

# 3500/65 16-Channel Temperature Monitor

Bently Nevada\* Asset Condition Monitoring

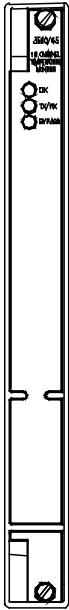
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## Description

The 3500/65 monitor provides 16 channels of temperature monitoring and accepts both resistance temperature detector (RTD) and isolated tip thermocouple (TC) temperature inputs. The monitor conditions these inputs and compares them against user-programmable alarm setpoints.

The monitor is programmed using the 3500 Rack Configuration Software. You can configure the 16-Channel Temperature Monitor to accept isolated tip thermocouples, 3-wire RTD, 4-wire RTD, or a combination of TC and RTD inputs.

In Triple Modular Redundant (TMR) configurations, you must install temperature monitors in groups of 3 adjacent monitors. In this configuration the monitor uses 2 types of voting to ensure accurate operation and to avoid single-point failures



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Specifications and Ordering Information  
Part Number 172930-01  
Rev. D (12/11)

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## Specifications

### Inputs

#### Signal

Accepts from 1 to 16 RTD or isolated tip TC transducer signals.

#### Input Impedance

Greater than 1 M $\Omega$  for each lead input.

#### Power Consumption

3 watts nominal.

#### Transducers

##### TCs

###### Type E

-100 °C to +1000 °C,  
(-148 °F to +1832 °F).

###### Type J

0 °C to +760 °C  
(32 °F to +1400 °F).

###### Type K

0 °C to +1370 °C  
(32 °F to +2498 °F).

###### Type T

-160°C to +400 °C,  
(-256 °F to +752 °F).

##### RTDs

100  $\Omega$  3-wire and 4-wire platinum RTD  
( $\alpha = 0.00385$ );

-200 °C to +850 °C  
(-328 °F to +1562 °F).

100  $\Omega$  3-wire and 4-wire platinum RTD  
( $\alpha = 0.00392$ );

-200 °C to +700 °C  
(-328 °F to +1292 °F).

120  $\Omega$  3-wire and 4-wire nickel RTD:

-80 °C to +260 °C  
(-112 °F to +500 °F).

10  $\Omega$  3-wire and 4-wire copper RTD:

-100 °C to +260 °C,  
(-148 °F to +500 °F).

**Note:** Platinum RTDs with  $\alpha = 0.00385$  are the worldwide industrial standard and are the recommended RTDs for all applications.

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## Outputs

### Front Panel LEDs

#### OK LED

Indicates when the temperature monitor is operating properly.

#### TX/RX LED

Indicates when the temperature monitor is communicating with other modules in the 3500 rack.

#### Bypass LED

Indicates when the temperature monitor is in Bypass Mode.

#### RTD Current-Source Value

913  $\pm$  7  $\mu$ A @ 25 °C per transducer (1 supply for the 4-wire RTD and 2 supplies for the 3-wire).

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## Signal Conditioning

Specified at +25 °C (+77 °F). Full-scale range for each channel is set in the field via 3500 Configuration Software. No calibration is required.

### RTDs and TCs

#### Resolution

1 °C or 1 °F.

## Accuracy

### Internal Termination

Bulkhead Rack:  $\pm 3$  °C at +25 °C ( $\pm 5.4$  °F at +77 °F).

Standard Rack:  $\pm 3$  °C at +25 °C ( $\pm 5.4$  °F at +77 °F).

### External Termination

Bulkhead Rack:  $\pm 3$  °C at +25 °C ( $\pm 5.4$  °F at +77 °F).

Standard Rack:  $\pm 3$  °C at +25 °C ( $\pm 5.4$  °F at +77 °F).

Cold Junction Compensation Sensor (used for TC measurements)  $\pm 2$  °C at +25 °C ( $\pm 3.6$  °F at +77 °F).

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## Alarms

### Alarm Setpoints:

You can use software configuration to set Alert and Danger setpoints for the value measured by the monitor. Alarms are adjustable from 0 to 100% of full-scale for each measured value. The exception is when the full-scale range exceeds the range of the sensor. In this case, software will limit the setpoint to the range of the sensor. Accuracy of alarms are to within 0.13% of the desired value. The 3500/65 16-channel temperature monitor has both under- and over-alarm setpoints.

### Alarm Time Delays

You can use software to program alarm delays as follows:

### Alert Delay

From 1 to 60 seconds in 1-second increments.

## Danger Delay

From 1 to 60 seconds in 0.5-second increments or set to the minimum alarm delay of 225 mS.

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## Proportional Values

Proportional values are temperature measurements used to monitor the machine. The 16-channel temperature monitor returns temperature proportional values.

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## 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).

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## Compliance and Certifications

### EMC

Standards:  
EN 61000-6-2 Immunity for Industrial Environments  
EN 55011/CISPR 11 ISM Equipment  
EN 61000-6-4 Emissions for Industrial Environments

European Community Directives:  
EMC Directive 2004/108/EC

### Electrical Safety

Standards:  
EN 61010-1

European Community Directives:  
2006/95/EC Low Voltage

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## Hazardous Area Approvals

### North American

#### Approval Option (01)

Class 1, Div 2  
Groups A, B, C, D  
T4 @ Ta = -20 °C to +65 °C  
(-4 °F to +150 °F)