

Pressure transmitters

Flameproof enclosure Ex d

Models E-10 and E-11

WIKA data sheet PE 81.27



For further approvals,
see page 7

Applications

- Borehole monitoring
- Refineries and petrochemical industry
- Drilling platforms and pipelines
- Gas compressors

Special features

- CSA- and FM-approved as “explosionproof” for class I, div. 1 hazardous areas
- ATEX- and IECEx-approved as “flameproof enclosure” for II 2G Ex db IIC T6...T1 Gb
- Current or voltage output
- Designed for harsh ambient conditions
- Low-power version available



Pressure transmitter, model E-10

Configurator



Standard article



Description

The model E-10 and E-11 pressure transmitters with flameproof enclosure have been designed specifically for the high demands of industrial oil and gas applications.

These pressure transmitters are available with various analogue signals, from 4 ... 20 mA to battery-powered, low-power versions, e.g DC 1 ... 5 V.

They feature an exceptionally high resistance to vibration, pressure spikes and moisture ingress.

On each individual instrument a comprehensive quality control and calibration is performed, so that an accuracy of $\leq 0.5\%$ can be ensured. Temperature compensation guarantees accuracy and long-term stability, even with strong fluctuations in the ambient temperature.

The models E-10 and E-11 are suitable for sour gas applications and feature particularly high resistance against sulphide stress cracking when in contact with sulphurous gases.

The pressure transmitters are approved as “explosionproof” for class I, div. 1 hazardous areas to FM and CSA as well as “flameproof” for II 2G Ex db IIC T6...T1 Gb to ATEX and IECEx.

Specifications

Overview of versions

Model E-10	Process connection with pressure port
Model E-11	Flush process connection

Accuracy specifications

Non-linearity per BFSL per IEC 61298-2	$\leq \pm 0.2$ % of span
Accuracy	See " Max. measured error per IEC 61298-2 "
Max. measured error per IEC 61298-2	$\leq \pm 0.5$ % of span
Non-repeatability per IEC 61298-2	≤ 0.1 % of span
Medium temperature coefficient at 0 ... 80 °C [32 ... 176 °F]	
Zero point	≤ 0.2 % of span/10K
Span	≤ 0.2 % of span/10K
Long-term stability per DIN 16086	$\leq \pm 0.2$ % of span/year
Reference conditions	Per IEC 61298-1

Measuring ranges, gauge pressure

bar	
0 ... 0.4	0 ... 40
0 ... 0.6	0 ... 60
0 ... 1	0 ... 100
0 ... 1.6	0 ... 160
0 ... 2.5	0 ... 250
0 ... 4	0 ... 400
0 ... 6	0 ... 600 ¹⁾
0 ... 10	0 ... 1,000 ²⁾
0 ... 16	0 ... 1,050 ^{2) 3)}
0 ... 25	-

1) Measuring range not for model E-11 with FM and CSA approval

2) Measuring range not for model E-11.

3) Measuring range not for model E-10 with FM and CSA approval

psi	
0 ... 5	0 ... 500
0 ... 10	0 ... 600
0 ... 15	0 ... 750
0 ... 25	0 ... 1,000
0 ... 30	0 ... 1,500
0 ... 60	0 ... 2,000
0 ... 100	0 ... 3,000
0 ... 160	0 ... 5,000
0 ... 200	0 ... 8,000 ¹⁾
0 ... 250	0 ... 10,000 ²⁾
0 ... 300	0 ... 15,000 ²⁾
0 ... 400	-

1) Measuring range not for model E-11 with FM and CSA approval

2) Measuring range not for model E-11.

Measuring ranges, absolute pressure

bar abs.	
0 ... 0.4	0 ... 4
0 ... 0.6	0 ... 6
0 ... 1	0 ... 10
0 ... 1.6	0 ... 16
0 ... 2.5	-

psi abs.	
0 ... 15	0 ... 60
0 ... 25	0 ... 100
0 ... 30	-

Vacuum and compound measuring ranges

bar	
-1 ... 0	-1 ... +5
-1 ... +0.6	-1 ... +9
-1 ... +1	-1 ... +15
-1 ... +1.5	-1 ... +24
-1 ... +3	-1 ... +25

psi	
-30 inHg ... 0	-30 inHg ... +160
-30 inHg ... +30	-30 inHg ... +200
-30 inHg ... +60	-30 inHg ... +300
-30 inHg ... +100	-

→ Other measuring ranges on request.

