6 (adjustable)	-30 ... +40
IAS35	419 2510 522 27	+5 ... +35	0.7 ... 6 (adjustable)	-30 ... +50
IAS60	419 2512 522 27	0 ... +60	0.7 ... 6 (adjustable)	-30 ... +70

Sensor: Sensor coil
Sensor material: Copper
Electrical connection: Terminal screw

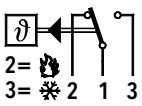


IA ...
External set point adjustment



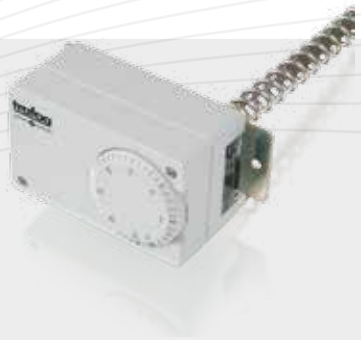
IAS ...
Internal set point adjustment

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

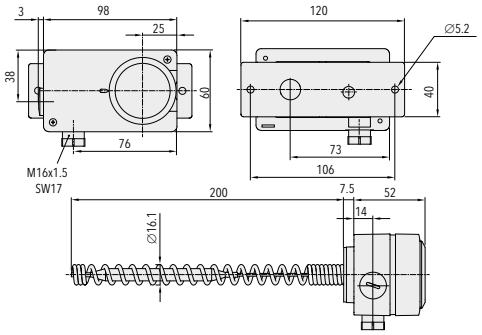
- Short response time
- Protection IP54
- Electrical connection on terminal screw

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72177
Instructions www.trafag.com/H73624

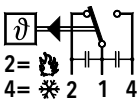
Standard products (extra short lead time)					
Product No.	**Type Code**	**Sensor material**	**Temperature range [°C]**	**Switching differential [°C]**	**Sensor max. [°C]**
MSK35	634 2509 432 30	Copper	0 ... +35	0.7 ... 10 (adjustable)	50
MSK40	634 2501 432 30	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
MSK80	634 2513 432 30	Copper	+10 ... +80	0.7 ... 10 (adjustable)	100

Sensor: Capillary tube with direct mounted sensor
Sensor material: Copper
Electrical connection: Terminal screw



MSK ...
Internal set point adjustment
Accessory: K200 / W200 See chapter "Accessories"

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



MP/MSP 663/664

Pipe Mounting Thermostat

Features

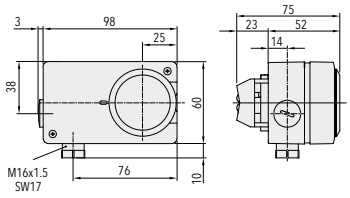
- For pipe or barrel mounting
- Short response time
- Protection IP54
- Electrical connection on terminal screw

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72175
Instructions www.trafag.com/H73663

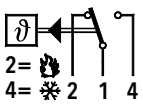
Standard products (extra short lead time)				
Product No.	**Type Code**	**Temperature range [°C]**	**Switching differential [°C]**	**Sensor max. [°C]**
MSP35	664 2594 502 00	-10 ... +35	3.7 ... 14 (adjustable)	50
MSP80	664 2595 502 00	-10 ... +80	3.7 ... 14 (adjustable)	85
MSP95	664 2520 502 00	+5 ... +95	3.7 ... 14 (adjustable)	105
MSP110	664 2523 502 00	+20 ... +110	3.7 ... 14 (adjustable)	115

Sensor: Capillary tube with direct mounted sensor
Sensor material: Copper
Electrical connection: Terminal screw



MSP ...
Internal set point 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

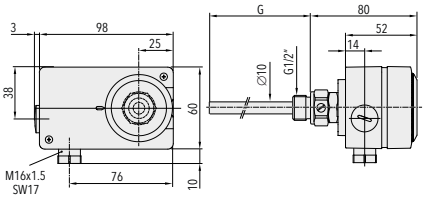
Technical Data			
Designation of application	Direct mounting thermostat	Switching differential	Adjustable / not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72174
Instructions www.trafag.com/H73624

Standard products (extra short lead time)

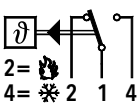
Product No.	Type Code	Temperature range [°C]	Protection tube length [mm]	Switching differential [°C]	Sensor max. [°C]
MST8015	634 2595 322 12 1216 0150	-10 ... +80	150	2 ... 12 (adjustable)	105
MST8040	634 2595 322 12 1216 0400	-10 ... +80	400	2 ... 12 (adjustable)	85
MST9511	634 2520 332 12 1217 0110	+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: Terminal screw



MST ...
Internal set point 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

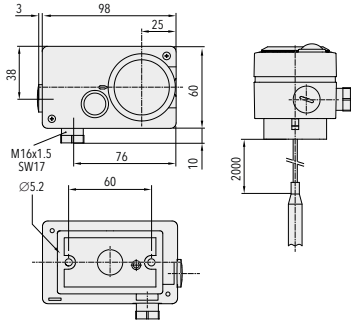
- External or internal resetting
- Short response time
- Protection IP54
- Electrical connection on terminal screw

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

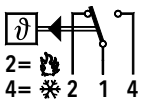
Data sheet www.trafag.com/H72173
Instructions www.trafag.com/H73624

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	Copper	+20 ... +230	250
MS350SR	632 1254 121 19	Copper	+70 ... +350	380

Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw



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 set point adjustment, external reset
Calibrated for increasing temperatures

M/MS 624/634

Ministat

Features

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

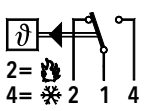
Technical Data			
Designation of application	Remote sensing thermostat	Switching differential	Adjustable / not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval	EN60730-1/ EN60730-2-9: Typ 2.B.H

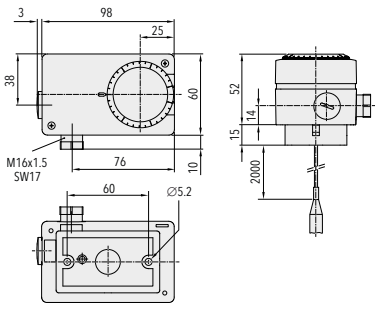
Standard products (extra short lead time)

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	Copper	+20 ... +230	3 ... 32 (adjustable)	250
M350S	624 2554 121 19	Copper	+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	Copper	+20 ... +230	3 ... 32 (adjustable)	250
MS350S	634 2554 121 19	Copper	+70 ... +350	4 ... 40 (adjustable)	380

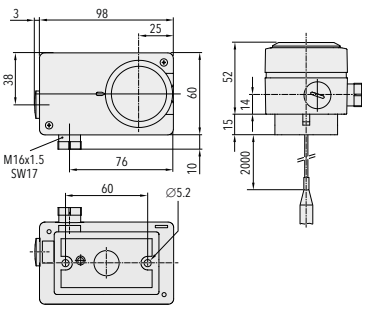
Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw

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





M ...
External set point adjustment



MS ...
Internal set point adjustment

Data sheet www.trafag.com/H72172
Instructions www.trafag.com/H73624

Ordering information/type code

		XXX	XX	XX	XXX	XX	XXXXXXXXX	XX	XX

Custom build code

External adjustment	624
Internal adjustment	634

Micro switch

Small switching differential, not adjustable	10	Adjustable large switching differential	24
Average switching differential, not adjustable	11	Adjustable standard switching differential	25
With gold plated contacts, not adjustable	21		

Range

Range [°C]	Sensor max. [°C]		Range [°C]	Sensor max. [°C]	
-30 ... 40	45	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 diameter [mm]	Sensor material		Range	Sensor diameter [mm]	Sensor material	
24, 53, 54	Ø4.7	Stainless steel	111	94, 95, 20, 23, 31	Ø7	Copper nickel plated	323
24, 53, 54	Ø4.7	Copper	112	94, 95, 20, 23, 31	Ø9	Stainless steel	331
24, 53, 54	Ø4.7	Copper nickel plated	113	94, 95, 20, 23, 31	Ø9	Copper	332
24, 53, 54	Ø7	Stainless steel	121	94, 95, 20, 23, 31	Ø9	Copper nickel plated	333
24, 53, 54	Ø7	Copper	122	01, 07, 09, 11, 13, 17	Ø4.7	Copper	412
24, 53, 54	Ø7	Copper nickel plated	123	01, 07, 09, 11, 13, 17	Ø4.7	Copper nickel plated	413
24, 53, 54	Ø9	Stainless steel	131	01, 07, 09, 11, 13, 17	Ø7	Stainless steel	421
24, 53, 54	Ø9	Copper	132	01, 07, 09, 11, 13, 17	Ø7	Copper	422
24, 53, 54	Ø9	Copper nickel plated	133	01, 07, 09, 11, 13, 17	Ø7	Copper nickel plated	423
94, 95, 20, 23, 31	Ø4.7	Stainless steel	311	01, 07, 09, 11, 13, 17	Ø9	Copper	432
94, 95, 20, 23, 31	Ø4.7	Copper	312	01, 07, 09, 11, 13, 17	Ø9	Copper nickel plated	433
94, 95, 20, 23, 31	Ø4.7	Copper nickel plated	313				
94, 95, 20, 23, 31	Ø7	Stainless steel	321				
94, 95, 20, 23, 31	Ø7	Copper	322				

Fixing [2]

Nut M10 (for remote sensing version)	10
Captive nut (for direct mounting version)	14
Grubscrew locked, lateral (direct mounting version)	12
Console (for remote sensing version)	17
Grubscrew locked with thermal distance piece (for direct mounting version)	18
Console (for remote sensing version)	19

Protection tube

See data sheet H72114/H72163	XXXX.XXXX

Accessory

Set blocking (only type 634)	15	Outdoor usage (aerated)	44
Condensator over Pin 1-2	12	Cover with window	77
Condensator over Pin 1-3	13	Capillary tube protection: Flexible metal tube, brass nickel plated	90
Condensators over Pin 1-2 / 1-3	23	Capillary tube protection: Flexible metal tube 1.4541/V2A	91
Railway version (UIC 616)	28	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
[2] See data sheet H72106
[3] Overlengths upon request

GS 657/658

Galvanostat

Features

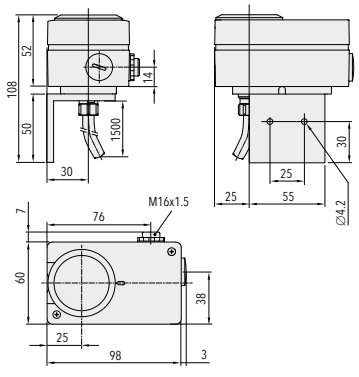
- Short response time
- Protection IP54
- Electrical connection on terminal screw

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

Data sheet www.trafag.com/H72179
Instructions www.trafag.com/H73624

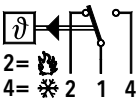
Standard products (extra short lead time)				
Product No.	**Type Code**	**Temperature range [°C]**	**Switching differential [°C]**	**Sensor max. [°C]**
GS95	658 1120 326 26	+5 ... +95	2.5 (fixed)	105
GS150	658 1131 326 26	+20 ... +150	3.0 (fix)	165

Sensor: Capillary tube with remote sensor
Sensor material: Copper with protection tube Teflon FEP
Electrical connection: Terminal screw



GS ...
Internal set point adjustment

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



D...R 302

Duo Limistat

Features

- With 2 individual measuring systems
- Short response time
- Protection IP54
- Electrical connection on terminal screw

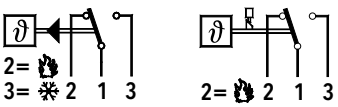
Technical Data			
Designation of application	Double thermostat with remote sensor and limiter	Switching differential	Adjustable/not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval	EN60730-1/ EN60730-2-9: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

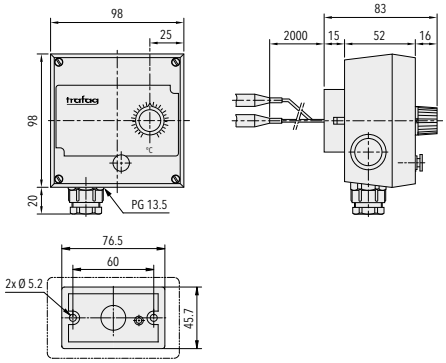
Data sheet www.trafag.com/H72142
Instructions www.trafag.com/H73170

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: Terminal screw

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 set point 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	EN60730-1/ EN60730-2-9: Typ 2.B.H

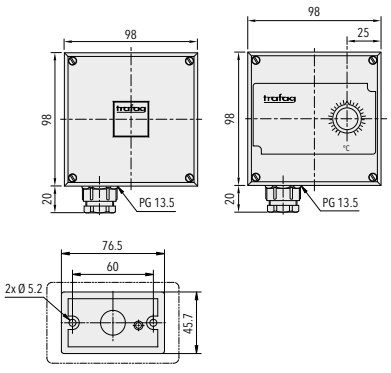
Data sheet www.trafag.com/H72139
Instructions www.trafag.com/H70311

Standard products (extra short lead time)

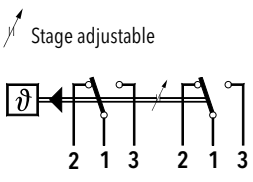
Product No.	Type Code	Temperature range [°C]	Switching differential [°C]	Smallest stage difference [°C]	Larges stage difference [°C]	Sensor max. [°C]
M2S40	114 1101 422 19	-30 ... +40	1.8 (fixed)	0.8	25	45
M2S35	114 1109 422 19	0 ... +35	1.8 (fixed)	0.8	15	50
M2S95	114 1120 322 19	+5 ... +95	2.5 (fixed)	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: Terminal screw

M2S230S ... M2S350S
Sensor: Capillary tube with remote sensor
Sensor material: 1.4435/AISI 316L
Electrical connection: Terminal screw



M2S ...
Internal set point adjustment



Switch 1, on scale
Switch 2, + or – to switch 1

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

Froststat

Features

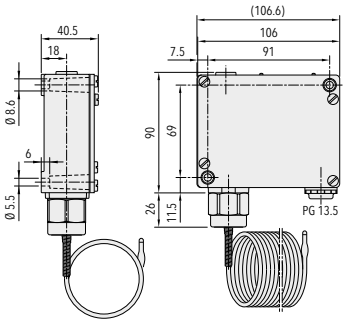
- Rugged aluminium housing
- Short response time
- Protection IP54
- Electrical connection on terminal screw

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

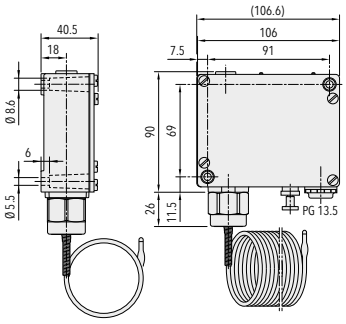
Data sheet www.trafag.com/H72123
Instructions www.trafag.com/H70821

