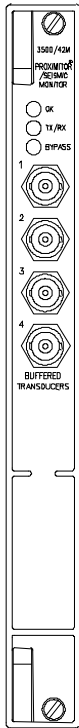


# 3500/42M Proximator\*/Seismic Monitor

Bently Nevada\* Asset Condition Monitoring



## Description

The 3500/42M Proximator\*/Seismic Monitor is a 4-channel monitor that accepts input from proximity and seismic transducers, conditions the signal to provide various vibration and position measurements, and compares the conditioned signals with user-programmable alarms. The user can program each channel of the 3500/42M using the 3500 Rack Configuration Software to perform any of the following functions:

- Radial Vibration
- Thrust Position
- Differential Expansion
- Eccentricity
- REBAM\*
- Acceleration
- Velocity
- Shaft Absolute
- Circular Acceptance Region

**Note:** The monitor channels are programmed in pairs and can perform up to two of these functions at a time. Channels 1 and 2 can perform one function, while channels 3 and 4 perform another (or the same) function.

The primary purpose of the 3500/42M monitor is to provide:

1. Machinery protection by continuously comparing monitored parameters against configured alarm setpoints to drive alarms.
2. Essential machine information for both operations and maintenance personnel.

Each channel, depending on configuration, typically conditions its input signal to generate various parameters called "static values". The user can configure Alert setpoints for each active static value and Danger setpoints for any two of the active static values.



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## Specifications

### Inputs

#### Signal

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

#### Input Impedance

#### Standard I/O

10 k $\Omega$  (Proximitors and Acceleration Inputs).

#### TMR I/O

The effective impedance of three Bussed TMR I/O channels wired in parallel to one transducer is 50 k $\Omega$ .

#### Power Consumption

7.7 Watts, typical.

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### 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 and Acceleration<sup>2</sup>

10 mV/(m/s<sup>2</sup>) (100 mV/g).

### Velocity and Velocity<sup>2</sup>

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).

### Circular Acceptance Region

See Radial Vibration.

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### Outputs

#### Front Panel LEDs

#### OK LED

Indicates when the 3500/42M is operating properly.

#### TX/RX LED

Indicates when the 3500/42M is communicating with other modules in the 3500 rack.

**Bypass LED**

Indicates when the 3500/42M is in Bypass Mode.

**Buffered Transducer Outputs**

The front of each monitor has one coaxial connector for each channel. Each connector is short-circuit 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  $\Omega$ .

**Resolution**

0.3662  $\mu$ A per bit  
 $\pm$ 0.25% error at room temperature  
 $\pm$ 0.7% error over temperature range.  
 Update rate 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**

**Note:** 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.

**Note:** 1X & 2X Vector, Not 1X, and Smax parameters are valid for machine speeds of 60 cpm to 60,000 cpm.

**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

±3% for machine speeds less than 30,000 cpm.

±8.5% for machine speeds greater than 30,000 cpm.

**Thrust and Differential Expansion**

**Frequency Response**

*Direct filter*

-3 dB at 1.2 Hz.

*Gap filter*

-3 dB at 0.41 Hz.

**Accuracy**

Within ±0.33% of full-scale typical, ±1% maximum.

**Eccentricity**

**Frequency Response**

*Direct filter*

-3 dB at 15.6 Hz.

*Gap filter*

-3 dB at 0.41 Hz.

**Accuracy**

Within ±0.33% of full-scale typical, ±1% maximum.

**Acceleration**

**Frequency Response**

The following table shows the frequency ranges if both channels of a channel pair are enabled:

Output Type	Without Filter	Low- or High-Pass Filter	With Integration
RMS	10 to 30,000 Hz	10 to 9,155 Hz	10 to 9,155 Hz
Peak	3 to 30,000 Hz	3 to 9,155 Hz	10 to 9,155 Hz

The following table shows the frequency ranges if a single channel is enabled for a channel pair.

Output Type	Without Filter, Low- or High-Pass Filter	With Integration
RMS	10 to 30,000 Hz	10 to 14,500 Hz
Peak	3 to 30,000 Hz	10 to 14,500 Hz

**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).

**Accuracy**

Within ±0.33% of full scale typical, ±1% maximum. Exclusive of filters.

**Acceleration II**

**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.

The following table represents the frequency ranges for the 3500/42M under different options using the Acceleration II Channel Type.

Output Type	Without Filter, Low- or High-Pass Filter	With Integration
RMS	10 to 30,000 Hz	10 to 20,000 Hz
Peak	3 to 30,000 Hz	10 to 20,000 Hz

**Filter Quality**

*High-Pass*

4-pole (80 dB per decade, 24 dB per octave).

