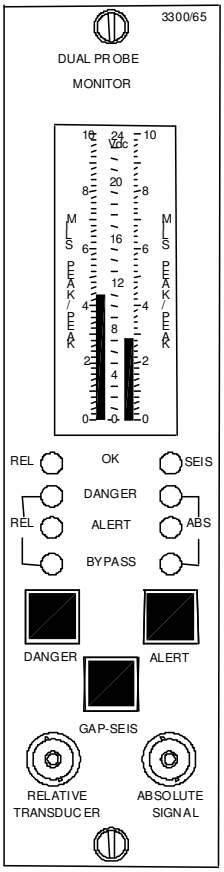
3300/65 Dual Probe Monitor

Bently Nevada™ Asset Condition Monitoring



Description

The 3300/65 Dual Probe Monitor combines the shaft relative displacement signal of a Bently Nevada proximity transducer and casing vibration from a velocity transducer, both of which are installed in the same axis on the machine, into one measurement of shaft absolute vibration.

Dual Probe Monitors are designed for machines with fluid film bearings, such as large steam and gas turbines, where a significant amount of shaft vibration is transmitted to the case. If you are uncertain as to whether your machine transmits significant vibration to the casing, we can provide engineering services to determine the characteristics of your machine and recommend an appropriate monitoring system.

Four distinct measurements are provided by the Dual Probe Monitor:

- Shaft relative vibration - A proximity probe measurement of shaft vibration relative to the bearing housing.
- Bearing housing vibration - A seismic measurement of the bearing housing vibration relative to free space.
- Shaft absolute vibration - A vector summation of shaft relative vibration and bearing housing vibration.
- Shaft average radial position relative to the bearing clearance - A proximity probe dc gap measurement.

Specifications

Inputs

Signal:

Accepts two signals, one from a 600 cpm 2-wire velocity Seismoprobe®, a Velomitor®, or Velomitor XA and one from a proximity transducer.

Input Impedance

Relative Transducer:

10 k Ω.

Seismic Transducer:

(2-wire) 10 k Ω.

Signal Scale Factor

Proximity Probe:

200 mV/mil (7.87 V/mm),

100 mV/mil (3.94 V/mm)

Jumper-selectable.

Seismic Input: Seismoprobe:

500 mV/(in/s) (19.69 mV/(mm/s)).

Velomitor

100 mV(in/s) (3.94 mV/(mm/s))

Note: The buffered output of the seismic signal is integrated velocity with the same output scale factor as the proximity signal.

Power Consumption:

Nominal consumption of 1.5 watts.

Signal Conditioning

Accuracy:

Within ±0.33% of full-scale typical,

±1% maximum

±2% maximum with 2X Trip Multiply.

±3% maximum with 3X Trip Multiply.

Specified at ambient temperature of +25°C (+77°F).

Frequency response:

Nominal -3dB corners User-programmable for 4 to 4,000 Hz (240 to 240,000 cpm), or 1 to 600 Hz (60 to 36,000 cpm) for proximity transducer; 4 to 4,000 Hz (240 to 240,000 cpm) for Seismic; 10 to 4000 Hz (600 to 240,000 cpm) for Absolute.(or to 36,000 cpm if 1-600 Hz relative option selected)

Note: The 1 to 600 Hz (60 to 36,000 cpm) option is not recommended for machine applications with rapid startup and coastdown rates where acceleration/deceleration exceeds 1,000 rpm per second. Because of the extended low frequency range to 60 cpm, the monitor circuitry will retain vibration transients normally experienced during fast startups (such as with motor driven equipment). This can hold vibration levels above alarm setpoints beyond alarm time delays. This may result in Danger relay actuation after the internal time delay has lapsed even if actual vibration has decreased below the Danger alarm setpoint level. If, based on this explanation, the standard 4 Hz (240 cpm) low frequency limit is not satisfactory for your application, contact your sales professional. The 1 Hz (60 cpm) option is recommended for applications where shaft rotative speed is less than 1,000 rpm.