Measuring range		
Unit	■ bar ■ psi ■ kg/cm² ■ MPa	
Max. working pressure	→ Corresponds to the upper measuring range value / end value of the measuring range → Any permanent operation above the maximum working pressure is not permissible.	
Overpressure limit	The overpressure limit is based on the measuring range. Depending on the selected process connection and the seal, restrictions in overpressure limit can result.	
bar	Measuring ranges ≤ 25 bar	3 times
	Measuring ranges from 0 ... 40 bar to 0 ... 600 bar	2 times
	Measuring ranges > 0 ... 600 bar	1.4 times
psi	Measuring ranges ≤ 400 psi	3 times
	Measuring ranges from 0 ... 500 psi to 0 ... 8,000 psi	2 times
	Measuring ranges > 0 ... 8,000 psi	1.4 times
Vacuum resistance	Yes	

Process connection				
Standard	Thread size	Max. measuring range	Overpressure limit	Sealing
Process connections for model E-10				
EN 837	G ¼ B, male	1,000 bar [15,000 psi]	1,480 bar [21,400 psi]	-
	G ¼, female	1,000 bar [15,000 psi]	1,480 bar [21,400 psi]	-
	G ½ B, male	1,000 bar [15,000 psi]	1,480 bar [21,400 psi]	-
DIN EN ISO 1179-2	G ¼ A, male	600 bar [8,000 psi]	858 bar [12,440 psi]	NBR
Female thread with sealing cone	9/16-18 UNF, F250-C, female	1,050 bar [15,000 psi]	1,480 bar [21,400 psi]	-
ANSI/ASME B1.20.1	½ NPT, male	400 bar [5,000 psi]	572 bar [8,290 psi]	-
	¼ NPT, male	1,000 bar [15,000 psi]	1,480 bar [21,400 psi]	-
	¼ NPT, female	1,000 bar [15,000 psi]	1,480 bar [21,400 psi]	-
	½ NPT, male	1,000 bar [15,000 psi]	1,480 bar [21,400 psi]	-
Process connections for model E-11				
-	G ½ B flush (available for measuring ranges 0 ... 2.5 to 0 ... 600 bar [0 ... 30 to 0 ... 8,000 psi])	600 bar [8,000 psi]	600 bar [8,700 psi]	NBR
		400 bar [5,000 psi]	400 bar [5,800 psi]	FPM/FKM
		200 bar [2,000 psi]	200 bar [2,900 psi]	EPDM
-	G 1 B flush (available for measuring ranges 0 ... 0.4 to 0 ... 1.6 bar [0 ... 5 to 0 ... 30 psi])	1.6 bar [30 psi]	10 bar [145 psi]	NBR
		1.6 bar [30 psi]	10 bar [145 psi]	FPM/FKM
		1.6 bar [30 psi]	10 bar [145 psi]	EPDM

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	
Possible restrictions	Depending on the choice of seal on the process connection, there may be restrictions in the permissible temperature range.
NBR	-30 ... +100 °C [-22 ... +212 °F]
FPM/FKM	-15 ... +105 °C [5 ... 221 °F]

→ For further information on process connections, see technical information IN 00.14.

Permissible temperature ranges depend on the option selected above, the EPL, the temperature class, the selected electrical connection and the selected seal. See chapter “Specifications” in the operating instructions.

Output signal		
Signal type		
Current (2-wire)	4 ... 20 mA	
Voltage (3-wire)	DC 0 ... 10 V DC 0 ... 5 V DC 1 ... 5 V DC 0.5 ... 4.5 V	
Load in Ω		
Output signal 4 ... 20 mA	≤ (auxiliary power - 10 V) / 0.02 A	
Output signal DC 0 ... 10 V	> maximum output signal / 1 mA	
Output signal DC 0 ... 5 V	> maximum output signal / 1 mA	
Output signal DC 1 ... 5 V	> 100k	
Output signal DC 0.5 ... 4.5 V	> 100k	
Voltage supply		
Auxiliary power	Output signal 4 ... 20 mA	DC 10 ... 30 V
	Output signal DC 0 ... 5 V	DC 10 ... 30 V
	Output signal DC 1 ... 5 V	DC 6 ... 30 V
	Output signal DC 0.5 ... 4.5 V	DC 5 ... 30 V
	Output signal DC 0 ... 10 V	DC 14 ... 30 V
Power consumption	1 W	
Dynamic behaviour		
Settling time per IEC 61298-2	Model E-10	≤ 2 ms ≤ 10 ms → Measuring ranges ≤ 0 ... 25 bar [≤ 0 ... 400 psi] for medium temperature < -30 °C [-22 °F]
	Model E-11	≤ 10 ms

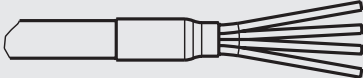
→ Other output signals on request.

