Technical **Datasheet**

delta-controls

D Series
SMART Compact Differential Pressure Transmitter
Model: DPRE-28.SMART

Key **Features**

- Accuracy +-0.1%.
- 4-20mA output signal.
- Fully HART ® compatible.
- Static pressure limit up to 420 bar.
- ATEX certified (Intrinsic Safety).
- Gold plated diaphragm option.
- Hastelloy C276 wetted parts option.

Series **Overview**

- The D-Series pressure, differential pressure and temperature transmitters offer customers cost-effective and accurate solutions to their individual process requirements.
- Available with a wide range of process connections and easily configurable via the D-Soft software, the D-Series can be used for a variety of applications when pressure, differential pressure, temperature, level or flow measurements are needed.

Other products in the series include:

- DPCE-28.SMART Pressure Transmitter

Product **applications**

The DPRE-28.SMART D-Series is suitable for a wide range of applications for measuring:

- Differential Pressure
- Level
- Flow

The choice of models available ensures that the DPRE-28.SMART D-Series is suitable for use in:

- Corrosive atmospheres
- Resistant to chemical attack

How can we **help you?**

Delta Controls' offers fast, efficient and knowledgeable support when and where you need it. Please visit our web site at www.delta-controls.com to find your local support centre or call us on:

+44 (0) 1252 729140

Application & Construction

The DPRE-28 SMART Differential Pressure Transmitters are suitable for measuring differential pressure of gases, vapours and liquids. The active sensing element is a piezoresistive silicon sensor separated from the medium by a diaphragm and by a specifically selected type of manometric liquid. The casing is made of cast aluminium alloy or 316 stainless steel with degree of protection IP66/67. The design of the casing enables the rotation of the casing by 0-355° relative to the sensor, and a choice of cable direction.

The communication standard for data interchange with the transmitter is the HART protocol.

Communication with the transmitter is carried out with:

– a KAP-03, KAP-03Ex communicator,
– some other HART type communicators,(*)
– a PC using a HART/USB/Bluetooth converter and D-Soft configuration software

(*) .eddl file available at www.delta-controls.com

The data interchange with the transmitter enables the users to:

- identify the transmitter;
- configure the output parameters:
  – measurement units and the values of the start points and end points at the measurement range;
  – damping time constant;
  – conversion characteristic (inversion, user's non-linear characteristic);
- read the currently measured pressure value of the output current and the percentage output control level;
- force an output current with a set value;
- calibrate the transmitter in relation to a model pressure

Installation

The transmitter with P or PN type process connection is not heavy, so it can be installed without an additional mounting bracket on application. For fitting in any desired position we recommend a universal Delta mounting bracket for 2" pipe (AL mounting bracket). The version with C type process connections can be fitted directly to a 3- or 5- valve manifold. We recommend factory-mounted transmitters with VM type valve manifold. A transmitter without a valve manifold can be fitted in any position on a "2 pipe or on a wall using the C-2" mounting bracket. When the special process connections are required for the measurement of specific media levels in closed tanks (e.g. in the sugar and chemical industries) the transmitter is fitted with a Delta diaphragm seal.

Measuring Ranges

No.	Nominal measuring range (FSO)		Minimum set range		Rangeability	Overpressure limit/ Static pressure limit
1	0...70 bar	(0...7 MPa)	7 bar	(700 kPa)	10:1	exception: 70 bar for P-type
2	0...16 bar	(0...1,6MPa)	1,6 bar	(160 kPa)	10:1	C-type: 250/320/420 bar P-type: 40 bar
3	0...2,5 bar	(0...250 kPa)	0,2 bar	(20 kPa)	12,5:1	
4	0...1 bar	(0...100 kPa)	50 mbar	(5 kPa)	20:1	
5	0...0,25 bar	(0...25 kPa)	10 mbar	(1 kPa)	25:1	
6	-0,5...0,5 bar	(-50...50 kPa)	0,1 bar	(10 kPa)	10:1	
7	-100...100 mbar	(-10...10 kPa)	10 mbar	(1 kPa)	20:1	
8	-5...70 mbar	(-0,5...7 kPa)	4 mbar	(0,4 kPa)	18:1	
9	-25...25 mbar	(-2,5...2,5 kPa)	2 mbar	(0,2 kPa)	25:1	C-type: 20 bar

Technical Data

Metrological parameters

Accuracy ≤ ±0.1% of calibrated range

Long-term stability ≤ accuracy for 3 years
(for the nominal measuring range)

Thermal error ≤ ±0.08% (FSO) / 10°C
max. ±0.3% (FSO) in temperature range -25…80°C

Thermal compensation range -25…80°C

Zero shift error for static pressure

0.01% (FSO) / 10 bar for range 3, 4, 5, 6, 7, 9
0.03% (FSO) / 10 bar for range 8
0.06% (FSO) / 10 bar for ranges 1, 2

Zeroing the transmitter in conditions of static pressure can eliminate this error.

