

Technical Datasheet



D Series

Analogue Compact Pressure Transmitter

Model: D22

Key Features

- Compact design and robust construction.
- 4-20mA two-wire or 0-10 V output.
- Any range from 0/25 mbar up to 0/1380 bar.
- ATEX & IECEx certification—Ex ia & Ex d
- Gold plated diaphragm.
- 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:

- D32 Analogue Compact Differential Pressure Transmitter



Product applications

The D22 D-Series is suitable for a wide range of applications for measuring:

- Pressure (Gauge, vacuum & absolute)
- Level

The choice of models available ensures that the D22 D-Series is suitable for use in:

- Corrosive atmospheres
- Resistant to chemical attack

How can we help you?

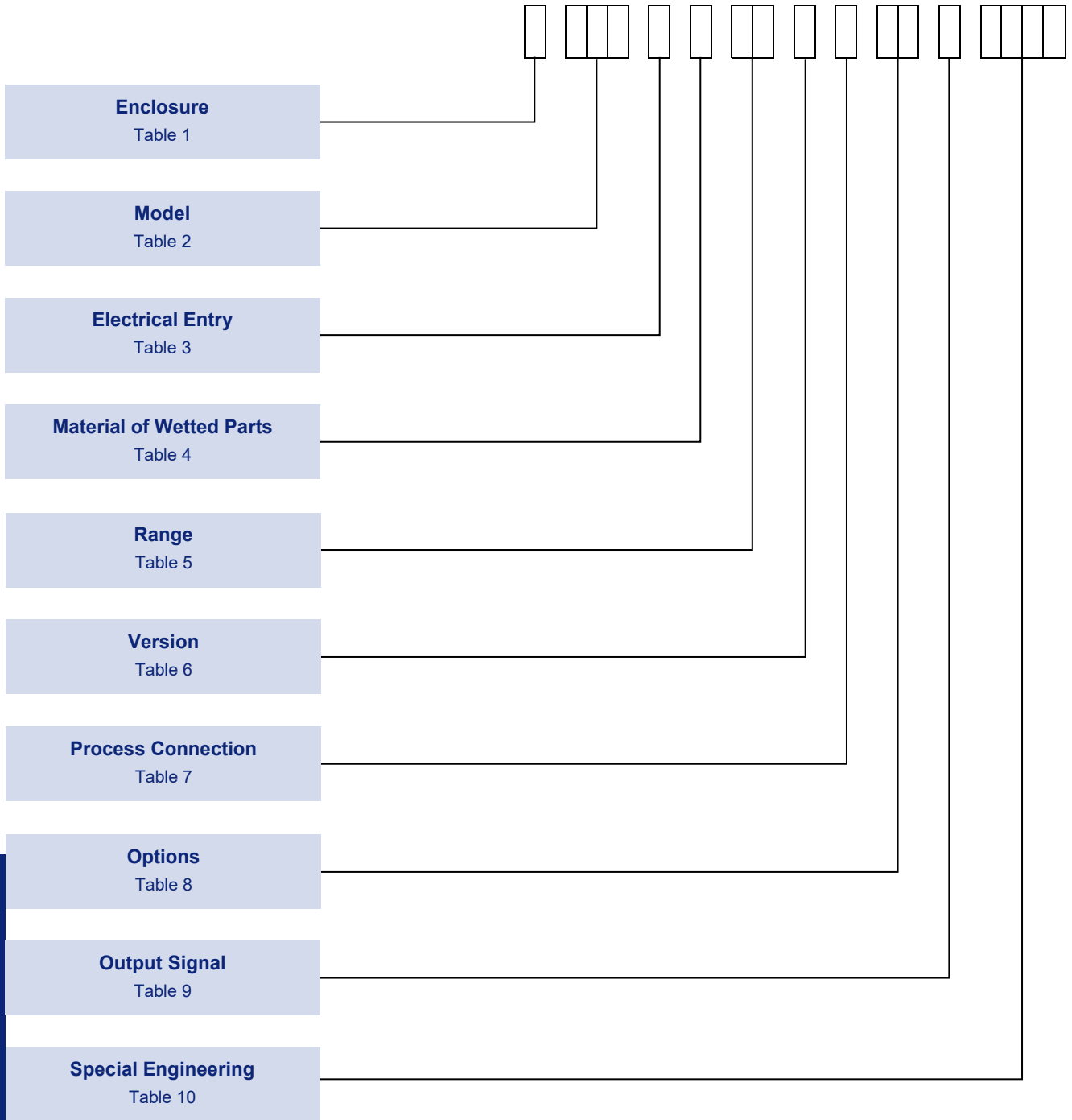
Delta Mobrey's offers fast, efficient and knowledgeable support when and where you need it. Please visit our web site at www.delta-mobrey.com to find your local support centre or call us on:

