

INDUSTRIAL PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The industrial pressure transmitter NAT 8252 features an exceptionally long-term stable thin-film-on-steel sensor cell with triple (optionally 5-fold) overpressure safety. Optionally, the NAT 8252 is available as a pressure switch with 1 or 2 switching outputs. The robust design and the wide temperature range from -40°C to +125°C qualify the NAT 8252 as the ideal solution for a wide range of demanding applications.



Applications

- Machine tools
- Hydraulics
- HVAC
- Refrigeration
- Process technology
- Water treatment

Features

- Smallest design
- Completely welded steel sensor system without additional seals
- Excellent long-term stability
- Optional: 5-fold overpressure resistance
- Optional: Switching output 1 or 2 PNP transistors

03/2019

Data sheet H72303t

Technical Data

Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.5 % FS typ.
Measuring range	0 ... 2.5 to 0 ... 600 bar 0 ... 30 to 0 ... 7500 psi	Media temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, 0.5 ... 4.5 VDC, 0 ... 5 VDC, 0.5 ... 5 VDC, 1 ... 5 VDC, 0.5 ... 5.5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 1 ... 10 VDC, 0.1 ... 10.1 VDC, 0.5 ... 4.5 VDC ratiometric, Switching output: 1 or 2 PNP transistors	Ambient temperature	-40°C ... +125°C (Cable PVC 22: -5°C ... +60°C) (Cable PUR 24: -40°C ... +70°C) (Cable Radox Tenuis 88: -40°C ... +120°C)

Subject to change

8252 . XX XX XX XX XX XX					XX
Output signal	Signal output	Load resistance	I (supply)	U (supply)	
	4 ... 20 mA	See graphic		24 (9 ... 32) VDC	19
	0.5 ... 4.5 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 20 \text{ mA}$	24 (9 ... 32) VDC	20
	0 ... 5 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 20 \text{ mA}$	24 (9 ... 32) VDC	14
	0.5 ... 5 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 20 \text{ mA}$	24 (9 ... 32) VDC	22
	1 ... 5 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 20 \text{ mA}$	24 (9 ... 32) VDC	25
	0.5 ... 5.5 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 20 \text{ mA}$	24 (9 ... 32) VDC	24
	1 ... 6 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 20 \text{ mA}$	24 (9 ... 32) VDC	16
	0 ... 10 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 15 \text{ mA}$	24 (15 ... 32) VDC	17
	1 ... 10 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 15 \text{ mA}$	24 (15 ... 32) VDC	26
	0.1 ... 10.1 VDC	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 15 \text{ mA}$	24 (15 ... 32) VDC	13
	0.5 ... 4.5 VDC ratiometric	$\geq 5.0 \text{ k}\Omega$ to Us-	$\leq 10 \text{ mA}$	5 (4.75 ... 5.25) VDC	23
	2 PNP transistors ³⁾		$\leq 10 \text{ mA}$	24 (9 ... 32) VDC	PS
	1 PNP transistor ³⁾		$\leq 10 \text{ mA}$	24 (9 ... 32) VDC	T1
Accessories	Female electrical plug M12x1, 5-pole ²⁾				33
	Female electrical connector industrial standard (for electrical connection 01)				34
	Pressure peak damping element $\varnothing 1.0 \text{ mm}$ ⁶⁾				40
	Pressure peak damping element $\varnothing 0.4 \text{ mm}$ ⁶⁾				44
	Seal FPM, -18°C ... +125°C				61
	Seal EPDM, -40°C ... +125°C				63
	Seal NBR, -25°C ... +100°C				83
	Special electrical connection: Pin 2 +, Pin 3 Ground, Pin 4 - (only for output signal 19 and male electrical plug 01, industrial standard)				90
	Special electrical connection: Pin 1 Out, Pin 2 +, Pin 3 Ground, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 01, industrial standard)				91
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 3 Out, Pin 4 - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)				95
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 3 -, Pin 4 Out (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)				96
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 Ground (only for output signal 19 and male electrical plug 01, industrial standard)				92
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 Ground (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)				E1
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 Out, Pin 4 Ground (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 32, M12x1, 4-pole)				E2
	Special electrical connection: Pin 1 Out, Pin 2 -, Pin 3 +, Pin 4 Ground (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug 01, industrial standard)				E3
	Special electrical connection: Pin 1 +, Pin 2 Ground, Pin 4 - (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)				E6
	Special electrical connection: Pin A +, Pin C - (only for output signal 19 and male electrical plug Deutsch DT04-3P, 3-pole)				F0
	Special electrical connection: Pin A +, Pin B Out, Pin C - (only for output signals 13, 14, 16, 17, 20, 22, 23, 24, 25, 26 and male electrical plug Deutsch DT04-3P, 3-pole)				F1
	Cable length 0.5 m				EM
	Cable length 1.0 m				1M
	Cable length 2.0 m				2M
	Parameterization according to customer specification for output signal PS, T1 (see table "Parameters")				ZC
	Parameterization standard for output signal PS, T1 (see table "Parameters")				ZS
	Multiple packaging ⁸⁾				VM

