

Technical Datasheet



Sentry Series Differential Pressure Switch

Models: D02 & D03

Key Features

- SPDT & DPDT Switch Outputs
- Aluminium Epoxy Coated Weatherproof Enclosure IP66/NEMA4
- 316 Stainless Steel Wetted Parts as Standard.
- Field Adjustable Set-Points Against a Reference Scale
- Pressure Ranges up to 10bar (160psi)
- Maximum Working Pressure up to 250bar (3500psi)
- Safety Vented Design as Standard

Series Overview

The Sentry Series offers exceptional performance and high build quality in a simple, safe and cost-effective package.

- Performance is assured by repackaging Delta's well proven sensor technologies in a new, simple, one-piece enclosure.
- Commissioning is made simple by the inclusion of a hinged lid that is held in place by a single captive screw.
- Safety is maintained by a vent that prevents the enclosure becoming pressurized in the event of a sensor being damaged.
- Cost is minimised through the selection of common standard options although, as with all Delta products, a variety of optional extras are available to tailor the product to specific needs.

Other products in the series include:

- Pressure Switches: Models P02 & P03
- Temperature Switches: Models T02 & T03



Product applications

The Sentry Series is suitable for a wide range of applications in:

- Process plants
- OEM equipment

The choice of models available ensures that the Sentry Series is suitable for use in:

- General purpose applications

How can we help you?

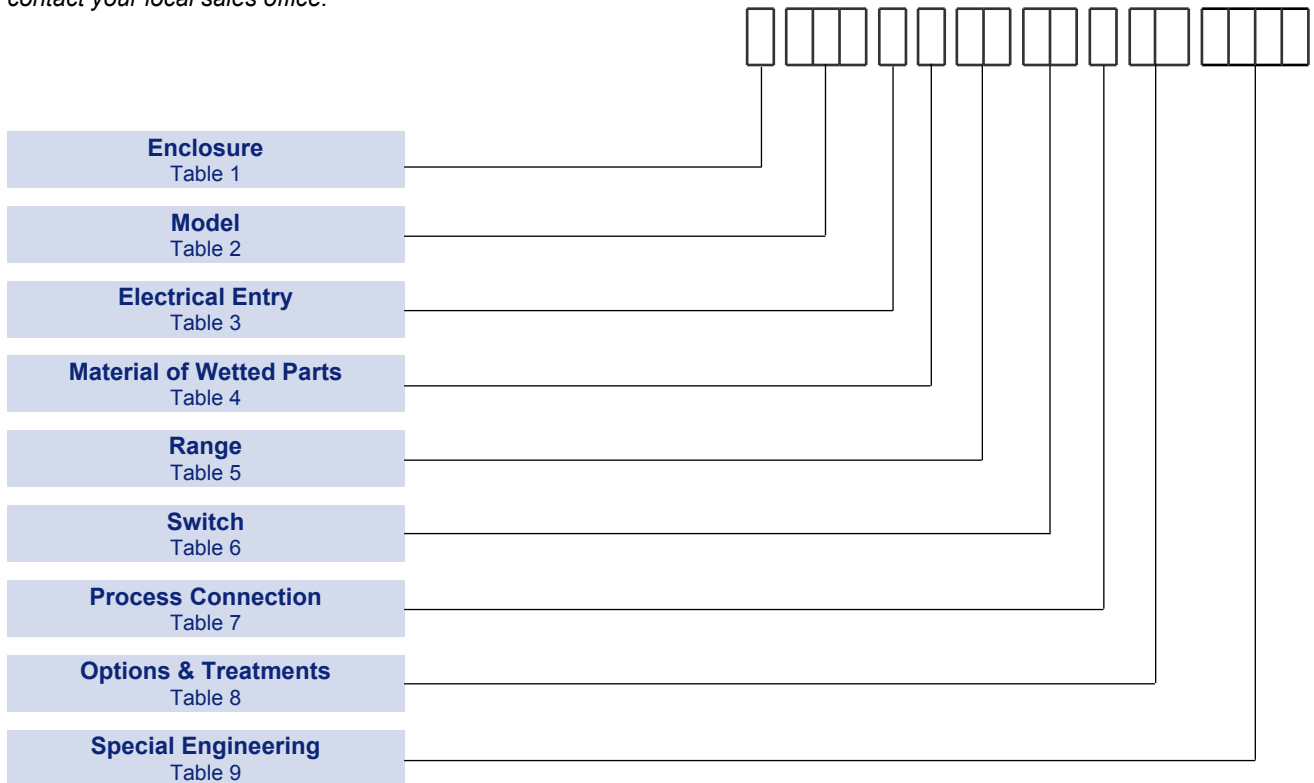
Delta Controls' offers fast, efficient and knowledgeable support when and where you need it. Please visit our web site at www.delta-controls.com to find your local support centre or call us on:

