

# Pressure transmitter

## For refrigeration and air-conditioning applications

### Model AC-1, with ceramic measuring cell

WIKA data sheet PE 81.46



for further approvals  
see page 5

#### Applications

- Refrigeration plants
- Heat pumps
- Refrigeration units

#### Special features

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



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

Gauge pressure							
bar	<b>Measuring range</b>	<b>0 ... 6</b>	<b>0 ... 10</b>	<b>0 ... 15</b>	<b>0 ... 16</b>	<b>0 ... 20</b>	<b>0 ... 25</b>
	Overpressure limit	20	20	40	40	40	40
	Burst pressure	25	25	50	50	50	50
	<b>Measuring range</b>	<b>0 ... 30</b>	<b>0 ... 35</b>	<b>0 ... 40</b>	<b>0 ... 45</b>	<b>0 ... 50</b>	<b>0 ... 60</b>
	Overpressure limit	100	100	100	100	100	100
	Burst pressure	120	120	120	120	120	120
psi	<b>Measuring range</b>	<b>0 ... 100</b>	<b>0 ... 150</b>	<b>0 ... 200</b>	<b>0 ... 250</b>	<b>0 ... 300</b>	<b>0 ... 350</b>
	Overpressure limit	300	300	600	600	600	600
	Burst pressure	375	375	750	750	750	750
	<b>Measuring range</b>	<b>0 ... 400</b>	<b>0 ... 450</b>	<b>0 ... 500</b>	<b>0 ... 550</b>	<b>0 ... 600</b>	<b>0 ... 650</b>
	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
	<b>Measuring range</b>	<b>0 ... 700</b>	<b>0 ... 750</b>	<b>0 ... 800</b>	<b>0 ... 850</b>		
	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	<b>Measuring range</b>	<b>-1 ... +7</b>	<b>-1 ... +9</b>	<b>-1 ... +10</b>	<b>-1 ... +15</b>	<b>-1 ... +20</b>
	Overpressure limit	20	20	20	40	40
	Burst pressure	25	25	25	50	50
	<b>Measuring range</b>	<b>-1 ... +25</b>	<b>-1 ... +29</b>	<b>-1 ... +45</b>	<b>-0.5 ... +7</b>	<b>-0.5 ... +10</b>
	Overpressure limit	40	100	100	20	20
	Burst pressure	50	120	120	25	25
psi	<b>Measuring range</b>	<b>-30 inHg ... +100</b>	<b>-30 inHg ... +145</b>	<b>-30 inHg ... +200</b>	<b>-30 inHg ... +250</b>	<b>-30 inHg ... +300</b>
	Overpressure limit	300	300	600	600	600
	Burst pressure	375	375	750	750	750
	<b>Measuring range</b>	<b>-30 inHg ... +350</b>	<b>-30 inHg ... +400</b>	<b>-30 inHg ... +450</b>	<b>-30 inHg ... +500</b>	<b>-30 inHg ... +550</b>
	Overpressure limit	600	600	1,450	1,450	1,450
	Burst pressure	750	750	1,800	1,800	1,800
	<b>Measuring range</b>	<b>-30 inHg ... +600</b>				
	Overpressure limit	1,450				
	Burst pressure	1,800				

The given measuring ranges are also available in kg/cm<sup>2</sup>.

Other measuring ranges on request

### Vacuum tightness

Yes

## Output signals

Selectable versions	
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 $\Omega$
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

$\leq 2\%$  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  
 $\leq 0.3\%$  of span/10 K

### Settling time

$\leq 5$  ms

### Long-term drift (per IEC 61298-2)

$\leq 0.3\%$  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

### Stability

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

The pressure transmitter is to be tested for its resistance to additives in the medium. The user is responsible for performing such tests.

Resistance to further refrigerants on request.

