

MANUFACTURER DOCUMENT PACKAGE

# Manufacturer's Manual

Selected official pages for procurement and maintenance review

PRODUCT BRAND

Bently Nevada

PRODUCT MODEL

330730-080-00-05

330730-080-00-05 - Unarmored proximity extension cable  
Selected manufacturer pages; verify exact configuration.

OFFICIAL SOURCE

Datasheet 146256 Rev. P

[Open current manufacturer source](#)

AMIKON PRODUCT SUPPORT

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[AMIKONG.COM](https://www.amikong.com)

Amikon Limited prepared this independent reference package. Selected manufacturer pages follow with their original content and pagination visible.

# 3300 XL 11 mm Proximity Transducer System

## Datasheet

Bently Nevada Machinery Condition Monitoring

146256 Rev. P

### Description

#### Transducer System

The 3300 XL 11 mm Proximity Transducer System consists of:

- 3300 XL 11 mm probe
- 3300 XL 11 mm extension cable
- 3300 XL 11 mm Proximitor Sensor<sup>1</sup>

The 3300 XL 11 mm Proximity Transducer System has a 3.94 V/mm (100 mV/mil) output for non-contacting vibration and displacement measurements on fluid film bearing machines. The large 11 mm tip enables this transducer system to have a longer linear range compared to our standard 3300 XL 8 mm Transducer System. It is primarily used in the following applications where the longer linear range is necessary:

- Axial (thrust) position measurements
- Ramp differential expansion measurements on steam turbines
- Rod position or rod drop measurements on reciprocating compressors
- Tachometer and zero speed measurements
- Phase reference (Keyphasor) signals

The 3300 XL 11 mm Proximitor Sensor is designed to replace the 7200-series 11 mm and 14 mm Transducer Systems. When upgrading from the 7200-series system to the 3300 XL 11 mm system, every component must be replaced with 3300 XL 11 mm components. In addition, the monitoring system must be updated. If using a 3500 Monitoring System, an updated version of the configuration software that lists the 3300 XL 11 mm Transducer System as a compatible option is required. Existing 3300 Monitoring Systems may need a modification.



Contact your local sales and service representative for assistance.



The 3300 XL 11 mm Proximity Transducer is designed for measuring position or vibration within a frequency range of 0 to 8 kHz. Typical applications of this system include radial vibration and position, axial position and Keyphasor measurements.

Although the terminals and connector on the Proximitor sensor have protection against electrostatic discharge, take reasonable precautions to avoid electrostatic discharge during handling.

## Proximitor Sensor

The 3300 XL 11 mm Proximitor Sensor has the same advanced features found in the 3300 XL 8 mm Proximitor Sensor. Its thin design allows it to be mounted in either a high-density DIN-rail installation or a more traditional panel mount configuration. Improved RFI/EMI immunity allows the 3300 XL Proximitor Sensor to achieve European CE mark approvals without any special mounting considerations. This RFI immunity also prevents the transducer system from being adversely affected by nearby high frequency radio signals. SpringLoc terminal strips on the Proximitor Sensor require no special installation tools and facilitate faster, highly robust field wiring connections.

## Proximity Probe and Extension Cable

The 3300 XL 11 mm probe comes in varying probe case configurations, including armored and unarmored  $\frac{1}{2}$ -20,  $\frac{5}{8}$ -18, M14 X 1.5 and M16 X 1.5 probe threads. The reverse mount 3300 XL 11 mm probe comes standard with either  $\frac{3}{8}$ -24 or M10 X 1 threads. All components of the transducer system have gold-plated brass ClickLoc connectors. ClickLoc connectors lock into place, preventing the connection from becoming loose. The patented TipLoc molding method provides a robust bond between the probe tip and the probe body. The probe cable is securely attached to the probe tip utilizing

our patented CableLoc design that provides 330 N (75 lb) pull strength.

3300 XL Probes and Extension Cables can also be ordered with a FluidLoc cable option. This option prevents oil and other liquids from leaking out of the machine through the cable's interior. The connector protector option provides additional protection of the connectors in a humid or moist environment. Connector protectors are recommended for all installations and provide increased environmental protection<sup>2</sup>. Additionally, the 3300 XL 11 mm probe comes standard with a locknut with pre-drilled safety wire holes.

