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)

For specific cable lengths, please order through Bently Nevada Custom Products.

30 ft. - 100 ft. is ordered in 5ft. increments only. 100 ft. - 320 ft. is ordered in 10ft. increments only

Serial Cabling (RS232): RS232 Cable, Host to 3500/92

130419-AAAA-BB

A: Cable Length	
0 0 1 0	10 feet (3 meters)
0 0 2 5	25 feet (7.5 meters)
0 0 5 0	50 feet (15 meters)
0 1 0 0	100 feet (30.5 meters)
B: Assembly Instructions	
0 1	Not Assembled
0 2	Assembled

RS232 Cable, Honeywell PLCG to 3500/92

130420-AAAA-BB

A: Cable Length	
0010	10 feet (3 meters)
0025	25 feet (7.5 meters)
0050	50 feet (15 meters)
0100	100 feet (30.5 meters)
B: Assembly Instructions	
01	Not Assembled
02	Assembled

130119-01 RS232 Cable, Host Computer to RS232/RS422 Converter

Serial Cabling (RS422/RS485):

RS422 Cables can be used for rack-to-rack connections when using ModbusRS485 I/O Modules. The final rack-to-host connection is application specific and may require a custom cable.

RS422 PVC Insulated Cable, RS232/RS422 Converter to 3500/92

130530-AAAA-BB

A: Cable Length	
0010	10 feet (3 meters)
0025	25 feet (7.5 meters)
0050	50 feet (15 meters)
0100	100 feet (30.5 meters)
0250	250 feet (75 meters)
0500	500 feet (150 meters)
B: Assembly Instructions	
01	Not Assembled
02	Assembled

RS422 PVC Insulated Cable, 3500/92 to 3500/92

129665-AAAA-BB

A: Cable Length	
0010	10 feet (3 meters)
0025	25 feet (7.5 meters)