



7E.174-E
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SMART differential pressure transmitter Series LD377B for use in explosion proof area

Description

LD377B series SMART differential 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.

Moreover, it is possible to locally configure the instruments (zero and span) by means of 4 pushbuttons and to display the data on the wide LCD display.

The LD377B transmitters measure differential pressure with spans from 1,2 to 10000 mbar with a static pressure up to 200 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.

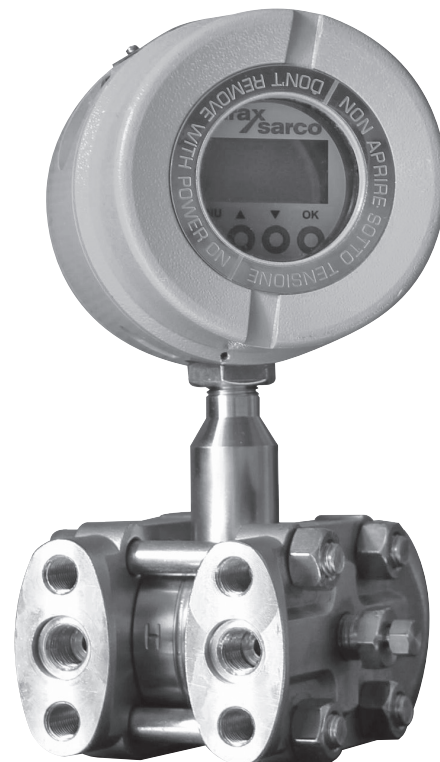
Measuring span: the interval between minimum and maximum values of the measuring range.

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 mbar	SPAN min/max mbar	Range limits min/max mbar
B	0/18	1,2/18	-18/+18
C	0/50	3,3/50	-50/+50
D	0/350	23/350	-350/+350
E	0/1000	67/1000	-1000/+1000
F	0/2500	167/2500	-2500/+2500
G	0/5000	333/5000	-5000/+5000
H	0/10000	667/10000	-10000/+10000



Transmitter parameters

The parameters that are available for display and setting are:

Measuring span: possibility to change from 3,33% 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 greater than minimum span.

Damping: digitally adjustable from 0 to 60 sec. (minimum response time $\sim 0,1$ sec.).

Reverse output: automatically obtained via software.

Transfer function: linear/square root via software.

Self-test: in case of malfunction the analog output is forced to the fail-safe state 3,85 mA or 21 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 4-20mA, 2 wires. Digital using HART®.

Response time: < 256ms (Std HART®)

Measured value update frequency:

4-20mA + HART® output: ~1 s

Polling time:

4-20mA + HART® output: ~800 ms

Nominal range 18-50 mbar:

Max static pressure: 50 bar.

Overpressure limits: 50 bar on either side.

Nominal range 350-10000 mbar:

Max static pressure: 100 bar.

Overpressure limits: 100 bar on either side.

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

Performances

Total accuracy: comprehensive of hysteresis, non-linearity and repeatability: < 0.1%FS

Dead band: negligible.

Display resolution: 0.1

Influence of operating conditions

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

Zero: ± 0,1%/10°C. **Span:** ± 0,1%/10°C at nominal range.

Static pressure effect

Nominal range 18-50 mbar:

Zero: ± 0,4% / 10 bar. **Span:** 0,4% / 10 bar.

Nominal range 350-2500 mbar:

Zero: ± 0,1% / 10 bar. **Span:** 0,1% / 10 bar.

Nominal range 5000-10000 mbar:

Zero: ± 0,2% / 10 bar. **Span:** 0,2% / 10 bar.

Over range effect

Nominal range 18-50 mbar:

Zero: on either side ± 1% at 50 bar.

Nominal range 350-2500 mbar:

Zero: on either side ± 0.1% at 100 bar.

Nominal range 5000-10000 mbar:

Zero: on either side ± 1% at 100 bar.

Power supply effect:

Negligible between 12,5 and 30 Vdc.

Physical specifications

Wetted parts by process fluid: Diaphragm AISI 316L, Hastelloy C Measuring chamber, adapters, vent and drain plugs AISI 316

Process connections: See ordering information.

Housing: die cast aluminum alloy EN AW-6082 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.

Bracket: for 2" pipe mounting.

Electrical connections: two entries on electronic housing, 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: 6 kg approx.

Calibration

Standard: at nominal range, direct action, linear.

