MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

BENTLY NEVADA

3500/92-04-01-01

ETHERNET RS485 COMMUNICATION GATEWAY

Used with the applicable 3500/92 communication gateway configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Bently Nevada 3500/92 Communication Gateway, 141542 Rev. N.

3500/92 Communication Gateway

Datasheet

Cordant™

141542 Rev. N



Description

The Bently Nevada™ 3500/92 Communication Gateway module provides extensive communication capabilities of all rack monitored values and statuses for integration with process control and other automation systems using both Ethernet TCP/IP and serial (RS232/RS422/RS485) communications capabilities. It also permits Ethernet communications with 3500 Rack Configuration Software and Data Acquisition Software.

Supported protocols include:

- Modicon Modbus protocol (via serial communications)
- Modbus/TCP protocol (a variant of serial Modbus used for TCP/IP Ethernet communications)
- Proprietary Bently Nevada protocol (for communication with 3500 Rack Configuration and Data Acquisition Software packages)

The Ethernet connection to the 3500/92 is an RJ45 connection for 10BASE-T star configuration Ethernet networks.

The 3500/92 supports the communication interfaces, communication protocols, and other features from the original 3500/90 with the exception of the primary value Modbus registers. The 3500/92 now has a Configurable Modbus Register Utility, which can provide the same functionality originally addressed by the primary value Modbus registers.

Baker Hughes

Specifications

Inputs

Power Consumption	5.0 Watts typical with ModbusRS232/ RS422 I/O Module 5.6 Watts typical with Modbus RS485 I/O Module
Data Types	Collects data from other modules in the rack, such as current measured values with time stamp, module statuses, and current alarm statuses, via a high speed internal network. Exact data types returned depend on module type and channel configuration. Update Time: The data collection rate depends on rack configuration but will not exceed 1 second for all modules in the 3500 rack.

Outputs

OK LED	Indicates when the 3500/92 is operating properly.
TX/RX LED	Indicates when the 3500/92 is communicating with other modules in the 3500 rack.

Protocols

BNC Host Protocol	Communication with 3500 Configuration Software and 3500 Data Acquisition and Display Software over Ethernet TCP/IP.
Modbus	Based on AEG Modicon PI-MBUS-300 Reference Manual. Uses Remote Terminal Unit (RTU) transmission mode.
Ethernet	
Communication Link	Ethernet, 10Mbps, and conforms to IEEE802.3
Protocol	Ethernet TCP/IP frame and Modbus/TCP
Connection	RJ-45 (telephone jack style) for 10BASE-T Ethernet cabling

Environmental Limits

Main and I/O Module	
Operating Temperature	-30°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

Physical

Main Board	
Dimensions (Height x Width x Depth)	241 mm x 24.4 mm x 242 mm (9.50 in x 0.96 in x 9.52 in)
Weight	0.82 kg (1.8 lb.)
I/O Modules	
Dimensions (Height x Width x Depth)	241 mm x 24.4 mm x 99.1 mm (9.50 in x 0.96 in x 3.90 in)
Weight	0.44 kg (0.96 lb.)

Rack Space Requirements

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

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

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

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.

ATEX/IECEx

Ex 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.

Ordering Information

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3500/92 Communication Gateway

3500/92-AA-BB-CC

A: I/O Module Type	
01	ModbusRS232/RS422 I/O Module
02	ModbusRS485 I/O Module
03	Ethernet/RS232 Modbus I/O Module
04	Ethernet/RS485 Modbus I/O Module
B: Memory Type	
01	Low Memory
C: Agency Approval Option	
00	None
01	CSA/NRTL/C
02	CSA/ATEX/IECEx

Additional Options

Firmware	
126M4118-01	Firmware Upgrade Kit Older Communication Gateway modules will require a Firmware Upgrade to communication with a new I/O Module. See 3500/92 manual for detailed information.

Cables

Standard 10BASE-T Shielded Category 5 Cable with RJ-45 connectors

138131-AAA

A: Length (in ft.) up to 320 ft in length.	
0 0 6	6 feet (1.8 meters)
0 1 0	10 feet (3 meters)
0 2 5	25 feet (7.3 meters)
0 4 0	40 feet (12 meters)
0 5 0	50 feet (15 meters)
0 7 5	75 feet (22.5 meters)
0 8 5	85 feet (25.5 meters)
1 0 0	100 feet (30.5 meters)
1 2 0	120 feet (36.6 meters)
1 5 0	150 feet (44.8 meters)
2 0 0	200 feet (61 meters)
2 5 0	250 feet (75 meters)
3 2 0	320 feet (98 meters)

Spares

Part Number	Description
04425545	Grounding Wrist Strap (single use)
137495-01	Firmware IC (Odd bank)
137494-01	Firmware IC (Even bank)
136180-01	3500/92 Communication Gateway Module.
125736-01	Modbus RS232/RS422 I/O Module.
133323-01	Modbus RS485 I/O Module.
136188-01	Ethernet/RS232 Modbus I/O Module*
136188-02	Ethernet/RS485 Modbus I/O Module*
Bently_ Manuals	International Technical Documentation DVD

