


# Installation Information

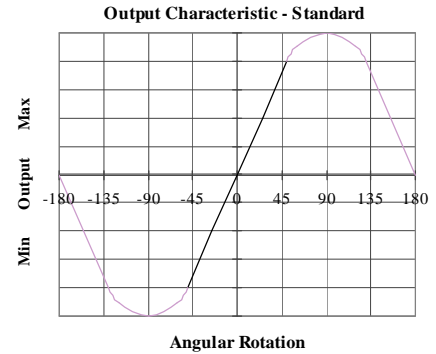
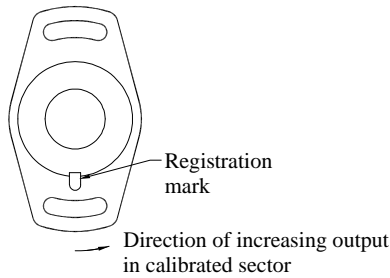
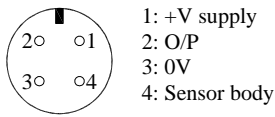
## TIPS<sup>®</sup> M603 LARGE ANGLE TILT SENSOR

INTRINSICALLY SAFE FOR HAZARDOUS MINING ENVIRONMENTS

ATEX Qualified to Intrinsic Safety Standard Certificate number Sira 00ATEX2076X

Output Description:	Barrier Supply Voltage:	Barrier Output:	 I/II M1/IGD EEx ia I/IIC T4 (Ta = -40°C to +80°C) Ex iaD 20 T135°C (Ta = -40°C to +80°C)
Voltage (BX002)	20-35V dc	0.5 to 9.5V	
Current Loop (BX003)	20-35V dc	4-20mA	

### Connector pin layout:



### Putting Into Service:

The sensor must be used with a galvanically isolated three port barrier designed to supply the sensor with a nominal 5V and to transmit the buffered output to a safe area. Various Barrier output versions are available. The barrier parameters must not exceed:

-  $U_i = 11.4V$   $I_i = 0.20A$   $P_i = 0.51W$

$C_i = 1.16\mu F$  with connector,  $C_i = 1.36\mu F$  with 1000m of cable.  $L_i = 50\mu H$  with connector,  $L_i = 710\mu H$  with 1000m of cable.

The sensor is certified to be used with up to **1000m** of cable with parameters not exceeding:-

Capacitance = **200 nF** total, Inductance = **660μH** total

The performance of the sensor may be affected by voltage drops in long cables; these can be eliminated by using a 5 wire connection. The typical supply current is 10mA and the sensor output is ratiometric to the supply voltage at the sensor.

**Use:** The sensor is designed to measure Angular displacement and provide an analogue output signal.

**Assembly and Dismantling:** The unit is not to be serviced or dismantled and re-assembled by the user.

**Maintenance:** accumulated dust layer must not exceed a depth of 50mm.

### Mechanical Mounting:

Flange mounted, flange slots are 4.5mm by 30 degrees wide on a 48mm pitch.

The mid point of the calibrated range is set with the flange slots in the vertical plane, mechanical mid point adjustment is achieved by rotating the sensor in the flange slots. **Note:** the sensor should be mounted on a vertical face.

### Output Characteristic:

The sensor has full rotational freedom and two sectors, 180° apart, over which linear response can be achieved. At the mid point of the calibrated range the output signal will be half full scale deflection, and the mounting flanges will be vertical. In the calibrated range the output increases as the sensor is rotated in an anti-clockwise direction viewed from the flange face- see drawing above. The calibrated output is factory set to be between 20 and 160°.

**Warning - the connector can be rotated for purposes of convenient orientation of the connector and cable, however rotating the connector more than one complete revolution is not recommended. Repeated rotation of the connector will lead to damage to the internal wiring.**

### Incorrect Connection Protection levels:-

**Not protected** – the sensor is **not** protected against either reverse polarity or over-voltage. The risk of damage should be minimal where the supply current is limited to less than 50mA.