Technical **Datasheet**

delta-controls

Sentry Series
Temperature Switch
Models: T01 & T02

Key **Features**

- SPDT & DPDT Switch Outputs
- Aluminium Epoxy Coated Weatherproof Enclosure IP66/NEMA4X
- ATEX / IECEx Intrinsically Safe option
- 316 Stainless Steel Wetted Parts as Standard.
- Field Adjustable Set-points Against a Reference Scale
- Temperature Ranges up to 350°C (660°F)
- Maximum Working Temperature up to 360°C (680°F)
- Safety Vented Design as Standard
- Suitable for use in SIL 2 safety related systems

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
- Zone 0 Hazardous Areas
- SIL 2 safety related systems

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: Model P0
- Differential Pressure Switches: Model D0

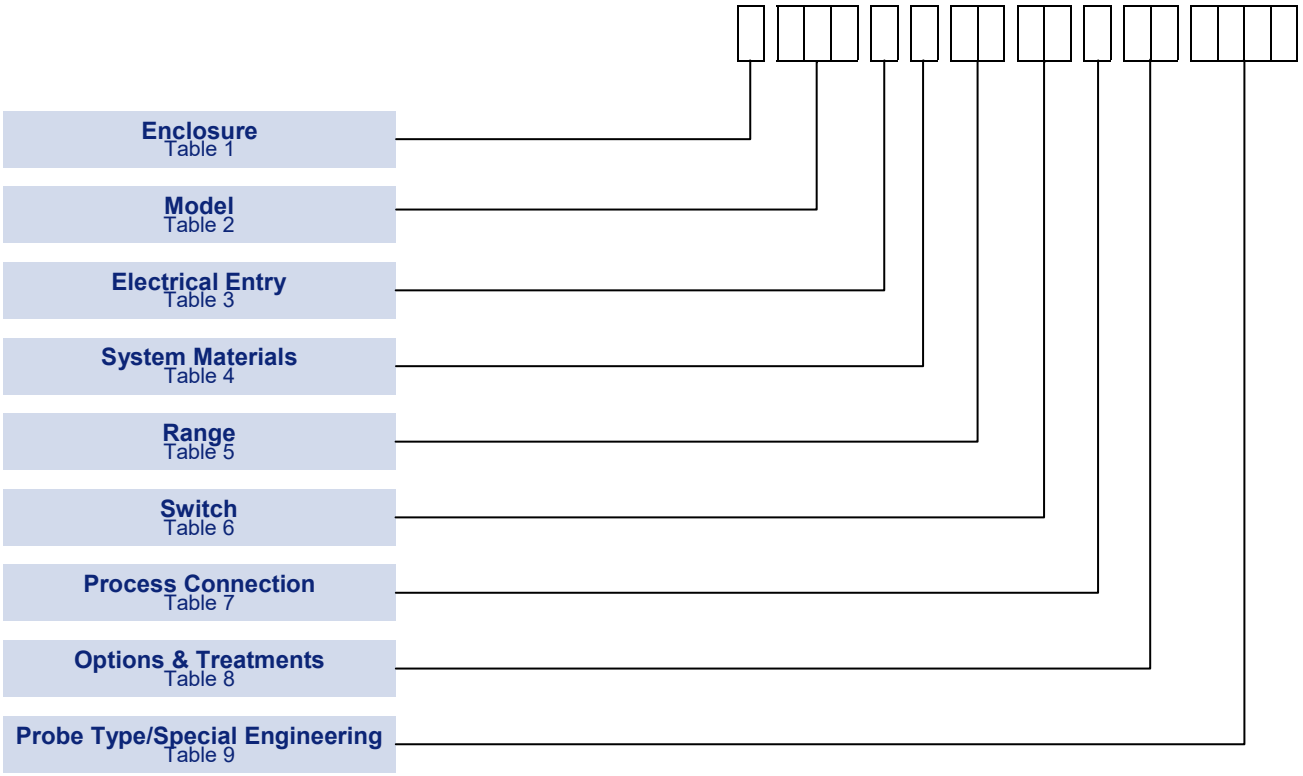
How can we **help you?**

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

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: T01 & T02

Accuracy:	Set point repeatability ± 1% of span at 20°C / 68°F
Storage Temperature:	-40 to +60°C / -40 to +140°F
Ambient Temperature:	-30 to +60°C / -22 to +140°F
Maximum Process Temperature:	See Table 5
Enclosure classification:	IP66 / NEMA 4X / Intrinsically Safe Ex ia
Switch output:	SPDT or DPDT snap action microswitch (standard) Hermetically sealed (optional)
Electrical rating:	See Table 6
Process Connection:	1/2” NPT M
Approximate Weight:	0.9kg - 1.2kg depending on model

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 4X, IP66.	W
Intrinsic Safety: Ex ia As per General Purpose enclosure above but ATEX and IECEx approved for use in Zone 0 hazardous locations. II 1GD Ex ia IIC T5 / T6 Ga (-60°C ≤ Ta ≤ + 80°C) / (-25°C ≤ Ta ≤ + 60°C) Ex ia IIIC T135°C Da (-60°C ≤ Ta ≤ + 80°C)	5

Models

T01
For applications up to 100°C (212° F), maximum working temperature 110°C (230°F).

