

Railway Pressure Transmitter



Product description

The pressure transmitter NAR 8258 with increased accuracy of 0.3 % was specifically designed for railway vehicles (EN 50155) and has a long-term stable thin-film-on-steel sensor cell. The wide temperature range from -40°C to +85°C and the triple overpressure protection make the NAR 8258 the ideal choice for railway vehicles in rough environmental conditions.

Technical Data

Measuring principle	Thin-film-on-steel
Measuring range	0 ... 6 to 0 ... 700 bar 0 ... 100 to 0 ... 10000 psi
Output signal	4 ... 20 mA, Switching output: 1 or 2 PNP
Media temperature	-40°C ... +85°C
Ambient temperature	-40°C ... +85°C (EN 50155: OT6)

Additional information

Data sheet	www.trafag.com/H72307
Instructions	www.trafag.com/H73303
Accessories	www.trafag.com/H72258
Video	https://youtu.be/wK2MrOGWJPg

Applications

- Railways

Features

- Measuring accuracy 0.3 %
- Optional: Switching output 1 or 2 PNP
- Excellent long-term stability
- Meets EN 50155 (Railway)

 EMC: 2014/30/EU

 S.I. 2016 No. 1091

 RoHS/Reach compliant

 Conformity EN 50155

Ordering information/Type code

Measuring range ¹⁾	Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]	Pressure-measurement-range [psi]	Over pressure [psi]	Burst pressure [psi]	8258	XX	XX	XX	XX	XX
0 ... 6	18	100	77	0 ... 100	300	1450	G7					
0 ... 10	30	200	78	0 ... 150	450	2500	G8					
0 ... 16	48	200	79	0 ... 200	600	2500	GA					
0 ... 25 ²⁾	75	300	80	0 ... 250	750	2500	G9					
0 ... 40 ²⁾	120	300	81	0 ... 300 ²⁾	900	4000	HA					
0 ... 60 ²⁾	180	400	82	0 ... 400 ²⁾	1200	4000	H0					
0 ... 100 ²⁾	300	500	83	0 ... 1000 ²⁾	3000	5000	H2					
0 ... 160 ²⁾	480	750	85	0 ... 1500 ²⁾	4500	7000	H3					
0 ... 250	750	1000	74	0 ... 2000 ²⁾	6000	10000	H5					
0 ... 400	1000	2000	84	0 ... 3000	9000	14500	G4					
0 ... 600	1500	2500	86	0 ... 5000	12500	21750	H4					
0 ... 700	1500	2500	87	0 ... 7500	18750	29000	H6					
				0 ... 10000	18750	29000	H7					

Sensor	Relative pressure, accuracy: 0.3 %	23
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Pressure connection	G1/4" male, Seal: DIN 3869	17
	G1/4" male, with integrated damping Ø 0.5 mm, Seal: DIN 3869	15
	G1/4" male (Manometer) EN 837 ²⁾	53
	G1/8" male DIN 3852-E ³⁾	54
	1/4" NPT male	30
	1/8" NPT male ⁴⁾	43
	7/16"-20UNF-2A male, SAE J1926-2 (Heavy Duty) ⁵⁾	69
	7/16"-20UNF female, SAE J512 with valve opener ⁶⁾	24
	7/16"-20UNF female, SAE J512 without valve opener ⁶⁾	44
	R1/4" male, DIN 2999 ²⁾	20
	M10x1 male, DIN EN ISO 6149-2	32
	M12x1 male ⁷⁾	64
	M12x1.25 male ⁷⁾	65
	M12x1.5 male, DIN EN ISO 9974-2 ²⁾	49

Electrical connection	Male electrical connector, Industrial standard, Contact distance 9.4 mm, Material PA	01
	Male electrical connector M12x1, 4-pole, Material PA, IEC 61076-2-101	32
	Male electrical connector M12x1, 5-pole, Material PA, IEC 61076-2-101	35
	3 Way M Delphi MetriPack 1.5 sealed connector, Material PA66 ⁸⁾	51
	Cable material Radox Tenuis, IP67/IP68, 4 x 0.5 mm ²	88

Output signal	Output signal	Load resistance	I (supply)	U (supply)	
	4 ... 20 mA	See graphic	(= signal output)	24 (9 ... 32) VDC	19
	2 PNP transistors ⁹⁾		≤ 10 mA	24 (9 ... 32) VDC	P5
	1 PNP transistor ⁹⁾		≤ 10 mA	24 (9 ... 32) VDC	T1

