Trafag insight

Pressure switches - Pressure transmitters - Thermostats

trafag
sensors controls


MES
TOUCH

Trafag – the hightech sensor company

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

Competent and customer-oriented

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

Application and solution-oriented

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

Market-oriented and always within reach

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

Adaptable and efficient

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

Markets and applications

Shipbuilding

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

Hydraulics

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

Engines

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

Railways

- Brake systems
- Pantograph
- Air compressors
- Control and safety systems
- Air-conditioning systems

Test and measurement

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

Various

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

trafag sensors controls


trafag
SP1
SP2
0.520
SWITZERLAND

Pressure transmitters and electronic pressure switches

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

Sensor technology

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

Thin-film-on-steel sensor technology

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

Thick-film-on-ceramic sensor technology

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

trafag sensors controls


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

Mechanical pressure monitoring

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

Bellow sensor

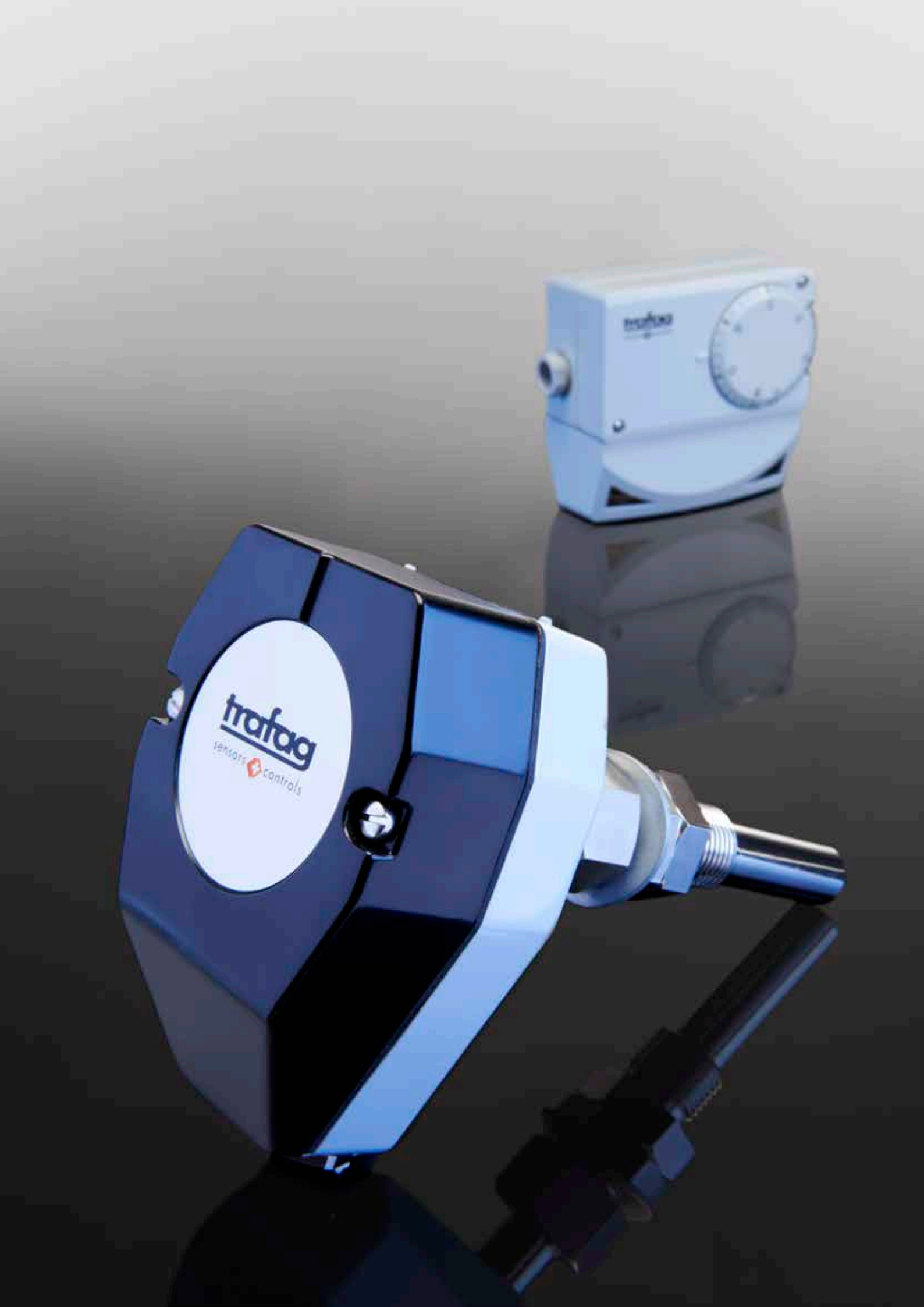
- High switching point precision and repeatability
- Stainless steel, bronze and brass designs
- Optionally welded/soldered design for absolute impermeability
- Measure liquid, vaporous and gaseous media

Piston sensor

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

Membrane sensor

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


trafag
sensors controls

Temperature monitoring

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

Measuring principle

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

Design variations

- With internal or external temperature set-point adjustment
- Internal or external measuring scale
- With or without a manual reset switch
- With or without DT-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