T02
For applications up to 350°C (660° F), maximum working Temperature 360°C (680°F).

TABLE 2

		Code
Temperature	Rigid Stem **Vapour Pressure**	T01
Temperature	Flexible thermal system **Vapour Pressure**	T02

Electrical Entry

TABLE 3

Description	**Code** (Single Entry)	**Code** (Dual Entry)
M20 x 1.5 Internal ISO Thread	0	5
½ NPT Internal Thread	2	4

System Materials

TABLE 4

	Code
316 Stainless steel	2

Setting Ranges

TABLE 5

*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 are shown in Table 10.

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.

Availability		Range	Tmax	Deadband*	Code
T01	T02	°C	°C	°C	
✓	✓	-40 to +60	70	4	**H1**
✓	✓	10 to 100	110	4	**K4**
×	✓	50 to 120	130	4	**L4**
×	✓	120 to 220	230	4	**S4**
×	✓	150 to 270	280	5	**TH**
×	✓	230 to 350	360	6	**V9**

Availability		Range	Tmax	Deadband*	Code
T01	T02	°F	°F	°F	
✓	✓	-40 to +140	158	7	**HA**
✓	✓	50 to 212	230	7	**KC**
×	✓	120 to 250	270	7	**LB**
×	✓	250 to 430	450	7	**SE**
×	✓	300 to 518	540	9	**TQ**
×	✓	450 to 660	680	11	**V0**

Switch Options

TABLE 6

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	0.6/0.3A @ 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
15 Amp @ 125/250/ 480 V AC & 2 A @ 30V DC General purpose precision	AC14 D300	0.6/0.3A @ 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
5 A @ 250V AC and 2 A @ 30V DC Hermetically sealed. Gold plated silver contacts.	AC14 D300	0.6/0.3A @ 120/240V AC	250V	0.5kV	AC	432	72	SPDT	H2^
	DC13 R300	0.22/0.1A @ 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
Ui = rated insulation voltage: Uimp = rated impulse to withstand voltage across contacts.
In the absence of any verification by CSA the microswitch § manufacturer's rating is stated in ***italics and bold***.
If in doubt seek guidance from the factory.

Process Connection

TABLE 7

	Code
½ - 14 NPT EXT: Sliding Gland	J

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

Probe Type and/or Special Engineering

TABLE 9

If a different probe length or any other non-standard options are required, the last 4 digits will consist of a special engineering code issued by Delta.

Probe Type	Capillary Length	Sensing Bulb Length	Bulb diameter	Code
Rigid Stem	n/a	81mm / 3.2”	9.5mm / 3/8”	R216
Flexible	2m / 6.5’	81mm / 3.2”	9.5mm / 3/8”	S020
Please consult Delta sales engineering for special requirements				TBA

The rigid stem version (code R216) has a sliding gland process connection for mounting via a thermowell. Material of probe is 316 stainless steel.

The flexible capillary version (code S020) comprises an armoured capillary attached to the sensing bulb. A sliding compression gland process connection is fitted to the capillary to enable various depths of thermowell to be accommodated. All parts of the thermal system are in 300 series stainless steel with the capillary and sensing bulb in 316 stainless steel.

Performance Data

TABLE 10

°C Units

Due to manufacturing tolerances the figures quoted in these tables are for guidance only. Should the differential be critical for specific applications our engineers should be consulted prior to ordering.

Range		T_{max}	Microswitch - Option Switching Differential °C							
Code	°C	°C	00	01	10	11	04	05	H2	H3/H6
H1	-40 to +60	70	1.5	2.5	See Table 5	4	1.5	3	8	10
K4	10 to 100	110								
L4	50 to 120	130								
S4	120 to 220	230								
TH	150 to 270	280								
V9	230 to 350	360								

°F Units

Range		T_{max}	Microswitch - Option Switching Differential °F							
Code	°F	°F	00	01	10	11	04	05	H2	H3/H6
HA	-40 to +140	158	2.7	4.5	See Table 5	7.2	2.7	5.4	14.4	18
KC	50 to 212	230								
LB	120 to 250	270								
SE	250 to 430	450								
TQ	300 to 518	540								
V0	450 to 660	680								