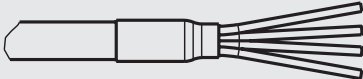
Electrical connection					
Connection type	IP code 1)	Wire cross-section	Wire cross-section in mm ²	Cable length	Cable material
½ NPT male conduit, with potted cable outlet (ATEX and IECEx approval)	IP66/ IP67	3 x 0.5 AWG20	6.8 [0.27]	■ 2 m ■ 5 m ■ 10 m	Polyolefin copolymer
½ NPT male conduit, with cable outlet (FM and CSA approval)	NEMA 4x IP67	3 x 0.56 AWG20	5.4 [0.21]	■ 6 ft ■ 10 m ■ 20 ft ■ 30 ft	PVC
½ NPT male conduit, with potted cores (FM and CSA approval)	NEMA 4x IP67	3 x 0.5 AWG20	3 x 2.6 [3 x 0.10]	■ 6 ft ■ 10 m ■ 20 ft ■ 30 ft	Polyolefin

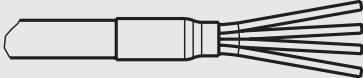
1) A restricted ambient temperature range of -40 ... +80 °C [-40 ... +176 °F] applies for IP code IP67.

Further details on: electrical connection	
Pin assignment	→ See “Pin assignment”
Short-circuit resistance	S+ vs. U-
Reverse polarity protection	U+ vs. U-
Insulation voltage	DC 500 V

Pin assignment

½ NPT male conduit, with potted cable outlet (ATEX and IECEx approval)			
		2-wire	3-wire
	U+	Red	Red
	U-	Black	Black
	S+	-	Brown
	Shield	Grey, shield connected to case	

½ NPT male conduit, with cable outlet (FM and CSA approval)			
		2-wire	3-wire
	U+	Red	Red
	U-	Black	Black
	S+	-	Brown
	Shield	Grey, shield connected to case	

½ NPT male conduit, with potted cores (FM and CSA approval)			
		2-wire	3-wire
	U+	Red	Red
	U-	Black	Black
	S+	-	Brown
	Shield	Green, shield connected to case	

Legend

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

Material		
Material (wetted)		
Measuring ranges ≤ 25 bar [≤ 400 psi]	Model E-10 and model E-11	Stainless steel (1.4571)
Measuring ranges > 25 bar [> 400 psi]	Model E-10	Stainless steel and Elgiloy®
	→ NACE conformity only for E-10 with metal seal or without seal.	
Sealing	→ See “Process connection”	
Material (in contact with the environment)		
Housing	Stainless steel (1.4571)	
Cable	→ See “Electrical connection”	
Pressure transmission medium		
Measuring ranges ≤ 25 bar [≤ 400 psi]	Model E-10 and model E-11	Synthetic oil
Measuring ranges > 25 bar [> 400 psi]	Model E-10	No pressure transmission medium

Operating conditions		
Permissible temperature ranges for instruments per ATEX and IECEx ^{1) 2)}		
Medium and ambient temperature limit	T6	-40 ... +60 °C [-40 ... +140 °F]
	T5	-40 ... +75 °C [-40 ... +167 °F]
	T4 ... T1	-40 ... +105 °C [-40 ... +221 °F]
Storage temperature limit	-	-40 ... +70 °C [-40 ... +158 °F]
Permissible temperature ranges for instruments per FM ^{1) 2)}		
Medium and ambient temperature limit	T6	-40 ... +60 °C [-40 ... +140 °F]
	T4 ... T1	-40 ... +105 °C [-40 ... +221 °F]
Storage temperature limit	-	-40 ... +70 °C [-40 ... +158 °F]
Permissible temperature ranges for instruments per CSA ^{1) 2)}		
Medium temperature limit	T6	-30 ... +60 °C [-22 ... +140 °F]
	T4	-22 ... +100 °C [-40 ... + 212 °F]
Ambient temperature limit	T6	-40 ... +60 °C [-40 ... +140 °F]
	T4	-40 ... +105 °C [-40 ... +221 °F]
Storage temperature limit	-	-40 ... +70 °C [-40 ... +158 °F]
Vibration resistance per IEC 60068-2-6	10g	
Shock resistance per IEC 60068-2-27	100g (mechanical shock)	
Operating altitude	≤ 2,000 m [6,562 ft] above sea level	
Ingress protection (IP code) per IEC 60529	→ See table “Electrical connection”	
Pollution degree per IEC 60664-1	2	
Overvoltage category	I	
Service life		
Measuring range < 600 bar	100 million load cycles	
Measuring range ≥ 600 bar	10 million load cycles	

