Pressure transmitter
For refrigeration and air-conditioning applications
Model R-1

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 labelling possible

Fig. left: With M12 x 1 circular connector
Fig. centre: With Metri-Pack series 150
Fig. right: With cable outlet

Description

Application area in refrigeration and air-conditioning technology
The model R-1 pressure transmitter has been optimally designed for the specific requirements of refrigeration and air-conditioning applications. 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 reliability
The hermetically welded, dry thin-film measuring cell ensures long-term leak tightness. Moreover, these efficient cells, made with a sputtering technique, feature 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.

Measuring ranges

Gauge pressure								
bar	**Measuring range**	**0 ... 6**	**0 ... 10**	**0 ... 15**	**0 ... 16**	**0 ... 20**	**0 ... 25**	**0 ... 30**
	Overload safety	20	20	32	32	50	50	80
	Burst pressure	100	100	160	160	250	250	400
	Measuring range	**0 ... 35**	**0 ... 40**	**0 ... 45**	**0 ... 50**	**0 ... 60**	**0 ... 100**	**0 ... 160**
	Overload safety	80	80	80	80	80	200	320
	Burst pressure	400	400	400	400	400	800	1,000
psi	**Measuring range**	**0 ... 100**	**0 ... 150**	**0 ... 200**	**0 ... 250**	**0 ... 300**	**0 ... 350**	**0 ... 400**
	Overload safety	290	290	460	460	720	720	720
	Burst pressure	1,450	1,450	2,300	2,300	3,600	3,600	3,600
	Measuring range	**0 ... 450**	**0 ... 500**	**0 ... 550**	**0 ... 600**	**0 ... 650**	**0 ... 700**	**0 ... 750**
	Overload safety	1,100	1,100	1,100	1,100	1,100	1,100	1,100
	Burst pressure	5,800	5,800	5,800	5,800	5,800	5,800	5,800
	Measuring range	**0 ... 800**	**0 ... 850**	**0 ... 1,500**	**0 ... 2,400**			
	Overload safety	1,100	1,100	2,900	4,600			
	Burst pressure	5,800	5,800	11,600	14,500			

Vacuum and +/- measuring range						
bar	**Measuring range**	**-1 ... +7**	**-1 ... +9**	**-1 ... +10**	**-1 ... +15**	**-1 ... +20**
	Overload safety	20	20	20	32	50
	Burst pressure	100	100	100	160	250
	Measuring range	**-1 ... +25**	**-1 ... +29**	**-1 ... +45**	**-0.5 ... +7**	**-0.5 ... +10**
	Overload safety	50	80	120	20	20
	Burst pressure	250	400	550	100	100
psi	**Measuring range**	**-30 inHg ... +100**	**-30 inHg ... +145**	**-30 inHg ... +200**	**-30 inHg ... +250**	**-30 inHg ... +300**
	Overload safety	290	290	460	460	720
	Burst pressure	1,450	1,450	2,300	2,300	3,600
	Measuring range	**-30 inHg ... +350**	**-30 inHg ... +400**	**-30 inHg ... +450**	**-30 inHg ... +500**	**-30 inHg ... +550**
	Overload safety	720	1,100	1,100	1,100	1,100
	Burst pressure	3,600	5,800	5,800	5,800	5,800
	Measuring range	**-30 inHg ... +600**				
	Overload safety	1,100				
	Burst pressure	5,800				

Other measuring ranges on request

Vacuum tightness
Yes

Output signals

Signal type	Signal
Current (2-wire)	4 ... 20 mA
Voltage (3-wire)	DC 1 ... 5 V
	DC 0 ... 10 V
Ratiometric (3-wire)	DC 0.5 ... 4.5 V

Other output signals available on request

Load in Ω

Current (2-wire): ≤ (power supply - 7 V) / 0.02 A
Voltage (3-wire): > max. output signal / 1 mA
Ratiometric (3-wire): > max. output signal / 1 mA

Voltage supply

Power supply

The power supply depends on the selected output signal

- 4 ... 20 mA: DC 7 ...30 V
- DC 1 ... 5 V: DC 8 ...30 V
- DC 0 ... 10 V: DC 14 ... 30 V
- DC 0.5 ... 4.5 V: DC 4.5 ... 5.5 V

Reference conditions (per IEC 61298-1)

Temperature

15 ... 25 °C

Atmospheric pressure

860 ... 1,060 mbar

Humidity

45 ... 75 % relative

Power supply

DC 24 V

Nominal position

Calibrated in vertical mounting position with process connection facing downwards.

Accuracy specifications

Accuracy at reference conditions

≤ 2 % of span

Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2).

Temperature error at -25 ... +85 °C

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

Time response

Settling time

≤ 5 ms

Operating conditions

Ingress protection (per IEC 60529)

The ingress protection depends on the type of electrical connection.