Standard products (extra short lead time)			
Product No.	**Type Code**	**Sensor material**	
F15	991 1299 000	Copper capillary tube, L=6m	Internal setpoint adjustment
F153	990 1299	Copper capillary tube, L=3m	Internal setpoint adjustment
F15R	993 1299 000	Copper capillary tube, L=6m	Internal setpoint adjustment and external reset knob
F153R	992 1299	Copper capillary tube, L=3m	Internal setpoint adjustment and external reset knob

Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw

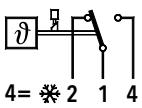


F ...
Internal set point adjustment



F ... R
Internal set point 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

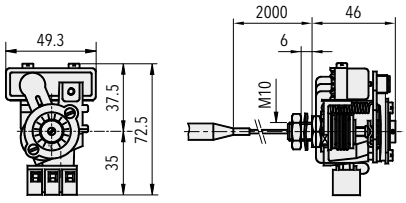
Technical Data			
Designation of application	Remote sensing thermostat, skeleton type	Switching differential	Adjustable / not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72122
Instructions www.trafag.com/H70211

Standard products (extra short lead time)

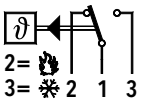
Product No.	Type Code	Sensor material	Temperature range [°C]	Switching differential [°C]	Sensor max. [°C]
L35	754 2509 422 10	Copper	0 ... +35	0.7 ... 10 (adjustable)	60
L40	754 2501 422 10	Copper	-30 ... +40	0.7 ... 10 (adjustable)	45
L95	754 2520 322 10	Copper	+5 ... +95	2 ... 12 (adjustable)	105
L150	754 2531 322 10	Copper	+20 ... +150	2.5 ... 16 (adjustable)	165
L230S	754 2524 121 10	1.4435/316L	+20 ... +230	3 ... 32 (adjustable)	250
L350S	754 2554 121 10	1.4435/316L	+70 ... +350	4 ... 40 (adjustable)	380

Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw



L ...
Internal set point adjustment

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



L...R 755

Labor Limistat

Features

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

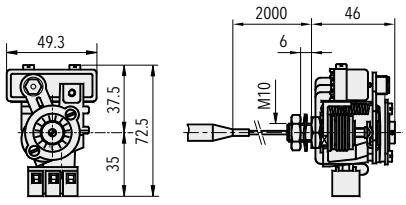
Technical Data			
Designation of application	Remote sensing thermostat with limiter, skeleton type	Switching differential	Not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72124
Instructions www.trafag.com/H70211

Standard products (extra short lead time)

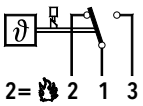
Product No.	Type Code	Sensor material	Temperature range [°C]	Sensor max. [°C]
L95R	755 1220 322 10	Copper	+5 ... +95	105
L150R	755 1231 322 10	Copper	+20 ... +150	165
L230SR	755 1224 121 10	Copper	+20 ... +230	250
L350SR	755 1254 121 10	Copper	+70 ... +350	380

Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw



L ... R
Internal set point adjustment and reset
Calibrated for increasing temperatures

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



I/IS 404/414

Industat

Features

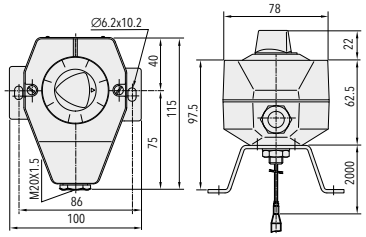
- Compact design
- Rugged housing
- Protection IP65
- Any mounting position possible

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

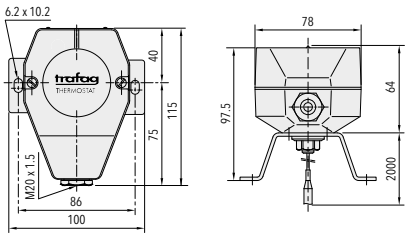
Standard products (extra short lead time)

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	1.4435/316L	+20 ... +230	3 ... 32 (adjustable)	250
I350S	404 2554 121 27	1.4435/316L	+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	1.4435/316L	+20 ... +230	3 ... 32 (adjustable)	250
IS350S	414 2554 121 27	1.4435/316L	+70 ... +350	4 ... 40 (adjustable)	380

Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw

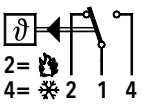


I ...
External set point adjustment



IS ...
Internal set point 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 www.trafag.com/H72110
Instructions www.trafag.com/H73111

Ordering information/type code

		XXX	XX	XX	XXX	XX	XXXXXXXXX	XX	XX
Custom build code	External adjustment	**404**							
	Internal adjustment	**414**							

Micro switch	Small switching differential, not adjustable	**10**
	Average switching differential, not adjustable	**11**
	With gold plated contacts, not adjustable	**21**
	Adjustable large switching differential	**24**
	Adjustable standard switching differential	**25**

Range

Range [°C]	Sensor max. [°C]	
-30 ... 40	50	**01**
-10 ... 25	60	**07**
0 ... 35	70	**09**
10 ... 45	85	**11**
10 ... 80	100	**13**
15 ... 30	60	**17**
-10 ... 35	70	**94**

Range [°C]	Sensor max. [°C]	
-10 ... 80	85	**95**
5 ... 95	105	**20**
20 ... 110	115	**23**
20 ... 150	165	**31**
20 ... 230	250	**24**
40 ... 300	330	**53**
70 ... 350	380	**54**

Sensor [1)]

Range	Sensor diameter [mm]	Sensor material	
01, 07, 09, 11, 13, 17	Ø7	Stainless steel	**421**
01, 07, 09, 11, 13, 17	Ø4.7	Copper	**412**
01, 07, 09, 11, 13, 17	Ø7	Copper	**422**
01, 07, 09, 11, 13, 17	Ø9	Copper	**432**
01, 07, 09, 11, 13, 17	Ø4.7	Copper nickel plated	**413**
01, 07, 09, 11, 13, 17	Ø7	Copper nickel plated	**423**
01, 07, 09, 11, 13, 17	Ø9	Copper nickel plated	**433**
94, 95, 20, 23, 31	Ø4.7	Stainless steel	**311**
94, 95, 20, 23, 31	Ø7	Stainless steel	**321**
94, 95, 20, 23, 31	Ø9	Stainless steel	**331**
94, 95, 20, 23, 31	Ø4.7	Copper	**312**

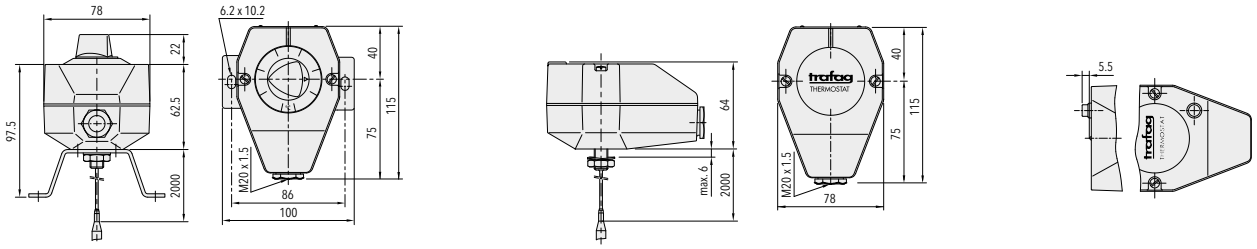
Range	Sensor diameter [mm]	Sensor material	
94, 95, 20, 23, 31	Ø7	Copper	**322**
94, 95, 20, 23, 31	Ø9	Copper	**332**
94, 95, 20, 23, 31	Ø4.7	Copper nickel plated	**313**
94, 95, 20, 23, 31	Ø7	Copper nickel plated	**323**
94, 95, 20, 23, 31	Ø9	Copper nickel plated	**333**
24, 53, 54	Ø4.7	Stainless steel	**111**
24, 53, 54	Ø7	Stainless steel	**121**
24, 53, 54	Ø9	Stainless steel	**131**
24, 53, 54	Ø4.7	Copper	**112**
24, 53, 54	Ø7	Copper	**122**
24, 53, 54	Ø9	Copper	**132**
24, 53, 54	Ø4.7	Copper nickel plated	**113**
24, 53, 54	Ø7	Copper nickel plated	**123**
24, 53, 54	Ø9	Copper nickel plated	**133**

Fixing [2)]	Nut M10 (for remote sensing version)	**10**
	Flange (for remote sensing version)	**16**
	Console (for remote sensing version)	**17**
	Bracket (for remote sensing version)	**27**
	Grubscrew locked, lateral (direct mounting version)	**12**
	Captive nut (for direct mounting version)	**13**
	Captive nut (for direct mounting version)	**14**
	Grubscrew locked with thermal distance piece (for direct mounting version)	**18**

Protection tube	See data sheet H72114/H72163	**XXXX.XXXX**

		XXX	XX	XX	XXX	XX	XXXXXXXXX	XX	XX
Accessory	Signal lamp							**14**	
	Set blocking (only type 414)							**15**	
	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 usage (aerated)							**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]								

[1] See data sheet H72114/H72163
[2] See data sheet H72106
[3] Overlengths upon request



IS...R 410/412

Indu Limistat

Features

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

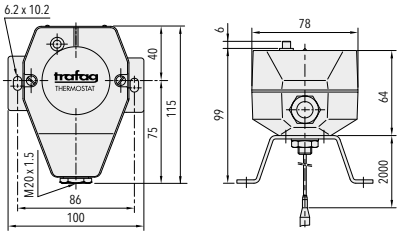
Technical Data			
Designation of application	Industrial thermostat with remote sensor and limiter	Switching differential	Not adjustable
Measuring range	-30°C ... +40°C to +70°C ... +350°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72138
Instructions www.trafag.com/H73111

Standard products (extra short lead time)

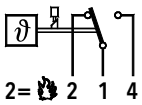
Product No.	Type Code	Sensor material	Temperature range [°C]	Sensor max. [°C]
IS95R	412 1220 322 27	Copper	+5 ... +95	105
IS150R	412 1231 322 27	Copper	+20 ... +150	165
IS230SR	412 1224 121 27	1.4435/316L	+20 ... +230	250
IS350SR	412 1254 121 27	1.4435/316L	+70 ... +350	380

Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw



IS ... R
Internal set point 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



ISN/ISNT 471/472

Navistat

Features

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

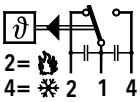
Technical Data			
Designation of application	Thermostat for shipbuilding	Switching differential	Not adjustable
Measuring range	+20°C ... +110°C to +40°C ... +300°C	Repeatability	± 0.5 % FS typ.
Output signal	Floating change-over contact	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS, RINA, RMRS EN60730-1/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

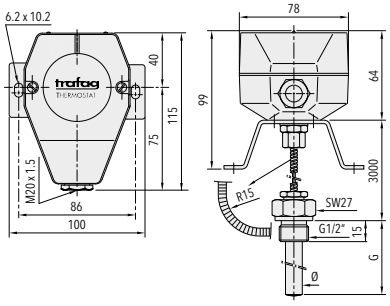
Standard products (extra short lead time)

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

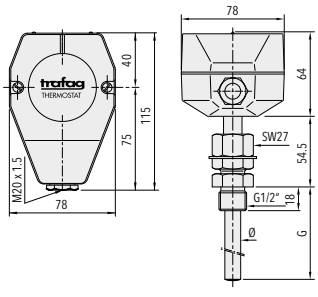
Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw

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





ISN ...
Internal set point adjustment



ISNT ...
Internal set point adjustment

Data sheet www.trafag.com/H72111
Instructions www.trafag.com/H73111

Ordering information/type code

		XXX .	XX	XX	XXX	XX	XXXX	XXXX	XX	XX
Custom build code	Controller, extended 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	322	+40 ... 300	Ø7	122
+20 ... 150	Ø9	332	+40 ... 300	Ø9	132
+20 ... 150	Ø12	342	+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]	Version	
322	10/8	min. 150	K, Stainless steel	1411
332	12/10	min. 110	K, Stainless steel	1412
342	15/13	min. 65	K, Stainless steel	1414
322	10/8	min. 150	K, Brass nickel plated	1416
332	12/10	min. 110	K, Brass nickel plated	1417
342	15/13	min. 65	K, Brass nickel plated	1419

Suitable for sensor	Protection tube diameter [mm]	Protection tube length [mm]	Version	
322 122	10/8	min. 150 min. 110	B, Brass nickel plated	8316
332 132	12/10	min. 110 min. 90	B, Brass nickel plated	8317
342 142	15/13	min. 65 min. 65	B, Brass nickel plated	8319
322 122	10/8	min. 150 min. 110	B, Stainless steel	8411
332 132	12/10	min. 110 min. 90	B, Stainless steel	8412
342 142	15/13	min. 65 min. 65	B, Stainless steel	8414

Protection tube length

Length G, see data sheet H72114/H72163	XXXX

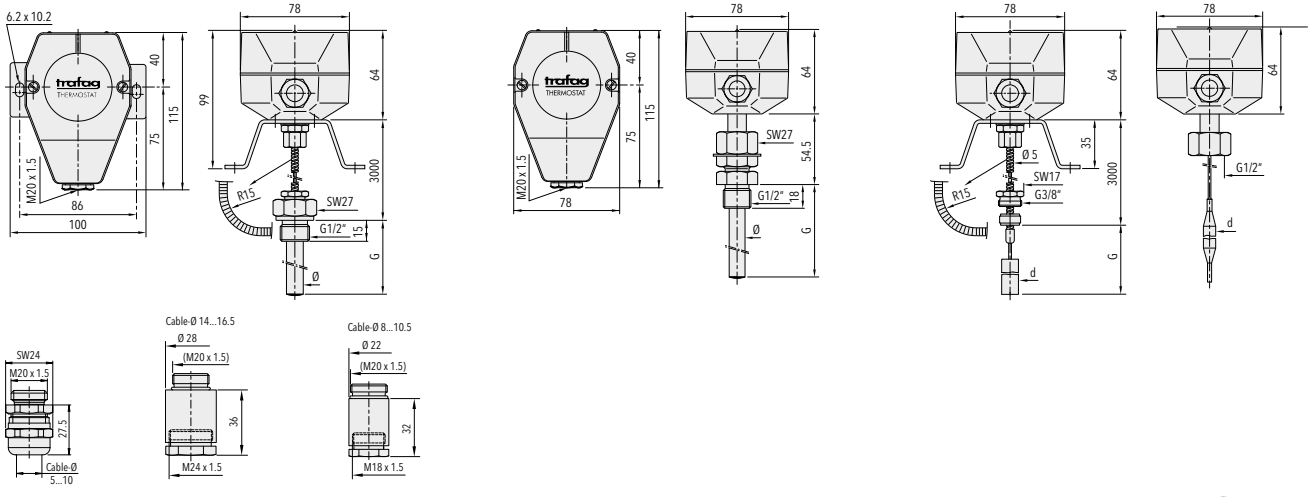
Accessory

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

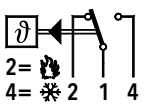
Technical Data			
Designation of application	Compact thermostat for shipbuilding	Switching differential	Not adjustable
Measuring range	+5°C ... +95°C to +20°C ... 150°C	Repeatability	± 1 % FS typ.
Output signal	Floating change-over contact	Approval	ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, RMRS EN60730-1/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

