

## Performance Bellows Operated Pressure Switches **200 Series**

201 / 2 / 3  
281  
Issue N

- Precision stainless steel mechanism for arduous atmospheres and high humidity.
- Set point adjustable over whole range against calibrated scale with tamperproof adjuster.
- Precise and accurate operation guaranteed by use of hydraulic formed bellows, or capsule stack.
- Ranges available up to 75 Bar (1,000 psi)
- Weatherproof and Flameproof models EEx d IIC - ATEX.
- NACE MR-01-75 compatibility.
- Models for fixed switching differential, adjustable differential and HI-LO operation.
- Safety vented or blow out device as standard.
- Hermetically sealed microswitch option.

### Performance **characteristics**

#### Enclosure

- IP66 Protection

#### Wetted parts options

- 316 Stainless Steel bellows.
- Nickel Alloy (Monel) suitable for NACE MR-01-75.

#### Standard Electrical ratings – Refer to Table 6

- 5 Amps – general purpose, environmentally sealed, hermetically sealed.
- 1 Amp with gold contacts.

#### Process connection

- Rc ¼ (BSP), ¼ NPT Internal, ½ NPT Internal & ½ NPT External.

#### Unit weight

- Between 3.1kg – 9.4kg (6.8lb – 20.7lb)

#### Accuracy

- Set point repeatability  $\pm 0.5\%$  of span at 20 °C / 68 °F ambient.



### Product **applications**

The 201 is suitable for a wide range of applications in many Industry sectors:

- Oil & Gas
- Chemical
- Petrochemical
- Refining
- Power
- Food Industry

The choice of models available ensures that the 201/2/3/281 is suitable for use in:

- Corrosive atmospheres
- Resistant to chemical attack

### How can we **help you?**

Delta Controls' range of reliable pressure and temperature measurement instruments can be customised to meet individual requirements. For technical advice or to discuss your application please contact us on +44 (0) 20 8939 3500

## Enclosure

TABLE 1



### FINISH

All enclosures except Type A are finished in light grey epoxy resin paint. Special finishes to order.

### INTRINSIC SAFETY

Because of the low voltages and currency of I.S. circuits, we recommend using gold and/or sealed contacts.

**NOTE:** Enclosure Codes W & A with range BC, C6, E1 and E8 (BU, CP, E4, E7) have weather protection reduced to IP54. In the interests of reliability not all enclosures are available with all wetted parts materials. See Table 4.

Temperatures in Table 1 refer to limitations for certified enclosures. See **TECHNICAL DATA**.

| WEATHERPROOF ENCLOSURES                                                                                                                                                                                                                                                                                      | Code |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>General Purpose</b><br>The basic enclosure is pressure die-cast in zinc alloy, offering weather protection not less than NEMA 4 + 13/IP66.                                                                                                                                                                | W    |
| <b>For Aggressive Atmospheres</b><br>Investment cast enclosure in austenitic stainless steel with weather protection not less than NEMA 4X + 13/IP66.                                                                                                                                                        | A    |
| FLAMEPROOF ENCLOSURES CATEGORY 2 (ZONE 1)                                                                                                                                                                                                                                                                    |      |
| <b>EExd IIC T6 (-60 to + 40°C), T4 (-60 to +80°C) II 2 G D</b><br>Gravity die-cast enclosure in aluminium-silicon alloy, certified to CENELEC EN50 014 and EN50 018.  II 2 G D<br>Suitable for outdoor use, IP66 / NEMA 4 | H    |
| IECEx ExdIIC certified to IEC 60079-0 and IEC 60079-1                                                                                                                                                                                                                                                        |      |
| <b>EExd IIC T6 (-60 to + 40°C), T4 (-60 to +80°C) II 2 G D</b><br>As Code H, but sand cast in high quality grey iron.  II 2 G D                                                                                           | K    |
| IECEx ExdIIC certified to IEC 60079-0 and IEC 60079-1                                                                                                                                                                                                                                                        |      |
| EExn ENCLOSURES CATEGORY 3 (ZONE 2)                                                                                                                                                                                                                                                                          |      |
| <b>Type of Protection EExn II T6 (-20 to +60°C) II 3 GD Ex tD A22 T23°C</b><br>Limited service conditions (see Technical Specifications)<br>As code 'W' but EEx n to EN50021.<br>Weatherproof to NEMA 4/IP66.<br><b>Limited switching facility (see table 6)</b>                                             | N    |
| As 'N' but with investment cast enclosure in austenitic stainless steel as 'A'.                                                                                                                                                                                                                              | O    |

## Models

TABLE 2



**NOTE:** Models 202, 203 are not supplied with all materials of wetted parts. See Table 4

|                                                                                                                                                                                                                                                                                                              | Code |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Fixed Switching Differential.</b> See Tables 10A & 10C.<br>Basic model giving close, fixed switching differential using proprietary microswitch operated by high integrity stainless steel mechanism. Set point field adjustable over full range against calibrated scale. SPDT & DPDT options available. | 201  |
| <b>Adjustable Switching Differential.</b> (Limited Span) See Tables 10B & 10D.<br>Achieved by special microswitch with built in adjuster, SPDT only. Not available with enclosure code N or O.                                                                                                               | 202  |
| <b>Adjustable Switching Differential.</b> (Wide Span) See Tables 10B & 10D.<br>Falling set point adjustable against a calibrated scale. Rising reset point adjustable to increase switching differential by up to 50% of range.                                                                              | 203  |
| <b>HI-LO Switching</b> (Adjustable Gap) See Tables 10A & 10C. Two individual set points and separate electrical circuits, with independent adjustment against calibrated scale.                                                                                                                              | 281  |

## Electrical Entry

Adaptors are available for other popular thread sizes.

