

## PERSEUS DIFFERENTIAL

## PRESSURE

# DF60 PERSEUS ATEX & IECEx Exd, Exia & INDUSTRIAL DIFFERENTIAL PRESSURE SWITCH

This range of switches features a robust high quality housing with 1 or 2 sealed SPDT microswitches and has been designed for use in environments where explosive gases can be present (e.g. gas fields, oil rigs & chemical plants etc). Microswitches can be set for single, dual simultaneous, or dual independently adjustable operation. Environmentally sealed or hermetically sealed microswitch options are available.

One of the benefits of the Perseus range is the separation of the flameproof and adjustment chambers allowing adjustment of the set point with power on and the switch in operation. The housing is available with one or two electrical entries.



**DIFFERENTIAL PRESSURE**

## FEATURES

- ✓ 316 Stainless steel or black anodised aluminium switchcase to IP66 & IP67 standards.
- ✓ Wetted parts NACE MR-01-75 compliant
- ✓ SIL 2 - IEC61508 proven reliability.
- ✓ Single or dual microswitches option.
- ✓ Settings from 0.4 mbar to 55mbar
- ✓ ATEX/IECEx Flameproof version II 2 G Ex db IIC T6...T5 Gb (Tamb -50°C to +75°C...+90°C) (with or without resistors)
- ✓ ATEX/IECEx Intrinsically safe version II 1 G Ex ia IIC T6...T2 Ga (Tamb - 50°C to +78°C...+93°C) (without resistors)
- ✓ ATEX/IECEx Intrinsically safe version II 1 G Ex ia IIC T5 ...T2 Ga (Tamb - 50 to +72°C...+122°C) (with resistors)
- ✓ ATEX/IECEx Intrinsically safe version II 1 D Ex ia IIIC T135°C Da (Tamb -50°C to +70°C) (with or without resistors)

Dual microswitches will increase the stated deadband.

ADJUSTMENT RANGE (BAR D)	MAXIMUM WORKING PRESSURE EQUALISED (BAR D)	MAXIMUM WORKING PRESSURE ONE SIDED (BAR D)	DEADBAND FIXED (mBar G)	SPRING CODE	DIAPHRAGM CODE
1.0 – 8.0	28	14	100 - 400	W	01SB
0.5 – 3.5	28	14	50 - 250	Q	01SB
0.15 – 1.15	28	14	50 - 100	G	01SB
0.05 – 0.95	10	7	15 - 55	W	03SB
25 – 225 mBar	10	7	7 - 20	G	03SB
25 – 50 mBar	10	7	5 - 7	T	03SB
15 – 55 mBar	0.5	0.35	1.5 – 7.5	B	08SB
4 – 16 mBar	0.5	0.35	0.75 – 2.0	G	08SB
1 – 5 mBar	0.5	0.35	0.25 – 1.0	R	08SB
*0.4 – 1.8 mBar	0.5	0.35	0.2 – 0.3	T	08SB

(\* Range starts at 0.8mBar when dual microswitches are selected)