Sensor: Capillary tube with direct mounted sensor
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 www.trafag.com/H72113
Instructions www.trafag.com/H73113

Ordering information/type code

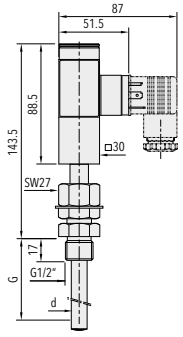
			474 .	XX	XX	XXX	XX	XXXX	XXXX	XX
Micro switch	Standard, switching differential not adjustable			03						
Range	**Range [°C]**	**Sensor max. [°C]**								
	+5 ... +95	100			20					
	+20 ... +110	115			23					
	+20 ... +150	165			31					
Sensor	**Sensor diameter [mm]**									
	Ø7					322				
	Ø12					342				
Fixing [2]	Flange connection (for remote sensing version)						00			
	Captive nut (for direct mounting version)						14			

Protection tube	**Mounting**	**Suitable for sensor**	**Protection tube diameter [mm]**	**Protection tube length [mm]**	
	For direct mounting version	322	10	150	**1416**
	For direct mounting version	342	15	65	**1419**
	For remote sensing version	322	10	150	**8316**
	For remote sensing version	342	15	65	**8319**

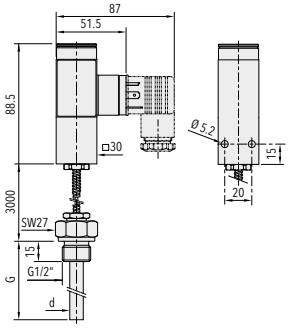
Protection tube length	**Protection tube length [mm]**	
	65	**0065**
	150	**0150**

Accessory		
	Female electrical connector DIN43650-A	**58**
	Capillary tube protection: Flexible metal tube, brass nickel plated	**90**
	Fixing set	**V3**
	Cover with window	**77**
	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	

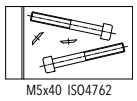
[2] See data sheet H72106



ISPT ...
External set point adjustment



ISP ...
External set point adjustment



EXS 404/414

Ex Industat

PTB 09
ATEX 1027

Features

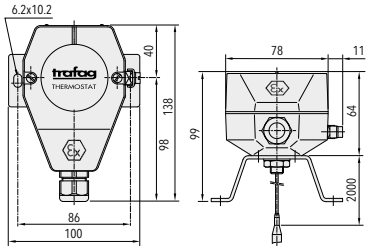
- Compact design
- Rugged housing
- Any mounting position possible
- II 2 G Ex de IIC T6
- II 2 D Ex tD A21 IP65 T80°C

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

Standard products (extra short lead time)

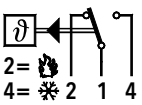
Product No.	Type Code	Sensor material	Temperature range [°C]	Switching differential [°C]	Sensor max. [°C]
EXS35	414 9109 423 27 0000 0000 02	Copper nickel plated	0 ... +35	2.5 (fixed)	50
EXS40	414 9101 423 27 0000 0000 02	Copper nickel plated	-30 ... +40	2.5 (fixed)	45
EXS95	414 9120 323 27 0000 0000 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	1.4435/316L	+20 ... +230	8 (fixed)	250
EXS350S	414 9154 121 27 0000 0000 02	1.4435/316L	+70 ... +350	10 (fixed)	380

Sensor: Capillary tube with remote sensor
Electrical connection: Terminal screw



EXS ...
Internal set point adjustment

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



Data sheet www.trafag.com/H72108
Instructions www.trafag.com/H73172

Ordering information/type code

		XXX	XX	XX	XXX	XX	XXXXXXXXX	XX	XX
Custom build code	External adjustment	**404**							
	Internal adjustment	**414**							
Micro switch	Standard, switching differential not adjustable		**91**						

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**	+35 ... +175	200	**56**
+10 ... +70	85	**59**	+20 ... +270	330	**55**
+20 ... +85	100	**58**	+70 ... +350	380	**54**
+20 ... +115	130	**57**			

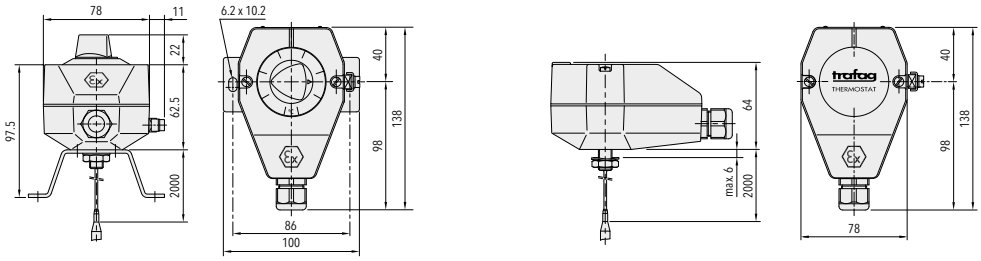
Sensor [1)]

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**
	Captive nut (for direct mounting version)	**14**
	Grubscrew locked with thermal distance piece (for direct mounting version)	**18**

		XXX	XX	XX	XXX	XX	XXXXXXXXX	XX	XX
Protection tube	See data sheet H72114/H72163						**XXXX.XXXX**		
Accessory	Set blocking (only type 414)							**15**	
	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



EXAS 409/419

Ex Indu Ambistat

PTB 09
ATEX 1027

Features

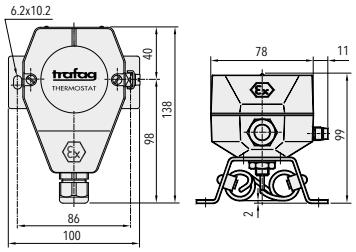
- Compact design
- Rugged housing
- Protection IP65
- II 2 G Ex de IIC T6
- II 2 D Ex tD A21 IP65 T80°C

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	EN60730-1/ EN60730-2-9: Typ 2.B.H

Data sheet www.trafag.com/H72128
Instructions www.trafag.com/H73172

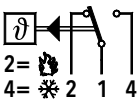
Standard products (extra short lead time)				
Product No.	**Type Code**	**Temperature range [°C]**	**Switching differential [°C]**	**Operating temperature [°C]**
EXAS33	419 9102 523 27 0000 0000 02	-30 ... +30	2.5 (fixed)	-30 ... +40
EXAS35	419 9110 523 27 0000 0000 02	+5 ... +35	2.5 (fixed)	-30 ... +50
EXAS60	419 9112 523 27 0000 0000 02	0 ... +60	2.5 (fixed)	-30 ... +65

Sensor: Sensor coil
Sensor material: Copper
Electrical connection: Terminal screw



EXAS ...
Internal set point adjustment

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



«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
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	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 www.trafag.com/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	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 www.trafag.com/H72182

Safety temperature limiter KTSB

PTB 09
ATEX 1027

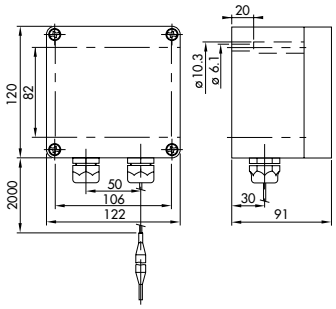
Features

- High current ratings 16 A
- With mechanical reset
- Internal set point adjustment

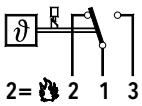
Technical Data	
Sensor technology	Capillary tube, remote sensor
Sensor material	1.4435/316L
Output	Micro switch
Electrical connection	Terminal screw

Standard Products

Product Nr.	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 de IIC T6
- Areas with dust explosion hazards EX II 2 D Ex tD A21 IP 66 T80°C

Data sheet www.trafag.com/H72181

Marine transmitter for PT100 sensors T...

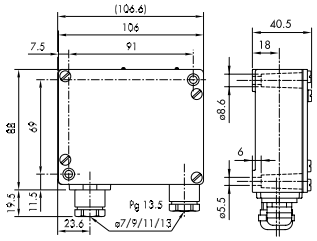
Features

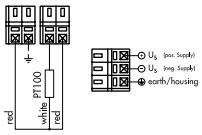
- For shipbuilding
- 4 ... 20 mA
- Protection IP65

Technical Data	
Sensor type	PT100
Operating temperature	–40°C ... +85 °C
Electrical connection	Terminal screw
Output	4 ... 20 mA

Standard Products

Product Nr.	Type Code	Range T [°C]	Supply [VDC]	Product Nr.	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 www.trafag.com/H72102
Instructions www.trafag.com/H73102

Temperature sensors PT100

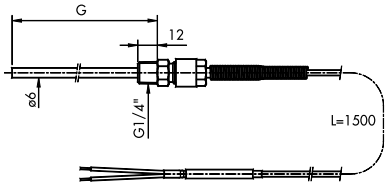
Features

- 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

Product Nr.	Range T [°C]	Protection tube length G [mm]	Class (IEC751)
PT100L15	–50 ... +250	150	B



Temperature sensor PT100/1000

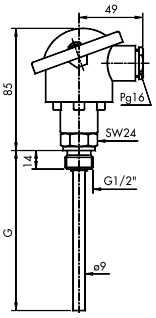
Features

- 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

Product Nr.	Range T [°C]	Protection tube length G [mm]	Class (IEC751)	Product Nr.	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 air flow	27 s (@ 0.2m/s)

Description

Resistivity R_0 @ 0°C [Ohm]	Electrical connection
100	lead frames
1000	lead frames

Electronic display-unit with relay LTR

Features

- Single stage thermostat with display
- 1 relay (SPDT)
- Protection IP54

Technical Data	
Sensor type	PT1000
Output	1 relay, 240 V/16 (3) A
Electrical connection	Terminal screw
Operating temperature	–10°C ... +50°C

Standard Products

Product Nr.	Range T [°C]	Relay output	U-supply [VAC]	Dimensions [mm]	Cutout of panel [mm]
LTR5TSRE	–50 ... +150	approx. 1.5	240	76 x 35 x 77	71 x 29

Electronic controller with display ATR

Features

- Extended Input 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
Ingress Protection	IP65 front panel (with gasket) IP30 box IP20 terminals
Operating temperature	0°C ... +45°C

Standard Products

Product Nr.	Outputs	Power supply	Dimensions [mm]	Cutout of panel [mm]
ATR142	Relay 1: 8A - 250 VAC for resistive load Relay 2: 5A - 250 VAC for 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

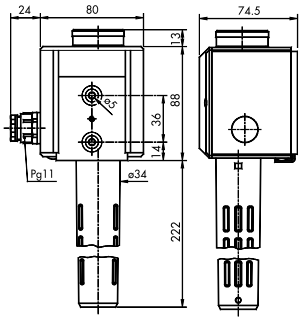
Features

- With adjustable setpoint
- 1-relay

Technical Data	
Protection	IP54
Operating temperature	–20°C ... +60°C
Output	1 relay
Electrical connection	Terminal screw

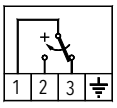
Standard Products

Product Nr.	Humidity [%rH]	Hysteresis [d%rH]	Max. sensor T [°C]
HMH	10 ... 100	approx. 1.5	+70



AC 250 V, 10 A (25 °C)
8 A (60 °C)

