

3500/33 16-Channel Relay Module

Product Datasheet

Bently Nevada* Asset Condition Monitoring

Description

The 3500/33 16-Channel Relay Module is a full-height module that provides 16 relay outputs. You can place any number of 16-channel relay modules in any of the slots to the right of the Transient Data Interface (TDI) Module.

Each output of the 3500/33 16-Channel Relay Module can be independently programmed to perform voting logic.

Each relay of the module includes Alarm Drive Logic. Programming for the Alarm Drive Logic uses AND and OR logic and may use the following:

- Alarming inputs (alert and danger statuses)
- Not-OK
- Individual Measured Variables from any monitor channel or any combination of monitor channels in the rack

Alarm Drive settings are configured using the 3500 Rack Configuration Software.



imagination at work

Part Number: 162301-01
Rev. N

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Specifications

Inputs

Power Consumption	5.8 watts typical
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Outputs

Front Panel LEDs	
OK LED	Illuminated when the 3500/33 16-Channel Relay Module is operating properly.
TX/RX LED	Transmit and receive Flashes when the 3500/33 16-Channel Relay Module is communicating with other modules in the 3500 rack.
CH Alarm LED	Illuminated when Relay channel is in an alarm state.
Relay Type	Single-pole Double-throw (SPDT)
Relay Environmental Sealing	Epoxy-sealed
Relay Arc Suppressor	250 Vrms Installed as standard
Relay Contact Life	10,000 cycles
Relay Operation	Four groups of four channels are switch selectable for Normally De-energized (ND) or Normally Energized (NE) operation.

Physical

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

Hazardous Area Approvals



For the detailed listing of country and product specific approvals, refer to the **Approvals Quick Reference Guide**, document 108M1756, at www.GEmeasurement.com.

CSA/NRTL/C (Approval Option 01)	
For CSA/NRTL/C agency approval ordering options with internal barriers	Ex nC [ia] IIC T4 Gc Class I, Division 1, Groups A, B, C and D Class I, Zone 2/0 AEx nC [ia] IIC T4 Gc Class I, Division 1 Groups A, B, C and D T4 @ -20 °C ≤ Ta ≤ +65 °C (-4 °F to +149 °F) per drawing 138547
For CSA/NRTL/C agency approval ordering options without internal barriers	Ex nC [L] IIC T4 Gc Class I, Division 2, Groups A, B, C and D Class I, Zone 2 AEx nC IIC T4 Gc Class I, Division 2 Groups A, B, C and D T4 @ -20 °C ≤ Ta ≤ +65 °C (-4 °F to +149 °F) per drawing 149243
ATEX/IECEx (Approval Option 02)	
For ATEX/IECEx agency approval ordering options with internal barriers	 II 3 (1) G Ex nA nC ic [ia Ga] IIC T4 Gc T4 @ -20 °C ≤ Ta ≤ +65 °C (-4 °F to +149 °F)
For ATEX/IECEx agency approval ordering options without internal barriers	 II 3 G Ex nA nC ic IIC T4 Gc T4 @ -20 °C ≤ Ta ≤ +65 °C (-4 °F to +149 °F)

Environmental Limits

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

Compliance and Certifications

EMC	Standards: EN 61000-6-2 Immunity for Industrial Environments EN 61000-6-4 Emissions for Industrial Environments European Community Directives: EMC Directive 2014/30/EU
Electrical Safety	Standards: EN 61010-1 European Community Directives: LV Directive 2014/35/EU

Contact Ratings for Standard Systems

Standard Relays

Min Switched Current	100 mA @ 5 Vdc
DC Specifications (Resistive Load)	
Max Switched Current	3.0 A @ 5 to 30 Vdc
	0.3 A @ 48 Vdc
	0.11 A @ 125 Vdc
AC Specifications (Resistive Load)	
Max Switched Current	3 A
Max Switched Power	750 VA
Max Switched Voltage	250 Vac

Low Current Relays

DC Specifications (Resistive Load)	
Min Switched Current	1 mA @ 1 Vdc
Max Switched Current	100 mA @ 48 Vdc
	5 mA @ 125 Vdc

Contact Ratings for Functional Safety Systems and Hazardous Area Systems



Note: for Functional Safety Systems ordering information refer to 3500 Machinery Protection System: Functional Safety Certified Products Datasheet, 162242-01

Standard Relays

Min Switched Current	100 mA @ 5 Vdc
DC Specifications (Resistive Load)	
Max Switched Current	2 A
Max Switched Voltage	30 Vdc

Low Current Relays

DC Specifications (Resistive Load)	
Min Switched Current	1 mA @ 1 Vdc
Max Switched Current	100 mA @ 48 Vdc
	5 mA @ 125 Vdc

Ordering Information

 For the detailed listing of country and product specific approvals, refer to the **Approvals Quick Reference Guide**, document 108M1756, at www.GEmeasurement.com.