**Temperature Limitations**

**Diaphragm code :** 01SB

**Viton :** -20 to +150°C

**Nitrile :** -30 to +100°C

**Diaphragm code :** 02SB, 03SB & 08SB

**Viton :** -10 to +150°C

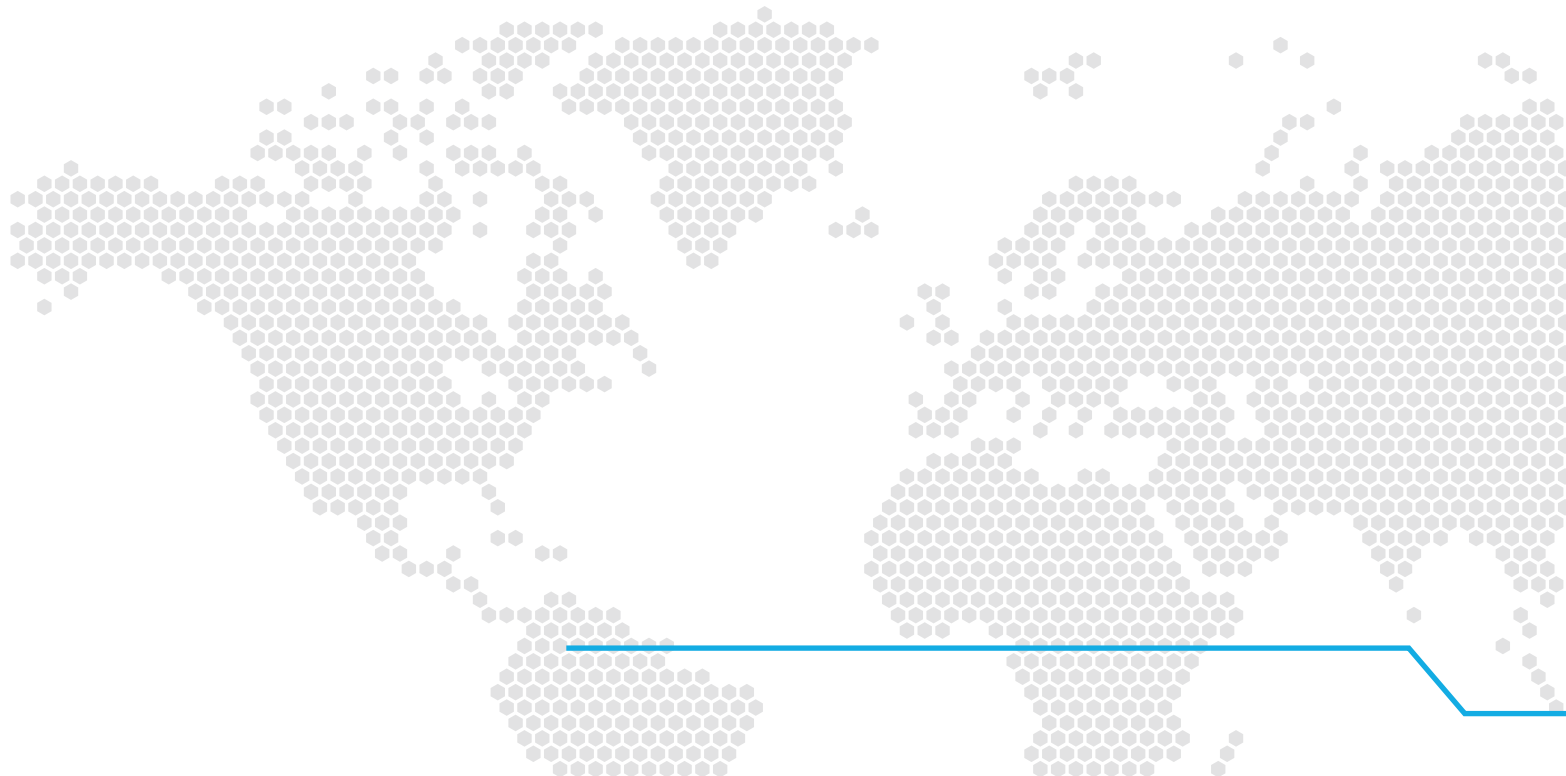