## Process connections

Selectable versions	
Standard	Thread size
EN 837	G ¼ B
ANSI/ASME B1.20.1	½ 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

## Materials

### Wetted parts

- Process connection from brass
- Sensor from ceramic Al<sub>2</sub>O<sub>3</sub> 96 %
- O-ring from CR70 (chloroprene)

### Non-wetted parts

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

## Electrical connections

### Short-circuit resistance

S+ vs. 0V

### Reverse polarity protection

UB vs. 0V


### Overvoltage protection

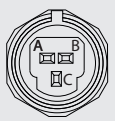
max. DC 36 V


### Insulation voltage

DC 500 V

### Connection diagrams

Circular connector M12 x 1			
		2-wire	3-wire
	UB	1	1
	0V	3	3
	S+	-	4

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







Cable outlet			
		2-wire	3-wire
	UB	brown	brown
	0V	green	green
	S+	-	white

Wire cross-section 3 x 0.14 mm<sup>2</sup>  
 Cable diameter 3.2 mm  
 Cable length 1 m or 2 m

### Legend:

- UB Power supply
- 0V Reference potential
- S+ Analogue output

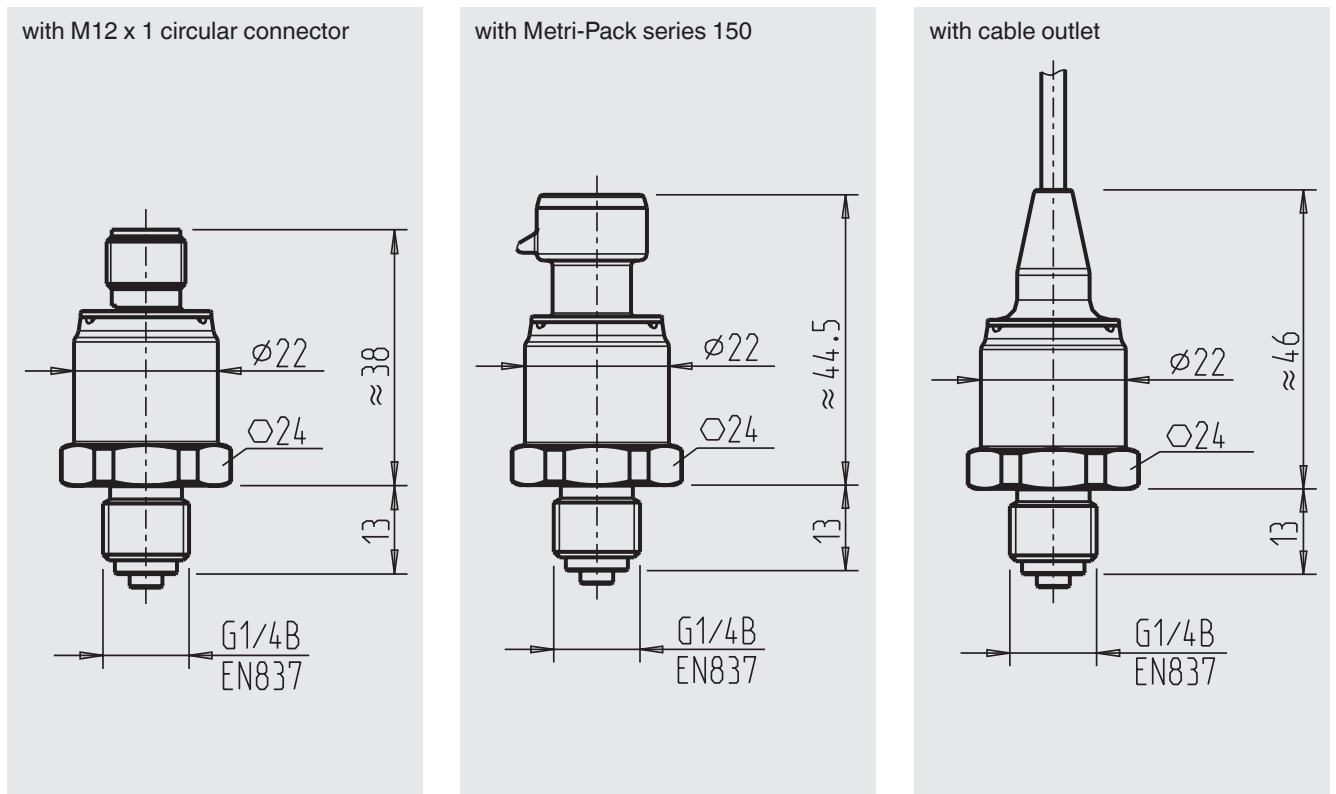
## Approvals

Logo	Description	Country
	<b>EC declaration of conformity</b> EMC directive 2004/108/EC, EN 61326 emission (group 1, class B) and immunity (industrial application)	European Community