+44 (0) 1252 729140

D-Series
Model: D22

How to order

Transmitters can be configured by selecting codes representing the desired features from the tables that follow. The chart below, describes how the model code is built up. For assistance in configuring a transmitter that best suits your needs, please contact your local sales office.



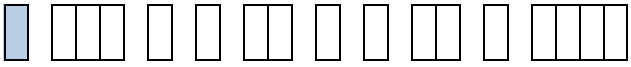
NOTE: Only the most common options are shown in this datasheet. Should you require a feature that is not shown, please contact your local sales office for further details.

NOTE: The non-standard option code is shown by "X" in the part number. Should you require any clarification on this codes please contact your local sales office.

Enclosure

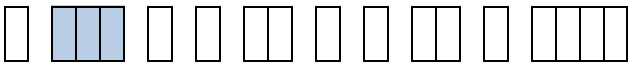
NOTE 1:
Refer to 'Approvals' section for details about the certification on Intrinsically Safe models and Flameproof models.

NOTE 2:
Aluminium enclosure with programmable local display is available, please contact local sales for more details.

TABLE 1 


ENCLOSURES TYPES	Code
WEATHERPROOF ENCLOSURE	
304 Stainless steel housing, IP65.	B
316 Stainless steel housing, IP65.	D
304 Stainless steel housing, IP66.	G
316 Stainless steel housing, IP66.	K
304 Stainless steel housing, IP67.	M
304 Stainless steel housing, IP66/67.	O
316L Stainless steel housing, IP68.	Q
INTRINSICALLY SAFE ENCLOSURES (ZONE 0)	
304 Stainless steel housing, IP65. (Ex ia)	C
316 Stainless steel housing, IP65. (Ex ia)	F
304 Stainless steel housing, IP66. (Ex ia)	J
316 Stainless steel housing, IP66. (Ex ia)	L
304 Stainless steel housing, IP67. (Ex ia)	N
304 Stainless steel housing, IP66/67. (Ex ia)	P
316L Stainless steel housing, IP68. (Ex ia)	S
FLAMEPROOF ENCLOSURES (ZONE 1)	
316L Stainless steel housing, IP68. (Ex d)	Z

Model

TABLE 2 

	Code
D22 Analogue Compact Pressure Transmitter	
For applications up to 1380 bar. Overpressure limit up to 1600 bar. Refer Table 5.	D22

Electrical Entry

TABLE 3 

	Code
PZ type connection, packing gland M20x1.5	1
PD type connection, DIN43650 Connector	3
PM12 type connection, thread M12x1 & connector with cable 3m length	4
PK type connection, cable 3m length	5

NOTE: Code 1
Available on Enclosure code G,K,J & L only.

NOTE: Code 3
Available on Enclosure code B,D,C & F only.

NOTE: Code 4
Available on Enclosure code M & N only.

NOTE: Code 5
Available on Enclosure code O & P only.

D-Series
Model: D22

NOTE: Code 6

Available on Enclosure code M & N only.

NOTE: Code 7 & 8

Available on Enclosure code Q & S only.

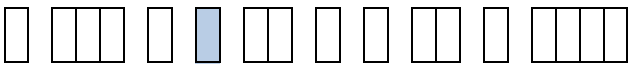
Note: Code A & B

Available on Enclosure code Z only.