**Nitrile :** -30 to +100°C

**Wetted Parts - Metallic**

316 stainless steel

**Process Connections :** Diaphragm codes 01SB, 02SB & 03SB : 1/4" or 1/2" BSP.P or NPT Female

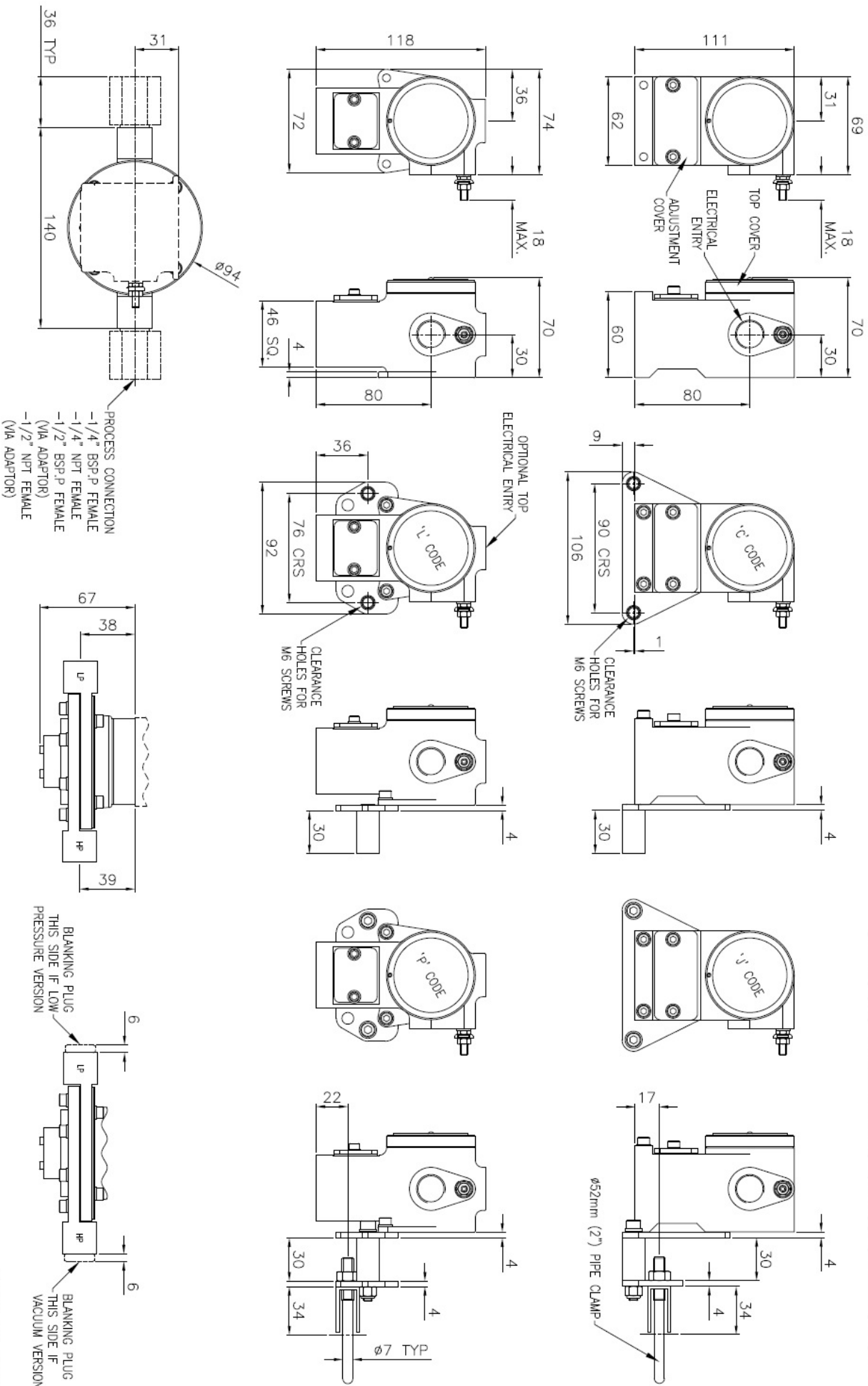
Diaphragm code 08SB as table overleaf.



