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SMART pressure transmitter Series LD256 for use in intrinsically safe area

Description

LD256 series SMART pressure transmitters are microprocessor based instruments that combine the analog signal advantages (4-20 mA) together with the flexibility of digital communication using HART® protocol. They can be remotely configured by a universal hand held terminal (HHT) or by a PC with a dedicated interface and Spirax Sarco software.

Moreover, it is possible to locally configure the instruments (zero and span) by means of 2 pushbuttons and to display the data on the wide LCD display.

The LD256 transmitters, complete with diaphragm in AISI 316, measure relative pressure with spans from 0.023 to 400 bar.

The pressure measuring element is a piezoresistive sensor.

It is possible to choose a variety of sensors to satisfy all process conditions.

The Spirax Sarco measuring cell contains the sensor and transmits pressure to the electronics. Thermal drift is compensated using the temperature signal generated by a PTC thermistor integrated in the sensor itself.

Based on these readings the microprocessor generates the 4-20 mA analog output "two wires system" and displays the pressure measurement on the LCD.

Some of the main characteristics of this microprocessor-based transmitter, are:

- Wide rangeability.
- Automatic temperature compensation.
- Digital communication using HART® protocol.

Functional data

With reference to the following, please note these definitions:

Nominal range: (referred to the sensor mounted in the instrument) the measured pressure range for which the sensor has been designed. Defined as a minimum and maximum value.

Measuring range: the minimum and maximum range values for which the transmitter is to be calibrated.

Measuring span: the interval between minimum and maximum values of the measuring range.

Input scale initial value or zero input: minimum pressure value within in the measuring range.

Input full scale value: maximum pressure value within in the measuring range.

Measuring range and span limits

Ref.	Nominal range bar	SPAN min/max bar	Range limits min/max bar	Overpressure (max bar)
D	0/0.35	0.023/0.35	-0.35/0.35	2
E	0/1	0.067/1	-1/1	6
F	0/2.5	0.117/2.5	-1/2.5	10
G	0/5	0.2/5	-1/5	16
H	0/10	0.367/10	-1/10	30
K	0/30	1.033/30	-1/30	75
L	0/100	3.37/100	-1/100	250
M	0/200	6.7/200	-1/200	500
N	0/400	13.4/400	-1/400	600



Transmitter parameters

The parameters that are available for display and setting are:

Measuring span: possibility to change from 3.3% to 100% of the nominal span.

Zero adjustment: digital calibration $\pm 15\%$.

Low/upper range values: they can be set within the nominal range provided that the span > minimum span.

Damping: digitally adjustable from 0 to 60 sec. (Minimum response time ~ 0.1 sec.).

Reverse output: automatically obtained via software.

Self-test: in case of malfunction the analog output is forced to the fail-safe state 3.8 mA or 23.2 mA.

Measuring units: 18 different pressure units or % of the measuring span, selectable via software.

Physical characteristics

Power supply: 12.5 - 30 Vdc.

Output signal: Analog 4-20 mA, 2 wires. Digital using HART®.

Response time: <256 ms (Std Hart®)

Measured value update frequency:

4-20 mA + HartR output: ~ 1s

Polling time:

4-20 mA + HartR output: ~ 800 ms

Ambient conditions

Temperature

Process fluid: -40 ÷ +80°C

Housing: -40 ÷ +80°C

Handling and storage: -40 ÷ +90°C

Relative Humidity: 0 a 100%

R.H. LCD display reading: -10 ÷ +65°C

Power supply parameters

If Ta<60°C

Ui = 30 V, li = 100 mA; Pi = 0.75W; Ci = 10 nF; Li ≈0 mH

If 60<Ta<80°C

Ui = 25.2 V, li = 100 mA; Pi = 0.62W; Ci = 10 nF; Li ≈0 mH

Performances

Output resolution: < 0,01% nominal range (at 20°C)

Accuracy comprehensive of non-linearity, repeatability and hysteresis:

<0.07% FS (0 ÷ 80°C)

<0.2% FS (0 ÷ -40°C)

Dead band: negligible

Display resolution: 0.1

Influence of operating conditions

Thermal drift: referred to -10 ÷ +80°C range.

Zero: ± 0.1%/10°C. **Span:** ± 0.1%/10°C at nominal range.

Long term stability: <0.1% FS/year

Power supply effect: Negligible between 12.5 and 30 Vdc.

Calibration

Standard: at nominal range, direct action.

On request: at the conditions specified with the order.

Physical specifications

Process wetted parts: AISI 316.