### Enclosures 'W' & 'N'

Standard option code 1(22mm dia) is provided with a nylon 22/20 reducer and fibre washer suitable for a standard M20 cable gland and back nut. Option code 0 elbow adaptor is factory fitted. Adapter kits may also be provided retrospectively to fit at site if required. Ask for details.

### 'W' and 'N' SAFETY NOTE

If a metal cable gland is site fitted it must either be earthed locally or an earth/gland plate must be used to connect the body of the gland at the enclosure earthing point. Earth/gland plates can be provided either factory fitted or in kit form for site assembly.

TABLE 3



|                                                                   | Code |
|-------------------------------------------------------------------|------|
| Enclosure W & N: Clearance for 20mm (3/4 in) outside dia conduit. | 1    |
| Enclosures H, K, A & O: M20 x 1.5 ISO thread.                     | 0    |
| Enclosures H & K: M20 x 1.5 ISO thread, dual entry.               | 5    |
| Enclosures H & K: 3/4-NPT INT.                                    | 3    |
| Enclosures H & K: 1/2" NPT Internal                               | 2    |
| Enclosures H & K: 3/4-NPT INT. dual entry                         | 6    |
| Enclosure W: M20 x 1.5 elbow adaptor.                             | 0    |
| Enclosure N: M20 x 1.5 straight adaptor (Approved).               | 0    |

## Material of Wetted Parts

Brass bellows are only available on enclosures W & N and Rc1/4 process connection size, see Table 7.

Not all ranges are available with all materials. Refer to Table 5 for availability.

TABLE 4



|                                                                                                                        | Code |
|------------------------------------------------------------------------------------------------------------------------|------|
| Brass bellows soft soldered to brass fittings (model 201) only.                                                        | 1    |
| Stainless steel bellows/capsule stack and process connection all welded fabrication.                                   | 2    |
| Nickel Alloy (Monel) bellows/capsule stack and process connection. Suitable for NACE MR-01-75. All welded fabrication. | M    |

## Setting Ranges

TABLE 5



$P_{max}$  = maximum working pressure

\* Ranges BC, C6 & E1 (BU, CP, E4) not available on Model 202. Range G1 (GF) is only available as Models 201/281.

§ Range BC & C6 (BU, CP) not available on HI-LO model. (281)

| $P_{max}$ |      | RANGE      |                |      |              |          |                     | Code |
|-----------|------|------------|----------------|------|--------------|----------|---------------------|------|
| bar       | psi  | bar        | mbar           | Code | psi          | in.Hg    | in.H <sub>2</sub> O |      |
| 1.4       | 20   |            | -1000 to 0     | A0   |              | -30 to 0 |                     | AB   |
| 1         | 15   |            | -12.5 to +12.5 | BC§* |              |          | -5 to +5            | BU§* |
| 4         | 60   | -1 to 1.5  |                | G3   | -14.5 to +20 |          |                     | GK   |
| 1         | 15   |            | 3 to 25        | C6§* |              |          | 1 to 10             | CP§* |
| 1         | 15   |            | 5 to 120       | E1*  |              |          | 2 to 50             | E4*  |
| 1         | 15   |            | 50 to 350      | E8   | 1 to 5       |          |                     | E7   |
| 1.4       | 20   | 0.2 to 1   |                | G1*  | 3 to 15      |          |                     | GF*  |
| 2         | 30   | 0.1 to 1.5 |                | G5   | 1 to 20      |          |                     | GP   |
| 8         | 100  | 0.2 to 4   |                | J0   | 2 to 60      |          |                     | J3   |
| 9         | 125  | 0.2 to 7   |                | M1   | 3 to 100     |          |                     | M4   |
| 20        | 300  | 0.3 to 15  |                | P6   | 4 to 200     |          |                     | PB   |
| 40        | 600  | 6 to 25    |                | Q2   | 85 to 400    |          |                     | QB   |
| 100       | 1400 | 10 to 40   |                | R3   | 140 to 600   |          |                     | RB   |
| 100       | 1400 | 15 to 75   |                | S7   | 200 to 1000  |          |                     | SB   |

+ Available as Special Engineering.

| AVAILABILITY MATERIAL CODE (TABLE 4) |   |   | RANGE CODE |
|--------------------------------------|---|---|------------|
| 1                                    | 2 | M |            |
|                                      | ✓ | † | A0/AB      |
|                                      | ✓ | ✓ | BC/BU      |
| ✓                                    | ✓ | † | G3/GK      |
|                                      | ✓ | ✓ | C6/CP      |
| ✓                                    | ✓ | ✓ | E1/E4      |
|                                      | ✓ | ✓ | E8/E7      |
| ✓                                    | ✓ | ✓ | G1/GF      |
|                                      | ✓ | ✓ | G5/GP      |
|                                      | ✓ | ✓ | J0/J3      |
| ✓                                    | ✓ | ✓ | M1/M4      |
| ✓                                    | ✓ | ✓ | P6/PB      |
|                                      | ✓ | ✓ | Q2/QB      |
|                                      | ✓ | ✓ | R3/RB      |
|                                      | ✓ | ✓ | S7/SB      |

