Senturion XPR04 Proximity Probe

- Switch selectable system cable lengths 5m, 7m and 9m.
- LED indication of selected length.
- 3.5mm socket for gap voltage monitoring.
- Double screened cable for high noise immunity.
- Snap lock and shake proof cable connection.
- Low profile driver for easy local integration to machine (Din rail mount opt).
- Excellent repeatability on replacement of probe, extension or driver.
- Compliant with standard API 670.

The XPR04 proximity probe system is made up of a calibrated probe, extension cable and driver. 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 180 °C.

The driver unit offers selectable system lengths of 5 m, 7 m or 9 m, with a front panel green LED indicating the selected option. The gap voltage monitoring socket assists with commissioning the probe system; a volt meter can be connected directly to the driver through the 3.5 mm standard audio socket to display the gap voltage at the point of installation and the probe mechanical gap can then be adjusted to suite the application.

The cable system incorporates snap lock connectors which require no torquing and provide a shake proof solution important for heavy industrial applications. The double screened cable offers robustness in combination with high immunity to interference and optional stainless steel convoluted armour is available for applications or environments where cable protection is paramount.
**System Performance**

- **Measurement Range:**
  - Standard Option: 0.0 mm to 2.5 mm
  - Half Sensitivity Option: 0.0 mm to 4.0 mm
- **Linearity:**
  - ±1%, -1.0 V to -19.0 V (% of FS)
  - ±2%, 0 °C to +150 °C @ -10.0V
- **Std Sensitivity:**
  - 7.87 V/mm (200 mV/mil) ± 1%
- **Half Sensitivity:**
  - 3.94 V/mm (100 mV/mil) ± 1%
- **Resolution:**
  - <0.001 mm
- **Interchangeability:**
  - Maximum interchangeability error replacing either probe, extension cable or driver in calibrated system is ± 5 %.
- **Available system lengths:**
  - 5 m, 7 m and 9 m
- **Cable length tolerance**
  - Probe (1 metre): 1.0 m to 1.5 m
  - Cable Extension (4 metre): 4.0 m to 4.4 m
  - Cable Extension (6 metre): 6.0 m to 6.6 m
  - Cable Extension (8 metre): 8.0 m to 8.8 m
- **Frequency Response:**
  - DC to 10 kHz
- **Maximum Cable Length:**
  - 330 m based on 120 pF/m at <10 kHz and 500 um pk-pk.
  - 300 m based on 120 pF/m at <1 kHz and 500 um pk-pk.
- **Reference Target Material:**
  - ANSI 4140

**Probe**

- **Probe tip diameter:** 8.0 mm
- **Probe tip material:** PPS 40 % Glass Filled
- **Probe body material:** Stainless steel
- **Available probe body lengths:** 20 mm to 250 mm
  - 0.8 in to 9.6 in
- **Cable type:** Triaxial 75Ohm Coaxial
  - FEP outer jacket
  - 3.2 mm outer diameter
- **Armoured option:** Convoluted Stainless Steel
  - 6.4 mm outer diameter
- **Probe Resistance:** 3.1 Ohms ± 0.2 Ohm
- **Operating Temp Range:** -30 °C to +180 °C
- **Storage Temp Range:** -40 °C to +180 °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
- **Connector:** Female Miniature Coaxial

**Driver**

- **Linear voltage range:**
  - Standard Option: -1.0 V to -19.0 V for 0.254 mm (10 mil) to 2.54 mm (100 mil)
  - Half Sensitivity Option: -1.0 V to -16.0 V for 0.254 mm (10 mil) to 4.064 mm (160 mil)
- **System length selection:** Internal switch 5 m, 7 m or 9 m
- **System length indication:** Green LED lamp
- **Power supply range:**
  - -16.0 Vdc to -28.0 Vdc
  - Note: Output voltage is limited to 1.2 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
- **Monitor Output Impedance:**
  - 10 KOhm
- **Sensor Connector type:** Self Locking Miniature Male Coaxial
- **Monitor Connector type:** 3.5 mm audio jack
- **Mounting:** Din Rail or Plate
- **Mass:** 250 grams
- **Operating Temp Range:**
  - -30 °C to +90 °C
- **Storage Temp Range:**
  - -40 °C to +90 °C