¹⁾ Customized pressure ranges upon request

²⁾ For electrical connections 32 and 35

³⁾ Only with electrical connections 32, 22, 24, 08, 88

⁴⁾ Max. allowable pressure range 60 bar at 180 bar overpressure

⁵⁾ Max. allowable pressure range 160 bar at 480 bar overpressure

⁶⁾ Not for pressure connections 53, 24, 44, 18

⁷⁾ Cable length see accessories

⁸⁾ The order quantity must be a multiple of 50, only for electrical connections 01, 32, 35, 02, D3, D4, not for pressure connection 30 with electrical connections 02, D3, D4

⁹⁾ Upon request

Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
NAT2.5A	8252 75 2517 01 0000 0000 19 34 44 61	0 ... 2.5	7.5	9 ... 32	±0.5
NAT4.0A	8252 76 2517 01 0000 0000 19 34 44 61	0 ... 4	12	9 ... 32	±0.5
NAT6.0A	8252 77 2517 01 0000 0000 19 34 44 61	0 ... 6	18	9...32	±0.5
NAT10.0A	8252 78 2517 01 0000 0000 19 34 44 61	0 ... 10	30	9...32	±0.5
NAT16.0A	8252 79 2517 01 0000 0000 19 34 44 61	0 ... 16	48	9 ... 32	±0.5
NAT25.0A	8252 80 2517 01 0000 0000 19 34 44 61	0 ... 25	75	9 ... 32	±0.5
NAT40.0A	8252 81 2517 01 0000 0000 19 34 44 61	0 ... 40	120	9 ... 32	±0.5
NAT100.0A	8252 83 2517 01 0000 0000 19 34 44 61	0 ... 100	300	9 ... 32	±0.5
NAT250.0A	8252 74 2517 01 0000 0000 19 34 44 61	0 ... 250	750	9 ... 32	±0.5
NAT400.0A	8252 84 2517 01 0000 0000 19 34 44 61	0 ... 400	1000	9 ... 32	±0.5
NAT600.0A	8252 86 2517 01 0000 0000 19 34 44 61	0 ... 600	1500	9 ... 32	±0.5
NAT2.5V	8252 75 2517 01 0000 0000 17 34 44 61	0 ... 2.5	7.5	15 ... 32	±0.5
NAT4.0V	8252 76 2517 01 0000 0000 17 34 44 61	0 ... 4	12	15 ... 32	±0.5
NAT6.0V	8252 77 2517 01 0000 0000 17 34 44 61	0 ... 6	18	15 ... 32	±0.5
NAT10.0V	8252 78 2517 01 0000 0000 17 34 44 61	0 ... 10	30	15 ... 32	±0.5
NAT16.0V	8252 79 2517 01 0000 0000 17 34 44 61	0 ... 16	48	15 ... 32	±0.5
NAT25.0V	8252 80 2517 01 0000 0000 17 34 44 61	0 ... 25	75	15 ... 32	±0.5
NAT40.0V	8252 81 2517 01 0000 0000 17 34 44 61	0 ... 40	120	15 ... 32	±0.5
NAT100.0V	8252 83 2517 01 0000 0000 17 34 44 61	0 ... 100	300	15 ... 32	±0.5
NAT250.0V	8252 74 2517 01 0000 0000 17 34 44 61	0 ... 250	750	15 ... 32	±0.5
NAT400.0V	8252 84 2517 01 0000 0000 17 34 44 61	0 ... 400	1000	15 ... 32	±0.5
NAT600.0V	8252 86 2517 01 0000 0000 17 34 44 61	0 ... 600	1500	15 ... 32	±0.5
NAT2.5PS	8252 75 2517 32 0000 0000 PS 44 61 ZS	0 ... 2.5	7.5	9 ... 32	±0.5
NAT4.0PS	8252 76 2517 32 0000 0000 PS 44 61 ZS	0 ... 4	12	9 ... 32	±0.5
NAT6.0PS	8252 77 2517 32 0000 0000 PS 44 61 ZS	0 ... 6	18	9 ... 32	±0.5
NAT10.0PS	8252 78 2517 32 0000 0000 PS 44 61 ZS	0 ... 10	30	9 ... 32	±0.5
NAT16.0PS	8252 79 2517 32 0000 0000 PS 44 61 ZS	0 ... 16	48	9 ... 32	±0.5
NAT25.0PS	8252 80 2517 32 0000 0000 PS 44 61 ZS	0 ... 25	75	9 ... 32	±0.5
NAT40.0PS	8252 81 2517 32 0000 0000 PS 44 61 ZS	0 ... 40	120	9 ... 32	±0.5
NAT60.0PS	8252 82 2517 32 0000 0000 PS 44 61 ZS	0 ... 60	180	9 ... 32	±0.5
NAT100.0PS	8252 83 2517 32 0000 0000 PS 44 61 ZS	0 ... 100	300	9 ... 32	±0.5
NAT160.0PS	8252 85 2517 32 0000 0000 PS 44 61 ZS	0 ... 160	480	9 ... 32	±0.5
NAT250.0PS	8252 74 2517 32 0000 0000 PS 44 61 ZS	0 ... 250	750	9 ... 32	±0.5
NAT400.0PS	8252 84 2517 32 0000 0000 PS 44 61 ZS	0 ... 400	1000	9 ... 32	±0.5
NAT600.0PS	8252 86 2517 32 0000 0000 PS 44 61 ZS	0 ... 600	1500	9 ... 32	±0.5

