

Pressure transmitter

For heating and refrigeration

Model R-1

WIKA data sheet PE 81.45



For further approvals,
see page 5

Applications

- Boosters
- Condensers
- Compressors

Special features

- Wetted parts from stainless steel
- Resistant to all common refrigerants
- Special case design for the best possible condensation tightness
- Private label possible



Pressure transmitter, model R-1

Description

Application area heating and refrigeration technology

The model R-1 pressure transmitter has been optimally designed for the specific requirements of heating and refrigeration technology as well as in heat pumps. Its monolithic construction dispenses with the need to use seals on the process side. This enables the model R-1 to be used with all typical refrigerants.

Excellent performance

The hermetically welded, dry thin-film measuring cell ensures long-term leak tightness. Moreover, this efficient measuring cell, made with a sputtering technique, features high long-term stability and a very high burst pressure.

Attractive price/performance ratio

The production on highly flexible production lines also offers a very attractive price/performance ratio with higher quantities.

Specifications

Accuracy specifications	
Non-linearity per BFSL per IEC 61298-2	≤ ±0.5 % of span
Accuracy	→ See "Max. measured error per IEC 61298-2"
Max. measured error per IEC 61298-2	≤ ±2 % of span
Temperature error at -25 ... +85 °C [-13 ... +185 °F]	
Mean temperature coefficient of zero point	Typical: ≤ 0.5% of span/10 K
Mean temperature coefficient of span	≤ ±0.3 % of span/10 K
Long-term drift per IEC 61298-2	≤ ±0.3 % of span/year
Reference conditions	Per IEC 61298-1

Measuring ranges, gauge pressure

bar	
0 ... 6	0 ... 35
0 ... 10	0 ... 40
0 ... 15	0 ... 45
0 ... 16	0 ... 50
0 ... 20	0 ... 60
0 ... 25	0 ... 100
0 ... 30	0 ... 160

psi	
0 ... 100	0 ... 550
0 ... 150	0 ... 600
0 ... 200	0 ... 650
0 ... 250	0 ... 700
0 ... 300	0 ... 750
0 ... 350	0 ... 800
0 ... 400	0 ... 850
0 ... 450	0 ... 1,500
0 ... 500	0 ... 2,400

Vacuum and +/- measuring ranges

bar	
-1 ... +7	-1 ... +25
-1 ... +9	-1 ... +29
-1 ... +10	-1 ... +45
-1 ... +15	-0.5 ... +7
-1 ... +20	-0.5 ... +10

psi	
-30 inHg ... +100	-30 inHg ... +400
-30 inHg ... +145	-30 inHg ... +450
-30 inHg ... +200	-30 inHg ... +500
-30 inHg ... +250	-30 inHg ... +550
-30 inHg ... +300	-30 inHg ... +600
-30 inHg ... +350	-

Other measuring ranges on request.

Further details on: Measuring range	
Units	<input type="checkbox"/> bar <input type="checkbox"/> psi
Maximum working pressure	→ Corresponds to the upper measuring range value/measuring range full scale value
Overpressure limit	2 times (for more details, see „Process connection“ on page 3)
Vacuum resistance	Yes

The overpressure limit is based on the measuring range. Depending on the selected process connection and the seal, restrictions in overpressure limit can result.

Process connection			
Standard	Thread size	Max. measuring range	Overpressure limit
EN 837	G ¼ B	160 bar [2,400 psi]	2 times
ANSI/ASME B1.20.1	½ NPT	160 bar [2,400 psi]	
	¼ NPT	160 bar [2,400 psi]	
ISO 7	R ¼	160 bar [2,400 psi]	
KS	PT ¼	160 bar [2,400 psi]	
SAE J513 compatible	7/16-20 UNF-2A 90°	160 bar [2,400 psi]	2 times, max. 80 bar
SAE J515 compatible (for Schrader connection)	7/16-20 UNF-2B Schrader connection	60 bar [870 psi]	
-	Blowpipe version	50 bar [720 psi]	

Details must be tested separately in the respective application. The specified values for the overpressure limit serve only as a rough orientation. The values depend on the temperature, the seal used, the selected torque, the type and the material of the mating thread and the prevailing operating conditions.