2= dehumidifying
3= humidyfing



Data sheet www.trafag.com/H72402

Technical Data Thermostats

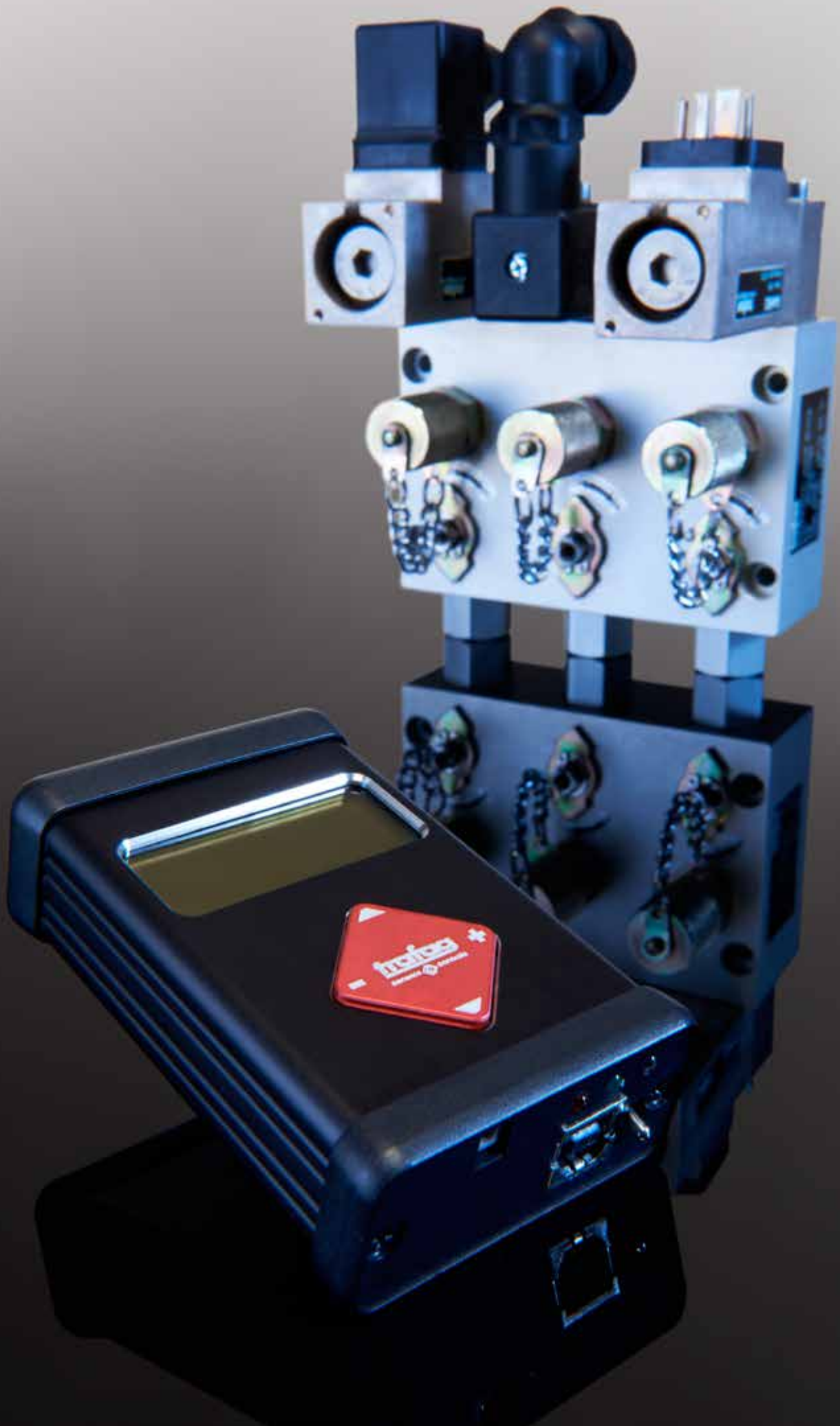
	A/AS/ASE 645/650	ADS 319	A2/A2S 198/199	IA/IAS 409/419	MSK 624/634	MP/MSP 663/664	
Main characteristics							
Designation of application	Remote sensing thermostat, skeleton type	Double room thermostat	Multistage room thermostat	Industrial room thermostat	Duct thermostat	Pipe mounting thermostat	
Measuring 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 mm²	3 x 1...2.5 mm²	6 x 1...2.5 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	
Environmental conditions							
Ambient temperature	See ordering information	See ordering information	See ordering information	-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	
Mechnical 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 to +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 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	6 x 1...2.5 mm²	6 x 1...2.5 mm²
	-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	Temperatur compensa-ted 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 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	4 x 0.5...1.5 mm²	
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	
Mechnical 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» Atex-konform 414	«Simple Apparatus» Atex-konform 419
	Ex Industrial thermostat with remote sensor	Ex Industrial room thermostat	Industrial room thermostat	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.
	Temperatur compensated with bimetal switch lever			
	> 2 MΩ	> 2 MΩ	> 2 MΩ	> 2 MΩ
	1.45 kV gegenüber Masse	1.45 kV terminal ground	1.25 kV terminal ground	500 V AC terminal ground
	M20x1.5/SW24 Cable-Ø 5.5...13 mm Admission: PTB 99 ATEX 3128	M20x1.5/SW24 Cable-Ø 5.5...13 mm Admission: PTB 99 ATEX 3128	M20x1.5 Cable-Ø 4...10 mm	M20x1.5 Cable-Ø 4...10 mm
	3 x 1...2.5 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²	3 x 1...2.5 mm²
	-30°C ...+70°C	-30°C ... +65°C	-30°C ...+70°C	-30°C ... +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. They include devices for monitoring or configuring transmitters such as hand pumps with precision pressure gauge or the Sensor Communicator, a handheld device which provides direct access to the calibration values of the transmitter in the Trafag ASIC. Trafag also offers a wide range of accessories which can be adapted to meet specific application requirements and also make installation easier. They include diagnostic valve manifolds, snubbers and pressure peak damping elements for measuring pressure or protective pipes for thermostats.

Accessories for pressure measurement instruments

- Sensor Communicator
- Diagnostic valve block
- Hand pump with precision manometer
- Zenerbarrier
- Venting box
- Cable hanger
- Pressure peak damping element
- Snubber
- Adapter 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

Sensor communicator SC

Features

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

Technical Data

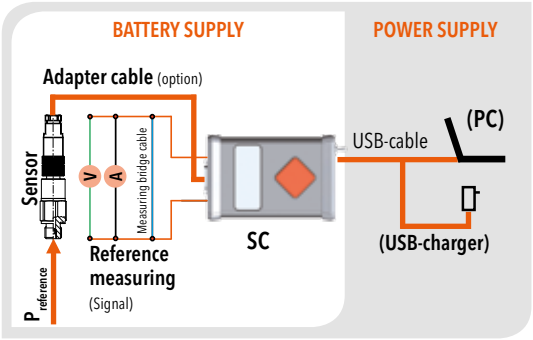
Identification of device data: Model, signal output, type plate, manufacturing date
Setting of switchpoint (8320 EPN-S)
CANopen: Setting of Node-ID and baudrate
Reset to factory settings

Compatible devices and adapter cables

		Signal output		
Model	**Connector**	4...20mA	0...10VDC 0...5VDC 1...6VDC	0.5...4.5VDC ratiometric
NAT (8251) NAE (8255) NAH (8253) NSL (8257)	**Industrial standard** 82XX.XXXX.**01**.XX..	**SC01A**	**SC01V**	**SC01R**
	M12, 4 poles 82XX.XXXX.**32**.XX..	**SC32A**	**SC32V**	**SC32R**
	M12, 5 poles 82XX.XXXX.**35**.XX..	**SC35A**	**SC35V**	**SC32R**

		Signal output		
Model	**Connector**	4...20mA	CANopen	Switch output
EPR (8293) NAH (8298) NSL (8257)	**DIN43650** 82XX.XXXX.**04**.XX..	**SC04A**		
	DIN43650 (invers) 82XX.XXXX.**04**.XX.**92**..	**SC04A92**		
CMP (8270)	**M12, 5 poles** 82XX.XXXX.**35**.XX..		**SC35CAN**	
EPN-S (8320)	**DIN43650** 82XX.XXXX.**40**.XX..			**SC04SW**

CONNECTION SCHEME



DIMENSIONS [mm]

Content of delivery:

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

Manual en www.trafag.com/ H73699
Manual de www.trafag.com/ H73698

Diagnostic valve block DVB

Features

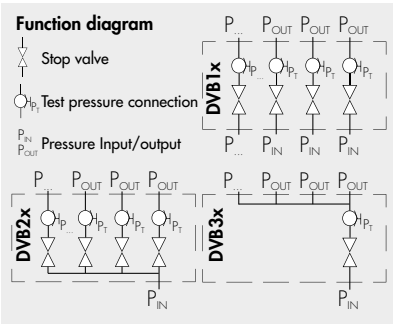
- Function tests during operation (no interruption necessary) with stop valve and test connection

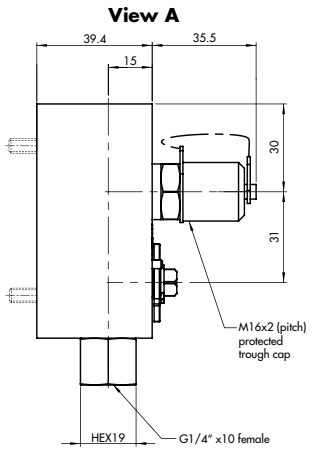
Technical Data	
Pressure	-0.8 ... 100 bar
Temperature	-20°C ... +120 °C

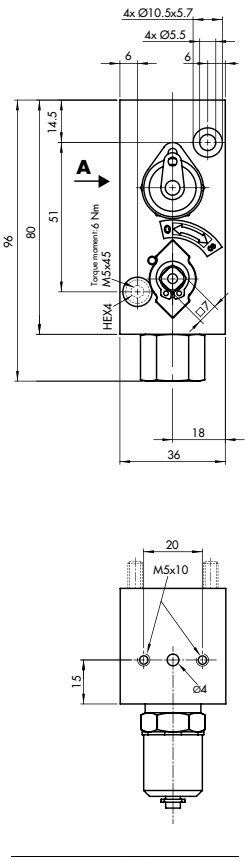
Standard Products

Standard	Type	Material	Standard	Type	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			

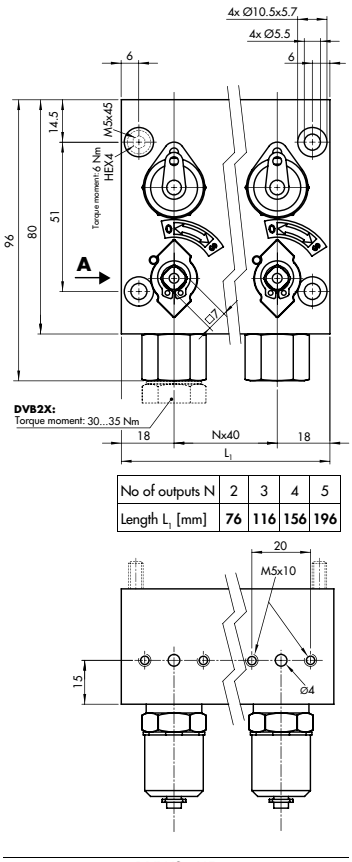
Data sheet www.trafag.com/H72361
Instructions www.trafag.com/H73361







DVB11



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

DVBX2...X5

Handpump for pressure testing THP

Features

- For testing of pressure transmitter and pressure switches

Technical Data	
Pressure connection	G1/4 female

Standard Products

Standard		Range P [bar]	Standard	Resolution [mbar]	Range P [bar]
THP 30		–0.85 ... +20	THP 700	200	0 ... 700

Switch amplifier

- ⟨Ex⟩ II (1) GD [EEx ia] IIC

Technical Data	
Ambient temperature	–20°C ... +60 °C
Protection	IP 20
Output	Signal, relays

Product Description

Material No.	Supply	Ex-Range	EC-Type Examination Certificate
ZEN24VDC	20 ... 30 VDC 20 ... 23 mA	U_0 = 10.5 V I_0 = 13 mA P_0 = 34 mW	PTB 00 ATEX 2080
ZEN230VAC	207 ... 253 VAC 45 ... 65 Hz	U_0 = 10.6 V I_0 = 19.1 mA P_0 = 51 mW	PTB 00 ATEX 2081

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).

Accessories for submersible transmitters

Technical Data
Vented plastic housing with wire terminals to connect a submersible pressure transmitter
Cable hanger to clamp cable with diameters of 5.5 ... 9.5 mm

Standard Products

Product Nr.	Description	Dimensions	Material
AKL5.5–9.5	Cable hanger	174 x 45 x 32 mm	1.4301, PA fibreglass reinforced
HIP67	Venting box	130 x 94 x 57 mm Fixing ▭ 115 x 79 mm, Ø 5 mm	Polystyrol, not suitable for outdoor applications

Pressure peak damping elements DAMP...

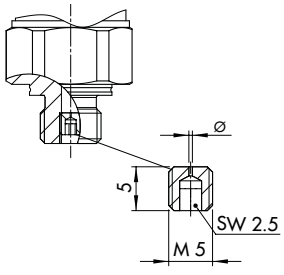
Features

- With M5 male thread
- Retrofit kit with integrated M5 female thread

Technical Data	
Hole diameter	0.4 mm, 1.0 mm
Set	5 pcs.

Standard Products

Standard		Sensor material	Standard		Sensor material
DAMP0.4	with 0.4 mm hole for water and light oil	1.4435/316L	DAMP1.0	with 1 mm hole for heavy oil	1.4435/316L



Data sheet www.trafag.com/ H72258

Snubbers K.../F...

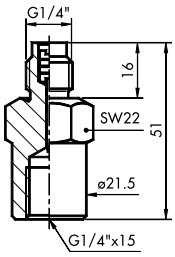
Features

- G1/4 male
- G1/4 female
- Integrated in an adapter

Technical Data	
Sensor material	1.4435/316L, brass

Standard Products

Standard		Sensor material	Standard		Sensor material
K3	Snubber for heavy oil	1.4435/316L	F4	Snubber for light oil	Brass
F3	Snubber for heavy oil	Brass	K5	Snubber for water/air	1.4435/316L
K4	Snubber for light oil	1.4435/316L	F5	Snubber for water/air	Brass



Data sheet www.trafag.com/ H72258

Snubbers K1/K2

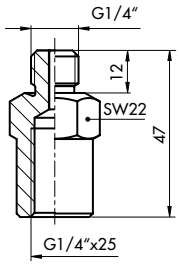
Features

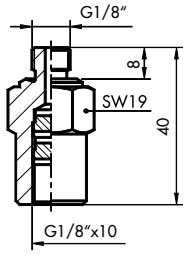
- Pressure peak damping element integrated in adapter

Technical Data	
Threads	G1/8 male – female
	G1/4 male – female
Sensor material	1.4435/316L

Standard Products

Standard		Sensor material	Standard		Sensor material
K1 G1/4	Snubber for water/air/light oil	1.4435/316L	K2 G1/8	Snubber for water/air/light oil	1.4435/316L





Data sheet www.trafag.com/ H72258

Adapters with manometer pressure ports

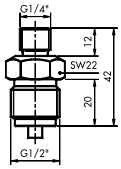
A1/A2
D1/D2

D4

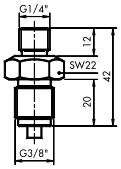
Technical Data	
Threads	G1/4 male – G1/2 male
	G1/4 male – G3/8 male
	G1/4 female – G1/2 male
Sensor material	1.4435/316L, brass

Standard Products

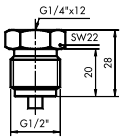
Standard		Sensor material	Standard		Sensor material
D1	G1/4 male – G3/8 male manometer	1.4435/316L	A2	G1/4 male – G1/2 male manometer	Brass
A1	G1/4 male – G3/8 male manometer	Brass	D4	G1/4 female – G1/2 male manometer	1.4435/316L
D2	G1/4 male – G1/2 male manometer	1.4435/316L			



A2/D2



A1/D1



D4

Data sheet www.trafag.com/ H72258

Stop valve V6 / V7

V6

V7

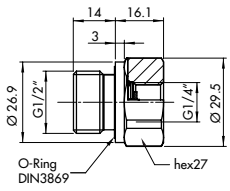
Features

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

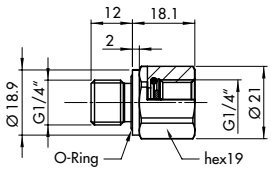
Technical Data	
Working pressure	Up to 600 bar
Working media temperature	–25°C ... +125 °C
Sensor material	1.4305/FKM

Standard Products

Standard		Thread	Standard		Thread
V6	For water, air, light-crude,heavy oil	G1/2m - G1/4f	V7	For water, air, light-crude,heavy oil	G1/4m - G1/4f



V6



V7

Data sheet www.trafag.com/ H72258

8316...8319 Protection tubes for remote sensors

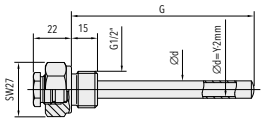
Features

- For liquid medias
- Pressure proof upto 25 bar

Technical Data	
Protection tube material	Brass nickel plated
Operating temperature	see table