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Sentry Series
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How to order

Switches 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 switch that best suits your needs, please contact your local sales office.



NOTE: Options shaded in the following tables are the most common options and are available on the quickest lead-times and at the lowest cost.

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


Technical Specification

Sentry Series
Models: D02 & D03

Accuracy:	Set point repeatability ± 1% of span at 20°C / 68°F
Storage Temperature:	-40 to +60°C / -40 to +140°F
Ambient Temperature:	-25 to +60°C / -13 to +140°F
Maximum Process Temperature:	Subject to appropriate installation practice, the component parts with stand up to +60°C (+140°F).
Enclosure classification:	IP66 / NEMA 4
Switch output:	SPDT or DPDT snap action microswitch (standard) Environmentally sealed and hermetically sealed (optional)
Electrical rating:	See Table 6
Process Connection:	Rc ¼ (¼ BSP Tr INT) to ISO 7/1 (standard) ¼ -18NPT INT (optional) Others via adapter (optional)


Weight (approx):	<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Model</th> <th>BC</th> <th>BD/CB/CE</th> <th>DC/DD/EA</th> </tr> <tr> <td>D02</td> <td>4.0kg/8.8lb</td> <td>6.3kg/13.9lb</td> <td>4.2kg/9.3lb</td> </tr> <tr> <td>D03</td> <td>n/a</td> <td>8.6kg/19lb</td> <td>6.5kg/14.3lb</td> </tr> </table>	Model	BC	BD/CB/CE	DC/DD/EA	D02	4.0kg/8.8lb	6.3kg/13.9lb	4.2kg/9.3lb	D03	n/a	8.6kg/19lb	6.5kg/14.3lb
Model	BC	BD/CB/CE	DC/DD/EA										
D02	4.0kg/8.8lb	6.3kg/13.9lb	4.2kg/9.3lb										
D03	n/a	8.6kg/19lb	6.5kg/14.3lb										

Enclosure

TABLE 1 

WEATHERPROOF ENCLOSURE	Code
General Purpose The basic enclosure is die-cast in aluminium, epoxy painted, with weather protection not less than NEMA type 4, IP66.	W

Models

TABLE 2 

D02
 For applications up to 10 bar (160 psi), maximum working pressure 110 bar (1600 psi).

D03
 For applications up to 10 bar (160 psi), maximum working pressure 250 bar (3500 psi).

		Code
Differential Pressure	Diaphragm Operated Standard Pressure	D02
Differential Pressure	Diaphragm Operated High Overload Pressure	D03

Electrical Entry

TABLE 3 

Description	Code
M20 x 1.5 Internal ISO Thread	0
½ NPT Internal Thread	2

Material of Wetted Parts

TABLE 4 

Ranges		Code
BD-EA	316 Stainless steel diaphragm. All other wetted parts fully austenitic 300 series stainless steel, PTFE and Nitrile seals.	I
BD-EA	For wetted parts required to conform with Sour Gas or Sour Crude, applications as laid down in NACE standard MR-01-75	L
BC	Nitrile diaphragm and seal with aluminium flanges	D

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Setting Ranges

The instruments will sustain, without loss of performance, a continuous forward over pressure equal to the maximum static pressure and/or full Vacuum

NOTE: For pressure difference switches maximum working pressure (Pmax) and maximum static/line pressure mean the same.

* Forward overpressure is limited to 500 mbar


Maximum static/line pressure applied in the reverse direction (i.e., to low pressure connection with high pressure connection open to atmosphere) will be contained without failure. The diaphragm on ranges BD to EA (BY to EH) will however have been distorted, leading to a degradation of performance and a shortening of the service life.

