
Bently Nevada 125760-01 Datasheet



Cambia Automation Limited

Cambia Group
+86 13599507613
sales@cambia.cn
2018/10/24

3500/20 Rack Interface Module

Bently Nevada™ Asset Condition Monitoring



Description

The Rack Interface Module (RIM) is the primary interface to the 3500 rack. It supports a proprietary protocol used to configure the rack and retrieve machinery information. The RIM must be located in slot 1 of the rack (next to the power supplies).

The RIM supports compatible Bently Nevada external communications processors such as TDXnet, TDIX, and DDIX. While the RIM provides certain functions common to the entire rack, the RIM is not part of the critical monitoring path and has no effect on the proper, normal operation of the overall monitoring system. One RIM is required per rack.

For Triple Modular Redundant (TMR) applications, the 3500 System requires a TMR version of the RIM. In addition to all the standard RIM functions, the TMR RIM also performs "monitor channel comparison." The 3500 TMR configuration implements monitor voting using the setup specified in the monitor options. Using this method, the TMR RIM continually compares the outputs from three (3) redundant monitors. If the TMR RIM detects that the information from one of those monitors is no longer within a configured percent of the information of the other two monitors, it will flag that the monitor is in error and place an event in the System Event List.



imagination at work

Specifications and Ordering Information
Part Number 141531-01
Rev. A (03/07)

Specifications

Inputs

Power Consumption

4.75 watts, typical

Data

Front panel

Standard

RS232 serial communications

Data Rate

38.4 k baud.

I/O modules

Standards

RS232/RS422 serial communications

Internal modem communications

Data Rate

38.4 k baud maximum, serial communications

14.4 k baud, internal modem communications.

Outputs

Front Panel LEDs

OK LED

Indicates when the RIM is operating properly.

TX/RX LED

Indicates when the RIM is communicating with other modules in the 3500 rack.

TM LED

Indicates when the 3500 rack is in Trip Multiply.

CONFIG OK LED

Indicates that the 3500 rack has a valid configuration.

I/O Module OK Relay

Relay to indicate when the 3500 rack is operating normally or when a fault has been detected within the rack. User can select either an "OPEN" or "CLOSED" contact to annunciate a NOT OK condition. This relay always operates as "Normally Energized".

OK relay

Rated to 5A @ 24 Vdc/ 120 Vac, 120 Watts/600 VA Switched Power.

Normally closed contacts

Arc suppressors are provided.

Controls

Front Panel

Rack reset button

Clears latched alarms and Timed OK Channel Defeat in the rack. Performs same function as "Rack Reset" contact on I/O module.

Address switch

Used to set the rack address; 63 possible addresses.

Configuration Keylock

Used to place 3500 rack in either "RUN" mode or "PROGRAM" mode. RUN mode allows for normal operation of the rack and locks out configuration changes. PROGRAM mode allows for normal operation of the rack and also allows for local or remote rack configuration. The key can be removed from rack in either position, allowing switch to remain in either RUN or PROGRAM positions. Locking switch in the RUN position allows you to restrict unauthorized rack reconfiguration. Locking switch in PROGRAM position allows remote configuration of a rack at any time.

**I/O Module
System
Contacts**

Trip multiply

Used to place 3500 rack in Trip Multiply.

Alarm inhibit

Used to inhibit all alarms in the 3500 rack.

Rack reset

Used to clear latched alarms and Timed OK Channel Defeat.

***Maximum
Current***

<1 mA dc, Dry Contact to Common.

**RS232/RS422 Switch
(RS232/RS422 I/O
module only)**

Used to select between RS232 and RS422 for communications with the Bently Nevada host software.

Communications

Front Panel

Communications

RS232 serial communications only.

Protocol

Bently Nevada proprietary.

Data rate

38.4 k baud maximum (auto baud capable).

Purpose

Permits data collection and 3500 rack configuration.

Cable length

30 metres (100 feet) maximum.

**RS232/RS422
I/O Module**

Communications

RS232, RS422, or external modem.

Protocol

Bently Nevada proprietary.

Baud rate

38.4 k baud maximum (auto baud capable).

Purpose

Permits data collection and 3500 rack configuration.

Cable length

RS232

30 metres (100 feet) maximum.

RS422

1200 metres (4000 feet) maximum.

Modem

Consult modem manufacturer, typical 3 metres (10 feet).

Modem I/O Module

Communications

Hayes AT-compatible.

Protocol

Bently Nevada proprietary.

Baud rate

14.4 k baud maximum.

Purpose

Permits data collection and 3500 rack configuration.

Cable length

2.1 metres (7 feet) maximum.

Modem

To phone jack.