## Switching Options

TABLE 6

A much wider variety of switching options can be engineered to customer's requirements for Model 201 switches, manual latching, pneumatic output etc. Please consult our engineers for further information. On models 202, 203 and 281, only the switching options specified can be supplied.

| Model 201                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                 |                                                                                                |                |                  |           |       |                |                |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------------------------------|----------------|------------------|-----------|-------|----------------|----------------|--|
| UL/CSA Rating<br>(RESISTIVE)<br>§SEE NOTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | IEC 947-5-1/EN 60947-5-1 Rating                 |                                                                                                |                |                  |           |       | Contact        | Code           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Designation &<br>Utilization<br>Category        | Rated operational current I <sub>e</sub><br>(A) at rated operational<br>voltage U <sub>e</sub> | U <sub>i</sub> | U <sub>imp</sub> | VA Rating |       |                |                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                 |                                                                                                |                |                  | Make      | Break |                |                |  |
| 5 Amps @ 110/250V AC<br>Light Duty for AC only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.8kV            | 432       | 72    | SPDT<br>DPDT   | 00<br>01       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| 5 Amps @ 110/250V AC &<br>2 Amps @ 30V DC<br>General purpose precision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.8kV            | 432       | 72    | SPDT<br>DPDT   | 02<br>03       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| 1 Amp @ 125V AC &<br>§100mA @ 30V DC gold alloy<br>contacts for low voltage<br>switching                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 A @ 125 VAC RESISTIVE (IEC 1058-1/EN 61058-1) |                                                                                                |                |                  |           |       | SPDT<br>DPDT   | 04<br>05       |  |
| § 5 Amps @ 110/250V AC &<br>5 Amps @ 30V DC<br>Environmentally sealed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.5kV            | 432       | 72    | SPDT*<br>DPDT* | 08<br>09       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| § 1 Amp @ 30V AC &<br>30V DC Environmentally<br>sealed with gold contacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | AC14 E150                                       | 0.3A @ 120V AC                                                                                 | 125V           | 0.5kV            | 216       | 36    | SPDT*<br>DPDT* | 0G<br>0H       |  |
| 5 Amps @ 250V AC and<br>2 Amps @ 30V DC<br>Hermetically sealed. Gold<br>plated silver contacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.5kV            | 432       | 72    | SPDT<br>DPDT   | H2<br>H3†, H6‡ |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| † 2 Single pole, double throw, simultaneous falling under pressure<br>‡ 2 Single pole, double throw, simultaneous rising under pressure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                 |                                                                                                |                |                  |           |       |                |                |  |
| Model 202 (Cannot be supplied with enclosure Code N / O)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                 |                                                                                                |                |                  |           |       |                |                |  |
| 5 Amps @ 110/250V AC<br>Light Duty for AC only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.8kV            | 432       | 72    | SPDT           | 0C             |  |
| 5 Amps @ 110/250V AC and<br>2 Amps @ 30V DC Adjustable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.8kV            | 432       | 72    | SPDT           | 0D             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| Model 203                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                 |                                                                                                |                |                  |           |       |                |                |  |
| 5 Amps @ 110/250V AC &<br>2 Amps @ 30V DC<br>General purpose precision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.8kV            | 432       | 72    | SPDT<br>DPDT   | 02<br>03       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| 1 Amp @ 125V AC &<br>§100mA @ 30V DC gold alloy<br>contacts for low voltage<br>switching                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 A @ 125 VAC RESISTIVE (IEC 1058-1/EN 61058-1) |                                                                                                |                |                  |           |       | SPDT<br>DPDT   | 04<br>05       |  |
| Model 281                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                 |                                                                                                |                |                  |           |       |                |                |  |
| 5 Amps @ 110/250V AC<br>Light Duty for AC only                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.8kV            | 432       | 72    | SPDT           | 20             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| 5 Amps @ 110/250V AC &<br>2 Amps @ 30V DC<br>General purpose precision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.8kV            | 432       | 72    | SPDT           | 22             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| 1 Amp @ 125V AC &<br>§100mA @ 30V DC gold alloy<br>contacts for low voltage<br>switching                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 A @ 125 VAC RESISTIVE (IEC 1058-1/EN 61058-1) |                                                                                                |                |                  |           |       | SPDT           | 24             |  |
| § 5 Amps @ 110/250V AC &<br>5 Amps @ 30V DC<br>Environmentally sealed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.5kV            | 432       | 72    | SPDT*          | 28             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| § 1 Amp @ 30V AC &<br>30V DC Environmentally<br>sealed with gold contacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | AC14 E150                                       | 0.3A @ 120V AC                                                                                 | 125V           | 0.5kV            | 216       | 36    | SPDT*          | 2G             |  |
| 5 Amps @ 250V AC and<br>2 Amps @ 30V DC<br>Hermetically sealed. Gold<br>plated silver contacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | AC14 D300                                       | 0.6/0.3A @ 120/240V AC                                                                         | 250V           | 0.5kV            | 432       | 72    | SPDT           | H4             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DC13 R300                                       | 0.22/0.1A @ 125/250V DC                                                                        |                |                  | 28        | 28    |                |                |  |
| <p>The electrical rating is dependent on the microswitch fitted to the instrument. The electrical ratings defined by each approval that the microswitch complies with and is shown on the product nameplate, ie UL/CSA, or IEC. It should be noted that the instrument must be used within the electrical rating specified from the approval you require. This table lists the actual IEC ratings against the Designation &amp; Utilization Category marked on the nameplates. In the absence of any verification by UL/CSA the microswitch § manufacturer's rating is stated in <b>italics and bold</b>. If in doubt seek guidance from the factory.</p> <p><b>NOTE:</b> For low energy circuits e.g. 30V and up to 100mA, we recommend using gold alloy contact switches.</p> <p>U<sub>i</sub> = rated insulation voltage      U<sub>imp</sub> = rated impulse withstand voltage across contacts.</p> |                                                 |                                                                                                |                |                  |           |       |                |                |  |
| *Suitable for use with EExn Enclosures (Code N)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                 |                                                                                                |                |                  |           |       |                |                |  |

