

3500/61E & 3500/67E Temperature Monitor

Bently Nevada* Asset Condition Monitoring



Description

The 3500/61E and 3500/67E modules provide six channels and two channels of temperature monitoring. Both monitors can be ordered to accept Resistance Temperature Detector (RTD) or Thermocouple (TC) temperature inputs. The TC option provides 500 Vdc of channel-to-channel isolation.

The modules condition these inputs and compare them against user-programmable alarm setpoints.

The user programs the configuration parameters for the monitor using the 3500 Rack Configuration Software.

The 3500/61E is designed to work with the I/O modules used for the 3300/30 & 3300/35, and 3500/67E is designed to work with the I/O modules used for the 3300/36.



Specifications and Ordering Information

Part Number 287825-01

Rev. NC (04/11)

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Specifications

Inputs

Signal

3500/61E:

Accepts from 1 to 6 RTD or TC transducer signals.

3500/67E:

Accepts from 1 to 2 RTD or TC transducer signals.

Input Impedance

Greater than 3 M Ω for each lead input.

Power Consumption

3500/61E:

TC Option: Nominal consumption of 6.3 watts.

RTD Option: Nominal consumption of 5.6 watts.

3500/67E:

TC Option: Nominal consumption of 4.8 watts.

RTD Option: Nominal consumption of 3.2 watts.

Transducers

TCs

Type E:

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

Type J:

-18 °C to +760 °C,
(0 °F to +1400 °F).

Type K:

-18°C to +1370 °C,
(0 °F to +2498 °F).

Type T:

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

RTDs

100 Ω 3-wire & 4-wire platinum RTD (alpha = 0.00385):

*-200° C to +850° C

(-328 °F to +1562 °F).

With external barriers:

-50 °C to +850 °C

(-122 °F to +1562 °F).

100 Ω 3-wire & 4-wire platinum RTD (alpha = 0.00392):

* -200 °C to +700 °C

(-328 °F to +1292 °F).

With external barriers:

-50 °C to +700 °C

(-122 °F to +1292 °F).

120 Ω 3-wire & 4-wire nickel RTD:

-80 °C to +260 °C

(-112 °F to +500 °F).

With external barriers:

-50 °C to +260 °C

(-112 °F to +500 °F).

10 Ω 3-wire & 4-wire copper RTD:

*-100 °C to +260 °C,

(-148 °F to +500 °F).

With external barriers:

-50 °C to +260 °C

(-122 °F to +500 °F).

Note: Platinum RTD's with 0.00385 alphas are the worldwide industrial standard and are recommended for all applications.

* Lower OK limit with external barriers is -50°C.

Isolation

The isolated option has 500 Vdc of isolation between channels.

Outputs

Front Panel LEDs

OK LED

Indicates when the 3500/61E or 3500/67E is operating properly.

DANGER LED

Indicates when the 3500/61E or 3500/67E has detected that a Danger condition and is driving the danger relay.

ALERT LED

Indicates when the 3500/61E or 3500/67E has detected that an Alert condition and is driving the alert relay.

Bypass LED

Indicates when the 3500/61E or 3500/67E is in Bypass Mode (alarming has been disabled on one or more channels).

RTD Current Source Value

913 ±10 µA @ 25° C per transducer (single supply for the 4-wire RTD and two supplies for the 3-wire).

Recorder

+4 to +20 mA. Values are proportional to monitor full-scale. Individual recorder values are provided for each channel. Monitor operation is unaffected by short circuits on recorder outputs.

Voltage Compliance (current output)

0 to +12 Vdc range across load. Load resistance is 0 to 600 Ω.

Resolution

0.3662 µA per bit ±0.15% error at room temperature ±0.4% error over temperature range.

Signal Conditioning

Note: Specified at +25 °C (+77 °F) unless otherwise noted.

Full-scale range for each channel is set in the field via 3500 Configuration Software. No calibration is required.

RTDs and TCs (except for 10Ω Copper RTDs)

Resolution

1 °C or 1 °F

Accuracy

With RTDs (Platinum or Nickel) and a full scale range limited to 150°C

±1°C max over temperature

All other configurations

±2.6 °C (±5.4 °F) at 25±2 °C

±2.8 °C (±5.04°F) max over temperature

10Ω Copper RTDs

Resolution

1°C or 1°F

Accuracy

±3 °C at 25 °C

(±5.4 °F at 77 °F).

Cold Junction Compensation Sensor (used for TC measurements)

Accuracy

±1° C at 25 °C

(±1.8 °F at 77 °F).

Alarms

Alarm Setpoints

The user can set Alert and Danger setpoints for the value measured by the monitor using software configuration. 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, the range of the sensor will limit the setpoint. Accuracy of alarms are to within 0.13% of the desired

value. The Temperature Monitors have both under and over alarm setpoints.

Alarm Time Delays

The user can program alarm delays using software as follows:

Alert

From 1 to 60 seconds in 1 second intervals.

Danger

From 1 to 60 seconds in 0.5 second intervals or can be set to the minimum alarm delay.

