

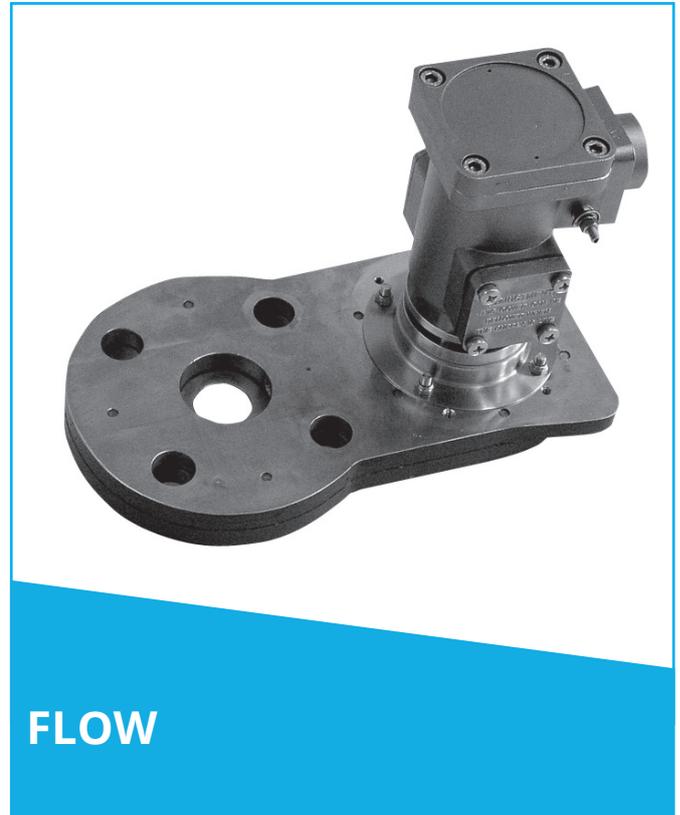
## TITAN FLOW

# FF503 TITAN ATEX / IECEX Exd, Exia CERTIFIED & INDUSTRIAL FLOW SWITCH

As will be apparent from the illustrations the complete flow switch comprising orifice plate, differential pressure sensitive element and switching mechanism are combined in a single compact assembly which enables easy installation between pipe flanges, models being available for pipe sizes 15 - 250mm diameter. These sensors incorporate a spring loaded pressure sensitive flexible diaphragm, which when deflected by pressure drop across the orifice plate, actuates directly by push rod a snap action S.P.D.T. microswitch at the flow setting selected on the adjustment scale.

Each instrument can be provided with one of seven standard orifice ratios which enables a wide range of flow rates to be accommodated. When using fluids other than fresh water these values will of course alter. It should be also noted that the head loss values are those occurring immediately across the orifice and that up to 50% of this head loss can be recovered by providing at least ten diameters of straight plain pipe either side of flow switch.

Each instrument is tested before despatch and switch set point marked on adjustment scale. If specially ordered this scale can be calibrated to indicate the adjustable range of flow rate in litres per hour or other units of measurement as required. The accuracy of such calibration will be affected by many external factors such as fluid temperature change, pipe layout etc., but experience has shown this to be within +/-5% for a given set of conditions.



**FLOW**

## FEATURES

- ✓ 316 stainless steel or black anodised aluminium switchcase to IP66 standards.
- ✓ Easy installation between pipe and flanges.
- ✓ ATEX/IECEX Flameproof version  
CE  II2G Exd IIB + H2 T6...T2 Gb  
Ta-60 to +75°C...90°C

- ✓ Pipe sizes 15 - 250mm.
- ✓ Single or dual microswitch option.
- ✓ ATEX/IECEX Intrinsically safe version  
CE  II1G Exia IIC T6...T2 Ga  
Ta -50 to +78°C...128°C

**Flange casting :** Gunmetal - standard 316 stainless steel, Monel or Tufnol  
(Tufnol option on industrial and Exd versions only)

