

# Bently Nevada 3500 Series Service Manual

3500/42-06-00

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## 1. Description

3500/42-06-00

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## 3. Product Information



3500/42-06-00 | Bently Nevada | Proximitor Seismic Monitor

Manufacturer : Bently Nevada

Product No. : 3500/42-06-00

Product type : Proximitor Seismic Monitor

Made in U.S.A

I/O Module Type : 06= I/O Description :I/O Module with internal

barriers, internal terminations, 4 x Velomitor

Transducer Type : Prox/Accel on channels 1 through 4

Hazardous Area Approval Option : 00 = None

Inputs

Signal: Accepts from 1 to 4 proximity, velocity or acceleration transducer signals

Power consumption: 7.7 watts, typical

Input Impedance

Standard I/O:10 k $\Omega$  (Proximitor and acceleration inputs)

Sensitivity

Radial Vibration:

3.94 mV/ $\mu$ m (100 mV/mil) or

7.87 mV/ $\mu$ m (200 mV/mil)

Thrust : 3.94 mV/ $\mu$ m (100 mV/mil) or 7.87 mV/ $\mu$ m (200 mV/mil)

Eccentricity : 3.94 mV/ $\mu$ m (100 mV/mil) or 7.87 mV/ $\mu$ m (200 mV/mil)

Differential Expansion: 0.394 mV/ $\mu$ m (10 mV/mil) or 0.787 mV/ $\mu$ m (20 mV/mil)

REBAM ; 40 mV/ $\mu$ m (1000 mV/mil) or 80 mV/ $\mu$ m (2000 mV/mil)

Acceleration & Acceleration2: 10 mV/ (m/s<sup>2</sup>) (100 mV/g)

Velocity & Velocity2: 20 mV/ (mm/s) pk (500 mV/ (in/s) pk) or 5.8 mV/ (mm/s) pk (145 mV/ (in/s) pk) or 4 mV/ (mm/s) pk (100 mV/ (in/s) pk)

Shaft Absolute, Radial Vibration: 3.94 mV/ $\mu$ m (100 mV/mil) or 7.87 mV/ $\mu$ m (200 mV/mil)

Shaft absolute, Direct: 3.94 mV/ $\mu$ m (100 mV/mil) or 7.87 mV/ $\mu$ m (200 mV/mil)

Shaft absolute, Velocity:

20 mV/ (mm/s) pk

(500 mV/ (in/s) pk) or

5.8 mV/ (mm/s) pk

(145 mV/ (in/s) pk) or

4 mV/ (mm/s) pk

(100 mV/ (in/s) pk)

Outputs

Front Panel LEDs

OK LED: Indicates when the 3500/42M Proximitor Seismic Monitor is operating properly.

TX/RX LED: Indicates when the 3500/42M Proximitor Seismic Monitor is communicating with other modules in the 3500 rack.

Bypass LED: Indicates when the 3500/42M Proximitor Seismic Monitor is in Bypass Mode.

Buffered Transducer Outputs: The front of each monitor has one coaxial connector for each channel.

Each connector is shortcircuit protected.

Output Impedance: 550  $\Omega$

Transducer Power Supply: -24 Vdc

Recorder: +4 to +20 mA

Values are proportional to monitor full-scale.

The monitor provides individual recorder values for each channel.

Monitor operation is unaffected by short circuits on recorder outputs.

Voltage Compliance (current output):

0 to +12 Vdc range across

load

Load resistance is 0 to 600  $\Omega$ .

Front Panel LEDs

Resolution: 0.3662  $\mu$ A per bit  $\pm$ 0.25% error at room temperature  $\pm$ 0.7% error over temperature range

Update rate approximately 100 ms or less

Shaft Absolute Buffered Outputs: The Shaft Absolute I/O modules have one output for each channel group.

Each output is short circuit protected.

Shaft Absolute Output Impedance: 300  $\Omega$

Signal Conditioning

Specified at +25  $^{\circ}$ C (+77  $^{\circ}$ F) unless otherwise noted.