Response time 16..230ms (programmable)

Additional electronic damping 0…30 s

Error due to supply voltage changes 0.002% (FSO) / V

Electrical parameters

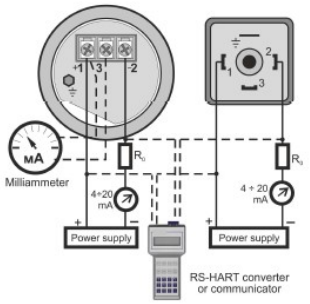
Power supply: 7.5...55 V DC (Ex ia 7.5...28 VDC)

Output signal 4...20 mA, two wire transmission

Load resistance $R\,[\Omega] \le \frac{U_{SUP}\ [V] - 7.5V}{0.0225A}$

Resistance required for communication min 240 Ω

Electrical diagrams



D-Series
Model: DPRE-28.SMART

Technical Data (cont.)

Materials

Wetted parts: type P, PN process connection: 316Lss
type P(H) process connection: 316Lss or Hastelloy C276
type C process connection: 316Lss

Diaphragms: 316Lss , Hastelloy C 276, Au

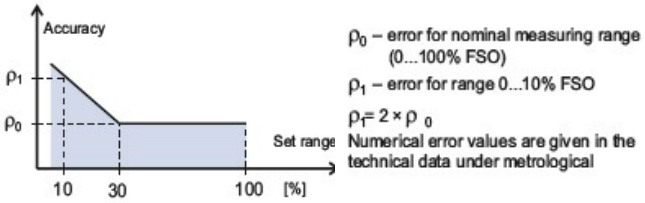
Casing : 304ss
Option : 316ss

Operating conditions

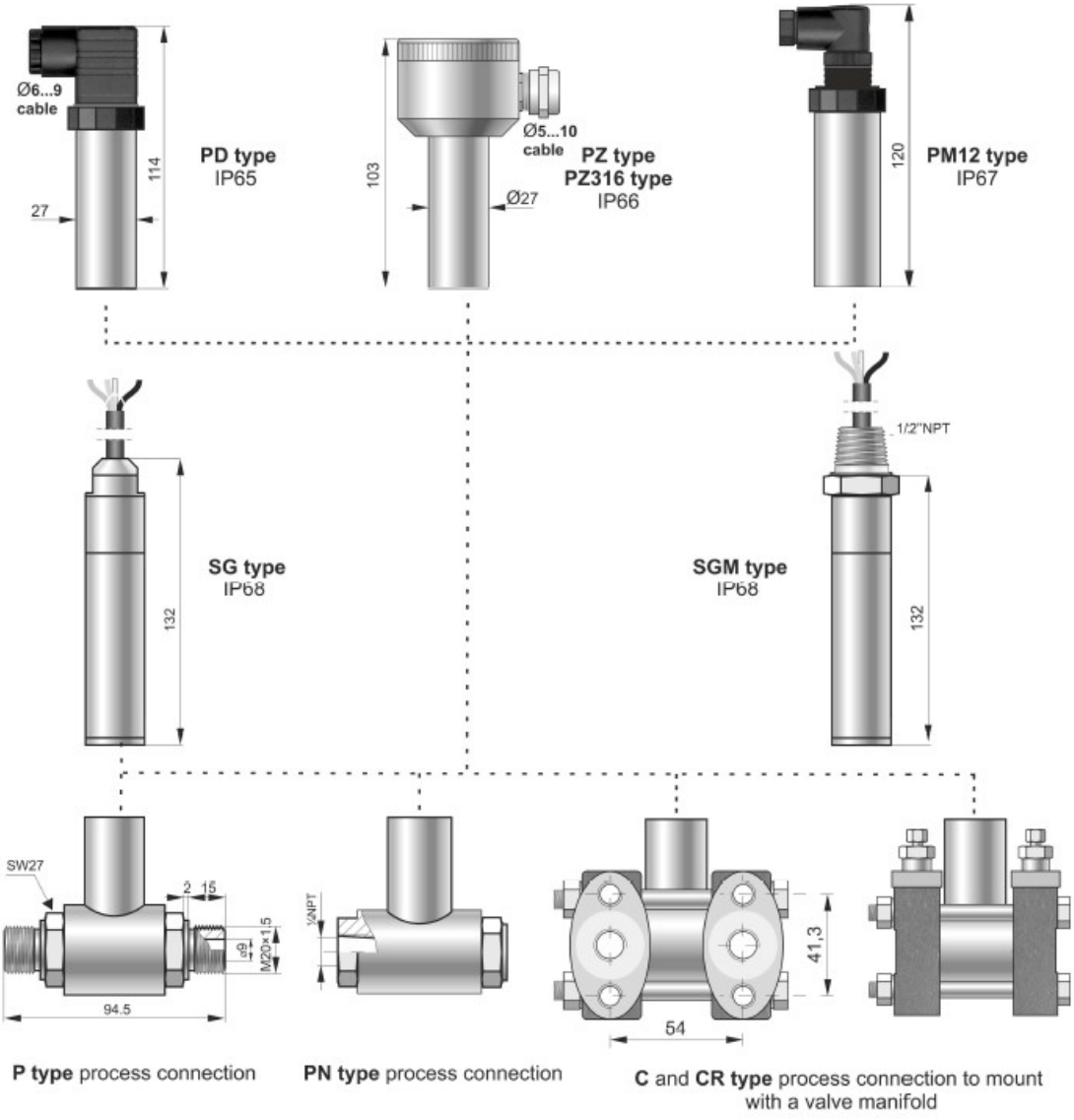
Operating temperature range (ambient temp.) -25…85°C
Ex ia -25…80°C

