Pressure transmitter for medical gases
Model MG-1

Applications

Distribution and storage of medical gases, especially oxygen in hospitals, at home and in ambulances.

Special features

- Measuring ranges from 0 … 6 bar to 0 … 16 bar and from 0 … 200 bar to 0 … 400 bar
- Output signals 4 … 20 mA, 0 … 10 V, 0 … 5 V, 1 ... 5 V, 0,5 … 4.5 V ratiometric
- Electrical connection M 12 x 1 (IP 67), 2 m cable (IP 67), 2 m shielded cable (IP 67)
- Process connection G 1/4 B, 1/4 NPT, 7/16-20 UNF, G 1/4 DIN 3852-E, G 1/8 B, 1/8 NPT, …
- Oxygen clean in accordance with international standards

Pressure transmitter model MG-1

Description

In order to prevent a safety risk in an oxygen application, two major design rules have to be fulfilled:

Only those materials suitable for oxygen services may be used. Contamination must have been carefully removed from those materials in contact with oxygen.

Additionally the cleaned product must be specially packed, in order to maintain the level of cleanliness, and the product must also be marked as suitable for oxygen usage.

In line with the international standards, different levels of cleanliness, different packaging and different oxygen markings are recommended.

As the MG-1 pressure transmitter offers a wide range of possibilities, a solution can be offered which is optimised and tailor-made to the individual application.

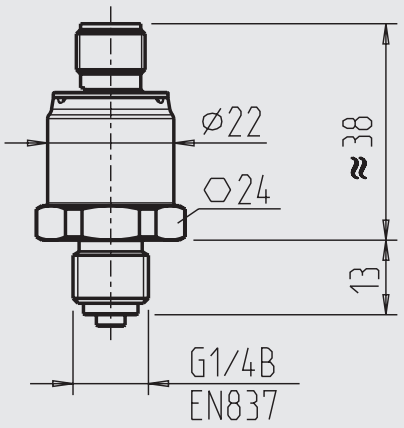
Specifications		Model MG-1					
Measuring range	bar	6	10	16	200	300	400
Overpressure safety	bar	20	20	32	500	800	800
Burst pressure	bar	25	25	160	1200	1700	1700
Measuring range	psi	100	150	200	3000	4000	5000
Overpressure safety	psi	290	290	460	7200	11000	11000
Burst pressure	psi	1450	1450	2300	17000	24000	24000
	MPa, kPa and kg/cm² available; -1/0 bar or -30/0 inHg upon request						
Level of cleanliness		Measuring range < 30 bar / 435 psi			Measuring range > 30 bar / 435 psi		
■ Breathing gas		free from oil and grease			free from oil and grease		
- Residual hydrocarbons	mg/m²	< 1000			< 1000		
■ Medical standard		per ISO 15001			per ISO 15001		
- Residual hydrocarbons	mg/m²	< 550			< 220		
- Particle size	µm	not applicable			on request		
■ Industrial standard		Free from oil and grease for oxygen per ASTM G93 Level D/E and DIN 19247			Free from oil and grease for oxygen per ASTM G93 Level D/E and DIN 19247		
- Residual hydrocarbons	mg/m²	< 550			< 220		
■ High industrial standard		Free from oil and grease for oxygen per ASTM G93 Level C			Free from oil and grease for oxygen per ASTM G93 Level C		
- Residual hydrocarbons	mg/m²	< 66			< 66		
Materials							
■ Process connection		Stainless steel, 316L and 13-8 PH					
■ Case		Stainless steel, 316L					
■ Electrical connection		Highly resistant glass-fibre reinforced plastic (PBT GF30)					
Output		Output signal		Power supply U_B		Max. resistive load R_A	
		4 ... 20 mA, 2-wire		DC 8 ... 30 V		$R_A \leq (U_B - 7\ V) / 0.02\ A$	
		0 ... 10 V, 3-wire		DC 14 ... 30 V		$R_A > 10$ kOhm	
		0 ... 5 V, 3-wire		DC 8 ... 30 V		$R_A > 5$ kOhm	
		1 ... 5 V, 3-wire		DC 8 ... 30 V		$R_A > 5$ kOhm	
		0.5 … 4.5 V ratiometric		DC 5 V ± 5 %		$R_A > 4.5$ kOhm	
Total current consumption	mA	max. 10					
Settling time	ms	≤ 2					
Non-linearity	% of span	≤ ± 0.5 (BFSL) to IEC 61298-2					
Accuracy [1]	% of span	≤ ± 2					
Long-term stability	% of span	≤ ± 0.3 / year					
Reference conditions							
■ Temperature	°C	15 ... 25					
■ Humidity	%	15 ... 95 non-condensing					
■ Ambient pressure	mmHg	500 … 800					
Permissible temperature ranges							
■ Operation		-20 ... +70 °C	-4 ... +158 °F				
■ Storage		-25 ... +80 °C	-13 ... +176 °F				
Temperature error in operating temperature range	% of span	≤ ± 2.0					
CE conformity							
■ Pressure equipment directive		97/23/EC					
■ EMC directive		2004/108/EC, EN 61326 Emission (Group 1, Class B) and Immunity (industrial locations)					
Shock resistance	g	40 (6 ms) per IEC 60068-2-27 (mechanical shock)					
Vibration resistance	g	20 (20 ... 2000 Hz, 120 min.) per IEC 60068-2-6 (vibration under resonance)					
Short-circuit resistance		S_+ vs. 0V					
Reverse polarity protection		U_B vs. 0V					
Weight	kg	approx. 0.08					

1) Including non-linearity, hysteresis, zero-point and full scale value deviations (corresponds to measured error per IEC 61298-2).
Calibrated in vertical mounting position with process connection facing downwards.