**Orifice plate :** 316 stainless steel - standard or acetal (for Tufnol plates)

**Diaphragm :** Nitrile - with metallic plates  
Viton - with Tufnol plates

**Temperature parameters :**  
Nitrile: -30 to +100°C  
Viton: -20 to +100°C

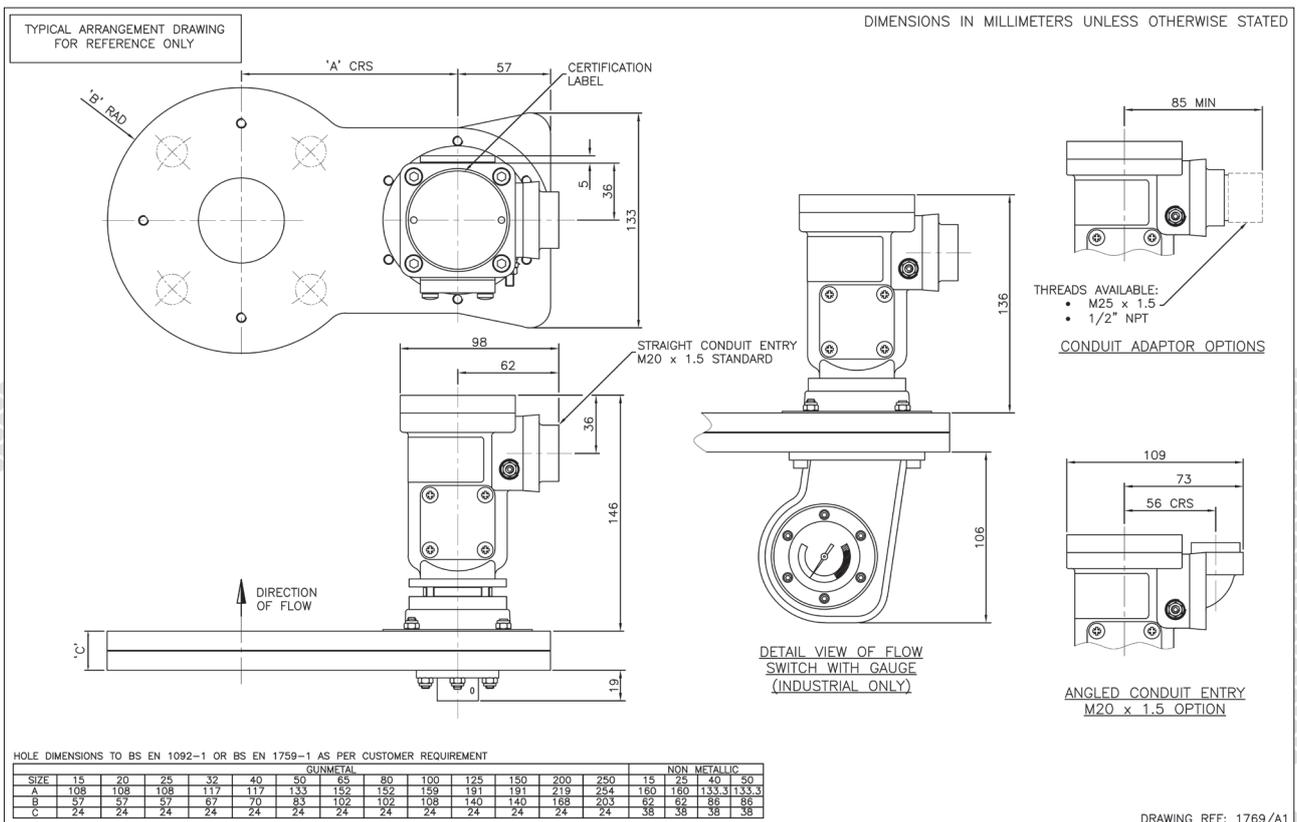
**Pressure parameters :**  
Metallic flanges : 8 bar  
Tufnol flanges : 12 bar

