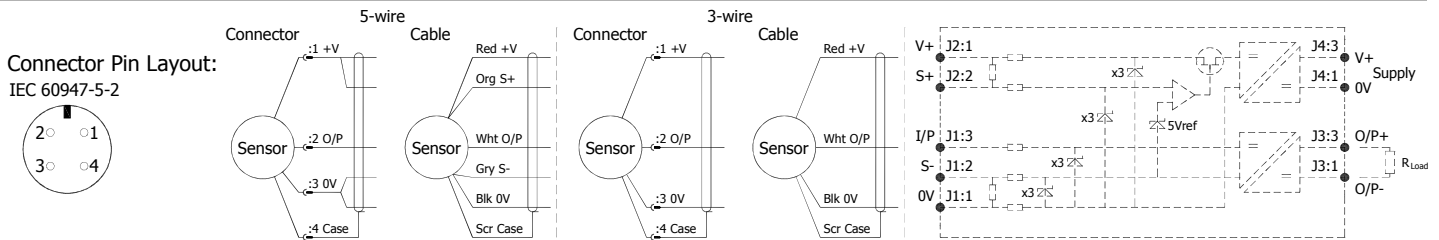


# Installation Information

## LIPS<sup>®</sup> M133 MID STROKE LINEAR POSITION SENSOR INTRINSICALLY SAFE 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<sub>i</sub> = 11.4V**      **I<sub>i</sub> = 0.20A**      **P<sub>i</sub> = 0.51W**
- C<sub>i</sub> = 1.36μF\***      **L<sub>i</sub> = 860μH\*** ('Lxx', 'LQxx', 'Mxx' or 'MQxx' options) \*Figures for 1km cable
- C<sub>i</sub> = 1.16μF**      **L<sub>i</sub> = 50μH** ('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!**

**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.

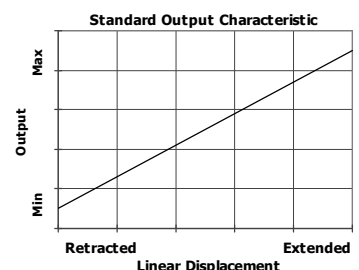
**Maintenance:** No maintenance is required. Any cleaning must be done with a damp cloth.

**Mechanical Mounting:** Via the two slots in the flange, the slots are 4.5 mm by 30 degrees wide on a 48 mm pitch.

**Output Characteristic:** Plunger extended 28 mm\* from mounting face at start of normal travel.

\*Note: where dome end option is fitted add 5 mm.

The output increases as the plunger extends from the sensor body, the calibrated stroke is between 51 mm and 100 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.