Description

The design of the PROXPAC XL* Proximity Transducer Assembly is similar to our 31000/32000 Proximity Probe Housing Assemblies. The assembly offers the same advantages and features as the 31000 and 32000 housings for accessing and externally adjusting proximity probes. However, the housing cover of the PROXPAC XL Assembly also contains its own 3300 XL Proximitor* sensor. This design makes the PROXPAC XL Assembly a completely self-contained proximity probe system, and eliminates the need for an extension cable between the probe and its associated Proximitor sensor. It also eliminates the need for a separate Proximitor housing, as the field wiring connects directly between the monitors and PROXPAC XL Assemblies.

The PROXPAC XL housing is made of Polyphenylene Sulfide (PPS), which is an advanced, molded thermoplastic. This material replaces the steel and aluminum in previous housings offered in the Bently Nevada* product line. It also incorporates glass and conductive fibers in the PPS to strengthen the housing and more effectively dissipate electrostatic charges. The PROXPAC XL housing is rated for Type 4X and for IP66 environments and provides extra protection in severe environments.
Specifications

Electrical

Proximitron Sensor Input

3300 XL 8 mm Proximity Probe with a 1-metre cable length installed in the probe sleeve.

Power

Requires -17.5 Vdc to -26 Vdc without barriers at 12 mA maximum consumption, -23 Vdc to -26 Vdc with barriers. Operation at a more positive voltage than -23.5 Vdc can result in reduced linear range.

Supply Sensitivity

Less than 2 mV change in output voltage per volt change in input voltage.

Output resistance:

50 Ω

Nominal Probe DC Resistance (R_PROBE):

See Table 1.

Table 1: Resistance from the Center Conductor to the Outer Conductor

<table>
<thead>
<tr>
<th>Probe Length (m)</th>
<th>R_PROBE (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>7.59 ± 0.50</td>
</tr>
</tbody>
</table>

Field wiring:

0.2 to 1.5 mm² (16 to 24 AWG). Recommend using 3-conductor shielded triax cable and tinned field wiring. Maximum length of 305 metres (1,000 feet) between the 3300 XL Proximitron Sensor and the monitor. See the frequency response graph (Figure 1, page 7) for signal rolloff at high frequencies when using longer field wiring lengths.

Linear Range:

2 mm (80 mils). Linear range begins at approximately 0.25 mm (10 mils) from target and is from 0.25 mm to 2.3 mm (10 mils to 90 mils) approximately –1 Vdc to –17 Vdc.

Recommended Gap Setting:

1.27 mm (50 mils)

Incremental Scale Factor (ISF)

7.87 V/mm (200 mV/mil) ±5% including interchangeability error when measured in increments of 0.25 mm (10 mils) over the 80 mil linear range from 0 °C to +45 °C (+32 °F to +113 °F).

Deviation from best fit straight line (DSL)

Standard 1 metre system

Less than ±0.025mm (±1 mil) with components at 0 °C to +45 °C (+32 °F to +113 °F).

Frequency Response

0 to 10 kHz: +0, -3 dB, with up to 305 metres (1,000 feet) of field wiring.

Minimum Target Size

15.2 mm (0.6 in) diameter (flat target)

Shaft Diameter

Minimum

50.8 mm (2.0 in)
Recommended minimum

76.2 mm (3.0 in)

When gapped at the center of the linear range, the interaction between two separate transducer systems (cross-talk) will be less than 50 mV on shaft diameters of at least 50 mm (2.0 in) or greater. Care should be taken to maintain minimum separation of transducer tips, generally at least 40 mm (1.6 in) for axial position measurements or 38 mm (1.5 in) for radial vibration measurements to limit cross-talk to 50 mV or less. Radial vibration or position measurements on shaft diameters smaller than 76.2 mm (3.0 in) will generally result in a change in scale factor. Consult Performance Specification 159484 for additional information.

Effects of 60 Hz Magnetic Fields
Up To 300 Gauss

See Table 2.