### Notes:

1. Proximitor Sensors are supplied by default from the factory calibrated to AISI 4140 steel. Calibration to other target materials is available upon request.
2. Silicone tape is also provided with each 3300 XL extension cable and can be used instead of connector protectors. Silicone tape is not recommended in applications where the probe-to-extension cable connection will be exposed to turbine oil.

## Mechanical

|                                  |                                                                                                                                    |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Probe Tip Material               | Polyphenylene sulfide (PPS).                                                                                                       |
| Probe Case Material              | AISI 304 stainless steel (SST).                                                                                                    |
| Probe Cable Specification        | 75 $\Omega$ triaxial, fluoroethylene propylene (FEP) insulated probe cable in the following total probe lengths: 1, 5 or 9 meters. |
| Extension Cable Material         | 75 $\Omega$ triaxial, fluoroethylene propylene (FEP) insulated.                                                                    |
| Proximator Sensor Material       | A380 aluminum                                                                                                                      |
| System Length                    | 5 or 9 meters including extension cable                                                                                            |
| Extension Cable Armor (optional) | Flexible AISI 302 SST with FEP outer jacket.                                                                                       |
| Tensile Strength (maximum rated) | 330 N (75 pounds) probe case to probe lead. 270 N (60 pounds) at probe lead to extension cable connectors.                         |
| Connector Material               | Gold-plated brass                                                                                                                  |

### Probe Case Torque

|                                 | Maximum Rated           | Recommended             |
|---------------------------------|-------------------------|-------------------------|
| 1/2-20 and 5/8-18 probe cases   | 45.2 N•m<br>(400 in•lb) | 15.2 N•m<br>(133 in•lb) |
| M14x1.5 and M16x1.5 probe cases | 63.3 N•m<br>(560 in•lb) | 21.1 N•m<br>(187 in•lb) |
| Reverse mount probes            | 22.6 N•m<br>(200 in•lb) | 7.5 N•m<br>(66 in•lb)   |

### Connector-to-connector torque

|                                                 |                     |
|-------------------------------------------------|---------------------|
| Recommended torque                              | Finger tight        |
| Maximum torque                                  | 0.565 N•m (5 in•lb) |
| Minimum Bend Radius (with or without SST armor) | 25.4 mm (1.0 in)    |

### System Weight (typical)

#### Probe

70 g (2.5 oz) (minimum length case, 1m lead, no armor)

170 g (6.0 oz) (minimum length case, 1m lead, with armor)

For longer case lengths add 1.1 g/mm (1.0 oz/in).

For 5 m probe length add 180 g (6 oz) for non-armored probe or 560 g (20 oz) for armored probe.

For 9 m probe length add 360 g (12 oz) for non-armored probe or 1120 g (40 oz) for armored probe.

|                         |                     |
|-------------------------|---------------------|
| Extension Cable         | 45 g/m (0.5 oz/ft)  |
| Armored Extension Cable | 140 g/m (1.5 oz/ft) |
| Proximator Sensor       | 255 g (9 oz)        |

### Thread Engagement Limits

| Probe Case Thread | Maximum Length of Thread Engagement |
|-------------------|-------------------------------------|
| <b>1/2-20</b>     | 0.750 in                            |
| <b>5/8-18</b>     | 0.938 in                            |

| Probe Case Thread | Maximum Length of Thread Engagement |
|-------------------|-------------------------------------|
| <b>M14x1.5</b>    | 21 mm                               |
| <b>M16x1.5</b>    | 24 mm                               |



Maximum thread engagement lengths are per the industry standard of 1.5 times the nominal thread diameter. A fit class matching that of the external probe thread is assumed for all internal threads. Applications with thread engagement lengths exceeding the values in the table above may exhibit binding during installation. Contact your Bently Nevada representative if you require probe thread engagement lengths exceeding the values above. Bently Nevada does not replace proximity probes under warranty due to excessive thread engagement lengths.

