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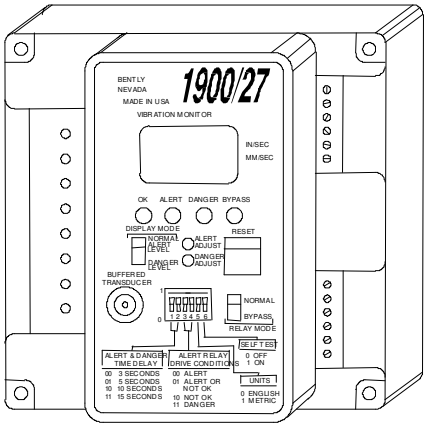
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1900/27 Vibration Monitor

Bently Nevada™ Asset Condition Monitoring



Description

The 1900/27 is a single-channel, stand-alone, locally mounted vibration monitor. It can be used as a stand-alone machinery protection device, suitable for general-purpose or some essential machinery and provides a built-in 4-20 mA interface for trending the monitored parameter in plant control and automation systems. The 1900/27 accepts a single transducer input from compatible Trendmaster® 2000 accelerometers, conditions the signal into peak velocity units, and provides local display and status indication as well as alarm relay contact outputs for connection to an external annunciator.

By using an optional Rack Buffered Output Transducer Interface Module (TIM), the 1900/27 can also be used in conjunction with our Trendmaster 2000 system. It allows the user to apply machinery protection capabilities to all (or selected) seismic vibration points of the Trendmaster 2000 system.

Note: If your application calls for connectivity to Bently Nevada's Trendmaster 2000 system, but does not require a 4-20 mA interface to other systems, consider the use of our 1900/25 monitor instead (consult part number 141485-01 for details).

⚠ Caution

If housing measurements are being made for overall protection of the machine, thought should be given to the usefulness of the measurement for each application. Most common machine malfunctions (imbalance, misalignment, etc.) originate at the rotor and cause an increase (or at least a change) in rotor vibration. In order for any housing measurement alone to be effective for overall machine protection, a significant amount of rotor vibration must be faithfully transmitted to the bearing housing or machine casing, or more specifically, to the mounting location of the transducer.

In addition, care should be exercised in the physical installation of the transducer. Improper installation can result in a decrease of the transducer amplitude and frequency response and/or the generation of signals, which do not represent actual machine vibration.

Upon request, we can provide engineering services to determine the appropriateness of housing measurements for the machine in question and/or to provide installation assistance..

Specifications

Inputs

Compatible transducers

Bently Nevada 200150 and 190520 Accelerometers.

Input Sensitivity

100 mv/g

Maximum acceleration

20 g peak

Maximum differential input voltage

4 volts peak to peak

Power

AC/HDC Power Version

AC Voltage:

85 to 264 Vac

DC Voltage:

110 to 370 Vdc

Current Draw:

60 mA. typ.

120 mA max.

Frequency:

47 Hz to 440 Hz, or DC.

Inrush:

20A typ. @ Vin=100Vac

40A typ. @ Vin=200Vac

+24 Vdc Power Version

Voltage:

18 to 36 Vdc

Current Draw:

300 mA max.

Signal Conditioning

Monitor Full-scale:
(Below 614Hz)

English Units:

2.0 in/s zero-to-peak

Metric Units:

50.8 mm/s zero-to-peak

Note: Full scale is limited by maximum input above 614 Hz. The maximum input is 2 volts peak, or 20 g peak. 20 g at 614 Hz is equivalent to 2 inch per second (the full scale range of the monitor). For frequencies above 614 Hz, Full scale is equal to (1228/frequency).

Frequency Response:

High pass corner frequency

-3 dB corner @ 8 Hz less than 1% error due to high pass corner above 30 Hz

Low pass corner

Greater than 4 kHz
less than 1% error due to low pass corner below 4kHz

Accuracy

Liquid Crystal Display and Buffered output.