## Process Connection

Other thread specifications and sizes are available without using adaptors.

Adaptors are available for applications where their use is permitted.

Brass bellows are only available with Rc1/4 Process Connection.

TABLE 7



|                                      | Code |
|--------------------------------------|------|
| Rc 1/4 (1/4 BSP tr INT) to (ISO 7/1) | A    |
| 1/4 – 18NPT INT                      | F    |
| 1/2 – 14NPT INT                      | H    |
| 1/2 – 14NPT EXT                      | J    |

## Options & Treatments

Combinations available, apply for details.

TABLE 8



|                                                                                                              | Code              |
|--------------------------------------------------------------------------------------------------------------|-------------------|
| Tropicalisation High humidity environment                                                                    | 01                |
| Marine and Offshore Saline atmosphere or salt spray                                                          | 02                |
| Ammonia Process (wetted) parts and construction suitable for atmospheric ammonia.                            | 03                |
| Oxygen Service 2: Process (wetted) parts are cleaned for oxygen.                                             | 04                |
| Oxygen Service 3: Process and non-process parts are cleaned for use with oxygen.                             | 05                |
| Stainless Steel Pipe Mounting Bracket Permits local 2" pipe work to be utilised for mounting the instrument. | 10                |
| Tagging - Variety of tagging methods are available                                                           | APPLY FOR DETAILS |
| Applies when – no option is required and selection is made from special engineering.                         | 00                |

## Special Engineering

TABLE 9



| FEATURE                                                          | Code |
|------------------------------------------------------------------|------|
| Please consult Delta sales engineering for special requirements. | TBA  |

## Performance Data

### Bar Units (SI)

Due to manufacturing tolerances the figures quoted in these tables are for guidance only and are typical for weatherproof models.

Flameproof models maybe up to 2 times higher depending on the range. Should the differential be critical for specific applications our engineers should be consulted prior to ordering.

Model 281: The switching differential on each point may be up to 1.5 times that of Table 10A & C. Care must be exercised, therefore, in specifying high differential switches on sensitive ranges, or set point separation less than 3 times switching differential.

**TABLE 10**

| MODEL 201 (281) |                  |                   |                     |         |         |         |         |         |                                |      |     |      |      |       |
|-----------------|------------------|-------------------|---------------------|---------|---------|---------|---------|---------|--------------------------------|------|-----|------|------|-------|
| Range code      | Range mbar / bar | Wetted parts code | SPDT Options (mbar) |         |         |         |         |         | DPDT Options (201 only) (mbar) |      |     |      |      |       |
|                 |                  |                   | 00 (20)             | 02 (22) | 04 (24) | 08 (28) | 0G (2G) | H2 / H4 | 01                             | 03   | 05  | 09   | 0H   | H3/H6 |
| A0              | -1000 to 0       | 2                 | 14                  | 43      | 15      | 64      | 64      | 150     | 20                             | 56   | 22  | 75   | 75   | 225   |
| BC              | -12.5 to +12.5   | 2M                | 2                   | 6       | 2       | 13      | 13      | 5       | 3                              | 10   | 4   | 15   | 15   | 8     |
| G3              | -1 to +1.5       | 1                 | 36                  | 113     | 38      | 180     | 180     | 50      | 137                            | 53   | 210 | 210  | 270  | 270   |
| G3              | -1 to +1.5       | 2                 | 15                  | 46      | 16      | 71      | 71      | 180     | 20                             | 59   | 23  | 82   | 82   | 270   |
| C6              | 3 to 25          | 2M                | 2                   | 6       | 2       | 13      | 13      | 5       | 3                              | 10   | 4   | 15   | 15   | 8     |
| E1              | 5 to 120         | 1                 | 2                   | 5       | 2       | 12      | 12      | 5       | 3                              | 9    | 3   | 14   | 14   | 8     |
| E1              | 5 to 120         | 2M                | 2                   | 7       | 2       | 14      | 14      | 5       | 4                              | 11   | 4   | 16   | 16   | 8     |
| E8              | 50 to 350        | 2M                | 2                   | 7       | 2       | 14      | 14      | 6       | 3                              | 10   | 4   | 16   | 16   | 9     |
| G1              | 0.2 to 1         | 1                 | 3                   | 9       | 3       | 15      | 15      | 28      | 5                              | 13   | 5   | 17   | 17   | 42    |
| G1              | 0.2 to 1         | 2M                | 6                   | 18      | 6       | 30      | 30      | 28      | 8                              | 22   | 8   | 35   | 35   | 42    |
| G5              | 0.1 to 1.5       | 2M                | 5                   | 17      | 6       | 25      | 25      | 80      | 10                             | 25   | 10  | 29   | 29   | 120   |
| J0              | 0.2 to 4         | 2M                | 34                  | 106     | 36      | 160     | 160     | 420     | 50                             | 234  | 52  | 190  | 190  | 630   |
| M1              | 0.2 to 7         | 1                 | 30                  | 98      | 32      | 140     | 140     | 500     | 45                             | 126  | 48  | 170  | 170  | 750   |
| M1              | 0.2 to 7         | 2M                | 50                  | 112     | 38      | 180     | 180     | 500     | 50                             | 139  | 54  | 200  | 200  | 750   |
| P6              | 0.3 to 15        | 1                 | 62                  | 196     | 66      | 310     | 310     | 1200    | 90                             | 245  | 95  | 350  | 350  | 1800  |
| P6              | 0.3 to 15        | 2M                | 76                  | 240     | 80      | 390     | 390     | 1200    | 100                            | 285  | 110 | 440  | 440  | 1800  |
| Q2              | 6 to 25          | 2M                | 160                 | 492     | 165     | 800     | 800     | 2300    | 210                            | 587  | 230 | 900  | 900  | 3450  |
| R3              | 10 to 40         | 2M                | 310                 | 991     | 340     | 1500    | 1500    | 3000    | 440                            | 1300 | 490 | 1700 | 1700 | 4500  |
| S7              | 15 to 75         | 2M                | 330                 | 1000    | 350     | 1600    | 1600    | 3060    | 460                            | 1300 | 510 | 1900 | 1900 | 4590  |

