

CANOPEN MINIATURE PRESSURE TRANSMITTER

Swiss based Trafag is a leading international supplier of high quality sensors and monitoring instruments for measurement of pressure and temperature. The CANopen miniature pressure transmitter CMP is based on Trafag's own thin-film-on-steel technology which offers high accuracy and longterm stability even in harsh environments. The most compact design and the proven high-performance electronics with CiA-certified, comprehensive CANopen-functionality makes the CMP 8270 best-in-class pressure transmitter.



Applications

- Engine manufacturing
- Railways
- Machine tools
- Hydraulics
- Process technology
- Test benches

Features

- Small and rugged construction
- Different accuracy classes
- Measurement of pressure and temperature
- CANopen bus protocol DS301/DS404 supports CAN 2.0A/B
- LSS (DS 305 V2.0)

02/2020

Data sheet H72614s

Technical Data			
Measuring principle	Thin-film-on-steel	Accuracy @ 25°C typ.	± 0.5 % FS typ. ± 0.3 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.
Measuring range	0 ... 0.2 to 0 ... 600 bar 0 ... 3 to 0 ... 7500 psi	Media temperature	-50°C ... +135°C
Output signal	Bus protocol CANopen DS404	Ambient temperature	-40°C ... +125°C
NLH @ 25°C (BSL) typ.	± 0.3 % FS typ. ± 0.2 % FS typ. ± 0.15 % FS typ. ± 0.1 % FS typ.		

Subject to change

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]		8270 . XX	XX	XX	XX	XX	XX
		0 ... 0.2 ²⁾	1.2	25	68	0 ... 3 ²⁾	18	350	F8					
	0 ... 0.4 ²⁾	1.2	25	69	0 ... 5 ²⁾	18	350	F9						
	0 ... 0.6 ²⁾	1.5	25	70	0 ... 10 ²⁾	25	350	G0						
	0 ... 1 ²⁾	2	25	71	0 ... 15 ²⁾	30	350	G1						
	0 ... 1.6 ²⁾	3.5	50	73	0 ... 25 ²⁾	50	700	G3						
	0 ... 2.5 ²⁾	5	50	75	0 ... 30 ²⁾	60	700	G5						
	0 ... 4	12	100	76	0 ... 50	100	850	G6						
	0 ... 6	12	100	77	0 ... 100	200	1450	G7						
	0 ... 10	20	200	78	0 ... 150	300	2500	G8						
	0 ... 16	32	200	79	0 ... 200	400	2500	GA						
	0 ... 25	50	300	80	0 ... 250	500	2500	G9						
	0 ... 40	80	300	81	0 ... 300	600	4000	HA						
	0 ... 60	120	400	82	0 ... 400	800	4000	H0						
	0 ... 100	200	500	83	0 ... 500	1000	4000	H1						
	0 ... 160	320	750	85	0 ... 1000	2000	5000	H2						
	0 ... 250	500	1000	74	0 ... 1500	3000	7000	H3						
	0 ... 400	800	1500	84	0 ... 2000	4000	10000	H5						
	0 ... 600	1200	2000	86	0 ... 3000	6000	14500	G4						
					0 ... 5000	10000	21750	H4						
					0 ... 7500	15000	29000	H6						
Sensor	Relative pressure, accuracy: 0.5 % ⁵⁾			25	Absolute pressure, accuracy: 0.5 % ^{4) 5)}			45						
	Relative pressure, accuracy: 0.3 %			23	Absolute pressure, accuracy: 0.3 % ⁶⁾			43						
	Relative pressure, accuracy: 0.15 % ⁵⁾			21	Absolute pressure, accuracy: 0.15 % ^{4) 5)}			41						
	Relative pressure, accuracy: 0.1 % ⁵⁾			24	Absolute pressure, accuracy: 0.1 % ^{4) 5)}			44						
Pressure connection	G1/4" male (Seal)													17
	1/4" NPT male													30
	1/4" NPT female ⁷⁾													13
	7/16"-20UNF male ^{3) 4)}													18
	7/16"-20UNF female, DIN3866 (valve opener) ^{3) 4)}													24
	7/16"-20UNF male, SAE4 (J1926) ³⁾													42
	9/16"-18UNF male, SAE6 (J1926), seal: accessory 61 ^{3) 7)}													61
M10x1 male, DIN EN ISO 6149-2 ³⁾													32	
Electrical connection	Male electrical connector M12x1, 5-pol., Mat. PA													35
Output signal	CANopen bus protocol with pre-adjustment Node-ID = 1, baudrate = 20 kbps													52
	CANopen bus protocol with pre-adjustment, Node-ID: 1, automatic baudrate detection													53
Accessories	Female electrical plug M12x1, 5-pole													33
	Meets EN 50155 (railways)													11
	Pressure peak damping element ø 1.0 mm													40
	Pressure peak damping element ø 0.3 mm													43
	Pressure peak damping element ø 0.5 mm													45

