

# RAILWAY PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. 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 +125°C and the triple over-pressure protection make the NAR 8258 the ideal choice for railway vehicles in rough environmental conditions.



## Applications

- Railways



## Features

- Measuring accuracy 0.3 %
- Optional: Switching output 1 or 2 PNP transistors
- Excellent long-term stability
- Dielectrical strength: 710 VDC, meets EN 50155 (Railways)

Technical Data			
Measuring principle	Thin film on steel	Media temperature	-40°C ... +125°C
Measuring range	0 ... 6 to 0 ... 600 bar 0 ... 100 to 0 ... 7500 psi	Ambient temperature	-40°C ... +125°C
Output signal	4 ... 20 mA, Switching output: 1 or 2 PNP transistors	Approval / conformity	EN 50155 (Railways) EN 45545-2 (Fire protection)
Accuracy @ 25°C typ.	± 0.3 % FS typ.		

05/2017

Data sheet H72307a

Subject to change

## Ordering information/type code

				8258 . XX				XX	XX	XX	XX	XX
<b>Measuring range</b> <sup>1)</sup>	<b>Pressure measurement range [bar]</b>	<b>Over pressure [bar]</b>	<b>Burst pressure [bar]</b>		<b>Pressure measurement range [psi]</b>	<b>Over pressure [psi]</b>	<b>Burst pressure [psi]</b>					
	0 ... 6	18	100	<b>77</b>	0 ... 100	300	1450	<b>G7</b>				
	0 ... 10	30	200	<b>78</b>	0 ... 150	450	2500	<b>G8</b>				
	0 ... 16	48	200	<b>79</b>	0 ... 200	600	2500	<b>GA</b>				
	0 ... 25 <sup>8)</sup>	75	300	<b>80</b>	0 ... 250	750	2500	<b>G9</b>				
	0 ... 40 <sup>8)</sup>	120	300	<b>81</b>	0 ... 300 <sup>8)</sup>	900	4000	<b>HA</b>				
	0 ... 60 <sup>8)</sup>	180	400	<b>82</b>	0 ... 400 <sup>8)</sup>	1200	4000	<b>H0</b>				
	0 ... 100 <sup>8)</sup>	300	500	<b>83</b>	0 ... 1000 <sup>8)</sup>	3000	5000	<b>H2</b>				
	0 ... 160 <sup>8)</sup>	480	750	<b>85</b>	0 ... 1500 <sup>8)</sup>	4500	7000	<b>H3</b>				
	0 ... 250	750	1000	<b>74</b>	0 ... 2000 <sup>8)</sup>	6000	10000	<b>H5</b>				
	0 ... 400	1000	2000	<b>84</b>	0 ... 3000	9000	14500	<b>G4</b>				
	0 ... 600	1500	2500	<b>86</b>	0 ... 5000	12500	21750	<b>H4</b>				
					0 ... 7500	18750	29000	<b>H6</b>				
<b>Sensor</b>	Relative pressure, accuracy: 0.3 %								<b>23</b>			
<b>Pressure connection</b>	G1/4" male, seal: DIN 3869 (accessory 61/63/83)		<b>17</b>		7/16"-20UNF SAE4 male, seal: accessory 61 <sup>7)</sup>			<b>42</b>				
	G1/4" male (Manometer) EN 871 <sup>8)</sup>		<b>53</b>		M10x1 male, DIN EN ISO 6149-2			<b>32</b>				
	1/4" NPT male		<b>30</b>		M12x1.5 male, DIN EN ISO 9974-2 <sup>8)</sup>			<b>49</b>				
<b>Electrical connection</b>	Male electrical plug, industrial standard, contact distance 9.4 mm, Mat. PA									<b>01</b>		
	Male electrical plug M12x1, 4-pole, Mat. PA									<b>32</b>		
	Male electrical plug M12x1, 5-pole, Mat. PA									<b>35</b>		
<b>Output signal</b>	<b>Signal output</b>	<b>Load resistance</b>		<b>I (supply)</b>		<b>U (supply)</b>						
	4 ... 20mA	See graphic				24 (9 ... 32) VDC			<b>19</b>			
	2 PNP transistors <sup>3)</sup>			≤ 10 mA		24 (9 ... 32) VDC			<b>PS</b>			
	1 PNP transistor <sup>3)</sup>			≤ 10 mA		24 (9 ... 32) VDC			<b>T1</b>			
<b>Accessories</b>	Female electrical plug M12x1, 5-pole <sup>2)</sup>									<b>33</b>		
	Female electrical connector industrial standard (for electrical connection 01)									<b>34</b>		
	Pressure peak damping element ø 1.0 mm <sup>6)</sup>									<b>40</b>		
	Pressure peak damping element ø 0.4 mm <sup>6)</sup>									<b>44</b>		
	Seal FPM, -18°C ... +125°C									<b>61</b>		
	Seal EPDM, -40°C ... +125°C									<b>63</b>		
	Seal NBR, -25°C ... +100°C									<b>83</b>		
	Special electrical connection: Pin 2 +, Pin 3 ground, Pin 4 - (only for output signal 19 and male electrical plug 01, industrial standard)									<b>90</b>		
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground (only for output signal 19 and male electrical plug 01, industrial standard)									<b>92</b>		
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 4 ground (only for output signal 19 and male electrical plug 32, M12x1, 4-pole)									<b>E1</b>		
	Parameterisation according to customer specification (see table parameter), for output signal PS, T1									<b>ZC</b>		

