HYDROGEN PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The EHI 8280 Hydrogen pressure transmitter features a thin-film-on-steel sensor based on a special hydrogen-compatible high-performance alloy for best-in-class signal stability. The robust mechanical design with fully welded housing is built to last in harsh environments.

Applications

- H_2 fuelling stations
- Hydrogen compressors
- Fuel cells
- Vehicles with H_2 drive
- Hydrogen tanks

Features

- EC79/2009 certified by the KBA Kraftfahrt-Bundesamt
- Wetted materials made of hydrogen-compatible steel
- Completely welded sensor system without additional seals
- Excellent long-term stability

03/2023
Data sheet H72349_3
Subject to change

Technical Data			
Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ.
Measuring range	0 ... 1 to 0 ... 600 bar 0 ... 15 to 0 ... 7500 psi	Media temperature	–40°C ... +85°C
Output signal	4 ... 20 mA, 0 ... 5 VDC, 0.5 ... 5 VDC, 1 ... 6 VDC, 0 ... 10 VDC, 0.5 … 4.5 VDC ratiometric	Ambient temperature	–40°C ... +85°C Cable PVC: -5°C ... +60°C Cable PUR: -20°C ... +70°C Cable Raychem: -20°C ... +85°C
NLH @ 25°C (BSL) typ.	± 0.2 % FS typ.		

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trafag sensors controls

Ordering information/type code

8280 . XX XX XX XX XX XX

Measuring range [1]

Pressure measurement range [bar]	Over pressure [bar]	Burst pressure [bar]		Pressure measurement range [psi]	Over pressure [psi]	Burst pressure [psi]	
0 ... 1	2	25	**71**	0 ... 15	30	350	**G1**
0 ... 1.6	3.2	32	**73**	0 ... 30	60	700	**G5**
0 ... 2.5	5	50	**75**	0 ... 50	100	850	**G6**
0 ... 4	8	60	**76**	0 ... 100	200	1450	**G7**
0 ... 6	12	100	**77**	0 ... 150	300	2500	**G8**
0 ... 10	20	200	**78**	0 ... 200	400	2500	**GA**
0 ... 16	32	200	**79**	0 ... 250	500	2500	**G9**
0 ... 25	38	300	**80**	0 ... 300	600	4000	**HA**
0 ... 40	60	300	**81**	0 ... 400	600	4000	**H0**
0 ... 60	90	400	**82**	0 ... 500	750	4000	**H1**
0 ... 100	150	500	**83**	0 ... 1000	1500	5000	**H2**
0 ... 160	240	750	**85**	0 ... 1500	2250	7000	**H3**
0 ... 250	375	1000	**74**	0 ... 2000	3000	10000	**H5**
0 ... 400	600	1500	**84**	0 ... 3000	4500	14500	**G4**
0 ... 600	1000	2000	**86**	0 ... 7500	15000	29000	**H6**

Sensor

Relative pressure, accuracy class 0.5 %	**35**
Relative pressure, accuracy class 0.3 %	**33**

Pressure connection

G1/4" male, seal: DIN 3869	**17**
1/4" NPT male	**30**
7/16"-20UNF-2A male, SAE J1926-2 (Heavy Duty) [3]	**69**
9/16"-18UNF-2A male, SAE J1926-2 (Heavy Duty) [3]	**67**

Electrical connection

Male electrical connector EN 175301-803-A (DIN 43650-A), Mat. PA	**05**
Male electrical connector M12x1, 5-pole, Mat. PBT	**35**
Male electrical connector Packard Metri Pack, Mat. PBT	**51**
Cable PUR (Screwed cable gland PA 6-3), -20°C ... +70°C [4] [5]	**24**
Cable PVC (Screwed cable gland PA 6-3), -5°C ... +60°C [4] [5] [6]	**22**
Cable Raychem (Screwed cable gland PA 6-3), -20°C ... +100°C [4] [5] [6]	**08**

Output signal

Signal output	Load resistance	I (supply)	U (supply)	
4 ... 20 mA	(Usupply-9 V) / 20 mA		9 ... 32 VDC	**19**
0 ... 5 VDC	> 2.5 kΩ	< 10 mA	9 ... 32 VDC	**14**
0.5 ... 5 VDC	> 5.0 kΩ	< 10 mA	9 ... 32 VDC	**22**
1 ... 6 VDC	> 5.0 kΩ	< 10 mA	9 ... 32 VDC	**16**
0 ... 10 VDC	> 5.0 kΩ	< 10 mA	15 ... 32 VDC	**17**
0.5 ... 4.5 VDC ratiometric	> 5.0 kΩ	< 10 mA	5 (4.75 ... 5.25) VDC	**23**