TABLE 5 

Model	Range				Deadband**	
	mbar/bar	Code	in H ₂ O/psi	Code	mbar	in H ₂ O/psi
D02	-12.5 to +12.5	BC*	-5.0 to +5.0	BU*	3	1.2
D02 (D03)	6 to 40	BD (0D)	2.5 to 16	BY (0Y)	5	2.0
D02 (D03)	25 to 160	CB (0B)	10 to 64	CS (IS)	16	6.4
D02 (D03)	100 to 600	CE (0E)	1.5 to 8.5	CK (0K)	22	0.3
D02 D03	0.4 to 2.5	DC	6 to 40	DP	120	1.7
D02 D03	0.6 to 4	DD	10 to 60	DT	210	3.0
D02 D03	1.6 to 10	EA	25 to 160	EH	420	6.1

** Deadband figures are typical for Code 10 SPDT 15A microswitches (see table 6) with falling set-points at mid-scale. Deadbands for other microswitch options may differ. Due to manufacturing tolerances the figures quoted are for guidance only. Should the differential be critical for specific applications, our engineers should be consulted before ordering.

Switch Options

TABLE 6 

UL/CSA Rating (RESISTIVE) §SEE NOTE	IEC 947-5-1/EN 60947-5-1 RATING							Contact	Code
	Designation & Utilization Category	Rated operational current Ie (A) at rated operational voltage Ue	U _i	U _{imp}	VA Rating				
						Make	Break		
5 A @110/250V AC Light Duty for AC only	AC14 D300	0.6/0.3 A @ 120/240V AC	250V	0.8kV	AC	432	72	SPDT	00
	DC13 R300	0.22/0.1A @ 125/250V DC			DC	28	28	DPDT	01
1 A @ 125V AC & §100 mA @ 30V DC gold alloy contacts for low voltage switching	1 A @ 125 VAC RESISTIVE (IEC 1058-1/EN 61058-1)							SPDT	04
								DPDT	05
§ 5 A @ 125/250V AC & 5 A @ 30V DC Environmentally sealed	6 A @ 250 VAC (EN 61058)							SPDT	08 [^]
								DPDT	09 [^]
15 Amp @ 125/250/ 480 V AC & 2 A @ 30V DC General purpose precision	AC14 D300	0.6/0.3 A @ 120/240V AC	250V	0.8kV	AC	432	72	SPDT	10
	DC13 R300	0.22/0.1A @ 125/250V DC	250V	0.8kV	DC	28	28	DPDT	11
0.1 A @ 125/250V AC and 30V DC Environmentally sealed with gold contacts	0.1 A @ 250 VAC (EN 61058)							SPDT	0G [^]
								DPDT	0H [^]
5 A @ 250V AC and 2 A @ 30V DC Hermetically sealed. Gold plated silver contacts.	AC14 D300	0.6/0.3 A @ 120/240V AC	250V	0.5kV	AC	432	72	SPDT	H2 [^]
	DC13 R300	0.22/0.1 A @ 125/250V DC			DC	28	28	DPDT	H3 [†] H6 [‡]

† 2 Single pole, double throw, simultaneous falling under pressure
 ‡ 2 Single pole, double throw, simultaneous rising under pressure
 ^Terminal Block supplied as standard.
 Note: For Low energy circuits e.g 30V and up to 100mA, we recommend using gold alloy contact switches
 U_i = rated insulation voltage: U_{imp} = rated impulse to withstand voltage across contacts.
 In the absence of any verification by UL/CSA the microswitch § manufacturer's rating is stated in **italics and bold**.
 If in doubt seek guidance from the factory.

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Process Connection

TABLE 7 

	Code
Rc ¼ (¼ BSP Tr INT) to ISO 7/1: Direct	A
¼ NPT F: Direct	F

Options & Treatments

TABLE 8 

	Code
Stainless steel permanently fixed tags	20
Stainless steel wired on tag	30
Applies when – no option is required and selection is made from special engineering (see table 9)	00