Pressure transmitters

	NHT 8250	NAT 8252	NAH 8253	NAH 8254
	 H_2			
Measuring principle	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel
Measuring range	0 ... 1 to 0 ... 250 bar 0 ... 15 to 0 ... 2000 psi	0 ... 2.5 to 0 ... 700 bar 0 ... 30 to 0 ... 10000 psi	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 0.2 to 0 ... 700 bar 0 ... 3 to 0 ... 10000 psi
Output signal	4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC, 1 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.1 ... 10.1 VDC, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors	Switching output: 1 or 2 PNP transistors	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA, 0 ... 5 VDC, 1 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC and more, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors
Accuracy @ +25°C typ.	± 0.5 % FS typ.	± 0.5 % FS typ.	± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	± 0.3 % FS typ.
Ambient temperature	–40°C ... +85°C	–40°C ... +125°C	-40°C ... +125°C	–40°C ... +125°C
Media temperature	–40°C ... +85°C	–40°C ... +125°C	-40°C ... +125°C	–40°C ... +125°C
Protection	IP65, IP67	IP65, IP67, IP68	Min. IP65	IP65, IP67, IP68
Sensor (wetted parts)	Nitrogen-strengthened austenitic steel, hydrogen compatible	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
Pressure connection (wetted parts)	1.4404 (AISI316L)	1.4542 (AISI630)	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)
Housing	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)
Pressure connections	G1/4" m, 1/4"NPT m, 7/16"-20UNF SAE4 m	G1/4" m; G1/4" m (Manometer); G1/4" m with integrated damping; G1/8" m, DIN3852-E; 1/4"NPT m; 1/4"NPT f; 1/8"NPT m; 7/16"-20UNF f, SAE J512; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858; R1/4" m, DIN2999; R1/8" m, DIN3858; M10x1 m, DIN EN ISO 6149-2; M12x1 m, DIN EN ISO 6149-2; M12x1.25 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2; M14x1.5 m, DIN EN ISO 6149-2	G1/4" m; 1/4"NPT m; 1/4"NPT f; 7/16"-20UNF m; 7/16"-20UNF f, DIN3866, valve opener; 7/16"-20UNF m, SAE4 (J1926); 9/16"-18UNF m, SAE6 (J1926); 3/8"-24UNF m, SAE3 (J514); R1/4" m, DIN2999; M14x1.5 m, DIN EN ISO 6149-2	G1/4" m; G1/4" m (Manometer); G1/4" m with integrated damping; G1/8" m, DIN3852-E; 1/4"NPT m; 1/4"NPT f; 1/8"NPT m; 7/16"-20UNF f, SAE J512; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858; R1/4" m, DIN2999; R1/8" m, DIN3858; M10x1 m, DIN EN ISO 6149-2; M12x1 m, DIN EN ISO 6149-2; M12x1.25 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2; M14x1.5 m, DIN EN ISO 6149-2
Electrical connections	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; Cable IP67	M12x1; Cable IP67 (IP68)	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; Cable IP67	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482; Deutsch DT04-3P/4P; Cable
Applications	H2 fuelling stations Hydrogen compressors Fuel cells Vehicles with H2 drive Hydrogen tanks	Machine tools Hydraulics HVAC Refrigeration Process technology Water treatment	Test benches Railways Machine tools Hydraulics	Machine tools Hydraulics Process technology Measuring and test bench technology
Approval / Conformity				
Data sheet	www.trafag.com/H72338	www.trafag.com/H72303	www.trafag.com/H72300	www.trafag.com/H72304
Instructions	www.trafag.com/H73303	www.trafag.com/H73303	www.trafag.com/H73250	www.trafag.com/H73303

	NAE 8256	NSL 8257	NAR 8258	CMP 8270	CMP 8271
				 CANopen	 CANopen
	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel, piezoresistive	Thin-film-on-steel
	0 ... 0.2 to 0 ... 700 bar 0 ... 3 to 0 .... 10'000 psi	0 ... 0.2 to 0 ... 2.5 bar 0 ... 3 to 0 ... 30 psi	0 ... 6 to 0 ... 700 bar 0 ... 100 to 0 ... 10000 psi	0 ... 0.2 to 0 ... 600 bar 0 ... 3 to 0 ... 7500 psi	0 ... 2.5 to 0 ... 700 bar 0 ... 30 to 0 ... 10000 psi
	4 ... 20 mA, 1 or 2 PNP transistors	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA, Switching output: 1 or 2 PNP transistors	Bus protocol CANopen DS404	Bus protocol CANopen DS404
	0.5 %: ± 0.5 % FS typ. 0.3 %: ± 0.3 % FS typ.	0.15 ... 0.8 % FS typ.	± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
	–40°C ... +125°C	-40°C ... +125°C	–40°C ... +85°C (EN 50155: OT6)	-40°C ... +125°C	-40°C ... +125°C
	–40°C ... +125°C	-40°C ... +125°C	–40°C ... +85°C	-50°C ... +135°C	-40°C ... +125°C
	IP65, IP67, IP68	Min. IP65	IP65, IP67, IP68	Min. IP67	Min. IP67
	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)
	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)	1.4301 (AISI304)
	G1/4" m; G1/4" m (Manometer EN 837); 1/4"NPT m; M10x1 m	G1/4" m; 1/4" NPT m; 1/4" NPT f; 9/16"-18UNF m, SAE6 (J1926)	G1/4" m; G1/4" m with integrated damping; G1/4" m (Manometer); 1/4"NPT m; 7/16"-20UNF m, SAE4 (J1926); R1/4" m, DIN2999; M10x1 m, DIN EN ISO 6149-2; M12x1 m, DIN EN ISO 6149-2; M12x1.25 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2	G1/4" m; 1/4"NPT m; 1/4"NPT f; 7/16"-20UNF m; 7/16"-20UNF f, DIN3866, valve opener; 7/16"-20UNF m, SAE4 (J1926); 9/16"-18UNF m, SAE6 (J1926); M10x1 m, DIN EN ISO 6149-2	G1/4" m; G1/4" m (Manometer); G1/4" m with integrated damping; G1/8" m, DIN3852-E; 1/4"NPT m; 1/4"NPT f; 1/8"NPT m; 7/16"-20UNF f, SAE J512; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858; R1/4" m, DIN2999; R1/8" m, DIN3858; M10x1 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2; M14x1.5 m, DIN EN ISO 6149-2
	M12x1; cable IP67/IP68	Industrial standard, contact distance 9.4 mm; M12x1; MIL-C 26482	Industrial standard, contact distance 9.4 mm; M12x1; Cable IP67, IP68	M12x1	M12x1
	Shipbuilding	Shipbuilding Engine manufacturing Machine tools	Railways	Engine manufacturing Railways Machine tools Hydraulics Process technology Test benches	Hydraulics Machine tools Engine manufacturing Process technology
	DNV EU RO Mutual Recognition Type Approval Certificate	DNV-GL	EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 50121-3-2 (EMC)		
	www.trafag.com/H72305	www.trafag.com/H72302	www.trafag.com/H72307	www.trafag.com/H72614	www.trafag.com/H72619
	www.trafag.com/H73303	www.trafag.com/H73250	www.trafag.com/H73303	www.trafag.com/H73614	www.trafag.com/H73619