3500/33 16-Channel Relay Module AXX - BXX

A: Output Module

- 01 16-Channel Relay Output Module
- 02 16-Channel Failsafe¹ Relay Output Module
- 03 Low Current 16-Channel Relay Output Module
- 04 Low Current 16-Channel Failsafe¹ Relay Output Module

B: Hazardous Area Approval Option

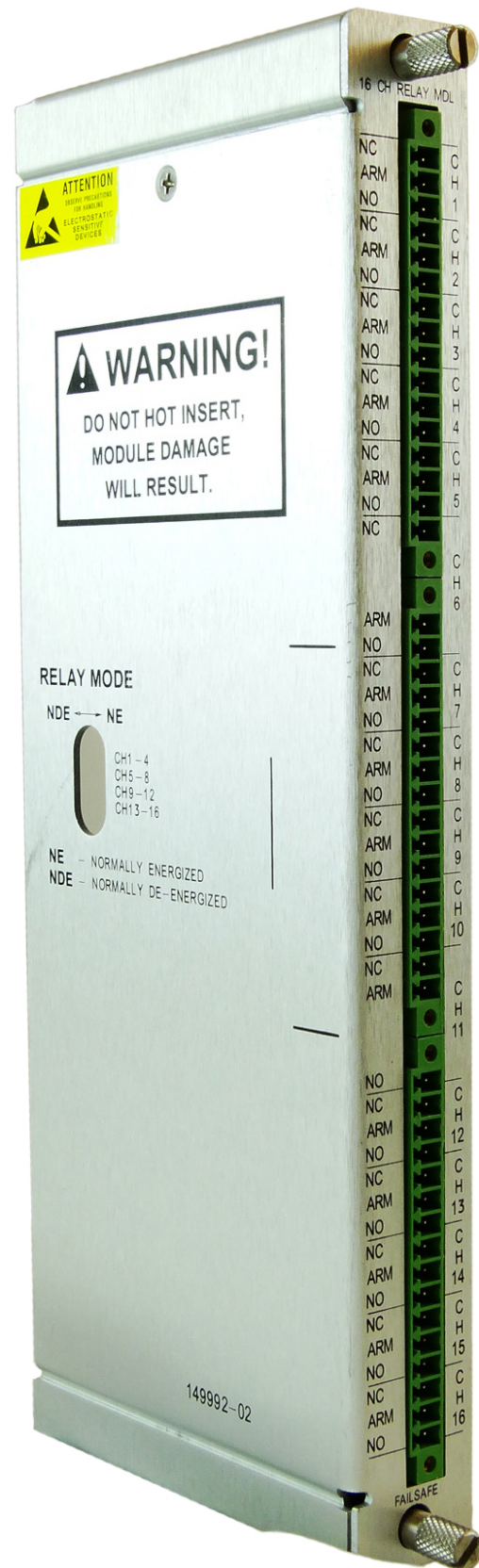
- 00 None
- 01 CSA / NRTL / C (Class I, Div 2)
- 02 ATEX / IECEx / CSA (Class I, Zone 2)

 Note 1: Normal relays go to their non-alarm state when the main module is removed. Failsafe relays go to their alarm state when the main module is removed.

Spares

 For Functional Safety System Ordering Information, refer to 3500 Machinery Protection System: Functional Safety Certified Products Datasheet, 162242-01.