Rack Connector Communications		-30 °C to +65 °C (-22 °F to +150 °F).
	RS422 only.	Storage Temperature:
Protocol	Bently Nevada proprietry.	-40 °C to +85 °C (-40 °F to +185 °F).
Baud rate	38.4 k baud maximum.	Modem I/O Module
Purpose	Allows multiple 3500 racks to be daisy-chained together for communications with 3500 Host Software.	Operating Temperature:
		0 °C to +50 °C (+32 °F to +122 °F).
Cable length	1200 metres (4000 feet) maximum.	Storage Temperature:
		-40 °C to +85 °C (-40 °F to +185 °F).
Data Manager I/O Module (2 sets of ports)		Humidity:
Communications	Bently Nevada proprietary.	95%, non-condensing.
Protocol	Bently Nevada prioprietary.	CE Mark Directives
Baud rate	9600 baud fixed.	EMC Directives:
Purpose	Permits static and dynamic data collection by Bently Nevada Transient Data Interface External or Dynamic Data Interface External Communication Processors.	EN50081-2:
Cable length	3 metres (10 feet) maximum.	<i>Radiated Emissions</i>
		EN 55011, Class A
		<i>Conducted Emissions</i>
		EN 55011, Class A
		EN50082-2:
		<i>Electrostatic Discharge</i>
		EN 61000-4-2, Criteria B
		<i>Radiated Susceptibility</i>
		ENV 50140, Criteria A
		<i>Conducted Susceptibility</i>
		ENV 50141, Criteria A
		<i>Electrical Fast Transient</i>
		EN 61000-4-4, Criteria B
		<i>Surge Capability</i>

Environmental Limits

Rack Interface Module and RS232/RS422 I/O

Operating Temperature:

	EN 61000-4-5, Criteria B
<i>Magnetic Field</i>	
	EN 61000-4-8, Criteria A
<i>Power Supply Dip</i>	
	EN 61000-4-11, Criteria B
<i>Radio Telephone</i>	
	ENV 50204, Criteria B
Low Voltage Directives:	
EN 61010-1	
	Safety Requirements

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)

*Certification
Number*

CSA 150268-1002151 (LR 26744)

Physical

RIM

**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:

0.91 kg (2.0 lb.).

RS232/RS422 I/O

**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:

0.45 kg (1.0 lb.).

Modem I/O

**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

0.45 kg (1.0 lb.).

Data Manager I/O

**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:

0.45 kg (1.0 lb.).

Rack Space Requirements

RIM Main Board:

1 full-height front slot.

**RIM I/O
Modules:**

1 full-height rear slot.

**Data Manager
I/O Modules:**

1 full-height rear slot.

Ordering Information

3500/20-AXX-BXX-CXX

A: Rack Interface Type

- 01** Standard RIM (Use for standard monitoring applications)
- 02** TMR RIM (Use only for application that requires a Triple Modular Redundant Configuration)

B: Type of I/O Module

- 01** I/O module with built-in modem
- 02** I/O module with RS232/RS422 interface

C: Agency Approval Option

- 00** None

Specifications and Ordering Information
Part Number 141531-01
Rev. A (03/07)

Spares

125744-02

Standard Rack Interface Module

125744-01

TMR Rack Interface Module

135031-01

RIM I/O Module with Modem
Interface

125768-01

RIM I/O Module with RS232/RS422
Interface

125760-01

Data Manager I/O Module

04425545

Grounding Wrist Strap (single use)

00801286

Real-Time Clock IC

128755-01

Firmware IC (for PWA 125744-01
Rev P or later, or for PWA 125744-
02 Rev N or later)

00580441

Connector Header, Internal
Termination, 3-position, Green

00580436

Connector Header, Internal
Termination, 6-position, Green

129768-01

RIM Operation and Maintenance
Manual**Cables**

02290860

RS232 Modem cable from: 3500
Rack External Modem Host
Computer to External Modem

130119-01

Host Computer to RS232/RS422
Converter Cable RS232

129386-01

TDIX - Static Data Cable

129387-01

DDIX - Static Data Cable

02290160

DDIX/TDIX - Dynamic Data Cable

02230411

RS232 to RS422 Converter 110
Vac

02230412

RS232 to RS422 Converter 220
Vac**Host Computer to 3500 Rack Cable, RS232**

130118-XXXX-BXX

A: Cable Length

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

**RS232/RS422 Converter to 3500 Rack Cable,
RS422, PVC Insulated**

130120-XXXX-BXX

A: Cable Length

0010	10 feet (3 metres)
0025	25 feet (7.5 metres)
0050	50 feet (15 metres)
0100	100 feet (30.5 metres)
0250	250 feet (76 metres)
0500	500 feet (152 metres)

