Technical **Datasheet**

D Series
SMART Compact Pressure Transmitter
Model: D23

Key **Features**

- Compact design and robust construction.
- 4-20mA output signal.
- Fully HART ® compatible.
- ATEX certified (both protection mode: Intrinsic Safety & Flameproof)
- IECEx Certified Flameproof only (Intrinsic Safety is coming soon)
- 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 is 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:

- D33 SMART Compact Differential Pressure Transmitter
- D21 SMART HART Pressure Transmitter with display

Product **applications**

The D23 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 D23 D-Series is suitable for use in:

- Corrosive atmospheres
- Resistant to chemical attack

How can we **help you?**

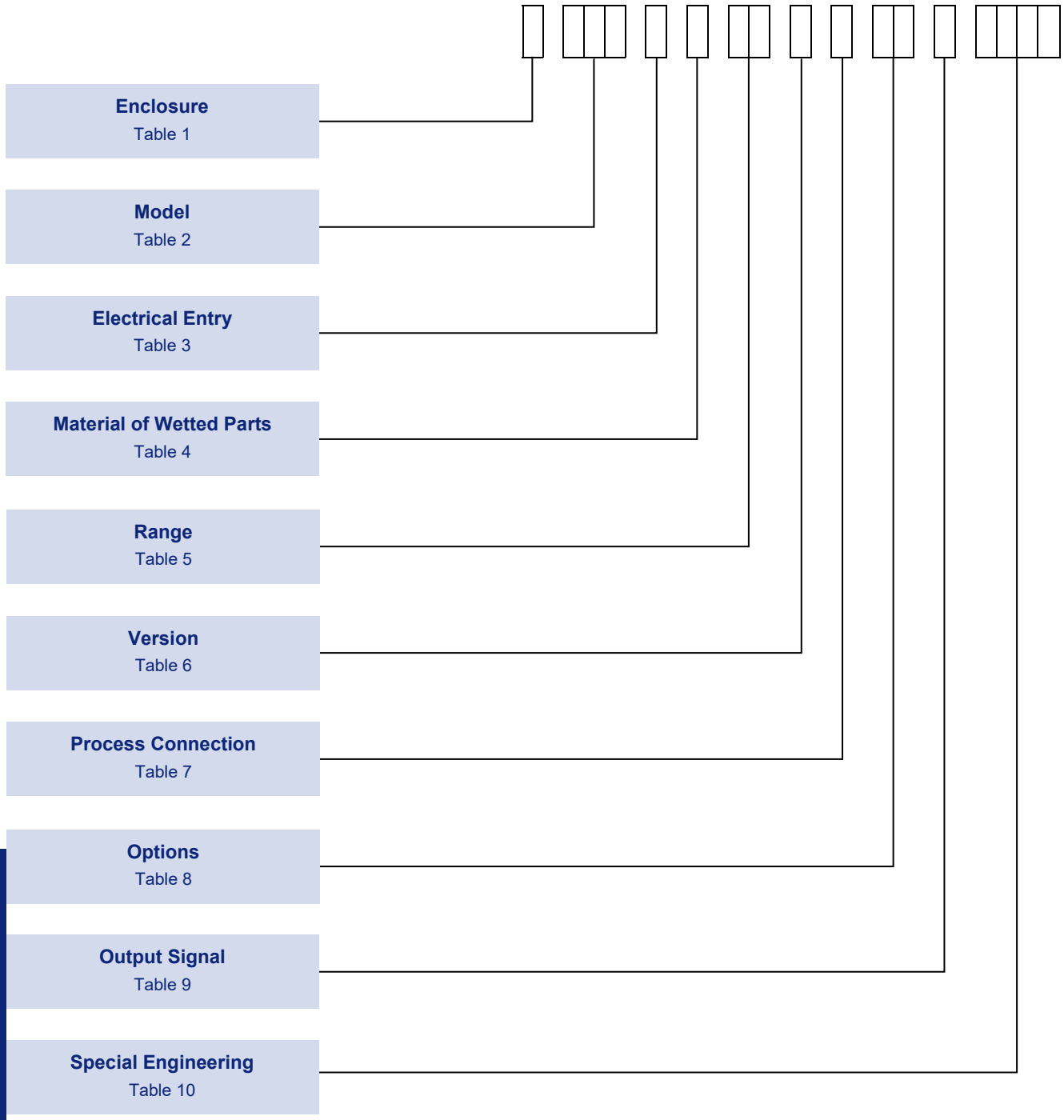
Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on:

+44 (0) 1252 729140

D-Series
Model: D23

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

TABLE 1

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

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

NOTE 3:
Flameproof enclosure available only with electric connection type 8 & A

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**
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**
316L Stainless steel housing, IP68. (Ex ia)	**S**
FLAMEPROOF ENCLOSURES (ZONE 1)	
316L Stainless steel housing, IP68. (Ex d)	**Z**

Model

TABLE 2

	Code
D23 SMART Compact Pressure Transmitter For applications up to 1380 bar. Overpressure limit up to 1600 bar. Refer Table 5.	**D23**

Electrical Entry

TABLE 3

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.

