

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

BENTLY NEVADA

991-06-70-02-05

TWO-WIRE AXIAL DISPLACEMENT TRANSMITTER

Used with the applicable 991 Thrust Transmitter system configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official pages follow this cover with source pagination retained.

141618 Rev. R

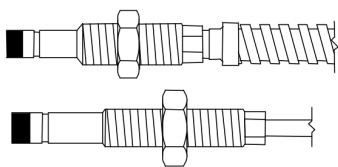
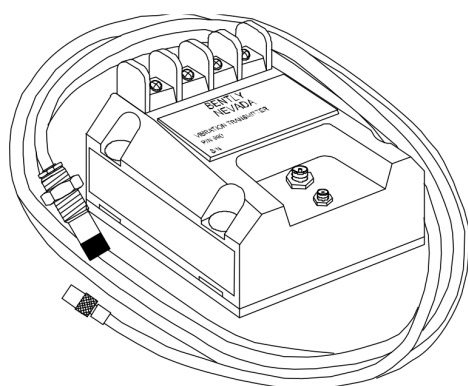
991 Thrust Transmitter

Datasheet

Cordant™

141618 Rev. R

Description



The 991 Thrust Transmitter is intended primarily for the original equipment manufacturers (OEMs) of centrifugal air compressors or small pumps, motors, or fans who prefer to provide a simple 4 to 20 mA proportional axial displacement (thrust) signal as the input to their machinery control system. The transmitter is a 2-wire, loop-powered device that accepts input from our 3300 NSv proximity probe and its matching extension cable (available in 5 m and 7 m system length options). The transmitter conditions the signal into appropriate engineering units proportional to the shaft's axial position¹, and provides it as a 4 to 20 mA industry-standard signal for input to the control system where machinery protection alarming and logic occurs².

The 991 transmitter provides the following notable features:

- Integrated Proximitors Sensor requires no external unit
- Non-isolated PROX OUT and COM terminals plus a coaxial connector provide a dynamic vibration and gap voltage signal output for diagnostics³.
- Non-interacting zero and span potentiometers under the Transmitter label supports loop adjustment.
- Test Input pin allows quick verification of loop signal output, using a variable DC voltage source as the input.
- A Power-up Inhibit circuit eliminates signal errors due to line voltage transients.
- A Not OK/Signal Defeat circuit prevents high outputs or false alarms due to a faulty proximity probe or loose connection.
- Choice of DIN-rail clips or bulkhead mounting screws as standard options simplifies mounting.
- Potted construction for high humidity (up to 100% condensing) environments.
- Compatibility with 3300 NSv proximity probe allows transducer installation in small areas with minimal



Baker Hughes

clearance, typical of centrifugal air compressors.

Notes:

1. Probe adjustment and range are critical in thrust position measurements. Incorrect probe gap settings may prevent the transmitter from reaching full-scale in either the normal or counter directions (no machinery monitoring). For proper adjustment, follow the instructions in the manual.
2. Thrust transmitters have many limitations when compared to a continuous monitoring system. They are a practical solution in some applications for measuring rotor axial position and are a valuable tool for trending thrust readings. While the transmitter is capable of alarming on thrust position and non-OK checking, monitor functions such as Timed OK channel defeat, Danger Bypass, and Trip Multiply cannot be used. In addition, PLCs attached to the thrust transmitter are not suitable for plant-wide diagnostic systems such as System 1 or Rule Paks.
3. The 991 Vibration Transmitter's PROX OUT coaxial connector provides a non-isolated dynamic transducer signal for machinery diagnostics. You can connect this signal directly to battery-powered or isolated test equipment to diagnose machinery problems. However, since the PROX OUT signal is not isolated from the 4 to 20 mA loop signal, an interface is available (and strongly recommended) for signal isolation. The 990/991 Test Adapter conditions the 990 Transmitter's PROX OUT signal for use with ac-powered test equipment. The adapter also inverts and isolates the 990's transducer signal, making it suitable for equipment such as

oscilloscopes and analyzers, and preserving industry-standard conventions for signal polarity. We strongly recommend that you use this test adapter for all applications to maintain isolation between test equipment and the loop signal, and to maintain machinery protection integrity.

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.