Standard Products

Standard	Suitable for types	Diameter d [mm]	Length G [mm]	Standard	Suitable for types	Diameter d [mm]	Length G [mm]
83160110K	M, MS, M2S, L, I, IS, ISP	10	110	83160400K	M, MS, M2S, L, I, IS	10	400
83160150K	M, MS, M2S, L, I, IS, ISP, ISN	10	150	83170110	ISP, ISN	12	110
83160200K	I, IS	10	200	83180150K	D ... R	14	150
83160300K	M, MS, M2S, L, I, IS	10	300	83190065	ISP, ISN	15	65



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

Data sheet www.trafag.com/ H72163

8411/8412/8414 Protection tubes for remote sensors

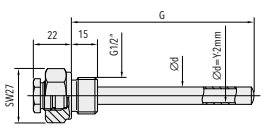
Features

- For liquid medias
- Pressure proof upto 40 bar

Technical Data	
Protection tube material	Stainless steel 1.4435/316L
Operating temperature	see table

Standard Products

Standard	Suitable for types	Diameter d [mm]	Length G [mm]	Standard	Suitable for types	Diameter d [mm]	Length G [mm]
84110110K	M, MS, M2S, L, I, IS, ISP	10	110	84110400K	M, MS, M2S, L, I, IS	10	400
84110150K	M, MS, M2S, L, I, IS, ISP, ISN	10	150	84120110	ISP, ISN	12	110
84110200K	I, IS	10	200	84140065	ISP, ISN	15	65



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

Data sheet www.trafag.com/ H72163

1211/1216 Protection tubes for direct mounting

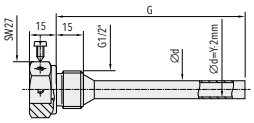
Features

- For thermostats type MST
- Lateral clamp mounting

Technical Data	
Protection tube material	Stainless steel 1.4435/316L/ brass nickel plated
Operating temperature	see table

Standard Products

Standard	For type	Sensor material	Diameter d [mm]	Length G [mm]	Standard	For type	Sensor material	Diameter d [mm]	Length G [mm]
12110150K	MST ... 15	1.4435/316L	10	150	12160150K	MST ... 15	Brass nickel plated	10	150
12110400K	MST ... 40	1.4435/316L	10	400	12160400K	MST ... 40	Brass nickel plated	10	400



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

Data sheet www.trafag.com/ H72163

1411/1412/1414 Protection tubes for direct mounting

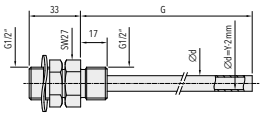
Features

- For thermostats type ISPT/ISNT
- Pressure proof upto 40 bar
- With captive nut

Technical Data	
Protection tube material	Stainless steel 1.4435/316L
Operating temperature	see table

Standard Products

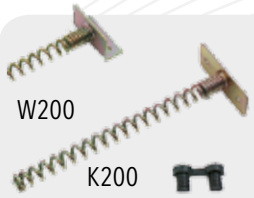
Standard	For type	Sensor material	Diameter d [mm]	Length G [mm]	Standard	For type	Sensor material	Diameter d [mm]	Length G [mm]
14110150K	ISNT ... 150	1.4435/316L	10	150	14140065K	ISP/ISNT ... 65	1.4435/316L	15	65
14120110K	ISNT ... 110	1.4435/316L	12	110					



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

Data sheet www.trafag.com/ H72163

Thermostat sensor duct holder W_K



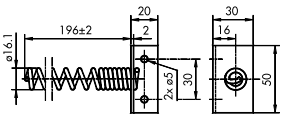
Features

- For HVAC
- For retrofitting of thermostats

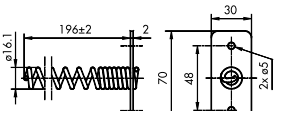
Technical Data	
Material	Steel galvanised

Standard Products

Standard	For type	Material	Standard		Material
W200	I, IS, M2, M2S	Steel galvanised	K200	L, LF, M, MS	Steel galvanised



W200



K200

Data sheet www.trafag.com/ H72106

Capillary tube holder K80140

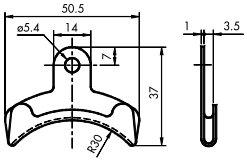
Features

- For frostat F/F...R

Technical Data	
Material	Steel galvanized

Standard Products

Standard	Package size	Material
K80140	6pcs	steel galvanised



Mounting plate MB31

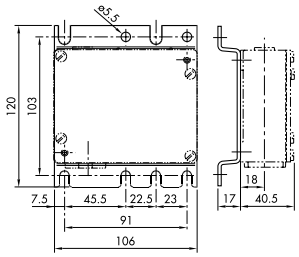
Features

- For pressure transmitters and pressure switches

Technical Data	
Material	Steel galvanised

Standard Products

Standard	For type
MB31	N, ND, DGP, P, PS, PV, PD, PK, PVF, EXP, EXPK, EXPD



Screwed cable gland CG

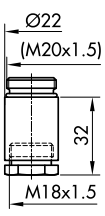
Features

- DIN8280 for shipbuilding
- Retrofit for pressure transmitters, - switches, thermostats

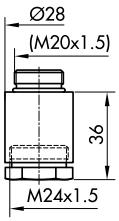
Technical Data	
Sensor material	Brass
Thread	M18x1.5, M24x1.5
Cable diameters	10.5 mm, 16.5 mm

Standard Products

Standard		Sensor material	Standard		Sensor material
CG18	M18x1.5 for 8...10.5 mm cable diameter	12...30	CG24	M24x1.5 for 14...16.5 mm cable diameter	12...30



CG18



CG24

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.

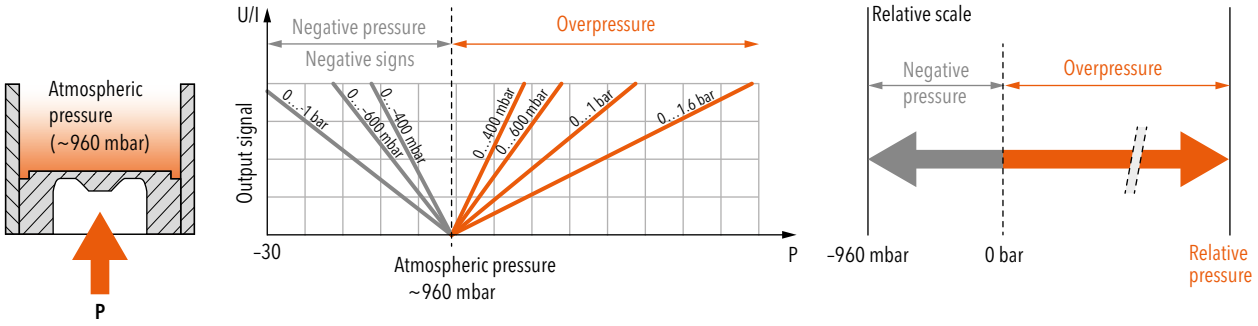
Types of pressure measurement

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

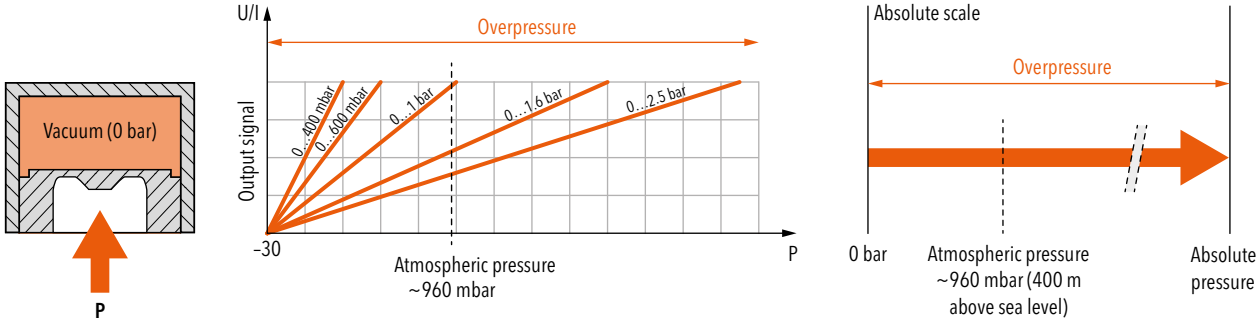
Absolute pressure measurement
The measuring result is always the deviation to the absolute zero (vacuum).
e.g. 4 mA = 0 bar (=vacuum); zero point (ZP): 0 bar

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

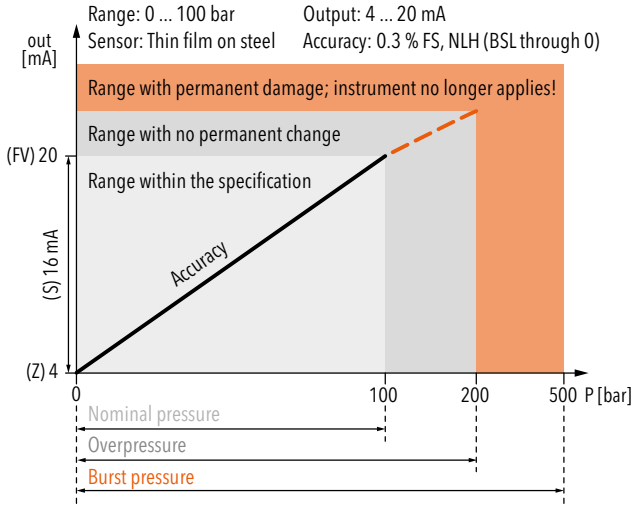
Nominal pressure measuring range
Range between the upper and lower limits of the size measured (operating pressure). The specified accuracy remains within this range.

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



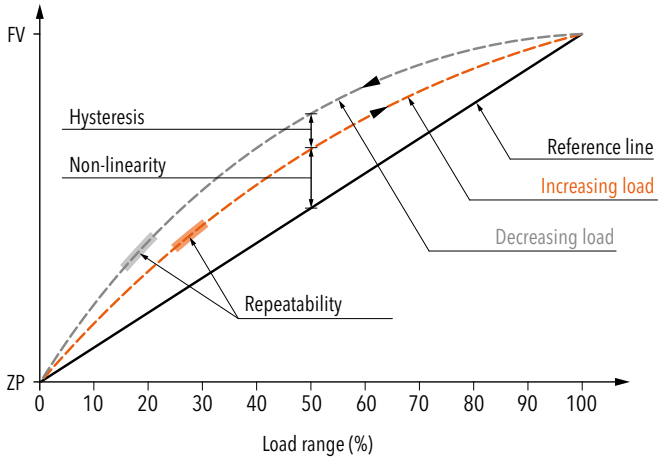
Accuracy

Typical 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.

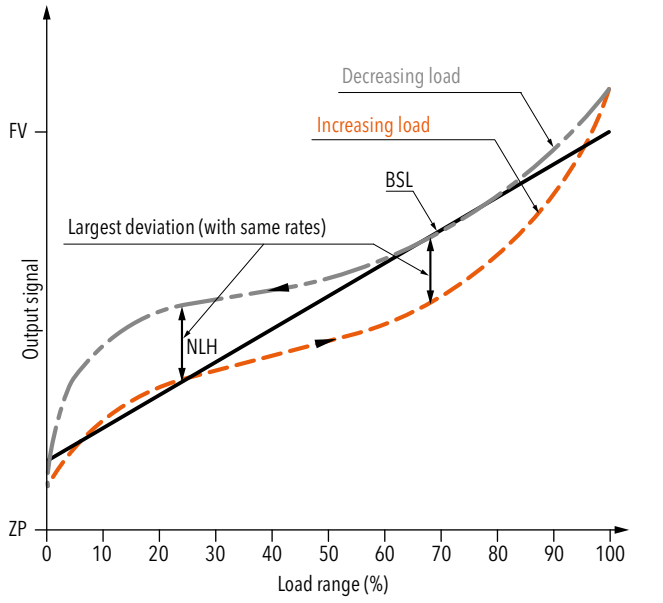
Non-linearity
The largest deviation from the effective characteristic line of an ideal reference line. The reference line can be defined as a limit point adjustment, a BSL or a BSL through 0.

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.

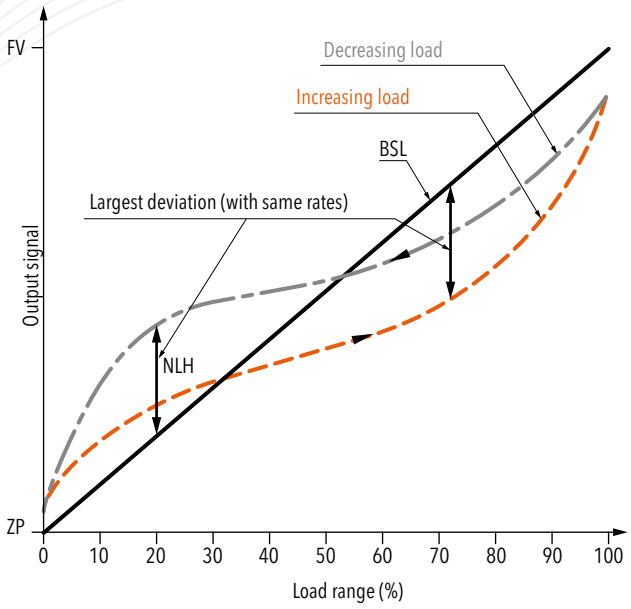
Specifications: Accuracy NLH (BSL)



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
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 VF
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.
E.g.
X...X = adjustable value
X - X = non-adjustable value; proportional to nominal pressure
X = fixed value

Limiter pressostats
Pressostat with manual micro-switch reset.

Environmental Conditions

Media temperature
Permissible temperature range of the measuring media.

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

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

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

EMC Protection

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

Immission
Immunity to external electromagnetic disturbances.

Emission
Interference emission from electromagnetic disturbances.

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

Burst
Immunity to recurring, rapid, transient electrical disturbances.