Housing: die cast aluminum alloy EN AB-44100 finished with epoxy resin (RAL 5010). It is dust and sand tight and protected against sea wave effects as defined by IEC IP66. Suitable for tropical climate operation as defined by DIN 50015.

Covers O-ring: EPDM.

Filling fluid: silicone oil.

Nameplate: stainless steel, fixed on housing.

Process connection: see ordering information.

Electrical connections: two cable entries on electronic M20x1.5 and cable gland PG 13.5 for 7 to 12 mm diameter cable.

Terminal board: 2 terminals for signal wiring up to 1.5 mm² (14 AWG). Connection for ground and cable shield.

Mounting position: any position.

Net weight: 1.4 kg approx.

Options

Bracket: for 2 inch pipe mounting.

Degreasing: for oxygen service.

Housing: AISI 316

Directive 2014/68/EU (PED)

Pressure equipment until Category III, for fluids (gases, liquids and vapours) in Group 1.

Directive 2014/34/EU (ATEX)

Equipment for explosive atmospheres Group II Category 1G suitable for zones 0, 1, and 2.

Intrinsically Safe: Ex ia IIC T6 Ga (-40°C > Tamb ÷ +40°C)

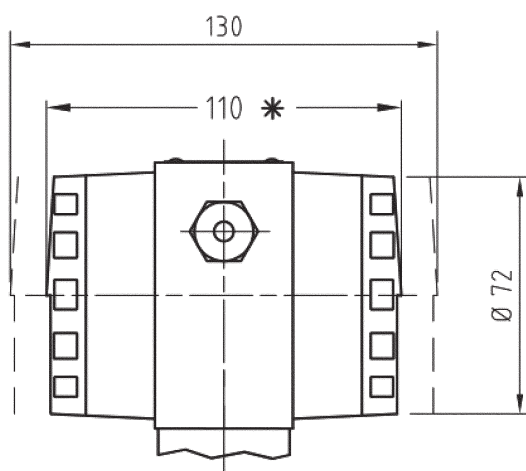
Ex ia IIC T5 Ga (-40°C > Tamb ÷ +55°C)

Ex ia IIC T4 Ga (-40°C > Tamb ÷ +80°C)

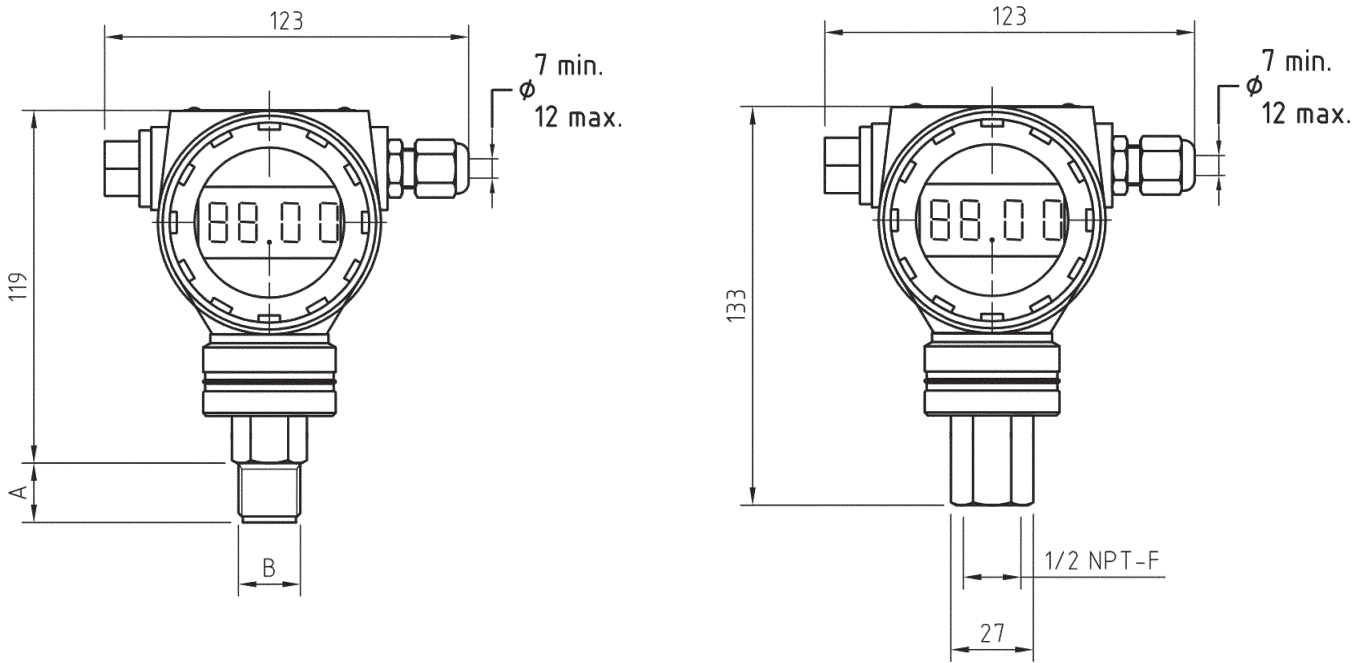
Directive 2014/30/EU (EMC)

Equipment with an adequate level of electromagnetic compatibility.

