Senturion PRI04 Proximity Probe

- Proximity Probe with built in driver.
- Fully compatible with API 670 systems.
- 2.5mm measurement range.
- Excellent linearity and stability.
- Suitable for operation up to +90 °C.
- Suitable for relative vibration and shaft position measurements.

Proximity probe systems are usually made up of a calibrated probe, extension cable and driver. The PRI04 proximity probe system is a fully integrated probe with all these elements contained in the probe body. Utilising the eddy current principle, this combination forms a tuned circuit with the target material and variations in probe face to target distance are detected in this circuit by the driver. This provides a linearised voltage output proportional to target gap with a nominal sensitivity of 7.87 mV/um and a range of up to 2.5 mm. This type of measurement system provides highly accurate (resolution typically less than one micro-meter) vibration and relative positional measurements, for harsh environments up to 90 °C.

The probe temperature range is limited to 90°C due to the integrated electronics and is therefore also suitable for most pumps, fans and hydroelectric generator vibration monitoring applications. Removing the need for the separate driver and associated housing provides a significant cost saving with no compromises in measurement accuracy. The fully integrated assembly also offers increased immunity to signal interference with the removal of the probe to driver connecting cable.

The probe offers cable lengths of 5 m or 10 m for connecting locally to the machine with the capability of driving up to 500m of cable to the connecting system without loss of accuracy.
**Specification**

**Measurement Range:** 0.0 mm to 2.5 mm  
**Standard Option**

**Linearity:**  
(% of FS)  
± 2%, -1.0 V to -19.0 V  
± 5%, 0 °C to +90 °C @ -10.0 V

**Std Sensitivity:**  
7.87 V/mm (200 mV/mil) ± 1 %

**Linear voltage range:**  
Standard Option  
-1.0 V to -19.0 V for 0.254 mm (10 mil) to 2.54 mm (100 mil)

**Resolution:**  
< 0.001 mm

**Frequency Response:**  
DC to 10 kHz

**Maximum Cable Length:**  
330 m based on 120 pF/m at <10 kHz and 500 um pk-pk.  
3000 m based on 120 pF/m at <1 kHz and 500 um pk-pk.

**Reference Target Material:**  
ANSI 4140

**Probe tip diameter:**  
8.0 mm

**Probe tip material:**  
PPS 40 % Glass Filled

**Probe body material:**  
Stainless steel

**Available probe body lengths:**  
70 mm to 150 mm  
M10 x 1.0  
2.8 in to 5.9 in  
3/8 UNF

**Cable type:**  
3-wire 16/02  
PE outer jacket  
3.2 mm outer diameter

**Armoured option:**  
Stainless Steel Overbraid

**Operating Temp Range:**  
-30 °C to +90 °C

**Storage Temp Range:**  
-40 °C to +90 °C

**Minimum target diameter:**  
16 mm

**Effect of target curvature:**  
+2 % for shaft diameter 150 mm  
+5 % for shaft diameter 25 mm

**Magnetic field effect:**  
< 1 % at 110 mT

**Power supply range:**  
-16.0 Vdc to -28.0 Vdc  
Note: Output voltage is limited to 2.0 V below supply voltage when supply is < -21.5 V.

**Power supply sensitivity:**  
< 0.3 mVout / Vsupply

**Power consumption:**  
3 mA typ, 7 mA max

**Output impedance:**  
75 Ohms

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**Probe Mechanical Configuration**

**Straight Mount**

**Reverse Mount**

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## Probe Ordering Information

### PR04 -

<table>
<thead>
<tr>
<th>Cable length</th>
<th>5.0 - 5 m</th>
<th>10.0 - 10 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable protection</td>
<td>U - Unarmoured screened (standard)</td>
<td>A - Armour (stainless steel overbraid)</td>
</tr>
<tr>
<td>Body Format</td>
<td>S - Straight Mount (for bracket mounting)</td>
<td>R - Reverse (fixed nut with 'O' ring for use with probe holder)</td>
</tr>
<tr>
<td>Thread type</td>
<td>0 - 3/8&quot;UNF (standard imperial)</td>
<td>1 - M10 x 1.0 (standard metric)</td>
</tr>
<tr>
<td>Range (sensitivity)</td>
<td>0 - 2.5 mm (7.87 mV/µm) (API670)</td>
<td></td>
</tr>
<tr>
<td>Intrinsic Safety</td>
<td>0 - None</td>
<td>1 - ATEX Ex II 1 G Ex ia IIC T4 (Tamb = -40 °C to +180 °C)</td>
</tr>
<tr>
<td>Unthreaded Length</td>
<td>Can be ordered in metric or inches.</td>
<td>Not required for reverse mount (fixed nut) option (00)</td>
</tr>
<tr>
<td>Overall Case length</td>
<td>Can be ordered in metric or inches.</td>
<td>See Note 2.</td>
</tr>
</tbody>
</table>

### Note 1 - Unthreaded Length Option

#### Imperial Case
Unthreaded length must be at least 0.8 inches less than the case length. Order in increments of 0.1 in.
Maximum unthreaded length: 5.1 in.
Minimum unthreaded length: 0.0 in.
Example: 04 = 0.4 in.

#### Metric Case
Unthreaded length must be at least 20 mm less than the case length. Order in increments of 10 mm.
Maximum unthreaded length: 130 mm.
Minimum unthreaded length: 0 mm.
Example: 09 = 90 mm.

### Note 2 - Overall Case Length Option

#### Imperial Case
Order in increments of 0.1 in.
Maximum case length: 5.9 in
Minimum case length: 2.8 in
Example: 44 = 4.4 in

#### Metric Case
Order in increments of 10 mm.
Maximum length: 150 mm.
Minimum length: 70 mm.
Example: 09 = 90 mm.