		8280 . XX	XX	XX	XX	XX	XX
Accessories	Seal FPM, -18°C ... +125°C						**61**
	Seal EPDM, -40°C ... +125°C						**63**
	Seal NBR, -25°C ... +100°C						**83**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0						**46**
	Female electrical plug EN 175301-803-A (DIN 43650-A)/silicone, -40°C ... +125°C, for cable diameter 4 … 9 mm, flammability standard UL94-V0						**56**
	Female electrical plug EN 175301-803-A (DIN43650-A)/NBR, -40°C ... +90°C, for cable diameter 4 … 9.5 mm, flammability standard UL94-V2						**58**
	Female electrical plug M12x1, 5-pole						**33**
	Special electrical connection: Pin 1 +, Pin 2 - (only for output signal 4 ... 20 mA and male electrical connector EN175301-803-A / DIN43650-A)						**92**
	Special electrical connection: Pin 1 Out , Pin 2 -, Pin 3 + (only for output 14, 16, 17 and male electrical connector EN175301-803-A / DIN43650-A)						**98**
	Special electrical connection: Pin 1 +, Pin 2 -, Pin 3 Out (only for output 14, 16, 17 and male electrical connector EN175301-803-A / DIN43650-A)						**97**
	Special electrical connection: Pin 1 + , Pin 3 -, Pin 5 GR (only for output 4...20mA and male electrical connector M12x1, 5-pol.)						**94**
	Special electrical connection: Pin 1 + , Pin 3 - (only for output 4 ... 20 mA and male electrical connector Packard Metri Pack 3-poles)						**E4**
	Special electrical connection: Pin 1 + , Pin 2 out Pin 3 – (only for output signals 14, 16, 17 and male electrical connector Packard Metri Pack 3-poles)						**99**
	Housing nut for electrical connection EN175301-803-A (DIN43650-A) secured with Loctite (max. 85°C)						**L9**
	Cable length 1.5 m						**1M**
	Cable length 3.0 m						**3M**
	Cable length 5.0 m						**5M**
	Multiple packaging [7]						**VM**

[1] Customized pressure ranges upon request
[2] Upon request
[3] Measuring range max. 630 bar according to SAE J1926-2 (Heavy Duty)
[4] Cable length see accessories (max. length 50 m, in 5-meter sections)
[5] IP68, max. 3 m, Media +10°C … +35°C
[6] Cable length max. 3 m for pressure ranges ≤ 16 bar
[7] The order quantity must be a multiple of 50, only for electrical connections 05 and 35

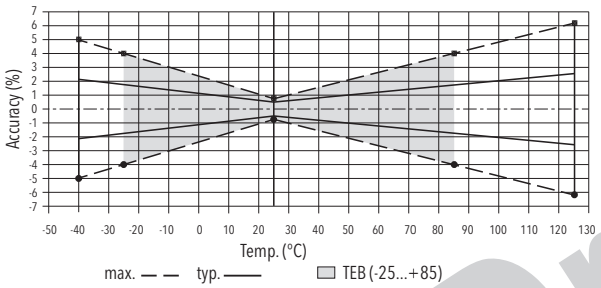
Code	Pressure connection	Seal FPM (Code 61)	Seal EPDM (Code 63)	Seal NBR (Code 83)
17	G1/4" male, Seal: DIN 3869	✓	✓	✓
30	1/4" NPT female			
69	7/16"-20UNF male, SAE4 (J1926)	✓		
67	9/16"-18UNF male, SAE6 (J1926)	✓		

Specifications		
Electrical data	Output / supply voltage	4 ... 20 mA: 24 (9...32) VDC 0 ... 5 VDC: 24 (9...32) VDC 0.5 ... 5 VDC: 24 (9...32) VDC 1 ... 6 VDC: 24 (9...32) VDC 0 ... 10 VDC: 24 (15...32) VDC 0.5 ... 4.5 VDC ratiometric 10 ... 90 % U_{supply}: 5 ± 0.25 VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Power-on delay time	100 ms
	Inverse-polarity protection, short-circuit strength @ 25°C during 5 min.	4 ... 20 mA: to U_s = 32 VDC 0 ... 10 VDC, 0 ... 5 VDC, 1 ... 6 VDC: to U_s = 28 VDC 0.5 ... 4.5 VDC ratiometric: to U_s = 14 VDC
Environmental conditions	Media temperature	–40°C ... +85°C
	Ambient temperature	–40°C ... +85°C Cable PVC: -5°C ... +60°C Cable PUR: -20°C ... +70°C Cable Raychem: -20°C ... +85°C
	Protection [1)]	IP65, IP67, IP68
	Humidity	Max. 95 % relative
	Vibration	15 g RMS (20...2000 Hz) acc.to EN 60068-2-64 25 g sin (80...2000 Hz), 1 oct./min, (1x @ 25°C) acc.to EN 60068-2-6
	Shock	500 g / 1 ms acc.to EN 60068-2-27
EMC protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical data	Sensor (wetted parts)	Nitrogen-strengthened austenitic steel, hydrogen compatible
	Pressure connection (wetted parts)	1.4404 (AISI316L)
	Housing	1.4404 (AISI316L)
	Sealing	FPM/EPDM/NBR
	Male electrical connector	See ordering information
	Weight	appr. 80 ... 110 g
	Mounting torque	25 Nm