149986-01	Spare 16-Channel Relay Control Module
149992-01	Spare 16-Channel Relay Output Module
149992-02	Spare 16-Channel Failsafe Relay Output Module
149992-03	Spare 16-Channel Low Current Relay Output Module
149992-04	Spare 16-Channel Low Current Failsafe Relay Output Module
04425545	Grounding Wrist Strap (single use)
162291-01	16-Channel Relay Module Operation and Maintenance Manual
00580453	Connector Header Internal Termination 16-position Green

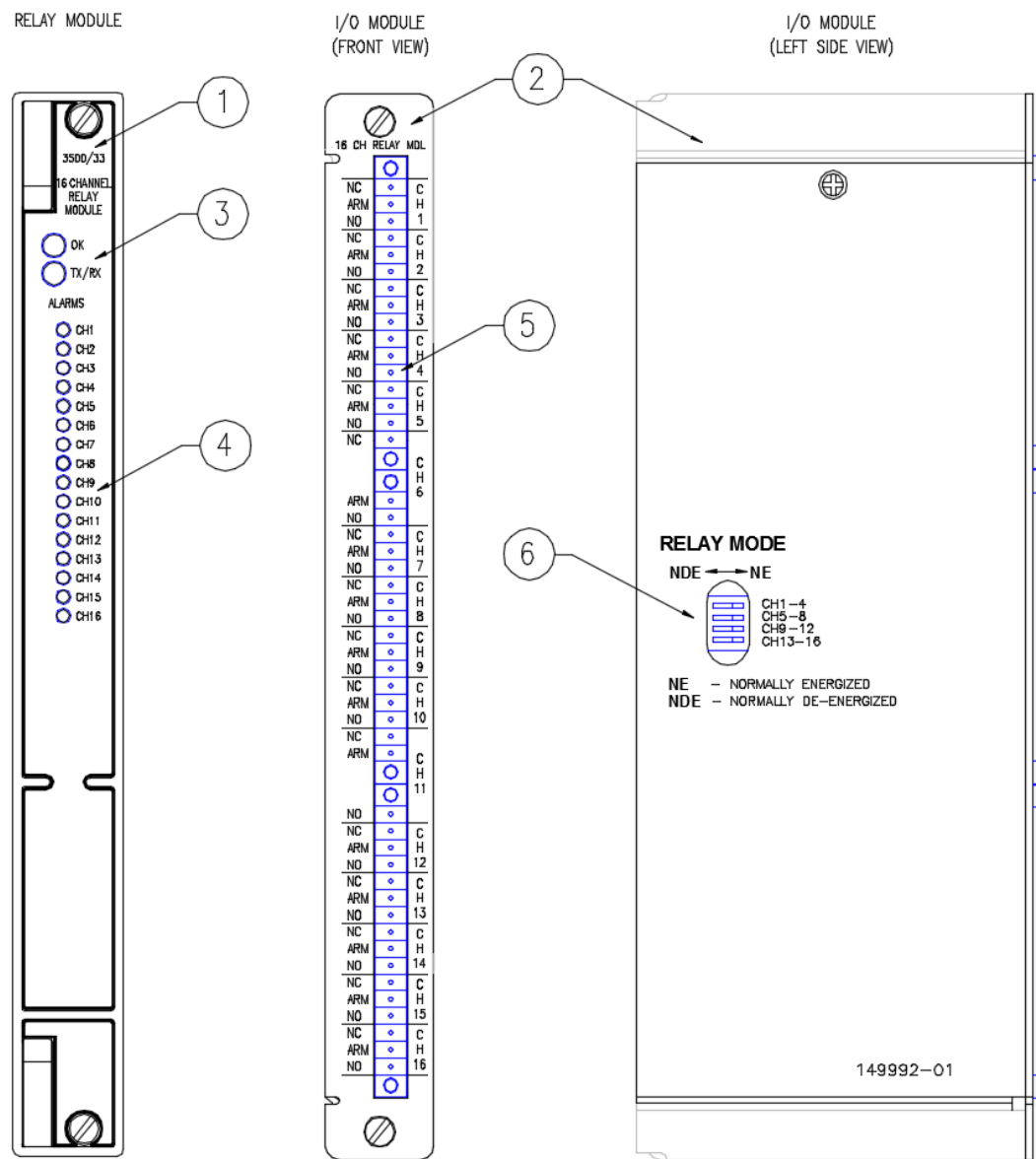


Ordering Considerations

- The 3500/33 16-Channel Relay Module requires the 3500 Rack Configuration Software, version 3.3 or later.
- The 3500/33 16-Channel Relay Module requires the 3500 Data Acquisition Software, version 2.40 or later.
- The 3500/33 16-Channel Relay Module requires the 3500 Data Display Software, version 1.40 or later.
- When ordered with the multiple approvals option (02), the 3500 monitor is certified to Zone 2 standards, including ATEX and North American zones.
- The Zone 2 standards specify increased spacing requirements at higher voltages. The 3500/33 16-Channel Relay Module does not meet these spacing requirements. Thus, the module ordered with the multiple approvals option is limited to a lower voltage than those with the other approvals options.
- Using higher voltages violates the hazardous area certificates associated with the multiple approvals option.
- The North American Division 2 standards associated with the CSA-only approvals option (-01) have been de-rated to 30 Vrms to comply with 61010-1 type test requirements.
- If the 3500/33 16-Channel Relay Module 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.