Ex-Product lines for pressure and temperature control

Trafag offers a wide range of EX-, ATEX- and IECE 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 EX-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 level	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)	Ingress protection	Temperature level	Equipment protection level

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

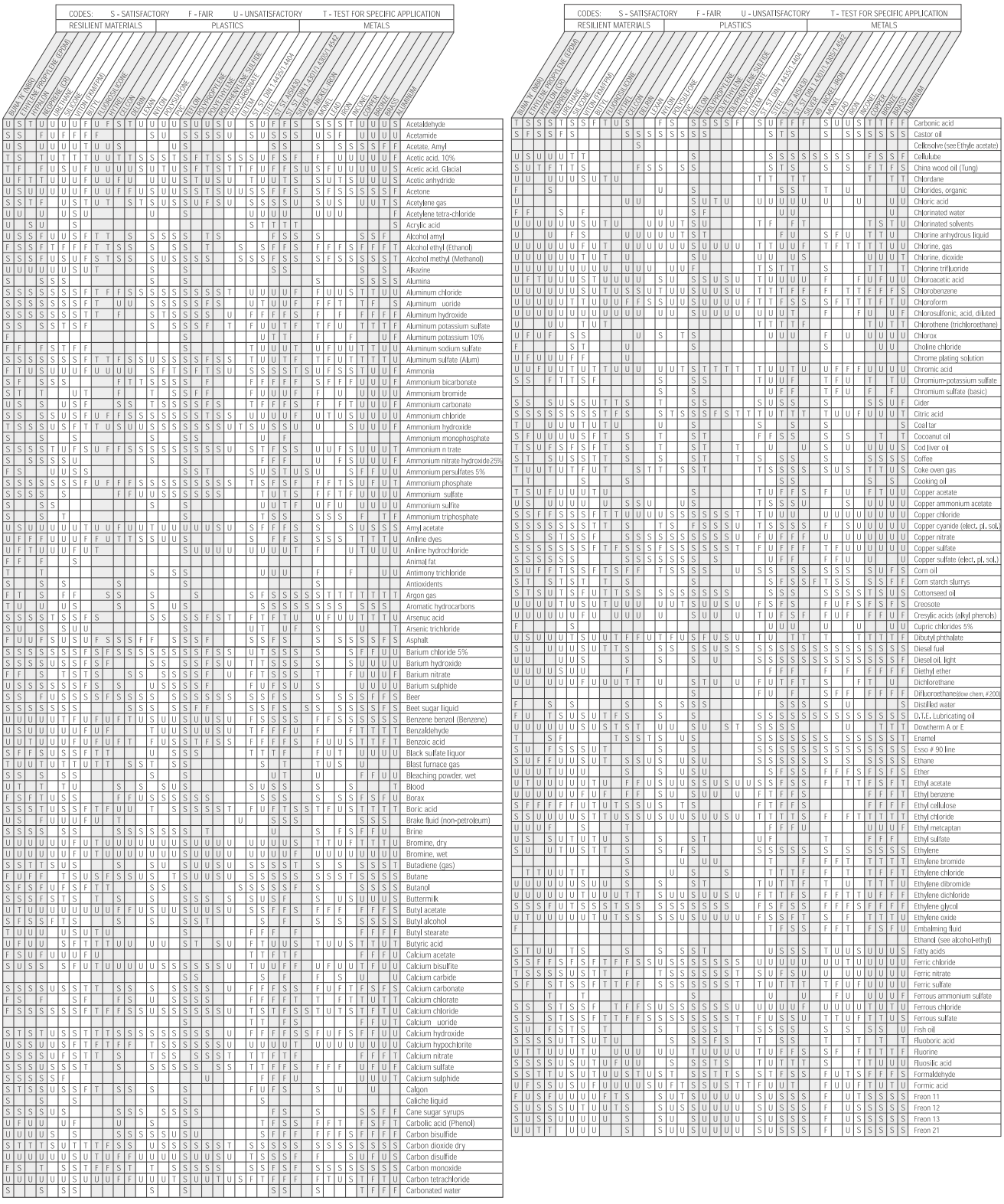
EN 50303 – Mining

Ex ia I Ma

Type of protection	Equipment for mining	Equipment protection level

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

Fluid resistance guide



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

Fluid resistance guide (cont.)

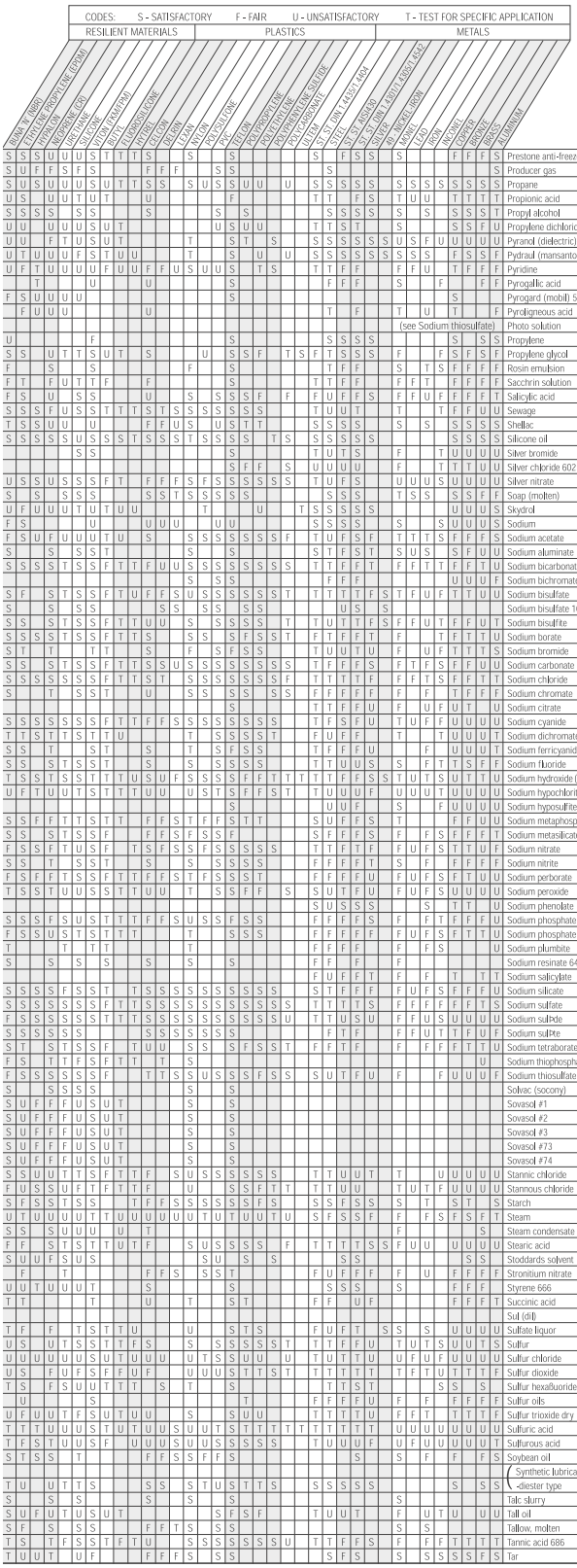
CODES: S - SATISFACTORY F - FAIR U - UNSATISFACTORY T - TEST FOR SPECIFIC APPLICATION

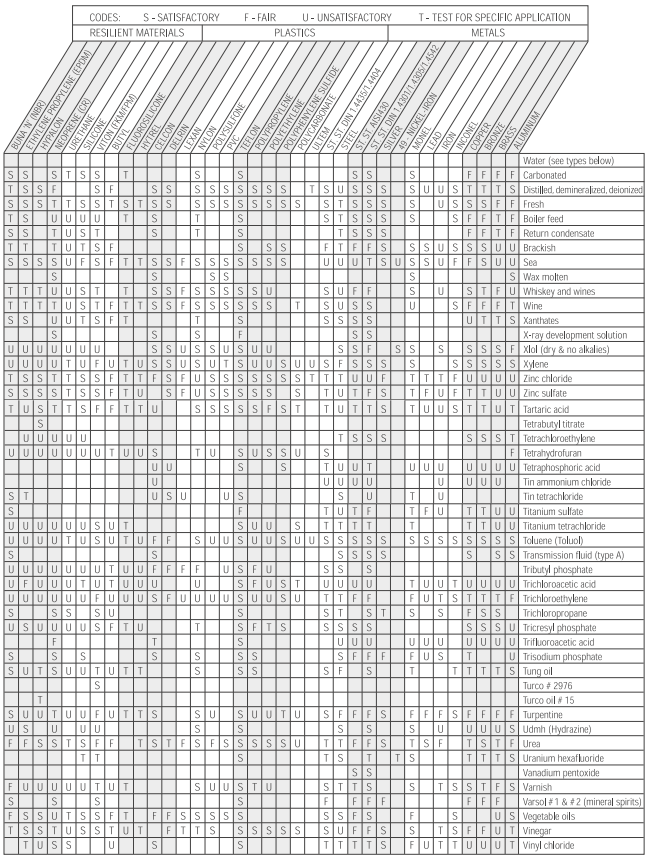
RESILIENT MATERIALS										PLASTICS												METALS														
BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM	
U	T	T	T	U	U	U	U	U	U	S			S	U	U	S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 22
U	T		F			U	T			S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 31
S	T	S	S				T			S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 32
F	U	F	T	F	U	T	U			S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 112
S	U	S	S		U	U	U	U	S	S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 113
S	U	S	S	T	U	F	U	F	T	S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 114
S	S		S		U	T	T			S			S	U		S	U	U	U	U		S	U	S	S	S		F		U	S	S	S	S	S	Freon 115
S			S							S			S			S							U	S	S	S				U		S	S	S	S	Freon 218
U			S			U				S			S	U		S	U	U	T	U		S	U	S	S	S		T		U	T	S	S	S	S	Freon 502
S	S		S	U	U	S	S	U	U	F	F		U	U		S	U	U	U	U		S	T	S	S	S		F			S	S	S	S	T	Freon 503
S													S											S	S							S		S		Freon 13B1
S			S							S			S			S							U	S	S	S				U		S	S	S	S	Freon 6316
S			S							S			S			S							U	S	S	S				U		S	S	S	S	Freon 6318
S	U	S	S	T	U	S	U	U	S	S	S		U	T		S	T	U		T	S	S	T	S	S	S		F			S	S	S	S	T	Freon TF (solvent)
T	T	S	T	S	U	S	T			S	S					S	T	U		T		U	U	S	T						S	S	S	S	T	Freon TWD 602 (solvent)
F		F	T			S	T			S	S					S	T	U		T		S	T	F	F			F			F	S	F	S	F	Freon TE 35
																																				Freon TM
T	T		T	T	U	S	T			S	S			U		S	T	U		U		S	T	F	T			F			F	F		S	U	Freon TMC (solvent)
F	U		U	U	U	U	U	T	T	F	F			U		S	U	U	U	U		S	T	S	S	S		F			S	S	S	S	T	Freon MF (solvent)
F	U		U	T	U	S	U			F	F			U		S	U	U	U	U		S	T	S	S	S		F			S	S	S	S	T	Freon BF (solvent)
S	S	S	S	S	S	S		S	T	T	T	S	S		S	S	S	S	S			S	U	F	F			S		U		F	F	U	T	Fruit juices
T	U		U	T	U	S	U	T	T	S	S	S	S	F	S	S			S				T	S	S	S		S	S	T	S	T	S	S	S	Fuel oils
U	F	U	U	U	U	U	S	U	T	F	F	S	U	U	U	S	U	U	S	U		S	S	S	S	F		F	T	T	F	F	S	F	S	Furfural
T			S				S			F	F			U		S	U	U	U	U		S	T	S	S			F			S	S	S	S	T	Freon 123
U	S		S	U	U	U	U	U	U	F	F		T	U		S	U	U	U	U		S	T	S	S			F			S	S	S	S	T	Freon 134A
S	U	T	U	U	U	F	U	T	F	U	U		S	F	S	S	T	U	S	T		S	U	F	S	S		F			S	F	S	F	S	Gallic acid
T	U	U	U	T	U	S	U	S	T	S	F	S	S	T	S	S	U	U	S	T	S	S	S	S	S	S		S	S	T	S	T	S	S	F	Gasoline
S	S	S	S	U	S	S	T	T		S	S		S	S	S	S	S	S	S			S	U	S	S			S		U		S	S	F	S	Gelatin
S	S	S	S	U	S	S	F	T	F	S	S	S	S	S	S	S	S	S		T		S	S	S	S			S		S		S	S	F	S	Glucose, edible
S	S	S	S	U	S					S	S	S	S	S	S	S							S	T	S			S		S		S	S	F	S	Glue (non acid)
S	S	S	S	U	S	S	F	T	T	S	S	S	S	S	S	S	S	S	S	S		S	S	S	S	S		S	F	F	S	F	S	S	S	Glycerine (Glycerol)
S	U		U	S	U	S	U	T	T	S	S		S			S	T					S	S	S	S	S		S		S		S	S	S	S	Grease, petroleum base
S			S	S	S	S							S			S						S	S	S	S	S	S	S	F	S		S	S	S	U	Goulac (core binder)
S	S		S	T	T	S	F	T	U				U	S		S						F	T	U	F			F	U	T		U	U	U	U	Green sulfate liquid
S	S	S	S	U	S					S								S						S	S	S						S	S	S		Glycol solution
U	U		U	U		F		U	U	U	U		U	U		S	U	U	U	U		S	U	S	S	S						S		F	U	Halon 1011
F			U			U												U																S		Halon 1202
T						S		T										U				S	S	S	S							S	S	S	S	Halon 2402
T			S	T	F	F	S	U		S	S		S			T		U				S	T	T	S						S	S		S	T	Halon 1301
T			U			F		U					S									U	S	S	S							S	S	S	S	Halon 1211
S	U	F	F	F	U	S	U	T	T	S	S		S	U		S	U	U	S	U		S	S	S	S	S		S				S	S	S	S	Heptane (liquid)
F	U	S	F	S	U	S	U	T	T	S	S		T	S		S	U	U	S	U	S	S	S	S	S	S		S		F		F	F	S	F	Hexane
S	U	S	T	F	U	S		T	S	S	S		T	S		S	T	U	S	T		S	S	S	S	S	S	S	S	S		S	S	S	S	Hydraulic oil
F	S		F	U	U	U	S	U	U	F		S	S		S	S	U					S	U	F	S	U		U	U	U		U	U	U	S	Hydrazine
U	S	S	U	U	U	F	T	U		U	U	S	U	S		S	S	T	U	U		U	U	U	U			U			U	U	U	U	U	Hydrobromic acid
T	U	T	U	T	U	F						U	U	U	U	S								F	F	F		S				S	S	S	S	Hydrocarbons (c hlorinated)
T	F	T	T	U	U	T	T	T	U	U	U	S	U	S	S	F	T	T	T	T	T	U	U	U	U	T		U	U	U	F	U	U	U	U	Hydrochloric acid (aerated)
T	F	T	U	U	U	T	T	T	U	U	U	S	U	S	S	F	T	T	T	T	T	U	U	U	U	F		U	U	U	T	U	U	U	U	Hydrochloric acid (air free)
S	S	S	S	U	U	S	F	T	U	U	U	S	U	S	S	S	S	S				F	U	S	S	T		F		U	T	U	U	U	S	Hydrocyanic acid
T	T	S	U	T	U	S	U	U	U	U	U	S	U	S		S	T	T	T	T		T	T	U	U	F		U	U	U	U	U	U	U	U	Hydrofluoric acid (aerated)
U	T		U	T	U	S	U	U	U	U	U	S	U	S		S	T	T	T	T		T	T	U	U	S		F	T	U	U	T	T	U	U	Hydrofluoric acid (air free)
S	S	S	S		U					U	U	S		S	S								U	U	U			S			S			U	U	Hydrofluosilicic acid
S	S	S	S	S	T	S	S	U	F	U	U	S	S	U	S	S	S	S	S	S		S	S	S	S	S		T	S	S		S	S	S	S	Hydrogen 377
U	T		U	U	U	S	F	U		U	U			T		S	F		T	U		T	T	U	U	U		U	U		U	U	U	U	U	Hydrogen bromide (anhydrous)
U	S		T		S	T	T	U		U	U		U			S	S	S				S	T	U	T	F		T	F	T	S	T	T	T	U	Hydrogen chloride(anhydrous)
T	F		U	U	U	S	U	U		U						F	T	T					F	F	F	F		S			S	T	T	T	U	Hydrogen ßoride
U	T	U	U	T	T	T	T	T	U	T	U		U	T	S	S	T	T	T	T		T	T	T	T	U		T	U	T	F	U	U	U	F	Hydrogen peroxide
T	S	T	F	U	T	U	F	U	T	U	U	S	U	S	S	S	S	S	S	T		T	T	T	T	U		T	F	T	S	U	U	U	F	Hydrogen sulfide
T		S	T	S		S							F		S	S							S	S	T			S		U					T	Ink (non aniline)
U	F	F	U	U	U	S	T	T	T	U	U		S	S	U	S	T	U	U			T	T	T	T	U		T	U	U	S	T	T	U	U	Iodine
																							U	U	U			T	F	U		T			U	Iron potassium sulfate
T	U		F	T	U	F	U	T		S			S			S						S	S	S	F	S	S	S	S	S	S	S	S	S	S	Isobutane
S	U	S	F	S	U	S	U	S	S	S	F	S	T		S	S	T	T	S	T		S	S	S	S	S	S	S	S	S	S	S	S	S	S	Isooctane
U	F	U	U	U	U	U	F	U	U	S			T	U		S	T	T		U		F	S	T	F	U		T				U		T	T	Isopropyl acetate
F	S	S	F	U	S	S	F	T	T	S	S		S	F		S	S	F	S	S	S	F		S	S	S		S			F	S	S	S	S	Isopropyl alcohol (Isopropanol)
F	U		U	U	U	S	U	T					U					U																		JP-1, JP-A, JP-A1
F	U		U	U	U	S	U	T					U					U																		JP-2
F	U		U	U	U	S	U	T		T	T		U	S		S	T	U	S	T		S	S	S	S			S			S	S	S	S	S	JP-3
T	U	U	U	U	T	S	U	T	S	F	F	S	S	S	S	S	T	U	S	T	S	S	S	S	S	S	S	S	S	F	S	F	S	F	S	JP-4
S	U		U	T	U	S	U	T		F	F			S		S	T	U	S	T		S	S	S	S			S			S	S	S	S	S	JP-5
T	U		U	U	U	S	U	T										U				S	S	S				S				S	S	S		JP-6
																		U																		JP-7
T	U		U	U	U	S	U	T										U				S	S	S	S			S				S	S	S		JP-8
S	U	U	F	F	U	S	U	T	F	S	S	S	S	F	S	S	U	U	S	T	S	S	S	S	S	S		S	S	S	S	S	S	S	S	Kerosene
S	T	S	S	S	T	S		T					S		S	S						S	U	S	S			S		U			U		U	Ketchup
T			U		U		U	S										U																		JP-B
T	U		U		U	S	U	U										U																		JP-X
U	U	U	U	U	U	U	U	U	U	S			S			S	U	T		U		S	T	F	F	S		S		T		S	S	S	S	Lacquers & Lacquer solvents
T	T	T	T	U	S	F	T	T	U	U	U		T	S	T	S	S	T	S	F		U	U	T	T	F		T	U	U	S	T	U	U	U	Lactic acid
S	F	U	U	U	F	S	U	T	T	F	F		S			F	T	T		S		S	T	F	F	S		F	U			U	U	T	U	Lard
S	S	T	S	U	U	U	F	U		F	S	U	S	S	S	S	S	S	S			F	U	F	F	F		S			F	U	U	U	U	Lead acetate
U	S														S	S								S	S											Light water (fire ext.)
S	S		S		S	S							S			S								F	F	S		S				S	S	S	F	Lime slurry
S	S	T	S	T	S	S	F	T					S			S	S	S				S	S	F	S			S		S		U	U	U	U	Lime sulfur
	S	U	U	U	T	U				S																										Lindol (TCP)
S	U	F	U	S	S	S	F	T	T	S	S		S	T	S	S	S	U	S	S		S	S	S	S	S		S		S		U	S	S	S	Linseed oil
F	U	U	U	U	U	S	U	T	T	S	S		F			S	U		S			S	S	S	S	S		T				S	S	S	S	Liquid petroleium gas (LPG)
S	S		F	U	T	S		T							S	F							F	S	S				S			F	F	F		Lithium bromide
S	F		S	T		S	T			S			S		S	S	S	S		F		S	F	F	F	T		F	U	F		F	F	F	U	Magnesium carbonate 437
S	S	S	S	S	S	S	F	T	T	S	S	S	T	S	S	S	S	S	S	S		T	U	U	T	F		F	U	T	S	U	U	U	U	Magnesium chloride
S	S	S	S	U	S	S	F		U	S	S	U	S	S	S	S	S	S	S	F		S	S	S	S	T		S	U	F	S	F	S	F	U	Magnesium hydroxide
S	T		S		S	T										S						S	S	S	S	S		S					S	S	S	Magnesium oxide
S	S	S	S	U	S	S	F	T	T	S			S	S	S	S	S	S	S	F		F	S	F	S	F		S	F	F	F	T	T	T	F	Magnesium sulfate
S	S	S	S		S	S	S	S		S			S									S	U	T	T	S		U	F	U		U	U	U	F	Magnesium sulfite
S	S	S	S	S	S	S	S						S			S						S	F	S	S			S		U		F	F	U	S	Malt beverages
S	S		F	T	U	S	F			F	F	S		S	S	S	T			T			U			F		F		U	F	F				Manganese sulfate
S		S	S	S	S	S				S			S			S							F	S	S			S		U		F	F	U	S	Margarine
S	U	S	S	U	S	S				S			S			S	S					S	F	S	F			S		U		F	F	U	U	Mayonnaise
S	S	S	S	T	T	S	F	T		F	F	S	U	S	S	S	S	S		S		U	U	U	U	U		U	U	U	U	U	U	U	U	Mercuric chloride
F	T		F			T	F			S					S	S	S	S				F	U	U	F			U			F	U	U	U	U	Mercuric cyanide