8258 XX XX XX XX XX XX

Accessories		
Female electrical plug M12x1, 5-pole ¹⁰⁾		33
Female electrical plug industrial standard (for electrical connection 01), EN 175301-803C		34
Pressure peak damping element ø 1.0 mm		40
Pressure peak damping element ø 0.4 mm		44
Seal FKM, -18°C ... +125°C		61
Seal EPDM, -40°C ... +125°C		63
Seal NBR, -25°C ... +100°C		83
Cable length 0.5 m		EM
Cable length 1.0 m		1M
Cable length 2.0 m		2M
Parameterization standard for output signal PS, T1 (see table: Parameters)		ZS
Parameterization according to customer specification for output signal PS, T1 (see table: Parameters)		ZC
Pin configuration, see table: Electrical connection		

- ⁰¹⁾ Customized pressure ranges, upon request
- ⁰²⁾ Upon request, whereas minimum order quantities may apply
- ⁰³⁾ max. allowable pressure range 160 bar (2320 psi) at 480 bar (6961 psi) overpressure
- ⁰⁴⁾ max. allowable pressure range 400 bar (5800 psi) at 600 bar (8700 psi) overpressure
- ⁰⁵⁾ Measuring range max. 630 bar according to SAE J1926-2 (Heavy Duty)
- ⁰⁶⁾ max. allowable pressure range 60 bar (870 psi) at 180 bar (2610 psi) overpressure
- ⁰⁷⁾ Without seal, use seal geometry according DIN EN ISO 6149-2
- ⁰⁸⁾ Not available with switching output signals (codes PS / T1)
- ⁰⁹⁾ Only with electrical connection 32
- ¹⁰⁾ For electrical connections 32 and 35

Compatibility matrix pressure connection and accessories

Code	Pressure connection	Damping		Seal		
		Ø 1.0 mm (Code 40)	Ø 0.4 mm (Code 44)	FKM (Code 61)	EPDM (Code 63)	NBR (Code 83)
17	G1/4" male, Seal: DIN 3869	✓	✓	✓	✓	✓
15	G1/4" male, with integrated damping Ø 0.5 mm, Seal: DIN 3869			✓	✓	✓
53	G1/4" male (Manometer) EN 837					
54	G1/8" male DIN3852-E	✓	✓	✓	✓	
30	1/4" NPT male	✓	✓			
43	1/8" NPT male	✓	✓			
69	7/16"-20UNF-2A male, SAE J1926-2 (Heavy Duty)	✓	✓	✓	✓	
24	7/16"-20UNF female, SAE J512 with valve opener					
44	7/16"-20UNF female, SAE J512 without valve opener					
20	R1/4" male, DIN 2999	✓	✓			
32	M10x1 male, DIN EN ISO 6149-2	✓	✓	✓		
64	M12x1 male	✓	✓			
65	M12x1.25 male	✓	✓			
49	M12x1.5 male, DIN EN ISO 9974-2	✓	✓	✓		

Parameters

Name	Standard setting (accessory ZS)	Value range	Short name	Customer adjustment (accessory ZC)
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75 % Measuring range	> RP1, FL1 (2 ... 99 %) Hysteresis \geq 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 (1 ... 98 %) Hysteresis \geq 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 (2 ... 99 %) Hysteresis \geq 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 (1 ... 98 %) Hysteresis \geq 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	approx. 2 ^x [ms], x = 8, 9 ... 16	dS1	
Switch point delay time SP2 / RP2 (hysteresis mode) Switch point delay time FH2 / FL2 (window mode)	0	approx. 2 ^x [ms], x = 8, 9 ... 16	dS2	
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno) Hysteresis NC (Hnc) Window NO (Fno) Window NC (Fnc)	ou1	
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno) Hysteresis NC (Hnc) Window NO (Fno) Window NC (Fnc) Device ready	ou2	