30 Hz – 4 kHz:

±3% of full scale, Maximum

8 Hz – 30 Hz

-30% , + 3% of full scale

4-20 mA Recorder.

30 Hz – 4 kHz:

±5% of full scale, Maximum

8 Hz – 30 Hz

-30% , + 5% of full scale

Outputs

Buffered Transducer Output

Output Sensitivity:

19.7 mV/mm/s (500 mV/in/s)

Output Impedance:

500 Ω

Full-scale Range:

50.8 mm/s (2 in/s) zero-to-peak

4-20 mA Output

Full-scale Range:

20 mA @

50.8 mm/s (2 in/s)

Overrange:

63.5 mm/s (2.5 in/s)

Accuracy:

Adjusted with trimpot

Galvanic Isolation:

Optical @ 1000 Vac or 707 Vdc

Relays

Type

Single-pole, double-throw.

Contact Ratings

Switched Power:

180 watts, 1800 VA Maximum

Maximum Voltage and Current

300 Vac at 6 A

28 Vdc at 6 A

Dielectric Strength (at sea level):

Contact to Contact: 750 Vrms

Contact to Coil: 1500 Vrms

Life Expectancy

Electrical:

180,000 operations at 6 A, 120 Vac

Displays

Liquid Crystal Display

Size:

50.8 mm wide x 22.8 mm high

(2.0 inches wide x 0.9 inches high)

Full-scale:

50.8 mm/s (1.999 in/s)

Refresh Rate:

0.8 s

LED Indicators

OK:

One constant ON green LED indicates OK condition of monitor, transducers, and field wiring. Constant OFF indicates NOT OK condition. OK LED flashing at 2 Hz indicates monitor has been NOT OK, but is now OK.

Alert:

One yellow LED indicates an Alert condition. Flashing at 2 Hz indicates an Alert condition has occurred and gone away. (Only occurs when the Alert relay is configured as nonlatching.)

Danger:

One of the two red LEDs indicates a Danger condition. Flashing at 2 Hz indicates a Danger condition has occurred and gone away. (Only occurs when the Danger relay is configured as nonlatching.)

BYPASS:

The other red LED indicates the monitor is in BYPASS mode.

Controls

Display Mode Switch:

Three positions: Normal, Alert Setpoint, and Danger Setpoint. Controls what is shown on the LCD display.

Relay Mode Switch:

Two positions; controls whether monitor is in normal or BYPASS mode.

Reset Button:

Push to reset latching relays and flashing LEDs.

Configuration Switch

Used to set Alert and Danger Time Delay, Alert relay drive conditions, display units, and to initiate a monitor self-test.

Environmental Limits

Operating Temperature:

-20°C to +70°C (-4°F to +158°F)

Storage Temperature:

-30°C to +90°C (-22°F to +194°F)

Relative Humidity:

To 95%, non-condensing

Hazardous Area Approvals

CSA/NRTL/C:

Class1, Division 2, Groups A, B, C, D T4 @ Ta=70 °C

Physical

Dimensions

Height x Width x Depth:

132 mm x 132 mm x 71.1 mm

(5.20 in x 5.20 in x 2.80 in)

Weight

400 g (0.85 lb).

Ordering Information

1900/27-AXX

A: Power Supply Option

0 1 85 - 264 Vac, 110 – 370 DC
0 3 +24 Vdc

Field-programmable Options

These options are either field-changeable or programmed via internal jumpers. **Bold text** indicates options as shipped from the factory.

Alarm Time Delay Option:

3 seconds

5 seconds

10 seconds

15 seconds

Alert Relay Configuration Option:

Alert relay

Alert or NOT OK relay

NOT OK relay

Danger relay

Units Option:

English

Metric

Monitor Self-test Option:

Off

On

Relay Mode Option:

Normal

BYPASS

Normal Relay State Option:

Normally de-energized

Normally energized

Relay Reset Option:

Latching

Nonlatching

4-20 mA Output Behavior Option:

The 4-20 mA output can be set to clamp to 2 mA when the monitor is placed in BYPASS.