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

RESILIENT MATERIALS										PLASTICS												METALS														
BUNA 'N' (NBR)	ETHYLENE PROPYLENE (EPDM)	HYPALON	NEOPRENE (CR)	URETHANE	SILICONE	VITON (FKM/FPM)	BUTYL	FLUOROSILICONE	HYTREL	CELCON	DELRIN	LEXAN	NYLON	POLYSULFONE	PVC	TEFLON	POLYPROPYLENE	POLYETHYLENE	POLYPHENYLENE SULFIDE	POLYCARBONATE	ULTEM	ST. ST. DIN 1.4435/1.4404	STEEL	ST. ST. AISI430	ST. ST. DIN 1.4301/1.4305/1.4542	SILVER	49 - NICKEL-IRON	MONEL	LEAD	IRON	INCONEL	COPPER	BRONZE	BRASS	ALUMINUM	
S	S	S	S	T	S	S	T	U	T	U	U	F	S	S	S	S	S	S				S	S	S	S	U		U	U	S	S	U	U	U	U	Mercury
S		S	S		S	S							S			S								T	U			F		U		U	U	U	U	Mercury salts
U	T					U										S							T	F	F			U		F		U	U	U	F	Methallylamine
T				S	U								U		U	S							T	F	U	F		F		S	S	F	S	S	U	Methallyl chloride
S	U	T	F	U	U	S	U	U	T	S			F		S	S	T	U				S	S	S	S	S		S	S	S		S	S	S	S	Methane
																																				Methanol (see alcohol-methyl)
U	F	U	F	U	U	U	T	U	U	F	F		F	U	U	S	T					S	S		T	T				S		F			T	Methyl acetate
U	U	U	U	U	U	F	U	T	U	F	F	F	S	U	U	S	U	U	T	U		T	T	T	T	F		F		S	T	F	S	T	U	Methyl chloride
U	F	U	U	U	U	U	F	U	T	F	T		S	U	U	S	U	U	S	U	U	S	S	F	F	F		S	S	S		S	S	S	S	Methyl ethyl ketone (MEK)
U	U	U	U	U	U	F	U	F	U	S			U	U	U	S	T	U	S	U	U	F	T	T	T	S		F	T	F	T	T	U	S	U	Methylene chloride
S													S			S								S	S	S						S		S		MIL-F-5516
S													S			S								S	S	S						S		S		MIL-F-5572
S													S			S								S	S	S						S		S		MIL-F-5624
S						S																		S	S	S						S		S		MIL-F-25558
S	U		S	S		S							S			S								S	S	S						S		S		MIL-H-5606
S	U		S	S		S																	S	S	S	S						S		S	S	MIL-L-7808
S	S	S	S	U	S	S	U	T	F	S	F	S	S	U	S	S	F	S		S		S	S	S	S	U		U		S	S	U	U	U	S	Milk 474
S			S		S	U				U	T	S	S	S	S	S								U	F		F	S	T	U		U	U	U	F	Mine water (acid)
S	U		F	F	S	S	U	T	T	S			S	S	S	S	U	U	S	F		S	S	S	S	S		S	S	S	S	S		S	S	Mineral oil, USP
F	U		U		U	S				S							U							S	S	S						S		S	S	Mineral spirits
										U			U			S								F	F	U		U	U			U	U	U	U	Mixed acids (H_2SO_4 & HNO_3)
S	T	S	S	T	S	S	F	T	T	S	S	S	S		S	S	S	S	S			S	S	S	S	S		S		S	S	S	S	F	S	Molasses
S	U	S	T	T		S			T	S			T	S	S	S	U	U	S	S	S	S	S	S	S	S		S			S	S	S	S	S	Motor oil - sae #10, etc.
F	U	U	U	U	U	S	U	T	T	S		F	S	T	T	S	U	U	S			S	S	S	S	S		F		T	S	F	F	F	S	Naphtha
U	U	U	U	T	U	S	U	T	T	S			S		U	S	F	U	S			S	S	S	S	S		F	F	F		F	F	F	F	Naphthlene
F	U	U	U		U	S	U	T		U						S						T	T	F	T	S		T		T		F	U	F	F	Naphthenic acid
S	U	S	S	U	U	S	U	U	T	S			S		S	S	S	U				S	S	S	S	S		S		S		F		S	S	Natural gas
S	S	S	F	U	S	S	F	T	U	F	F	S	U	S	S	S	S	S	S	S		T	U	U	T			T	F	U	F	U	U	U	U	Nickel chloride
S	S		S		S	S	F			F			S		S	S	S	S	T	S		T	T	F	F			T			U	U	U	U	U	Nickel nitrate
S	S	S	S	U	S	S	F	T	U	F	F	S	U	S	S	S	S	S	S	S		F	U	T	F			T	F	U	F	T	T	T	U	Nickel sulfate
U	T	T	U	U	U	U	T	U	U	U	U	S	U	U	T	S	T	T	T		T		U	T	S	U		U	U	U	F	U	U	U	T	Nitric acid with 40% H_2O 493
U	T	U	U	U	U	F	T	T	U	U	U	S	U	U		S	T	T	S	U	T	S	U	T	T	U		U		U	T	U	U	U	U	Nitric acid vapors
U	U	U	U	U	U	U	U	U	U	U	U	S	U	U		S	S	U	T	U		T	U	T	T	U		U		U	F	U	U	U	T	Nitric acid (red ßuming)
										U	U		U	U									U	U	U			U	U	U		U	U	U	U	Nitric + HCL acids
													U										S	S	S					S		S				Nitriding gases
U	F	U	U	U	U	U	T	U	U	S	S	U	S	U	U	S	S		S	U		T	S	S	S	S		F	U	F		T	F	F	T	Nitrobenzene
U	T	U	U	U	U	U			U	F			U			S							F	F	F	U	U	U	U	U		U	U	U	S	Nitrogen tetroxide-dry
		S	S				T			U												T	S	F	F	T		F	U	S	S	F	F	F	S	Nitroglycerine
U	T	S				T				U			U			S	U	U				T	U	U	U			U	U		F	U	U	U	U	Nitrous acid
F	F	U	F	S	F	U	T	T		S			S			S	U	U				T	S	F	F	U		U			U	F	F	F	T	Nitrous oxide
																							S	S	S		S					S	S	S	S	Nyval (Mobil)
S	S		S	S	S	S	F	T	F	S	S		S	S		S	S	S	S			S	S	S	S	S					S	S	S	S	S	Nitrogen
S	U	U	S	S	U	S																	S	S	S	S						S	S	S	S	Oronite 8200
											S																	S								Oakite
F	U	U	T	T	T	S	U	S	T	F			S	S	S	S	F	U	F	F		T	F	F	S	S		F	U	F	T	T	T	T	T	Oleic acid
U		U	U							U			S		U	S	U						S	S			F								F	Oleum
S	F	U	S	S	S	S	T	T		S			T	U		S	S	T		S		S		S	S			S		S	S	T		S	S	Olive oil 514
T	U		T	S	U	S	U	T	S														S	S	S	S						F	S	S	S	Oronite hydraulic fluid
F	S	T	F	T	F	U	F	T	U	U			S	S		S	S	T	S	T		T	U	T	T	F		T	U	U	S	T	F	T	T	Oxalic acid
										U													T	T	T			T	F	T		T	T	T	F	Oxidizing gases
U	T	T	S	T	T	S	F	T	F	U	U	T	T	T	T	T	U	U	S	T		S	S	S	S	F		S		S		S	S	S	S	Oxygen
U	S	S	T	S	S	T	F	S	U	U	U		U	T	T	S	U	U		T		F	U	F	F	F									F	Ozone
F			F	F		U	U						S	T	S	F						S	S		S			S					S	T	T	Paint, oil base
T			T		T								S			S												S								Paint vechicles (except soya)
S	U		U	T	T	S	U	T														S	S	S	S			S					S	T	S	Palm oil
F	F	U	U	T	U	F	T	T	T				U	S		S	F	T				S	S	S	S	T		F				F	F	U	S	Palmitic acid
S	U		U	F	T	S	U			F	F	S	S	S	S	S	T	U		T		S	S	S	S			S			S	S	S	S	S	Paraffin
S			S	F	T	S				F						S		U				S		S	S			S				S	S	S	S	Paraffin oil
S			S		F			F								S												T							S	Pencillin solution
F	U	F	S	U	U	S	U	U		S						S		U		S		F	F	F	F	S	F	S				F	F	F	S	Pentane
U	F	T	F	U	U	F	T	S	U	U	U		U	U		S	T	U	S	U		T	U	T	T			U		U		U	U	U	T	Perchloric acid
U	U	U	U	U	U	S	U	T	U	F	F		T	U	U	S	U	U	T	U	U	F	F	F	F	S		F	T	F	S	F	F	F	T	Perchloroethylene 539
S	U	T	T	T	T	S				S													S	S		S		S		S		S	S	S	S	Petroleum oils
				S																																Petroleum residue from distillation
U	U	U	U	U	T	F	F	T	U	U	U	S	U	U	T	S	U		S	U	U	T	U	F	S	S		F	F	T	T	F	S	F	T	Phenol
	S		F	F	F	F				U	U		T	U	U	S							S	S	S	S	S	S	S	S		F	S	S	F	Phosphate ester non-inflammable oils
T	F	S	T	T	U	S	F	T	U	U	U	S	U	S	S	S	S	T	S	T	T	T	U	U	T	F		U	T	U	S	U	U	U	T	Phosphoric acid (aerated)
T	F	S	T	T	T	S	F	T	U	U	U	S	U	S	S	S	S	T	S	F	T		U	U	T	F		T	T	U	T	T	T	T	U	Phosphoric acid (air free)
U										U					S	S	T					T	F		S			S	S	F		T	T	T	S	Phosphorous
	F		T			S				U	U	S	U			S	S						U	U	T			U	U	U		U	U	U	U	Phosphoric acid vapors
	T	U	U	U	U	U				U																										Pickling solution
F	F	S	S	T	T	U	U	T	U	U	T	F	S	S	S	S	T	T				F	U	F	S	S		U	T	U	U	U	U	U	U	Picric acid
F	U	U	U	S	U	S	U	S					S			S						S			S			S		S			U		S	Pine oil
S	S	U	F	U	U	U	F	U		F			T			S	T	T				F	S	F	F	S		F		S		F	F	F	U	Potassium acetate
S	S		S		S	S				S			S		S	S							U		S			F	F	U		F				Potassium aluminum sulfate
S	S		F	U	F	S	T	T		F			T		S	S	S	S				F	F	F	S			F	U	F		F	F	F	U	Potassium bicarbonate
S	S		S		S	S	T			S			T		S							T	U		U	S		U	F	U	U	F	U	U	F	Potassium bisulfate
S	S		S	U	S	S	T	T		T			T	S	S	S	S	S	S	T		F	U	U	F	U		F	F	U	S	F	F	F	U	Potassium bromide
S	S		S	U	S	S	F	T	U	F	F	U	U	S	S	S	S	S	S		T	T	F	F	S	F		F	U	T	S	U	U	U	U	Potassium carbonate
T	S		S	S	S	S	F			U	F	F	S	S	S	S	S	S	S			F	F	F	S	F		U			S	T	U	U	U	Potassium chlorate
S	S	S	S	S	S	S	F	T	T	S	F	F	U	F	S	S	S	S	S	T		F	T	T	T	U		F	U	T	F	F	F	T	U	Potassium chloride
S	S		T	T	S	S	T			U			S		S	S	S	S				F	T	F	F	F		F	F	F	S	F	S	F	F	Potassium chromates
S	S	S	S	S	S	S	S	S	T	U	U	F	S	F	S	S	S	S	S			F	S	S	S	U		F	U	T	F	U	U	U	U	Potassium cyanide
	S	S	S	S	S	S	F	T	T	U			T	S	S	S	S	S	S	T		T	F	F	F	S		F	F	F	S	F	F	F	F	Potassium dichromate
U	T		T			S	T			S			T		S	S	S	S				T	U	U	F	U		F	F	U	T	F	F	F	S	Potassium ferricyanide
S	S	S	F	U	T	T	F	U		S	F	F	F	F	S	S	T	F	T	U	S	T	T	F	S	F		F	U	T	S	T	T	U	U	Potassium hydroxide
F	S		F	T		U	U						T			S	U	U	S			T	T	U	U	U		U			U	U	U	U	U	Potassium hypochlorite
S	S	S	S	S	S	S	S	S	T	F	F	F	S	F	S	F	S	S	S	S		T	F	F	F	T		F	F	F	T	F	F	F	F	Potassium nitrate
U	S	S	S	U	S	S				U	S		U	S		S	S	S	S	S		F	F	S	S	U		F	U	F	F	F	F	F	F	Potassium permanganate
										U												F	T	T	F	U		F	U	U		U	U	U	U	Potassium peroxide
S	S		U	T		S	T			S			T			S	S	S				T	T	S	S	U		U	U	U		U	U	U	U	Potassium persulfate
S	S	F	S	S	S	S	S	S	T	S	F	F	S	S	S	S	S	S	S	T		T	S	S	S	F		F	F	U	S	F	F	U	S	Potassium sulfate
S	S		S	S	S	S	S						S			S	S	S	S			F	U	F	F	U		U			S	U	U	U	U	Potassium sulfide
F	S	F	S	S	S	S	F	T					T			S	S	S				T	T	U	T	S		U	F	U		F	F	U	U	Potassium sulfite