PART NUMBER BREAKDOWN			ELECTRICAL CONNECTION _ = M20 LEAVE BLANK C = 1/2" NPT ADAPTOR F = M25 ADAPTOR		
<b>TYPE</b> <b>DF6</b> = STANDARD  DR6 = RESISTOR OPTION	<b>MICROSWITCH OPTIONS</b> <b>1</b> = 1 X SPDT <b>2</b> = 2 X SPDT LINKED <b>3</b> = 1 x SPDT WITH ADJUSTABLE DEADBAND <b>4</b> = 2 x SPDT INDEPENDENT ADJUSTABLE <b>5</b> = 1 X HERMETIC SEALED <b>6</b> = 2 X HERMETIC SEALED	<b>SPRING CODE</b> PLEASE REFER TO RANGE TABLE	<b>DIAPHRAGM CODE</b> PLEASE REFER TO RANGE TABLE	<b>ELECTRICAL CONNECTION ENTRY</b> <b>B</b> = RIGHT HAND SIDE <b>L*</b> = DUAL ENTRY <b>T*</b> = DUAL ENTRY TOP PLUGGED <b>R*</b> = DUAL ENTRY SIDE PLUGGED *STAINLESS STEEL CASE ONLY	
<b>D F 6 1 A B / 2 W 0 1 S B 1 / A B _</b>					
<b>SWITCHCASE MATERIAL</b> A = BLACK ANODISED ALUMINIUM S = STAINLESS STEEL	<b>CERTIFICATION</b> <b>O</b> = ATEX/IECEX Ex ia INTRINSICALLY SAFE <b>B</b> = ATEX/IECEX Ex d FLAMEPROOF <b>A</b> = INDUSTRIAL / MARINE		<b>DIAPHRAGM MATERIAL</b> <b>1</b> = NITRILE <b>2</b> = VITON	<b>PROCESS CONNECTION DIAPHRAGM CODES 01SB, 02SB &amp; 03SB FEMALE</b> <b>1</b> = 1/4" BSP.P - DP <b>2</b> = 1/4" NPT - DP <b>A</b> = 1/2" BSP.P - DP <b>C</b> = 1/2" NPT - DP	<b>BRACKET</b> (R, M & N REFER TO SALES) <b>X</b> = STD 01SB (ALUM & ST.ST) <b>J</b> = 2" PIPE BKT 01SB (ALUM) <b>K</b> = 2" PIPE BKT 01SB (ST.ST) <b>C</b> = STD 03SB (ALUM) <b>J</b> = 2" PIPE BKT 03SB (ALUM) <b>P</b> = STD 03SB (ST.ST) <b>L</b> = 2" PIPE BKT 03SB (ST.ST) <b>W</b> = STD - 08SB (ALUM & ST.ST) <b>T</b> = 2" PIPE 08SB (ALUM & ST.ST)
<b>PROCESS CONNECTION DIAPHRAGM CODES 08SB</b> <b>1</b> = 1/4" O/D TUBE - POSITIONAL ELBOW - DP <b>2</b> = 1/4" O/D TUBE - POSITIONAL TEE - DP <b>9</b> = SPECIAL <b>A</b> = 6MM O/D TUBE POSITIONAL ELBOW - DP <b>C</b> = 8MM O/D TUBE POSITIONAL ELBOW - DP <b>E</b> = 10MM O/D TUBE POSITIONAL ELBOW - DP <b>G</b> = 12MM O/D TUBE POSITIONAL ELBOW - DP			<b>J</b> = 1/4" BSP.P FEMALE STRAIGHT - DP <b>L</b> = 1/4" BSP.T FEMALE STRAIGHT - DP <b>N</b> = 1/4" BSP.P MALE STRAIGHT - DP <b>Q</b> = 1/4" NPT FEMALE STRAIGHT - DP <b>S</b> = 1/4" NPT MALE STRAIGHT - DP <b>U</b> = 1/2" NPT FEMALE STRAIGHT - DP		



DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED

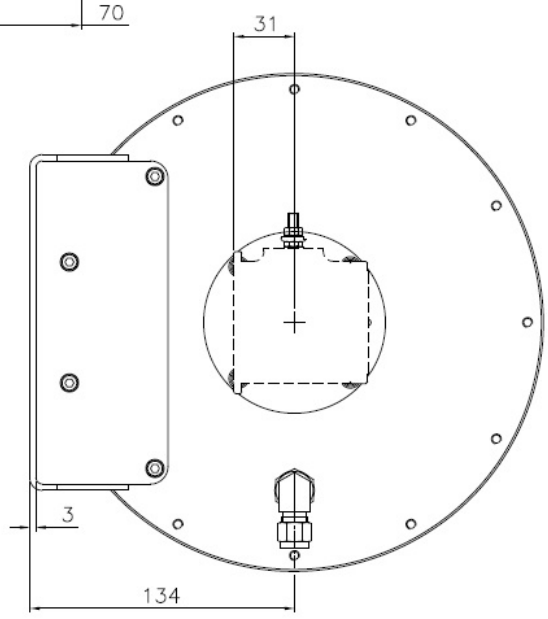
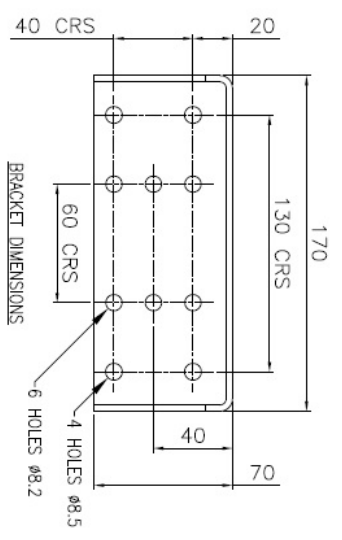
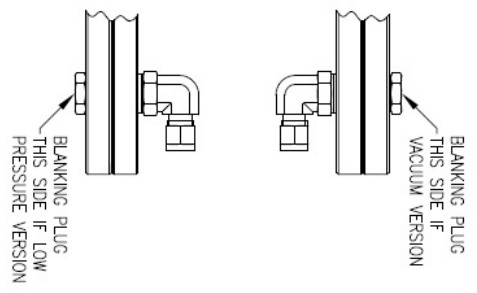
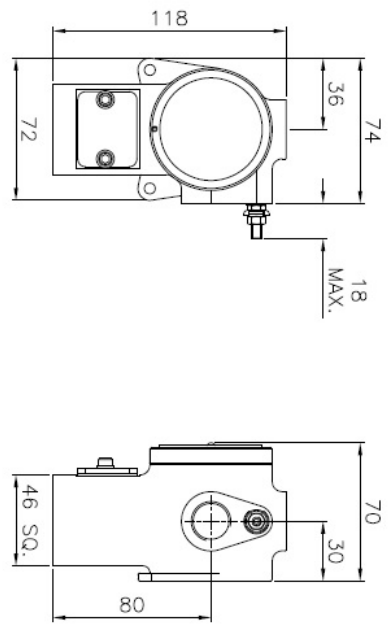
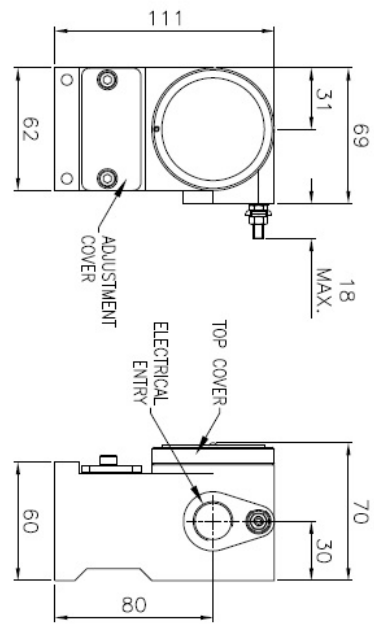
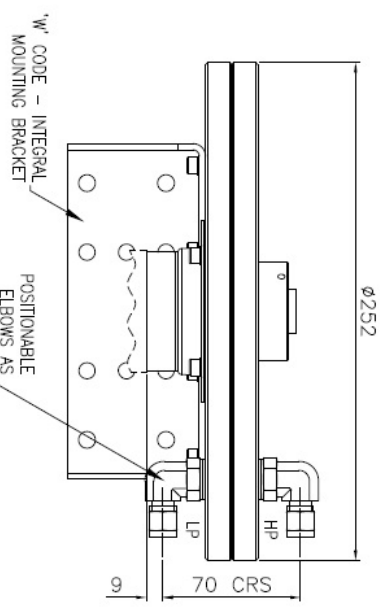
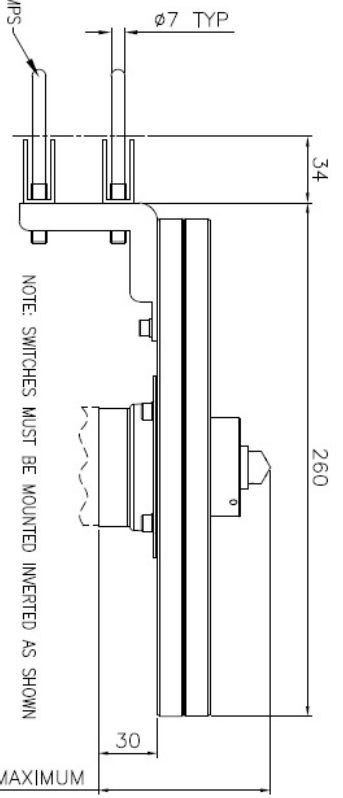