Pressure transmitters

	FPT 8236	EPR 8283	EPI 8287	EPN 8288
				
Measuring principle	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel	Thin-film-on-steel
Measuring range	0 ... 1.0 to 0 ... 100 bar 0 ... 15 to 0 ... 1500 psi	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 0.2 bis 0 ... 700 bar 0 ... 3 bis 0 ... 10000 psi	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 … 4.5 VDC ratiometric	4 ... 20 mA	4 ... 20 mA, 0 ... 5 VDC, 0.5 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 … 4.5 VDC ratiometric	4 ... 20 mA, 0 ... 10 VDC
Accuracy @ +25°C typ.		± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Ambient temperature	–10°C ... +125°C	–40°C ... +125°C	–40°C ... +125°C	–40°C ... +125°C
Media temperature	–10°C ... +125°C	–40°C ... +125°C	–40°C ... +125°C	–40°C ... +125°C
Protection	IP65, IP67, IP68	IP65, IP67, IP68	IP65, IP67, IP68	IP65
Sensor (wetted parts)	1.4462 (AISI318 LN)	1.4542 (AISI630)	1.4542 (AISI630)	1.4542 (AISI630)
Pressure connection (wetted parts)	1.4462 (AISI318 LN), 1.4542	1.4542 (AISI630)	1.4542 (AISI630) or 1.4404 (AISI316L)	1.4542 (AISI630) or 1.4404 (AISI316L)
Housing	1.4542	1.4542 (AISI630)	1.4542 (AISI630) or 1.4404 (AISI316L)	1.4542 (AISI630) or 1.4404 (AISI316L)
Pressure connections	G1/2" m, flush membrane	G1/4" f; G1/4" m Seal; G1/4" m with integrated damping; G1/4" m (Manometer) EN 837; G1/2" m (Manometer) EN 837; 1/4"NPT m; 1/4"- 18 NPT f; 1/2"NPT m; R1/4" m, DIN3858; M14x1.5 m, DIN6149-2; 7/16"-20UNF m, DIN3866; 7/16"-20UNF m, SAE4 (J1926.3); 7/16"-20UNF f, SAE J512, valve opener	G1/4" f; G1/4" m Seal; G1/4" m with integrated damping; G1/4" m (Manometer) EN 837; G1/2" m (Manometer) EN 837; 1/4"NPT m; 1/4"- 18 NPT f; 1/2"NPT m; R1/4" m, DIN3858; M14x1.5 m, DIN6149-2; 7/16"-20UNF m, DIN3866; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF f, SAE J512, valve opener; 9/16"-18UNF m, SAE6 (J1926)	G1/4" m Seal; G1/2" m (Manometer) EN 837; 1/4" NPT m; 1/2" NPT m; R1/4" m, DIN3858; M14x1.5 m, DIN6149-2; 9/16"-18UNF m, SAE6 (J1926)
Electrical connections	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); M12x1; MIL-C 26482; Cable	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; MIL-C 26482; DIN72585; Cable	EN175301-803-A (DIN43650-A)
Applications	Machine tools Food Industry Process technology Water treatment Hydraulics	Railways	Machine tools Hydraulics Industrial applications	Shipbuilding Engine manufacturing Machine tools Hydraulics
Approval / Conformity		EN 50155 (Railway) EN 45545-2 (Fire protection)		DNV-GL EU RO Mutual Recognition Type Approval Certificate
Data sheet	www.trafag.com/H72343	www.trafag.com/H72319	www.trafag.com/H72317	www.trafag.com/H72318
Instructions	www.trafag.com/H73343	www.trafag.com/H73317	www.trafag.com/H73317	www.trafag.com/H73317

	EPR 8293	EPN/EPNCR 8298	NAP 8842/8843	ESH 8845
				
	Thin-film-on-steel	Thin-film-on-steel	Piezoresistive	Piezoresistive
	0 ... 2.5 to 0 ... 600 bar	0 ... 2.5 to 0 ... 2500 bar	0 ... 0.1 to 0 ... 1000 bar	0 ... 0.1 to 0 ... 100 bar
	4 ... 20 mA	4 ... 20 mA 0.5 ... 4.5 VDC ratiometric	4 ... 20 mA 0 ... 10 VDC	4 ... 20 mA, 0 ... 5 VDC, 0 ... 10 VDC
	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ. ± 0.3 % FS typ.		
	-40°C ... +125°C	-40°C ... +125°C	0°C ... +70°C	-40°C ... +125°C
	-40°C ... +125°C	-40°C ... +125°C	0°C ... +80°C	-40°C ... +125°C
	IP65, IP67	IP65, IP67, IP69K	Min. IP65	Min. IP40
	1.4542 (AISI630)	1.4542 (AISI630)	1.4435 (AISI316L)	1.4435 (AISI316L)
	1.4542 (AISI630) 1.4301 (AISI304)	1.4542 (AISI630)	1.4435 (AISI316L)	1.4435 (AISI316L)
	1.4301 (AISI304) 1.4542 (AISI630)	1.4301 (AISI304) 1.4542 (AISI630)	1.4435 (AISI316L)	1.4435 (AISI316L)
	G1/4" m Seal; R1/4" m; 1/4"NPT m; 1/2"NPT m	G1/4" m Seal; R1/4" m DIN3858; G1/2" m (Manometer) EN 837; 1/4"NPT m; 1/2"NPT m; M14x1.5 m; M18x1.5 m	G1/4" f; G1/4" m; G1/4" m (Manometer); G1/2" m; G1/2" m, frontal membrane; G1/2" m, flush membrane; G1/2" m (Manometer)	1/4"NPT m; 1/2"NPT m; G1/4" f; G1/4" m; G1/2" m; G1/2" m, frontal membrane; G1/2" m, flush membrane
	EN175301-803-A (DIN43650-A); MIL-C 26482	EN175301-803-A (DIN43650-A); MIL-C 26482; DIN72585; Cable	Cable; DIN43650-A; Binder 723; MIL-C 26482	EN175301-803-A; M12x1; MIL-C 26482; Binder 723
	Railways	Shipbuilding Engine manufacturing Machine tools Hydraulics	Shipbuilding Machine tools Hydraulics HVAC Process technology Water treatment	Test benches Test equipment
	EN 50155 (Railways)	ABS, BV, CCS, DNV-GL, KRS, LRS, NKK, RINA, RMRS	DNV-GL	
	www.trafag.com/H72311	www.trafag.com/H72312	www.trafag.com/H72230	www.trafag.com/H72354
	www.trafag.com/H73311	www.trafag.com/H73311	www.trafag.com/H73208	www.trafag.com/H73227

