

Pressure transmitter for refrigeration and air-conditioning applications

Model AC-1, with ceramic measuring cell

WIKA data sheet PE 81.46



Applications

- Refrigeration plants
- Heat pumps
- Refrigeration units

Special features

- Resistant against the major refrigerants
- Special case design for the best possible condensation tightness



Pressure transmitter model AC-1
Fig. left: with M12 x 1 circular connector
Fig. centre: with Metri-Pack 150
Fig. right: with cable outlet

Description

Application area in refrigeration and air-conditioning technology

As a result of its excellent resistance to the main refrigerants, the model AC-1 pressure transmitter with integrated ceramic thick-film sensor is ideal for use in refrigeration and air-conditioning systems.

Excellent reliability and quality

The model AC-1 combines innovative design and the highest quality standards. The instrument has successfully passed a test process, specifically matched to the harsh demands of the refrigeration and air-conditioning market.

Attractive price/performance ratio

The model AC-1's very flexible product and production concept offers high availability, even in large quantities, at an attractive price-performance ratio.

Measuring ranges

Relative pressure							
bar	Measuring range	0 ... 6	0 ... 10	0 ... 15	0 ... 16	0 ... 20	0 ... 25
	Overpressure limit	20	20	40	40	40	40
	Burst pressure	25	25	50	50	50	50
	Measuring range	0 ... 30	0 ... 35	0 ... 40	0 ... 45	0 ... 50	0 ... 60
	Overpressure limit	100	100	100	100	100	100
	Burst pressure	120	120	120	120	120	120
psi	Measuring range	0 ... 100	0 ... 150	0 ... 200	0 ... 250	0 ... 300	0 ... 350
	Overpressure limit	300	300	600	600	600	600
	Burst pressure	375	375	750	750	750	750
	Measuring range	0 ... 400	0 ... 450	0 ... 500	0 ... 550	0 ... 600	0 ... 650
	Overpressure limit	600	1,450	1,450	1,450	1,450	1,450
	Burst pressure	750	1,800	1,800	1,800	1,800	1,800
	Measuring range	0 ... 700	0 ... 750	0 ... 800	0 ... 850		
	Overpressure limit	1,450	1,450	1,450	1,450		
	Burst pressure	1,800	1,800	1,800	1,800		

Vacuum and +/- measuring range						
bar	Measuring range	-1 ... +7	-1 ... +9	-1 ... +10	-1 ... +15	-1 ... +20
	Overpressure limit	20	20	20	40	40
	Burst pressure	25	25	25	50	50
	Measuring range	-1 ... +25	-1 ... +29	-1 ... +45	-0.5 ... +7	-0.5 ... +10
	Overpressure limit	40	100	100	20	20
	Burst pressure	50	120	120	25	25
psi	Measuring range	-30 inHg ... +100	-30 inHg ... +145	-30 inHg ... +200	-30 inHg ... +250	-30 inHg ... +300
	Overpressure limit	300	300	600	600	600
	Burst pressure	375	375	750	750	750
	Measuring range	-30 inHg ... +350	-30 inHg ... +400	-30 inHg ... +450	-30 inHg ... +500	-30 inHg ... +550
	Overpressure limit	600	600	1,450	1,450	1,450
	Burst pressure	750	750	1,800	1,800	1,800
	Measuring range	-30 inHg ... +600				
	Overpressure limit	1,450				
	Burst pressure	1,800				

The given measuring ranges are also available in kg/cm².

Other measuring ranges on request

Vacuum tightness

Yes

Output signals

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

Depending on the signal the following loads apply:

Signal	Load in Ω
4 ... 20 mA	$\leq (\text{power supply} - 7 \text{ V}) / 0.02 \text{ A}$
DC 0 ... 10 V	$> \text{max. signal} / 1 \text{ mA}$
DC 1 ... 5 V	
DC 0.5 ... 4.5 V ratiometric	

Voltage supply

The permissible power supply depends on the corresponding value of the output signal.

Output signal	Power supply
4 ... 20 mA	DC 7 ... 30 V
DC 0 ... 10 V	DC 14 ... 30 V
DC 1 ... 5 V	DC 8 ... 30 V
DC 0.5 ... 4.5 V ratiometric	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
- DC 5 V with ratiometric output signal

Mounting position

Calibrated in vertical mounting position with pressure connection facing downwards.

