3500/32M 4-Channel Relay Module

Datasheet

Cordant™

141533 Rev. W

Description

The 4-Channel Relay Module is a full-height module that provides four relay outputs. Any number of 4-Channel Relay Modules can be placed in any of the slots to the right of the Transient Data Interface Module. Each output of the 4-Channel Relay Module can be independently programmed to perform voting logic.

Each relay utilized on the 4-Channel Relay Module includes Alarm Drive Logic.

Programming for the Alarm Drive Logic uses AND and OR logic, and can use alarming inputs (Alert and Danger statuses), Not- OK, or individual PPLs from any monitor channel or any combination of monitor channels in the rack. You can program this Alarm Drive to meet your application needs using the Bently Nevada™ 3500 Rack Configuration Software.

Baker Hughes

Specifications

Inputs	
Power Consumption	5.8 Watts typical
Outputs	
OK LED	Illuminated when module is functioning properly.
TX/RX LED	Transmit and Receive. Flashes to indicate proper communications between this module and other modules within the rack.
CH ALARM LED	Illuminated to indicate that the Relay Channel is in an alarm state.
Relays	
Type	Single-pole, double-throw (SPDT) relays
Environmental Sealing	Epoxy-sealed
Arc Suppressor	250 Vrms, installed as standard
Contact Life	100,000 cycles @ 5 A, 24 Vdc or 240 Vac
Operation	Each relay of the four channels is switch selectable for Normally De-energized or Normally Energized.

Environmental Limits

Operating Temperature	-30°C to +65°C (-22°F to +150°F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Humidity	95%, non-condensing

Physical Characteristics

Main Module

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	0.7 kg (1.6 lb.)

I/O Module

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	0.4 kg (1.0 lb.)

Rack Space Requirements

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

Contact Ratings for Standard Systems

Standard Relays

Minimum switched current	100 mA @ 12 Vdc
DC specifications (Resistive load)	
Maximum switched current	2 A @ 0V to 30 Vdc 0.75 A @ 48 Vdc 0.2 A @ 125 Vdc
Max switched voltage	125 Vdc
AC specifications (Resistive load)	
Maximum switched voltage	250 Vac
Maximum switched current	2 A
Maximum switched power	450 VA

Contact Ratings For Functional Safety Systems and Hazardous Area Systems

Standard Relays

Minimum switched current	100 mA @ 12 Vdc
DC specifications (Resistive load)	
Maximum switched current	2 A @ 0V to 30 Vdc
Maximum switched voltage	30 Vdc
AC specifications (Resistive Load)	
Maximum Switched Voltage	30 Vac
Maximum Switched Current	2 A

WARNING

Due to the potential for varying voltage levels, please review the following:

- 3500 monitors ordered with hazardous approvals options (01 & -02) are certified to Division 2/Zone 2 standards (including ATEX/IECEx and North American Zones and Divisions). The Division 2 /Zone 2 standards specify increased spacing requirements at higher voltages, and the 3500/32M relays **do not** meet these spacing requirements. For this reason, 3500/32M relays ordered with the hazardous area approvals options (including country-specific hazardous area approvals options) have historically been limited to a lower voltage than those ordered with non-hazardous approvals options. Using higher voltages would violate the hazardous area certificates associated with the hazardous area approvals option.
- If the 3500/32M is part of a functional safety (SIL) system, the functional safety certificate requires the restricted voltage. Higher voltages are not allowed for functional safety (SIL) systems.
- It is possible to connect field wiring to the 3500/32M relays such that conductors are exposed to potential human contact. This could present a shock hazard at high voltages. Customers shall only use the 3500/32M relays at the voltages specified. Appropriate safety precautions must be taken with respect to the shock hazard.