<sup>1)</sup> Customized pressure ranges upon request

<sup>2)</sup> For electrical connections 32 and 35

<sup>3)</sup> Only with electrical connection 32

<sup>4)</sup> Max. allowable pressure range 60 bar at 120 bar overpressure

<sup>5)</sup> Max. allowable pressure range 160 bar at 500 bar overpressure

<sup>6)</sup> Only for pressure connections 17, 30, 32

<sup>7)</sup> According to norm J1926, max. 35 MPa

<sup>8)</sup> Upon request

Parameter				
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 Hysteresis $\geq$ 1 % FS	SP1	
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring range	< SP1, FH1 Hysteresis $\geq$ 1 % FS	RP1	
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	> RP2, FL2 Hysteresis $\geq$ 1 % FS	SP2	
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	< SP2, FH2 Hysteresis $\geq$ 1 % FS	RP2	
Switch point delay time SP1 / RP1 (hysteresis mode) Switch point delay time FH1 / FL1 (window mode)	0	0; 2 <sup>x</sup> [ms], x = 3, 4 ... 16	dS1	
Switch point delay time SP2 / RP2 (hysteresis mode) Switch point delay time FH2 / FL2 (window mode)	0	0; 2 <sup>x</sup> [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	

Specifications		
<b>Electrical Data</b>	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 1 or 2 PNP transistors: 24 (9...32) VDC
	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 1 or 2 PNP transistors: to $U_s = 32$ VDC
<b>Environmental conditions</b>	Media temperature	-40°C ... +125°C
	Ambient temperature	-40°C ... +125°C
	Protection <sup>1)</sup>	IP65, IP67
	Humidity	Max. 95 % relative
	Vibration	15 g RMS (20...2000 Hz) 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C)
	Shock	50 g / 11 ms 100 g / 6 ms Male electrical plug M12x1 32, 35
<b>EMC Protection</b>	Emission	EN/IEC 61000-6-3 EN50121-3-2
	Immunity	EN/IEC 61000-6-2 EN50121-3-2 2)
<b>Mechanical Data</b>	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

<sup>1)</sup> See electrical connection

<sup>2)</sup> Surge voltage on shield, shield connected on both sides

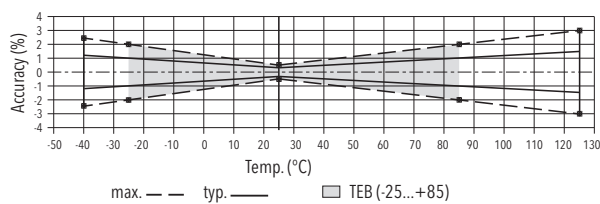
## Analogue output

Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.01
	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.]	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.3
	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; 2*[ms], x = 3, 4 ... 16		
Switching frequency	max. 60 Hz (at switching delay time = 0)		