| MODEL 202, 203 |                  |                   |                        |      |      |      |                        |      |              |      |
|----------------|------------------|-------------------|------------------------|------|------|------|------------------------|------|--------------|------|
| Range code     | Range mbar / bar | Wetted parts code | 202 (mbar / bar value) |      |      |      | 203 (mbar / bar value) |      |              |      |
|                |                  |                   | SPDT ONLY              |      |      |      | SPDT OPTIONS           |      | DPDT OPTIONS |      |
|                |                  |                   | 0C                     |      | 0D   |      | 02 or 04               |      | 03 or 05     |      |
|                |                  |                   | Min                    | Max  | Min  | Max  | Min                    | Max  | Min          | Max  |
| A0             | -1000 to 0       | 2                 | 27                     | 77   | 80   | 185  | 170                    | 500  | 250          | 500  |
| BC             | -12.5 to +12.5   | 2M                | N/A                    | N/A  | N/A  | N/A  | 8                      | 25   | 10           | 25   |
| G3             | -1 to +1.5       | 1                 | 68                     | 187  | 210  | 497  | 700                    | 1500 | 1100         | 1500 |
| G3             | -1 to +1.5       | 2                 | 29                     | 80   | 86   | 200  | 700                    | 1500 | 1100         | 1500 |
| C6             | 3 to 25          | 2M                | N/A                    | N/A  | N/A  | N/A  | 8                      | 25   | 10           | 25   |
| E1             | 5 to 120         | 1                 | N/A                    | N/A  | N/A  | N/A  | 13                     | 60   | 20           | 60   |
| E1             | 5 to 120         | 2M                | N/A                    | N/A  | N/A  | N/A  | 25                     | 60   | 37           | 60   |
| E8             | 50 to 350        | 2M                | 4                      | 14   | 11   | 23   | 100                    | 200  | 150          | 200  |
| G5             | 0.1 to 1.5       | 2M                | 11                     | 35   | 31   | 67   | 150                    | 700  | 225          | 700  |
| J0             | 0.2 to 4         | 2M                | 65                     | 183  | 197  | 459  | 400                    | 2000 | 600          | 2000 |
| M1             | 0.2 to 7         | 1                 | 59                     | 168  | 176  | 409  | 600                    | 3500 | 900          | 3500 |
| M1             | 0.2 to 7         | 2M                | 68                     | 189  | 207  | 488  | 600                    | 3500 | 900          | 3500 |
| P6             | 0.3 to 15        | 1                 | 120                    | 335  | 363  | 852  | 1000                   | 7000 | 1500         | 7000 |
| P6             | 0.3 to 15        | 2M                | 143                    | 338  | 443  | 1000 | 1000                   | 7000 | 1500         | 7000 |
| Q2             | 6 to 25          | 2M                | 294                    | 796  | 908  | 2100 | 2                      | 12.5 | 3            | 12.5 |
| R3             | 10 to 40         | 2M                | 611                    | 1700 | 1800 | 4200 | 5                      | 20   | 7.5          | 20   |
| S7             | 15 to 75         | 2M                | 639                    | 1700 | 1900 | 4500 | 5                      | 37.5 | 7.5          | 37.5 |