Fluid resistance guide (cont.)





Conversion of pressure units

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

Conversion of temperature units

[°F] to [°C]
Formula: °C = 5/9·(°F –32)

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

[°C] to [°F]
Formula: °F = 9/5·(°C +32)

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

Trafag international

Europe

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

Austria
Trafag GmbH
Schreibern 7
A - 6922 Wolfurt
Tel. +43 5574 20866
www.trafag.at

Belgium
Marktechnical B.V.B.A.
Boxtelstraat 11
B - 2320 Hoogstraten
Tel. +32 3 311 8864
www.marktechnical.be

Bosnia
Axo-Texcomp Services SA
P.O. Box 88
CH - 1164 Buchillon
Tel. +41 21 807 22 01

Croatia see Bosnia

Cyprus
Bee Engineering Services Ltd
P.O. Box 54739, CY - 3727 Limassol
Tel. +357 25 588 775
www.beeengineering.com

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

Denmark
OEM Automatic Klitsø A/S
Engholm Parkvej 4
DK - 3450 Allerød
Tel. +45 70 106 400
www.oemklitso.dk

Finland
Wexon OY
Juhanilantie 4, FIN - 01740 Vantaa
Tel. +358 9 290 440
www.wexon.com

France
Trafag S.A.R.L.
2 Boulevard Westinghouse
F - 93270 Sevran
Tel. +33 1 4863 0101
www.trafag.fr

Germany
Trafag GmbH
Maybachstr. 7, D - 71272 Renningen
Tel. +49 7 1599 3290
www.trafag.de

Great Britain
Trafag (UK) Ltd.
Units 12&14, Josselin Court,
Josselin Road, Burnt Mills Industrial Estate
Basildon, Essex SS13 1QF
Tel. +44 1 268 727172
www.trafag.co.uk

Greece
ACTech Ltd.
60 Mesologgiou Str.
GR - 185 45 Piraeus
Tel. +30 2104 630 825
www.actech.gr

Hungary
OEM Automatic Kft.
Gyár u.2.
2040 Budaörs
Tel.: +36 23 880 895
www.oemautomatic.hu

Iceland
Samey ehf.
Lyngas 13, IS-210 Gardabaer
Tel. +354 510 5200
www.samey.is

Italy
Trafag Italia S.r.l.
c/o Tecnocity Altomilanese
Via Cremona, 1
20025 Legnano (MI)
Tel. +39 0 331 592 397
www.trafag.it

Montenegro see Bosnia

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

Norway
Stork AS
Brynsveien 100
N - 1352 Kolsas
Tel. +47 67 17 64 00
www.stork.no

Poland
POLTRAF Sp. z o. o.
ul. Czarny Dwór 2
PL - 80-365 Gdańsk
Tel. +48 58 557 52 07
Tel. +48 58 557 52 23
www.poltraf.com.pl

Portugal
Contimetra Instrumentos Industriais Lda.
Rua do Proletariado, 15-B
Portela de Carnaxide
P - 2790-138 Carnaxide
Tel. +351 214 203 900
www.contimetra.com

Romania
Synchro Comp s.r.l.
Jan Negulescu 6
Craiova 200678 Dolj
Tel. +40 317 800 000
www.synchro.ro

Russia
POLTRAF CIS
196105, Russia,
St.-Petersburg,
Vitebskiy pr. 3, lit. B
Tel. +7 812 388 62 22
www.trafag.ru

Serbia see Bosnia

Spain
Carlo Gavazzi S.A.
Avda. Iparraguirre, 80-82
E - 48940 Leioa (Bizkaia)
Tel. +34 944 804 037
www.trafag.es

Sweden
Regal Components AB
Lefflersgatan 1
SE-754 50 Uppsala
Tel. +46 18 65 70 00
www.regal.se

Switzerland
see 'Headquarters'
Tel. +41 44 922 32 32
www.trafag.com

Turkey
Alfa Elektronik Makine Ltd Sti
Cevizli Mah. Bagdat Cad.
Güven Sok. No: 11
34846 Maltepe-ISTANBUL
Tel. +90 216 3994404
www.alfasanayi.com

Asia

China

Engines, Shipbuilding:
Entire China
Sun Trade Limited
Room 9C-3, 8B-2
288 Gong He Xin Road
Shanghai 200070, China
Tel. +86 21 6380 4899

Engines: Entire China
Shanghai SKY Trading Co., Ltd.
Bond Shanghai Office
Rm. 24D, Unit.2,
No. 1251 Jiangning Rd
Shanghai 200060
Tel: +86 21 6276 1312
www.sky-trading.com.cn

General industrial: Entire China
Beijing Macrosense Co., Ltd
Rm C1106, Intelli-Center
No. 18 Zhongguancun Donglu
Haidian District, Beijing 100083
Tel. +8610 8260 1626/8260 1361
Mobile +86 1370 103 7546
www.macrosense.com

SF6 Density monitoring: Entire China
ETIC Electrical Equipment Co., Ltd.
A610 Pioneering Square, No. 48 Keji Road,
Xi'an High Technology and Industrial
Development Zone
Xi'an 710075
Tel. +86 29 8799 9981/2/3
www.etic.cn

India

Trafag Controls India Pvt. Ltd.
Plot no-106, Sector-7
IMT Manesar
Gurgaon-122050,
Haryana
Tel. +91 124 4044720
www.trafag.com

Iran

Jannatpour & Sadeghzadeh Trading Group
No. 257 South Lalehzar Street
Tehran
Tel. +98 21 3397 5059
www.persian-automation.com

Israel

Timcon Technologies Systems Ltd
3, Josef Levi St.
Industrial Zone P.O.B. 1057
Kiryat Bialik 27110, Israel
Tel. +972 4 8742605
www.timcon.co.il

Japan

Trafag Japan Co., Ltd.
2-13-5 Shiba Daimon
Minato-ku
Tokyo 105-0012
atsumi-a@muse.dti.ne.jp
Tel. +81 3 6435 7506
www.trafag.jp

Korea

Hwa Jin Enterprise Co.
1573-10, Song Jeong-Dong,
Gang-Seo Gu
Busan 618-270, Korea
Tel. +82 51 831 9447
www.hwa-jin.com

Malaysia

OptoCom Equiptech (M) Sdn Bhd
H49-2, Jalan 5 5 Cosmoplex Industrial Park
BB Salak Tinggi, Sepang
Selangor 43900
Tel. +60 38706 6806
www.optocom.com.my

Singapore

Bond Instrumentation (S) Pte. Ltd.
8 Gul Street 3, Singapore 629265
Tel. +65 68 651 800
www.bond.com.sg

Taiwan

Daybreak International (Taiwan) Corp.
3 Fl., 124 Chung-Cheng Road,
Shihlin, Taipei 11145
Taiwan R.O.C.
Tel. +88 6 288 661 234

Thailand

Themtech Co., Ltd.
127 Soi Srimuang-Anusorn
Sutthisarnvinijchai Rd., Dindaeng
Bangkok 10400
Tel. +662 693 6767
Tel. +662 693 6629
www.primusthai.com

United Arab Emirates

Abdulla Bin Hamid Trading LLC
Po Box 30495
Dubai, UAE
Tel. +9714 2241464
Tel. +9714 3411723
www.accutech.ae

Vietnam

GNN Co. Ltd
33 Hoa Hong 2, W.2
Phu Nhuan Dist. HCMC
Tel. +84 8 3517 4923
www.gnnvietnam.com

America

USA

Trafag, Inc.
9600-B Southern Pine Blvd.
Charlotte, NC 28273, USA
Tel. +1 704 343 6339
www.trafag.us

Canada

Indumart Inc.
25 Denison Street
Markham, Ontario
L3R 1B5, Canada
Tel. +1 905 944 9998
www.indumart.com

South America

Brazil

G&M Comercio de Produtos Ltda.
Rua Senador Queiros, 165
09050-300 Santo André
Tel. +55 (11) 4425-4245
www.gmtestemedicao.com.br

Sense Eletrônica
Rua Tuiuti, 1237
Tatuapé São Paulo SP
Tel. +55 11 2145-0421
www.sense.com.br
www.trafag.com.br

Africa

South Africa

ICS (Pty) Ltd.
(Instrumentation & Control Systems)
George Industrial Area, P.O. Box 3053
6536 George, South Africa
Tel. +27 44 850 1221
www.instcon.co.za

Australia, Oceania

Australia

Dart Instruments Pty. Ltd.
250 Military Road
Neutral Bay NSW 2089
Tel. +61 2 8456 7550
www.trafag.com.au

New Zealand

Eurotec Limited
750C Great South Road
Penrose
P.O. Box 14543
Panmure Auckland
Tel. +64 9 579 1990
www.eurotec.co.nz


trafag

Swiss based quality

Worldwide represented, globally trusted

- **Headquarters**
  Switzerland

- **Subsidiaries**

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

- **Representatives**

  Australia
  Belgium
  Brazil
  Canada
  China
  Cyprus
  Denmark
  Finland
  Greece
  Hungary
  Iceland
  Iran
  Israel
  Korea
  Malaysia
  Netherlands
  New Zealand
  Norway
  Portugal
  Romania
  Russia
  Singapore
  South Africa
  Spain
  Sweden
  Taiwan
  Thailand
  Turkey
  United Arab Emirates
  Vietnam

References

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

Trafag sensors & controls
Switzerland

Industriestrasse 11
8608 Bubikon

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

www.trafag.com
trafag@trafag.com

trafag
sensors controls