Typical 5m system performance

Typical 5m system performance

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**Probe Mechanical Configuration**

**Straight Mount**

![Diagram of Straight Mount Configuration]

**Reverse Mount**

![Diagram of Reverse Mount Configuration]

**Extension Cable Mechanical Drawing**

![Diagram of Extension Cable Configuration]
Driver Mechanical Configuration

- Female Probe Input Connector
- Removable Signal Connector
- Cable Length Indicators
- Driver Unit
- Gap Voltage Connector

Mounting Option 1:
TS35 DIN Rail

Mounting Option 2:
Mounting Clip

2x M4 Screws

119.2mm Mounting Screw Pitch
129.4mm Clip Width
Probe Ordering Information

XPR04 - 10 U S 1 0 0 0 06

Cable length
- 0.5 – 0.5 m
- 1.0 – 1 m
- 5.0 – 5 m
- 7.0 – 7 m
- 9.0 – 9 m

Cable protection
- U – Unarmoured double screened (standard)
- C – Conduit (convoluted stainless steel)
- S – Heatshrink isolation over conduit
- G – M20 cable gland fitted to standard cable

Body Format
- S – Straight Mount (for bracket mounting)
- R – Reverse (fixed nut with "O" ring for use with probe holder)
- A – Right angled cable exit

Thread type
- 0 – 3/8"UNF (standard imperial)
- 1 – M10 x 1.0 (standard metric)
- 2 – M16 x 1.5
- 3 – 3/8" - 24 UNC
- 4 – M18 x 1.5
- 5 – M14 x 1.0
- 6 – M14 x 1.5
- 7 – M12 x 1.25
- 8 – M10 x 1.5

Range (sensitivity)
- 0 – 2.5 mm (7.87 mV/µm) (API670)
- 1 – 4 mm (3.94 mV/µm)

Intrinsic Safety
- 0 – None
- 1 – ATEX Ex II 1 G EEx ia IIC T4 (Tamb = -40 °C to +180 °C)

Unthreaded Length
Can be ordered in metric or inches.
Not required for reverse mount (fixed nut) option (00)
See Note 1.

Overall Case length
Can be ordered in metric or inches.
See Note 2.

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: 8.8 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: 230 mm.
Minimum unthreaded length: 0 mm.
Example: 06 = 60 mm.

Note 2 - Overall Case Length Option
Imperial Case
Order in increments of 0.1 in.
Maximum case length: 9.6 in
Minimum case length: 0.8 in
Example: 24 = 2.4 in

Metric Case
Order in increments of 10 mm.
Maximum length: 250 mm.
Minimum length: 20 mm.
Example: 06 = 60 mm.
**Driver Ordering Information**

**System Length**
- U - Universal Driver for 5m, 7m and 9m systems (standard)
- S - Special requirements (2m, 14m, etc)

**Range (sensitivity)**
- 0 - 2.5mm (7.67mV/μm) (APIG70)
- 1 - 4mm (3.94mV/μm)

**Intrinsic Safety**
- 0 - None
- 1 - ATEX Ex II G Ex ia IIC T4 (Tamb = -40°C to +80°C)

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**Extension Cable Ordering Information**

**Cable Length**
- 4.0 - 4m
- 4.5 - 4.5m
- 6.0 - 6m
- 6.5 - 6.5m
- 8.0 - 8m
- 8.5 - 8.5m

**Cable Protection**
- U - Unarmoured double screened (standard)
- C - Conduit (Convoluted SS)

**Intrinsic Safety**
- 0 - None
- 1 - ATEX Ex II G Ex ia IIC T4 (Tamb = -40°C to +80°C)