<i>Low-Pass</i>	4-pole (80 dB per decade, 24 dB per octave).	<b>Velomitor* Sensor Accuracy</b>	Full Scale 0-0.5: ±3% Typical Full Scale 0-1.0: ±2% Typical Full Scale 0-2.0: ±1% Typical
<b>Accuracy</b>	Within ± 0.33% of full scale typical, ± 1% maximum, exclusive of filters.		
<b>Velocity and Velocity II</b>		<b>Shaft Absolute, Radial Vibration</b>	
<b>Frequency Response</b>		<b>Frequency Response</b>	
<i>Bias</i>		<i>Direct filter</i>	User-programmable, 4 Hz to 4000 Hz or 1 Hz to 600 Hz.
<i>Not OK filter</i>	-3dB at 0.01 Hz (Velocity II only)	<i>Gap filter</i>	-3 dB at 0.09 Hz.
<i>RMS</i>	10 to 5,500 Hz, -3 dB.	<i>1X Vector filter</i>	Valid for machine speeds of 240 cpm to 60,000 cpm.
<i>Peak or Peak-to-Peak</i>	3 to 5,500 Hz, -3 dB	<b>Accuracy</b>	
<i>1X and 2X Vector filter</i>	Valid for machine speeds of 60 to 100,000 cpm. (Velocity II only)	<i>Direct and Gap</i>	Within ±0.33% of full-scale typical, ±1% maximum.
<b>Filter Quality</b>		<i>1X</i>	Within ±0.33% of full-scale typical, ±1% maximum.
<i>High-Pass</i>	2-pole (40 dB per decade, 12 dB per octave).	<b>Shaft Absolute, Velocity</b>	
<i>Low-Pass</i>	4-pole (80 dB per decade, 24 dB per octave).	<b>Frequency Response</b>	
<b>Accuracy</b>	Within ± 0.33% of full scale typical, ± 1% maximum. Exclusive of filters.	<i>Peak or Peak-to-Peak</i>	User-programmable, 1 to 4,000 Hz, -3 dB.
		<b>Filter Quality</b>	
		<i>High-Pass</i>	2-pole (40 dB per decade, 12 dB per octave).
		<i>Low-Pass</i>	2-pole (40 dB per decade, 12 dB per octave).

1X Vector filter

Constant Q Filter. Minimum rejection in stopband of -57.7 dB.

**Accuracy**

Within ±0.33% of full scale typical, ±1% maximum. Exclusive of filters.

**Shaft Absolute Buffered Output Accuracy**

±6.0% @ 25 C

**Circular Acceptance Region**

See Radial Vibration

**REBAM**

**Frequency Response**

*Spike*

User-programmable from 0.152 to 8678 Hz.

*Element*

User-programmable for BPFO ranging from 0.139 to 3836 Hz. High-pass corner is 0.8x BPFO. Low-pass corner is 2.2x BPFO.

*Rotor*

User programmable from 0.108 to 2221 Hz.

*Direct*

Programmable from 3.906 to 14.2 Hz. Selection is determined by Spike and Rotor filters.

*Gap*

Programmable from 0.002 to 1.0 Hz. Selection is determined by the Rotor filter.

1X Vector filter

The range of shaft speeds for which the value is valid is dependent upon the nominal Shaft Speed the channel is configured for. The following table summarizes the relationship:

Nominal Shaft Speed (Hz)	Valid Speed Range (Hz)
10 to <126	0.071 to 160
126 to <252	0.133 to 330
252 to <504	0.25 to 660
504 to 584	0.50 to 750

**Note:** If a multi-event gear or speed wheel generates the speed input, the resultant input signal has an upper limitation of approximately 20 KHz.

**Filter Quality**

*Spike high-pass*

6-pole Elliptic (155 dB per decade, minimum). Corner frequency is -0.1 dB.

*Element bandpass*

8-pole Butterworth (155 dB per decade minimum). Corner frequency is -3 dB.

*Rotor low-pass*

6-pole Elliptic (155 dB per decade, minimum). Corner frequency is -0.1 dB.

*Rotor, Direct high-pass*

1-pole Butterworth (18 dB per decade, minimum). Corner frequency is -3 dB.

*Spike, Direct low-pass*

Corner is -0.3 dB maximum.

*Gap low-pass*

1-pole Butterworth (18 dB per decade, minimum). Corner frequency is -3 dB.

*1X Amplitude*

Constant Q of 16.67. Stopband frequencies are 0.91 and 1.09 times the running speed. Stopband attenuation is -51 dB minimum.

**Accuracy**

*Amplitude*

Within ±0.33% of full scale typical, ±1% maximum when input signal is at the center frequency of the proportional value's passband.

*Phase*

3 degrees error, maximum.

**Channels enabled**

Certain configurations allow the user to enable only one channel of a channel pair. See the discussion and graphs in the final pages of this datasheet.

