

# 3500/32M 4-Channel Relay Module

## Datasheet

Bently Nevada Machinery Condition Monitoring

14I533 Rev. T



## 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 3500 Rack Configuration Software.



## 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<br>(-22°F to +150°F) |
| Storage Temperature   | -40°C to +85°C<br>(-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<br>(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<br>(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<br>0.75 A @ 48 Vdc<br>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

ABS - Marine and Offshore Applications

DNV GL Rules for Classification - Ships, Offshore Units, and High Speed and Light Craft

## Hazardous Area Approvals



For the detailed listing of country and product specific approvals, refer to the *Approvals Quick Reference Guide* (108M1756) available from [Bently.com](http://Bently.com).

### CSA/NRTL/C

Class I, Zone 2: AEx/Ex nA nC ic IIC T4 Gc;

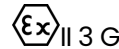
Class I, Zone 2: AEx/Ex ec nC ic IIC T4 Gc;

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 nA nC ic IIC T4 Gc

Ex ec nC ic IIC T4/T5 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) available from [Bently.com](http://Bently.com).

### 3500 4-Channel Relay Module

#### 3500/32 - AA-BB

##### A: Output Module

|           |                               |
|-----------|-------------------------------|
| <b>01</b> | 4-Channel Relay Output Module |
|-----------|-------------------------------|

##### B: Agency Approval Option

|           |      |
|-----------|------|
| <b>00</b> | None |
|-----------|------|

|           |                             |
|-----------|-----------------------------|
| <b>01</b> | CSA/NRTL/C (Class I, Div 2) |
|-----------|-----------------------------|

|           |                                  |
|-----------|----------------------------------|
| <b>02</b> | ATEX/IECEX/CSA (Class I, Zone 2) |
|-----------|----------------------------------|

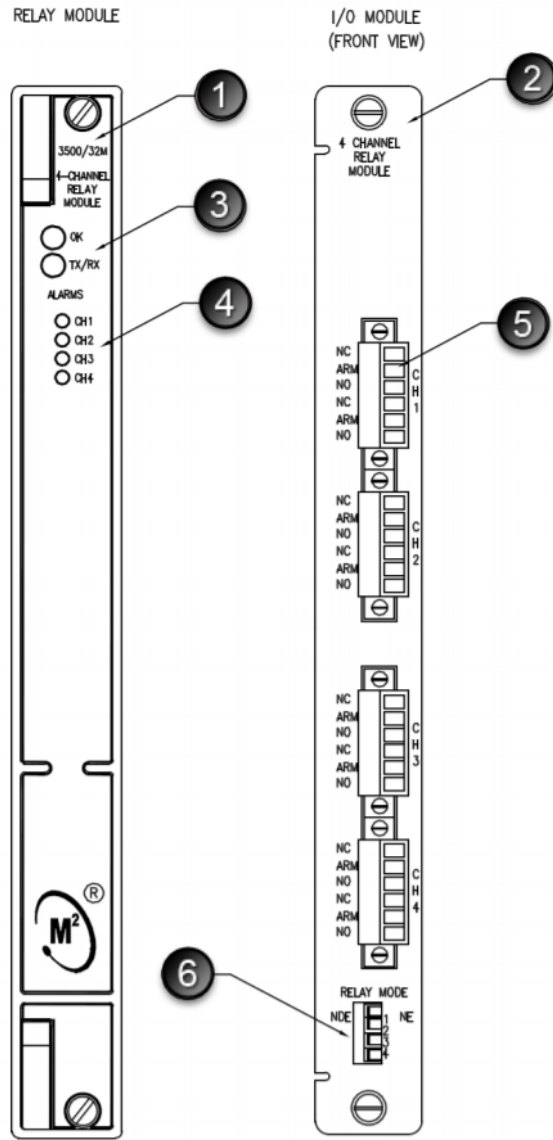
## Spares

|           |  |
|-----------|--|
| 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                                   |



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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