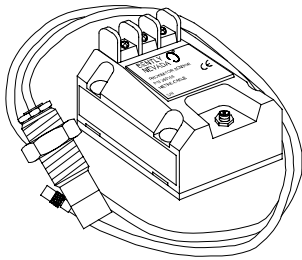


## Specifications and Ordering Information

# 35 mm Extended Range Proximity Transducer



## Description

The 35 mm Proximity Transducer System consists of a probe, extension cable, and a Proximitor® Sensor. It is primarily used to measure differential expansion (DE) on medium and large steam turbines. It is specifically designed for applications where the required range of the transducer system exceeds 4 mm (160 mils) **and** the temperature at the probe location exceeds 125°C (257°F).<sup>1</sup>

Three primary configurations are available for 35 mm probes:

- 1) a threaded probe case with lock nut for mounting in a tapped hole.
- 2) an unthreaded probe case for use with a mounting clamp.
- 3) rear-exit or side-exit integral cable.

Probes are also available with 5 or 9 metres of integral cable that connects directly to the Proximitor® Sensor, thus eliminating connections with a separate extension cable.

### Note:

1. The 25 mm Integral Differential Expansion Transducer System is available and provides numerous improvements over the 35 mm Extended Range Proximity Transducer System. It is recommended as the best available technology for extended range applications where the temperature at the probe location does not exceed 125° C (257° F). Consult Specifications and Ordering Information (p/n 141611-01) or your Bently Nevada Sales and Service Professional for more information.

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## Specifications

Specifications were determined with a -24 Vdc supply, 10 k  $\Omega$  load, and a 102 mm (4 in) diameter AISI 4140 steel target at +22°C (+72°F).

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### Electrical

<i>Proximitor® Sensor Input:</i>	Accepts one noncontacting 7200 series 35 mm Proximity Probe and Extension Cable.
<i>Power:</i>	-18 Vdc to -24 Vdc at 12 mA maximum consumption.
<i>Output resistance:</i>	50 $\Omega$ .
<i>Probe dc resistance (nominal) (<math>R_{PROBE}</math>):</i>	5.0 $\Omega$ +2.85 $\Omega$ /m (0.866 $\Omega$ /ft).



<i>Extension cable dc resistance (nominal)</i>	
<i>Center conductor (R<sub>CORE</sub>):</i>	2.80 Ω/m (0.850 Ω/ft).
<i>Shield conductor (R<sub>JACKET</sub>):</i>	0.05 Ω/m (0.016 Ω/ft).
<i>Extension cable capacitance:</i>	68.8 pF/m (20.9 pF/ft) typical.
<i>Field wiring:</i>	Recommend using three-conductor shielded triad cable. Maximum length of 305 metres (1,000 feet) between the Proximito <sup>®</sup> Sensor and the monitor. Consult the manual for frequency roll-off at longer lengths.
<i>Linear Range:</i>	12.7 mm (500 mils). Linear range begins at approximately 1.3 mm (50 mils) from target and is from 1.3 to 14.0 mm (50 to 550 mils) (approximately -1.5 to -11.5 Vdc).
<i>Average Scale Factor (ASF):</i>	0.79 V/mm (20 mV/mil) ±6% including interchangeability error when measured in increments of 1.3 mm (50 mils) over the 500 mil linear range.
<i>Deviation from best fit straight line (DSL):</i>	Less than ±0.33 mm (±12.8 mil).
<i>Minimum Target Size:</i>	57 mm (2.25 in) in diameter (flat target).
<i>Electrical Classification:</i>	Complies with the European CE mark. Hazardous area approvals not available.

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## Mechanical

<i>Probe Tip Material:</i>	Molded thermoplastic.
<i>Probe Case Material:</i>	300 series stainless steel.
<i>Probe and Extension Cable Specifications:</i>	95 Ω coaxial, fluoroethylene propylene (FEP) insulated probe cable in the following total probe lengths: 1, 5 or 9 metres.
<i>Extension Cable Material:</i>	95 Ω coaxial, fluoroethylene propylene (FEP) insulated.

