3500/62 Process Variable Monitor

Datasheet

Cordant™

141541 Rev. R



Description

The Bently Nevada™ 3500/62 Process Variable Monitor is a 6-channel monitor for processing machine critical parameters that merit continuous monitoring, such as pressures, flows, temperatures, and levels. The monitor accepts +4 to +20 mA current inputs or any proportional voltage inputs between -10 Vdc and +10 Vdc. It conditions these signals and compares the conditioned signals to user-programmable alarm setpoints.

The 3500/62 monitor:

- Continuously compares monitored parameters against configured alarm setpoints to drive alarms for machinery protection.
- Provides essential machine information for both operations and maintenance personnel.

You can program the 3500/62 using the 3500 Rack Configuration Software to perform either current or voltage measurements. The 3500/62 offers I/O modules for three signal input scenarios: +/-10 Volts DC, isolated 4-20 mA, or 4-20 mA with Intrinsically Safe zener barriers. The Internal Barrier I/O provides external power input terminals to provide intrinsically safe power to the 4-20 mA transducers

When used in a Triple Modular Redundant (TMR) configuration, you must install Process Variable Monitors adjacent to each other in groups of three. When used in this configuration, the monitor employs two types of voting to ensure accurate operation and to avoid loss of machinery protection due to single-point failures.

Triple Modular Redundant (TMR) Units are no longer available for purchase.

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Specifications

Inputs

Signal	
+/-10 Vdc I/O	-10 Vdc to +10 Vdc
4-20 mA Barrier I/O	4-20 mA DC
4-20 mA Isolated I/O	4-20 mA DC.
Voltage Compliance (4-20 mA Barrier I/O 4-20mA out)	13.66 V
Isolation (4-20 mA ISO I/O only)	500 Volts
Input Impedance	
+/-10V I/O	1 MΩ
4-20 mA Barrier I/O	50 Ω
4-20 mA Isolated I/O	50 Ω
Power Consumption	7.0 Watts, typical.
External transducer Power (Internal Barrier I/O Only)	+24 Vdc. +/- 5% @ 250 mA max. Fused.

Outputs

Front Panel LEDs	
OK LED	Indicates when the Process Variable Monitor is operating properly.
TX/RX LED	Indicates when the Process Variable Monitor is communicating with other modules in the 3500 rack.
Bypass LED	Indicates when the Process Variable is in Bypass Mode.

Signal Conditioning

Specified at +25°C (+77°F). Full-scale range for each channel is set in the field via 3500 Configuration Software. No calibration is required.

Accuracy	Within ±0.33% of full-scale typical, ±1% maximum.
Full Scale Range	Maximum 20,000 units mapped over the input signal span. Minimum input signal span for voltage input is 2 Volts.

Alarms

Alarm Setpoints

User can set Alert and Danger setpoints for the value measured by the monitor. Alarms are adjustable and can normally be set from 0 to 100% of full-scale for each measured value. The exception is when the full-scale range exceeds the range of the sensor in which case the setpoint will be limited to the range of the sensor. Accuracy of alarms is to within 0.13% of the desired value. The Process Variable Monitor has both under and over alarm setpoints.

Alarm Time Delays

User can use software to set alarm delays as follows:

Alert	From 1 to 60 seconds in 1 second intervals.
Danger	From 1 to 60 seconds in 0.5 second intervals.

Proportional Values

Proportional values are Process Variable measurements used to monitor the machine. The Process Variable Monitor returns current or voltage proportional values in a variety of different units that are configurable.

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Environmental Limits

Operating Temperature	-30°C to +65°C (-22°F to +149°F) when used with Internal/External Termination I/O Module.
Operating Temperature	0°C to +65°C (+32°F to +149°F) when used with Internal Barrier I/O Module (Internal Termination).
Storage Temperature	40°C to +85°C (-40°F to +185°F).
Humidity	95%, noncondensing.

Monitor Module

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	0.82 kg (1.8 lbm)
I/O Modules (without barriers)	
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 lbm)
I/O Module (with barriers)	
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	0.46 kg (1.01 lbm)

Rack Space Requirements

Monitor Module	1 full-height front slot.
I/O Modules	1 full-height rear slot.