	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**

NOTE: Code 7
Available on Enclosure code Q & S only.
NOTE: Code 8
Available on Enclosure code Q, S & Z only.
NOTE: Code A
Available on Enclosure code Z only.

(Table 3 continued…)	Code
SG type connection, cable 3m length	**7**
SGM type connection, cable 3m length	**8**
FL type connection, thread 1/2" NPTM & cable 2m length	**A**

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)		Minimum set range		Rangeability	Overpressure limit (without hysteresis)	
A0	-100...100 mbar	(-10...10 kPa)	20 mbar	(2 kPa)	10:1	1 bar	(100 kPa)
A2	-15...70 mbar *	(-1,5...7 kPa)	5 mbar	(0,5 kPa)	17:1	0,5 bar	(50 kPa)
C0	-1...1,5 bar	(-100...150kPa)	0,12 bar	(12 kPa)	20:1	4 bar	(400 kPa)
C1	-1…7 bar	(-100…700 kPa)	0,07 bar	(7 kPa)	114:1	14 bar	(1,4 MPa)
C3	-0,5...0,5 bar	(-50...50 kPa)	50 mbar	(5 kPa)	20:1	2 bar	(200 kPa)
D0	0...0,25 bar	(0...25 kPa)	25 mbar	(2,5 kPa)	10:1	1 bar	(100 kPa)
D1	0...1 bar	(0...100 kPa)	50 mbar	(5 kPa)	20:1	2 bar	(200 kPa)
D3	0...2 bar	(0...200 kPa)	100 mbar	(10 kPa)	20:1	4 bar	(400 kPa)
D4	0...7 bar	(0...0,7 MPa)	0,07 bar	(7 kPa)	100:1	14 bar	(1,4 MPa)
E1	0...25bar	(0...2.5MPa)	0,25 bar	(25 kPa)	100:1	50bar	(5 MPa)
E2	0...70 bar	(0...7 MPa)	0,7 bar	(70 kPa)	100:1	140 bar	(14 MPa)
F0	0…160 bar	(0…16 MPa)	1,6 bar	(160 kPa)	100:1	450 bar	(45 MPa)
F1	0...300 bar	(0...30 MPa)	3 bar	(300 kPa)	100:1	450 bar	(45 MPa)
F5	0...600 bar	(0...60 MPa)	6 bar	(600 kPa)	100:1	1200 bar	(120 MPa)
G0	0…1000 bar	(0…100 MPa)	10 bar	(1 MPa)	100:1	1200 bar	(120 MPa)
H0	0...1,3 bar abs	(0...130 kPa abs)	100 mbar abs	(10 kPa abs)	13:1	2 bar	(200 kPa)
H1	0...7 bar abs	(0...0,7 MPa abs)	100 mbar abs	(10 kPa abs)	70:1	14 bar	(1,4 MPa)
J0	0...25 bar abs	(0...2,5 MPa abs)	0,25 bar abs	(25 kPa abs)	100:1	50 bar	(5 MPa)
J1	0...70 bar abs	(0...7 MPa abs)	0,7 bar abs	(70 kPa abs)	100:1	140 bar	(14 MPa)

**only for transmitters without diaphragm seal.*

Version

TABLE 6

	Code
Applies when no option is required.	**0**
Extended thermal compensation range –40 to +80°C	**C**

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	**B**
G1/2" (male) with Ø4mm hole	**D**
G1/2" (male) with Ø12mm hole	**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**

Options

TABLE 8

Combination of more than one option is available.