Pressure transmitters

	ECT 8472	ECT 8473	ECTN 8477	ECR 8478
				
Measuring principle	Thick-film-on-ceramic	Thick-film-on-ceramic	Thick-film-on-ceramic	Thick-film-on-ceramic
Measuring range	0 ... 1 to 0 ... 400 bar 0 ... 15 to 0 ... 5000 psi	0 ... 0.1 to 0 ... 40 bar 0 ... 1.5 to 0 ... 500 psi	0 ... 0.1 to 0 ... 250 bar 0 ... 1.5 to 0 ... 3000 psi	0 ... 0.1 to 0 ... 60 bar 0 ... 1.5 to 0 ... 1000 psi
Output signal	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 ... 4.5 VDC ratiom.	4 ... 20 mA	4 ... 20 mA
Accuracy @ +25°C typ.	± 0.5 % FS typ.	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)	± 0.3 % FS typ. (± 0.5 % FS typ., ± 1 % FS typ.)
Ambient temperature	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C
Media temperature	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C	-25°C ... +125°C
Protection	IP65, IP67, IP68	IP65, IP67, IP68	IP65, IP67, IP68	IP65, IP67
Sensor (wetted parts)	Ceramic, Al2O3 (96 %)	Ceramic, Al2O3 (96 %)	Ceramic, Al2O3 (96 %)	Ceramic, Al2O3 (96 %)
Pressure connection (wetted parts)	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4404 (AISI316L)
Housing	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4305 (AISI303) 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4404/1.4435 (AISI316L)
Pressure connections	G1/4" f; G1/4" m; G1/2" m, DIN3852-A; G1/2" m, DIN3852-E; G1/2" m, DIN3852-E, with inner cone; 1/4"NPT m, ANSI B1.20.1; 1/8"NPT m, ANSI B1.20.1; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 7/16"-20UNF f, SAE J512, valve opener; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858;	G1/4" f; G1/4" m; G1/2" m, DIN3852-A; G1/2" m, DIN3852-E; G1/2" m, DIN3852-E, with inner cone; 1/4"NPT m, ANSI B1.20.1; 1/8"NPT m, ANSI B1.20.1; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 7/16"-20UNF f, SAE J512, valve opener; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858; G3/4" frontal membrane	G1/4" f; G1/4" m; G1/2" m, DIN3852-A; G1/2" m, DIN3852-E; 1/4"NPT m; 7/16"-20UNF m, SAE4 (J1926); R1/4" m, DIN3858; G3/4" frontal membrane	G1/4" m; G3/4" frontal membrane
Electrical connections	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); M12x1; Industrial standard, contact distance 9.4 mm; Packard Metri Pack; Cable	EN175301-803-A (DIN43650-A); M12x1; Cable	EN175301-803-A (DIN43650-A); M12x1; Packard Metri Pack
Applications	Machine tools Hydraulics Water treatment	Machine tools Hydraulics Water treatment	Shipbuilding Engine manufacturing	Railways
Approval / Conformity			DNV-GL EU RO Mutual Recognition Type Approval Certificate	EN 50155 (Railway) EN 45545-2 (Fire protection)
Data sheet	www.trafag.com/H72324	www.trafag.com/H72326	www.trafag.com/H72322	www.trafag.com/H72337
Instructions	www.trafag.com/H73324	www.trafag.com/H73324	www.trafag.com/H73324	www.trafag.com/H73324

Pressure transmitters

	EXNT 8292	EXNA 8852/8853	EXNA 8854		ZEN…
					
	Thin-film-on-steel	Piezoresistive	Piezoresistive		Switch amplifier
	0 ... 0.4 to 0 ... 2000 bar 0 ... 5 to 0 ... 30000 psi	0 ... 0.1 to 0 ... 1000 bar	0 ... 0.1 to 0 ... 1000 bar		
	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA		Signal, Relays
	± 0.5 % FS typ. ± 0.3 % FS typ.				
	Max. –40°C ... +120°C	T3/T4: -25°C ... +85°C T6: -25°C ... +55°C	T3: -40°C ... +125°C T4: -40°C ... +85°C T6: -40°C ... +50°C		-20°C ... +60°C
	Max. –40°C ... +120°C	T3: -25°C ... +150°C T4: -25°C ... +100°C T6: -25°C ... +55°C	T3: -40°C ... +150°C T4: -40°C ... +100°C T6: -40°C ... +50°C		
	Min. IP65, IP67, IP67	Min. IP65	Min. IP65		IP20
	1.4542 (AISI630), optional hydrogen-compatible steel	1.4435 (AISI316L)	1.4435 (AISI316L) or titanium		
	1.4542 (AISI630) 1.4301 (AISI304) Optional hydrogen-compatible steel	1.4435 (AISI316L)	1.4435 (AISI316L) or titanium		
	1.4301 (AISI304)	1.4435 (AISI316L)	1.4435 (AISI316L) or titanium		
	G1/4" m; G1/4" m (Manometer) EN 837; G1/4" f; G1/2" m; G1/2" m (Manometer) EN 837; R1/4" m; 1/4"NPT m; M18x1.5 m	G1/4" f; G1/4" m; G1/4" m (Manometer); G1/2" m; G1/2" m, frontal membrane; G1/2" m, flush membrane; G1/2" m (Manometer)	1/4"NPT m; 1/2"NPT m; G1/4" f; G1/4" m; G1/2" m; G1/2" m, frontal membrane; G1/2" m, flush membrane		
	EN175301-803-A; M12x1; MIL-C 26482; Binder 723; Cable	EN175301-803-A (DIN43650-A); M12x1; MIL-C 26482; Binder 723; Cable	EN175301-803-A; M12x1; MIL-C 26482; Binder 723; Cable		
	Shipbuilding Ex Zones 0, 1, 2 (gas); 20, 21, 22 (dust) and mining Hydrogen	Ex Zone 0, 1, 2 / Gas Ex Zone 20, 21, 22 / Dust Ex Underground Mining Shipbuilding	Ex Zone 0, 1, 2 / Gas Ex Zone 20, 21, 22 / Dust Ex Underground Mining		
	DNV-GL, KRS, RMRS ATEX / IECEx, according to the norm EN/IEC 60079-0/EN 60079-11/ EN 60079-26/ EN 50303	DNV-GL	DNV-GL Ex according to standards, IEC/EN 60079-0 /-11/-26, EN 50303		
	www.trafag.com/H72329	www.trafag.com/H72227	www.trafag.com/H72334		
	www.trafag.com/H73329	www.trafag.com/H73227	www.trafag.com/H73227		