Further details on: Process connection	
Max. measuring range	→ See "Process connection" table, page 3/4
Overpressure limit	→ See "Process connection" table, page 3/4
Pressure port diameter	3.5 mm (not with Schrader connection and blowpipe version)

Other process connections on request.

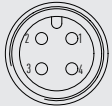
Output signal		
Signal type		
Current (2-wire)	4 ... 20 mA	
Voltage (3-wire)	<ul style="list-style-type: none"> ■ DC 0 ... 10 V ■ DC 1 ... 5 V 	
Ratiometric (3-wire)	DC 0.5 ... 4.5 V	
Load		
Current (2-wire)	≤ (auxiliary power - 7 V) / 0.02 A	
Voltage (3-wire)	> max. output signal / 1 mA	
Ratiometric (3-wire)	> max. output signal / 1 mA	
Voltage supply		
Auxiliary power	Output signal 4 ... 20 mA	DC 7 ... 30 V
	Output signal DC 1 ... 5 V	DC 8 ... 30 V
	Output signal DC 0 ... 10 V	DC 14 ... 30 V
	Output signal DC 0.5 ... 4.5 V	DC 4.5 ... 5.5 V
Overvoltage resistance	Max. DC 36 V	
Dynamic behaviour		
Settling time per IEC 61298-2	≤ 5 ms	

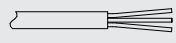
Other output signals on request.

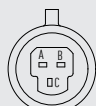
Electrical connection	
Connection type	<ul style="list-style-type: none"> ■ Circular connector M12 x 1 ■ Metri-Pack series 150 ■ Cable outlet
Cable outlet	
Wire cross-section	3 x 0.14 mm ²
Cable diameter	3.2 mm
Cable length	<ul style="list-style-type: none"> ■ 0.5 m ■ 1 m ■ 2 m ■ 5 m
Pin assignment	→ See below
Ingress protection (IP code) per IEC 60529 ¹⁾	Plug connector IP67
	Cable outlet IP69K
Short-circuit resistance	S+ vs. 0V
Reverse polarity protection	U+ vs. 0-
Insulation voltage	DC 500 V

1) The stated IP codes only apply when plugged in using mating connectors that have the appropriate IP code.

Pin assignment

Circular connector M12 x 1 (4-pin)			
		2-wire	3-wire
	U ₊	1	1
	U ₋	3	3
	S+	-	4

Cable outlet			
		2-wire	3-wire
	U ₊	Brown	Brown
	U ₋	Green	Green
	S+	-	White

Metri-Pack series 150			
		2-wire	3-wire
	U ₊	B	B
	U ₋	C	A
	S+	-	C

Legend




- U₊ Positive power supply terminal
- U₋ Negative power supply terminal
- S+ Analogue output

Material	
Material (wetted)	
Sensor and process connection	Stainless steel
Material (in contact with the environment)	
Case	Stainless steel
Cable	PVC
Electrical connection	Highly resistant glass-fibre reinforced plastic (PBT GF30)




Operating conditions	
Medium temperature limit	-40 ... +100 °C [-40 ... +212 °F]
Ambient temperature limit	-25 ... +85 °C [-13 ... +185 °F]
Storage temperature limit	-25 ... +85 °C [-13 ... +185 °F]
Free fall per IEC 60068-2-31	
Multiple packaging	0.5 m [1.6 ft]
Ingress protection (IP code) per IEC 60529	→ See "Electrical connection"

Packaging and instrument labelling	
Packaging	Multiple packaging, 50 pieces
	Multiple packaging, 25 pieces (with cable lengths > 5 m [3.2 ft])
Instrument labelling	<ul style="list-style-type: none"> ■ WIKA product label, lasered ■ Customer-specific product label on request

