3500/42M Proximitor*/Seismic Monitor

Bently Nevada* Asset Condition Monitoring

Description

The 3500/42M Proximitor/Seismic Monitor is a 4-channel monitor that accepts input from proximity and seismic transducers, conditions the signal to provide various vibrations 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.

Specifications

Inputs

Signal

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

Input Impedance

Standard I/O

10 kΩ (Proximitor and Acceleration Inputs).

TMR I/O

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

Power Consumption

7.7 Watts, typical.

Sensitivity

Radial Vibration

3.94 mV/µm (100 mV/mil), or

7.87 mV/µm (200 mV/mil).

Thrust

3.94 mV/µm (100 mV/mil), or

7.87 mV/µm (200 mV/mil).

Eccentricity

3.94 mV/µm (100 mV/mil), or

7.87 mV/µm (200 mV/mil).

Differential Expansion

0.394 mV/µm (10 mV/mil), or

0.787 mV/µm (20 mV/mil).

REBAM

40 mV/µm (1000 mV/mil), or

80 mV/µm (2000 mV/mil).

Acceleration and Acceleration2

10 mV/ (m/s^2) (100 mV/g).

Velocity and 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/µm (100 mV/mil), or

7.87 mV/µm (200 mV/mil).

Shaft Absolute, Direct

3.94 mV/µm (100 mV/mil), or

7.87 mV/µm (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.

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 Ω

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 Ω.

Resolution

0.3662 µA per bit

±0.25% error at room temperature

±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 Ω

Signal Conditioning

Note: Specified at +25 °C (+77 °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, ± 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 ±0.33% of full-scale typical, ±1% maximum.

1X and 2X

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

Smax

Within ±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).

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.

Velocity and Velocity II

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

2-pole (40 dB per decade, 12 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.

Velomitor* Sensor Accuracy

Full Scale 0-0.5: ±3% Typical

Full Scale 0-1.0: ±2% Typical

Full Scale 0-2.0: ±1% Typical

Shaft Absolute, Radial Vibration

Frequency Response

Direct filter

User-programmable, 4 Hz to 4000 Hz or 1 Hz to 600 Hz.

Gap filter

-3 dB at 0.09 Hz.

1X Vector filter

Valid for machine speeds of 240 cpm to 60,000 cpm.

Accuracy

Direct and Gap

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

1X

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

Shaft Absolute, Velocity

Frequency Response

Peak or

Peak-to-Peak

User-programmable, 1 to 4,000 Hz, -3 dB.

Filter Quality

High-Pass

2-pole (40 dB per decade, 12 dB per octave).

Low-Pass

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 is 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.

Static Values

Static values are measurements used to monitor the machine. The Proximitor/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.

Proximitor Barrier

Circuit Parameters

Vmax (PWR) = 26.80 V

(SIG) = 14.05 V

Imax (PWR) = 112.8 mA

(SIG) = 2.82 mA

Rmin (PWR) = 237.6 Ω

(SIG) = 4985 Ω

Channel Parameters (entity)

Vmax = 28.0 V

Imax = 115.62 mA

Rmin (PWR) = 237.6 Ω

(SIG) = 4985 Ω

Seismic Barrier

Circuit Parameters

Vmax (PWR) = 27.25 V

Imax (PWR) = 91.8 mA

Rmin (PWR) = 297 Ω

Channel Parameters (entity)

Vmax = 27.25 V

Imax = 91.8 mA

Rmin (PWR) = 297 Ω

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.

Compliance and Certifications

EMC

Standards:

EN 61000-6-2 Immunity for Industrial Environments

EN 55011/CISPR 11 ISM Equipment

EN 61000-6-4 Emissions for Industrial Environments

European Community Directives:

EMC Directive 2004/108/EC

Electrical Safety

Standards:

EN 61010-1

European Community Directives:

2006/95/EC Low Voltage

Hazardous Area Approvals

CSA/NRTL/C

Approval Option (01)

Class I, Div 2

Groups A, B, C, D

T4 @ Ta = 0 °C to +65 °C

(-4 °F to +150 °F)

Approval Option (02)

Ex nC[L] IIC

Class I, Div 2, Groups A, B, C, D

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

Ex nC[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 nC [nL] IIC

T4 @ Ta = -20 °C to +65 °C

(-4 °F to +150 °F)

South Africa

Approval Option (02)

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

Ex nCAL [ia] IIC T4

Ex nCAL [L] IIC T4

T4 @ Ta = -20 °C to +65 °C

(-4 °F to +150 °F)

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

For further certification and approvals information please visit the following website:
www.ge-mcs.com/bently

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.).

Rack Space Requirements

Monitor Module

1 full-height front slot.

I/O Modules

1 full-height rear slot.