Table 2: Output Voltage in Mil pp/Gauss

<table>
<thead>
<tr>
<th>Gap (mils)</th>
<th>1-metre Proximitor Sensor</th>
<th>Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0.0124</td>
<td>0.0004</td>
</tr>
<tr>
<td>50</td>
<td>0.0110</td>
<td>0.0014</td>
</tr>
<tr>
<td>90</td>
<td>0.0126</td>
<td>0.0045</td>
</tr>
</tbody>
</table>

IEC Ex

3300 XL Proximitor Sensor, ia IECEx BAS04.0055X

Ex ia IIC T4/T5 (-51°C ≤ Ta ≤ +100°C / -35°C ≤ Ta ≤ +85°C)

Terminal Block Connections

Ui = -28 V    Ci = 0 nF
Ii = 140 mA   Li =10 µH
Pi= 0.84 W

Coaxial Connection

Ui = -28 V    Ci= 5.7 nF
Ii = 140 mA   Li = 0.85 mH
Pi= 0.84 W

Load Parameters

The capacitance and either the inductance or the inductance to resistance (L/R) ratio of the load connected to the probe coaxial...
terminal, must not exceed the values in Table 3.

**Table 3: Maximum Load Parameters**

<table>
<thead>
<tr>
<th>Group</th>
<th>Capacitance (μF)</th>
<th>Inductance (mH)</th>
<th>L/R Ratio (μH/Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIC</td>
<td>0.077</td>
<td>0.99</td>
<td>35</td>
</tr>
<tr>
<td>IIB</td>
<td>0.644</td>
<td>7.41</td>
<td>142</td>
</tr>
<tr>
<td>IIA</td>
<td>2.144</td>
<td>15.6</td>
<td>295</td>
</tr>
</tbody>
</table>

**3300 XL Proximitor Sensor, nA**

IECEEx BAS04.0057X

AEEx nA II T4 / T5 (-51 °C ≤ Ta ≤ +100 °C / -35 °C ≤ Ta ≤ +85 °C)

Ui = -28 V

**Table 4: AEx ia IIC Temperature Classifications**

<table>
<thead>
<tr>
<th>Temperature Classification</th>
<th>Ambient Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>-51 °C to +232 °C</td>
</tr>
<tr>
<td>T2</td>
<td>-51 °C to +177 °C</td>
</tr>
<tr>
<td>T3</td>
<td>-51 °C to +120 °C</td>
</tr>
<tr>
<td>T4</td>
<td>-51 °C to +80 °C</td>
</tr>
<tr>
<td>T5</td>
<td>-51 °C to +40 °C</td>
</tr>
</tbody>
</table>

Ui = -28 V  Ci = 1.5 nF
li = 140 mA  Li = 200 µH
Pi =0.84 W

**Brazil:**

3300 XL 8mm Eddy Current Probe, ia

IECEEx BAS04.0058X

Ex nA II Temperature Classification per the table above.

Must be supplied from a voltage limited source.

EEEx nA for Zone 2, Group IIC, EC certificate number BAS99ATEX3100U.

3300 XL Proximitor Sensor, ia

IECEEx BAS04.0056

AEx ia IIC Temperature Classification per Table 4 below.

**Mechanical Housing Ratings**

IP66 rating verified by BASEEFA report number T07/0709.

**Probe Tip Material**

Polyphenylene Sulfide (PPS)

**Probe Case Material**

AISI 304 stainless steel

**Probe Cable**

1-metre length, 75 Ω triaxial, fluoroethylene propylene (FEP) insulated.

**Probe Connector**

Gold-plated brass ClickLoc* connector.
<table>
<thead>
<tr>
<th><strong>Probe Tensile Strength</strong></th>
<th><strong>Housing Strength Typical</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>330 N (75 lb) between probe cable and case, maximum.</td>
<td>Outer sleeve was mounted on a test stand with its axis parallel to horizontal and the housing mounted on the outer sleeve through an end hole. The housing supported 912 N (205 lbf) placed approximately 38 mm (1.5 in) from the unsupported end with the cover fastened in place and grounding liner installed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Housing Material</strong></th>
<th><strong>Sleeve Material and Retaining Chain</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultraviolet (UV) resistant, glass-reinforced polyphenylene sulfide (PPS) thermoplastic containing conductive fibers.</td>
<td>AISI 304 stainless steel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Outer Sleeve and Retaining Screws</strong></th>
<th><strong>Sleeve O-Ring Material</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>AISI 303 stainless steel</td>
<td>Neoprene</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Grounding Liner and Retaining Plate Material</strong></th>
<th><strong>Vibration Isolation Material</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>AISI 304 Stainless Steel</td>
<td>Extra Soft Cellular Silicone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Lid Label Material</strong></th>
<th><strong>Environmental Limits</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloss Radiant White Polyester</td>
<td><strong>Probe Temperature Range</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Operating Temperature:</strong></th>
<th><strong>Note:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>-51 °C to +177 °C (-60 °F to +350 °F).</td>
<td>Exposing the probe to temperatures below –34 °C (-29 °F) may cause premature failure of the pressure seal.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Total System Weight</strong></th>
<th><strong>Recommended Torque</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.44 kg (3.2 lbm) typical with 0.3 metre (12 in) sleeve length.</td>
<td><strong>Retaining Nut</strong></td>
</tr>
<tr>
<td>29.5 N·m (260 in·lb)</td>
<td><strong>Probe Sleeve Locknut</strong></td>
</tr>
<tr>
<td>39.3 N·m (350 in·lb)</td>
<td></td>
</tr>
</tbody>
</table>
**Probe Housing and Proximiter Sensor**