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 ≥ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 (1 ... 98 %) Hysteresis ≥ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 (2 ... 99 %) Hysteresis ≥ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 (1 ... 98 %) Hysteresis ≥ 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	0; approx. 2^x [ms], x = 3, 4 ... 16	dS1	
Switch point delay time SP2 / RP2 (hysteresis mode) Switch point delay time FH2 / FL2 (window mode)	0	0; approx. 2^x [ms], x = 3, 4 ... 16	dS2	
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou1	
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc) Device ready	ou2	

Parameterization of switching points

The switching points, delay times and output functions can be parameterized via Smartphone app (Android). The SMI Sensor Master Interface required for the parameterization as well as the Smartphone are not part of the delivery. The Android App is available for free in the Google Play Store.

- Ordering No. SMI Sensor Master Interface: F90170
- Data sheet SMI Sensor Master Interface: H72618



Specifications		
Electrical Data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 0.5 ... 4.5 VDC: 24 (9...32) VDC 0 ... 5 VDC: 24 (9...32) VDC 0.5 ... 5 VDC: 24 (9...32) VDC 1 ... 5 VDC: 24 (9...32) VDC 0.5 ... 5.5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 10 VDC: 24 (15...32) VDC 1 ... 10 VDC: 24 (15...32) VDC 0.1 ... 10.1 VDC: 24 (15...32) VDC 0.5 ... 4.5 VDC ratiom., 10 ... 90% U_{supply} : 5 ± 0.25 VDC 1 or 2 PNP transistors: 24 (9...32) VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Switch-on-delay pressure transmitters	100 ms
	Switch-on-delay pressure switches	50 ms + switching delay time
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4...20 mA: to $U_s = 32$ VDC 0.5...4.5 VDC, 0...5 VDC, 0.5...5 VDC, 1...5 VDC, 0.5...5.5 VDC, 1...6 VDC, 0...10 VDC, 1...10 VDC, 0.1...10.1 VDC: to $U_s = 28$ VDC 0.5...4.5 VDC ratiometric: to $U_s = 14$ VDC 1 or 2 PNP transistors: to $U_s = 32$ VDC
Environmental conditions	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C (Cable PVC 22: -5°C ... +60°C) (Cable PUR 24: -40°C ... +70°C) (Cable Radox Tenuis 88: -40°C ... +120°C)
	Protection ¹⁾	IP65, IP67, IP68
	Humidity	Max. 95 % relative
	Vibration	15 g RMS (20...2000 Hz) (EN60068-2-64) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) (EN60068-2-6)
	Shock	50 g / 11 ms 100 g / 6 ms Male electrical plug M12x1 (EN60068-2-27) ²⁾
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Housing	1.4301 (AISI304)
	Sealing	FPM/EPDM/NBR
	Male electrical plug	See ordering information
	Weight	appr. 50 g
	Mounting torque	25 Nm

