MANUFACTURER DOCUMENT PACKAGE

# Manufacturer's Manual

Amikon cover with selected official Bently Nevada pages

3300 XL 25 MM PROXIMITY PROBE

## 330851-01-000-030-10-00-05

TWENTY-FIVE MILLIMETER PROXIMITY PROBE

OFFICIAL SOURCES

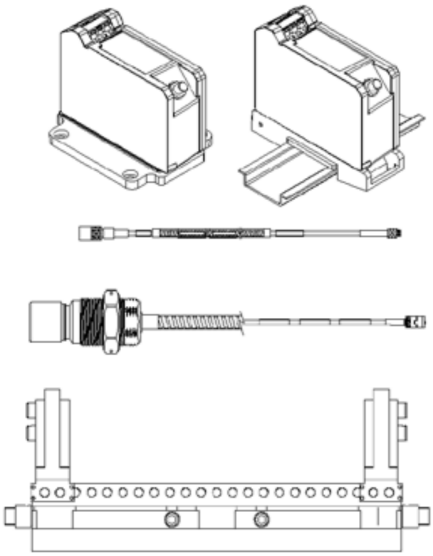
Bently Nevada official manufacturer document for 3300 XL 25 mm proximity probe. Selected pages retain their original content, color and aspect ratio.

# 3300 XL Proximity Transducer System

## Datasheet

Cordant™

163236 Rev. M



## Description

The 3300 XL 25 mm Transducer System consists of a separate 25 mm probe, an extension cable, and a 3300 XL 25 mm Proximitor Sensor. The 0.787 V/mm (20 mV/mil) output gives this system a linear range of 12.7 mm (500 mils). Based on this linear range, the 3300 XL 25 mm Transducer System is suitable for measuring differential expansion (DE) on mid-size to large steam turbine generators caused by the difference in growth rates between the turbine rotor and the machine stator (casing).

## Measuring Differential Expansion (DE)

The Differential Expansion measurement is made by two proximity transducers observing a collar or ramp some distance from the thrust bearing. Typical transducer mounting arrangements are:

- Two transducers observing the same side of a collar.
- Two complementary input transducers observing opposite sides of a collar, effectively doubling the measurable DE range.

Two transducers with at least one transducer viewing a ramp on a rotor and the second transducer viewing either a separate ramp or a different location on the rotor to compensate for radial movement. This arrangement adds some error to the measurement, but can measure a longer total DE distance than the complementary measurement.

The criteria for selecting a mounting method are the size of the available target, the expected amount of rotor axial movement and the type of DE target that exists in the machine (collar versus ramp). If sufficient collar height is available, two transducers observing the same side of a

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collar is the preferred configuration. These two transducers provide redundant measurements.

## System Compatibility

The 3300 XL 25 mm probe comes in a large variety of case configurations to physically replace all standard 7200 25 mm, 7200 35 mm and 25 mm DE Integral transducer systems (including side and rear exit probes). The Proximitor Sensor also has an output that is identical to that of the 7200 and 25 mm DE Integral systems, allowing customers to upgrade without requiring any changes in the monitor configuration. When upgrading from previous systems, every transducer system component (probe, extension cable, and Proximitor Sensor) must be replaced with 3300 XL 25 mm components.

## Proximity Probe and Extension Cable

The 3300 XL 25 mm probe is designed for maximum survivability in the harshest steam turbine DE environments. It can continually operate and maintain its accuracy in high temperatures up to 200 °C (392 °F), and can withstand intermittent high temperatures up to 250 °C (482 °F). The 25 mm probe has both a front and rear seal which, combined with the FluidLoc cable (standard on all 25 mm probes), prevents moisture from entering the probe tip. Special high-temperature ClickLoc connectors are also standard on the probe and extension cable. Each probe and cable are provided with connector protectors and a disposable connector protector installation tool to ensure that the connectors remain free of contamination. The ClickLoc connector on the probe lead has a removable collar that facilitates routing the cable through tight clearances.

The 3300 XL 25 mm probe is available in many probe case styles, including 1¼-12 or 1⅝-12 English threads, M30x2 or M39x1.5 metric threads, or side or rear exit probes with a 1.06 or 1.50 in diameter smooth probe case. Additionally, threaded 3300 XL 25 mm probe cases come standard with a locknut with predrilled safety wire holes.

## Proximitor Sensor

The 3300 XL 25 mm Proximitor Sensor(1) has the same advanced features as our previous 3300 XL Proximitor Sensors. 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.

(1) Proximitor Sensors are supplied by default from the factory calibrated to AISI 4140 steel. Calibration to other target materials is available upon request.

## Mounting Accessories

The correct operation of the transducer system must be verified during installation, and periodically after installation, by physically moving it to simulate the motion of the shaft collar. This requires a mounting bracket that allows the transducer system to slide relative to the shaft rotor and collar.

An optional 3300 XL Sliding Bracket can be ordered for the 25 mm Differential Expansion Transducer for both single transducer and complementary input applications. This mounting bracket makes it easy to accurately verify the transducer system and gap the probes by allowing you to slide the transducer system throughout its linear range. The base plate of the sliding bracket is installed on the inner surface of the turbine case near the differential expansion collar. Probes are installed in the applicable probe adapter, which attaches to the sliding carriage. The sliding carriage slides onto and is secured to the base plate with bolts and safety wire. To

# 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

## China RoHS

Cables associated with the product(s) mentioned in this datasheet have an EFUP designation of 15 years, in accordance with SJ/T 11364-2024.