### PSI Units

| MODEL 201 (281) |                                           |                   |              |         |         |         |         |         |                         |      |      |      |      |       |
|-----------------|-------------------------------------------|-------------------|--------------|---------|---------|---------|---------|---------|-------------------------|------|------|------|------|-------|
| Range code      | Range psi / in. Hg / in. H <sub>2</sub> O | Wetted parts code | SPDT Options |         |         |         |         |         | DPDT Options (201 only) |      |      |      |      |       |
|                 |                                           |                   | 00 (20)      | 02 (22) | 04 (24) | 08 (28) | 0G (2G) | H2 (H4) | 01                      | 03   | 05   | 09   | 0H   | H3/H6 |
| AB              | -30 to 0                                  | 2                 | 0.45         | 1.30    | 0.5     | 2.0     | 2.0     | 4.4     | 0.65                    | 1.7  | 0.65 | 2.25 | 2.25 | 6.64  |
| BU              | -5 to +5                                  | 2M                | 0.8          | 2.4     | 0.8     | 5.2     | 5.2     | 2       | 1.2                     | 4.0  | 1.6  | 6.0  | 6.0  | 3.2   |
| GK              | -14.5 to +20                              | 1                 | 0.52         | 1.65    | 0.5     | 2.6     | 2.6     | 2.6     | 0.7                     | 2.0  | 0.77 | 3.0  | 3.0  | 3.9   |
| GK              | -14.5 to +20                              | 2                 | 0.2          | 0.67    | 0.23    | 1.0     | 1.0     | 2.6     | 0.3                     | 0.85 | 0.33 | 1.2  | 1.2  | 3.9   |
| CP              | 1 to 10                                   | 2M                | 0.8          | 2.4     | 0.8     | 5.2     | 5.2     | 2       | 1.2                     | 4.0  | 1.6  | 6.0  | 6.0  | 3.2   |
| E4              | 2 to 50                                   | 1                 | 0.8          | 2.0     | 0.8     | 5.0     | 5.0     | 2       | 1.2                     | 3.6  | 1.2  | 5.5  | 5.5  | 3.2   |
| E4              | 2 to 50                                   | 2M                | 0.8          | 2.8     | 0.8     | 5.5     | 5.5     | 2       | 1.6                     | 4.5  | 1.6  | 6.5  | 6.5  | 3.2   |
| E7              | 1 to 5                                    | 2M                | 0.03         | 0.1     | 0.03    | 0.2     | 0.2     | 0.09    | 0.04                    | 0.15 | 0.06 | 0.23 | 0.23 | 0.13  |
| GF              | 3 to 15                                   | 1                 | 0.04         | 0.13    | 0.05    | 0.22    | 0.22    | 0.41    | 0.07                    | 0.2  | 0.07 | 0.25 | 0.25 | 0.61  |
| GF              | 3 to 15                                   | 2M                | 0.09         | 0.26    | 0.1     | 0.43    | 0.43    | 0.41    | 0.1                     | 0.32 | 0.12 | 0.50 | 0.50 | 0.61  |
| GP              | 1 to 20                                   | 2M                | 0.07         | 0.25    | 0.1     | 0.35    | 0.35    | 1.2     | 0.15                    | 0.38 | 0.15 | 0.42 | 0.42 | 1.74  |
| J0              | 2 to 60                                   | 2M                | 0.5          | 1.5     | 0.5     | 2.5     | 2.5     | 6.1     | 0.7                     | 3.5  | 0.8  | 2.8  | 2.8  | 9.14  |
| M1              | 3 to 100                                  | 1                 | 0.45         | 1.4     | 0.5     | 2.0     | 2.0     | 7.3     | 0.65                    | 1.8  | 0.7  | 2.5  | 2.5  | 10.88 |
| M1              | 3 to 100                                  | 2M                | 0.5          | 1.6     | 0.6     | 2.6     | 2.6     | 7.3     | 0.7                     | 2.0  | 0.8  | 2.9  | 2.9  | 10.88 |
| P6              | 4 to 200                                  | 1                 | 0.9          | 2.8     | 1       | 4.5     | 4.5     | 17.4    | 1.3                     | 3.5  | 1.4  | 5    | 5    | 26.1  |
| P6              | 4 to 200                                  | 2M                | 1.1          | 3.5     | 1.2     | 5.7     | 5.7     | 17.4    | 1.5                     | 4.2  | 1.6  | 6.4  | 6.4  | 26.1  |
| Q2              | 85 to 400                                 | 2M                | 2.3          | 7       | 2.5     | 11.6    | 11.6    | 33.4    | 3.0                     | 8.5  | 3.3  | 13   | 13   | 50.03 |
| R3              | 140 to 600                                | 2M                | 4.5          | 14.3    | 5       | 22      | 22      | 43.5    | 6.4                     | 19   | 7    | 25   | 25   | 65.25 |
| S7              | 200 to 1000                               | 2M                | 4.8          | 14.5    | 5       | 23      | 23      | 44.4    | 6.7                     | 19   | 7.5  | 28   | 28   | 65.26 |