<i>Proximito<sup>®</sup> Sensor Material:</i>	A380 aluminum.
<i>System Length:</i>	5 or 9 metres including extension cable.
<i>Extension Cable Armor (optional):</i>	Flexible AISI 302 SST with FEP outer jacket.
<i>Tensile Strength (maximum rated):</i>	Probe tip to probe case: 22 N (5 lbf) Probe case to connector: 133 N (30 lbf)
<i>Connector material:</i>	Silver-plated brass.
<i>Probe case torque:</i>	68 N•m (600 in•lbf)
<i>Maximum connector-to-connector torque:</i>	0.565 N•m (5 in•lbf)
<i>Total System Weight (typical):</i>	0.86 kg (1.9 lbm)

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## Environmental Limits

### Probe Temperature Range

<i>Operating Temperature:</i>	-18°C to +177°C (0°F to +350°F)
<i>Storage Temperature:</i>	-34°C to +177°C (-29°F to +350°F)

### Extension Cable Temperature Range

<i>Operating and Storage Temperature:</i>	-51°C to +177°C (-60°F to +350°F)
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### Proximito<sup>®</sup> Sensor Temperature Range

<i>Operating and Storage Temperature:</i>	-34°C to +100°C (-29°F to +212°F)
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<i>Relative Humidity:</i>	95% non-condensing from +2°C to +100°C (+35°F to +212°F) when connectors are protected.
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## Ordering Information

**35 mm Standard Proximity Probe**  
1 1/2-12 UNF English Thread:  
76679 -AXX -BXX -CXX -DX -EX

**M39 x 1.5 Metric Thread:**  
76680 -AXX -BXX -CXX -DX -EX  
**Option Descriptions**

*A: Unthreaded Length Option*

**English thread configurations:**  
Order in increments of 0.10 in = **0 1**  
Maximum unthreaded length: 8.1 in = **8 1**  
Minimum unthreaded length: 0 in = **0 0**

**Metric thread configurations:**  
Order in increments of 10 mm = **0 1**  
Maximum unthreaded length: 210 mm = **2 1**  
Minimum unthreaded length: 0 mm = **0 0**

*B: Case Length Option*

**English thread configurations:**  
Order in increments of 0.10 in = **0 1**  
Maximum case length: 9.8 in = **9 8**  
Minimum case length: 1.7 in = **1 7**

**Metric thread configurations:**  
Order in increments of 10 mm = **0 1**  
Maximum threaded length: 250 mm = **2 5**  
Minimum threaded length: 40 mm = **0 4**

**Note:** Case length must exceed unthreaded length by 1.7 in for the English threaded probe and 40 mm for the metric version.

*C: Total Length Option*

**1 0** 1.0 metre (3.3 ft)  
**5 0** 5.0 metres (16.4 ft)  
**Note:** For use with 5 metre Proximito<sup>®</sup> Sensor only.  
**9 0** 9.0 metres (29.5 ft)

*D: Armor Option*

**0** Without armor  
**1** With armor

*E: Connector Option*

**0** Without connector  
**2** With miniature coaxial male connector

## 35 mm Smooth Case Proximity Probe

Rear Exit: 76681 -AXX -BXX -CX -DX

Side Exit: 76682-AXX-BXX-CX-DX  
**Option Descriptions**

*A: Case Length Option*

Order in increments of 0.10 in = **0 1**

**For side exit configuration:**  
Minimum case length: 1.6 in = **1 6**  
Maximum case length: 9.8 in = **9 8**

**For rear exit configuration:**  
Minimum case length: 0.5 in = **0 5**  
Maximum case length: 9.8 in = **9 8**

*B: Total Length Option*

**1 0** 1.0 metre (3.3 ft)  
**5 0** 5.0 metres (16.4 ft)  
**Note:** For use with 5 metre Proximito<sup>®</sup> Sensor only.  
**9 0** 9.0 metres (29.5 ft)

*C: Armor Option*

**0** Without armor  
**1** With armor

*D: Connector Option*

**0** Without connector  
**2** With miniature coaxial male connector

**35 mm Extension Cable**  
76684 -AXXX -BXX  
**Option Descriptions**

*A: Total Length Option*

**0 4 0** 4.00 metres (13.1 ft)  
**Note:** For use with 5 metre Proximito<sup>®</sup> Sensor only.  
**0 8 0** 8.00 metres (26.2 ft)

*B: Armor Option*

**0 0** Without armor  
**0 1** With armor

**35 mm Proximito<sup>®</sup> Sensor**  
76683 - AXX  
**Option Description**

*A:*

**5 0** For combined system electrical length of 5 metres  
**9 0** For combined system electrical length of 9 metres

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## Accessories

77290-01 Manual

153875 Performance Specification