Pressure transmitters

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

Level transmitters

	ECL 8439	NAL 8838	EXNAL 8858
			
Measuring principle	Thick-film-on-ceramic	Piezoresistive	Piezoresistive
Measuring range	0 ... 0.1 to 0 ... 6.0 bar 0 ... 1.5 to 0 ... 100 psi	0 ... 0.1 to 0 ... 25 bar	0 ... 0.1 to 0 ... 25 bar
Output signal	4 ... 20 mA	4 ... 20 mA 0 ... 10 VDC	4 ... 20 mA
Accuracy @ +25°C typ.	± 0.3 % FS typ. ± 0.5 % FS typ.		
Ambient temperature	max. -25°C ... +70°C	-5°C ... +50°C	T4/T6: -5°C ... +50°C
Media temperature	max. -25°C ... +70°C	-5°C ... +50°C	T4/T6: -5°C ... +50°C
Protection	IP68 (6.0 bar/60 m)	Min. IP68	Min. IP68
Sensor (wetted parts)	Ceramic, Al2O3 (96%)	1.4435 (AISI316L) or titanium	1.4435 (AISI316L)
Pressure connection (wetted parts)	1.4404 (AISI316L) or 1.4462 (AISI318LN)	1.4435 (AISI316L) or titanium	1.4435 (AISI316L) or titanium
Housing	1.4404 (AISI316L) or 1.4462 (AISI318LN) OEM-version: Screwed cable gland brass nickel-plated	1.4435 (AISI316L) or titanium	1.4404 (AISI316L) or titanium
Pressure connections		G1/4" m	G1/4" m
Electrical connections	Cable PUR/PE	Cable PUR/Teflon/PE	Cable PUR or FEP
Applications	Shipbuilding Process technologyWater treatment (wastewater, grey-water, drinking water)	Shipbuilding Process technologyWater treatment	Shipbuilding Ex SEV 11 ATEX 0145 X
Approval / Conformity	DNV-GL EU RO Mutual Recognition Type Approval Certificate	DNV-GL	DNV-GL
Data sheet	www.trafag.com/H72336	www.trafag.com/H72228	www.trafag.com/H72231
Instructions	www.trafag.com/H73336	www.trafag.com/H73227	www.trafag.com/H73227

Electronic pressure switches

	EPN-S 8320	DPC 8380	DPS 8381	NAT 8252 NAH 8254	
					
Measuring principle	Thin-film-on-steel	Thick-film-on-ceramic	Thin-film-on-steel	Thin-film-on-steel	
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	0 ... 0.2 to 0 ... 100 bar 0 ... 2.5 to 0 ... 1500 psi adjustable	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi adjustable	0 ... 0.2 to 0 ... 700 bar 0 ... 3 to 0 ... 10000 psi	
Output signal	Transistor (open source)	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V	Switching output: 1 or 2 PNP transistors	
Accuracy @ +25°C typ.	± 0.5 % FS typ. (Switchpoint)	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.5 % FS typ.	± 0.3 % FS typ. ± 0.5 % FS typ.	
Ambient temperature	-25°C ... +85°C	-25°C ... +85°C	-25°C ... +85°C	–40°C ... +125°C	
Media temperature	-40°C ... +125°C	-25°C ... +85°C	-25°C ... +85°C	–40°C ... +125°C	
Protection	IP65, IP69K	IP67	IP67	IP65, IP67, IP68	
Sensor (wetted parts)	1.4542 (AISI630)	Ceramic, Al2O3 (96 %)	1.4542 (AISI630)	1.4542 (AISI630)	
Pressure connection (wetted parts)	1.4542 (AISI630) 1.4301 (AISI304)	1.4305 (AISI303 1.4404/1.4435 (AISI316L) 1.4462 (AISI318LN) Titanium Grade 5	1.4542 (AISI630)	1.4542 (AISI630)	
Housing	1.4301 (AISI304)	Zinc based die-casting alloy nickel plated display housing plastic	Zinc based die-casting alloy nickel plated display housing plastic	1.4301 (AISI304)	
Pressure connections	G1/4" m (Seal); 1/4"NPT m; G1/2" m, DIN3852-A; M14x1.5 m, DIN3852-A; 1/2"NPT m	G1/4" f; G1/4" m; G1/2" m, DIN3852-E; 1/4"NPT m; R1/4" m, DIN3858; 7/16"-20UNF m, DIN3866; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF f, SAE J512, valve opener; 9/16"-18UNF m, SAE6 (J1926); G3/4" frontal membrane	G1/4" f; G1/4" m Seal; G1/4" m with integrated damping; G1/4" m (Manometer) EN 837; G1/2" m (Manometer) EN 837; 1/4"NPT m; 1/2"NPT m; R1/4" m, DIN3858; M14x1.5 m, DIN6149-2; 7/16"-20UNF m, DIN3866; 7/16" -20UNF m, SAE4 (J1926); 7/16"-20UNF f, SAE J512, valve opener; 9/16"-18UNF m, SAE6 (J1926)	G1/4" m; G1/4" m (Manometer); G1/4" m with integrated damping; G1/8" m, DIN3852-E; 1/4"NPT m; 1/4"NPT f; 1/8"NPT m; 7/16"-20UNF f, SAE J512; 7/16"-20UNF m, SAE4 (J1926); 7/16"-20UNF m, DIN3866; 9/16"-18UNF m, SAE6 (J1926); R1/4" m, DIN3858; R1/4" m, DIN2999; R1/8" m, DIN3858; M10x1 m, DIN EN ISO 6149-2; M12x1 m, DIN EN ISO 6149-2; M12x1.25 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2; M14x1.5 m, DIN EN ISO 6149-2	
Electrical connections	EN175301-803-A (DIN43650-A); Cable	Male electrical connector M12x1, 5-pole Male electrical connector M12x1, 4-pole	Male electrical connector M12x1, 5-pole Male electrical connector M12x1, 4-pole	M12x1; Cable IP67 (IP68)	
Applications	Shipbuilding Engine manufacturing Railways HVAC	Machine tools HVAC Refrigeration	Machine tools Hydraulics Process technology	Machine tools Hydraulics HVAC Water treatment	
Approval / Conformity	DNV-GL, RMRS EN 50155 (Railways) EN 45545-2 (Fire protection, railways)				
Data sheet	www.trafag.com/H72333	www.trafag.com/H72320	www.trafag.com/H72321	www.trafag.com/H72303	
Instructions	www.trafag.com/H73333	www.trafag.com/H73320	www.trafag.com/H73320	www.trafag.com/H73303	