¹⁾ Extended overpressure as well as customized pressure ranges upon request

²⁾ Only with pressure connection 17 (G1/4") or 30 (1/4" NPT)

³⁾ Only for relative pressure

⁴⁾ Max. allowable pressure range 40 bar/600 psi

⁵⁾ Only for pressure ranges ≥ 4 bar / 50 psi

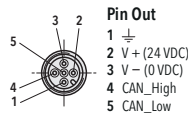
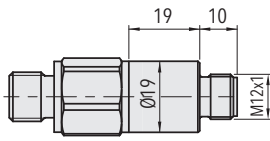
⁶⁾ Only for pressure ranges ≥ 1 bar / 15 psi

⁷⁾ Upon request

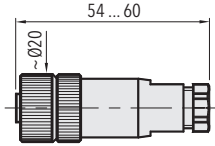
Standard products (extra short lead time)

Product No.	Type Code	Pressure range [bar]	Over pressure max. [bar]	Supply [VDC]	Accuracy @ 25°C typ. [%]
CMP4.0M	8270 76 2517 35 0000 0000 52 43	0 ... 4	12	8 ... 32	± 0.5
CMP6.0M	8270 77 2517 35 0000 0000 52 43	0 ... 6	12	8 ... 32	± 0.5
CMP10.0M	8270 78 2517 35 0000 0000 52 43	0 ... 10	20	8 ... 32	± 0.5
CMP16.0M	8270 79 2517 35 0000 0000 52 43	0 ... 16	32	8 ... 32	± 0.5
CMP25.0M	8270 80 2517 35 0000 0000 52 43	0 ... 25	50	8 ... 32	± 0.5
CMP40.0M	8270 81 2517 35 0000 0000 52 43	0 ... 40	80	8 ... 32	± 0.5
CMP100.0M	8270 83 2517 35 0000 0000 52 43	0 ... 100	200	8 ... 32	± 0.5
CMP250.0M	8270 74 2517 35 0000 0000 52 43	0 ... 250	500	8 ... 32	± 0.5
CMP400.0M	8270 84 2517 35 0000 0000 52 43	0 ... 400	800	8 ... 32	± 0.5

Dimensions

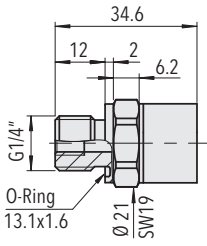


8270.XX.XXXX.35.XX.XX

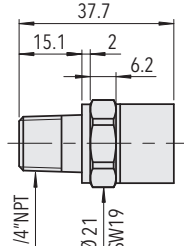


8270.XX.XXXX.XX.XX.33

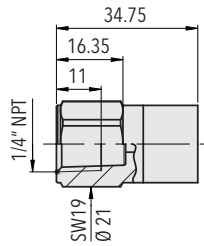
≤ 0 ... 2.5 bar



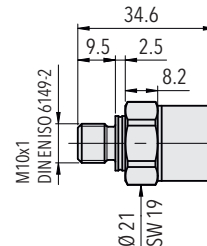
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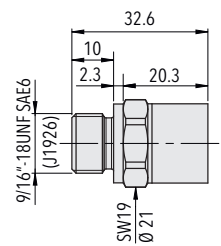
8270.XX.2X30.XX.XX.XX