| MODEL 202, 203 |                                          |                   |           |      |      |      |              |      |              |      |
|----------------|------------------------------------------|-------------------|-----------|------|------|------|--------------|------|--------------|------|
| Range code     | Range psi / in. Hg / in H <sub>2</sub> O | Wetted parts code | 202       |      |      |      | 203          |      |              |      |
|                |                                          |                   | SPDT ONLY |      |      |      | SPDT OPTIONS |      | DPDT OPTIONS |      |
|                |                                          |                   | 0C        |      | 0D   |      | 02 or 04     |      | 03 or 05     |      |
|                |                                          |                   | Min       | Max  | Min  | Max  | Min          | Max  | Min          | Max  |
| AB             | -30 to 0                                 | 2                 | 0.80      | 2.2  | 2.4  | 5.4  | 5.0          | 14.5 | 7.5          | 14.5 |
| BU             | -5 to +5                                 | 2M                | N/A       | N/A  | N/A  | N/A  | 3.5          | 10   | 4            | 10   |
| GK             | -14.5 to +20                             | 1                 | 1.0       | 2.7  | 3.0  | 7.0  | 10           | 21   | 16           | 21   |
| GK             | -14.5 to +20                             | 2                 | 0.45      | 1.1  | 1.2  | 2.9  | 10           | 21   | 16           | 21   |
| CP             | 1 to 10                                  | 2M                | N/A       | N/A  | N/A  | N/A  | 3.5          | 10   | 4            | 10   |
| E4             | 2 to 50                                  | 1                 | N/A       | N/A  | N/A  | N/A  | 5.5          | 24   | 8            | 24   |
| E4             | 2 to 50                                  | 2M                | N/A       | N/A  | N/A  | N/A  | 10           | 24   | 15           | 24   |
| E7             | 1 to 5                                   | 2M                | 0.06      | 0.20 | 0.16 | 0.33 | 1.5          | 29   | 2.1          | 2.9  |
| GP             | 1 to 20                                  | 2M                | 0.16      | 0.50 | 0.5  | 0.95 | 2.2          | 10   | 3.3          | 10   |
| J3             | 2 to 60                                  | 2M                | 1.0       | 2.6  | 2.9  | 6.6  | 6            | 29   | 9            | 29   |
| M4             | 3 to 100                                 | 1                 | 0.86      | 2.4  | 2.6  | 5.9  | 9            | 50   | 13           | 50   |
| M4             | 3 to 100                                 | 2M                | 1.0       | 2.7  | 3.0  | 7.0  | 9            | 50   | 13           | 50   |
| PB             | 4 to 200                                 | 1                 | 1.75      | 4.8  | 5.3  | 12   | 15           | 100  | 22           | 100  |
| PB             | 4 to 200                                 | 2M                | 2.1       | 4.9  | 6.5  | 14.5 | 15           | 100  | 22           | 100  |
| QB             | 85 to 400                                | 2M                | 4.3       | 11.5 | 13.5 | 30   | 30           | 180  | 44           | 180  |
| RB             | 140 to 600                               | 2M                | 8.9       | 24   | 26   | 60   | 75           | 290  | 110          | 290  |
| SB             | 200 to 1000                              | 2M                | 9.33      | 24   | 28   | 65   | 75           | 500  | 110          | 500  |

## Technical Specifications

### ACCURACY

Set point repeatability  $\pm 0.5\%$  of full scale at 20°C ambient.

Scale accuracy  $\pm 2\%$  of full scale.

### AMBIENT TEMPERATURE RANGE

All models are suitable for operating within a range of ambient temperature from -25 to +60°C (-13 to +140°F). Special build available for temperatures down to -60°C (-76°F), refer to SPECIAL ENGINEERING

### MAXIMUM PROCESS TEMPERATURE

Whilst the component parts withstand +60°C (+140°F), process temperatures up to +120°C (+248°F) are subject to appropriate installation practice and the use of wetted parts material code 2 or M (Table 4).

### MAXIMUM ENCLOSURE TEMPERATURE

Instrument has not been tested regarding maximum temperature with respect to dust layer above 50 mm. Therefore product is not suitable for operating under excess layer of dust.

## ELECTRICAL CONNECTIONS

### Terminal Block

Cable entry is to a non-pinching terminal block made of a non-hygroscopic thermosetting plastic, suitable for cables up to 2.5mm<sup>2</sup>/14AWG.

### Earthing/Grounding

An earthing stud is provided inside all weatherproof enclosures, adjacent to the entry. External earthing is standard on flameproof versions. Safety note - see Table 3.

### Dielectric Strength

The electrical assembly is capable of withstanding \*2kV between live parts and earth/ground and 500V between open contacts.

\*1.2kV for micro switch Codes H2, H3, H4 and H6. Refer to Table 6.

### Electrical Entry

Standard options are listed in Table 3. Other threads can be accommodated by adaptors. Dual entry available on some enclosures.

## OPTIONAL EXTRAS

### Chemical Seals

Chemical seals of our own or proprietary manufacture can be fitted when required.

### Mounting

#### Position/Location/Installation

Vertical as shown, in DIMENSIONS, taking care to avoid siting in locations that transmit excessive shock or vibration. For further advice contact our engineers.

### Pollution degree (EN60947-5-1)

All products are suitable for use in pollution degree 3. For extreme conditions where condensation may readily form, then sealed contacts should be used. See Table 6 codes 08/09, 0G/0H, H2/H3/H4/H6.

**Electrical Isolation** – These products are not suitable for electrical isolation. Always isolate circuit separately to carry out any electrical work.