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Compliance and Certifications

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

EMC

European Community Directive:

EMC Directive 2014/30/EU

Standards:

EN 61000-6-2; Immunity for Industrial Environments
EN 61000-6-4; Emissions for Industrial Environments

Electrical Safety

European Community Directive:

LV Directive 2014/35/EU

Standards:

EN 61010-1

RoHS

European Community Directive:

RoHS Directive 2011/65/EU

China RoHS

Cables associated with the product(s) mentioned in this datasheet have an EFUP designation of 15 years, in accordance with SJ/T 11364-2024.



Maritime

DNV GL rules for classification – Ships, offshore units, and high speed and light craft

ABS Rules for Condition of Classification, Part 1

- Steel Vessels Rules
- Offshore Units and Structures

Hazardous Area Approvals

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

For additional technical documentation, please log in to bntechsupport.com and access the Bently Nevada Media Library.

cNRTLus

When used with I/O module ordering options without internal barriers	Class I, Zone 2: AEx/Ex nA nC ic IIC T4 Gc; Class I, Zone 2: AEx/Ex ec nC ic IIC T4 Gc; Class I, Division 2, Groups A, B, C, and D; T4 @ Ta= -20˚C to +65˚C (-4˚F to +149˚F) When installed per drawing 149243 or 149244.
When used with I/O module ordering options with internal barriers	Class I, Zone 2: AEx/Ex nA nC ic [ia Ga] IIC T4 Gc; Class I, Zone 2: AEx/Ex ec nC ic [ia Ga] IIC T4 Gc; Class I, Division 2, Groups A, B, C, and D (W/ IS Output for Division 1) T4 @ Ta= -20˚C to +65˚C (-4˚F to +149˚F) When installed per drawing 138547.

ATEX/IECEx

When used with I/O module ordering options without internal barriers	II 3 G Ex nA nC ic IIC T4 Gc; Ex ec nC ic IIC T4 Gc; T4 @ Ta= -20˚C to +65˚C (-4˚F to +149˚F) When installed per drawing 149243 or 149244.
When used with I/O module ordering options with internal barriers	II 3(1) G Ex nA nC ic [ia Ga] IIC T4 Gc; Ex ec nC ic [ia Ga] IIC T4 Gc; T4 @ Ta= -20˚C to +65˚C (-4˚F to +149˚F) When installed per drawing 138547.

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Ordering Considerations

General

If the 3500/62 Module is added to an existing 3500 Monitoring System, the monitor requires the following (or later) firmware and software versions:

- 3500/20 Module Firmware – 1.07 (Rev G)
- 3500/01 Software – Version 2.20
- 3500/02 Software – Version 2.10
- 3500/03 Software – Version 1.20

If the Internal Barrier I/O is used the system must also meet these requirements:

- 3500/62 Module Firmware- 1.06 (Rev C)
- 3500/01 Software – Version 2.30

You cannot use External Termination Blocks with Internal Termination I/O modules.

When ordering I/O Modules with External Terminations, you must order the External Termination Blocks and Cables separately.

Internal Barrier I/O Module

Important info	Consult the 3500 Internal Barrier specification sheet (part number 141495-01) if you select the Internal Barrier Option.
Fuse	250 mA, 250 V fast blow type.

Ordering Information

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

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Process Variable Monitor

3500/62-AA-BB

A: I/O Module Type	
01	-10 to +10 Vdc I/O Module with Internal Terminations
02	-10 to +10 Vdc I/O Module with External Terminations
03	Isolated +4 to +20 mA I/O Module with Internal Terminations
04	Isolated +4 to +20 mA I/O Module with External Terminations
05	Non-Isolated +4 to +20 mA I/O Module with Internal Barriers and Internal Terminations
B: Agency Approval Option	
00	None
01	cNRTLus
02	ATEX/CSA (Class 1, Zone 2)

Agency Approval Option B 02 is available only with Ordering Options A 01 and A 05.

External Termination Blocks

136595-01	3500/62 External Termination Block (Terminal Strip Connectors).
136603-01	3500/62 External Termination Block (Euro Style Connectors).