Number of actual channel(s)	Minimum time delay (mS)
1	360
2	450
3	540
4	630
5	720
6	810

Note: 225 ms alarm time delays will not be available for all channels. As more channels are used the alarm time delay increases. The configuration software will indicate the minimum alarm time delay based on the channel loading.

Environmental Limits

Operating Temperature

-20 °C to +65 °C (-4 °F to +150 °F)

Storage Temperature

-30 °C to +85 °C (-22 °F to +185 °F).

CE Mark Directives

EMC Directives

Declaration of Conformity

287885

EN61000-6-4

Radiated Emissions

CISPR 16-2-3

Conducted Emissions

CISPR 16-2-1

EN61000-6-2

Electrostatic Discharge

EN 61000-4-2, Criteria B (I/Os excluded in 3300 system retro fit).

Radiated Susceptibility

EN61000-4-3, Criteria A

Conducted Susceptibility

EN61000-4-6, Criteria A

Electrical Fast Transient

EN 61000-4-4, Criteria B

Surge Capability

EN 61000-4-5, Criteria B

Magnetic Field

EN 61000-4-8, Criteria A

Power Supply Dip

EN 61000-4-11, Criteria B

CE Mark Low-Voltage Directives

Declaration of Conformity

287885

Safety Requirements

EN61010-01

Hazardous Area Approvals

CSA/NRTL/C

Class 1, Div 2

Groups A, B, C, D

T4A @ Ta = -20°C to +60°C
 (-4 °F to +140 °F)
 T4 @ Ta = -20 °C to +65 °C
 (-4 °F to +150 °F)

Note: When installed as a retrofit monitor for a 3300 System, hazardous area approval is valid only if the existing 3300 System has the same type of approval.

For further certification and approvals information please visit the following website:

www.ge-mcs.com/bently

Physical

Monitor Module (Main Board)

Dimensions (Height x Width x Depth)

228mm (8.97 in) x 50mm (1.98 in) x
 289mm (11.39 in)

Weight

1.23kg (2.70lb)

Rack Space Requirements

Monitor Module

3500/61E

1 full-height front slot. The slot to the right of the monitor must be left empty due to the size of the 3300 I/O module

3500/67E

1 full-height front slot.

Ordering Considerations

General

The 3500/61E and 3500/67E require the following (or later) software revisions

3500/01 Software – Version 4.0

System 1* - Version 6.75

Ordering Information

6 Channel Temperature Monitor 3500/61E-AXX-BXX-CXX

A: Transducer Type

01 Isolated TC
02 Non-Isolated RTD

B: I/O Module Type

00 none, uses currently installed 3300 SIM or SIRM

C: Agency Approval Option

00 None
01 CSA/NRTL/C (Class 1, Div 2)

Note: For installation as a retrofit monitor for a 3300 System, Agency Approval Option C01 should be ordered only if the existing 3300 System has the same type of approvals. Installation of a retrofit monitor in a system without approvals will invalidate the approvals of the monitor.

2 Channel Temperature Monitor

3500/67E-AXX-BXX-CXX

A: Transducer Type

01 Isolated TC
02 Non-Isolated RTD

B: I/O Module Type

00 none, uses currently installed 3300 SIM or SIRM

C: Agency Approval Option

00 None
01 CSA/NRTL/C (Class 1, Div 2)

Note: For installation as a retrofit monitor for a 3300 System, Agency Approval Option C01 should be ordered only if the existing 3300 System has the same type of approvals. Installation of a retrofit monitor in a system without approvals will invalidate the approvals of the monitor.

Spares

285694-01

3500/61E 6 Channel Temperature Monitor, Isolated TC

285694-02

3500/61E 6 Channel Temperature Monitor, Non-Isolated RTD

285694-03

3500/67E 2 Channel Temperature Monitor, Isolated TC

285694-04

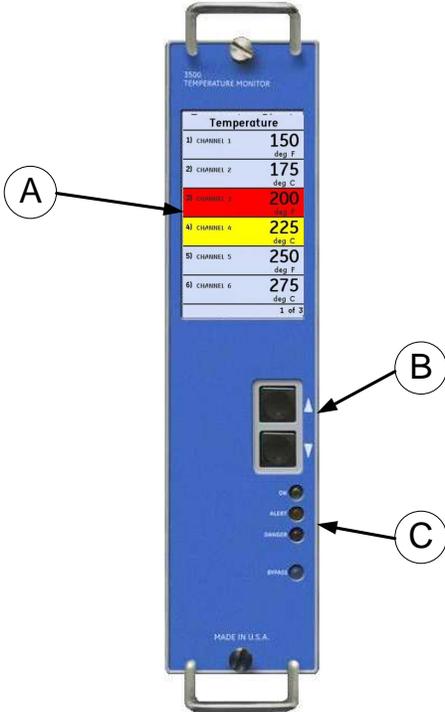
3500/67E 2 Channel Temperature Monitor, Non-Isolated RTD

287547-01

3500/61E & 3500/67E Manual.

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Graphs and Figures



- A. Color LCD Display
- B. Display Control Switches
- C. Status LEDs

Figure 1: Front view of the Temperature Monitor

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