1) For restrictions, see “Further details on: Process connection”

2) A restricted ambient temperature range of -40 ... +80 °C [-40 ... +176 °F] applies for IP code IP67

Options for specific media, model E-10	
Oil- and grease-free	
Residual hydrocarbon	< 1,000 mg/m ²
Packaging	Protective cap on the process connection
Hydrogen	
Measuring ranges	≥ 25 bar [360 psi] ≤ 1,050 bar [15,000 psi]

Packaging and instrument labelling	
Packaging	Individual packaging
Instrument labelling (product label)	WIKA product label, glued

Approvals

Logo	Description	Region
	EU declaration of conformity	European Union
	EMC Directive EN 61326 emission (group 1, class B) and immunity (industrial environment)	
	Pressure Equipment Directive	
	RoHS directive	
	ATEX directive Hazardous areas - Ex d Zone 1 gas II 2G Ex db IIC T6...T1 Gb	European Union
	IECEX Hazardous areas - Ex d Zone 1 gas Ex db IIC T6...T1 Gb	International
	FM Hazardous areas - Ex d Class I, division 1 Group A, B, C und D Class II, III, division 1 Group E, F, G; Type 4	USA
	CSA	USA and Canada
	Safety (e.g. electr. safety, overpressure, ...)	
	Hazardous areas - Ex d Class I, division 1 Group A, B, C und D Class II division 1 Group E, F, G Class III, division 1 Type 4X	

Optional approvals

Logo	Description	Region
	Ex Ukraine Hazardous areas - Ex d Zone 1 gas II 2G Ex db IIC T6...T1 Gb	Ukraine
	INMETRO Hazardous areas - Ex d Zone 1 gas Ex db IIC T6...T1 Gb	Brazil
	NEPSI Hazardous areas - Ex d Zone 1 gas Ex db IIC T6...T1 Gb	China
	KCs Hazardous areas - Ex d Zone 1 gas Ex db IIC T6...T1 Gb	Korea
-	TIIS Hazardous areas - Ex d Zone 1 gas Ex db IIC T6...T1 Gb	Japan
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada
	DNV ¹⁾ Ships, shipbuilding (e.g. offshore)	International