**Filter tracking/stepping (requires a valid speed signal)**

*Initial condition*

Nominal filter set used.

*Switch from nominal to lower filter set*

Current shaft speed ≤ 0.9 x (nominal shaft speed).

*Switch from lower to nominal filter set*

Current shaft speed ≥ 0.95 x (nominal shaft speed).

*Switch from nominal to higher filter set*

Current shaft speed ≥ 1.1 x (nominal shaft speed).

*Switch from higher to nominal filter set*

Current shaft speed ≤ 1.05 x (Nominal Shaft Speed).

*Shaft speed error condition*

Nominal filter set used.

**Alarms**

**Alarm setpoints**

The user can use software configuration to set Alert levels for each value measured by the monitor and Danger setpoints for any two of the values measured by the monitor. Alarms are adjustable from 0 to 100% of full-scale for each measured value. The exception is when the full-scale range exceeds the range of the transducer. In this case, the range of the transducer will limit the setpoint. Accuracy of alarms are to within 0.13% of the desired value.

**Alarm Time Delays**

**Note:** Applies to Radial Vibration, Thrust, Differential Expansion, Eccentricity, Acceleration, Velocity, Acceleration2, Velocity2, Circular Acceptance Region, Shaft Absolute Radial Vibration

The user can program alarm delays using software as follows:

*Alert*

From 1 to 60 seconds in 1 second intervals.

*Danger*

0.1 seconds or from 1 to 60 seconds in 0.5 second intervals.

**Shaft Absolute Velocity**

The user can program Alarm delays using software as follows:

*Alert*

From 1 to 60 seconds in 1 second intervals.

*Danger*

From 1 to 60 seconds in 0.5 second intervals.

## REBAM

The user can program Alarm delays using software as follows:

### Alert

From (calculated minimum value) to 400 seconds in 1 second intervals.

### Danger

From (calculated minimum value) to 400 seconds in 0.5 second intervals.

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## Static Values

Static values are measurements used to monitor the machine. The Proximator/Seismic Monitor returns the following static values:

### Radial Vibration

Direct, Gap, 1X Amplitude, 1X Phase Lag, 2X Amplitude, 2X Phase Lag, Not 1X Amplitude, and Smax Amplitude.

### Thrust Position

Direct, Gap

### Differential Expansion

Direct, Gap

### Eccentricity

Peak-to-peak, Gap, Direct Minimum, Direct Maximum.

## REBAM

Spike, Element, Rotor, Direct, Gap, 1X Amplitude, 1X Phase Lag

### Acceleration

Direct, defined as one of the following:

RMS Acceleration, **or**

peak Acceleration, **or**

RMS Velocity, **or**

peak Velocity, **or**

Band-pass peak Acceleration, **or**

Band-pass peak Velocity.

## Acceleration II

Direct, 1X Amplitude, & 2X Amplitude; defined as one of the following:

RMS Acceleration, **or**

peak Acceleration, **or**

RMS Velocity, **or**

peak Velocity, **or**

Band-pass peak Acceleration, **or**

Band-pass peak Velocity.

Additionally, 1X Phase, 2X Phase and Bias Voltage.

## Velocity

Direct, defined as one of the following:

RMS Velocity, **or**

peak Velocity, peak-to-peak Displacement (?), **or**

Band-pass peak Velocity, **or**

Band-pass, **or**

peak-to-peak Displacement.

## Velocity II

Direct, 1X Amplitude, & 2X Amplitude: defined as one of the following:

RMS Velocity, **or**

peak Velocity (?), peak-to-peak Displacement, **or**

Band-pass peak Velocity, **or**

Band-pass, **or**

peak-to-peak Displacement.

Additionally, 1X Phase, 2X Phase and Bias Voltage.

## Shaft Absolute, Radial Vibration and Shaft Absolute, Velocity

Direct, Gap, 1X Amplitude, 1X Phase Lag



## Circular Acceptance Region

Direct, Gap, 1X Amplitude, 1X Phase Lag, 1X Circular Acceptance Radius, 2X Amplitude, 2X Phase Lag, 2X Circular Acceptance Radius

## Barrier Parameters

The following parameters apply for both CSA-NRTL/C and ATEX approvals.