Temperature transmitter

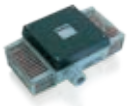
	NAE 8256	NAR 8258			DTP 8180
					
	Thin-film-on-steel	Thin-film-on-steel		**Measuring principle**	PT 1000, DIN EN 60751 class A, 2 conductors
	0 ... 0.2 to 0 ... 700 bar 0 ... 3 to 0 .... 10'000 psi	0 ... 6 to 0 ... 700 bar 0 ... 100 to 0 ... 10000 psi		**Measuring range**	-50°C ... +150°C / -58°F ... 302°F adjustable 50 ... 100 % FS
	4 ... 20 mA, 1 or 2 PNP transistors	4 ... 20 mA, Switching output: 1 or 2 PNP transistors		**Output signal**	4 ... 20 mA, 0 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, switchable mA or V
	± 0.5 % FS typ. ± 0.3 % FS typ.	± 0.3 % FS typ.		**Accuracy @ +25°C typ.**	± 0.5 % FS typ. + temperature sensor error
	–40°C ... +125°C	(–40°C ... +85°C) EN 50155: OT6)		**Ambient temperature**	-25°C ... +85°C
	–40°C ... +125°C	–40°C ... +85°C			
	IP65, IP67, IP68	IP65, IP67, IP68		**Protection**	IP67
	1.4542 (AISI630)	1.4542 (AISI630)		**Sensor (wetted parts)**	1.4404/1.4435 (AISI316L)
	1.4542 (AISI630)	1.4542 (AISI630)			
	1.4301 (AISI304)	1.4301 (AISI304)		**Housing**	Steel, die cast metal galvanised display housing plastic
	G1/4" m; G1/4" m (Manometer EN 837); 1/4"NPT m; M10x1 m	G1/4" m; G1/4" m with integrated damping; G1/4" m (Manometer); 1/4"NPT m; 7/16"-20UNF m, SAE4 (J1926); R1/4" m, DIN2999; M10x1 m, DIN EN ISO 6149-2; M12x1 m, DIN EN ISO 6149-2; M12x1.25 m, DIN EN ISO 6149-2; M12x1.5 m, DIN EN ISO 9974-2		**Pressure connections**	G1/8" m; G1/4" m; G1/2" m; 1/4" NPT m; 1/2" NPT m; Tri-Clamp DIN32676; Sanitary fitting DIN11851
	M12x1; Cable IP67/IP68	Industrial standard, contact distance 9.4 mm; M12x1; Cable IP67, IP68		**Electrical connections**	Male electrical connector M12x1, 5-pole Male electrical connector M12x1, 4-pole
	Shipbuilding Engine manufacturing Hydraulics	Railways		**Applications**	Machine tools Hydraulic power units Cooling and lubrication systems
	DNV EU RO Mutual Recognition Type Approval Certificate	EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 50121-3-2 (EMC)			
	www.trafag.com/H72305	www.trafag.com/H72307		**Data sheet**	www.trafag.com/H72352
	www.trafag.com/H73303	www.trafag.com/H73303		**Instructions**	www.trafag.com/H73352

Mechanical pressure switches

	9R5	PST4 9B4	PST4K 9K4	PST4M 9M4	PSTD 9D0	P/PS 900/904/912
						
Measuring principle	Steel bellow welded	Bellow	Piston	Membrane	Bellow	Bellow
Setting range	-0.8 ... 2 to 7 ... 12 bar -11 ... 29 to 102 ...174 psi	0 ... 4 to 2 ... 25 bar	1 ... 10 to 40 ... 400 bar 14 ... 150 to 580 ... 5800 psi	1 ... 10 to 10 ... 100 bar 14 ... 150 to 150 ... 1500 psi	-1 ... 6 and -1 ... 8 bar	-0.9 ... 1.5 to 10 ... 100 bar 5 ... 50 to 125 ... 1500 psi
Output signal	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)
Pressure connections			G1/8" f, G1/4" f, M10x1.0 f	G1/8" f, G1/4" f, M10x1.0 f	G1/4" f	G1/4" f, G1/2" m, 1/4"NPT f
Electrical connections	EN 175301-803-A (DIN 43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	EN175301-803-A (DIN43650-A)	Screw terminal
Switching differential	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable
Media temperature	–40°C ... +85°C	-25°C ... +125°C	–25°C ... +125°C	0°C ... +80°C	-25°C ... +120°C	-40°C ... +150°C
Ambient temperature	–40°C ... +85°C (EN 50155: OT6)	-25°C ... +85°C	-25°C ... +85°C	0°C ... +80°C	-25°C ... +85°C	-25°C ... +70°C
Protection	IP65 / IP67	IP65	IP65	IP65	IP65	IP65
Housing / Pressure connection	1.4301, 1.4306, 1.4307 PA66 A3X2G5 UL94-V0	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	Aluminium EN AW-6026 AlMgSiPb0.4 anodized	Aluminium EN AW-6082 AlMgSi1 anodized	Brass CuZn39Pb3	AlSi10Mg/ Epoxy coated
Sealing	See ordering information	FKM 75 Sh	PTFE	FKM	-	NBR
Applications	Railway	Engine manufacturing Railways Machine tools	Shipbuilding Engine manufacturing Railways Machine tools	Shipbuilding Engine manufacturing Railways Machine tools	Shipbuilding Engine manufacturing Machine tools Hydraulics	Shipbuilding Engine manufacturing Railways Machine tools
Approval / Conformity	EN 50155 (Railway) EN 45545-2 (Fire protection) EN 61373 (Shock, vibration) EN 60730-1/ EN 60730-2-6: Type 2.B.H	EN60730-1/ EN60730-2-6: Type 2.B.H	ABS, BV, CCS, DNV-GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Type 2.B.H	ABS, BV, CCS, DNV-GL, KRS, LRS, RINA, EN60730-1/ EN60730-2-6: Type 2.B.H	DNV-GL EN60730-1/ EN60730-2-6: Type 2.B.H	ABS, BV, CCS, DNV-GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Type 2.B.H
Type of protection						
Data sheet	www.trafag.com/H72370	www.trafag.com/H72362	www.trafag.com/H72369	www.trafag.com/H72368	www.trafag.com/H72273	www.trafag.com/H72252
Instructions	www.trafag.com/H73370	www.trafag.com/H73362	www.trafag.com/H73367	www.trafag.com/H73367	www.trafag.com/H73273	www.trafag.com/H71261