*Operating Temperature:*

-51 °C to +100 °C (-60 °F to +212 °F).

*Proxpac Storage Temperature:*

-51 °C to +105 °C (-60 °F to +221 °F).

*Relative Humidity (PROXPAC XL Sensor and probe):*

100% condensing, non-submersible when connectors are protected. When properly sealed, moisture should not enter the housing. Users should take precautions to prevent moisture from traveling through the conduit into the housing.

*Hot Water and Steam Exposure Effects:*

(Specification not guaranteed) Brief periods (up to one week) of contact with hot water 95 °C (203 °F) and/or condensing steam should not significantly affect the strength of the plastic housing. Longer contact with hot water or steam may weaken the plastic housing during the first 6 to 8 weeks of exposure and ultimately reduce the housing strength to approximately half of the initial value. Tests of actual housing performance after contact with hot water and condensing steam have not been conducted.

*Probe Pressure:*

The PROXPAC XL design seals differential pressure between the probe tip and the housing main body when used with a 3300 XL 8 mm probe. The sealing material inside the probe case consists of a Viton O-ring, whereas the O-ring between the sleeve and the housing is Neoprene. The plastic housing design is certified to seal against hose-directed water according to Type 4X and IP66 standards but will not resist internal or external pressure. Probes are not pressure tested prior to shipment.

Contact our custom design department if you require a test of the pressure seal for your application.

**Note:** It is the responsibility of the customer or user to ensure that their installation will contain and safely control all liquids and gases should the PROXPAC XL transducer leak. Solutions with high or low pH values may erode the tip assembly of the probe, causing media to leak into surrounding areas. Bently Nevada LLC will not be held responsible for any damages resulting from leaking Proximity Probe Housing Assemblies. In addition, PROXPAC XL transducers will not be replaced under the service plan due to probe leakage.

**Patents**

One or more of the following patents apply to this product: 5,016,343; 5,126,664; 5,351,388; and 5,685,884.
Frequency Response with Different Field Wiring Lengths without Barriers (1 m System)

Figure 1

Ordering Information

Notes:
Order -00 or -01 (for multi approvals) for the A option and -00 or -000 for all other options to receive just a spare housing with Proximitor Sensor.

PROXPAC XL Proximity Transducer, English
330880-AXX-BXX-CXXX-DXX-EXX

A: Probe and Approvals Option
0 0 No probe; Proximitor Sensor without approvals
0 1 No probe; Proximitor sensor with Multiple Approvals
1 6 3300 XL 8 mm probe without approvals
2 8 3300 XL 8 mm probe with Multiple Approvals

B: Standoff Adapter Option (B Dimension)
Order in increments of 0.5 in (13 mm).
Minimum length: 1.5 in (38 mm)
Maximum length: 7.5 in (191 mm)
Examples:
0 0 = No standoff adapter
1 5 = 1.5 in (38 mm)

C: Probe Penetration Option (C Dimension)
For penetration lengths between 1.0 and 2.0 inches, counterbore may be required in machine case to reduce probe side view and rear view effects.

Order in increments of 0.1 in (2 mm).
Minimum length: 1.0 in (25 mm)
Maximum length: 30 in (762 mm)
Examples:
0 0 0 = No probe sleeve
0 3 7 = 3.7 in (94 mm)
2 2 4 = 22.4 in (569 mm)

D: Fittings Option
For 1/2-14 NPT fittings, order option -03 or spare reducers for either option -01 or -02.
0 0 No fittings; two plugs and two washers
0 1 One 3/4-14 NPT fitting, two plugs
0 2 Two 3/4-14 NPT fittings, one plug
0 3 One 3/4-14 NPT fitting, one 3/4-14 NPT to 1/2-14 NPT SST reducer and two plugs

E: Mounting Thread Option
0 0 No outer sleeve assembly
0 2 3/4-14 NPT (Required if ordering Standoff Adapter Option.)
0 5 7/8-14 UNF-2A

PROXPAC XL Proximity Transducer, Metric
330881-AXX-BXX-CXXX-DXX-EXX

A: Probe and Approvals Option
0 0 No probe; Proximitor sensor without approvals
0 1 No probe; Proximitor sensor with Multiple Approvals
1 6 3300 XL 8 mm probe without approvals
2 8 3300 XL 8 mm probe with Multiple Approvals

Specifications and Ordering Information
Part Number 178554-01
Rev. A (05/14)
**B: Standoff Adapter Option (B Dimension)**

Order in increments of 10 mm.