Refer Table 1 for Enclosure

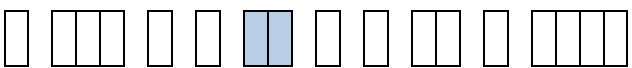
(Table 3 continued...)	Code
PKD type connection, cable 3m length	6
SG type connection, cable 3m length	7
SGM type connection, thread 1/2" NPT Male & cable 3m length	8
FL type connection, thread 1/2" NPT Male & flying leads 2m length (for Ex d only)	A
SGM type connection, thread 1/2" NPT Male & cable 3m length (for Ex d only)	B

Material of Wetted Parts

TABLE 4 

	Code
Stainless Steel 316L diaphragm and process connection	A
Hastelloy C276 diaphragm and process connection	B
Gold plated diaphragm and Stainless Steel 316L process connection	C

Range

TABLE 5 

Code	Nominal measuring range (FSO)		Code	Nominal measuring range (FSO)	
	D0	0...0.25 bar		(0...25 kPa)	E3
D1	0...1 bar*	(0...100 kPa)	E5	0...40 bar*	(0...4 MPa)
D2	0...2.5 bar*	(0...250 kPa)	E6	0...60 bar*	(0...6 MPa)
D5	0...0.4 bar	(0...40 kPa)	F0	0...160 bar*	(0...16 MPa)
D6	0...0.6 bar	(0...60 kPa)	F2	0...100 bar*	(0...10 MPa)
D7	0...1.6 bar*	(0...160 kPa)	F3	0...250 bar*	(0...25 MPa)
D8	0...4 bar*	(0...400 kPa)	F4	0...400 bar*	(0...40 MPa)
D9	0...6 bar*	(0...600 kPa)	F5	0...600 bar*	(0...60 MPa)
E0	0...16 bar*	(0...1.6 MPa)	G0	0...1000 bar*	(0...100 MPa)
E1	0...25 bar*	(0...2.5 MPa)	M0	0...-1 bar	(0...-100 kPa)

*Available in bar (absolute pressure).

NOTE: For Ex ia version, any measuring range. 0...25 mbar to 0...1000 bar (over pressure, under pressure); 400 mbar ÷ 80 bar (absolute pressure).

	Measuring range			
	25 mbar	100 mbar	400 mbar	0...1 bar + 1000 bar
Overpressure Limit (repeated, without hysteresis)	1 bar	1 bar	2,5 bar	4 x range; max 1200 bar
Damaging Overpressure	2 bar	2 bar	5 bar	8 x range; max 2000 bar
Accuracy	0,6%	0,3%	0,2% (0,16% - special version code A)	
Long term stability	0,6% / year	0,2% / year	0,1% / year	
Thermal error	Typically 0,5% / 10°C Max 0,6% / 10°C	Typically 0,3% / 10°C Max 0,4% / 10°C		Typically 0,2% / 10°C Max 0,3% / 10°C

D-Series
Model: D22

NOTE: For Ex d version, any measuring range. 0...25 mbar to 0...1380 bar (over pressure, under pressure); 400 mbar + 80 bar (absolute pressure).

	Measuring range				
	25 mbar	100 mbar	400 mbar	0...1 bar +	0...160 bar +
Overpressure Limit (repeated, without hysteresis)	1 bar	1 bar	2,5 bar	4 x range	2 x range; max. 1600 bar
Damaging Overpressure	2 bar	2 bar	5 bar	8 x range; max 2000 bar	
Accuracy	0,6%	0,3%	0,2% (0,16% - special version) 0,1% / year		
Long term stability	0,6% / year	0,2% / year			
Thermal error	Typically 0,5% / 10°C Max 0,6% / 10°C	Typically 0,3% / 10°C Max 0,4% / 10°C		Typically 0,2% / 10°C Max 0,3% / 10°C	

Version

TABLE 6

NOTE: Code 4

Only available with process connection code A & D.

NOTE: Code A

Available for ranges > 400 mbar

NOTE: Code B

Only available with output signal code O.

Refer Table 7 for Process Connection

Refer Table 9 for Output Signal

	Code
Applies when no option is required.	0
For oxygen service (sensor filled with Fluorolube fluid)	4
High overload capacity and integrated circuit offering excess voltage protection	9
Accuracy < 0.16%	A
Response time < 30ms	B

Process Connection

TABLE 7

Other thread specification & sizes are available. Ask for details.