Outputs

Recorder:

User-programmable for +4 mA to +20 mA, 0 Vdc to -10 Vdc, or

+1 Vdc to +5 Vdc. Outputs are proportional to programmed full-scale range. Recorder outputs are provided for relative and absolute or relative and seismic readings. Monitor operation is unaffected by short-circuits on recorder outputs.

Recorder accuracy (in addition to signal conditioning accuracy):

All specified at +25°C (+77° F).

+4 to +20 mA: ±0.7% of signal, ±0.09 mA offset.

+1 to +5 Vdc: ±2.2% of signal, ±10 mV offset.

0 to -10 Vdc: ±1.1% of signal, ±15 mV offset.

Output Impedance (voltage outputs):

100 Ω. Minimum load resistance is 10 k Ω.

Voltage Compliance (current outputs):

0 to +12 Vdc range across load. Load resistance is 0 to 600 Ω when using +4 to +20 mA option.

Buffered Transducer Outputs:

Two coaxial connectors on front panel provide relative and absolute signals. A test pin behind the front panel provides seismic signal. The three signals are also available on the rear panel. All signals are short-circuit protected.

Output Impedance:

100 Ω.

Transducer Supply Voltage:

-24 Vdc. Voltages are current limited for each channel on the monitor circuit board.

Alarms

Alarm Setpoints:

Alarms (Alert, Danger, and Gap) are digitally adjustable from 0 to 100% of full-scale and can be set within LCD resolution (± 1.6% of full-scale) to a desired level. Once set, alarms are repeatable within ± 0.4% of full-scale.

Relay Modules

Location:

One relay module can be installed behind each monitor. At least one alarm relay module must be ordered with each 3300 System.

Displays

Meter:

Nonmultiplexing vertical bargraph type Liquid Crystal Display (LCD). 63 individual LCD segments per channel. Probe Gap indicated on a third, center scale. LCD also displays error codes and monitor ADJUST mode.

Resolution:

Within ±1.6% of monitor full-scale.

Size:

83 mm (3.2 in), vertical dimension.

LED Indicators

OK:

One constant ON green LED per channel to indicate OK condition of monitor, transducers, and field wiring. Constant OFF indicates NOT OK condition or channel Bypassed (red Bypass LED will be ON). OK LED flashing at 1 Hz indicates transducer has been NOT OK, but is now OK. OK LED flashing at 5 Hz indicates error code(s) stored in memory. One OK LED for relative transducer and one for seismic transducer.

Alarm:

Two red LEDs per channel indicate alarm status (independent Alert and Danger LEDs for each channel). Flashing alarm LED indicates First Out (independent for Alert and Danger alarms).

Bypass:

Two red LEDs indicate status of Danger Bypass and Rack/Channel Bypass functions.

Environmental Limits

Operating Temperature:

0°C to +65°C (+32°F to +150°F).

Storage Temperature:

-40°C to +85°C (-40°F to +185°F).

Relative Humidity:

To 95%, noncondensing.

CE Mark Directives

EMC Directive

Certificate of Conformity: 158710

Low Voltage Directive

Certificate of Conformity: 135300

Hazardous Area Approvals

CSA/NRTL/C

Class I, Div 2

Groups A, B, C, D

T4 @ Ta = +65 °C

Certification Number

150368 – 1002151 (LR 26744)

ATEX

 II 3 G

EEx nC[L] IIC

T4 @ Ta = -20°C to +60°C

When installed per document number 132577-01.

Certification Number

BN26744C-55A

Physical

Rack Space Requirements:

First and second slot in rack are reserved for Power Supply and System Monitor, respectively. Monitor can be placed in any other available rack position.

Weight:

1 kg (2.2 lbs.).

Ordering Information

For spares, order the complete catalog number as described below. This includes a front panel assembly, monitor PWAs with sheet metal, and appropriate relay module. This unit is optioned, tested and ready to install in your system. Spare relay modules can be ordered separately.