### Proximator Barrier

#### Circuit Parameters

$V_{max}$  (PWR) = 26.80 V  
(SIG) = 14.05 V  
 $I_{max}$  (PWR) = 112.8 mA  
(SIG) = 2.82 mA  
 $R_{min}$  (PWR) = 237.6  $\Omega$   
(SIG) = 4985  $\Omega$

#### Channel Parameters (entity)

$V_{max}$  = 28.0 V  
 $I_{max}$  = 115.62 mA  
 $R_{min}$  (PWR) = 237.6  $\Omega$   
(SIG) = 4985  $\Omega$

### Seismic Barrier

#### Circuit Parameters

$V_{max}$  (PWR) = 27.25 V  
 $I_{max}$  (PWR) = 91.8 mA  
 $R_{min}$  (PWR) = 297  $\Omega$

#### Channel Parameters (entity)

$V_{max}$  = 27.25 V  
 $I_{max}$  = 91.8 mA  
 $R_{min}$  (PWR) = 297  $\Omega$

## Environmental Limits

### Operating Temperature

When used with Internal/External Termination I/O Module:  
-30°C to +65°C (-22°F to +150°F)

When used with Internal Barrier I/O Module (Internal Termination):  
0°C to +65°C (32°F to +150°F)

### Storage Temperature

-40 °C to +85 °C (-40 °F to +185 °F).

### Humidity

95%, noncondensing.

## CE Mark Directives

### EMC Directives

#### Declaration of Conformity

134036

#### EN61000-6-4

Radiated Emissions

EN 55011, Class A

Conducted Emissions

EN 55011, Class A

#### EN61000-6-2

Electrostatic Discharge

EN 61000-4-2, Criteria B

Radiated Susceptibility

EN61000-4-3, Criteria A

Conducted Susceptibility

EN61000-4-6, Criteria A

**Radiated  
Susceptibility**

ENV 50140, Criteria A

*Conducted  
Susceptibility*

ENV 50141, Criteria A

*Electrical Fast  
Transient*

EN 61000-4-4, Criteria B

*Surge  
Capability*

EN 61000-4-5, Criteria B

*Magnetic Field*

EN 61000-4-8, Criteria A

*Power Supply  
Dip*

EN 61000-4-11, Criteria B

*Radio  
Telephone*

ENV 50204, Criteria B

**CE Mark Low-  
Voltage  
Directives**

**Declaration of  
Conformity**

134036

**Safety  
Requirements**

EN61010-01

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**Hazardous Area Approvals**

**CSA/NRTL/C**

**Approval Option  
(01)**

Class I, Div 2

Groups A, B, C, D

T4 @ Ta = -20 °C to +65 °C

(-4 °F to +150 °F)

**Approval Option  
(02)**

**When used with I/O module  
ordering options without  
internal barriers:**

A/Ex nC[L] IIC

Class I, Div 2

T4 @ Ta = -20 °C to +65 °C

(-4 °F to +150 °F)

**ATEX**

**Approval Option  
(02)**

**For Selected Ordering Options  
with ATEX/CSA agency  
approvals:**

Ⓔ II 3/(3) G

EEx nCAL[L] IIC

T4 @ Ta = -20°C to +65°C

(-4°F to +150°F)

**Brazil  
Approval Option  
(02)**

**For Selected Ordering Options  
with ATEX/North American  
agency approvals:**

Br-Ex nCAL [ia] IIC T4

Br-Ex nCAL [nL] IIC T4

T4 @ Ta = -20 °C to +65 °C

(-4 °F to +150 °F)

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**Note:** When used with Internal Barrier I/O  
Module, refer to specification sheet  
141495-01 for approvals information.

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For further certification and approvals information please visit the  
following website:

[http://www.ge-energy.com/prod\\_serv/products/oc/en/bently\\_nevada.htm](http://www.ge-energy.com/prod_serv/products/oc/en/bently_nevada.htm)

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**Physical**

**Monitor Module  
(Main Board)**

**Dimensions  
(Height x Width  
x Depth)**

241.3 mm x 24.4 mm x 241.8 mm  
(9.50 in x 0.96 in x 9.52 in).

**Weight**

0.91 kg (2.0 lb.).

**I/O Module  
(non-barrier)**

**Dimensions  
(Height x Width  
x Depth)**

241.3 mm x 24.4 mm x 91.1 mm  
(9.50 in x 0.96 in x 3.90 in).

**Weight**

0.20 kg (0.44 lb.).

**I/O Module  
(barrier)**

**Dimensions  
(Height x Width  
x Depth)**

241.3 mm x 24.4 mm x 163.1 mm  
(9.50 in x 0.96 in x 6.42 in).

**Weight**

0.46 kg (1.01 lb.).

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**Rack Space Requirements**

**Monitor Module**

1 full-height front slot.

**I/O Modules**

1 full-height rear slot.

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**Ordering Information**

**General**

The 3500/42M Module requires the following (or later) firmware, and software revisions:

3500/01 Software – Version 2.50

3500/02 Software – Version 2.20

3500/03 Software – Version 1.21

External Termination Blocks cannot be used with Internal Termination I/O Modules.

When ordering I/O Modules with External Terminations the External Termination Blocks and Cable must be ordered separately for each I/O Module.

Bussed External Termination Blocks are to be used with TMR I/O Modules only.

**Internal Barrier  
I/O Modules**

Consult the 3500 Internal Barrier specification sheet (part number 141495-01) if the Internal Barrier Option is selected.