Approvals

Logo	Description	Region
	EU declaration of conformity	European Union
	EMC directive EN 61326 emission (group 1, class B) and immunity (industrial environments)	
	Pressure Equipment Directive	
	RoHS directive	
	UKCA	United Kingdom
	Electromagnetic compatibility regulations	
	Pressure equipment (safety) regulations	
	EAC	Eurasian Economic Community
	Electromagnetic compatibility	

Optional approvals

Logo	Description	Region
	UL Safety (e.g. electr. safety, overpressure, ...)	USA and Canada
	UL Component approval	USA and Canada
	UkrSEPRO Metrology, measurement technology	Ukraine
	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

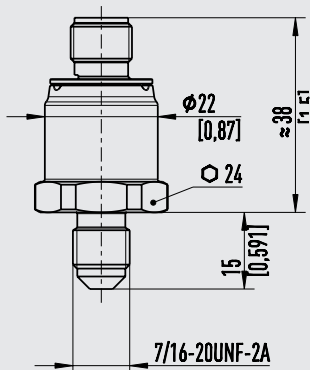
Manufacturer's information and certificates

Logo	Description
-	China RoHS directive
MTTF	> 100 years

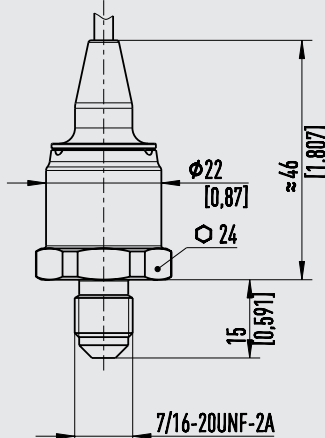
→ For approvals and certificates, see website

Dimensions in mm [in]

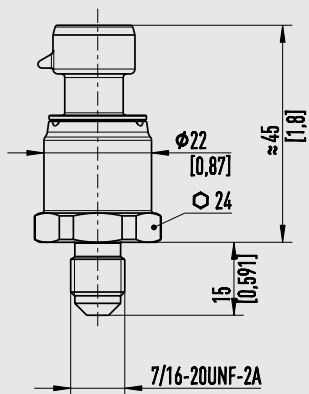
With circular connector M12 x 1



With cable outlet

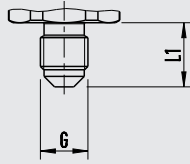


With Metri-Pack series 150



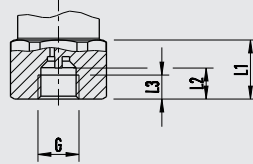
Process connections

SAE J513



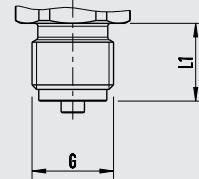
G	L1
7/16-20 UNF-2A cone 90°	15 [0.59]

SAE J515 Schrader connection

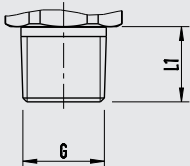


G	L1	L2	L3
7/16-20 UNF-2B	16 [0.63]	8.4 [0.33]	6.5 [0.26]

EN 837

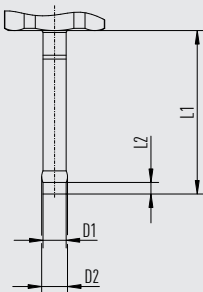


G	L1
G ¼ B	13 [0.51]



G	L1
⅛ NPT ANSI/ASME B1.20.1	10 [0.39]
¼ NPT ANSI/ASME B1.20.1	13 [0.51]
PT ¼ KS	13 [0.51]
R ¼ ISO 7	13 [0.51]

Blowpipe



L1	L2	D1	D2
40 mm [1.57 in]	3 mm [0.12 in]	6 mm [0.24 in]	6,7 mm [0.264 in]

→ For information on tapped holes and welding sockets, see technical information IN 00.14 at www.wika.com.

Ordering information

Model / Measuring range / Output signal / Electrical connection / Process connection

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The specifications given in this document represent the state of engineering at the time of publishing.

We reserve the right to make modifications to the specifications and materials.

In case of a different interpretation of the translated and the English data sheet, the English wording shall prevail.