Dual Probe Monitor

3300/65-AXX-BXX-CXX-DXX-EXX-FXX

A: Full-scale Range Option

0 1	0 to 5 mils
0 2	0 to 10 mils
0 3	0 to 15 mils
0 4	0 to 20 mils
1 1	0 to 150 µm
1 2	0 to 250 µm
1 3	0 to 400 µm
1 4	0 to 500 µm

B: Relative Transducer Input Option

0 1	3300 or 7200 Proximitor®
0 2	7200 11 mm (not XL) Proximitor
0 3	7200 14 mm or 3300 HTPS Proximitor

C: Agency Approval Option

0 0 Not required
0 1 CSA/NRTL/C

Note: CSA/NRTL/C option is only available with relays when the monitor is ordered in a system.

D: Intrinsic Safety Barrier Option
0 0 None
0 1 External with Velocity Seismoprobe
0 3 External with Velomitor

Note: External Safety Barriers must be ordered separately.

E: Seismic Transducer/Alarm Relay Option
0 0 Seismoprobe, no relay
0 1 Seismoprobe, Epoxy-sealed
0 2 Seismoprobe, Hermetically-sealed
0 3 Seismoprobe, Quad Relay (Epoxy-sealed only)
0 4 Velomitor, no relay
0 5 Velomitor, Epoxy-sealed relay
0 6 Velomitor, Hermetically-sealed relay
0 7 Velomitor, Epoxy-sealed Quad relay
0 8 Spare Monitor – No SIM/SIRM

F: Trip Multiply Option
0 0 None
0 1 2X
0 2 3X

Spare Relay Module Assemblies

84139-01
Seismic No Relays

84145-01
Seismic Dual Epoxy Relays

84151-01
Seismic Dual Hermetic Relays

84156-01
Seismic Quad Relays

107320-01
No Relays, Velomitor

107321-01
Dual Epoxy Relays, Velomitor

107322-01
Dual Hermetic Relays, Velomitor

107323-01
Quad Relays, Velomitor

Field-programmable Options

These options are field-programmable via plug-in jumpers. **Bold text** indicates options as shipped from the factory.

Recorder Signal Option

Relative signal on recorder Channel A, absolute signal on recorder Channel B.

Relative signal on recorder Channel A, seismic signal on recorder Channel B.

Bently Nevada Computer Interface Signal Option

Relative signal on A, absolute signal on B

Relative signal on A, seismic signal on B

First Out Option

Enabled

Disabled

Alarm Time Delay Option

0.1 second

1 second

3 seconds

6 seconds

OK Mode Option

Nonlatching

Latching

Timed OK/Channel Defeat Option

Enabled

Disabled

Alert Mode Option

Latching

Nonlatching

Danger Mode Option

Latching

Nonlatching

Danger Bypass Switch

Disabled

Enabled

Recorder Output Option

+4 to +20 mA

+1 to +5 Vdc

0 to -10 Vdc

Recorder Clamping Option

(+4 to +20 mA Option only with Timed OK/Channel Defeat enabled)