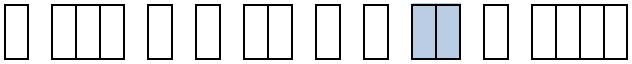
M20x1.5 (male) with Ø4mm hole	A
M20x1.5 (male) with Ø12mm hole (Pressure limits: min 0.25 bar / max 350 bar)	B
G1/2" (male) with Ø4mm hole	D
G1/2" (male) with Ø12mm hole (Pressure limits: min 0.25 bar / max 350 bar)	E
G1/4" (male) (Pressure limits: min 10 mbar / max 400 bar)	F
1/2" NPT Male (Pressure limits: max 690 bar)	G
1/2" NPT Female via adaptor (Pressure limits: max 690 bar)	H
M30x2 with flush diaphragm (Pressure limits: min 0.1 bar / max 70 bar)	I
G1" with flush diaphragm (Pressure limits: min 0.1 bar / max 70 bar)	J
G1/2" with flush diaphragm (Pressure limits: min 2.5 bar / max 300 bar)	K

D-Series
Model: D22

(Table 7 continued...)	Code
M20x1.5 (male) with radiator (Pressure limits: min 160 mbar / max 40 bar, max. temperature up to 170°C)	R
G1/2" (male) with radiator (Pressure limits: min 160 mbar / max 40 bar) max. temperature up to 170°C)	S

Options

Combination of more than one option is available.

TABLE 8 


	Code
Applies when no option is required	00
Stainless Steel tag plate mounted on wire	30

Output Signal

NOTE: Code D,E,F & G

Not available with Zone 0 Enclosures.
Refer Table 1 for Enclosure.


Refer Technical Data for more details.

TABLE 9 

	Code
4 to 20mA	O
0 to 10VDC / power supply 13-30VDC	C
0 to 2.5VDC / power supply 3.3VDC	D
0 to 3.3VDC / power supply 4.5VDC	E
0 to 5VDC / power supply 8 to 14VDC	F
0.5 to 4.5VDC / power supply 8 to 14VDC	G

Special Engineering

Last 4 digits of model code only used when special engineering is required.

TABLE 10 

	Code
Please consult Delta sales engineering for special requirements	TBA

Application & Construction

The D22 Analogue Compact Pressure Transmitters are suitable for measurement of the pressure, underpressure and absolute 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 electronics is placed in a casing with a degree of protection from IP 65 to IP 68, depending on the type of electrical connection applied.

Calibration

Potentiometers can be used to shift the zero position and the range by up to $\pm 10\%$, without altering the settings.

Installation

The transmitter is not heavy, so it can be installed on the installation without additional mounting bracket. When the pressure of steam or other hot media is measured, a siphon or impulse line should be used. The needle valve placed upstream the transmitter simplifies installation process and enables the zero point adjustment or the transmitter replacement.

When the special process connections are required for the measurement of levels and pressures (e.g. at food and chemical industries), the transmitter is provided with a Delta diaphragm seal. Contact Delta Mobrey sales representatives to get a quote for a suitable diaphragm seal.

Technical Data

Hysteresis, repeatability	0,05%	Output signal	4...20 mA, two wire transmission
Response time	<120ms Version B: <30ms		0..10V
Thermal compensation range	-10...80°C	Material of wetted parts	316Lss, Hastelloy C 276, Au
Operating temperature range (ambient temp.)	-40...80°C	Material of casing	304ss, 316Lss
FL electrical connection (Code B)	-40...80°C*	Power supply	output 4..20mA
SGM electrical connection (Code A)	-40...65°C*		8...36 V DC (Ex 9...28 V DC)
<i>*more information available in user 's manual and certificate</i>		Version B:	10.5...36 V DC (Ex 12...28 V DC)
Medium temperature range	-40...130°C	ALW & ALM type connection:	(11...36 V DC)
over 130°C – measurement with use an impulse line or diaphragm seals			output 0..10V 13...30 VDC
CAUTION: The medium must not be allowed to freeze in the impulse line or close to the process connection of the transmitter.		Error due to supply voltage changes	0,005%/ V
		Load resistance	$R[\Omega] \leq \frac{(U_{sup}[V]-8V)}{0,02A}$