DRAWING REF: 1561/A1

DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED

PROCESS CONNECTIONS	
1/2" O.D. TUBE POSITIONABLE ELBOW	NOT SHOWN, DETAILS ARE AVAILABLE UPON REQUEST
6mm O.D. TUBE POSITIONABLE ELBOW	
8mm O.D. TUBE POSITIONABLE ELBOW	
10mm O.D. TUBE POSITIONABLE ELBOW	
12mm O.D. TUBE POSITIONABLE ELBOW	
1/2" O.D. TUBE POSITIONABLE BRANCH TEE	
1/2" O.D. TUBE POSITIONABLE RUN TEE	
1/2" BSP FEMALE STRAIGHT	
1/2" BSP FEMALE STRAIGHT	
1/2" BSP FEMALE STRAIGHT	
1/2" NPT FEMALE STRAIGHT	
1/2" NPT FEMALE STRAIGHT	

1" CODE - BRACKET WITH Ø52mm (2") PIPE CLAMPS





# PERSEUS ATEX & IECEx Exd, Exia &

## INDUSTRIAL SWITCHES

### INTRODUCTION

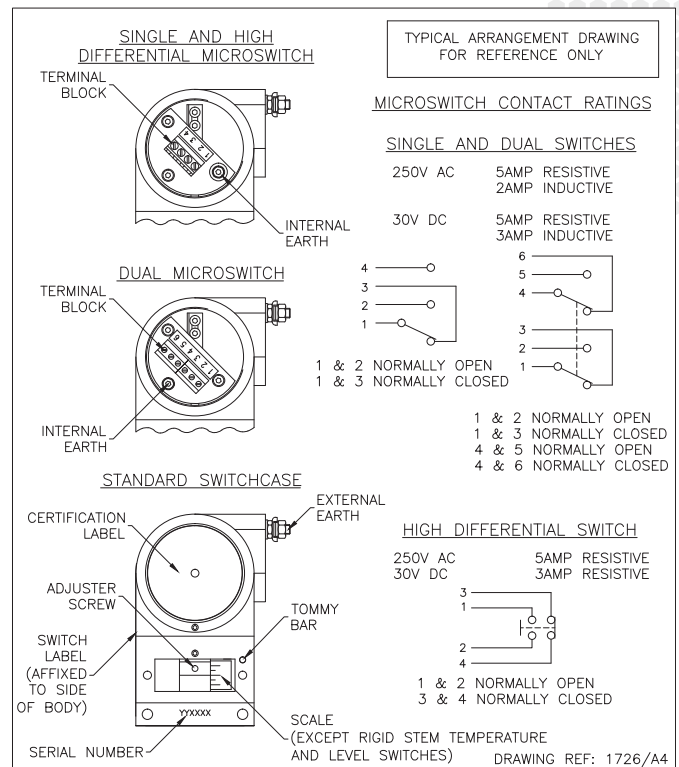
The Perseus **pressure, vacuum, differential pressure, temperature, and level** switches are designed for use in environments where explosive gases and dust can be present (e.g. Gas fields, Oil rigs and Chemical plants etc.) and have been ATEX and IECEx certified as detailed overleaf (SIL2 - IEC61508 proven reliability).

These switches are manufactured from a high quality casting which offers robust construction and protection to IP67 for use within heavily polluted industrial environments. A special feature of the instruments is the separation of the flameproof and adjustment compartments allowing for safe on-site adjustment of the set point with power on and the switch in operation.