Specifications ¹⁾

Electrical data	Output / supply voltage	4 ... 20 mA: 24 VDC (EN 50155) 1 or 2 PNP transistors: 24 VDC (EN 50155)
	Power-on delay time pressure transmitters	100 ms
	Power-on delay time pressure switches	50 ms + switching delay time
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4 ... 20 mA: to $U_s = 32$ VDC 1 or 2 PNP transistors: to $U_s = 32$ VDC
	Current limiting output signal	4 ... 20 mA: 24 mA (Overload)
Environmental conditions	Media temperature	-40°C ... +85°C
	Ambient temperature	-40°C ... +85°C (EN 50155: OT6)
	Storage temperature	-20°C ... +40°C
	Protection ²⁾	IP65, IP67, IP68
	Humidity	max. 95 % relative
	Vibration	14.4 g RMS (10 ... 500 Hz) (EN 60068-2-64) 15 g RMS (20 ... 2000 Hz) (EN 60068-2-64) 25 g sin (80 ... 2000 Hz), 1 oct./min, (1x @ 25°C) (EN 60068-2-6)
	Shock	100 g/6 ms Male electrical plug M12x1 (EN 60068-2-27) ³⁾
EMC protection	Emission	EN 50121-3-2
	Immunity	EN 50121-3-2 ⁴⁾
Mechanical data	Sensor (wetted parts)	1.4542 (AISI 630)
	Pressure connection (wetted parts)	1.4542 (AISI 630)
	Housing	1.4301 (AISI 304)
	Sealing	FPM, EPDM, NBR
	Male electrical connector	See ordering information
	Weight	~ 50 g
	Mounting torque	25 Nm

¹⁾ Details see table: Details railway specifications

²⁾ See table: Electrical connection

³⁾ For electrical connections 32 and 35

⁴⁾ With power supply according to EN IEC 61326-1:2021 table (2), footnote (e). Surge test conducted on shield, i.a.w. EN 61000-4-5:2014, 7.6. Device to be galvanically isolated and to be used in signal area protected against EMC interference (area C i.a.w. EN 50155:2021, fig.5).

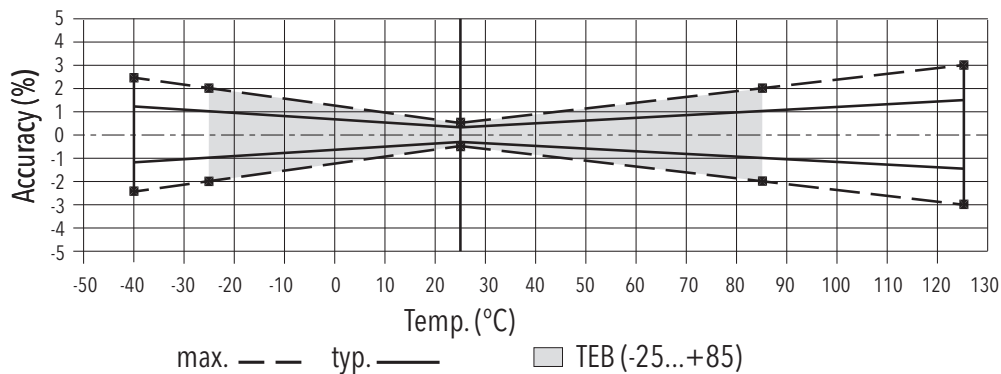
Analogue output

			≥ 0 bar ≤ 700 bar
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	Measurement deviation during EMC (verified with 100 ms integration time)	[% FS max.]	± 1.0
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.01
	Long term stability 1 year @ +25°C	[% FS typ.]	± 0.1
Rise time	typ. 1 ms / 10 ... 90 % nominal pressure		

Switchpoint accuracy

Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	Measurement deviation during EMC (verified with 100 ms integration time)	[% FS max.]	± 1.0
	Long term stability 1 year @ +25°C	[% FS typ.]	± 0.1
	Setting range of switchpoints	1 ... 99 % FS	
Distance switch point	≥ 1.0 % FS		
Switch point > reset point	Switchpoint > reset point		
Switching resistance	$\leq 3 \Omega$		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	Ambient and media temperature -40°C ... + 85°C: ≤ 400 mA, total of both switching outputs		
Current limiting	Integrated		
Life time	$> 100 \times 10^6$ cycles		
Delay time	approx. 2^x [ms], x = 8, 9 ... 16		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