- **Minimum length:** 40 mm
- **Maximum length:** 200 mm

**Examples:**
- 0 0 = No standoff adapter
- 0 4 = 40 mm
- 2 0 = 200 mm

**C: Probe Penetration Option (C Dimension)**

For penetration lengths between 25 and 50 mm, counterbore may be required in machine case to reduce probe side view and/or rear view effects.

Order in increments of 1 mm.

- **Minimum length:** 25 mm
- **Maximum length:** 760 mm

**Examples:**
- 0 0 0 = No probe sleeve
- 0 5 0 = 50 mm
- 7 6 0 = 760 mm

**D: Fittings Option (supplied as a kit)**

- 0 0 = No fittings; two plugs and two washers
- 0 1 = One M25 fitting, two plugs
- 0 2 = Two M25 fittings, one plug
- 0 3 = One M20 fitting, two plugs
- 0 5 = One PG21 to PG11 reducer, two plugs
- 0 6 = One 3/4-14 NPT fitting, one 3/4-14 NPT to 1/2-14 NPT SST reducer and two plugs
- 0 7 = One PG21 x M20 fitting, two plugs
- 0 8 = Two PG21 x M20 fittings, one plug

Conduit fittings are necessary when hardline conduit or metal piping is brought into the housing. If using flexible conduit, you should order with integral 3/4-14 NPT fittings so that you do not require additional conduit fittings with the housing. If using flexible conduit, order the D = 0 option.

**E: Mounting Thread Option**

- 0 0 = No outer sleeve assembly
- 0 1 = M24 X 3
- 0 2 = 3/4-14 NPT (required if ordering Standoff Adapter Option)

**Accessories**

- 159484 = Performance Specification - 3300 XL Proximity Transducer System
- 178761-01 = Operation manual
- 178850-00 = Upgrade Kit, Non-approved (Includes housing lid, 1-metre Proximitor sensor, and support table)
- 178850-05 = Upgrade Kit, Multi-Approvals (Includes housing lid, 1-metre Proximitor sensor, and support table)
- 178644-01 = Proximitor sensor support table
- 330180-12-00 = Spare 3300 XL Proximitor sensor, non-approved
- 330180-12-05 = Spare 3300 XL Proximitor sensor, Multiple Approvals
- 330105-02-12-10-02-00 = Spare 3300 XL 8 mm probe, English, non-approved
- 330105-02-12-10-02-05 = Spare 3300 XL 8 mm probe, English, approved
- 330106-05-30-10-02-00 = Spare 3300 XL 8 mm probe, metric, non-approved
- 330106-05-30-10-02-05 = Spare 3300 XL 8 mm probe, metric, approved
- 02120015 = Bulk Field Wire

1.0 mm² (18 AWG), 3-conductor, twisted shielded cable with drain wire. Specify length in feet.
**Probe Support / Oil Sleeve**
Provides seal along probe sleeve. May be used as a probe sleeve support in certain installations.

**English Probe Sleeve (Spare)**
108883 –AXXX
- This is the measured probe sleeve length. Order in increments of 0.1 in (3 mm). Note that the individual probe sleeve length does not include the distance from the end of the sleeve to the probe tip or the gap from the probe tip to the target material. If only the part number of the original housing is known and the sleeve cannot be measured, use the following formula to determine the sleeve length:

\[
A = \text{Standoff Adapter Option from original housing (330800 option B)} + \text{Probe penetration option from original housing (330800 option C)} + 025
\]

**Example:** Original part number is 330800-16-15-035-03-02. A option for replacement sleeve is (015 + 035 + 025) = 075.

- Minimum Probe Sleeve Length: 3.5 in (89 mm) = 035
- Maximum Probe Sleeve Length: 32.5 in (826 mm) = 325

