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CAMBIA Bently Nevada 3500/65 16-Channel DATASHEET

CAMBIA AUTOMATION LIMITED

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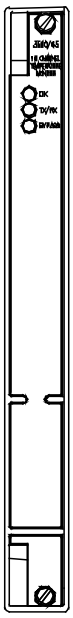
3500/65 16-Channel Temperature Monitor

Bently Nevada* Asset Condition Monitoring



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

Specifications

Inputs

Signal

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

Input Impedance

Greater than 1 MΩ 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 Ω 3-wire and 4-wire platinum RTD (α = 0.00385):

-200 °C to +850 °C

(-328 °F to +1562 °F).

100 Ω 3-wire and 4-wire platinum RTD (α = 0.00392):

-200 °C to +700 °C

(-328 °F to +1292 °F).

120 Ω 3-wire and 4-wire nickel RTD:

-80 °C to +260 °C

(-112 °F to +500 °F).

10 Ω 3-wire and 4-wire copper RTD:

-100 °C to +260 °C,

(-148 °F to +500 °F).

Note: Platinum RTDs with α = 0.00385 are the worldwide industrial standard and are the recommended RTDs for all applications.

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 ± 7 µA @ 25 °C per transducer (1 supply for the 4-wire RTD and 2 supplies for the 3-wire).

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: ±3 °C at +25 °C (±5.4 °F at +77 °F).

Standard Rack: ±3 °C at +25 °C (±5.4 °F at +77 °F).

External Termination

Bulkhead Rack: ±3 °C at +25 °C (±5.4 °F at +77 °F).

Standard Rack: ±3 °C at +25 °C (±5.4 °F at +77 °F).

Cold Junction Compensation Sensor (used for TC measurements)±2 °C at +25 °C

(±3.6 °F at +77 °F).

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.

Proportional Values

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

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).

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

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)

North American

Approval Option (02)

Ex nC[L] IIC

Class 1, Zone 2

Class 1, Div 2, Groups A, B, C, D

T4 @ Ta -20 °C to +65 °C

(-4 °F to +150 °F)

ATEX:

Approval Option (02)

For Selected Ordering Options with ATEX/North American agency approvals:

II 3/(3) G

Ex nC[L] IIC

T4 @ Ta = -20 °C to +65 °C

(-4 °F to +150 °F)

South Africa

Approval Option (02)

For Selected Ordering Options with ATEX/North American agency approvals:

Ex nCAL [ia] IIC T4

Ex nCAL [L] IIC T4

T4 @ Ta = -20 °C to +65 °C

(-4 °F to +150 °F)

For further certification and approvals information please visit the following website:
www.ge-mcs.com/bently

Monitor Module

Dimensions (Height x Width x Depth)

241.3 mm x 24.4 mm x 241.8 mm

(9.50 in x 0.96 in x 9.52 in).

Weight

0.91 kg (2.0 lb.).

I/O Modules

Dimensions (Height x Width x Depth)

241.3 mm x 24.4 mm x 99.1 mm

(9.50 in x 0.96 in x 3.90 in).

Weight

0.45 kg (1.0 lb.).

Rack Space Requirements

Monitor Module:

1 full-height front slot.

I/O Modules:

1 full-height rear slot.

Ordering Considerations

General

If you add the 3500/65 to an existing 3500 System your system will require the following or later firmware and software versions:

3500/22 Module Firmware

Revision 1.50

3500/01 Software

Version 3.85

3500/02 Software

Not supported*

3500/03 Software

Not supported*

3500/93 Module Firmware

Revision 2.02

System 1* Software

Revision 5.2 with Service Pack 2

*Attempting to use the 3500/65 with 3500/02 or 3500/03 software may prevent proper operation of the software.

You cannot use external termination blocks with internal termination I/O modules.

When ordering I/O Modules with external terminations, you must order the external termination blocks and cables separately.