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

Output Signal

TABLE 9

Note: For the constructions certified for Hazardous area, the instruments are supplied as standard with ATEX marking on the label. The instrument will be supplied with nameplate marked according to the selected code on Table 9,

	Code
4 to 20mA (Weatherproof or Hazardous Area with ATEX marking)	**O**
4 to 20mA (Hazardous Area with IECEx marking)	**6**

Special Engineering

TABLE 10

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

	Code
Please consult Delta Mobrey sales engineering for special requirements	**TBA**

Application & Construction

The D23 SMART Pressure Transmitters are suitable for measurement of the pressure, under pressure 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 communication standard for data interchange with the transmitter is the HART protocol.

Communication with the transmitter is carried out with:

– a DKAP 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-mobrey.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 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. The transmitter's electrical connections should be performed with twisted cable. The place for the communicator should be assigned before the communicator installation.

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
(0,1% for ranges A0, A2)
max. ±0,25% (FSO) in the whole compensation range
(0,4% for ranges A0, A2)

Thermal compensation range -25...80°C
-40...80°C – special version

Response time 16..230ms (programmable)

Additional electronic damping 0...30 s

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

Electrical parameter

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

Output signal 4...20 mA + Hart 5, two wire transmission

Load resistance $R\ [\Omega] \leq \frac{U_{sup}\ [V] - 7.5V}{0.0225A}$

Resistance required for communication min 240 Ω

Materials

Wetted parts and diaphragms: 316Lss, Hastelloy C 276, Au

Casing: 304ss
Optional: 316ss

Operating conditions

Operating temperature range (ambient temp.)
-40...85°C
Ex version -40…80°C

CAUTION: the medium must not be allowed to freeze in the impulse line or close to the process connection of the transmitter

Medium temperature range -40...120°C
over 120°C – measurement with the use of impulse line or diaphragm seals

Approvals

GLOBAL CERTIFICATION

IECEx Certified

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

INTRINSICALLY SAFE:
Certificate No.: Coming soon for intrinsically Safe version
IEC 60079-0, IEC 60079-11

EUROPEAN DIRECTIVES

ATEX Directive 2014/34/EU

INTRINSICALLY SAFE:
Certificate No.: KDB 14ATEX0121X
EN 60079-0, EN 60079-11, EN 60079-26, EN 50303

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

I M1 Ex ia I Ma
II 1/2G Ex ia IIC T4/T5/T6 Ga/Gb
II 1D Ex ia IIIC T105°C Da

FLAMEPROOF:
Certificate No.: KDB 19 ATEX0030X

EN 60079-0, EN 60079-1, EN 60079-31

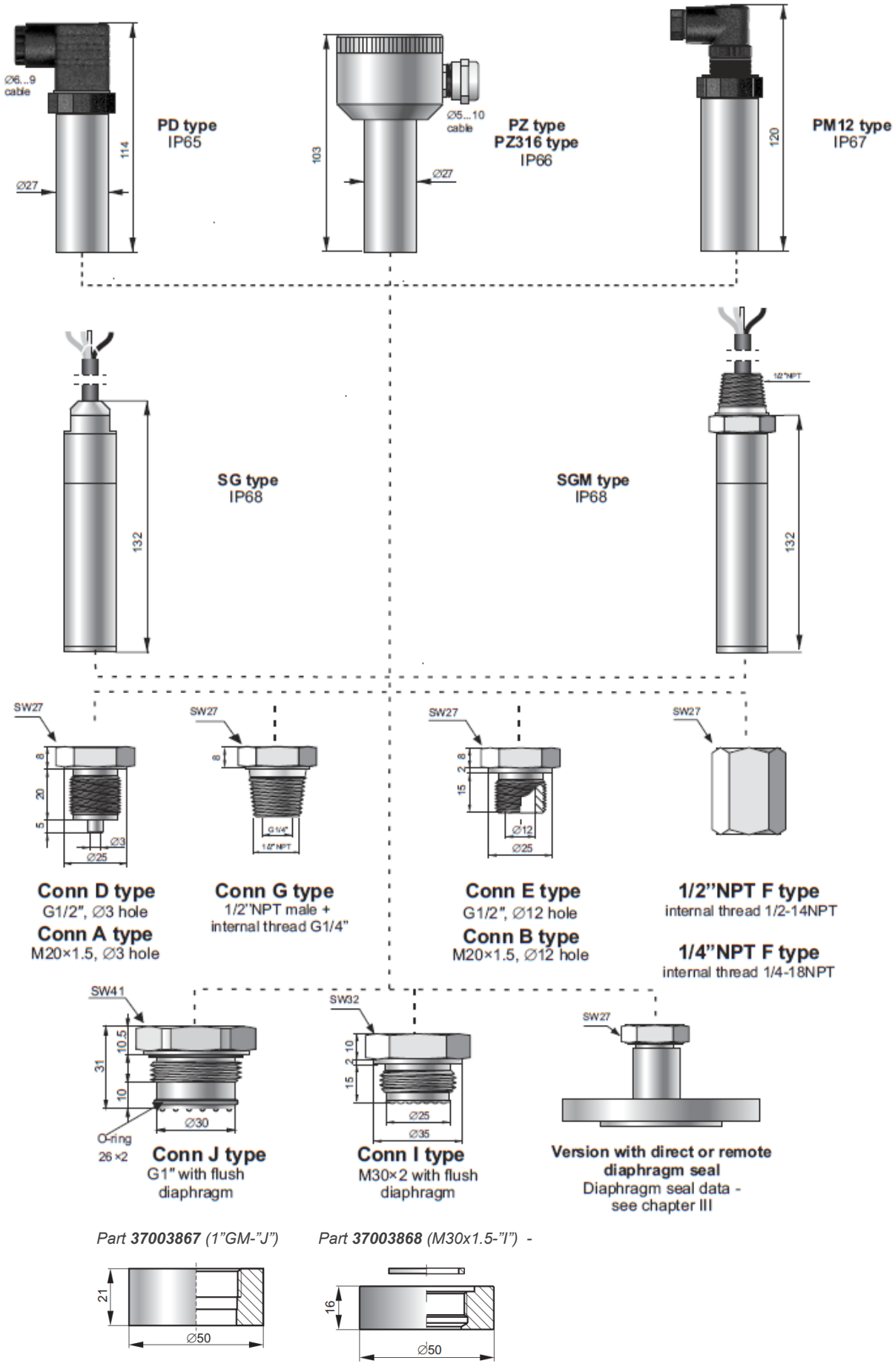
For Zone 1 models **(Refer Table 1 for Enclosure code)**