Accuracy

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: $\leq \pm 0.5$ % of span/10 K
- Mean temperature coefficient of span
 ≤ 0.3 % of span/10 K

Settling time

≤ 5 ms

Long-term drift (per IEC 61298-2)

≤ 0.3 % of span/year

Operating conditions

Ingress protection (per IEC 60529)

The ingress protection depends on the type of electrical connection.

Electrical connection	Ingress protection
Circular connector M12 x 1	IP 67
Metri-Pack series 150	IP 67
Cable outlet	IP 69K

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

Temperatures

Permissible temperature ranges

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

Resistance

The pressure transmitter is resistant to the refrigerants R12, R22, R134a, R404a, R407c, R410a, R502, R507.

Resistance to further refrigerants on request

Process connections

Standard	Thread size
EN 837	G ¼ B
ANSI/ASME B1.20.1	¼ 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

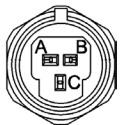
max. DC 36 V

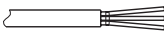
Insulation voltage

DC 500 V

Connection diagrams

Circular connector M12 x 1		
	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 length 1 m or 2 m

Materials

Wetted parts

- Process connection from brass
- Sensor from ceramic Al₂O₃ 96 %
- O-ring from CR70 (chloroprene)

Non-wetted parts

- Case from brass
- Electrical connection from highly resistant, glass-fibre reinforced plastic PBT GF 30

Approvals, directives and certificates

Approval (option)

cRUus (recognition)

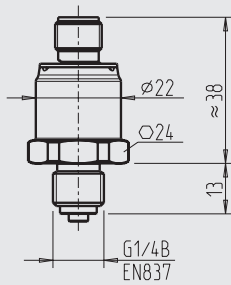
CE conformity

EMC directive 2004/108/EC, EN 61326 emission (group 1, class B) and immunity (industrial application)

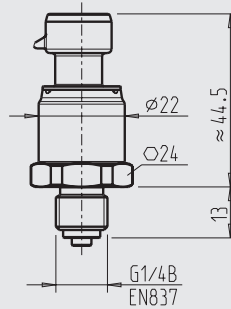
Dimensions in mm

Pressure transmitters

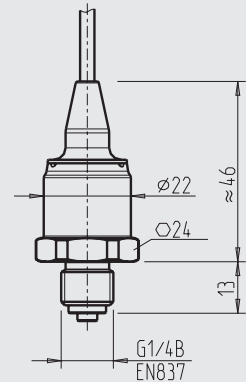
with M12 x 1 circular connector



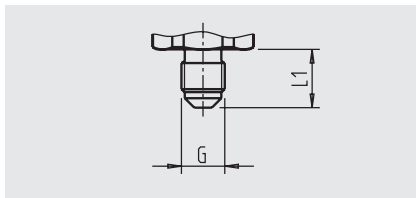
with Metri-Pack series 150



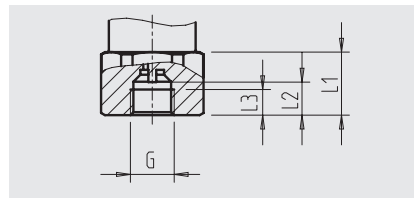
with cable outlet



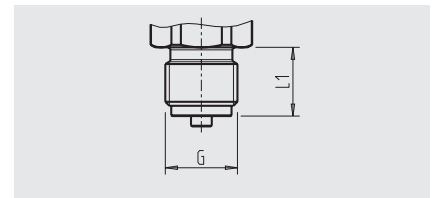
Process connections



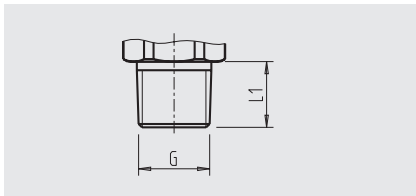
G	L1
7/16-20 UNF-2A taper 90°	15



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



G	L1
G 1/4 B EN 837	13



G	L1
1/8 NPT	10
1/4 NPT	13
PT 1/4	13
R 1/4	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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