	PV/PVF 903/907/915/940/941/942	PK 944/947	PD 920/924/932	987/988	EXP 900/904/912	EXPK 944/947/953	EXPD 920/924/932
							
	Bellow	Piston	Bellow	Bellow	Bellow	Piston	Bellow
	-0.9 ... 1.5 to 4 ... 40 bar 5 ... 50 to 50 ... 500 psi	1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar	-0.3 ... 1.3 to 1 ... 10 bar	-0.9 ... 1.5 to 4 ... 40 bar	1 ... 10 to 60 ... 600 bar	-1 ... 6 to -1 ... 18 bar
	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 or 2 floating change-over contacts (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)	1 Floating change-over contact (SPDT)
	G1/4" f, G1/2" m, 1/4" NPT f	G1/4" f, G1/2" m	G1/4" f, G1/8" f, G1/2" m	G1/4" m	G1/4" f, G1/2" m	G1/4" f, G1/2" m	G1/4" f, G1/8" f, G1/2" m
	Screw terminal	Screw terminal	Screw terminal	Blade connector	Screw terminal	Screw terminal	Screw terminal
	Adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable	Not adjustable
	-40°C ... +150°C	NBR: -30°C ... +100°C FKM: -15°C ... +150°C	-40°C ... +150°C	-25°C ... +80°C	-40°C ... +150°C	NBR: -30°C ... +100°C FKM: -15°C ... +150°C	-50°C ... +150°C
	-25°C ... +70°C	-20°C ... +70°C	-25°C ... +70°C	-25°C ... +70°C	-50°C ... +65°C	-50°C ... +65°C	-50°C ... +65°C
	IP65	IP65	IP65	IP40 (Microswitch IP67)	IP66	IP66	IP66
	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	AlSi10Mg/ Epoxy coated	PBTP, Crastin	AlSi10Mg/ Epoxy coated 1.4301 (AISI 304)	AlSi10Mg/ Epoxy coated 1.4301 (AISI 304)	AlSi10Mg/ Epoxy coated
	NBR	NBR/FKM	NBR	-	NBR	NBR / FKM	NBR
	Shipbuilding Engine manufacturing Railways Machine tools	Shipbuilding Engine manufacturing Railways Machine tools	Shipbuilding Engine manufacturing Railways Machine tools	Machine tools Medium voltage technology	Ⓔx II 2G / D	Ⓔx II 2G / D	Ⓔx II 2G / D
	ABS, BV, CCS, DNV-GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Type 2.B.H	ABS, BV, CCS, DNV-GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Type 2.B.H	ABS, BV, CCS, DNV-GL, KRS, LRS, RINA EN60730-1/ EN60730-2-6: Type 2.B.H	EN60730-1/ EN60730-2-6: Type 2.B.H	SEV 15 ATEX 0157 X IECEx SEV 17.0013X	SEV 15 ATEX 0157 X IECEx SEV 17.0013X	SEV 15 ATEX 0157 X IECEx SEV 17.0013X
					Areas with gaz explosion hazards: II 2G Ex db eb IIC T6 Gb Areas with dust explosion hazards: II 2D Ex tb IIIC T80°C Db	Areas with gas explosion hazards: II 2G Ex db eb IIC T6 Gb; Areas with dust explosion hazards: II 2D Ex tb IIIC T80°C Db	Areas with gas explosion hazards: II 2G Ex db eb IIC T6 Gb; Areas with dust explosion hazards: II 2D Ex tb IIIC T80°C Db
	www.trafag.com/H72257	www.trafag.com/H72259	www.trafag.com/H72253	www.trafag.com/H72272	www.trafag.com/H72263	www.trafag.com/H72270	www.trafag.com/H72256
	www.trafag.com/H71261	www.trafag.com/H71261	www.trafag.com/H73256	www.trafag.com/H73272	www.trafag.com/H73171	www.trafag.com/H73171	www.trafag.com/H73171

Thermostats

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

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

Thermostats

	L/LF 736/754	L...R 755	I/IS 404/414	IS...R 410/412	ISN/ISNT 471/472
					
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
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	-10°C ... +80°C to +40°C ... +300°C
Output signal	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
Ambient temperature	-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
Applications	Machine tools	Machine tools	Railways Machine tools	Machine tools Process technology	Shipbuilding Engine manufacturing
Approval / Conformity	EN60730-1/ EN60730-2-9: Type 2.B.H	EN60730-1/ EN60730-2-9: Type 2.B.H	EN60730-1/ EN60730-2-9: Type 2.B.H	EN60730-1/ EN60730-2-9: Type 2.B.H	Marine EU RO MR Type Approval
Type of protection					
Data sheet	www.trafag.com/H72122	www.trafag.com/H72124	www.trafag.com/H72110	www.trafag.com/H72138	www.trafag.com/H72111
Instructions	www.trafag.com/H70211	www.trafag.com/H70211	www.trafag.com/H73111	www.trafag.com/H73111	www.trafag.com/H73111

Thermostats

	ISP/ISPT 474		EXS 404/414	EXAS 409/419	«Simple Apparatus» conformity to ATEX 414	«Simple Apparatus» conformity to ATEX 419
						