8270.XX.2X13.XX.XX.XX

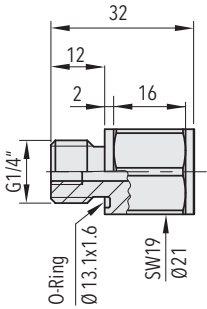


8270.XX.2X32.XX.XX.XX

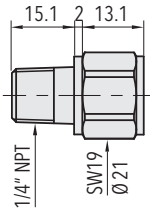


8270.XX.2X61.XX.XX.XX

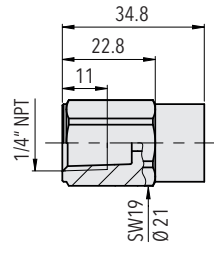
> 0 ... 2.5 bar



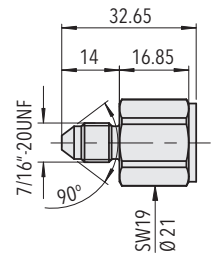
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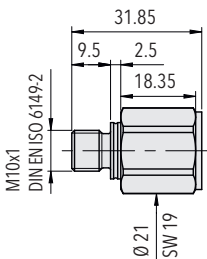
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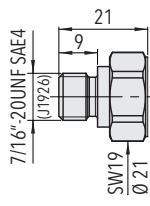
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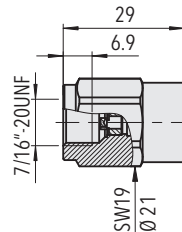
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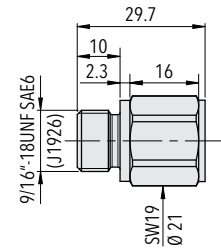
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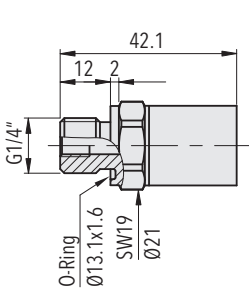
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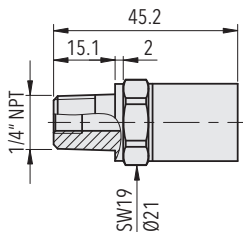
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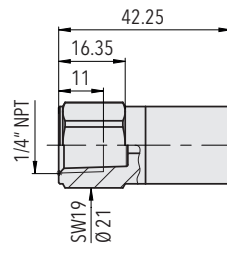
8270.XX.2X61.XX.XX.XX



8270.XX.4X17.XX.XX.XX



8270.XX.4X30.XX.XX.XX



8270.XX.4X13.XX.XX.XX

Specifications ²⁾		
Electrical Data	Output / supply voltage	Bus protocol CANopen / 12/24 (8...32)VDC
	Rise time	Typ. 1 ms / 10 ... 90 % nominal pressure
	Current consumption	ca. 20 mA
Environmental conditions	Media temperature	-50°C ... +135°C
	Ambient temperature	-40°C ... +125°C
	Protection ¹⁾	Min. IP67
	Humidity	Max. 95 % relative
	Vibration	40 g (20 ... 2000 Hz)
	Shock	100 g / 11 ms
EMC Protection	Emission	EN/IEC 61000-6-4
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	Pressure ranges ≤ 250 bar: 1.4542 (AISI630) Pressure ranges > 250 bar: 1.4301 (AISI304)
	Housing	1.4301 (AISI304)
	Sealing	FKM 70 Sh
	Male electrical plug	See ordering information
	Weight	~ 60 g
	Mounting torque	25 Nm