Cables

3500/62 Transducer (XDCR) Signal to External Termination (ET) Block Cable

134544-AAAA-BB

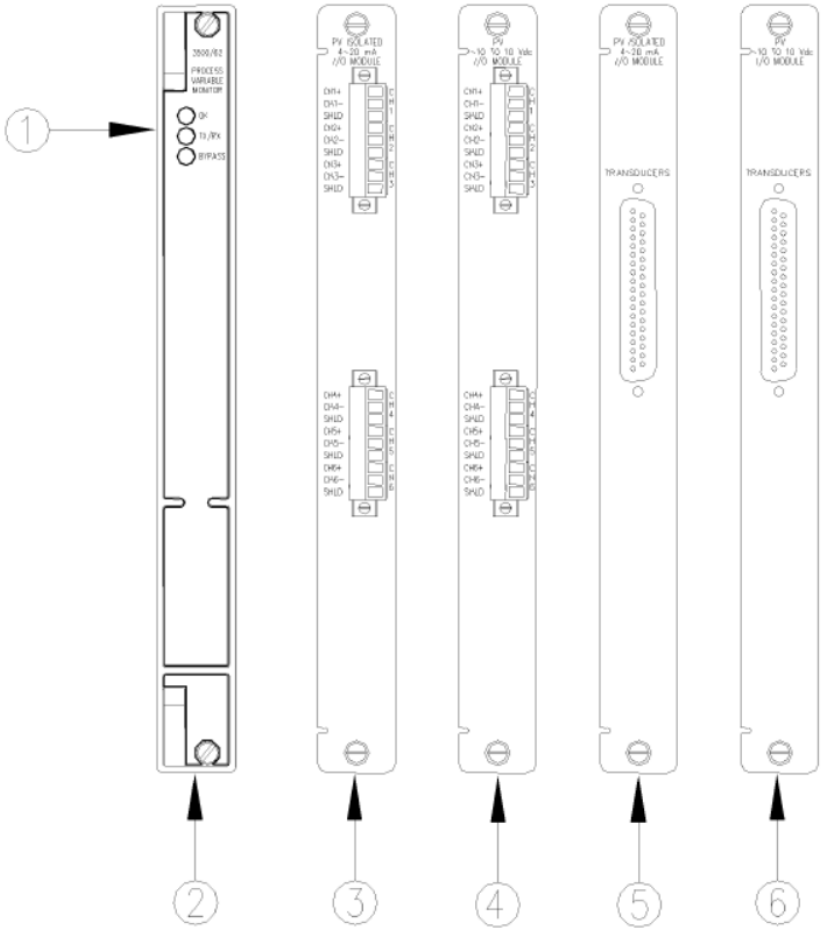
A: Cable Length	
0005	5 feet (1.5 metres)
0007	7 feet (2.1 metres)
0010	10 feet (3 metres)
0025	25 feet (7.5 metres)
0050	50 feet (15 metres)
0100	100 feet (30.5 metres)
B: Assembly Instructions	
01	Not assembled
02	Assembled

Spares

Part Number	Description
163179-03	3500/62 monitor
136590-01	Firmware IC
04425545	Grounding wrist strap (single use)
04400037	IC removal tool
136491-01	-10 Vdc to +10 Vdc I/O Module with internal terminations
136499-01	-10 Vdc to +10 Vdc I/O Module with external terminations
136294-01	Isolated +4 to +20 mA I/O Module with internal terminations
136483-01	Isolated +4 to +20 mA I/O Module with external terminations
137110-01	4 to 20 mA Barrier I/O Module with internal terminations
136973	3500/62 User Guide
01700059	Replacement fuse for barrier I/O
166M2377	Connector Header Push-in-Spring Type (Alternative for PN 00580442)

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Graphs and Figures



1. Status LEDs
2. Main Module Front View
3. 4 to 20mA Internal Terminations I/O Module
4. –10 to +10 Vdc Internal Terminations I/O Module
5. 4 to 20mA External Terminations I/O Module
6. -10 to +10 Vdc External Terminations I/O Module

Figure 1: Front and Rear Views of the 3500/62 Process Variable Monitor

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PRODUCT: 136483-01 / 3500/62 Isolated 4-20 mA I/O Module

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