PART NUMBER BREAKDOWN		FLANGE MATERIAL	
<b>B</b> = ATEX/IECEEx Exd CERTIFIED <b>O</b> = ATEX/IECEEx Exia CERTIFIED <b>A</b> = INDUSTRIAL	<b>DIAPHRAGM MATERIAL</b> <b>A</b> = NITRILE <b>B</b> = VITON	<b>1</b> = GUNMETAL - STANDARD <b>2</b> = STAINLESS STEEL <b>3</b> = MONEL <b>4</b> = TUFNOL EPOXIDE	<b>1</b> = NO FLOW INDICATOR <b>2</b> = WITH FLOW INDICATOR
<b>A</b> = ALUMINIUM SWITCHCASE <b>S</b> = ST. STEEL SWITCHCASE	<b>SPRING CODE</b> (PLEASE SEE BELOW)		
<b>FF503S1B / AG010010 / 11XA</b>			
<b>1</b> = 1 x SPDT SWITCH <b>2</b> = 2 x SPDT SWITCH  DUAL SWITCHES ARE MECHANICALLY LINKED TO PROVIDE DPDT SWITCHING ACTION	<b>NOMINAL BORE/PIPE SIZE CODES</b> <b>010005</b> = 1/2" <b>010007</b> = 3/4" <b>010010</b> = 1" <b>015015</b> = 1 1/2" <b>020020</b> = 2" <b>020025</b> = 2 1/2"	<b>030030</b> = 3" <b>040040</b> = 4" <b>060040</b> = 4" on 6" plates <b>060060</b> = 6" <b>080080</b> = 8" <b>100100</b> = 10"	<b>ELECTRICAL ENTRY</b> <b>A</b> = M20 STRAIGHT <b>B</b> = M20 ANGLED <b>C</b> = 1/2" NPT STRAIGHT <b>F</b> = M25 STRAIGHT

Spring code: This will be designated by our Engineer upon calculating the most applicable orifice ratio dependent on the pipe size, normal flow and alarm flow required for your specific application. These calculations will give a figure in "HG and the spring codes cover specific ranges.

**T** = 0.5 - 0.65" HG, **R** = 0.6 - 1.3" HG, **G** = 1.2 - 7.0" HG, & **B** = 6.5 - 12" HG.

Note: Flow switches with Tufnol Epoxide flange will have a flange thickness of 38mm.



# TITAN (XPB) ATEX & IECEx Exd, Exia

## INDUSTRIAL SWITCHES

### INTRODUCTION

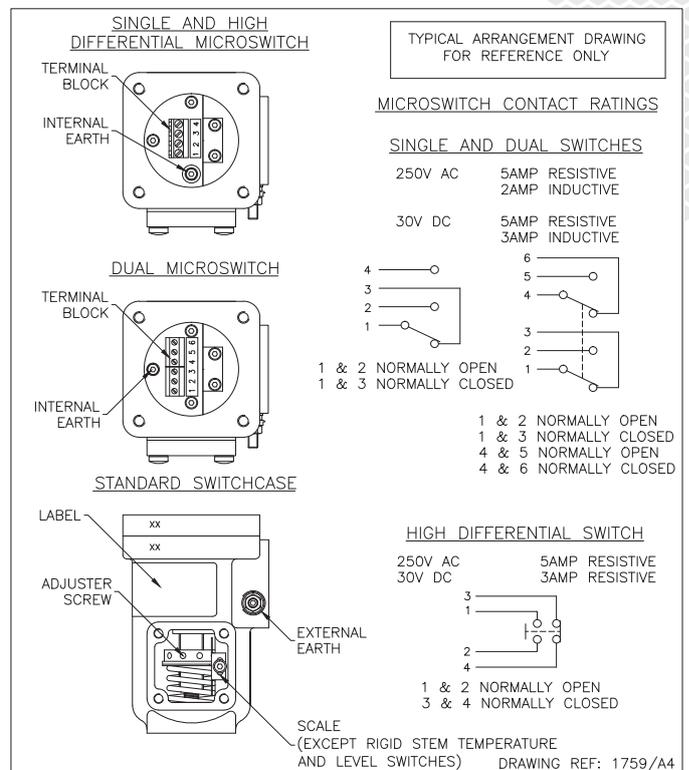
The Titan **pressure, differential pressure, temperature, level and flow** switches are designed for use in environments where explosive gases and can be present (e.g. Gas fields, Oil rigs and Chemical plants etc.) and have been ATEX and IECEx certified as detailed overleaf. (SIL 2 - IEC61508 proven reliability).