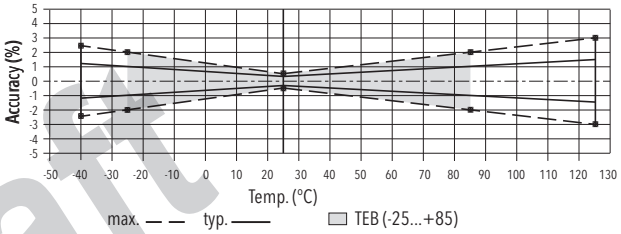
[1)] See electrical connection

Analogue output				
			Sensor 35 accuracy 0.5 %	**Sensor 33 accuracy 0.3 %**
Accuracy	TEB @ -25 ... +85°C	[% FS typ.]	± 1.75	± 1.0
	Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.3
	NLH @ +25°C (BSL)	[% FS typ.]	± 0.2	± 0.2
	TC zero point and span	[% FS/K typ.]	± 0.03	± 0.01
	Long term stability 1 year @ +25°C	[% FS typ.]	± 0.75	± 0.75
Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure			

Measuring accuracy 0.5 %

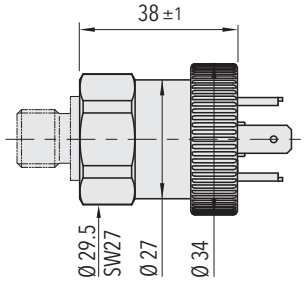


Measuring accuracy 0.3 %

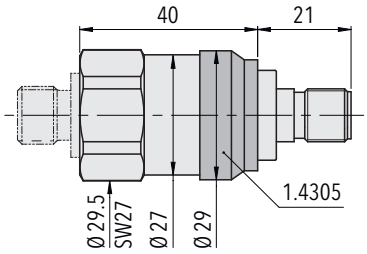


Additional information		
Documents	Data sheet	www.trafag.com/H72349
	Instructions	www.trafag.com/H73317
	Flyer	www.trafag.com/H70349

Dimensions



8280.XX.XXXX.**05**.XX.XX



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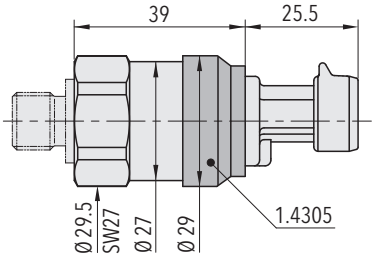

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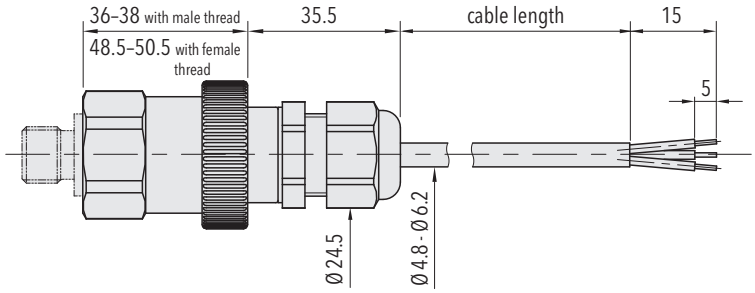

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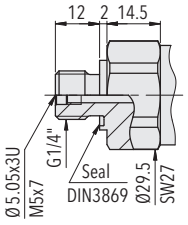

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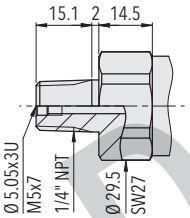
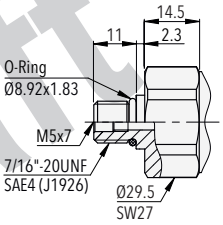
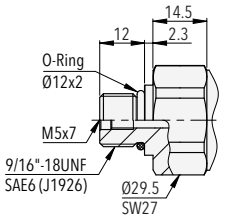