## 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

# 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.

## 3300 XL 25 mm Proximity Probe

### 330851-AA-BBB-CCC-DD-EE-FF

| **A: Probe Case Type Option** | |
|---|---|
| **01** | 1 ¼ - 12 thread |
| **02** | M30x2 thread |
| **03** | Smooth 1.06 in dia. - Rear Exit |
| **04** | Smooth 1.06 in dia. - Side Exit |
| **05** | 1 ½ - 12 thread |
| **06** | M39x1.5 thread |
| **07** | Smooth 1.5 in dia. - Rear Exit |
| **08** | Smooth 1.5 in dia. - Side Exit |

Standard case types are options 01 through 04.

| **B: Unthreaded Length Option** | |
|---|---|
| **Metric Case Types**<br>**Order in increments of 2 mm** | |
| Maximum Unthreaded Length | 224 mm |
| Minimum Unthreaded Length | 0 mm |
| Example | **050** = 50 mm |
| **English Case Types**<br>**Order in increments of 0.1 in** | |
| Maximum Unthreaded Length | 8.9 in |
| Minimum Unthreaded Length | 0.0 in |
| Example | **025** = 2.5 in |

Standard unthreaded length is 0.0 mm or 0.0 in There is an additional charge for non-standard unthreaded lengths.

Unthreaded length must be at least 26 mm or 1.0 in less than the case length. Unthreaded length option is 0.0 for smooth case probe types.

| **C: Overall Case Length Option** | |
|---|---|
| **Metric Case Types**<br>**Order in increments of 2 mm** | |

Standard case lengths are 26, 40, 60, 80, 100 and 250 mm for Metric cases and 1.0, 2.0, 3.0, 4.0, and 9.9 in for English cases. There is an additional charge for non-standard lengths.

| | |
|---|---|
| Maximum Unthreaded Length | 250 mm |
| Minimum Unthreaded Length | 26 mm |
| Example | **050** = 50 mm |
| **English and Smooth Case Types Order in increments of 0.1 in** | |
| Maximum Unthreaded Length | 9.9 in |
| Minimum Unthreaded Length | 1.0 in (1.5 in for side exit case types) |
| Example | **020** = 2.0 in |
| **D: Total Length Option** | |
| **10** | 1.0 metre (3.3 feet) |
| **50** | 5.0 metres (16.4 feet) |
| **90** | 9.0 metres (29.5 feet) |

Five metre probes are designed for use with the five metre Proximitor Sensor ONLY.

| | |
|---|---|
| **E: Armor Option** | |
| **00** | No Armor |
| **01** | with SST Armor |

When ordering SST Armor, the minimum probe length is 28 mm or 1.1 in

| | |
|---|---|
| **F: Agency Approval Option** | |
| **00** | No Approvals |
| **05** | Multiple Approvals |

For a shorter delivery time, order commonly stocked multi-approvals probes.

Currently, stocked probes consist of the following part numbers:

330851-01-000-020-10-00-05
330851-01-000-030-10-00-05
330851-02-000-040-10-00-05
330851-02-000-080-10-00-05
330851-04-000-015-10-00-05
330851-04-000-020-10-00-05

## 3300 XL 25 mm Proximitor Sensor

### 330850-AA-BB

| | |
|---|---|
| **A: Total Length and Mounting Option** | |
| **5 0** | 5.0 metres (16.4 feet) system length, panel mount |
| **5 1** | 5.0 metres (16.4 feet) system length, DIN mount |
| **9 0** | 9.0 metres (29.5 feet) system length, panel mount |
| **9 1** | 9.0 metres (29.5 feet) system length, DIN mount |
| **B: Agency Approval Option** | |
| **0 0** | No Approvals |
| **0 5** | Multiple Approvals |

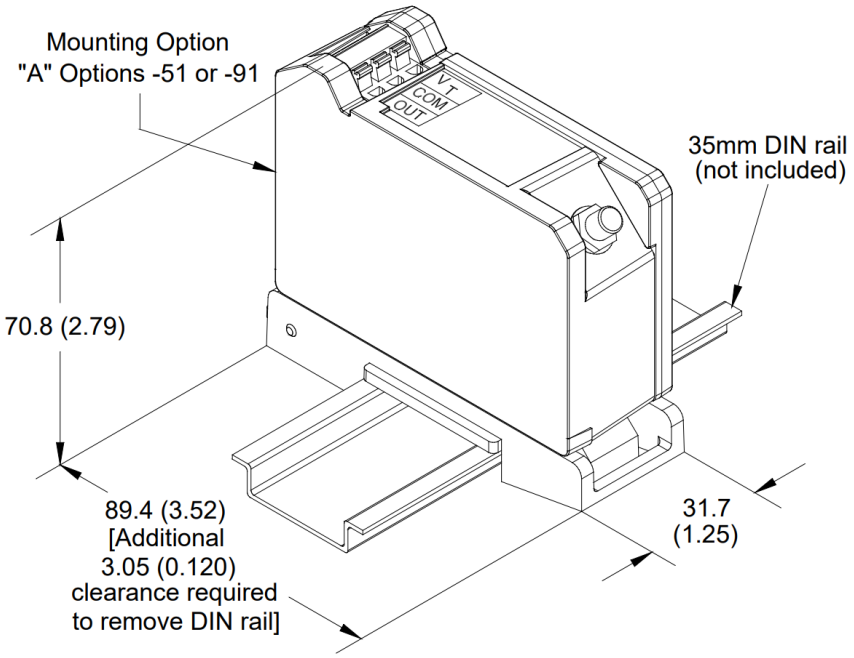



**Figure 19: 330850 DIN Mount 3300 XL 25mm Proximitor Sensor**