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

EMC Directive 2014/30/EU
Conformity assessment procedure: module A
The following standards were applied: EN 61326-1:2013; EN61326-2-3:2013

Restriction of hazardous substances (RoHS 2) 2011/65/EU
Compliant to RoHS.
The folloing stabdard was applied: EN IEC 63000:2018

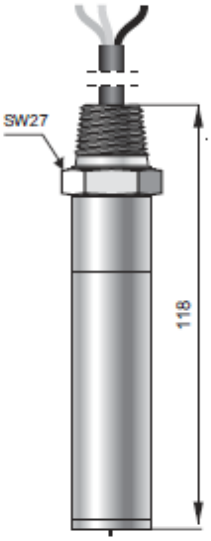
Dimensions



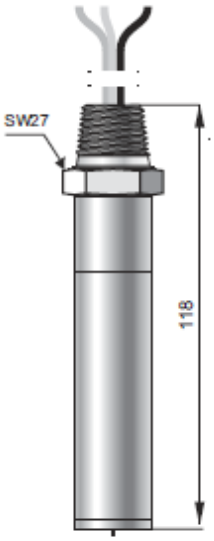
D-Series
Model: D23

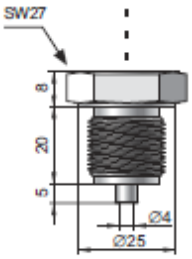
Dimensions

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

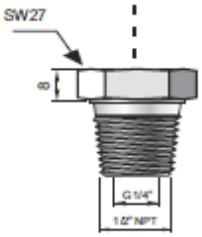


FL (1/2"NPTM)
flying leads
IP68
(IP66 for gauge pressure <80bar)

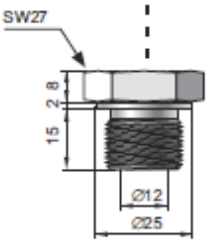




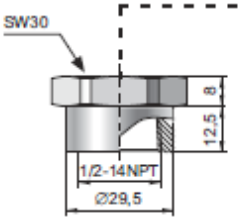
Conn D type
G1/2", Ø4 hole



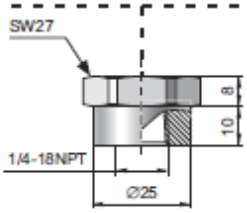
Conn G type
1/2"NPT male +
internal thread G1/4"



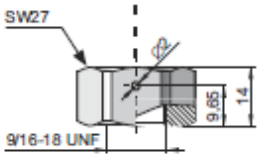
Conn E type
G1/2", Ø12 hole



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)

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