3500/94M VGA Display Monitor

Datasheet

Cordant™

122M3217 Rev. N



Description

The Bently Nevada™ 3500/94M VGA module displays all 3500 machinery protection system information, including:

- System event list
- Alarm event list
- All module and channel data
- Alarm and OK status
- Nine custom display options

Use the 3500 Rack Configuration Software to configure up to nine custom screens. By default, one bar graph screen shows all of the 1X-filtered vibration measurements, while another shows the proximity transducer gap values.

You can organize custom screens into machine train groups. You can also organize system data into any pages on the custom screen.

System Components

The 3500/94M is comprised of:

- The 3500/94M VGA module
- An I/O module
- A 10" or 15" VGA touch screen display

You can mount the VGA display monitor using standard cables up to 6 m (20 ft) from a 3500 rack, or using a supported Keyboard Video Monitor (KVM) Extender, up to 10 km (6.2 miles) from the 3500 rack.

Baker Hughes

Touch Screen Displays

Use either the 10" and 15" Advantech VGA touch screen displays. These compact, durable displays are designed for excellent viewing quality in industrial applications.

The 10" Advantech display is certified for hazardous environments. Each display requires a separate power supply. The 3500 Rack Configuration Software supports both display drivers.

Reduce the Number of Displays

Using a standard cable and the optional Display Router Box, you can view data from up to four 3500 racks on one display.

The alarm and OK status is continually displayed in the upper right corner of the VGA display. A rack select button changes color to indicate if any rack connected to the Display Router Box is Not OK or in Alarm status.

Due to limitations imposed by the VGA standard, the Display Router Box must be located within 6 m (20 ft) of each connected 3500 rack. Longer cables are not recommended because they may degrade image quality. Noisy electronic environments also degrade image quality.

Access Data Remotely

If you need to display 3500 data at a greater distance, you have one option.

Distance from Display Router Box	Options	Notes
> 10 m to 10 km (33 ft to 6.2 mi)	Single-mode, fiber optic (SM FO) Keyboard Video Monitor (KVM) Extender	No loss in image quality. Not certified for hazardous locations. Must be installed in a safe area or in an approved enclosure.

The SM FO KVM receiver and transmitter are not certified for hazardous area installations. Both the receiver and the transmitter must be installed in a safe area or enclosed in an approved enclosure.

Specifications

3500/94M VGA Display Unit

Inputs	
Power consumption	4.6 W max.
High-speed network	Monitor status, data and values
RS232 port (I/0)	Touch controller data
Outputs	
OK LED	Indicates proper operation of the module
TX/RX LED	Indicates communications between other system modules
VGA port (I/O)	Analog red, green, blue and sync signals to the display
Front Port	24 Vdc Power out, VGA signal out, Touch commands in.

Environmental Limits

Operating Temperature	-20°C to 65°C (-22°F to 149°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	95%, non-condensing

Compliance and Certifications

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

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

EMC	Standards EN 61000-6-2 EN 61000-6-4 Directive 2014/30/EU
Electrical Safety	Standards CSA C22.2 61010-1 UL EN 61010-1 Directive 2014/35/EU
RoHS	Directive 2011/65/EU

WARNING



HAZARDOUS VOLTAGE

RISK OF ELECTRIC SHOCK, BURN OR DEATH.

Do not remove cover. No user servicable parts inside.

WARNING



EXPLOSION HAZARD

Refer to User Manual **BEFORE** making connections.

DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

AVERTISSEMENT - RISQUE D'EXPLOSION - AVANT DE DECONNECTER L'EQUIPMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DESIGNE NON DANGEREUX.

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.

3500/94M VGA Display Module

The following approvals apply to the 3500/94M monitor, its I/O module, and the 3500/94M Display Router Box.

North America	
Approval Option (01)	**Canada** Ex nC [L] IIC T4 Gc: Certified to CSA60079-0, -11, -15 Class I, Division 2, Groups A, B, C and D: Certified to CSA213 **USA** Class I, Zone 2: AEx nC IIC T4 Gc: Conforms to: UL60079-0, -11, -15 Class I, Division 2, Groups A, B, C and D: Conforms to ISA 12.12.01 T4 @ -20°C ≤ Ta ≤ +65°C (-4°F ≤ Ta ≤ +149°F) Per control drawing 149243
ATEX/IECEx	
Approval Option (02)	II 3 G Ex nA nC ic IIC T4 Gc T4 @ -20°C ≤ Ta ≤ +65°C (-4°F ≤ Ta ≤ +149°F) Per control drawing 149243

Advantech 10" Display (AN-D3510)

North America	
Approval Option (01)	**Canada** Ex ic nA IIC T4; Certified to CSA C22.2 60079-0,-11,-15 Class I, Division 2, Groups A, B, C, D T4; Certified to CSA C22.2 213 **USA** Class I, Division 2, Group A, B, C, D T4; Conforms to: ISA 12.12.01 Class I, Zone 2, AEx ic nA IIC T4; Conforms to: UL60079-0, -11, -15
ATEX/IECEx	
Approval Option (02)	II 3G Ex ic nA IIC T4 Gc; -20°C ≤ Ta ≤ +65°C Ex ic nA IIC T4 Gc; IP54; -20°C ≤ Ta ≤ +65°C

The Advantech 15" Display (FPM-8151) is not certified to meet ATEX/IECEx standards.