## Measuring accuracy

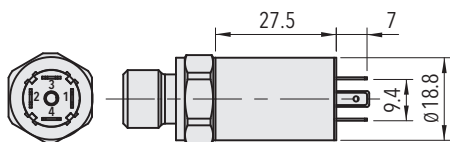


Additional specifications railways			
Environmental conditions	Cold	EN 60068-2-1	Ab: -40°C, 2 h (not in operation) Ae: -40°C, 1 h (in operation)
	Dry heat	EN 60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclical	EN 60068-2-30	Db: 55°C, variant 1, 2 cycles (2 x 24 h)
	Vibration and shock	EN 61373:2010	Vibration: category 3 Shock: category 3 <sup>1)</sup>
	Dielectrical strength	EN 50155:2007	710 VDC
Supply	Resistance of insulation	EN 50155:2007	>10 MΩ, 500 VDC
	Behavior in case of fire (electrical connections 01, 32, 35)	EN 45545-2	Weight: < 10 g Surface: < 0.2 m <sup>2</sup>
	Nominal voltage	EN 50155:2007 <sup>2)</sup>	24 V
	Interruptions of the voltage supply	EN 50155:2007 <sup>2)</sup>	Class S1
	Switching between two supply voltages	EN 50155:2007 <sup>2)</sup>	Class C1

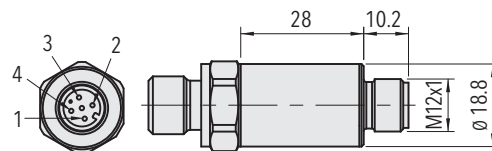
<sup>1)</sup> In Category 3 the 2010 versions' higher severity levels apply in each case

<sup>2)</sup> Chapter 5.1 Voltage supply

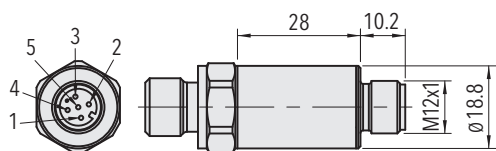
## Dimensions



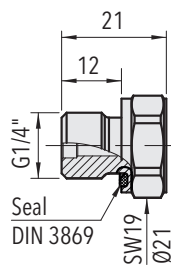
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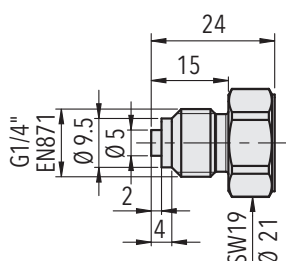
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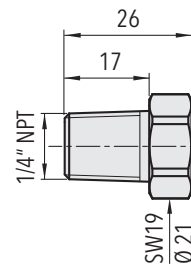
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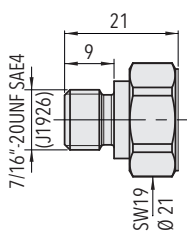
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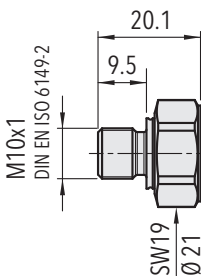
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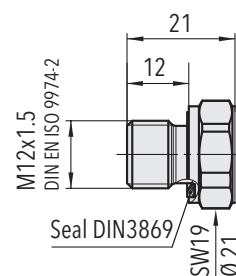
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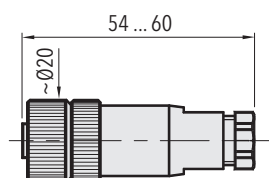
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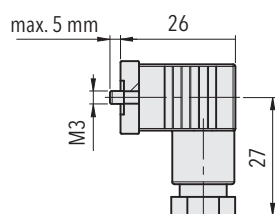
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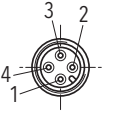
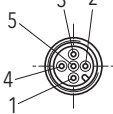
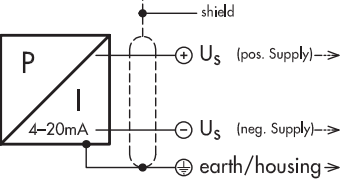
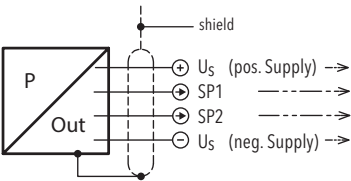