Pi [0.84 W]	Po [0.84 W]
Ci [20 nF]	Co [1.5 nF]
Li [10 μ H]	Lo [610 μ H]

cNRTLus

Class I, Division 1, Groups A-D, T4
Class I, Division 2, Groups A-D, T4
Class I, Zone 0 AEx ia IIC T4 Ga
Class I, Zone 2 AEx ec IIC T4 Gc
Ex ia IIC T4 Ga
Ex ec IIC T4 Gc
 $-30^{\circ}\text{C} \leq T_a \leq +85^{\circ}\text{C}$

ATEX/IECEx

 II 1 G Ex ia IIC T4 Ga T4 @ $T_a = -30^{\circ}\text{C}$ to $+85^{\circ}\text{C}$	
 II 3 G Ex ec IIC T4 Gc T4 @ $T_a = -30^{\circ}\text{C}$ to $+85^{\circ}\text{C}$	

Entity Parameters

Zone 2

Power Supply: 28 V

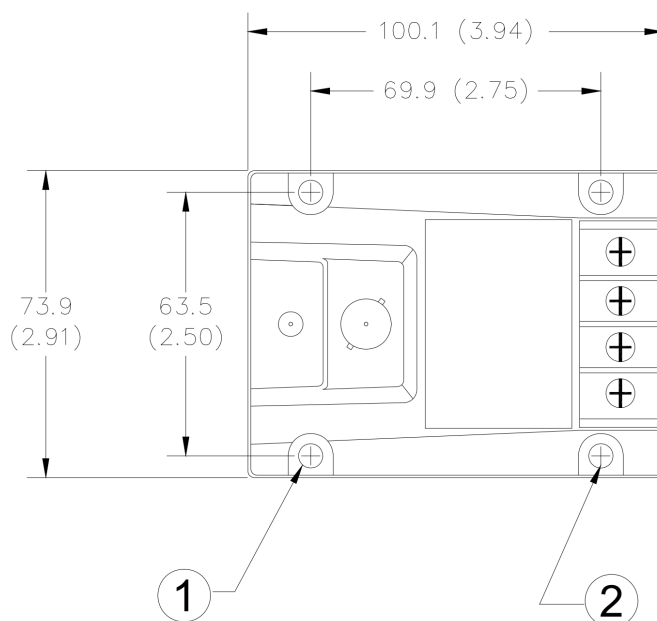
Zone 0/1

Terminal blocks E1-E2 "Power supply 4-20 mA"	Connector J3 "Probe"
Ui [28 V]	Uo [28 V]
Ii [120 mA]	Io [100 mA]

Graphs and Figures

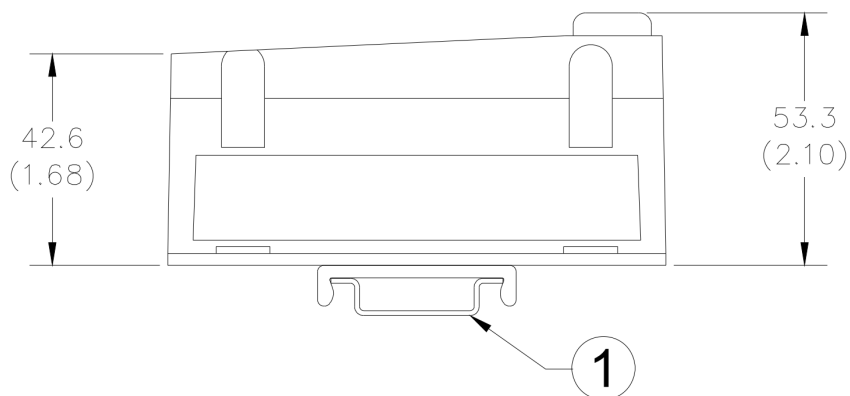


Note: All dimensions shown in millimeters (inches) unless noted otherwise.



1. Mounting holes, 5.8 mm (0.23 in) diameter, 4 places
2. Bulkhead mount holes, 4 each. 6-32 x 1.326 screws provided when mounting option specified

Figure 1: 991 Thrust Transmitter Dimensions (Top View)



1. 35mm DIN rail DIN mount clips (when DIN rail mounting is specified)

Figure 2: 991 Thrust Transmitter Dimensions (Side View)