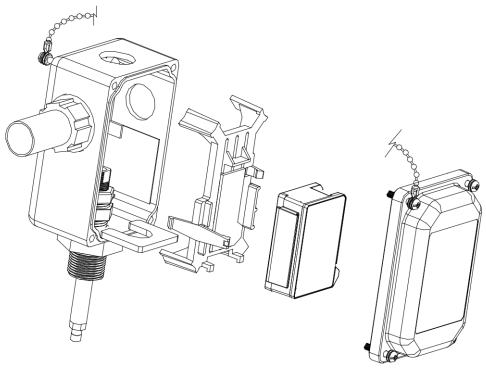
# PROXPAC XL Proximity Transducer Assembly

## Datasheet

Cordant™

178554 Rev. E



## 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.

Baker Hughes

# Specifications

## Electrical

| | |
|---|---|
| Proximitor 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 ($R_{PROBE}$)** | |
| Resistance from the Center Conductor to the Outer Conductor | |
| Probe Length (m) | $R_{PROBE}$ (Ω) |
| 1.0 | 7.59 ± 0.50 |

| | |
|---|---|
| Field wiring | 0.2 to 1.5 $mm^2$ (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 Proximitor 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) at a maximum altitude of 2000m. |
| **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 (1000 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)<br><br>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 Files Up To 300 Gauss** | | |
|---|---|---|
| Output Voltage in Mil pp/Gauss | | |
| Gap (mils) | 1-metre Proximitor Sensor | Probe |
| 10 | 0.0124 | 0.0004 |
| 50 | 0.0110 | 0.0014 |
| 90 | 0.0126 | 0.0045 |
| Electrical Classification:<br>Complies with the European CE mark. | | |

## 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. |
| Probe Tensile Strength | 330 N (75 lb) between probe cable and case, maximum. |
| Housing Material | Ultraviolet (UV) resistant, glass-reinforced polyphenylene sulfide (PPS) thermoplastic containing conductive fibers. |
| Sleeve Material and Retaining Chain | AISI 304 stainless steel |
| Outer Sleeve and Retaining Screws | AISI 303 stainless steel |
| Sleeve O-Ring Material | Neoprene |
| Grounding Liner and Retaining Plate Material | AISI 304 Stainless Steel |
| Vibration Isolation Material | Extra Soft Cellular Silicone |
| Lid Label Material | Gloss Radiant White Polyester |

| Recommended Torque | |
|---|---|
| Retaining Nut | 29.5 N·m (260 in·lb) |
| Probe Sleeve Locknut | 39.3 N·m (350 in·lb) |
| Housing Strength Typical | 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. |
| Housing Impact Strength | Certified by BASEEFA to withstand two separate 4 Joule (5.4 ft·lb) impacts at -39°C (-38°F) and at 115°C (239°F). CSA verified that samples of the housing and cover could withstand a 7 Joule (9.5 ft·lb) impact at ambient room temperature. |
| Total System Weight | 1.44 kg (3.2 lbm) typical with 0.3 metre (12 in) sleeve length. |

## Environmental Limits

| Probe Temperature Range | |
|---|---|
| Operating Temperature | -52°C to +177°C<br>(-62°F to +351°F)<br>Exposing the probe to temperatures below –34°C (-29°F) may cause premature failure of the pressure seal. |

| Probe Housing and Proximitor Sensor | |
|---|---|
| Operating Temperature | -52°C to +100°C<br>(-62°F to +212°F) |
| Proxpac Storage Temperature | -52°C to +105°C<br>(-62°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 does 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. |

It is the responsibility of the customer or user to ensure that their installatin 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 does not be held responsible for any damages resulting from leaking Proximity Probe Housing Assemblies. In addition, PROXPAC XL transducers does not be replaced under the service plan due to probe leakage.