These switches are manufactured from a high quality casting which offers robust construction and protection to IP66 for use within heavily polluted industrial and marine 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.

The TITAN Exd certified switches must be installed in accordance with BS EN 60079-14. The certification allows for mounting against a wall or bulkhead with the minimum flamepath distances specified not being applicable.

### CALIBRATION

The design features a simple form of calibration adjustment against a scale plate. This allows users to either order units with a specific setting, or stock a mid range setting and then adjust to suit the application. This can be set safely with the switch supply live. On removal of the adjustment cover the adjusting ring can be turned with a small Tommy bar or Allen key. The setting is read from the centre of the red pointer ring against the calibrated scale plate. Rotation to the left will increase the set point and to the right decrease the set point. The adjustment mechanism incorporates a friction device to ensure set point will not change under vibration conditions.



# TECHNICAL SPECIFICATION

**Switchcase and covers:** 316 stainless steel or black anodised aluminium.

**Microswitch:** 1 x SPCO/SPDT or 2 x SPCO/SPDT gold flashed silver contacts. Dual switches are mechanically linked to provide DPDT switching action, reset of switches could be up to 3% apart. Dual microswitches may increase deadband by a factor of two.

**Microswitch rating :** 5 Amps @ 250 VAC resistive, 2 Amps @ 250 VAC inductive.  
5 Amps @ 30 VDC resistive, 3 Amps @ 30 VDC inductive.

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

**Electrical Conduit Entry:** M20 x 1.5 straight or angled entry. ½" NPT via adaptors

**Environmental Protection:** IP66 in accordance with BS EN 60529

**Vibration and shock parameters:** Switches were subjected to Ministry of Defence Type Approval System Test Vibration DGS 350 Paras 0602 & 0603. Shock – BR3021

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

**Process:** Diaphragm actuated (unless otherwise stated) -30 to +100°C (Nitrile) or -20 to +150°C (Viton). Piston actuated -30 to +100°C (Nitrile) or -20 to +150°C (Viton), -40 to 150°C (PTFE) or -35 to +100°C (EPDM).

**Ambient:** -50 to +85°C (standard). Storage : -60 to +85° Deg C.

(For temperature, level and flow switches please refer to specific pages).

**Certification:** Switches can be supplied for gas environments (dust must be specified at time of enquiry).

**ATEX/IECEX certified Exd Flameproof - Gas** (with or without resistors)

CE Ex II2G Exd IIB + H2T6 Ta -60 to +75°C, T5 Ta +90°C

Special conditions for safe use. 1) No modifications must be made to the flamepaths of the unit without consultation of the drawings listed on the certificate. 2) Suitably rated cable must be selected based on t Class shown above. 3) Fasteners of yield strength 240nmm<sup>2</sup> or greater are to be utilised. 4) Only suitably certified Ex d IIC Gb cable glands are to be used.

**ATEX/IECEX certified Exia Intrinsically Safe - Gas**

CE Ex II1G Exia IIC T6 Ta -50 to +78°C, T5 Ta +93°C, T4 Ta +128°

CE Ex II1G Exia IIC T5 Ta -50 to +72°C, T4 Ta +122°C (with resistors)

Special conditions for safe use. (Category 1, Zone 0) Aluminium may only be used when the ignition hazardous assessment shows that there is no risk of ignition from incendive, impact or abraision sparks.

**Accuracy:** +/-1% at 20°C

Continuous development may result in changes to specifications 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.