Physical Characteristics

3500/94M VGA Display Module	
Dimensions (height x width x depth)	241.3 mm x 24.4 mm x 241.8 mm (9.5 in x 0.96 in x 9.52 in)
Weight	0.73 kg (1.6 lb.)
I/O Module	
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	0.34 kg (0.75 lb.)
10" Advantech Display (ANA-D3510-100-A1)	
Dimensions (height x width x depth)	249 mm x 389 mm x 48 mm 9.8 in x 15.3 in x 1.9 in
Touch screen (diagonal)	267 mm (10.5 in)
Weight	4.0 kg (8.78 lb)
15" Advantech Display (FPM-8151)	
Dimensions (width x height x depth)	422 mm x 338 mm x 68 mm 16.61 in x 13.31 in x 2.68 in
Display screen (diagonal)	381 mm (15 in)
Weight	8.5 kg (18.75 lb)

Rack Space Requirements

Monitor Module	
Rack space	1 full-height front slot
I/O Module	
Rack space	1 full-height rear slot
Keyboard Video Monitor (KVM) Extender	
Mounting	Shelf top
Power input	12 Vdc and 5 Vdc
Temperature range	0°C to 45°C (32°F to 113°F)
Humidity	80%, non-condensing
Rating	The SM FO KVM receiver and transmitter are not certified for hazardous area installations. Both the receiver and the transmitter must be installed in a safe area or enclosed in an approved enclosure.
NEMA 4X	Not approved



To install in a hazardous area, see the *3500/94M VGA Display Module Operation and Maintenance Manual* (document 122M3218).

Ordering Information

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.

System Display

3500/94M-AA-BB-CC

A: Display Size and Mounting	
00	None
01	10" display, face mount (only available for rack-mounted 3500 monitor)
02	10" display, 19" rack mount
03	10" display, panel mount (installation hardware included)
04	10" display, independent mount
05	15" display, 19" rack mount
06	15" display, panel mount (installation hardware included)
07	Router box, no display

B: KVM Extender and Display Router Box Cables	
00	None
12	Display Router Box cable 20 ft (6 m)
20	SM FO KVM SNGL extender and cable 2,000' (609.6 m)
21	SM FO KVM SNGL extender and cable 4,000' (1219.2 m)
22	SM FO KVM SNGL extender and cable 6,000' (1828.8 m)
23	SM FO KVM SNGL extender and cable 8,000' (2438.4 m)
24	SM FO KVM SNGL extender with patch cables
25	SM FO KVM DUAL extender and cable 2,000' (609.6 m)
26	SM FO KVM DUAL extender and cable 4,000' (1219.2 m)
27	SM FO KVM DUAL extender and cable 6,000' (1828.8 m)
28	SM FO KVM DUAL extender and cable 8,000' (2438.4 m)
29	SM FO KVM DUAL extender with patch cables
30	SM FO KVM SNGL extender and cable 500' (152.4 m)
31	SM FO KVM DUAL extender and cable 500' (152.4 m)

C: Agency Approvals	
00	None
01	CSA/NRTL/C (Class I, Division 2)
02	Multi (CSA/ATEX/IECEx) (only available for the 10" display)

Accessories and Spares

3500/94M Module Accessories and Spares

122M3217	3500/94M VGA Display Monitor Product Datasheet
122M3218	3500/94M VGA Display Module Operation and Maintenance Manual
184826-01	3500/94M Main module
190214-01	3500/94M Normal I/O module
190214-02	3500/94M Power-only I/O module for front-mount display

3500/94M Advantech 10" Display Accessories

For display monitor specifications, See Display Monitor Specifications on page 8.

120M8155-01	ANA-D3510-100-A1, Advantech 10” display. Does not include mounting screws.
Front Mounting Accessories and Spares	
122M3368-01	94M face mount for Advantech 10” display
122M4631-AA	Mounting standoff for face mount display with threaded mounting holes for 19" EIA rack. **AA**: mounting hole thread size. Choose one: **01** – M6 x 1 **02** – 10-32 **03** – M5 x 0.8
107M3696-01	3 ft (.91 m) v Video, serial, and power cable from front of rack-mounted 3500/94M Module to the 10" Advantech display. Note that cable assembly 119M6503-03 is also required from the 3500/94M IO Module (190214-02) to an industrial 24 VDC power supply.
119M6509-03	Power supply cable for 10" Advantech Display that connects the rear of a rack-mounted 3500/94M IO module (190214-02) to an industrial 24 VDC power supply. 10 ft (3.05 m). Note that cable assembly 107M3696-01 is also required from the front of the 3500/94M Module to the display.
02200794	24V DIN mount power supply with no cable
Other Mounting Accessories	
122M3369-01	94M rack mount for Advantech 10” display
122M3370-01	94M panel mount for Advantech 10” display
122M3371-01	94M independent mount for Advantech 10” display
119M6509-01	Power supply cable only for 10" Advantech Display that connects from the display to an industrial 24 VDC power supply. 10 ft (3.05 m).
119M6509-02	
161087-AA-00	VGA male-male cable for display to 3500/94M I/O **AA**: cable length. Choose one: **10** - 10 ft (3.05 m) **20** - 20 ft (6.1 m)