## Unit Weights

### Enclosures (Approx.) – Refer to Table 1 and Table 3

|           |              |
|-----------|--------------|
| 'W' & 'N' | 3.1kg/6.8lb  |
| 'A'       | 3.9kg/8.6lb  |
| 'H'       | 4.6kg/10.2lb |
| 'K'       | 9.4kg/20.7lb |
| 'M'       | 9.9kg/21.8lb |

## Approvals

### INTRINSIC SAFETY

Because of the low voltages and currents of intrinsically safe circuits, we recommend using gold contacts. Refer to Table 6.

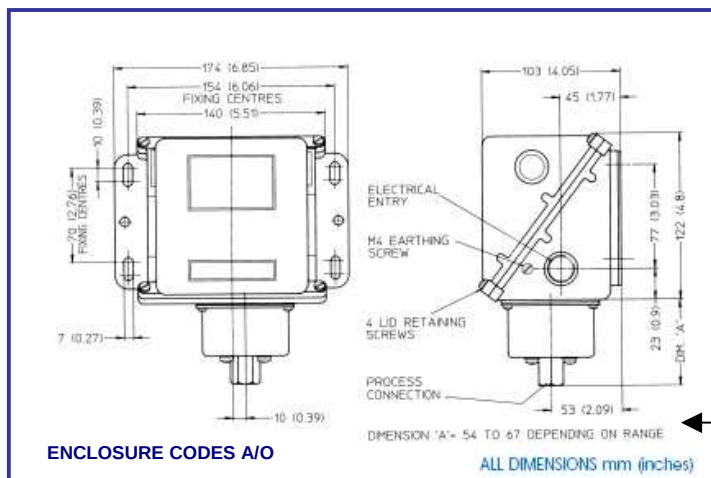
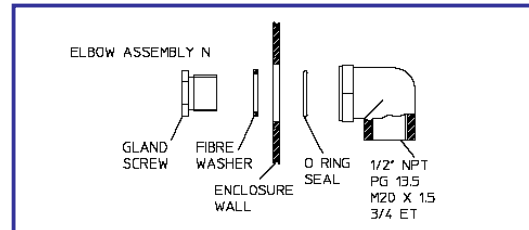
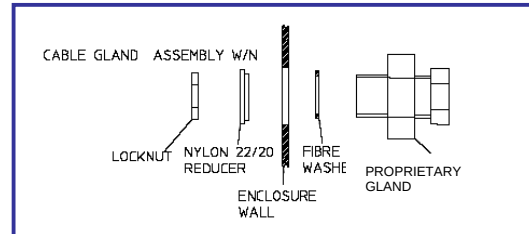
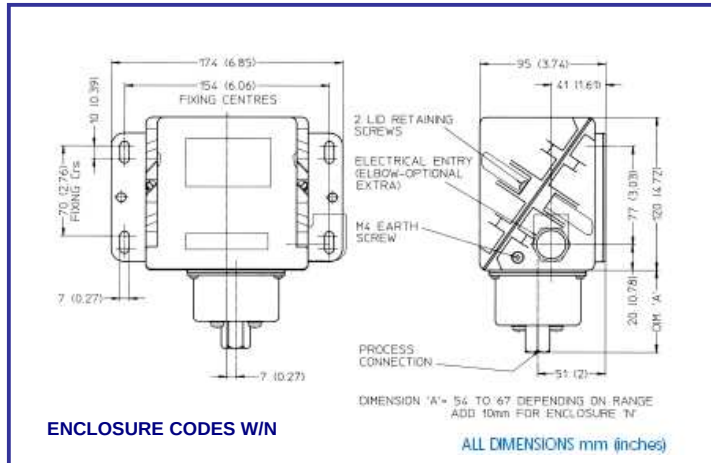
### CENELEC/ATEX II 2 G D

Certified to CENELEC EN50 014 and EN50 018.  
For use in Zone 1 hazardous areas EEx d IIC T6 (-60° to +40°C)  
T4 (-60° to +80°C)  
Enclosure Codes H and K and all models (see Table 1)  
Certificate number BAS01ATEX2426X

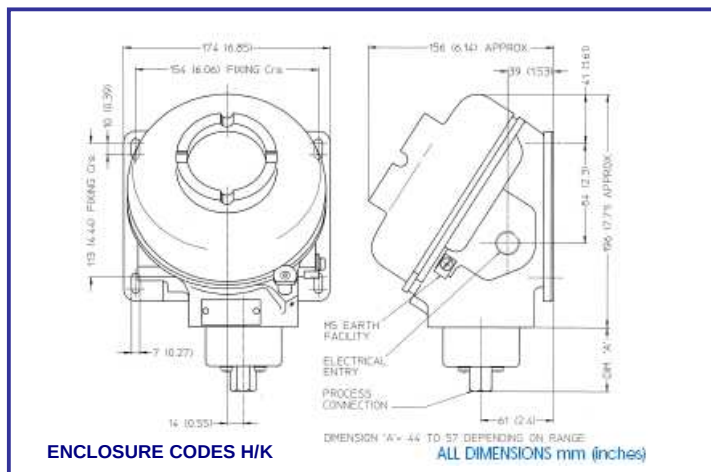


IECEx APPROVAL for use in Zone 1 hazardous areas  
Exd IIC certified to IEC 60079-0 and IEC 60079-1  
Cert No. IECExITS04 0006X

## Dimensions



**NOTE – Add 10mm for enclosure O (Dimension A)**



*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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