Measuring accuracy



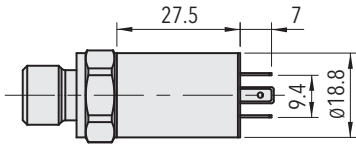
Detail railway specifications

Electrical data	Interruptions of the voltage supply	EN 50155	Class S1
	Switching between two supply voltages	EN 50155	Class C1
Environmental conditions	Cold	EN 60068-2-1	Ab: -40°C, 2 h (not in operation) Ae: -40°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclic	EN 60068-2-30	Db: 55°C, Variant 1, 2 cycles (2 x 24 h)
	Class of altitude	EN 50125-1	AX (max. 2000 m ASL)
	Class of air temperature	EN 50125-1	Refer to the specified ambient temperature in table Specification
	Switch-on extended operating temperature	EN 50155	Class ST0
	Rapid temperature variations	EN 50155	Class H1
	Salt mist	EN 60068-2-11	Ka: 480 h
	Vibration and shock	EN 61373	Vibration: category 3 Shock: category 3
	Dielectric strength	EN 50155	750 VDC
Resistance of insulation	EN 50155	>100 MΩ, 500 VDC	
Behavior in case of fire (Electrical connections 01, 32, 35)	EN 45545-2	HL1, HL2, HL3	
Life class	EN 50155	L4	

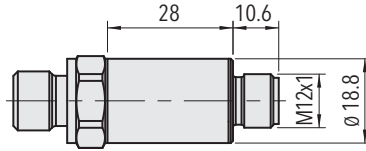
EMC compatibility: refer to table: Specifications

NAR 8258

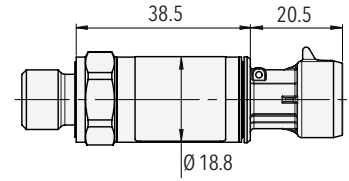
Dimensions



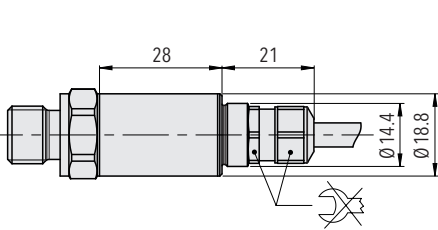
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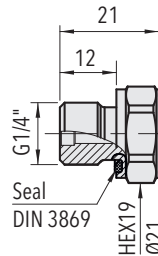
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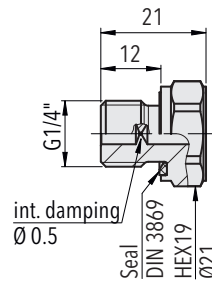
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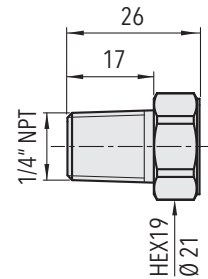
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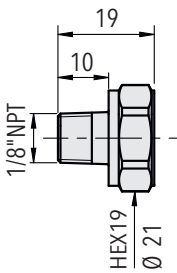
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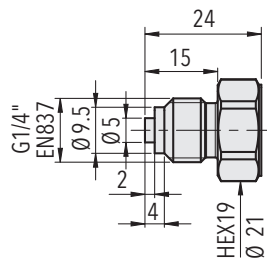
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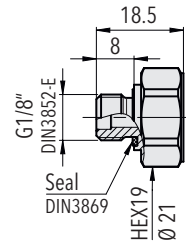
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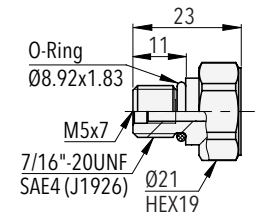
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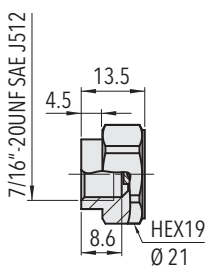
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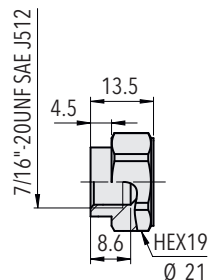
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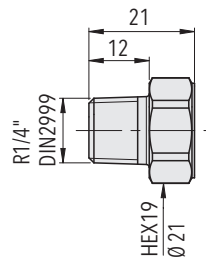
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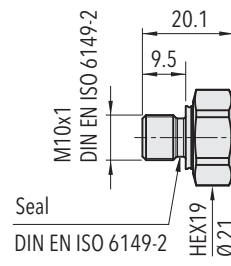
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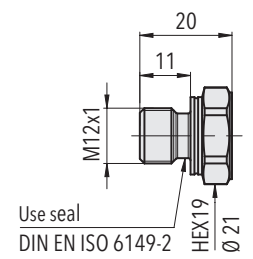
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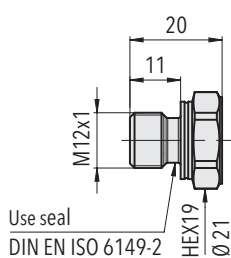
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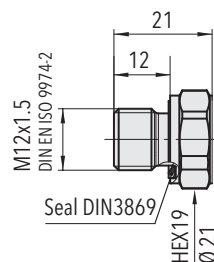
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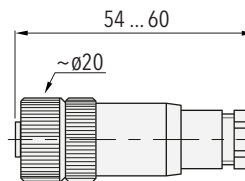
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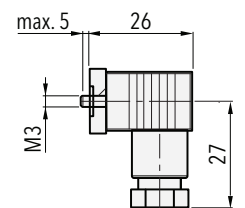
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Electrical connection