- Circular connector M12 x 1: IP67
- Metri-Pack series 150: IP67
- Cable outlet: IP69K

The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

Temperatures

- Medium: -40 ... +100 °C -40 ... +212 °F
- Ambient: -25 ... +85 °C -13 ... +185 °F
- Storage: -25 ... +85 °C -13 ... +185 °F

Stability

The pressure transmitter is resistant to the industrial standard refrigerants

Process connections

Standard	Thread size
EN 837	G ¼ B
ANSI/ASME B1.20.1	⅛ NPT
	¼ NPT
ISO 7	R ¼
KS	PT ¼
SAE	7/16-20 UNF-2A taper 90°
	7/16-20 UNF-2B Schrader female

Electrical connections

Short-circuit resistance
S+ vs. 0V

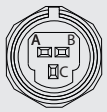
Reverse polarity protection
U_B vs. 0V

Overvoltage protection
maximum DC 36 V

Insulation voltage
DC 500 V

Connection diagrams

Circular connector M12 x 1 (4-pin)			
		2-wire	3-wire
	U_B	1	1
	0V	3	3
	S+	-	4

Metri-Pack series 150			
		2-wire	3-wire
	U_B	B	B
	0V	C	A
	S+	-	C

Cable outlet			
		2-wire	3-wire
	U_B	brown	brown
	0V	green	green
	S+	-	white
Wire cross-section: 3 x 0.14 mm² Cable diameter: 3.2 mm Cable lengths: 0.5 m, 1 m, 2 m, 5 m			

Legend
U_B Positive power supply terminal
0V Negative power supply terminal
S+ Analogue output

Materials

Wetted parts
Sensor and process connection from stainless steel

Non-wetted parts
- Case from stainless steel
- Electrical connection from highly resistant, glass-fibre reinforced plastic PBT GF 30

Approvals (option)

Logo	Description	Country
CE	**EC declaration of conformity** ■ EMC directive ■ RoHS directive	European Community
c UL us LISTED	**UL** Safety (e.g. electr. safety, overpressure, ...)	USA and Canada
c UL us	**UL** Component approval	USA and Canada
EAC	**EAC** Electromagnetic compatibility	Eurasian Economic Community
	GOST Metrology, measurement technology	Russia
	KazInMetr Metrology, measurement technology	Kazakhstan
	MTSCHS Permission for commissioning	Kazakhstan
	BelGIM Metrology, measurement technology	Belarus
	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada
	TZW Drinking water	Germany

Manufacturer‘s information and certificates

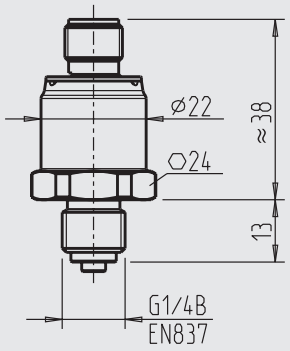
Logo	Description
-	**MTTF: >100 years**

Approvals and certificates, see website

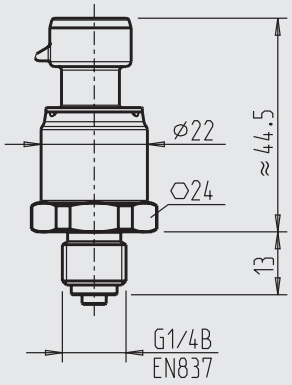
Dimensions in mm

Pressure transmitter

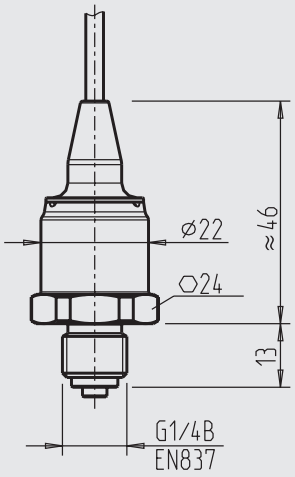
with circular connector M12 x 1



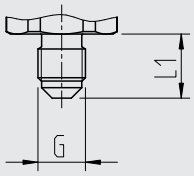
with Metri-Pack series 150



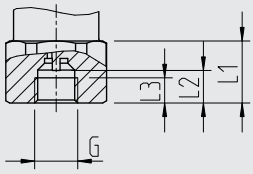
with cable outlet



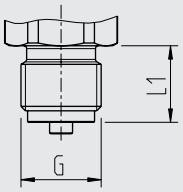
Process connections



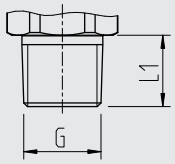
G	L1
7/16-20 UNF-2A taper 90°	15



G	L1	L2	L3
7/16-20 UNF-2B	16	8.4	6.5



G	L1
G ¼ B EN 837	13



G	L1
⅛ NPT	10
¼ NPT	13
PT ¼	13
R ¼	13

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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