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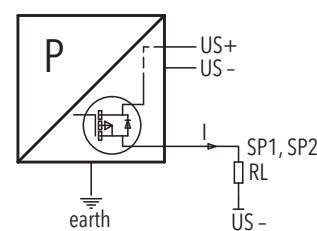
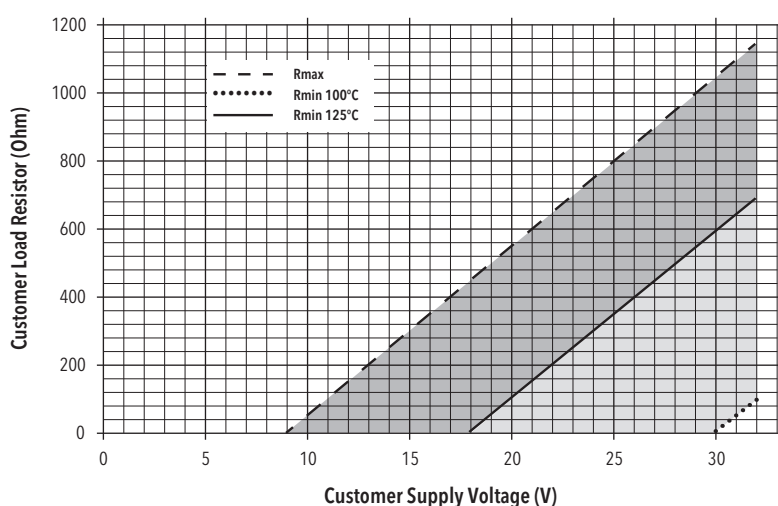
## Electrical connection

		Protection / electrical connection					
		IP65 *)**)			IP67 *)**)		
		Industrial standard Contact distance 9.4 mm <b>01</b>			M12x1 4-pole <b>32</b>		5-pole <b>35</b>
							
Output signal	 <p><b>8258.XX.XXXX.XX.19</b></p>		<b>90</b>	<b>92</b>		<b>E1</b>	
	 <p><b>8258.XX.XXXX.XX.PS/T1</b></p>				<b>PS</b>	<b>T1</b>	
		2	2	1	1	1	4
		1	4	2	3	2	1
		4	3	4	4	4	5
					1	1	
					4	4	
					2	-	
					3	3	

\*) Provided female connector is mounted according to instructions

\*\*) Ventilation via male electric plug/cable end

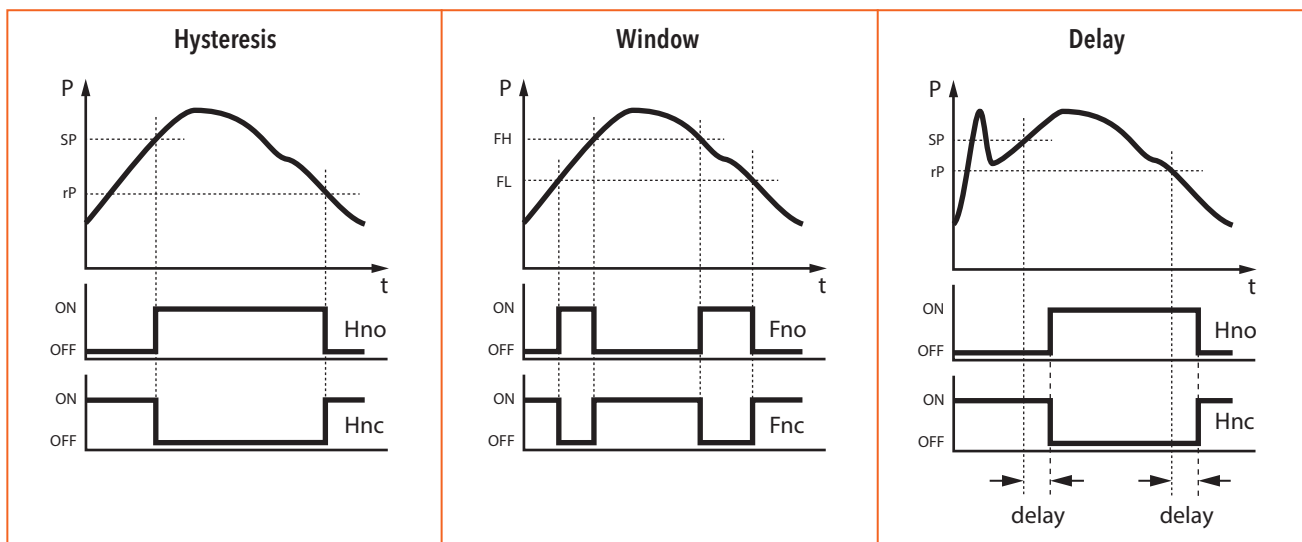
4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



Connection of loads to switching output



## Functions switching output



### Additional information

#### Documents

Data sheet	<a href="http://www.trafag.com/H72307">www.trafag.com/H72307</a>
Instructions	<a href="http://www.trafag.com/H73303">www.trafag.com/H73303</a>
Flyer	<a href="http://www.trafag.com/H70697">www.trafag.com/H70697</a>