¹⁾ See electrical connection

²⁾ For electrical connections 32 and 35

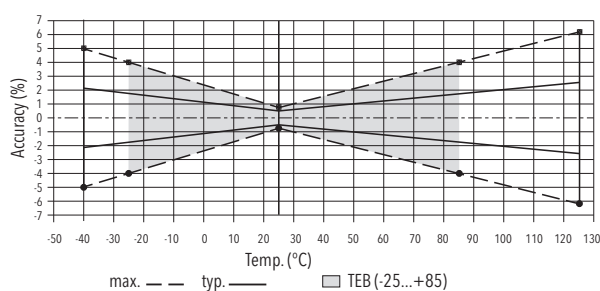
Analogue output

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

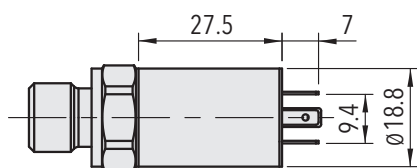
Switching output

Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75
	Accuracy @ +25°C	[% FS typ.]	± 0.5
	Long term stability 1 year	[% FS typ.]	± 0.1
Adjustment range of switchpoints	1 ... 99 % FS		
Distance switch point	≥ 1.0 % FS		
Switch point > reset point	Switchpoint > reset point		
Switching resistance	≤ 3 Ω		
Output function	Hysteresis, Window; normally closed (NO), normally open (NC)		
Switching current	-40°C ... +85°C	(Ambient and media temperature)	≤ 400 mA, total of both switching outputs
	+85°C ... +125°C	(Ambient and media temperature)	≤ 200 mA, total of both switching outputs
Current limiting	integrated		
Delay time	0; approx. 2 ^x [ms], x = 3, 4 ... 16		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

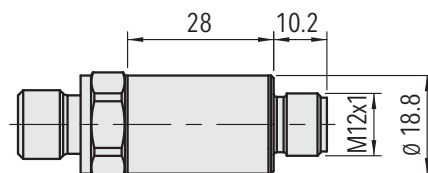
Measuring accuracy



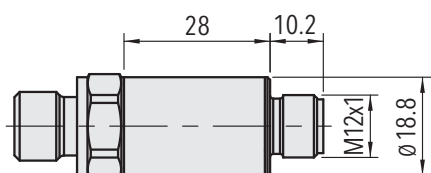
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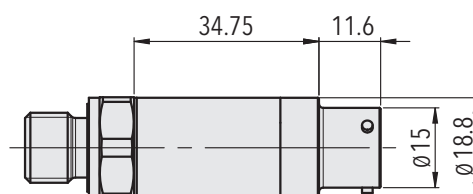
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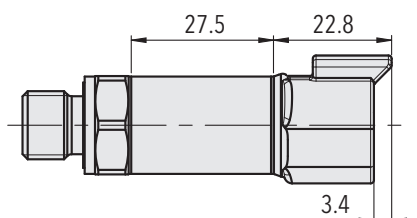
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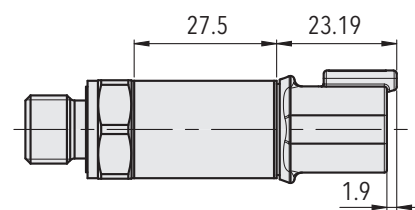
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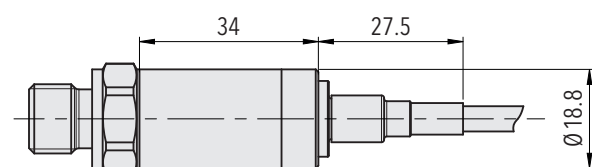
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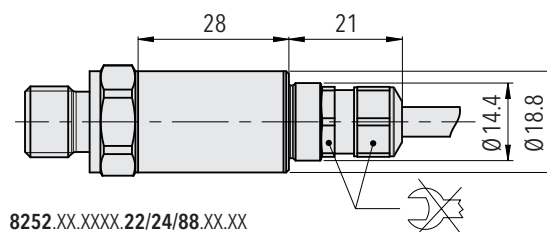
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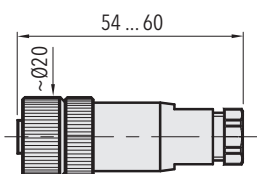
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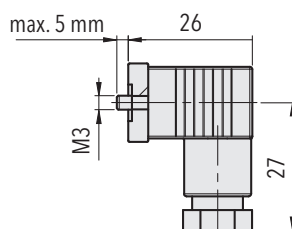
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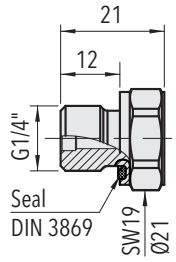