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 Considerations

Firmware, Software, and Hardware Requirements

The 3500/32M requires the 3500/22 Transient Data Interface (TDI) module. It also requires these or newer versions of the following firmware and software:

3500/32M Firmware	N.NN, Rev. X
3500/22 Firmware (TDI)	Rev 1.71
3500/01 Software (Rack Config)	Rev 4.5
3500/02 Software (Op Display)	Rev 2.21
3500/03 Software (Data Acquisition)	Rev 2.4
3500/94 VGA display	Rev C
3500/93 LCD display	Rev P

- The 3500/32M requires 3500 Rack Configuration software, version 4.5 or later.
- The 3500/32M requires 3500 Data Acquisition software, version 2.40 or later.
- The 3500/32M requires 3500 Data Display software, version 1.40 or later.
- When used with a 3500/93 LCD Display module, the 3500/93 will require firmware revision P or later.
- When used with a 3500/94 VGA Display module, the 3500/94 will require firmware revision C or later.

Ordering Information

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

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3500 4-Channel Relay Module

3500/32 -AA-BB

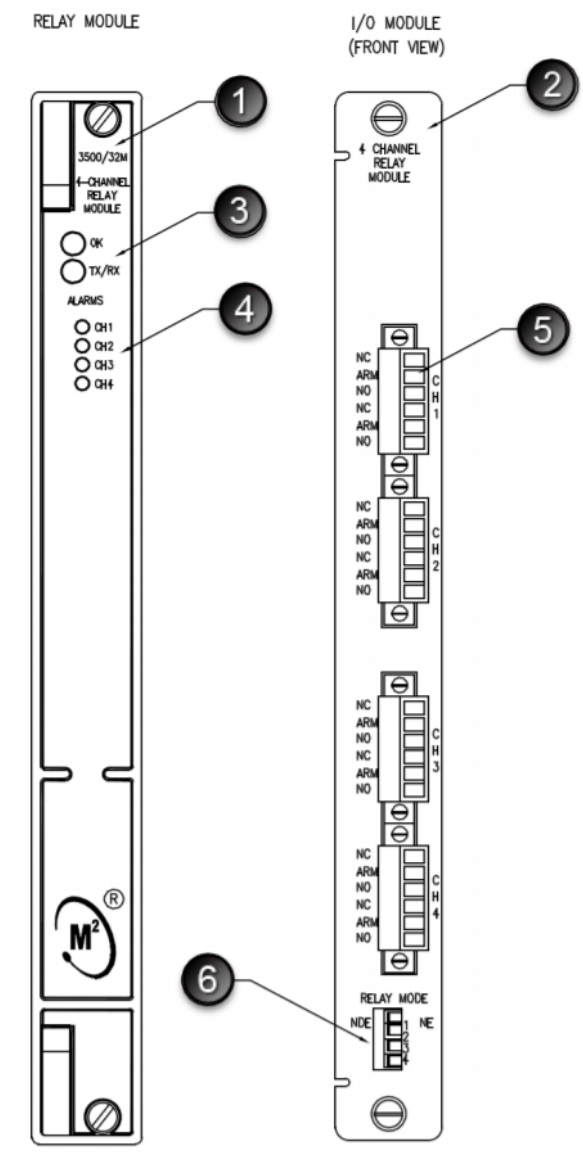
A: Output Module	
01	4-Channel Relay Output Module
B: Agency Approval Option	
00	None
01	cNRTLus (Class I, Div 2)
02	ATEX/IECEx/CSA (Class I, Zone 2)

Spares

149986-02	Spare 4-Channel Relay Control Module
125720-01	Spare 4-Channel Relay Output Module (available for repair only)
125720-02	Spare 4-Channel Relay Output Module for hazardous area systems and functional safety systems
04425545	Grounding wrist strap (single use)
00580453	Connector header, internal termination, 16-position, green
00580436	Connector header, internal termination, 6-position, green
166M2390	Connector header, push-in-spring type (alternative for PN 00580436)

For more information, please refer to the 3500/32 and 3500/32M 4-Channel and 3500/34 TMR Relay Modules User Guide (document 129771).

Graphs and Figures



1. Relay module
2. I/O module
3. Status LEDs
4. Relay channel LEDs
5. Relay contacts
6. Relay mode selection switch

Figure 1: Front and Rear View of the 4-Channel Relay Module

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