Optional: at the conditions specified with the order.

Options

Static pressure: 200 bar.

Degreasing for oxygen services.

Stainless steel housing: AISI 316 (IP66).

European Legislation

Directive 2014/68/EU (PED)

Pressure equipment until Category III, for fluids (gases, liquids and vapors) in Group1.

Directive 2014/34/EU (ATEX)

Equipment for explosive atmospheres Group II Category 1/2G suitable for zone 0 (process side) and zone 1 (external side).

Explosion proof:

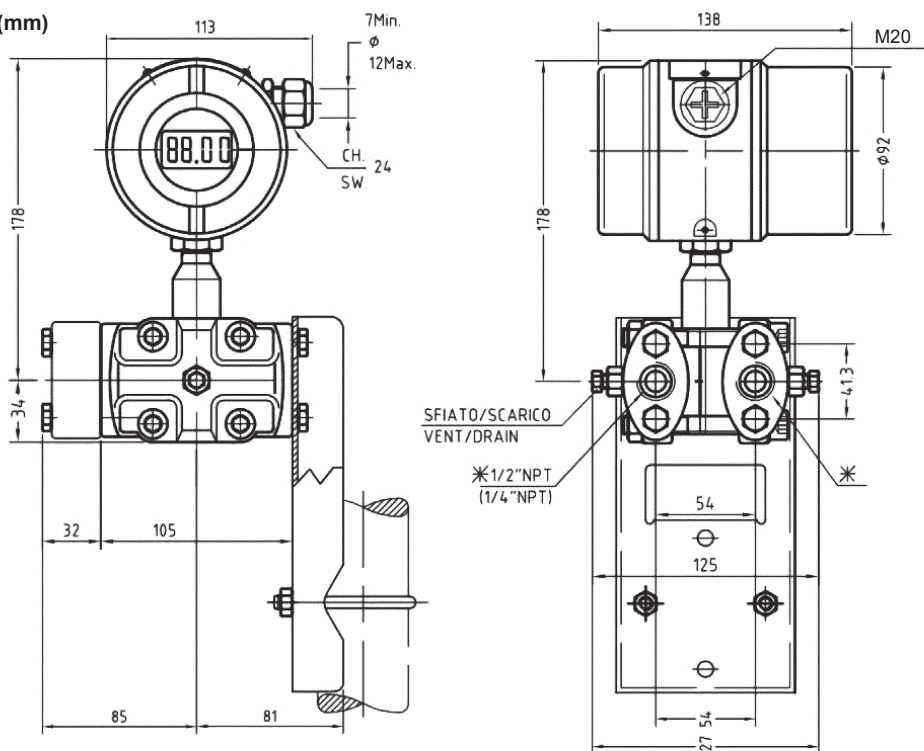
Ex d IIC T6 Ga/Gb (-40°C ≥ Tamb ≥ +60°C)

Ex d IIC T5 Ga/Gb (-40°C ≥ Tamb ≥ +80°C)

Directive 2014/30/EU (EMC)

Equipment with an adequate level of electromagnetic compatibility.

Dimensions (mm)



ORDERING INFORMATION				Example: LD377B-H-1-F-2-3-0-2						
Code number		LD377B	H	1	F	2	3	0	2	
HART Differential Pressure transmitter				H						
External parts:										
Stainless steel				1						
Stainless steel for oxygen service				3						
St steel + diaphragm Hastelloy C				4						
Nominal range		Measuring range min.		Measuring range max.						
0/18	mbar	0+1,2	mbar	0+18	mbar	B				
0/50	mbar	0+3,3	mbar	0+50	mbar	C				
0/350	mbar	0+23	mbar	0+350	mbar	D				
0/1000	mbar	0+67	mbar	0+1000	mbar	E				
0/2500	mbar	0+167	mbar	0+2500	mbar	F				
0/5000	mbar	0+333	mbar	0+5000	mbar	G				
0/10000	mbar	0+667	mbar	0+10000	mbar	H				
Special				9						
Calibration										
Optional						2				
Options										
Without						0				
Static pressure 200 bar*						1				
Housing: AISI 316 St.St.						2				
Application of diaphragm seals						4				
Special						9				
Process connections										
Standard 1/4" NPT F								0		
Stainless steel adapters 1/2" NPT F								2		
Explosion protection										
Exd explosion proof feature										2
* Only for ranges D-E-F-G-H										