**Metric Probe Sleeve (Spare)**
108882 –AXXX
- This is the measured probe sleeve length. Order in increments of 1 mm. Note that the individual probe sleeve length does not include the distance from the end of the sleeve to the probe tip or the gap from the probe tip to the target material. If only the part number of the original housing is known and the sleeve cannot be measured, use the following formula to determine the sleeve length:

\[
A = \text{Standoff Adapter Option from original housing (330801 option B)} * 10 + \text{Probe penetration option from original housing (330801 option C)} + 063
\]

**Example:** Original part number is 330801-16-08-205-03-02. A option for replacement sleeve is (080 + 205 + 063) = 348.

- Minimum Probe Sleeve Length: 88 mm (3.5 in) = 088
- Maximum Probe Sleeve Length: 823 mm (32.4 in) = 823

**English Standoff Adapter (Spare)**
Hex = 1-3/8 in; threads = 3/4-14 NPT
109319 –AXXX
- Order in increments of 0.5 in (13 mm).
- Minimum length: 1.5 in (38 mm)
- Maximum length: 7.5 in (191 mm)
- Example: 020 = 2 in (51 mm)

**Metric Standoff Adapter (Spare)**
Wrench flats = 35 mm; threads = 3/4-14 NPT.
109318 –AXX
- Order in increments of 10 mm.
- Minimum length: 40 mm
- Maximum length: 200 mm
- Example: 050 = 50 mm

**English sleeve plug threaded, 303 stainless steel.**
104968-01
- English Blanking Plug
104288-01
- Metric Blanking Plug.

**Heavy Duty Cable Fittings**
03813103
Chrome-plated zinc conduit fitting, 3/4-14 NPT
03818100  
AISI 316 stainless steel conduit fitting, 3/4-14 NPT

03818101  
AISI 316 stainless steel conduit fitting, PG21 x M25

03818102  
AISI 316 stainless steel conduit fitting, PG21 x M20

03818111  
Nickel-plated brass conduit fitting, PG21 x M20

26650-01  
AISI 303 stainless steel reducer 3/4-14 NPT to 1/2-14 NPT

Sealtite Flexible Conduit

14847-AXX  
1/2-14 NPT assembly

14848-AXX  
3/4-14 NPT assembly

A: Length Option

Order in increments of 1 ft (0.3 m).

Minimum length: 1 ft (0.3 m).

Maximum length: 99 ft (30.2 m)

Example: 05 = 5 ft (1.5 m)
Figures and Drawings

Note: All dimensions in millimeters (inches) except as noted.

Figure 1: Dimensions for PROXPAC XL Proximity Transducer Assembly

1. Depth = 92.7 (3.65)
2. Fitting “D”
3. PROXPAC XL Housing
4. 42 (1.75) hexagonal
5. Dimension “B”
6. Standoff adaptor (optional)
7. 3/4-14 NPT
8. Dimension “C”
9. 12.7 (0.5) diameter stainless steel sleeve
10. Probe
11. Target surface
Figure information

- “B” plus “C” dimensions greater than 305 mm (12.0 in) require additional sleeve support near the probe to stiffen the assembly and avoid the influence of resonance.

- For desired probe penetration lengths of less than 51 mm (2.0 in), order a separate Individual Standoff Adapter. The effective probe penetration length will then be reduced by the length of the Individual Standoff Adapter, plus an additional 13 mm (0.5 in) due to the NPT thread engagement.

Example: The customer desires a probe penetration length of 25 mm (1.0 in). To do this, they order a 330800 housing with CXXX (probe penetration) option of 0 3 0 (76 mm (3 in)) and a separate individual standoff adapter that is 38 mm (1.5 in) in length (part number 109319-015). The standoff adapter would cover 38 mm (1.5 in) of the probe sleeve, plus an additional 13 mm (0.5 in). Therefore, the effective probe penetration length would drop to 25 mm (1.0 in).

- “B” plus “C” dimension represents mid-setting distance between mounting surface and target surface. Threaded sleeve allows ±12.7 mm (0.5 in) adjustment from this point. “B” plus “C” dimension is 760 mm (30 in) maximum.

Viton and Neoprene are trademarks of DuPont Dow Elastomers L.L.C.
Sealtite is a trademark of Aldi Corporation.

* Denotes trademarks of Bently Nevada, Inc., a wholly owned subsidiary of General Electric Company.

© 2007 – 2014 Bently Nevada, Inc. All rights reserved.

Printed in USA. Uncontrolled when transmitted electronically.

1631 Bently Parkway South, Minden, Nevada USA 89423
Phone: 775.782.3611  Fax: 775.215.2873
www.ge-mcs.com/bently