Medium temperature range -25...120°C
Over 120°C - measurement with the use of impulse line or diaphragm seals
CAUTION: The medium must not be allowed to freeze in the impulse line or close to the process connection of the transmitter

Accuracy depending on the set range



Dimensions



How to Order

Model	Code	Description	
DPRE-28.SMART		Smart differential pressure transmitter	
Versions, certificates* more than one option is available	/Exia …… /320 bar …… /420 bar ……	II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb II 1 D Ex ia IIIC T105°C Da I M1 Ex ia I Ma Static pressure 320 ber, only for C process connection Static pressure 420 bar, only for C process connection	
		Range	**Min. set range**
Nominal measuring range	/0÷70 bar …… /0÷16 bar …… /0÷2,5 bar …… /0÷1 bar …… /0÷0.25 bar …… /-0.5÷+0.5 bar …… /-0,1÷0,1 bar …… /-5÷70 mbar …… /-25÷25 mbar ……	0÷70 bar (0÷7000 kPa) 0÷16 bar (0÷1600 kPa) 0÷2,5 bar (0÷250 kPa) 0÷1 bar (0÷100 kPa) 0÷0.25 bar (0÷25 kPa) -0.5÷0,5 bar (-50÷50 kPa) -1÷0,1 bar (-10÷10 kPa) -5÷70 mbar (-0,5÷7 kPa) -25÷25 mbar (-2,5÷2,5 kPa)	7 bar (700 kPa) 1,6 bar (160 kPa) 0,2 bar (20 kPa) 50 mbar (5 kPa) 10 mbar (1 kPa) 0,1 bar (10 kPa) 10 mbar (1 kPa) 4 mbar (0,4 kPa) 2 mbar (0,2 kPa)
Measuring set range	/…+…(required units)	Calibrated range in relation to 4mA and 20mA output	
Casing, electrical connection	/PD…… /PZ…… /PZ316…… /PM12…… /SG…… /SGM……	Housing IP65 with DIN43650 connector 304SS housing, IP66, packing gland M20x1,5 316SS housing, IP66, packing gland M20x1,5 Housing IP67 with thread M12x1 and connector 316LSS housing, IP68, cable electrical connection (3 m of cable in standard) 316LSS housing, IP68, cable electrical connection (3 m of cable in standard)	
Process connections	/C …… /CR …… /P …… /PN …… /code of diaphragm seal……	Thread 1/4”NPT F on the cover flanges. Cover flanges material SS316. Allows mounting with a valve manifold. Process connection of cover flange: M10 (option /C(7/16) - 7/16”UNF acc. to IEC 61518) C-type process connection rotated 90° Thread M20x1,5 (male) Thread 1/4’’NPT (female) Diaphragm seal (see chapter of diaphragm seals) mounted on Hi side of transmitter, Lo side 1/4”NPT Female	
Material of diaphragms (refers only to C, CR, P, PN process connection)	(without marking)…… /(H)…… /(Au)…… ……	Diaphragms material SS316L Diaphragms material Hastelloy C276 (/P and /PN – all wetted parts in Hastelloy C276 on request) Gold plated diaphragms	
Gasket (refers only to C, CR process connection)	(without marking)…… /NBR…… /PTFE……	FPM Viton NBR (for oxygen service) PTFE	
Accessories	/C-2”…… /C-2”(SS)…… /FI25…… /RedSpaw P…… /RedSpaw C…… /Red d/P 1/2”……	Mounting bracket for 2” pipe (to C process conn.), mat. zinced steel Mounting bracket for 2” pipe (to C process conn.), mat. Stainless Steel Mounting bracket for 2” pipe (to P process conn.), mat. Stainless Steel Connector to weld impulse pipes dia. 12 and 14 mm, material 15HM(SO) or SS316(S). Only process connection P type Connector to weld impulse pipes dia. 12 and 14 mm, material 15HM. Only process connection C type. Adapter for differential pressure transmitters with C type process connection, output thread 1/2NPT F. Material SS316L	
Other specification	/ ……	Description of required parameters	

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In the interest of development and improvement Delta Controls Ltd, reserves the right to amend, without notice, details contained in this publication. No legal liability will be accepted by Delta Controls Ltd for any errors, omissions or amendments.

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