Perseus Exd switches must be installed in accordance with BS EN 60079-14

### CALIBRATION

The design features a simple form of adjustment against a calibrated scale. This enables a user to order switches set at a predetermined point or stock a mid range setting and adjust switches to suit the particular application. The set point can be safely adjusted with the switch electrically live. Adjustment is made by removing the access cover and rotating the set point adjuster using a suitable tommy bar stowed to the right of the scale plate. The setting is read from the centre of the set point adjuster against the calibrated scale. Rotation to the left will increase the set point and to the right decrease it.



Perseus Stainless steel switchcase with dual electrical connection option

# TECHNICAL SPECIFICATION

**Switchcase & covers:** 316 Stainless steel or black anodised aluminium case and 316 stainless steel adjustment cover.

**Microswitch:** 1 x SPCO/SPDT or 2 x SPCO/SPDT gold flashed silver contacts. Single switch is available with adjustable deadband option. Dual switches are either mechanically linked to provide DPDT switching action (reset of switches could be up to 3% apart) or independently adjustable. Microswitches are environmentally sealed as standard, hermetically sealed can be supplied as an option. Dual microswitches may increase deadband by a factor of two.

**Microswitch rating:** 5 Amps @ 250 VAC resistive, 2 Amps @ 250VAC inductive  
5 Amps @ 30VDC resistive, 2 Amps @ 30 VDC inductive

**Electrical Connections:** Terminals suitable for cable 0.5 - 2.5 mm<sup>2</sup>. (Max 1.5 mm<sup>2</sup> for dual microswitch version)

**Electrical Conduit Entry:** One or two M20 x 1.5 ISO. ½" NPT or M25 via adaptors

**Environmental Protection:** IP66 & IP67 in accordance with BS EN 60529 : 1992 & IEC 60529 : 2001.

**Vibration and shock parameters:** Switches were subjected Lloyds Register Test Specification 1, section 13 BS EN 60068-2-6 : 1996 (Test Fc vibration) and BS EN 60068-2-27 : 1995 (Test Ea shock).

**Temperature Limitations:** Pressure, Vacuum and Differential Pressure.

**Process:** Diaphragm actuated (unless otherwise stated) -30 to +100°C (Nitrile) or -20 to +150 Deg.C (Viton).  
Piston actuated -30 to 100°C (Nitrile), -20 to +150°C (Viton), -50 to +150°C (PTFE) or -35 to +100°C (EPDM).

**Ambient:** -40 to +85°C. -50 to +125°C option - refer to sales office)

**Storage:** -50 to +85 Deg.C (For temperature, level and flow switches please refer to specific pages).

**ATEX/IECEx certified Exd Flameproof** - Gas (with or without resistors) CE Ex II 2 G Exd IIC T6...T5 Gb.  
T6 Tamb -50°C to +75°C, T5 Tamb -50°C to +90°C.

Special conditions for safe use. 1) Under rated conditions, the cable temperature can reach 9K above ambient temperature, ensure selection of correctly rated cable for the application. 2) Flameproof joints not intended for repair.

**ATEX/IECEx certified Exia Intrinsically Safe** - Gas & dust

CE Ex II 1 G Exia IIC T6 Ga Ta -50 to +78°C, T5 Ta +93°C, T4 Ta +128°C or

CE Ex II 1 G Exia IIC T5 Ga Ta -50 to +72°C, T4 Ta +122°C (with resistors).

CE Ex II 1 D Exia IIIC T135°C Da Ta -50 to +70°C

Special conditions for safe use. 1) For Ga installations - The equipment may be constructed using aluminium for the housing and internal parts and may only be used when the ignition hazardous assessment shows there is no risk of ignition from incendive impact or abrasion sparks.

**Accuracy:** +/-1% at 20°C.

Continuous development may result in changes to specification without prior notice

## ABOUT PYROPRESS

Our products are designed to work in demanding and hazardous environments which require fast and cost effective solutions in instrumentation and control.

Pyropress control sensors provide safe and reliable electrical switching of alarm or control circuits in response to changes in temperature, pressure, differential pressure, vacuum, flow and level conditions.

## QUALITY

To support the design of state of the art products the company has invested heavily in the latest CNC technology.

We are able to produce our own components to a high degree of accuracy assuring a reliable and consistent quality product.

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