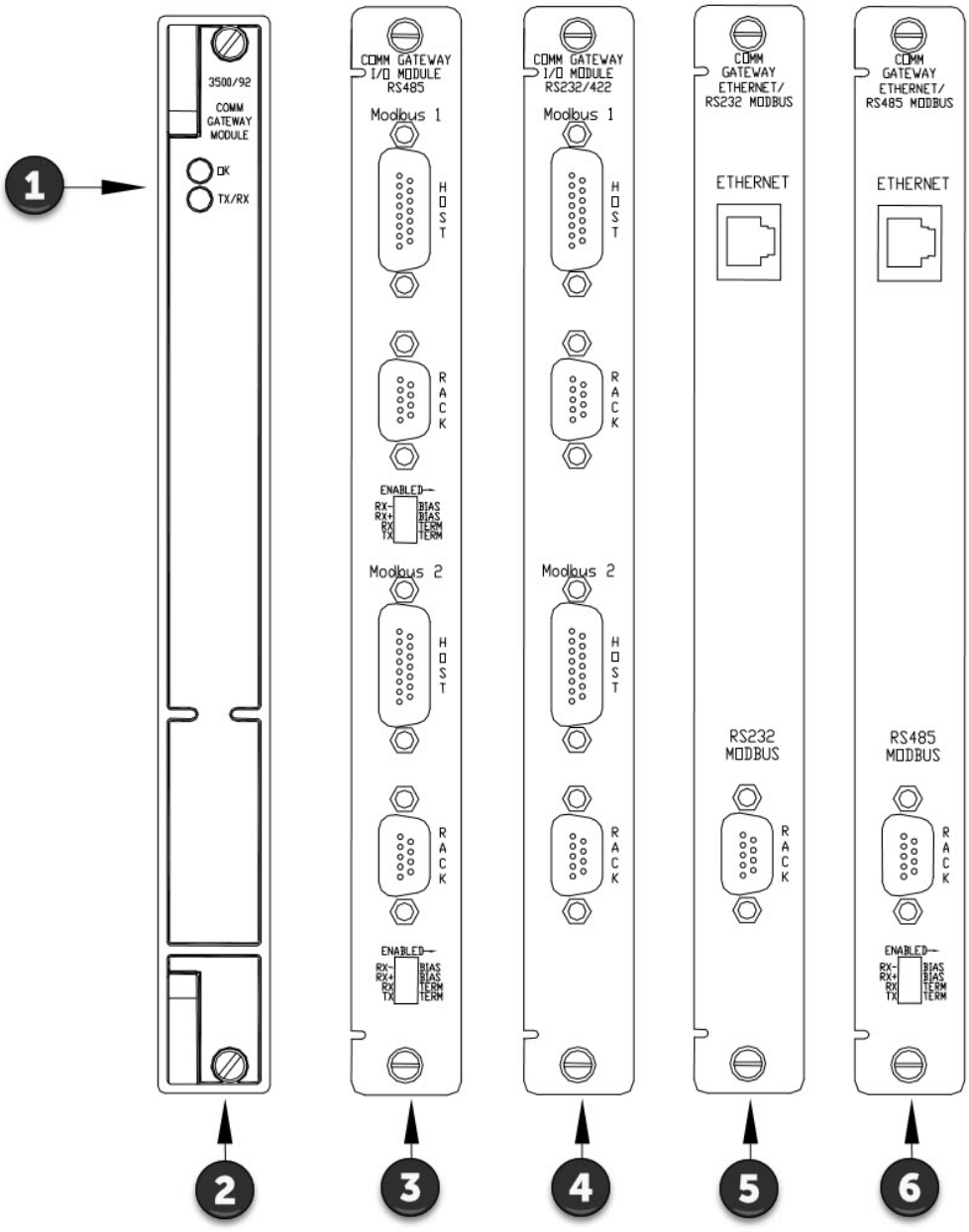


* These spares include the Firmware Upgrade Kit (126M4118-01).

Accessories

Part Number	Description
139036-01	9-pin D-SUB "Y"
Serial Converters	
02230411	RS232 to RS422 Converter - 110 Vac.
02230412	RS232 to RS422 Converter - 220 Vac.
Ethernet Hubs	
165M2516	24-port 100/1000 SFP BE based switch
Ethernet Transceivers	
02200260	15-Pin AUI male to Fiber Optic Cable (10BASE-FL) with ST connection
02200261	15-Pin AUI male to Thinnet (10BASE2)
Ethernet Cabling - Standard 10 BASE-T Shielded , Category 5 Cable with RJ-45 Connectors	
02175190	6 ft. length
02175191	10 ft. length
02175192	25 ft. length

Graphs and Figures



1. Status LEDs
2. Comm Gateway Module
3. RS485 I/O Module
4. RS232/422 I/O Module
5. Ethernet/RS232 I/O Module
6. Ethernet/RS485 I/O Module

Figure 1: Front and Rear Views of the 3500/92 Communication Gateway