# Compliance and Certifications

## FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

## EMC

European Community Directive:

EMC Directive 2014/30/EU

Standards

EN 61000-6-2; Immunity for Industrial Environments

EN 61000-6-4; Emissions for Industrial Environments

## RoHS

European Community Directive:

RoHS Directive 2011/65/EU

## Maritime

2019 Rules for Conditions of Classification,

Part 1, 1-1-1/7.7, 1-1-A3, 1-1-A4

2019 Rules for Conditions of Classification,

Part 1, Offshore Units and Structures

1-1-4/9.7, 1-1-A2, 1-1-A3

# Hazardous Area Approvals

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

For additional technical documentation, please log in to bntechsupport.com and access the Bently Nevada Media Library.

## cNRTLus

### 3300 XL Proximitor Sensor

| | |
|---|---|
| **ia**<br>When installed with intrinsically safe zener barriers per drawing 141092 or when installed with galvanic isolators. | Class I, Zone 0: AEx/Ex ia IIC T4/T5 Ga;<br>Class I, Groups A, B, C, and D,<br>Class II, Groups E, F and G,<br>Class III;<br><br>T5 @ Ta= -55°C to + 40°C.<br>T4 @ Ta= -55°C to + 80°C. |
| **nA, ec**<br>When installed with non-incendive circuit connected per drawing 140979. | Class I, Zone 2: AEx/Ex nA IIC T4/T5 Gc;<br>Class I, Division 2, Groups A, B, C, and D;<br>Class I, Zone 2: AEx/Ex ec IIC T4/T5 Gc;<br>Class I, Division 2, Groups A, B, C, and D;<br><br>T5 @ Ta= -55°C to + 40°C<br>T4 @ Ta= -55°C to + 80°C |

### 3300 XL Probe

| | |
|---|---|
| **ia**<br>When installed with intrinsically safe zener barriers per drawing 141092 or when installed with galvanic isolators. | Class I, Zone 0: AEx/Ex ia IIC T5...T1 Ga;<br>Class 1, Groups A, B. C, and D,<br>Class II, Groups E, F, and G,<br>Class III;<br><br>(see Temperature Schedule table to follow) |
| **nA, ec**<br>When installed with non-incendive circuit connected per drawing 140979. | Class I, Zone 2: AEx/Ex nA IIC T5...T1 Gc;<br>Class 1, Division 2, Groups A, B, C, D;<br>Class 1, Zone 2: AEx/Ex ec IIC T5...T1 Gc;<br>Class I, Division 2, Groups A, B, C, and D;<br><br>(see Temperature Schedule table to follow) |

## ATEX/IECEx

### 3300 XL Proximitor Sensor

| | |
|---|---|
| **ia** | II 1 G<br>Ex ia IIC T4/T5 Ga<br>Ex ia IIIC T90C/T105C Dc<br>For EPL Dc:<br>T105C @ Ta = -55°C to 100°C<br>T90C @ Ta = -55°C to +85°C<br><br>Ui= -28V / Uo= -28V<br>Ii= 140mA / Io= 140mA<br>Pi= 0.91W / Po= 0.742W<br>Ci- 47nF / Co= 1.5nF<br>Li= 1460µH / Lo= 610µH |
| **nA,ec** | II 3 G<br>Ex nA IIC T4/T5 Gc<br>Ex ec IIC T4/T5 Gc<br><br>Ui= -28V / Ii= 140 mA<br>T5 @ Ta= -55˚C to + 40˚C<br>T4 @ Ta= -55 ˚C to + 80˚C |

### 3300 XL Probe

Probe entity parameters are met when used with BN extension cables and connected to BN Prox.