	<b>UL</b> Component approval	USA and Canada
	<b>EAC</b> Electromagnetic compatibility	Eurasian Economic Community
	<b>GOST</b> Metrology, measurement technology	Russia
	<b>KazInMetr</b> Metrology, measurement technology	Kazakhstan
	<b>BelGIM</b> Metrology, measurement technology	Belarus
	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

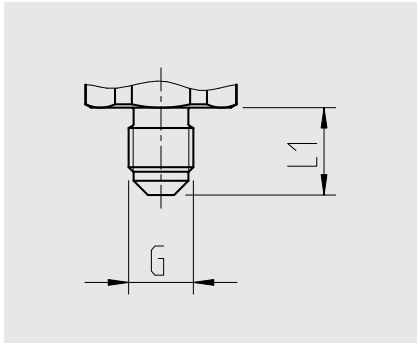
Approvals and certificates, see website

## Dimensions in mm

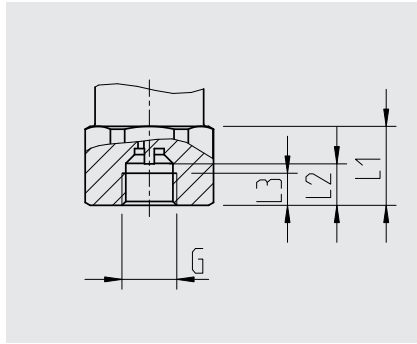
### Druckmessumformer



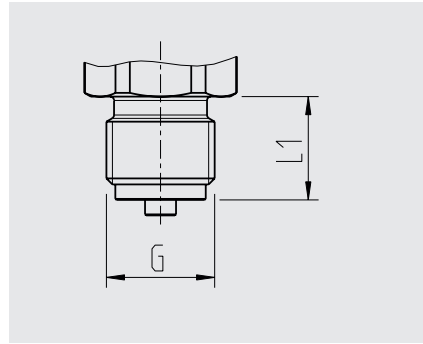
## Process connections



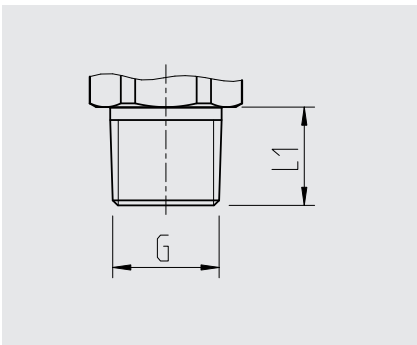
G	L1
7/16-20 UNF-2A taper 90°	15



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



G	L1
G ¼ B EN 837	13



G	L1
½ 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](http://www.wika.com).

## Ordering information

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

© 2009 WIKA Alexander Wiegand SE & Co. KG, all rights reserved.  
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.



**WIKAL Alexander Wiegand SE & Co. KG**  
Alexander-Wiegand-Straße 30  
63911 Klingenberg/Germany  
Tel. +49 9372 132-0  
Fax +49 9372 132-406  
[info@wika.de](mailto:info@wika.de)  
[www.wika.de](http://www.wika.de)