	Industrial standard, contact distance 9.4 mm		M12x1, 4-pole		M12x1, 5-pole	
Electrical connection type code	01		32		35	
IP protection	IP65 ^{1) 2)}		IP67 ^{1) 2)}		IP67 ^{1) 2)}	
Ambient temperature	-40°C ... +85°C ⁴⁾		-40°C ... +85°C ⁴⁾		-40°C ... +85°C ⁴⁾	
Pin assignment type code	90	92	F5	E1		
Output signal 8258.xx.xxxx.xx.19 	2 1 4	2 4 3	1 2 4	1 3 4	1 2 4	4 1 5
Pin assignment type code			PS	T1		
Output signal 8258.xx.xxxx.xx.PS/T1 			1 4 2 3	1 4 - 3		

¹⁾ Provided female electrical plug is mounted according to instructions

²⁾ Ventilation via male electric plug/cable end

⁴⁾ (EN 50155: OT6)

Empty 'Pin Assignment Type Code' field: Default pinout

Electrical connection

	3 Way M MetriPack 1.5 sealed connector		Cable	
Electrical connection type code	51		88	
IP protection	IP67 ¹⁾		IP67, IP68 ^{2) 3)}	
Ambient temperature	-40°C ... +85°C ⁴⁾		-40°C ... +85°C ⁴⁾	
Pin assignment type code	E4			
Output signal 8258.xx.xxxx.xx.19	1 2	1 3	Brown Black Yellow/Green	
Pin assignment type code			PS	T1
Output signal 8258.xx.xxxx.xx.PS/T1			Brown Blue Yellow/Green Black	Brown Blue - Black

¹⁾ Provided female electrical plug is mounted according to instructions

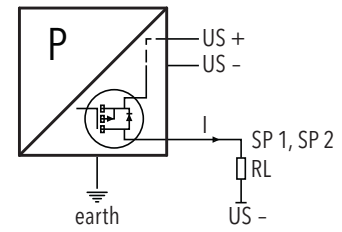
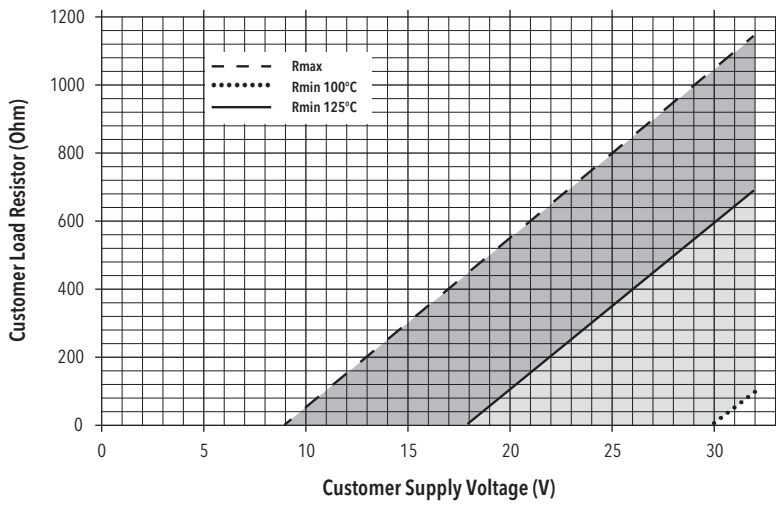
²⁾ Ventilation via male electric plug/cable end

³⁾ IP68, 20 bar, 30 min.