Not OK = 4 mA

Not OK = 2 mA

Alert Relay Mode Option

Normally de-energized

Normally energized

Danger Relay Mode Option

Normally de-energized

Normally energized

Absolute Alarm Option

Danger and Alert enabled

Alert enabled, Danger disabled

Danger and Alert disabled

Relative Alarm Option

Danger and Alert enabled

Alert enabled, Danger disabled

Danger and Alert disabled

Gap Alarm Option

Enabled

Disabled

Seismic Transducer OK Check Option

Enabled

Disabled

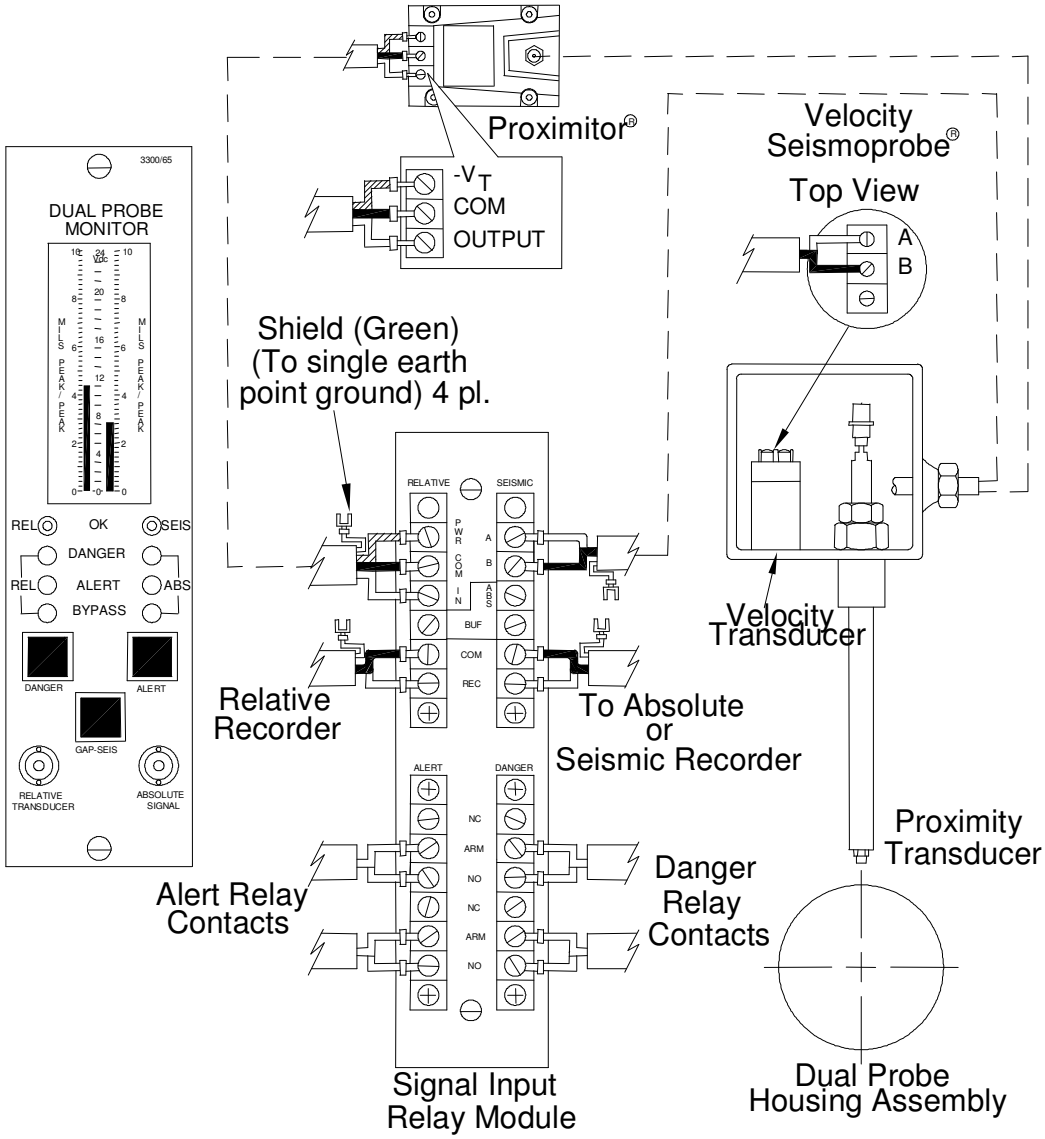
Relative Path Frequency Response Option

240 to 240,000 cpm

60 to 36,000 cpm

Field wiring diagram

3300/65 Dual Probe Monitor



Field wiring diagram for 3300/65 Dual Probe Monitor

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