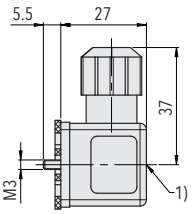
8280.XX.XX**30**.XX.XX.XX



8280.XX.XX**69**.XX.XX.XX

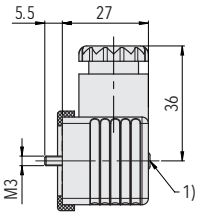


8280.XX.XX**67**.XX.XX.XX



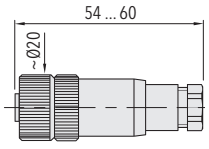
1) Tightening torque 50...60 Ncm

8280.XX.XXXX.XX.XX.**46/56**



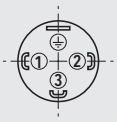
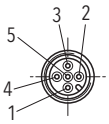
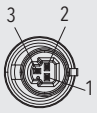
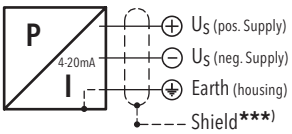
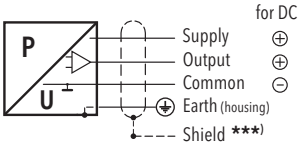
1) Tightening torque 50...60 Ncm

8280.XX.XXXX.XX.XX.**58**



8280.XX.XXXX.XX.XX.**33**

Electrical connection

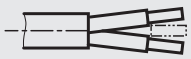
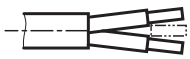
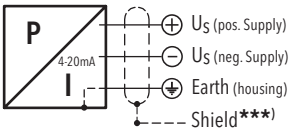
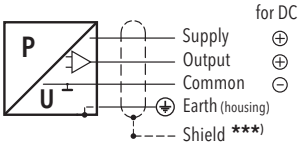
	Protection / electrical connection					
	IP65*) **)		IP67*) **)		IP67*) **)	
	Industrial standard EN175301-803A		M12x1 5-pole		Packard Metri Pack 3-pole	
	05		**35**		**51**	
						
Output signal						
 8287.xx.xxxx.xx.**19**	Standard	**92**		**94**		**E4**
	2 Us (pos. Supply)	1 Us (pos. Supply)	4 Us (pos. Supply)	1 Us (pos. Supply)	1 Us (pos. Supply)	1 Us (pos. Supply)
	1 Us (neg. Supply)	2 Us (neg. Supply)	1 Us (neg. Supply)	3 Us (neg. Supply)	2 Us (neg. Supply)	3 Us (neg. Supply)
	⏚ Earth (housing)	⏚ Earth (housing)	5 Earth (housing)	5 Earth (housing)		
	Shield***)		Shield***)			
 8287.xx.xxxx.xx.**14/16/17/ 22/23**	Standard	**98**	**97**			**99**
	2 Supply (for DC) ⊕	3 Supply (for DC) ⊕	1 Supply (for DC) ⊕	2 Supply (for DC) ⊕	1 Supply (for DC) ⊕	1 Supply (for DC) ⊕
	3 Output ⊕	1 Output ⊕	3 Output ⊕	4 Output ⊕	3 Output ⊕	2 Output ⊕
	1 Common ⊖	2 Common ⊖	2 Common ⊖	3 Common ⊖	2 Common ⊖	3 Common ⊖
	⏚ Earth (housing)	⏚ Earth (housing)	⏚ Earth (housing)	5 Earth (housing)		
	Shield ***)					

[1] Only for output signal 23

*) Provided female electrical plug is mounted according to instructions

**) Ventilation via male electric plug/cable end

***) Only cable versions or female electrical plug with shield connection

	Protection / electrical connection	
	IP68 max. 3 m	IP68 max. 3 m
	Cable**)	Cable**)
	24/22	**08**
		
Output signal		
 8287.xx.xxxx.xx.**19**	white Us (pos. Supply)	red Us (pos. Supply)
	brown Us (neg. Supply)	black Us (neg. Supply)
	yellow Earth (housing)	green Earth (housing)
 8287.xx.xxxx.xx.**14/16/17/ 22/23**	white Supply (for DC) ⊕	red Supply (for DC) ⊕
	green Output ⊕	white Output ⊕
	brown Common ⊖	black Common ⊖
	yellow Earth (housing)	green Earth (housing)

trafag sensors controls