<table>
<tr><td>ia</td><td>II 1 G<br>Ex ia IIC T5...T1 Ga,<br>(see Temperature Schedule table to follow)<br>Ex ia IIIC T90°C ... T280°C Dc<br>For EPL Dc:<table><tr><td>Ui= -28V</td><td>Ci = 1.5 nF</td></tr><tr><td>Ii = 140 mA</td><td>Li =610 µH</td></tr><tr><td>Pi = 0.91 W</td><td></td></tr></table></td></tr>
<tr><td>nA,ec</td><td>II 3 G<br>Ex nA IIC T5...T1 Gc,<br>Ex ec IIC T5...T1 Gc,<br>(see Temperature Schedule table to follow)<table><tr><td>Ui= -28V</td><td>Ii= 140 mA</td></tr></table></td></tr>
</table>

## Temperature Schedule

| Temperature Classification | Ambient Temperature (Probe Only) |
|---|---|
| For EPL Ga and Gc | |
| T1 | -55°C to +232°C |
| T2 | -55°C to +177°C |
| T3 | -55°C to +120°C |
| T4 | -55°C to +80°C |
| T5 | -55°C to +40°C |
| For EPL Dc | |
| T280°C @ Ta | -55°C to +232°C |
| T225°C @ Ta | -55°C to +177°C |
| T170°C @ Ta | -55C to +120°C |
| T130°C @ Ta | -55°C to +80°C |
| T105°C @ Ta | -55°C to +100°C |
| T90°C @ Ta | -55°C to +40°C |

# Hazardous Area Conditions of Safe Use

## cNRTLus:

**ia**

Install per Bently Nevada drawing 141092.

**nA, ec**

Install per Bently Nevada drawing 140979.

## ATEX/IECEx:

**ia**

Install per Bently Nevada drawing 141092.

**nA, ec**

The Proximitor must be installed so as to provide the terminals with a degree of protection of at least IP54.

# Ordering Information

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

For additional technical documentation, please log in to bntechsupport.com and access the Bently Nevada Media Library.

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-AA-BB-CCC-DD-EE

| **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/or rear view effects.<br>Order in increments of 0.1 in (2 mm).<br>Minimum length: 1.0 in (25 mm)<br>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 26650-01 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-AA-BB-CCC-DD-EE

| **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 10 mm.<br>Minimum length: 40 mm<br>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, counter bore may be required in machine case to reduce probe side view and/or rear view effects.<br>Order in increments of 1 mm.<br>Minimum length: 25 mm<br>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<br>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 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) |

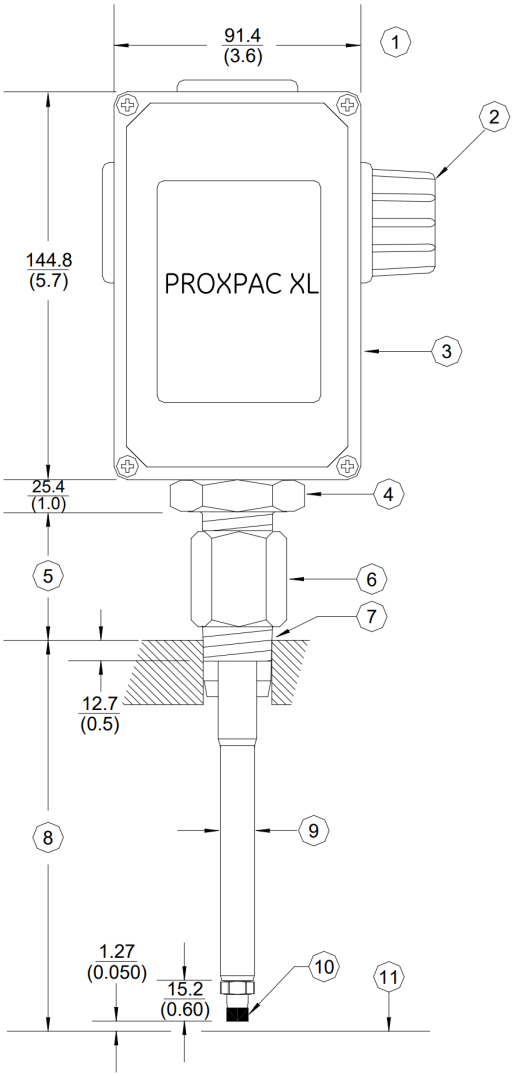



**Figure 2: Dimensions for PROXPAC XL Proximity Transducer Assembly**

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.