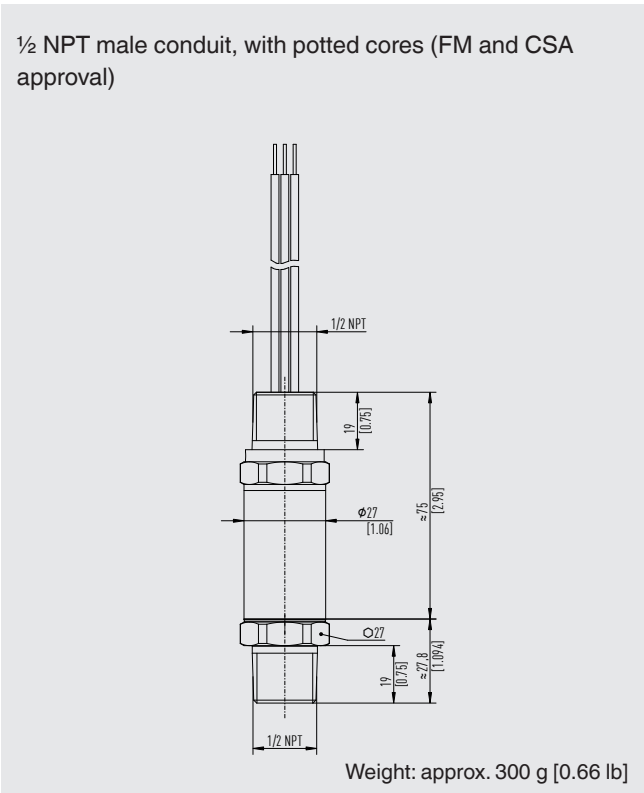
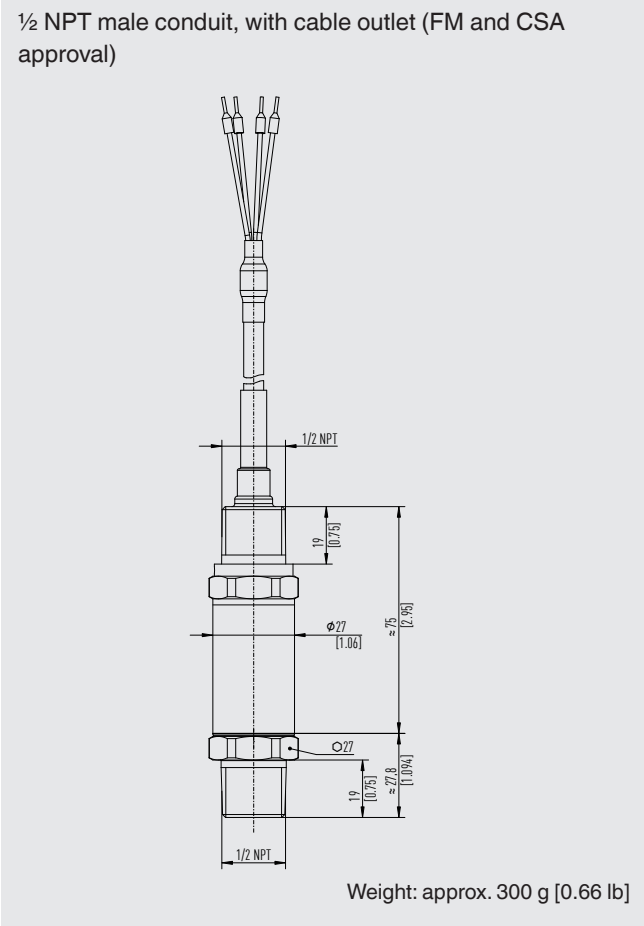
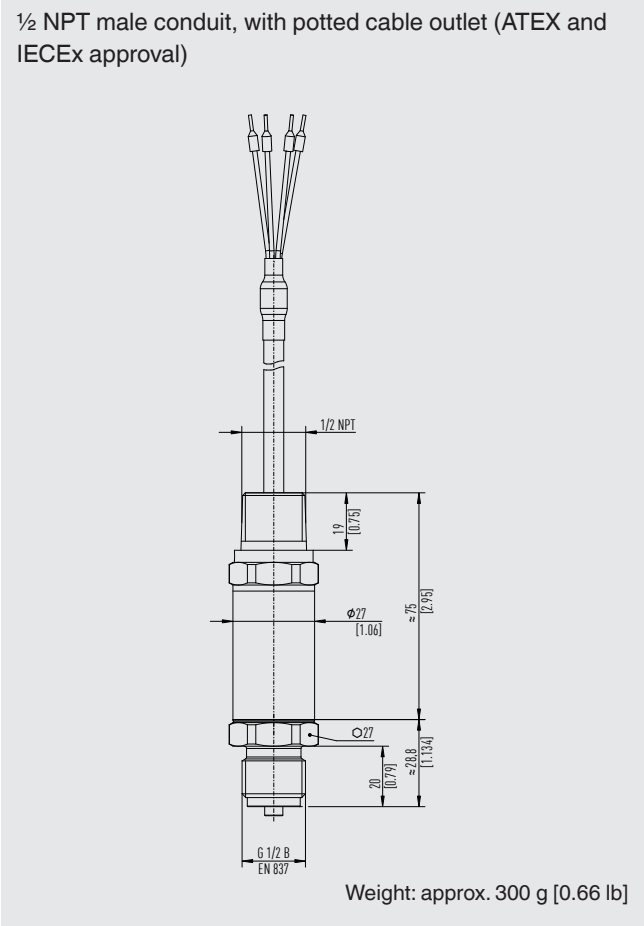
1) For model E-10 permissible pressure ranges 0 ... 1 to 0 ... 1,000 bar, only in conjunctions with ATEX/IECEx

Manufacturer's declaration

Logo	Description
-	China RoHS directive
MTTF	> 100 years

→ For approvals and certificates, see website

Dimensions in mm [in]



Ordering information

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

Configurator

Standard
article

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