⁴⁾ (EN 50155: OT6)

Empty 'Pin Assignment Type Code' field: Default pinout

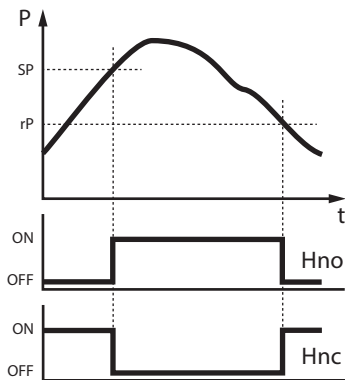
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



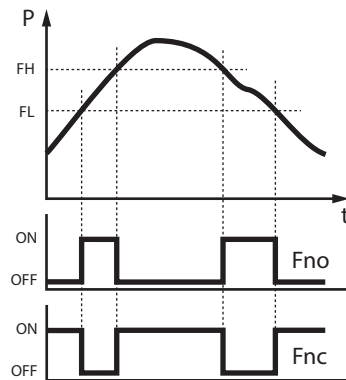
Connection of loads to switching contacts

Functions switching output

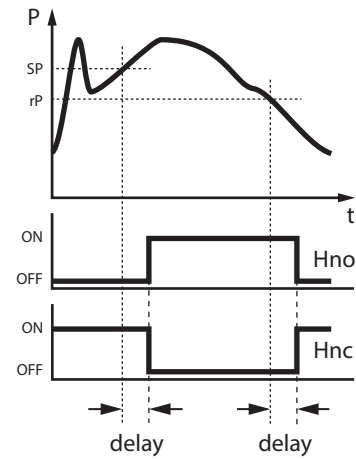
Hysteresis



Window



Delay



Reliable quality

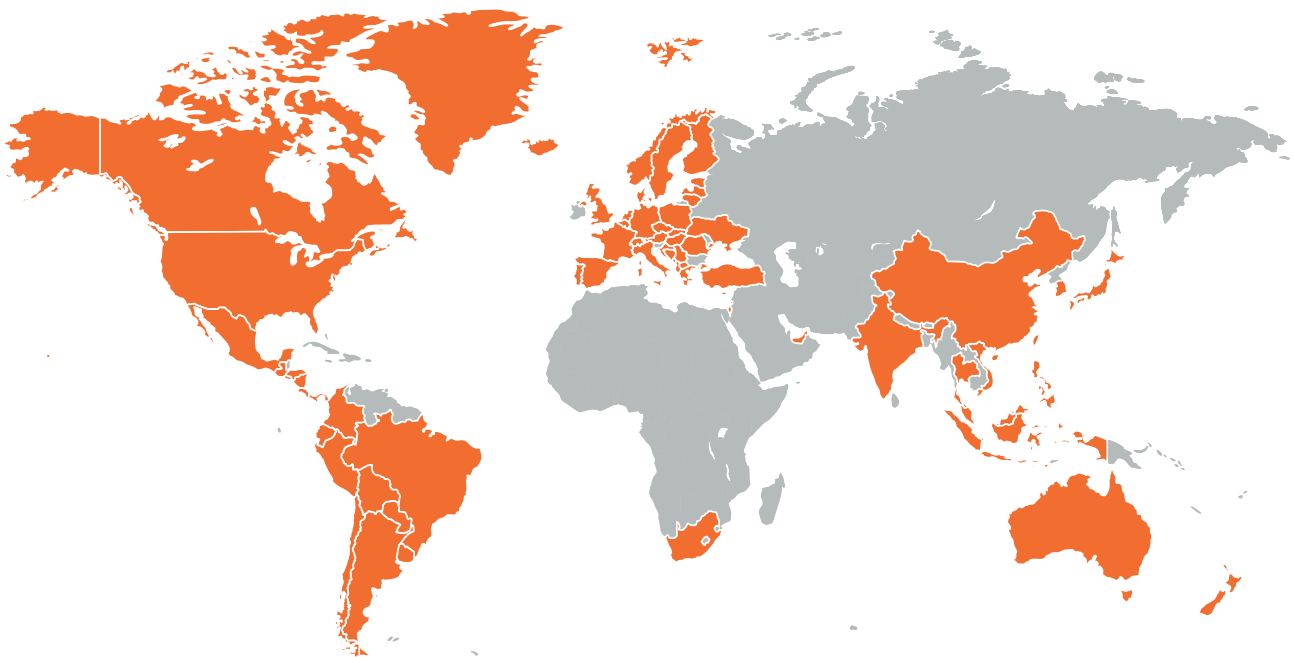
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Pressure transmitters



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Temperature transmitters



Gas density