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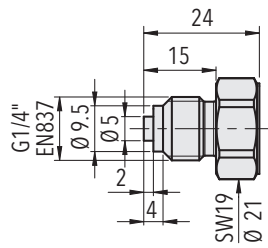


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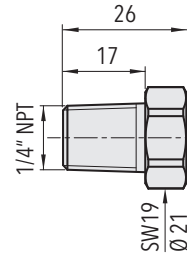
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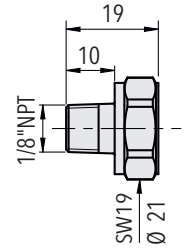
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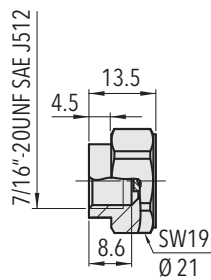
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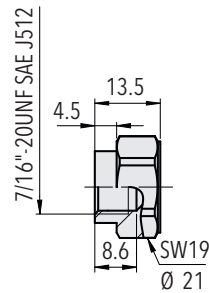
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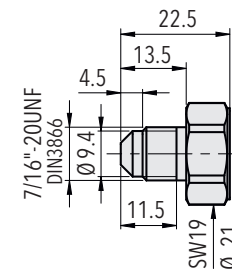
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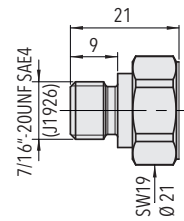
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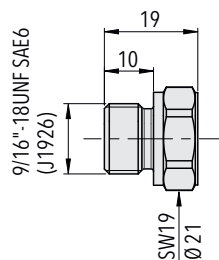
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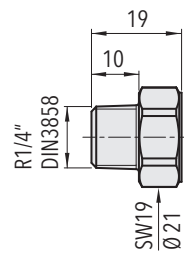
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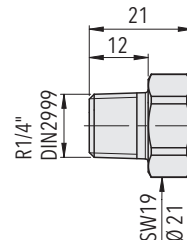
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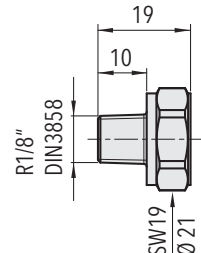
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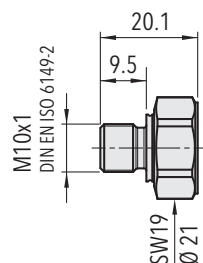
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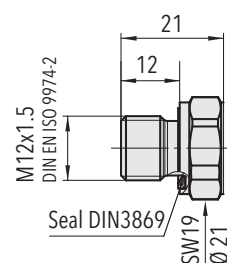
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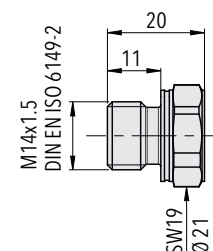
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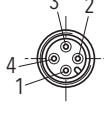
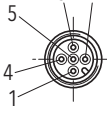
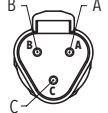
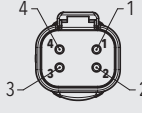
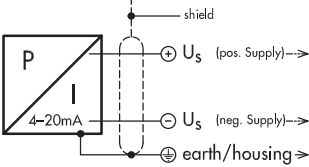
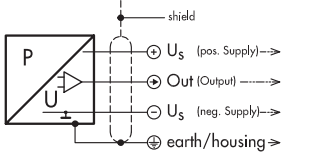