**Shaft Absolute**

The Shaft Absolute Channel Type requires the following (or later) firmware and software revisions:

3500/42M Module Firmware – Revision B

3500/01 Software – Version 2.61

DM2000 Software - Version 3.10.

Requires the M version of the 3500 Proximitator/Seismic Monitor.

**REBAM**

The REBAM channel type requires the following (or later) firmware, and software revisions:

3500/40M Module Firmware – Revision 2.1

3500/01 Software – Version 3.30

3500/02 Software – Version 2.40

3500/03 Software – Version 1.40

DM2000 Software - Version 3.40.

Requires the M version of the 3500 Proximitator Monitor.

**Acceleration II**

The Acceleration II channel type requires the following (or later) firmware, and software revisions:

3500/42M Module Firmware – Revision 2.10

3500/01 Software – Version 3.20

DM2000 Software - Version 3.30.

Requires the M version of the 3500 Proximitor Monitor.

### Velocity II

See Acceleration II.

### Circular Acceptance Region

See Acceleration II.

## Ordering Options

### Proximitor Seismic Monitor 3500/42-AXX-BXX

#### A: I/O Module Type

- 01** Prox/Seismic I/O Module with Internal Terminations
- 02** Prox/Seismic I/O Module with External Terminations
- 03** TMR Prox/Seismic I/O Module.
- 04** I/O Module with Internal Barriers (4 x prox./accel. ch's) and Internal Terminations
- 05** I/O Module with Internal Barriers (2 x prox./accl. + 2 x channels) and Internal Terminations
- 06** I/O Module with Internal Barriers (4 x Velomitor channels) and Internal Terminations
- 07** Shaft Absolute I/O Module with Internal Terminations
- 08** Shaft Absolute I/O Module with External Terminations
- 09** Prox/Velom I/O Module with Internal Terminations
- 10** Prox/Velom I/O Module with External Terminations

**Note 1:** The following table shows the ordering option and supported transducer types.

Ordering Option	Prox/Accel	Velom	Seismo-probe
A 01 & A 02	See Note 4		X
A 03	X	X	
A 04, A05, & A 06	See Note 2		
A 07 & A 08	X	X	X
A 09 & A 10	X	X	

**Note 2:** The following table shows the ordering options that are available for Internal Barriers with this monitor.

Option	Ch's 1 and 2	Ch's 3 and 4
A 04	Prox/Accel	Prox/Accel
A 05	Prox/Accel	Velomitorsensor
A 06	Velomitor sensor	Velomitor sensor

**Note 3:** HTVS transducer is supported in A 09 and A 10 I/O module type options.

**Note 4:** Prox/Accel and Velom are supported with the A 01 & A 02 options. However, unless a Seismoprobe\* is used the appropriate choice is the A 09 and A 10 options.

#### B: Agency Approval Option

- 00** None
- 01** CSA/NRTL/C (Class 1, Div 2)
- 02** ATEX/CSA (Class 1, Zone 2)

**Note:** Agency Approval Option B 02 is only available with Ordering Options; A 04, A 05, A 06, and A 09.

#### External Termination Blocks

- 125808-01 Proximitor ET Block (Euro Style Connectors).
- 128015-01 Proximitor ET Block (Terminal Strip Connectors).
- 132242-01 Prox/Seismic Bussed TMR ET Block (Euro Style connectors).
- 132234-01 Prox Seismic Bussed TMR ET Block (Terminal Strip connectors).
- 128702-01 Recorder External Termination Block (Euro Style connectors).
- 128710-01 Recorder External Termination Block (Terminal Strip connectors).
- 140993-01 Shaft Absolute External Termination Block (Euro Style connectors).
- 141001-01 Shaft Absolute External Termination Block (Terminal Strip).
- 125808-08 Proximitor/Velomitor External Termination Block (Euro Style connectors).
- 128015-08 Proximitor/Velomitor External Termination Block (Terminal Strip connectors).

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## Cables

### 3500 Transducer (XDCR) Signal to External Termination (ET) Block Cable

129525 -AXXX-BXX

A: Cable Length

**0005** 5 feet (1.5 metres)  
**0007** 7 feet (2.1 metres)  
**0010** 10 feet (3.0 metres)  
**0025** 25 feet (7.6 metres)  
**0050** 50 feet (15.2 metres)  
**0100** 100 feet (30.5 metres)

B: Assembly Instructions

**01** Not assembled  
**02** Assembled

135489-01

3500/42M Monitor Manual

I/O Module with Internal Barriers  
(Internal Terminations)  
(4 x Prox/Accel).