¹⁾ Provided female connector is mounted according to instructions

²⁾ For accessory code 11 see separate table

Accuracy							
		Measuring accuracy 0.5 % Ordering No. 25/45	Measuring accuracy 0.3 % Ordering No. 23/43			Measuring accuracy 0.15 % Ordering No. 21/41	Measuring accuracy 0.1 % Ordering No. 24/44
[bar]			≥ 0.2 ≤ 0.6	> 0.6 < 2.0	≥ 2.0		
TEB @ -25 ... +85°C	[% FS typ.]	± 2.0	± 2.0	± 1.5	± 1.0	± 0.2	± 0.1
Accuracy @ +25°C	[% FS typ.]	± 0.5	± 0.8	± 0.6	± 0.3	± 0.15	± 0.1
NLH @ +25°C (BSL)	[% FS typ.]	± 0.3	± 0.2	± 0.2	± 0.2	± 0.15	± 0.1
TC zero point and span	[% FS/K typ.]	± 0.03	± 0.02	± 0.02	± 0.01	± 0.002	± 0.002
Long term stability 1 year @ +25°C	[% FS typ.]	± 0.2	± 0.3	± 0.2	± 0.1	± 0.1	± 0.1
Mounting dependency with 180° rotation (vibration and shock)	[% FS max.]	0.5 mbar	0.5 mbar			0.5 mbar	0.5 mbar
Signal of pressure sensor							
Resolution		≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms	≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms	≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms	≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms	≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms	≥ 10 bit @ 1 ms 13 bit @ ≥ 5 ms
Sampling rate (fix)		1ms (1 kHz)	1ms (1 kHz)	1ms (1 kHz)	1ms (1 kHz)	1ms (1 kHz)	1ms (1 kHz)
Measuring filter (moving average)	[ms]	1 ... 65'000	1 ... 65'000	1 ... 65'000	1 ... 65'000	1 ... 65'000	1 ... 65'000
Signal of temperature sensor							
Total error @ -25 ... +85°C	[°C typ.]	not calibrated	± 2	± 1	± 1	± 1	± 1
Sampling rate (fix)		10x100 ms (1 Hz)	10x100 ms (1 Hz)	10x100 ms (1 Hz)	10x100 ms (1 Hz)	10x100 ms (1 Hz)	10x100 ms (1 Hz)
Measuring filter (moving average)	[s]	0.1 ... 6500	0.1 ... 6500	0.1 ... 6500	0.1 ... 6500	0.1 ... 6500	0.1 ... 6500

Railway specifications (type code 11)			
Electrical data	Output / supply voltage	EN50155	Bus protocol CANopen / 24 VDC
	Interruptions of the voltage supply	EN50155	Class S1
	Switching between two supply voltages	EN50155	Class C1
Environmental conditions	Media temperature	EN50155	OT6 (-40°C ... +85°C)
	Ambient temperature	EN50155	OT6 (-40°C ... +85°C)
	Startup at low temperature	EN50155	-40°C
	Dry heat	EN60068-2-2	Be: 85°C, 6 h (in operation)
	Damp heat, cyclic	EN60068-2-30	Db: 55°C, Variant 1, 2 cycles (2 x 24 h)
	Switch-on extended operating temperature	EN50155	Class ST0
	Rapid temperature variations	EN50155	Class H1
	Vibration and shock	EN61373	Vibration: category 3 Shock: category 3
	Dielectrical strength	EN50155	750 VDC
	Resistance of insulation	EN50155	> 100 MΩ, 500 VDC
	Behavior in case of fire	EN45545-2	Weight: < 10 g Surface: < 0.2 m ²
EMC Protection	Emission	EN50121-3-2	-
	Immunity	EN50121-3-2 ²⁾	-

²⁾ Surge voltage on shield, shield connected on both sides

Additional information		
Documents	Data sheet	www.trafag.com/H72614
	Instructions	www.trafag.com/H73614
	Flyer	www.trafag.com/H70653



CANopen Features

- CiA conformance tested
- All CiA bus speeds: 10kbit/s...1Mbit/s
- Autobaud
- Supports 11/29 bit identifiers: CAN 2.0 A/B
- Frequency of measurement and transmission upto 1kHz
- Moving average filter: 1ms...65s (pressure)
- Additional PDO mode: delta and limit triggered
- All standardised data types for PDO's Floating point, integer with 32, 24, 16 bits
- Eligible, prefix adjustable units pressure: bar, Pa, psi, mmHg, mmWg, atm, at; temperature: °C, °F, K
- Auto-zero function
- Auto-Start-Mode for operation without master
- 4 Pressure - and 4 temperature thresholds with 8 free definable CAN messages
- Separate storage of parameters for communication and application
- Flash-Update
- Baudrate detection

CANopen- Bus Protocol

- Output signal: CAN BUS (ISO 118982)
- CANopen: DS301 V4.0
- Device profile: DS404 V1.2
- Baudrate (Autobaude): 10kbit/s...1Mbit/s
- Error control: Nodeguarding, Heartbeat
- Node ID: LSS (DSP 305 V2.0) fully implemented, proprietary
- No. of PDO's: 4 TX
- PDO modes: event-/time-triggered, remotely requested, sync (cyclic/acyclic)
- PDO linking: yes
- PDO mapping: yes
- No. of SDO's: 1 server
- Emergency message: yes