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 Proximitor/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 Proximitor 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

- **0 1** Prox/Seismic I/O Module with Internal Terminations
- **0 2** Prox/Seismic I/O Module with External Terminations
- **0 3** TMR Prox/Seismic I/O Module.
- **0 4** I/O Module with Internal Barriers (4 x prox./accel. ch's) and Internal Terminations
- **0 5** I/O Module with Internal Barriers (2 x prox./accl. + 2 x channels) and Internal Terminations
- **0 6** I/O Module with Internal Barriers (4 x Velomitor channels) and Internal Terminations
- **0 7** Shaft Absolute I/O Module with Internal Terminations
- **0 8** Shaft Absolute I/O Module with External Terminations
- **0 9** Prox/Velom I/O Module with Internal Terminations
- **1 0** 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

- **0 0** None
- **0 1** CSA/NRTL/C (Class 1, Div 2)
- **0 2** 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

125808-02
Proximitor ET Block (Euro Style Connectors).

128015-02
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).

Cables

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

129525 -AXXXX-BXX

A: Cable Length

0 0 0 5	5 feet (1.5 metres)
0 0 0 7	7 feet (2.1 metres)
0 0 1 0	10 feet (3.0 metres)
0 0 2 5	25 feet (7.6 metres)
0 0 5 0	50 feet (15.2 metres)
0 1 0 0	100 feet (30.5 metres)

B: Assembly Instructions

0 1	Not assembled
0 2	Assembled

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

129529 -AXXXX-BXX

A: Cable Length

0 0 0 5	5 feet (1.5 metres)
0 0 0 7	7 feet (2.1 metres)
0 0 1 0	10 feet (3.0 metres)
0 0 2 5	25 feet (7.6 metres)
0 0 5 0	50 feet (15.2 metres)
0 1 0 0	100 feet (30.5 metres)