135489-02

I/O Module with Internal Barriers  
(Internal Terminations)  
(2 x Prox/Accel + 2 x Velomitor\*)

135489-03

I/O Module with Internal Barriers  
(Internal Terminations)  
(4 x Velomitor\*)

138708-01

Shaft Absolute I/O Module with  
Internal Terminations

138700-01

Shaft Absolute I/O Modules with  
External Terminations

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### 3500 Recorder Output to External Termination (ET) Block Cable

129529 -AXXX-BXX

A: Cable Length

**0005** 5 feet (1.5 metres)  
**0007** 7 feet (2.1 metres)  
**0010** 10 feet (3.0 metres)  
**0025** 25 feet (7.6 metres)  
**0050** 50 feet (15.2 metres)  
**0100** 100 feet (30.5 metres)

B: Assembly Instructions

**01** Not assembled  
**02** Assembled

00517018

3500/42M Shaft Absolute I/O Module  
8-pin connector shunt

140471-01

Prox/Velom I/O Module with Internal  
Terminations

140482-01

Prox/Velom I/O Module with External  
Terminations

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## Spares

176449-02

00561941

3500/42M Prox/Velom I/O Module 10-  
pin connector shunt

128229-01

3500/42M Proximitator/Seismic Monitor

00580434

Prox/Seismic I/O Module with Internal  
Terminations

Internal I/O Module connector header,  
Euro style, 8-pin. Used on I/O modules  
128229-01 and 138708-01.

128240-01

Prox/Seismic I/O Module with External  
Terminations

00580432

Internal I/O Module connector header,  
Euro style, 10-pin. Used on I/O  
modules 128229-01 and 138708-01.

126632-01

TMR I/O Module with External  
Terminations

00502133

Internal I/O Module connector header,  
Euro style, 12-pin.

00530843

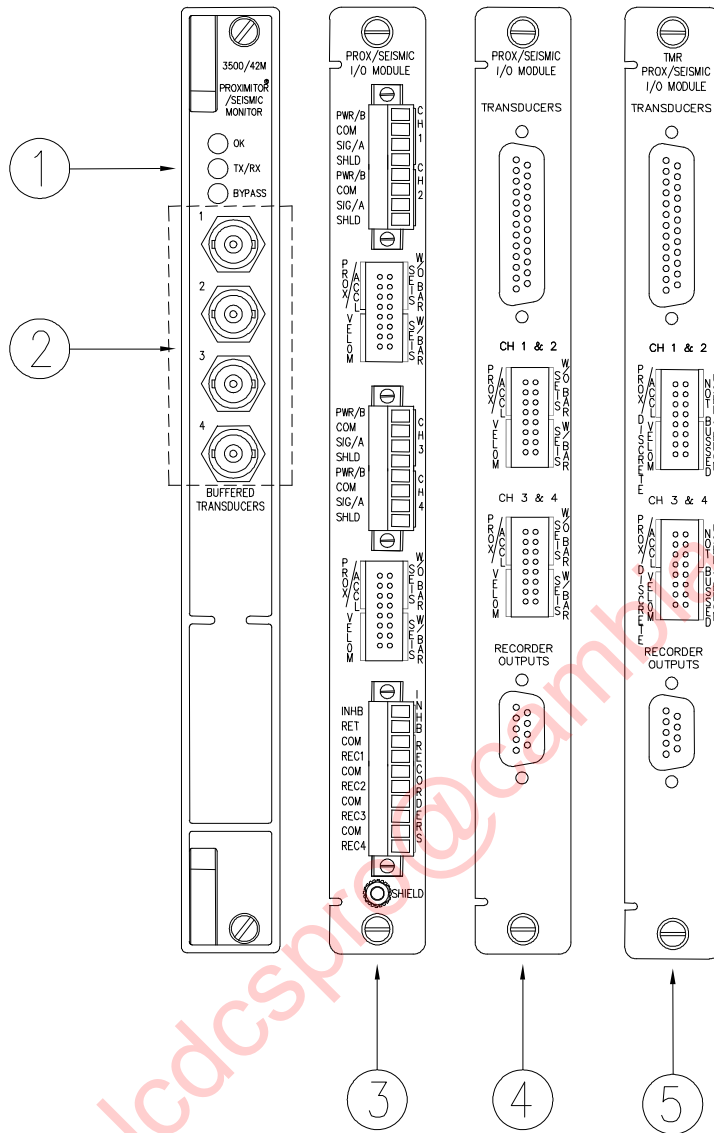
3500/42M Prox/Seismic I/O Module  
four-pin connector shunt