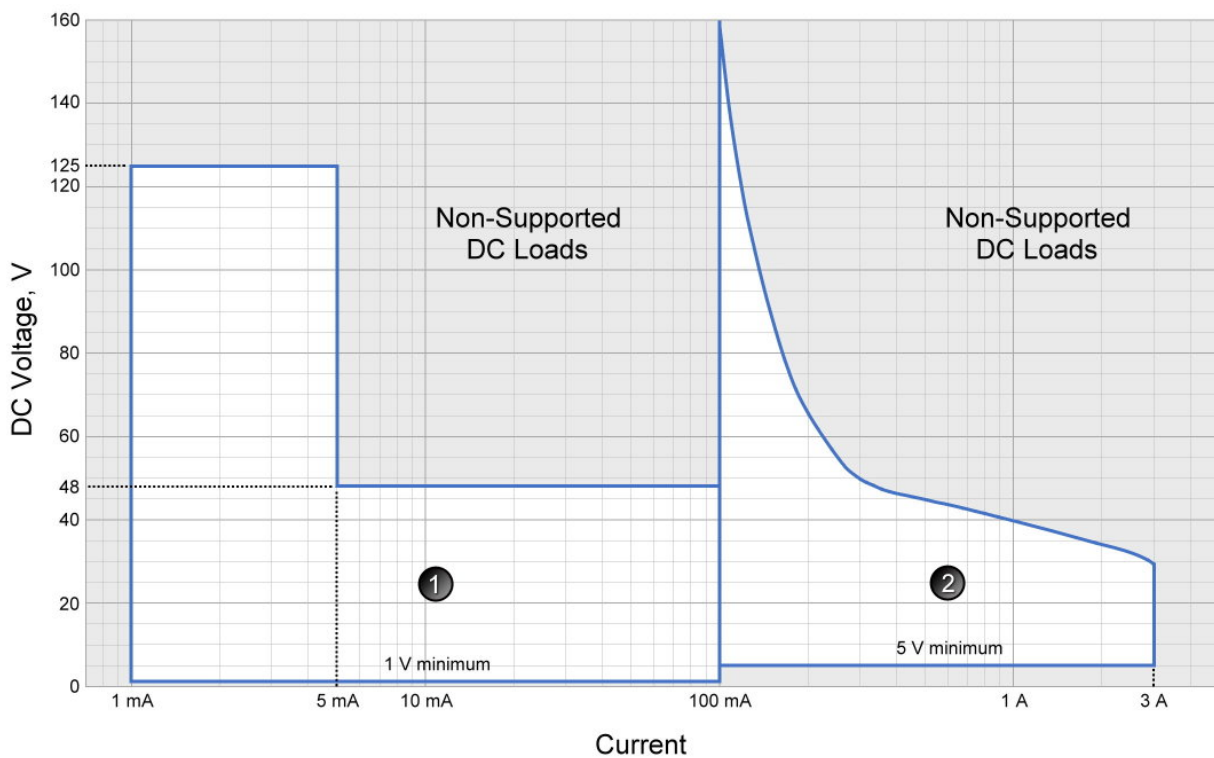
	WARNING
	HAZARDOUS VOLTAGE RISK OF ELECTRIC SHOCK, BURN OR DEATH. When you connect the field wiring to the 3500/33 16-Channel Relay Module, conductors may be exposed, creating a shock hazard at high voltages. Use the 3500/33 16-Channel Relay Module only at voltages up to 30 Vrms.

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 16-Channel Relay Module



1. Low Current Output Modules (Ordering options A03 and A04) use gold-plated relay contacts
2. Standard Output Modules (Ordering options A01 and A02) use silver relay contacts



Note: If the application is at the transition between the low current region and the high current region, the most appropriate choice is to select the Low Current option (with gold-plated contacts). If the gold plating is damaged by excessive load, the contacts will still behave as standard silver contacts.

Figure 2: Relay Contact Selection for DC Loads

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