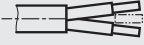
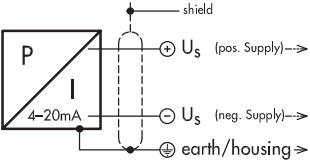
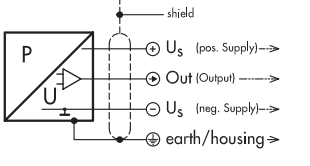
8252.XX.XX49.XX.XX.XX



8252.XX.XX31.XX.XX.XX

Electrical connection

		Protection / electrical connection										
		IP65 ^{1) 2)}		IP67 ^{1) 2)}				IP67 ^{1) 2)}	IP67, IP68 ^{1) 4)}		IP67, IP68 ^{1) 4)}	
		Industrial standard Contact distance 9.4 mm		M12x1				MIL-C 26482	DT04-3P 3-pole		DT04-4P 4-pole	
		01		32		35		02	D3		D4	
												
Output signal		8252..XX.XXXX.XX.19										
		90	92		E1	E6			F0			
	shield											
	U _S (pos. Supply)→	2	2	1	1	1	4	A	A	A	2	
	U _S (neg. Supply)→	1	4	2	3	2	4	1	B	B	C	1
	earth/housing→	4	3	4	4	4	5	E			3	
Output signal		8252..XX.XXXXXX.13/14/16/17/20/22/23/24/25/26										
		91	E3		95	96	E2			F1		
	shield											
	U _S (pos. Supply)→	1	2	3	1	1	1	2	A	A	A	2
	Out (Output)→	2	1	1	2	3	4	3	B	C	B	4
	U _S (neg. Supply)→	3	4	2	3	4	3	2	C/D	B	C	1
	earth/housing→	4	3	4	4	2	2	4	E			3

		Protection / electrical connection		
		IP67, IP68 ^{2) 3)}	IP67 ²⁾	IP67, IP68 ^{2) 3)}
		Cable 22/24	Cable 08	Cable 88
				
Output signal		8252..XX.XXXX.XX.19		
		white	red	brown
	shield			
	U _S (pos. Supply)→			
	U _S (neg. Supply)→	brown yellow	black green	black yellow / green
	earth/housing→			
Output signal		8252..XX.XXXXXX.13/14/16/17/20/22/23/24/25/26		
		white	red	brown
	shield			
	U _S (pos. Supply)→	green	white	blue
	Out (Output)→	brown yellow	black green	black yellow / green
	U _S (neg. Supply)→			
	earth/housing→			

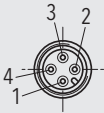
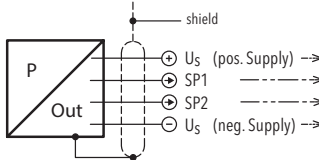
¹⁾ Provided female connector is mounted according to instructions

²⁾ Ventilation via male electric plug/cable end

³⁾ IP68, 20 bar, 30 min.