When ordering I/O Modules for use with 4-Wire RTDs, order with Modification 179952-01. For further information, see the 3500/65 Manual.

Ordering Information

3500/65-AXX-BXX

A: I/O Module Type

0 1	RTD/Isolated Tip TC with Internal Terminations
0 2	RTD/Isolated Tip TC with External Terminations

B: Agency Approval Option

0 0	None
0 1	CSA/NRTL/C
0 2	CSA/ATEX

Note: Agency Approval Option B 02 is only available with Ordering Option A 01.

External Termination Block

172115-01

RTD/Isolated Tip TC External Termination Block (Euro Style connectors).

Cables

3500/65 Transducer (XDCR) Signal to External Termination (ET) Block Cable

134544-AXXXX-BXX

A: Cable Length

0 0 0 5	5 feet (1.5 metres)
0 0 0 7	7 feet (2.1 metres)
0 0 1 0	10 feet (3 metres)
0 0 2 5	25 feet (7.5 metres)
0 0 5 0	50 feet (15 metres)
0 1 0 0	100 feet (30.5 metres)

B: Assembly Instructions

0 1	Not Assembled
0 2	Assembled

Spares

172931-01

3500/65 Manual.

145988-02

3500/65 Monitor.

172103-01

3500/65 RTD/Isolated Tip TC I/O Module, Internal Terminations

173005

Connector Header, Internal Termination, 20-position, Black

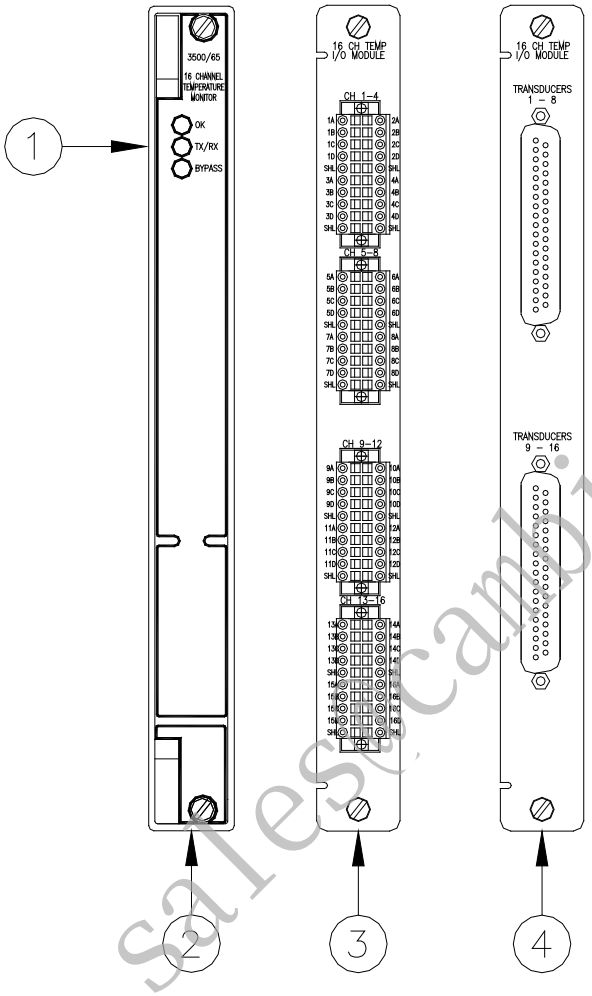
172109-01

3500/65 RTD/ Isolated Tip TC I/O Module, External Terminations

172115-01

RTD/Isolated Tip TC External Termination Block (Euro Style Connectors)

Graphs and Figures



1. Status LEDs
2. 3500/65 Main Module Front View
3. RTD/ Isolated Tip TC I/O Module (Internal Terminations)
4. RTD/ Isolated Tip TC I/O Module(External Terminations)

Figure 1. Front and rear views of the 3500/65 16 Channel Temperature Monitor

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