## Environmental Limits

### Probe Temperature Range

|                                   |                                   |
|-----------------------------------|-----------------------------------|
| Operating and Storage Temperature | -52°C to +177°C (-62°F to +351°F) |
|-----------------------------------|-----------------------------------|



Exposing the probe to temperatures below -34°C (30°F) may cause premature failure of the pressure seal.

### Extension Cable Temperature Range

|                                   |                                   |
|-----------------------------------|-----------------------------------|
| Operating and Storage Temperature | -52°C to +177°C (-62°F to +351°F) |
|-----------------------------------|-----------------------------------|

### Proximitior Sensor Temperature Range

|                       |                                   |
|-----------------------|-----------------------------------|
| Operating Temperature | -52°C to +100°C (-62°F to +212°F) |
|-----------------------|-----------------------------------|

|                     |                                                                                                                                                                                                                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage Temperature | -52°C to +105°C (-62°F to +221°F)                                                                                                                                                                                                                                                                       |
| Relative Humidity   | 100% condensing, non-submersible when connectors are protected. Tested to IEC 68-2-3 damp heat.                                                                                                                                                                                                         |
| Probe Pressure      | 3300 XL probes are designed to seal differential pressure between the probe tip and case. The probe sealing material consists of a Viton O-ring. 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 all liquids and gases are contained and safely controlled should leakage occur from a proximity probe. In addition, solutions with high or low pH values may erode the tip assembly of the probe causing media leakage into surrounding areas. Bently Nevada not be held responsible for any damages resulting from leaking 3300 XL proximity probes. In addition, 3300 XL proximity probes 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

### Functional Safety

SIL 2, HFT = 0

SIL 3, HFT = 1

## 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](http://bntechsupport.com) and access the Bently Nevada Media Library.

### cNRTLus

#### 3300 XL Proximity Sensor

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

|                                                                                                                                  |                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ia</b><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; Class I, Groups A, B, C, and D, Class II, Groups E, F, and G, Class III;<br><br>(see Temperature Schedule table to follow) |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                          |                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>nA, ec</b><br>When installed with non-incendive circuit connected per drawing 140979. | Class I, Zone 2: AEx/Ex nA IIC T5...T1 Gc;<br>Class I, Division 2, Groups A, B, C, D;<br>Class I, 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 Proximity Sensor

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |            |           |           |           |            |          |           |            |           |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|-----------|-----------|-----------|------------|----------|-----------|------------|-----------|
| <b>ia</b>    |  <p>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</p> <table> <tr> <td>Ui= -28V</td><td>Uo= -28V</td></tr> <tr> <td>Ii= 140mA</td><td>Io= 140mA</td></tr> <tr> <td>Pi= 0.91W</td><td>Po= 0.742W</td></tr> <tr> <td>Ci= 47nF</td><td>Co= 1.5nF</td></tr> <tr> <td>Li= 1460µH</td><td>Lo= 610µH</td></tr> </table> | Ui= -28V | Uo= -28V   | Ii= 140mA | Io= 140mA | Pi= 0.91W | Po= 0.742W | Ci= 47nF | Co= 1.5nF | Li= 1460µH | Lo= 610µH |
| Ui= -28V     | Uo= -28V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |            |           |           |           |            |          |           |            |           |
| Ii= 140mA    | Io= 140mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |            |           |           |           |            |          |           |            |           |
| Pi= 0.91W    | Po= 0.742W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |            |           |           |           |            |          |           |            |           |
| Ci= 47nF     | Co= 1.5nF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |            |           |           |           |            |          |           |            |           |
| Li= 1460µH   | Lo= 610µH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |            |           |           |           |            |          |           |            |           |
| <b>nA,ec</b> |  <p>II 3 G<br/>Ex nA IIC T4/T5 Gc<br/>Ex ec IIC T4/T5 Gc</p> <table> <tr> <td>Ui= -28V</td><td>Ii= 140 mA</td></tr> </table> <p>T5 @ Ta= -55°C to +40°C<br/>T4 @ Ta= -55°C to +80°C</p>                                                                                                                                                                                                                    | Ui= -28V | Ii= 140 mA |           |           |           |            |          |           |            |           |
| Ui= -28V     | Ii= 140 mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |          |            |           |           |           |            |          |           |            |           |

### 3300 XL Probe



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

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

## 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                | -55°C 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.