⁴⁾ IP68, 100 mbar, 4h

Electrical connection

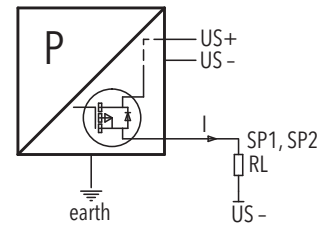
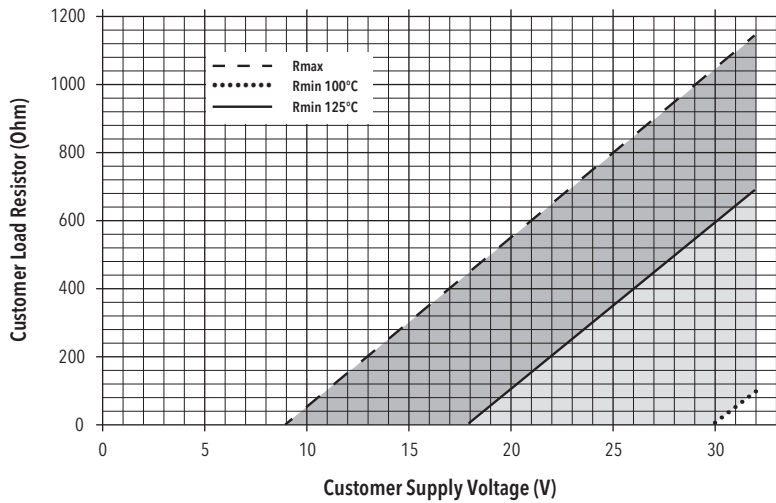
		Protection / electrical connection							
		IP67 ^{1) 2)}		IP67, IP68 ^{2) 3)}		IP67 ²⁾		IP67, IP68 ^{2) 3)}	
		M12x1 4-pole 32 		Cable 22/24 		Cable 08 		Cable 88 	
Output signal		PS	T1	PS	T1	PS	T1	PS	T1
		1 4 2 3	1 4 - 3	white green yellow brown	white green - brown	red white green black	red white - black	brown blue yellow / green black	brown blue - black
		8252.XX.XXXX.XX.PS/T1							

¹⁾ Provided female connector is mounted according to instructions

²⁾ Ventilation via male electric plug/cable end

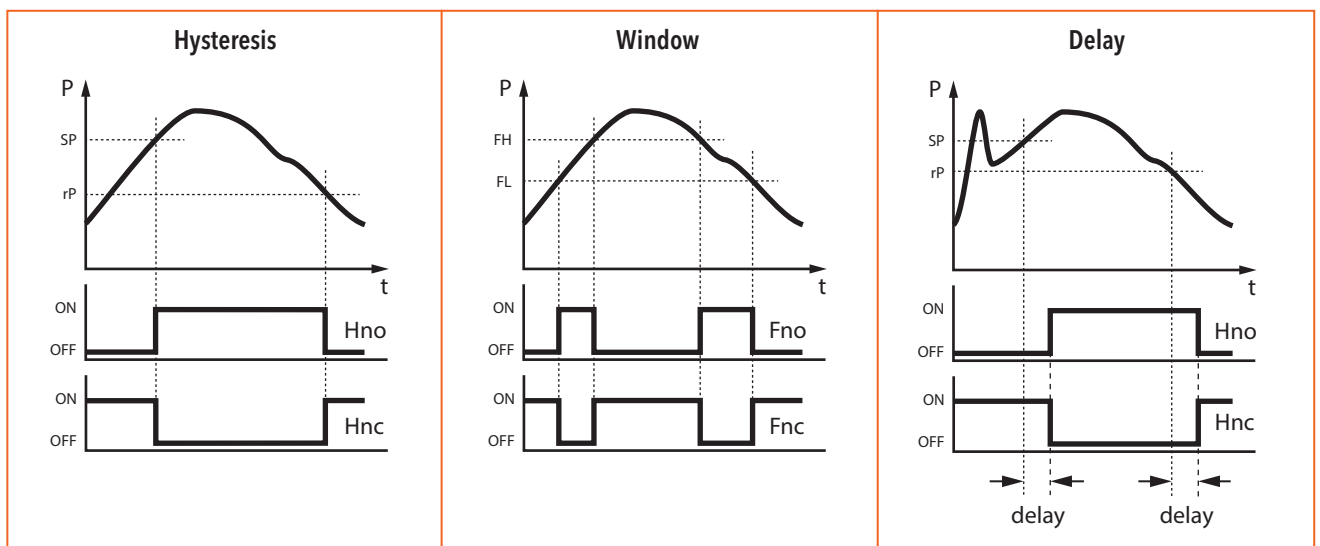
³⁾ IP68, 20 bar, 30 min.

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



Connection of loads to switch contacts

Functions switching output



Additional information

Documents

Data sheet

www.trafag.com/H72303

Instructions

www.trafag.com/H73303

Flyer

www.trafag.com/H70666