143489-01

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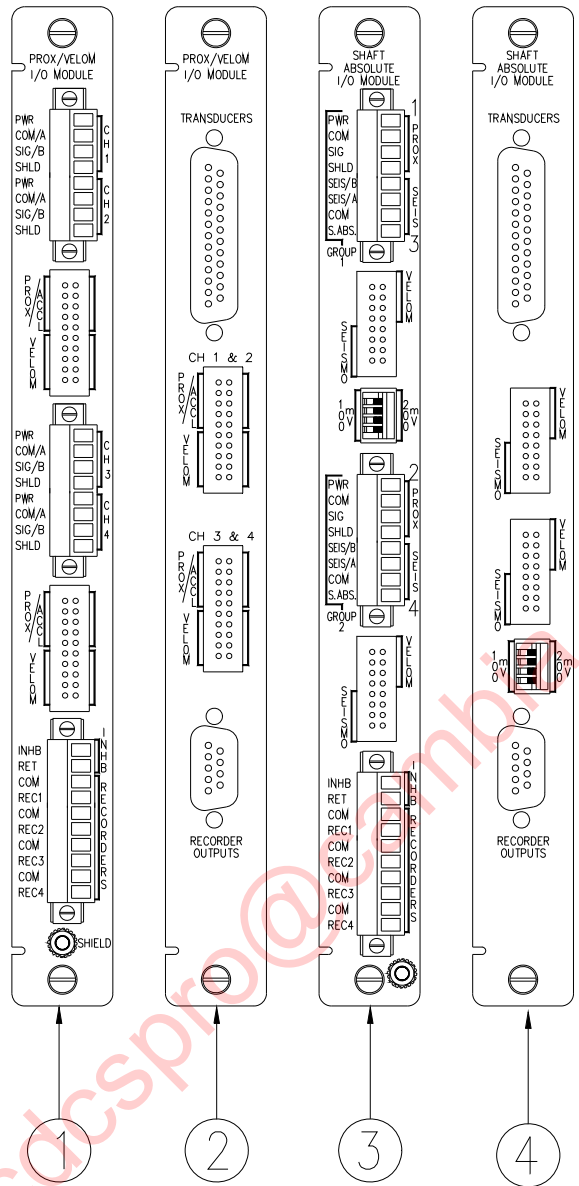
## Graphs and Figures

Specifications and Ordering Information  
Part Number 143694-01  
Rev. H (12/09)



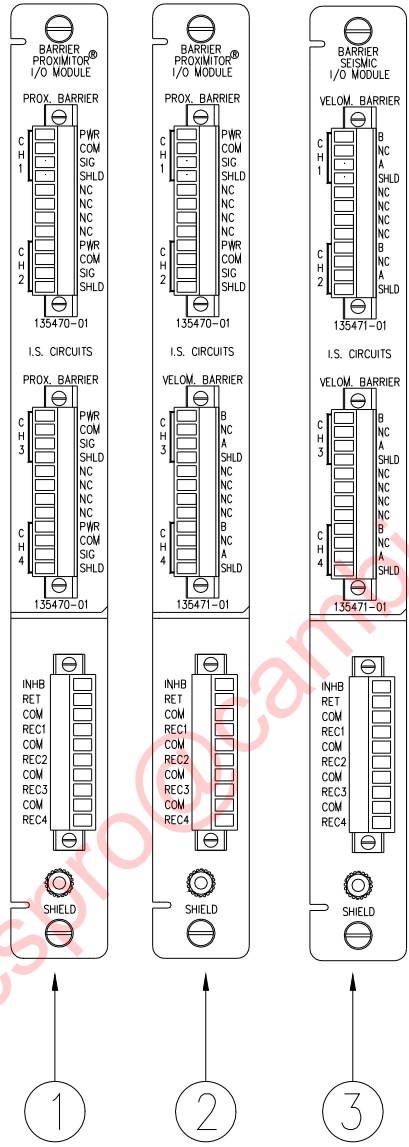
1. Status LEDs
2. Buffered Transducer Outputs
3. Prox/Seismic I/O Module with Internal Terminations
4. Prox/Seismic I/O Module with External Terminations
5. TMR I/O Module with External Terminations

Figure 1: Front and rear view of the Proximator\*/Seismic Monitor



1. Prox/Velom I/O Module, Internal Terminations
2. Prox/Velom I/O Module, External Terminations
3. Shaft Absolute I/O Module, Internal Terminations
4. Shaft Absolute I/O Module, External Terminations