## 3300 XL 11 mm Proximitior Sensor

### 330780-AA-BB

#### A: Total Length and Mounting Option

|           |                                                            |
|-----------|------------------------------------------------------------|
| <b>50</b> | 5.0 meter (16.4 feet) system length, panel mount           |
| <b>51</b> | 5.0 meter (16.4 feet) system length, DIN mount             |
| <b>52</b> | 5.0 meter (16.4 feet) system length, no mounting hardware  |
| <b>90</b> | 9.0 meters (29.5 feet) system length, panel mount          |
| <b>91</b> | 9.0 meters (29.5 feet) system length, DIN mount            |
| <b>92</b> | 9.0 meters (29.5 feet) system length, no mounting hardware |

#### B: Agency Approval Option

|           |                    |
|-----------|--------------------|
| <b>00</b> | Not required       |
| <b>05</b> | Multiple approvals |



Country specific approvals may be available, consult your local Customer Care Representative for more information.

## 3300 XL 11 mm Extension Cable

### 330730-AAA-BB-CC

Make sure that the extension cable length and the probe length, when added together, **equal the Proximitior Sensor Total length.**

#### A: Cable Length Option

|            |                        |
|------------|------------------------|
| <b>040</b> | 4.0 meters (13.1 feet) |
| <b>080</b> | 8.0 meters (26.2 feet) |

#### B: Connector and Cable Option

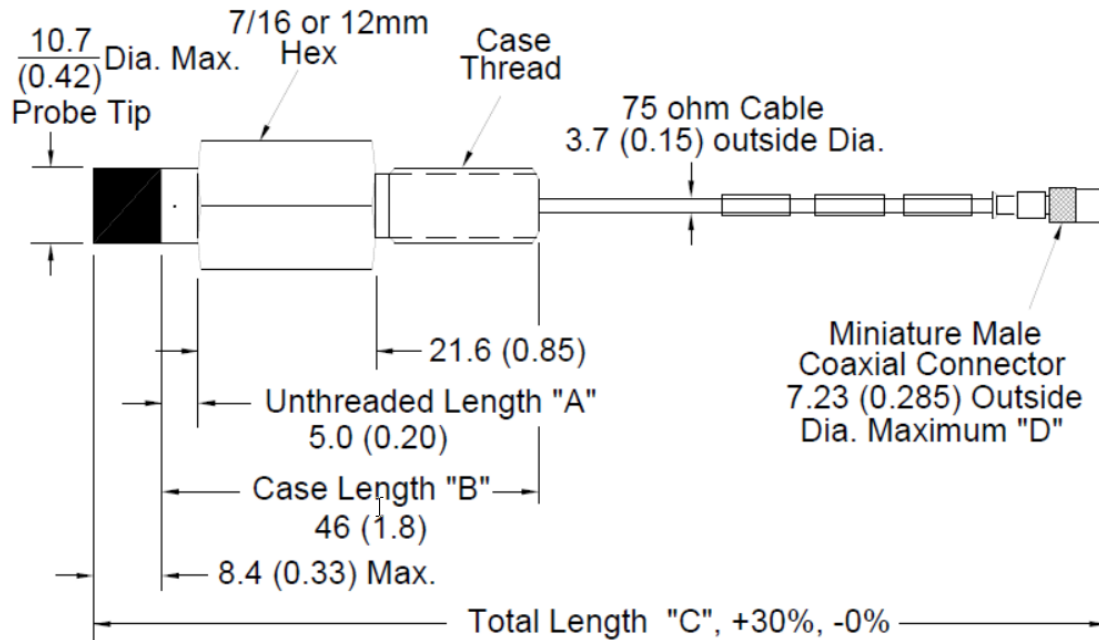
|           |                                                 |
|-----------|-------------------------------------------------|
| <b>00</b> | Standard cable                                  |
| <b>01</b> | Armored cable                                   |
| <b>02</b> | Standard cable with connector protector         |
| <b>03</b> | Armored cable with connector protector          |
| <b>10</b> | FluidLoc cable                                  |
| <b>11</b> | Armored FluidLoc cable                          |
| <b>12</b> | FluidLoc cable with connector protector         |
| <b>13</b> | Armored FluidLoc cable with connector protector |

