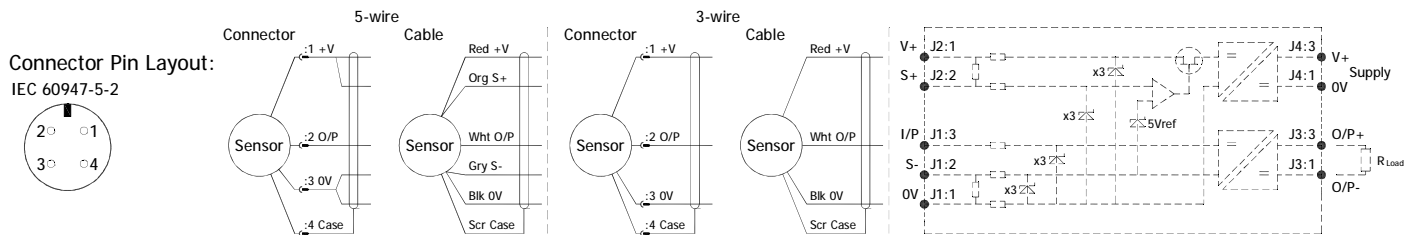


# Installation Information

## LIPS<sup>®</sup> M130 INTRINSICALLY SAFE LONG STROKE IN-CYLINDER LINEAR POSITION SENSOR FOR HAZARDOUS MINING ENVIRONMENTS

ATEX /IECEx Qualified to Intrinsic Safety Standard Certificate numbers SIRA 13ATEX2371X IECEx SIR 13.0154X		Ex I/II M1/1GD Ex ia IIC T4 Ga (Ta = -40°C to +80°C) Ex ia IIIC T135°C Da (Ta = -40°C to +80°C) Ex ia I Ma (Ta = -40 to +80°C)	
Electronics Version	Output Description:	Supply Voltage: V <sub>s</sub> (tolerance)	Load resistance:
EX07	0.5 - 4.5V (ratiometric with supply) [Output code 'A']	+5V (4.5 - 5.5V)	5kΩ min



**Putting Into Service:** The sensor must be used with a galvanic isolation barrier designed to supply the sensor with a nominal 5V and to transmit the sensor output to a safe area. The barrier parameters must not exceed:-

$U_i = 11.4V$        $I_i = 0.20A$        $P_i = 0.51W$   
 $C_i = 1.36\mu F^*$        $L_i = 860\mu H^*$       ('Lxx', 'LQxx', 'Mxx' or 'MQxx' options) \*Figures for 1km cable  
 $C_i = 1.16\mu F$        $L_i = 50\mu H$       ('J' option)

The sensor is certified to be used with up to 1000m of cable, cable characteristics must not exceed:-

Capacitance: ≤ 200 pF/m for max. total of: 200 nF  
 Inductance: ≤ 810 nH/m for max. total of: 810 μH

Approval only applies to specified ambient temperature range and atmospheric conditions in the range: 0.80 to 1.10 Bar, oxygen ≤ 21%.

The performance of the sensor may be affected by voltage drops associated with long cable lengths; For cable lengths exceeding 10 metres a five wire connection is recommended to eliminate errors introduced by cable resistance and associated temperature coefficients.

N.b. sensors supplied with cable, the free end must be appropriately terminated.

**Warning** - The M12 IEC 60947 connector may 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 damage the internal wiring!**

**Special Condition for Safe Use:**

The apparatus does not meet the 500 V r.m.s dielectric strength test between circuit and frame, in accordance with clause 6.3.13 of IEC 60079-11:2011. This must be taken into consideration on installation.

When using a Sensor that has an integral cable in a dust application, the free end of the cable shall be appropriately terminated for the zone of use.

Under certain extreme circumstances, the non-metallic and isolated metal parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. This is particularly important if the equipment is installed in a zone 0 location. In addition, the equipment shall only be cleaned with a damp cloth.

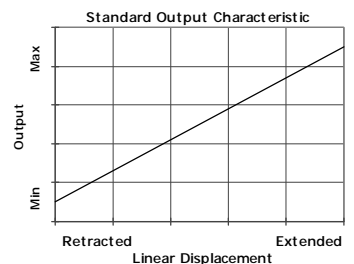
**Use:** The sensor is designed to measure linear displacement and provide an analogue output signal.

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

**Maintenance:** No maintenance is required. Any cleaning must be done with a damp cloth.

**Mechanical Mounting:** Via mounting thread, maximum tightening torque: 100Nm. See drawing P100-15, Installation Details Mounting Threads & Seals. An O ring seal is provided, size BS908 for M20 & 3/4 UNF thread or 14.3 x 2.4 for M18 thread. Install the target tube using the flange provided to fix into the piston rod. The target tube is intended to have some lateral freedom of movement to allow for misalignments in the assembly. The end of the target tube can be proud or flush with the piston end face as required. It is assumed that the sensor and target mounting points share a common earth.

**Output Characteristic:** Target position at start of normal travel is 36.0 mm from seal face. The output increases as the target is moved away from the sensor body, the calibrated stroke is between 400 mm and 1485 mm.



**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.