B: Assembly Instructions

0 1	Not assembled
0 2	Assembled

Spares

176449-02

3500/42M Proximitor/Seismic Monitor

128229-01

Prox/Seismic I/O Module with Internal Terminations

128240-01

Prox/Seismic I/O Module with External Terminations

126632-01

TMR I/O Module with External Terminations

00530843

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

143489-01

3500/42M Monitor Manual

135489-01

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

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

00561941

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

00580434

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

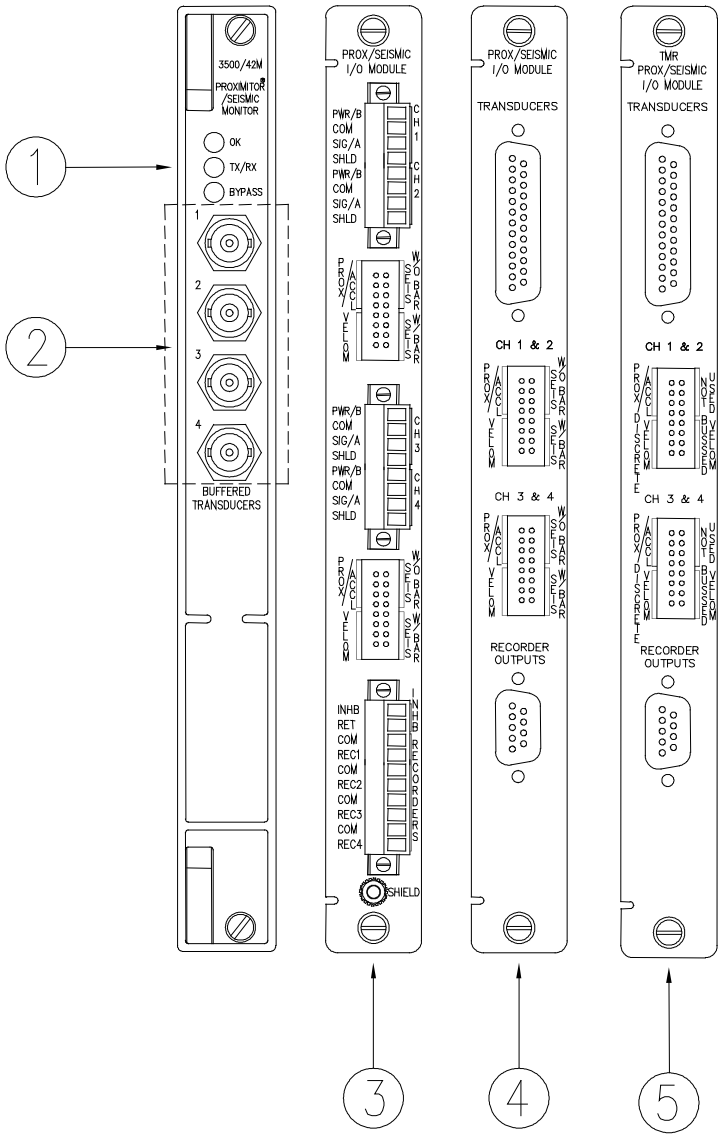
00580432

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

00502133

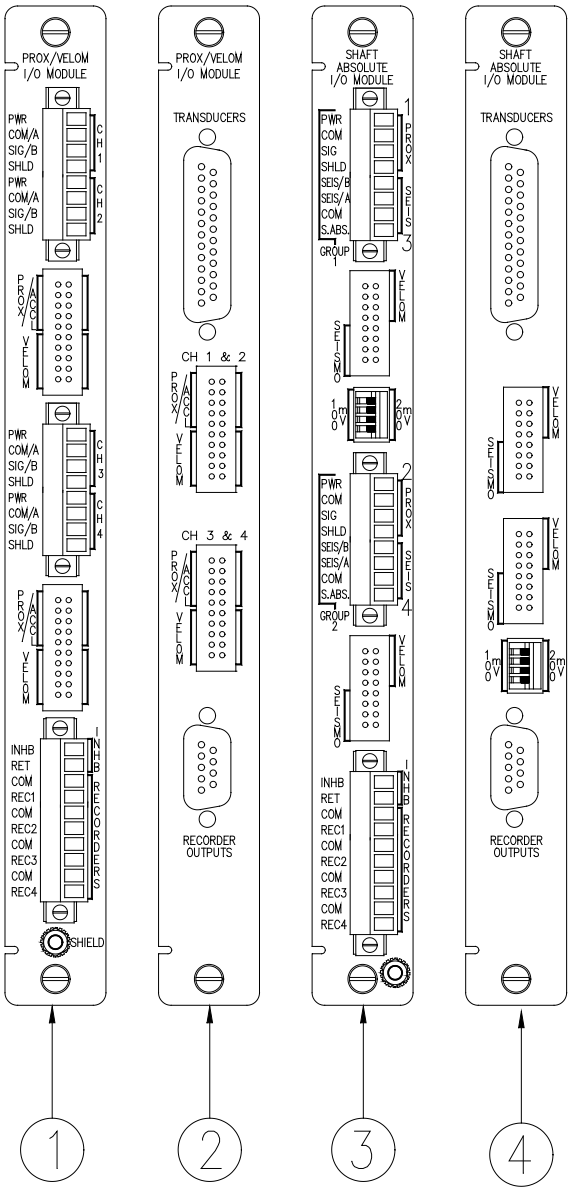
Internal I/O Module connector header, Euro style, 12-pin.

Graphs and Figures



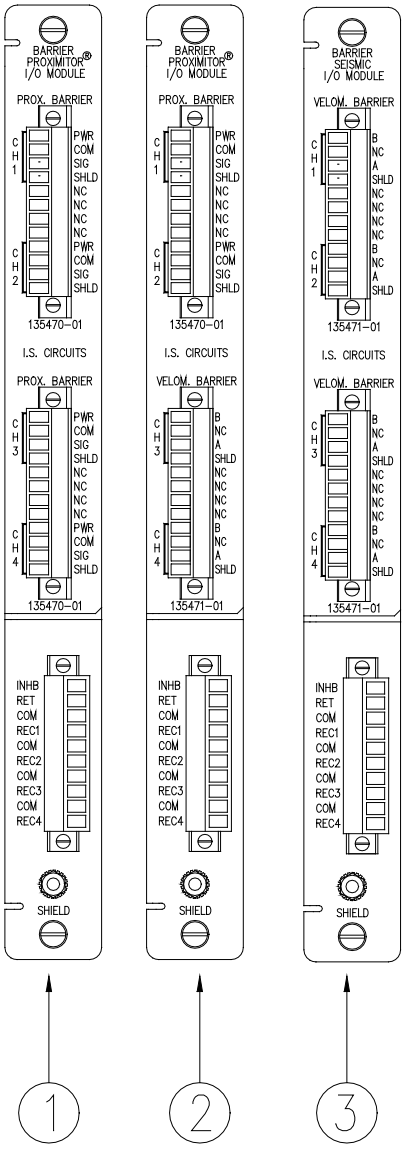
1. Status LEDs
2. Buffered Transducer Outputs
3. Prox/Seismic I/O Module with Internal Terminations
4. Prox/Seismic I/O Module with External Terminations
5. TMR I/O Module with External Terminations

Figure 1: Front and rear view of the Proximitor*/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 Proximitor®/Seismic Monitor

