Bently Nevada 138708-01

Shaft Absolute I/O Module with Internal Terminations

Bently Nevada 138708-01 is the internal-termination Shaft Absolute I/O module for the 3500/42M machinery-protection monitor. It provides the rear-rack transducer interface for shaft-absolute monitoring, with Prox/Accel, Velomitor or Seismoprobe selections supported by this I/O option. The associated monitor conditions the configured input signals and evaluates measurement values against programmable alarm limits. Buffered signal outputs are available by channel group for access to the shaft-absolute signals.



Technical Specifications

Product Identity	
Manufacturer	Bently Nevada
Complete part number	138708-01
Compatible monitor	3500/42M; M version required for shaft absolute
I/O ordering option	AA = 07
I/O dimensions	241.3 × 24.4 × 99.1 mm (H × W × D)
Rack space	One full-height rear I/O slot
Functional Configuration	
Termination	Internal
Supported transducer types	Prox/Accel, Velomitor or Seismoprobe
Performance & Power	
Shaft-absolute buffered outputs	One per channel group; 300 Ω output impedance
Environment	
Operating temperature	–30 to +65 °C
Storage temperature	–40 to +85 °C

Selected original manufacturer pages follow on pages 3–5.

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Compatibility & Selection Guide

System compatibility. Shaft-absolute operation uses the M version of the 3500/42 monitor. Its minimum versions are 3500/42M firmware Rev. B, 3500/01 Rack Configuration Software v2.61 and Data Manager 2000 v3.10. The monitor channels are configured in pairs; each pair can perform a supported function, with up to two functions active in one monitor. Alert and Danger settings are applied to the configured measurement values.

Wiring & Installation Reference

Field connections

Use the internal-termination connections and the actual module markings.

Match the transducer combination and buffered-output connections to the shaft-absolute measurement setup.

Installation and replacement

Verify monitor revisions. Confirm 3500/42M Rev. B or later firmware and applicable software versions.

Match the sensors. Check the shaft-absolute sensor arrangement and channel pairs against the monitor user guide.

Validate the measurement. Check the configured readings and buffered signals before returning machinery monitoring to service.

Installation precautions. Use the applicable 3500 monitor user guide and the actual module markings for terminal assignments and service procedures. Match the complete I/O part number, monitor revision and transducer configuration before reconnecting field circuits.

View connection reference (PDF) · PDF page 5 | View module reference · PDF page 5

Manufacturer sources: 3500/42M Proximitor Seismic Monitor 143694 Rev. AE.

Filter Tracking / Stepping (Requires a valid speed signal)	
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

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

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 Modules (non-barrier)	
Dimensions (Height x Width x Depth)	241.3 mm x 24.4 mm x 99.1 mm (9.50 in x 0.96 in x 3.90 in)
Weight	0.20 kg (0.44 lb)
I/O Modules (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	1 full-height front slot
I/O Modules	1 full-height rear slot

Barrier Parameters

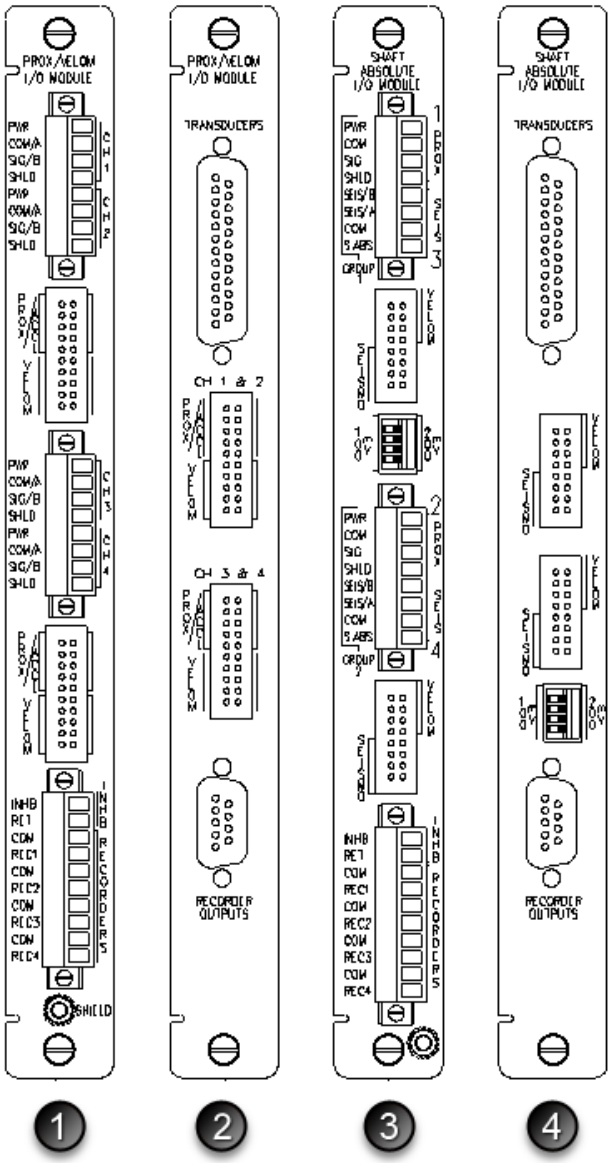
The following parameters apply to CSA-NRTL/C and ATEX approvals.

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

I/O Module Types

AA Ordering Option	I/O Part Number	I/O Description	Transducer Type
01	128229-01	Prox/Seismic I/O Module with internal terminations	Seismoprobe Prox/Accel and Velomitor are supported but are not recommended.
02	128240-01	Prox/Seismic I/O Module with external terminations	Seismoprobe Prox/Accel and Velomitor are supported but are not recommended.
04	135489-01	I/O Module with internal Barriers, internal terminations, 4 x Prox/Accel	Prox/Accel on channels 1 through 4
05	135489-02	I/O Module with internal barriers, internal terminations, 2 x Prox/Accel and 2 x Velomitor	Prox/Accel on channels 1 and 2 Velomitor on channels 3 and 4
06	135489-03	I/O Module with internal barriers, internal terminations, 4 x Velomitor	Velomitor on channels 1 through 4
07	138708-01	Shaft Absolute I/O Module with internal terminations	Prox/Accel or Velomitor or Seismorprobe
08	138700-01	Shaft Absolute I/O Modules with external terminations	Prox/Accel or Velomitor or Seismorprobe
09	140471-01	Prox/Velom I/O Module with internal terminations	Prox/Accel, Velomitor or HTVS
10	140482-01	Prox/Velom I/O Module with external terminations	Prox/Accel, Velomitor or HTVS

External termination blocks cannot be used with Internal Termination I/O Modules. When ordering I/O modules with external terminations, order the external termination blocks and cable separately for each I/O module.



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 for Legacy 3500/42M