Figure 2: Additional I/O Modules of the Proximator®/Seismic Monitor



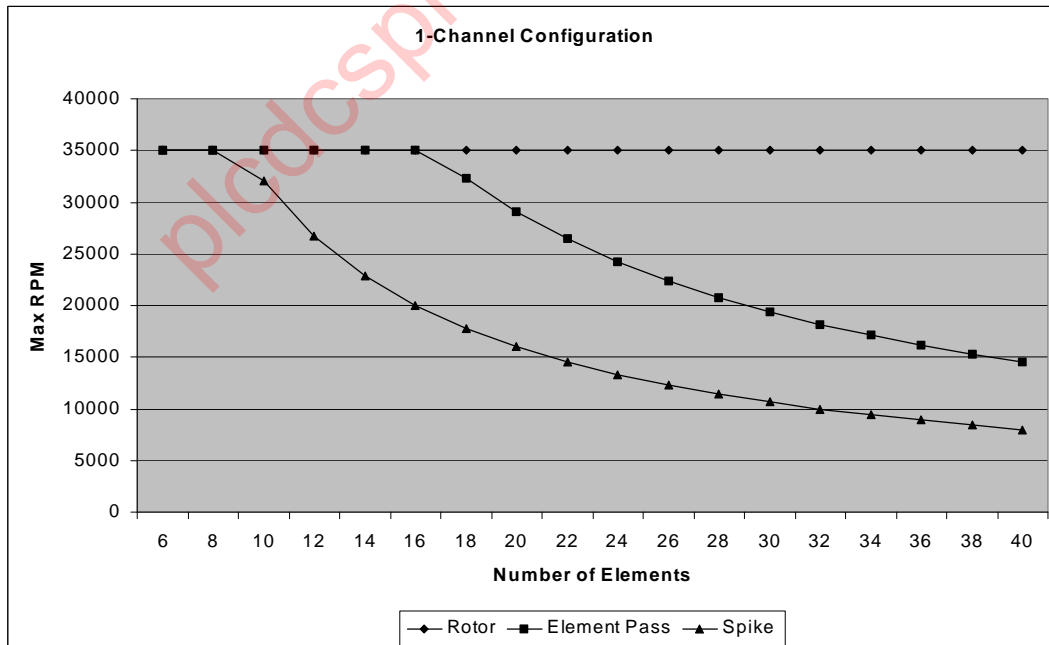
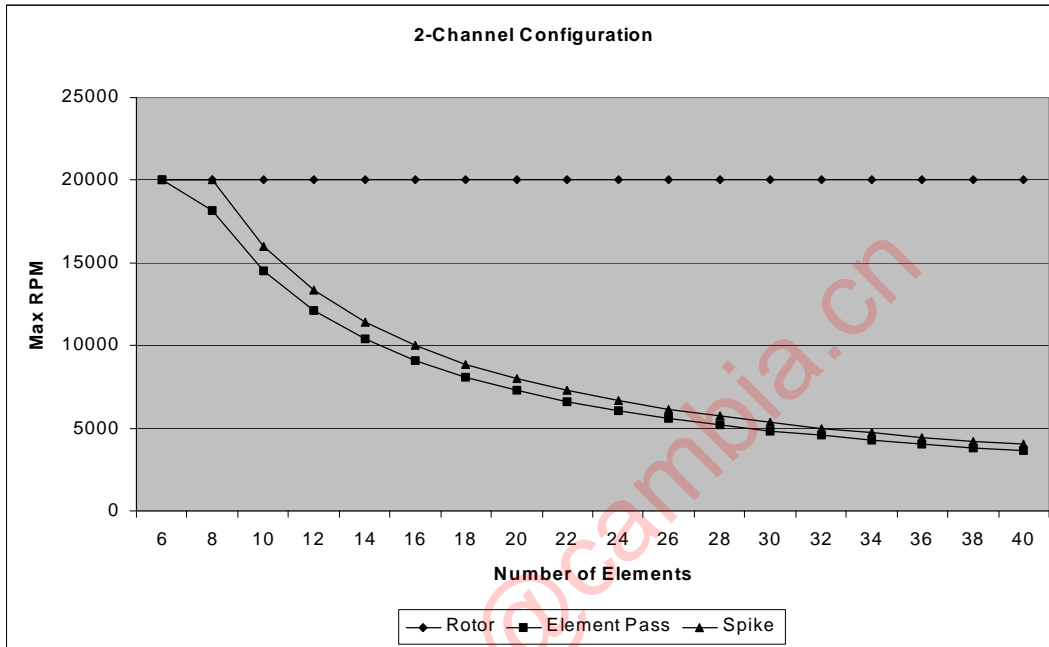
1. Barrier I/O module for connecting four Proximito sensors.
2. Barrier I/O module for connecting two Proximito sensor and two Velomito sensor.
3. Barrier I/O module for connecting four Velomito sensors.

Figure 3: Barrier I/O Modules for the Proximito/Seismic Monitor



## REBAM\* Channels:

The following graphs show the maximum machine speed allowed for a monitor channel pair configured for REBAM. The top graph assumes both channels of the channel pair are enabled. The bottom graph assumes only one channel of a channel pair is enabled. The maximum speed is dependent on the number of rolling elements in the bearing. The graph assumes that the rotor lowpass filter corner is set at 3.2X the shaft speed and the spike highpass filter corner is set at 4X the element pass frequency for the outer race (BPFO).



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