	Compact thermostat for shipbuilding		Ex Industrial thermostat with remote sensor	Ex Industrial room thermostat	Industrial room thermostat with remote sensor	Industrial room thermostat
	+5°C ... +95°C to +20°C ... +150°C		-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	Floating change-over contact
	Not adjustable		Not adjustable	Not adjustable	Not adjustable	Not adjustable
	-30°C ... +70°C		-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C	-30°C ... +70°C
	IP65		IP65	IP65	IP65	IP65
	Shipbuilding Engine manufacturing		Ⓔx II 2G / D	Ⓔx II 2G / D	Potentially hazardous areas	Potentially hazardous areas
	DNV-GL EU RO Mutual Recognition Type Approval Certificate EN60730-1/ EN60730-2-9: Typ 2.B.H		SEV 15 ATEX 0156 X IECEx SEV 17.0010X	SEV 15 ATEX 0156 X IECEx SEV 17.0010X	EN60730-1/ EN60730-2-9: Type 2.B.H EN60079-0, EN60079-11 Zone 1 and 2, 21 and 22	EN60730-1/ EN60730-2-9: Type 2.B.H EN60079-0, EN60079-11 Zone 1 and 2, 21 and 22
			Areas with gas explosion hazards: II 2G Ex db eb IIC T6 Gb; Areas with dust explosion hazards: II 2D Ex tb IIIC T80°C Db	Areas with gas explosion hazards: II 2G Ex db eb IIC T6 Gb; Areas with dust explosion hazards: II 2D Ex tb IIIC T80°C Db		
	www.trafag.com/H72113		www.trafag.com/H72108	www.trafag.com/H72128	www.trafag.com/H72183	www.trafag.com/H72182
	www.trafag.com/H73113		www.trafag.com/H73172	www.trafag.com/H73172	www.trafag.com/H73173	www.trafag.com/H73173

Accessories

Trafag offers a wide range of original accessories which are ideally matched to our products. These include devices for monitoring or configuring transmitters such as hand pumps with precision pressure gauge or the Sensor Communicator, a handheld device which provides direct access to the calibration values of the transmitter in the Trafag ASIC. Trafag also offers a wide range of accessories that meet specific application requirements and make installation easier, such as diagnostic valve manifolds, snubbers and pressure peak damping elements. For thermostats various protective pipes are available.

Accessories for pressure measuring instruments

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

Accessories for temperature measuring instruments

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

Accessories for pressure measuring instruments

SMI

Sensor Master Interface

Parameterisation device for electronic pressure switches and pressure transmitters with configurable measuring ranges.

www.trafag.com/H72618

SC

Sensor Communicator

Handheld for parameterisation of pressure transmitters and electronic pressure switches.

www.trafag.com/H73699

DVB

Diagnostic Valve Block

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

www.trafag.com/H72361

THP...

Hand pump

Hand pump with precision manometer.

V6/V7

Stop valve

Stop valve for exchanging pressure transmitters without interrupting the process.

www.trafag.com/H72258

A.../D...

Adapters with manometer pressure ports

Pressure adapters with different thread combinations and materials.

www.trafag.com/H72258

Accessories for temperature measuring instruments

83.../84...

Protection tubes for remote sensors

www.trafag.com/H72163

121.../141...

Protection tubes for direct mounting

www.trafag.com/H72163

W.../K...

Thermostat sensor duct holder

www.trafag.com/H72106

CG

Screwed cable gland

K80140

Capillary tube holder

Reliable quality

Worldwide represented, globally trusted, Swiss based

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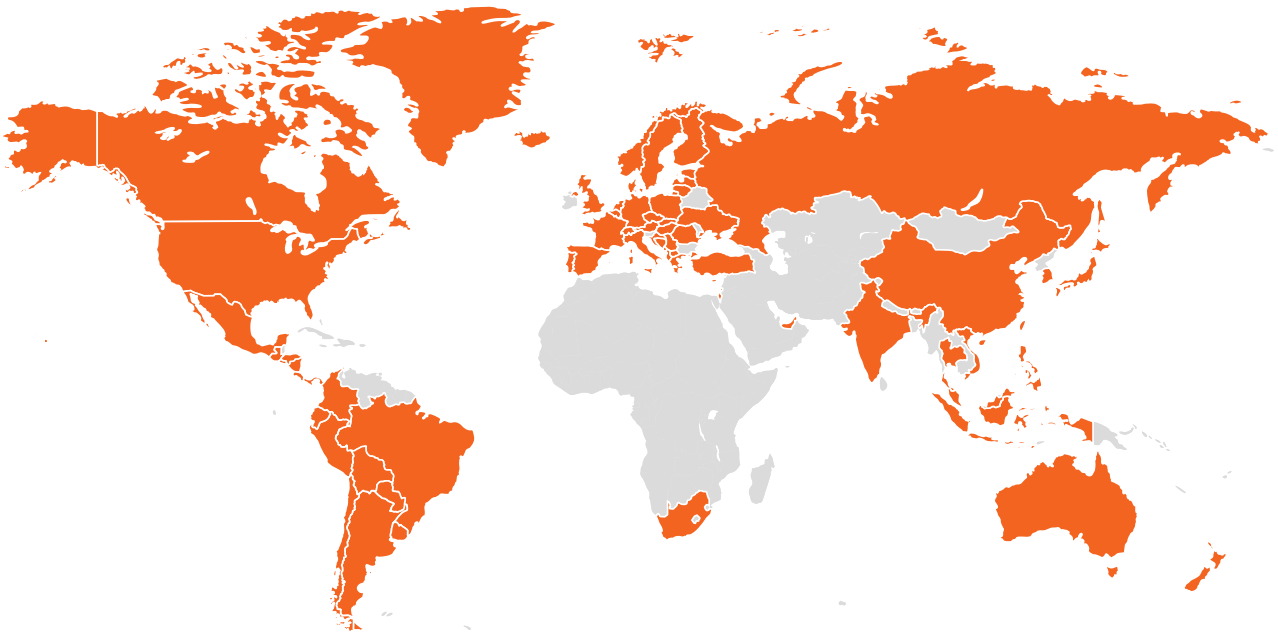

The coordinates to the representatives can be found at www.trafag.com/trafag-worldwide

Subject to change 01/2022 H70550h

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