#### C: Agency Approval Option

|           |                    |
|-----------|--------------------|
| <b>00</b> | Not required       |
| <b>05</b> | Multiple Approvals |

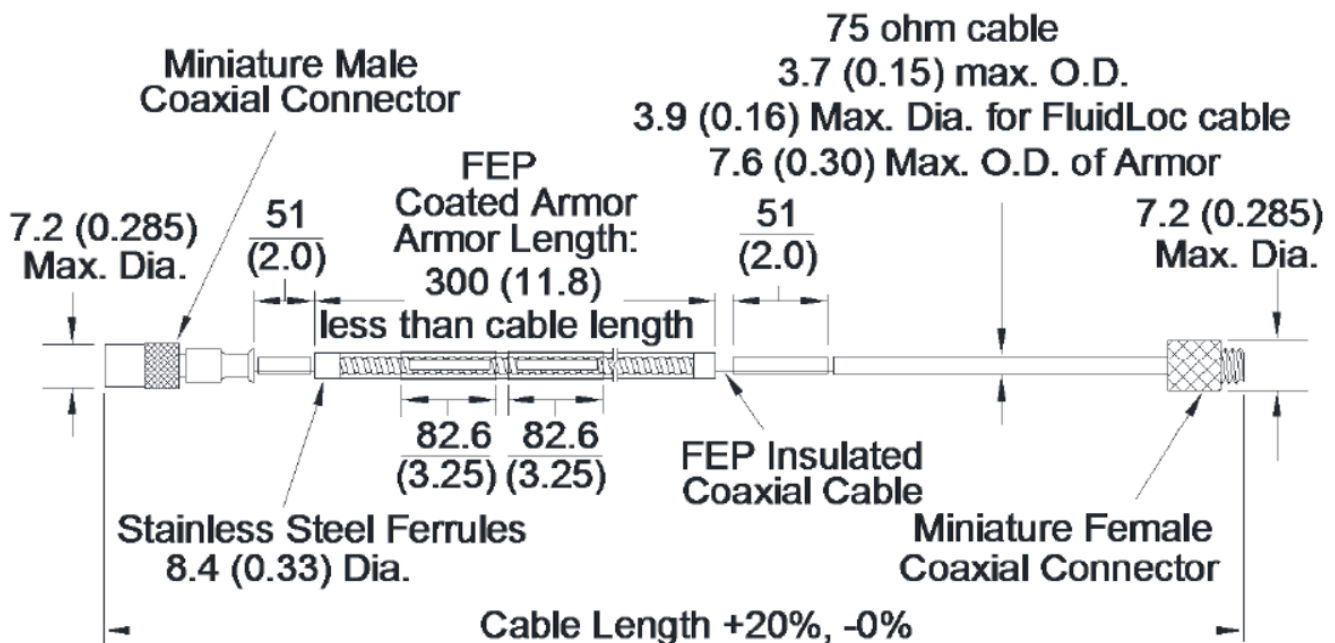
## Accessories

|           |                                                                                                                              |
|-----------|------------------------------------------------------------------------------------------------------------------------------|
| 146255    | 3300XL 11 mm User Guide                                                                                                      |
| 144979    | Performance Specification                                                                                                    |
| 02120015  | Bulk field wire. 1.0 mm <sup>2</sup> (18 AWG), 3 conductor, twisted, shielded cable with drain wire. Specify length in feet. |
| 02173009  | Bulk field wire. 1.0 mm <sup>2</sup> (18 AWG), 3 conductor, twisted, shielded cable. Specify length in feet.                 |
| 138492-01 | Replacement panel-mount mounting pad                                                                                         |
| 138493-01 | Replacement DIN-mount mounting pad                                                                                           |
| 01609137  | BNC (F) to banana plugs                                                                                                      |
| 01609138  | Proximitior Connector Test Pin wiring (two test pins to a BNC (F) connector)                                                 |



**Figure 13: 3300 XL 11 mm Proximity Probes, Reverse Mount**

330705, 3/8-24 UNF-2A threads  
330706, M10X1 threads



**Figure 14: 330730, 3300 XL 11 mm Extension Cable**

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