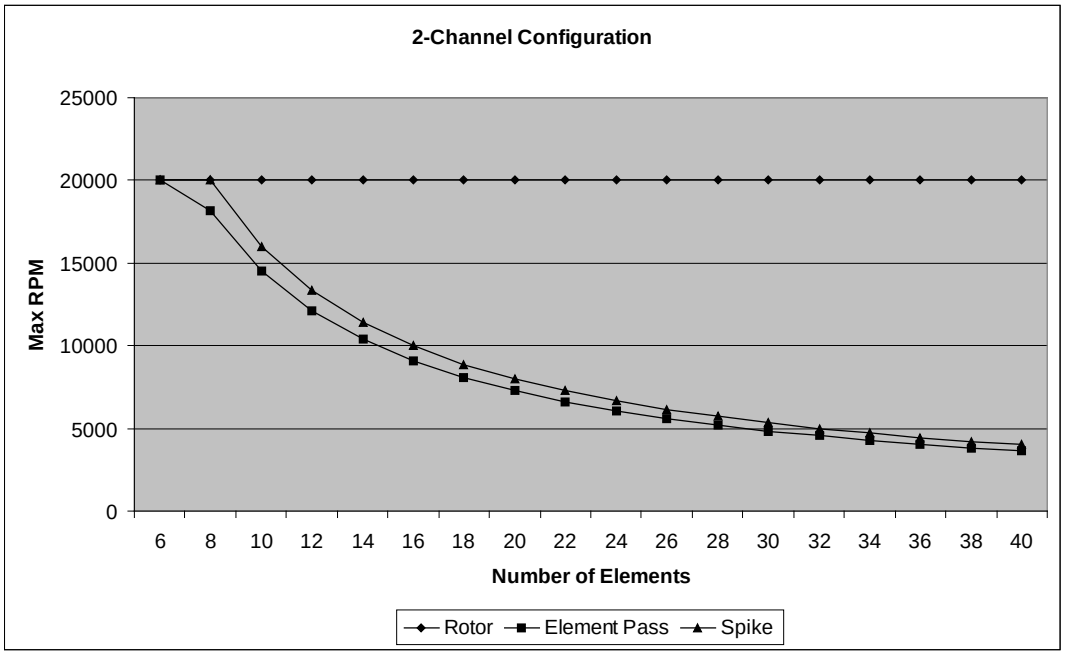


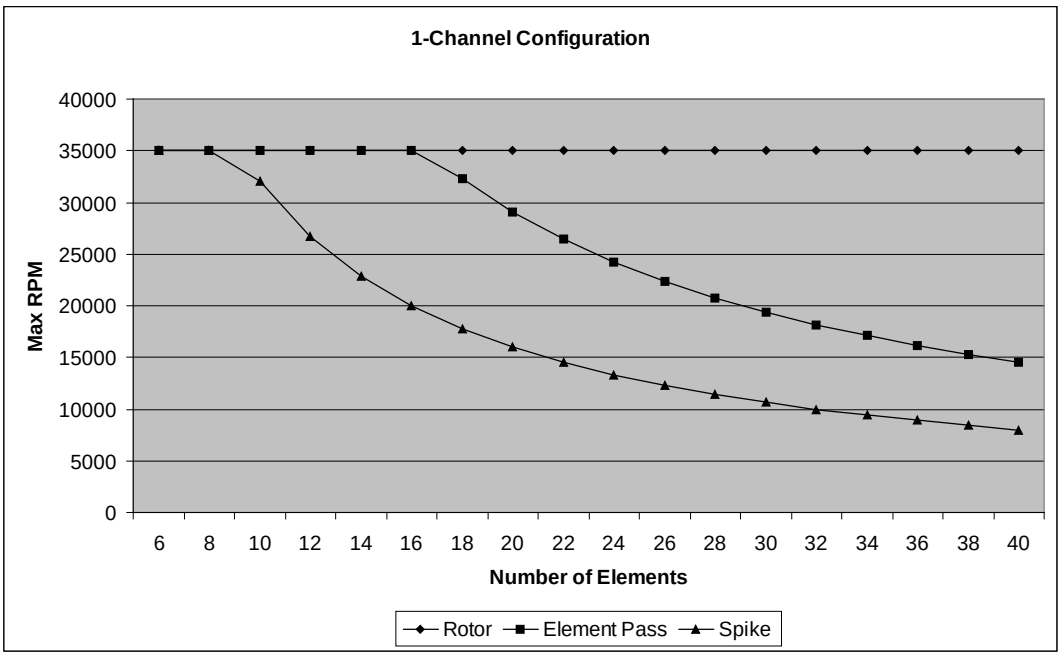
1. Barrier I/O module for connecting four Proximitor sensors.
2. Barrier I/O module for connecting two Proximitor sensor and two Velomitorsensor.
3. Barrier I/O module for connecting four Velomitor sensors.

Figure 3: Barrier I/O Modules for the Proximitor/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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