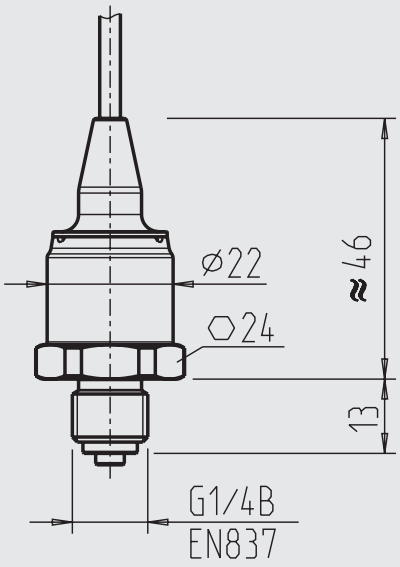
Dimensions in mm

Electrical connections

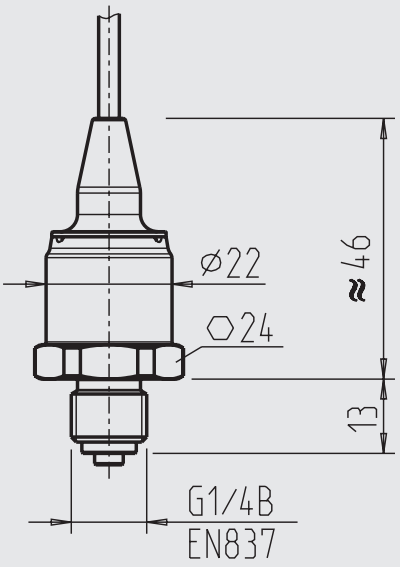
Circular connector
M12 x 1



Cable outlet
2 m

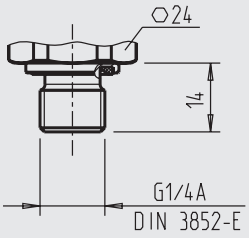


Cable outlet
shielded cable 2 m

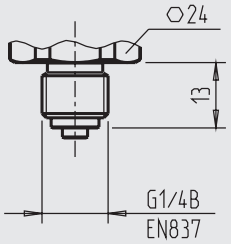


Process connections

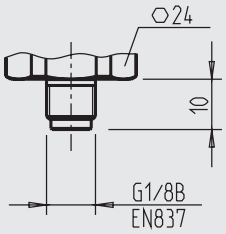
G 1/4 A
DIN 3852-E
with FKM O-ring
(up to 16 bar)



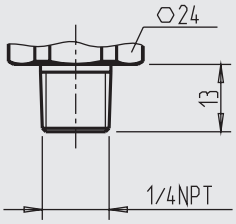
G 1/4 B
EN 837



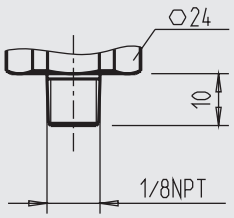
G 1/8 B
EN 837



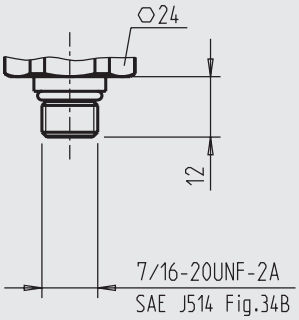
1/4 NPT
ANSI/ASME B1.20.1



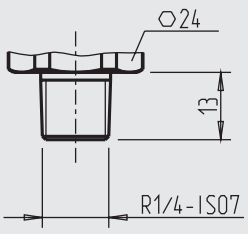
1/8 NPT
ANSI/ASME B1.20.1



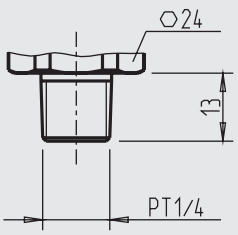
7/16-20 UNF-2A
with FKM Boss O-ring
(up to 16 bar)



R 1/4 ISO 7



PT 1/4



For information on tapped holes and welding sockets, see Technical Information IN 00.14 at www.wika.de.

Electrical connections

Electrical connections

Description	Circular connector M12 x 1, 4-pin			Cable outlet cable 2 m			Cable outlet shielded cable 2 m		
									
2-wire	U_B = 1	0V = 3		U_B = brown	0V = green		U_B = brown	0V = blue	
3-wire	U_B = 1	0V = 3	S_+ = 4	U_B = brown	0V = green	S_+ = white	U_B = brown	0V = blue	S_+ = black
Wire cross-section	-			3 x 0.14 mm²			3 x 0.14 mm²		
Cable diameter	-			3.2 mm			4.3 mm		
Ingress protection to IEC 60529	IP 67 The stated ingress protection only applies when plugged-in using mating connectors that have the appropriate ingress protection.			IP 67			IP 67		

Packaging

Degree of purity	Type of packaging
■ Breathing gas	Protection cap on the process connection
■ Medical standard	Protection cap on the process connection and sealed in a plastic bag
■ Industrial standard	Optional: protection cap on the process connection and sealed in double plastic bag
■ High industrial standard	

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