Dimensional drawing

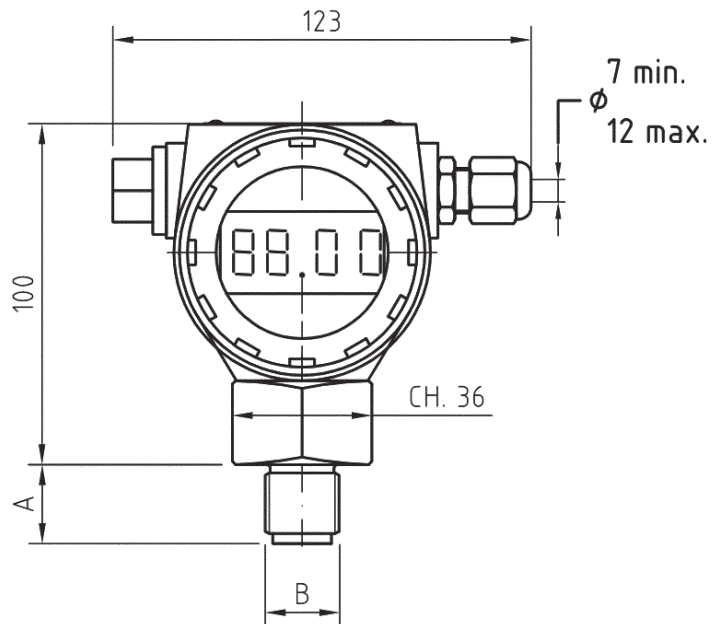


* 110 mm with both covers mounted.
130 mm is the space required to remove both covers.



	1/2"	
A	20	18
B	G	NPT

Fig. 1 - Screwed connection for nominal range \leq 30 bar



	1/2"	
A	20	18
B	G	NPT

Fig. 2 - Screwed connection for nominal range \geq 100 bar

ORDERING INFORMATION		Example : LD256-H-1-K-1-0-1-0-1-1									
Code number	LD256	H	1	K	1	0	1	0	1	1	
HART Pressure Transmitter		H									
Pressure connection											
Screwed 1/2" G-M		0									
Screwed 1/2" NPT-M		1									
Screwed 1/2" G-F		2									
Screwed 1/2" NPT-F		3									
Screwed 1" G-M		4									
Union nut 65x1/6 (*) (**)		5									
Union nut 78x1/6 (*) (**)		6									
Clamp 1" 1/2 (*) (**)		7									
Clamp 2" (*) (**)		8									
Special		9									
Nominal range	Measuring range min.	Measuring range max									
0/0.35 bar	0÷0.023 bar	0÷0.35 bar	D								
0/1 bar	0÷0.067 bar	0÷1 bar	E								
0/2.5 bar	0÷0.117 bar	0÷2.5 bar	F								
0/5 bar	0÷0.2 bar	0÷5 bar	G								
0/10 bar	0÷0.367 bar	0÷10 bar	H								
0/30 bar	0÷1.033 bar	0÷30 bar	K								
0/100 bar	0÷3.37 bar	0÷100 bar	L								
0/200 bar	0÷6.7 bar	0÷200 bar	M								
0/400 bar	0÷13.4 bar	0÷400 bar	N								
Speciale			9								
Calibration											
Standard (Nominal range)			1								
Optional on request			2								
Diaphragm material											
Stainless steel AISI 316			0								
Hastelloy C 276			2								
Special			9								
Options											
Without						0					
Bracket for 2 inch pipe mounting						1					
Housing: AISI 316 SS.						2					
Special						9					
Options											
Without							0				
Bracket for 2 inch pipe mounting							1				
Housing: AISI 316 SS.							2				
Special							9				
Options											
Without								0			
Bracket for 2 inch pipe mounting								1			
Housing: AISI 316 SS.								2			
Special								9			
Explosion protection											
Exia intrinsic safety									1		
(*) For nominal range < 50bar											
(**) Minimum calibration allowable = 500 mbar											