Approvals

EUROPEAN DIRECTIVES

Low voltage Directive (LVD) 2014/35/EU.
Compliant to LVD

ATEX Directive 2014/34/EU

INTRINSICALLY SAFE

Certificate No. Baseefa11ATEX0203
EN 60079-0, EN 60079-11

For Zone 0 models **(Enclosure code W/5, see Table 1)**
No. Baseefa11ATEX0203/1X

II 1GD Ex ia IIC T5 / T6 Ga (-60°C ≤ Ta ≤ +80°C) / (-25°C ≤ Ta ≤ +60°C)
Ex ia IIIC T135°C Da (-60°C ≤ Ta ≤ +80°C)

GLOBAL CERTIFICATION

INTRINSICALLY SAFE

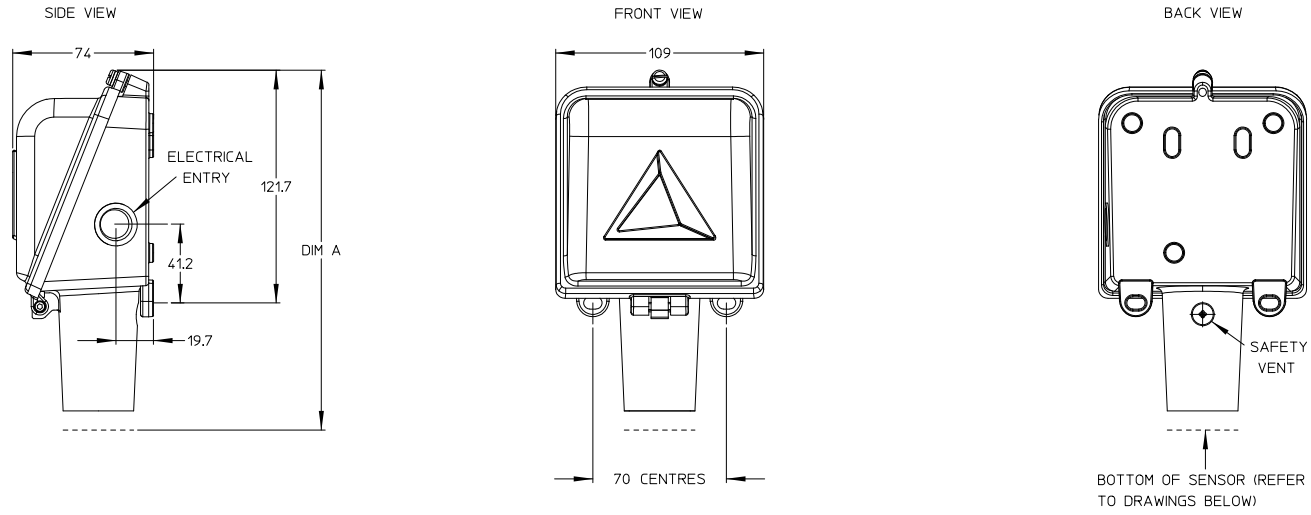
Certificate No. IECEx BAS 11.0104X
IEC 60079-0, IEC 60079-11

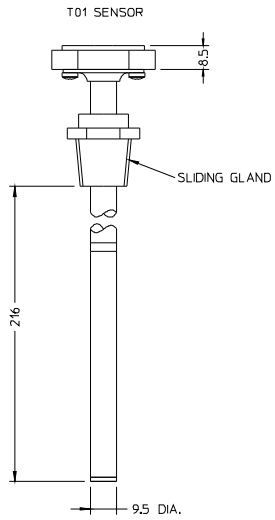
Ex ia IIC T5 / T6 Ga (-60°C≤Ta≤+80°C) / (-25°C≤Ta≤+60°C)
Ex ia IIIC T135°C Da (-60°C≤Ta≤+80°C)

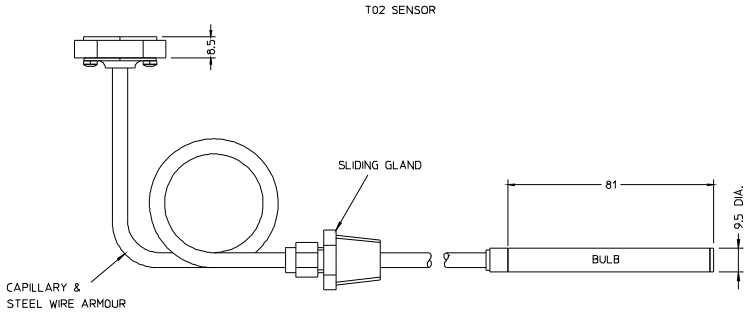
Functional Safety Certified

Meets the requirements of IEC 61508-2 for use in SIL 2 safety related systems
Certificate No. Sira FSP 12015/01

Dimensions







Model	Probe Code	DIM A
T01	R216	187mm
T02	S020	187mm

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