Special Engineering

TABLE 9 

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

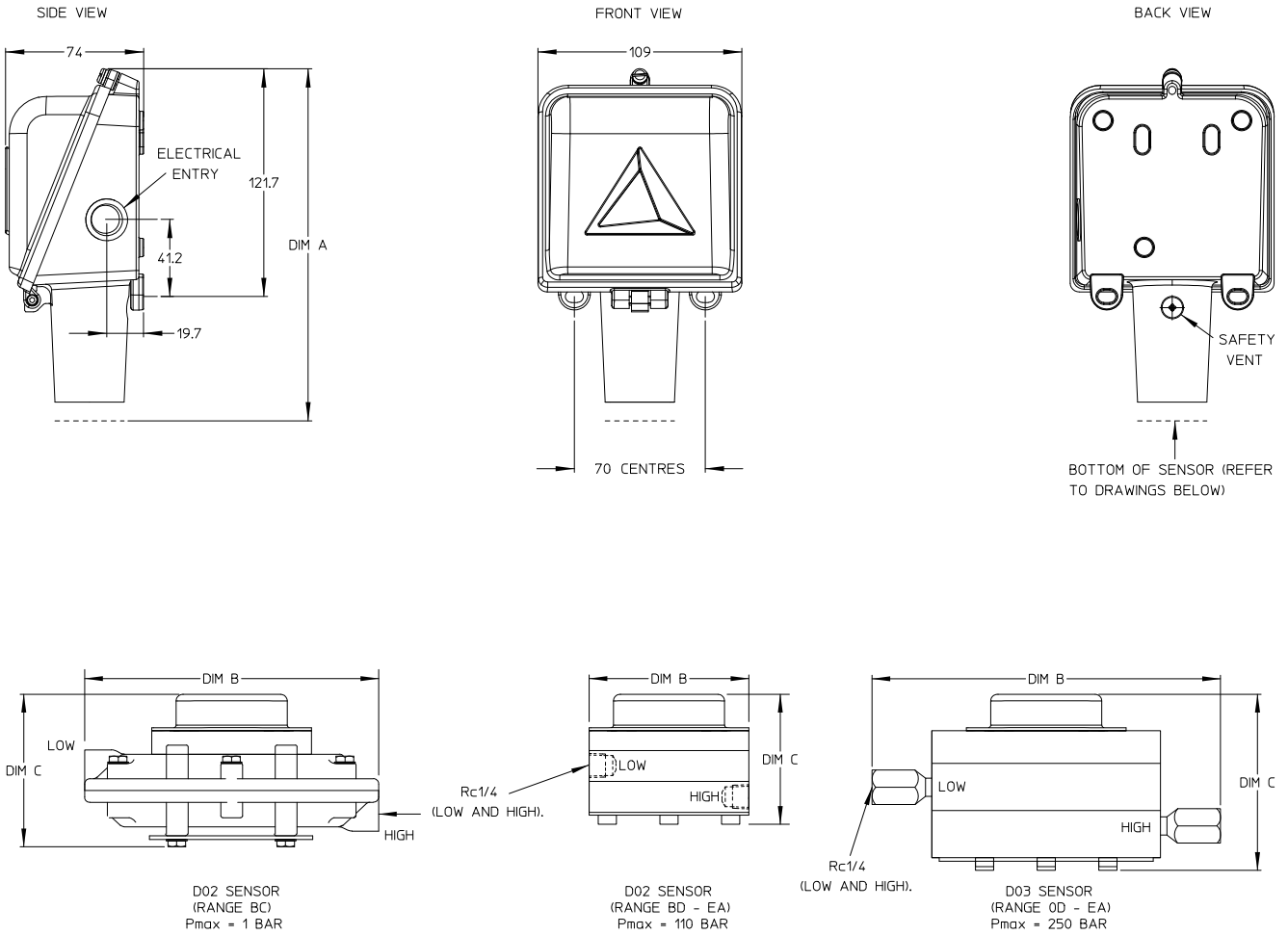
	Code
Please consult Delta sales engineering for special requirements	TBA

Approvals

CE Low voltage Directive (LVD) 2006/95/EC.
Compliant to LVD

Pressure Equipment Directive 97/23/EC:
This product has a process connection size <=DN25 and is therefore categorised as sound engineering practice under Cat 3.3 and therefore will not be CE marked under this directive or be accompanied by a declaration of conformity. It may however be CE marked where other directives have been applied e.g LVD.

Dimensions



Model	Range	DIM A	DIM B	DIM C
D02	BC	263	162	84
	BD - CE	251	114	72
	DC - EA	250	88	72
D03	OD - OE	276	192	97
	DC - EA	275	166	97

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