Approvals

EUROPEAN DIRECTIVES



ATEX Directive 2014/34/EU

INTRINSICALLY SAFE:

Certificate No.: FTZU 18 ATEX 0143X
EN 60079-0, EN 60079-11, EN 50303

For Zone 0 models (**Refer Table 1 for Enclosure code**)

M1 Ex ia I Ma
II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb
II 1D Ex ia IIIC T110°C Da
II 1/2G Ex ia IIC T4 Ga/Gb (for transmitter with electrical connection ALW, ALM)

FLAMEPROOF:

Certificate No.: KDB 19 ATEX 0030X
EN60079-0, EN 60079-1, EN 60079-31

For Zone 1 models (**Refer Table 1 for Enclosure code**)

II 2G Ex db IIC T6/T5/T4 Gb
II 2D Ex tb IIIC T85°C/T100°C/T120°C Db

GLOBAL CERTIFICATION



IECEX Certified

INTRINSICALLY SAFE:

Certificate No.: IECEX FTZU 18.0023X
IEC 60079-0, IEC 60079-11

For Zone 0 models (**Refer Table 1 for Enclosure code**)

Ex ia I Ma
Ex ia IIC T4/T5/T6 Ga/Gb
Ex ia IIIC T110°C Da
Ex ia IIC T4 Ga/Gb (for transmitter with electrical connection ALW, ALM)

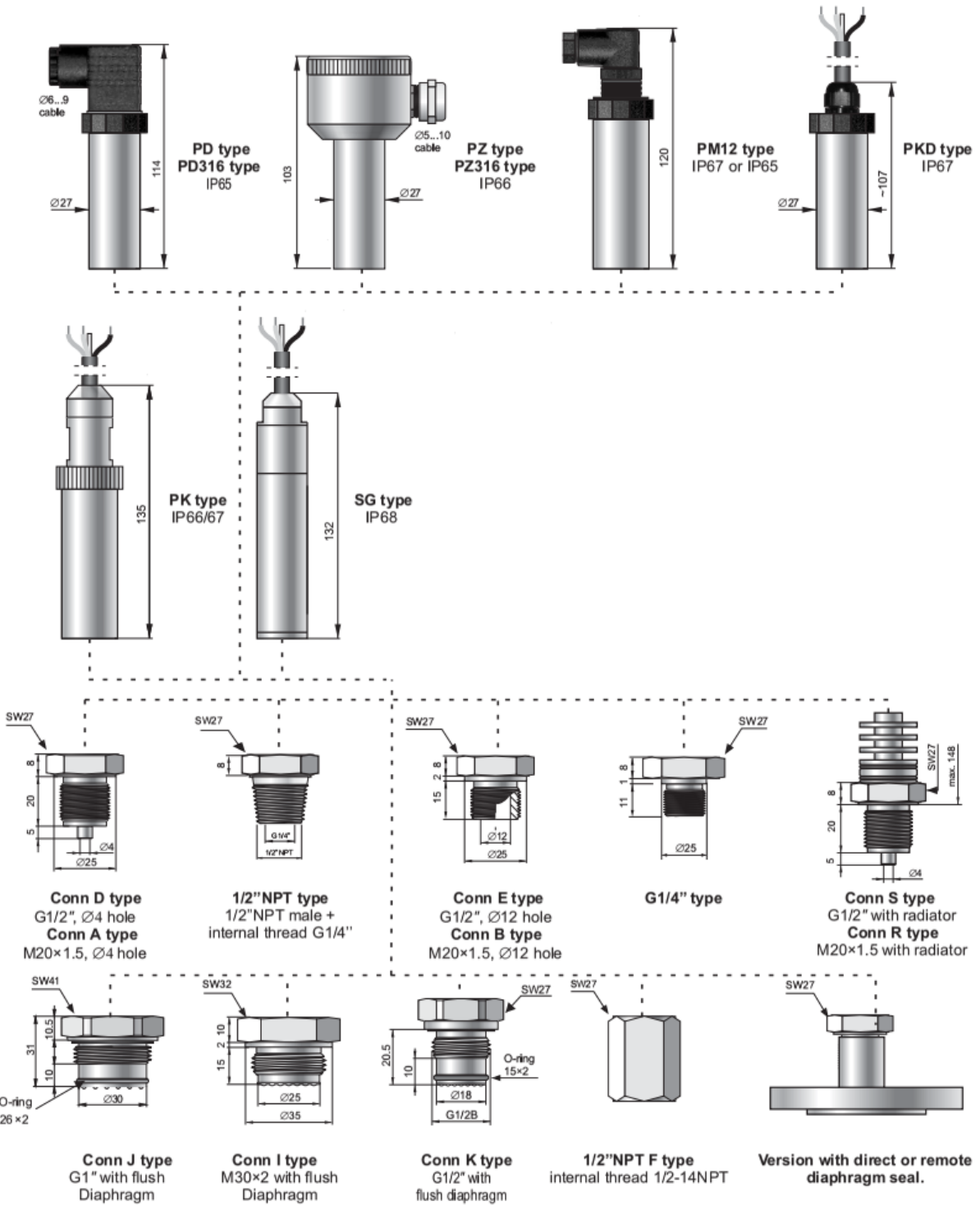
FLAMEPROOF:

Certificate No.: IECEX KDB 19.0005X
IEC 60079-0, IEC 60079-1, IEC 60079-31

For Zone 1 models (**Refer Table 1 for Enclosure code**)

Ex db IIC T6/T5/T4 Gb
Ex tb IIIC T85°C/T100°C/T120°C Db

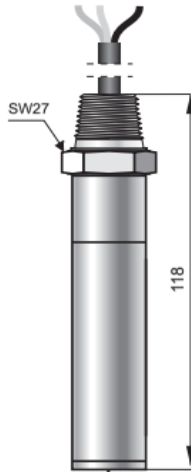
Dimensions



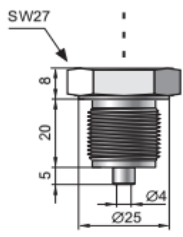
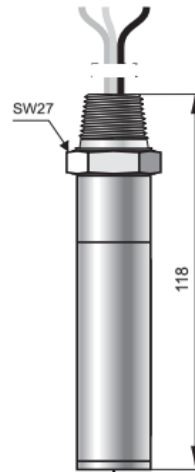
Weight may varies depending on model variant.

Dimensions

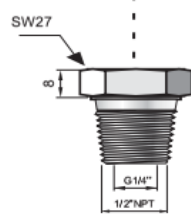
SGM (1/2"NPTM)
cable connection
IP68
(IP66 for gauge pressure <80bar)



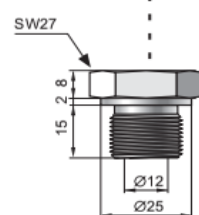
FL (1/2"NPTM)
flying leads
IP68
(IP66 for gauge pressure <80bar)



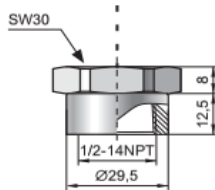
Conn D type
G1/2", Ø4 hole



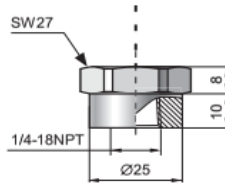
Conn G type
1/2"NPT male +
internal thread G1/4"



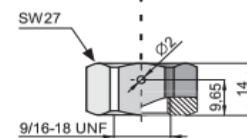
Conn E type
G1/2", Ø12 hole



Conn V type
1/2-14 NPT female



Conn T type
1/4-18 NPT female



Conn U - Autoclave
type F-250-C
(9/16-18 UNF)

WEIGHT

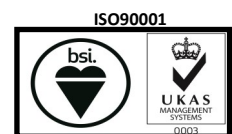
Model	Electrical Entry	Process Connection	Weight
D22	PD type	A	0.26 kg
		B	0.24 kg
	PZ type	A	0.92 kg

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

Delta Mobrey Limited

Riverside Business Park, Dogflud Way, Farnham, Surrey GU9 7SS, UK.

T+44 (0)1252 729140 F+44 (0)1252 729168 E sales@delta-mobrey.com W www.delta-mobrey.com



FM00720

D-Series
Model: D22