Radial Vibration



## Frequency Response

Direct filter: User-programmable

Single-pole -3db at 4 Hz to 4000 Hz or 1 Hz to 600 Hz  $\pm 1\%$  accuracy

Gap filter : -3 dB at 0.09 Hz

Not 1X filter: 60 cpm to 15.8 times running speed

Constant Q notch filter Minimum rejection in stopband of -34.9 dB

Smax: 0.125 to 15.8 times running speed

1X and 2X vector filter: Constant Q Filter Minimum rejection in stopband of -57.7 dB

## Accuracy

Direct and Gap: Exclusive of filtering Within  $\pm 0.33\%$  of full-scale typical  $\pm 1\%$  maximum

1X and 2X: Within  $\pm 0.33\%$  of full-scale typical  $\pm 1\%$  maximum

Smax : Within  $\pm 5\%$  maximum

Not 1X:  $\pm 3\%$  for machine speeds less than 30,000 cpm  $\pm 8.5\%$  for machine speeds greater than 30,000 cpm

## Thrust and Differential Expansion

Accuracy: Within  $\pm 0.33\%$  of full-scale typical  $\pm 1\%$  maximum

## Frequency Response

Direct filter: -3 dB at 1.2 Hz

Gap filter: -3 dB at 0.41 Hz

## Eccentricity

Accuracy: Within  $\pm 0.33\%$  of full-scale typical  $\pm 1\%$  maximum

## Frequency Response

Direct filter: -3 dB at 15.6 Hz

Gap filter: -3 dB at 0.41 Hz

## Acceleration

Accuracy: Within  $\pm 0.33\%$  of full-scale typical

$\pm 1\%$  maximum Exclusive of filters

## Filter Quality

High-pass: 4-pole (80 dB per decade, 24 dB per octave)

Low-pass: 4-pole (80 dB per decade, 24 dB per octave)

## Acceleration II

Accuracy: Within  $\pm 0.33\%$  of full scale typical  $\pm 1\%$  maximum Exclusive of filters

## Filter Quality

High-pass: 4-pole (80 dB per decade, 24 dB per octave)

Low-pass: 4-pole (80 dB per decade, 24 dB per octave)

## Frequency Response

Bias filter: -3 dB at 0.01 Hz

Not OK filter: -3 dB at 2400 Hz

1X and 2X vector filter: Valid for machine speeds of 60 cpm to 100,000 cpm

## Velocity and Velocity II

Accuracy: Within  $\pm 0.33\%$  of full-scale typical  $\pm 1\%$  maximum

+1% -3% with MTL 764(-) Zener External Barrier Exclusive of filters

## Velomitor sensor accuracy:

Full Scale 0-0.5:  $\pm 3\%$  typical

Full Scale 0-1.0:  $\pm 2\%$  typical

Full Scale 0-2.0:  $\pm 1\%$  typical

## Velomitor sensor accuracy with barriers

Under radiated immunity conditions, add  $\pm 11\%$  for all full scale ranges. The total Velomitor sensor accuracy will be  $\pm 15\%$ .

## Frequency Response

Bias: -3dB at 0.01 Hz ; Velocity II only

Not OK filter: -3 dB at 40 Hz; Velocity II only

RMS : 10 to 5,500 Hz, -3 dB

Peak or peak-to-peak: 3 to 5,500 Hz, -3 dB

1X and 2X vector filter: Valid for machine speeds of 60 to 100,000 cpm Velocity II only

## Filter Quality

High-pass: 4-pole (80 dB per decade, 24 dB per octave)

Low-pass: 2-pole (40 dB per decade, 12 dB per octave)

## Monitor Module (Main Board)

## Dimensions

(Height x Widthx Depth)



241.3 mm x 24.4 mm x 241.8mm  
(9.50 in x 0.96 in x 9.52 in)  
Weight 0.91 kg (2.0 lb)