BYPASS 2 mA clamp enabled

BYPASS 2 mA clamp disabled

Accessories

200150 Accelerometer

200150-AXX

See Specification and Ordering Information sheet for transducer ordering information.

200152 Transducer Cable

200152 - AXX

A: Cable length option in metres.

1 5 15 ±0.15 metre (49.2 ±0.5 feet)

190100-01

Weatherproof enclosure for one 1900/27 Vibration Monitor.

When properly installed, the weatherproof enclosure will meet NEMA 4X watertight specifications.

Manual

190127-01

1900/27 Vibration Monitor operation and maintenance.

Rack Buffered Output Transducer Interface Module (TIM)

The 1900/27 Vibration Monitoring System can be used with our Trendmaster cost-effective, automated data collection and diagnostics system, via the Rack Buffered Output Transducer Interface Module (TIM).

Two connectors required for cable (line) connections are included with the TIM. The signal-input connector is a two-wire terminal strip. The signal input cable must be provided by user or ordered separately.

101281-01

Rack Buffered Output TIM

Graphs and Figures

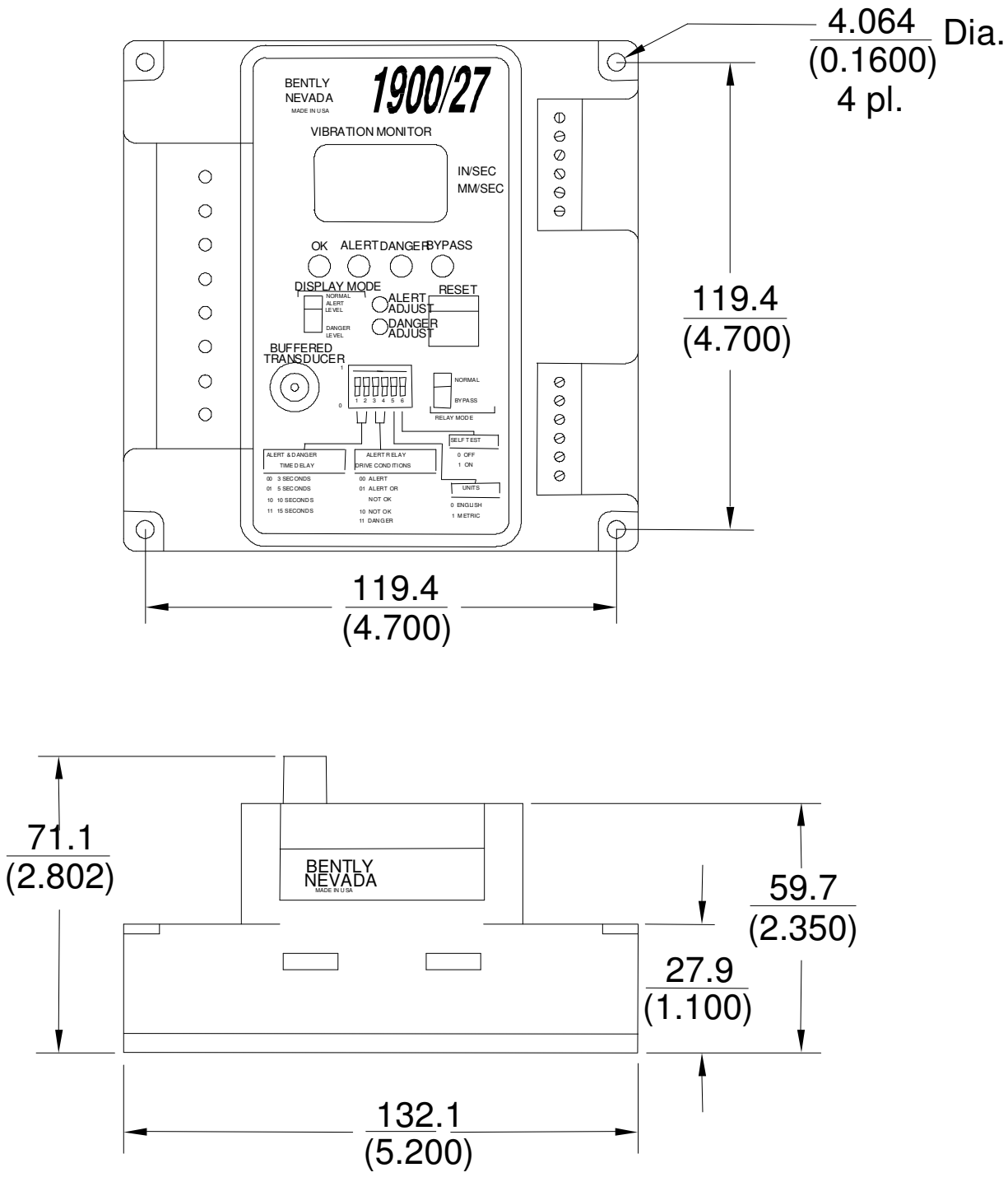


Figure 1: Typical field wiring diagram for the 1900/27 Vibration Monitoring System

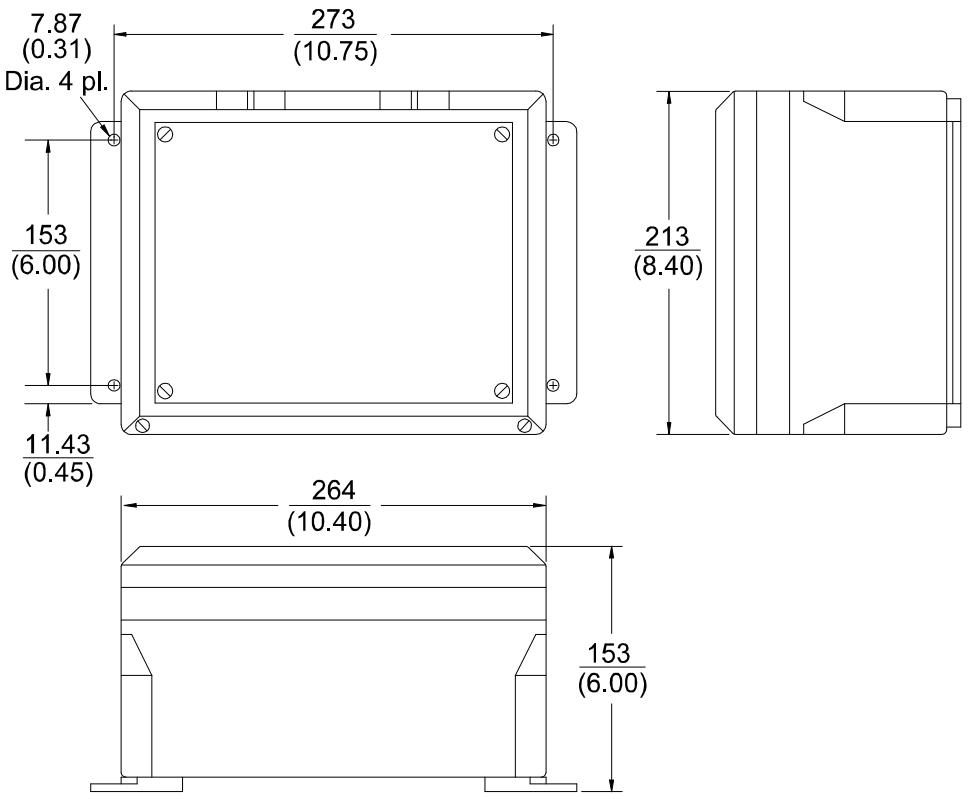


Figure 2: 1900/27 Weatherproof Enclosure Dimensions Diagram
Dimensions are in millimetres (inches)

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