B: Assembly Instructions

01	Not Assembled
02	Assembled

**RS232/RS422 Converter to 3500 Rack Cable,
RS422, Teflon® Insulated**

131106-XXXX-BXX

A: Cable Length

0010	10 feet (3 metres)
0025	25 feet (7.5 metres)
0050	50 feet (15 metres)
0100	100 feet (30.5 metres)
0250	250 feet (76 metres)
0500	500 feet (152 metres)

B: Assembly Instructions

01 Not Assembled
02 Assembled

0050 50 feet (15 metres)
0100 100 feet (30.5 metres)
0250 250 feet (76 metres)
0500 500 feet (152 metres)

**Host Computer to 3500 Rack Cable,
 RS422, PVC Insulated**
132632-AXXX-BXX**A: Cable Length**

0010 10 feet (3 metres)
0025 25 feet (7.5 metres)
0050 50 feet (15 metres)
0100 100 feet (30.5 metres)
0250 250 feet (76 metres)
0500 500 feet (152 metres)

B: Assembly Instructions

01 Not Assembled
02 Assembled

**Host Computer to 3500 Rack Cable,
 RS422, Teflon® Insulated**
132633-AXXXX-BXX**A: Cable Length**

0010 10 feet (3 metres)
0025 25 feet (7.5 metres)
0050 50 feet (15 metres)
0100 100 feet (30.5 metres)
0250 250 feet (76 metres)
0500 500 feet (152 metres)

B: Assembly Instructions

01 Not Assembled
02 Assembled

3500 Rack to 3500 Rack Cable, RS422, PVC Insulated
130122-AXXXX-BXX**A: Cable Length**

0010 10 feet (3 metres)
0025 25 feet (7.5 metres)

B: Assembly Instructions

01 Not Assembled
02 Assembled

3500 Rack to 3500 Rack Cable, RS422, Teflon® Insulated
131107-AXXXX-BXX**A: Cable Length**

0010 10 feet (3 metres)
0025 25 feet (7.5 metres)
0050 50 feet (15 metres)
0100 100 feet (30.5 metres)
0250 250 feet (76 metres)
0500 500 feet (152 metres)

B: Assembly Instructions

01 Not Assembled
02 Assembled

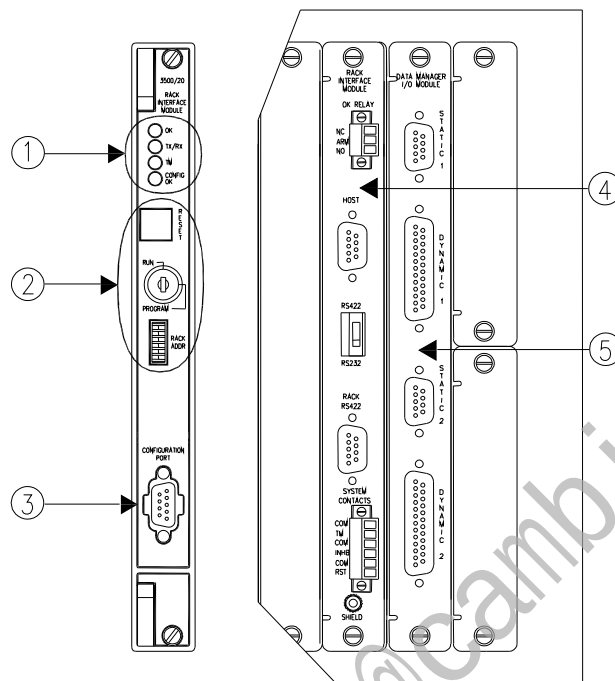
**500 Foot (152 metres) Extension Cable, RS422 (Used with
 Cables 130120, 131106, 130122 and 131107 for lengths
 greater than 500 feet (152 metres)).**
130121 - AXX BXX**A: Assembly Instructions**

01 Not Assembled
02 Assembled

B: Insulation

01 PVC Insulated
02 Teflon® Insulated

Graphs and Figures



- 1) **LEDs:** Indicate the operating status of the module
- 2) **Hardware Switches:**
- 3) **Configuration Port:** Configure or retrieve machinery data from only this rack using RS-232 protocol.
- 4) **Rack Interface I/O Module:** Daisy chain or configure racks using RS-232 and RS-422 protocol
- 5) **Data Manager I/O Module:** Connect two Bently Nevada Communication Processors to the 3500 rack.

Figure 1: Front and rear view of the Rack Interface Module

Copyright 1999. Bently Nevada, LLC.
1631 Bently Parkway South, Minden, Nevada USA 89423
Phone: 775.782.3611 Fax: 775.215.2873
www.ge-energy.com/bently
All rights reserved.

Bently Nevada is a trademark of General Electric Company.

Teflon is a trademark of E.I. du Pont de Nemours and Company