3500/61E & 3500/67E Temperature Monitor

Bently Nevada* Asset Condition Monitoring



Description

The 3500/61E and 3500/67E modules provide six channels and two channel 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 ENCORE series is available in two configurations:

3500 ENCORE Rack Upgrade: In this configuration the 3500/61 and 3500/67E are installed as part of a 3500 ENCORE upgrade of a 3300 Monitor System where the 3300 chassis and IO remain in place. When used in a rack upgrade the temperature monitors use the pre-existing 3300 series IO Module and the relays located on the 3300 series IO.

3500 ENCORE System: In this configuration there will be a 3500 ENCORE System Rack with 3500 ENCORE Temperature IO modules.
Monitors in 3500 ENCORE Systems use a logic programmable Relay Module to drive alarm relays.

When used in a 3500 ENCORE Rack Upgrade of a 3300 Monitor System the 3500/61E is designed to work with the I/O modules used for the 3300/30 & 3300/35 6-Channel Temperature Monitors. The 3500/67E is designed to work with the I/O modules used for the 3300/36 2-Channel Temperature Monitor.

Only the 3500/61E 6-Channel Temperature Monitor is designed for use in a 3500 ENCORE System rack.

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 MΩ 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

100Ω 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).

100Ω 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).

120Ω 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).

10Ω 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 alarm.

ALERT LED

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

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.

Rack Space Requirements

Monitor Module

3500/61E

1 full-height front slot. In a retrofit rack, the slot to the right of the monitor must be left empty due to the size of the 3300 I/O module

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

ENCORE 2 - Version 4.6

Ordering Information

6 Channel Temperature Monitor

3500/61E-AXX-BXX-CXX

A: Transducer Type
- **0 1** Isolated TC
- **0 2** RTD/Non-Isolated TC

B: I/O Module Type
- **0 0** none, uses currently installed 3300 SIM or SIRM
- **0 1** Temperature I/O

C: Agency Approval Option
- **0 0** None
- **0 1** CSA/NRTL/C (Class 1, Div 2)

Note: For installation as a retrofit monitor for a 3300 System as in a 3500 ENCORE Rack Upgrade, 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
- **0 1** Isolated TC
- **0 2** Non-Isolated RTD

B: I/O Module Type
- **0 0** none, uses currently installed 3300 SIM or SIRM

C: Agency Approval Option
- **0 0** None
- **0 1** CSA/NRTL/C (Class 1, Div 2)

Notes:
1) The 3500/67E cannot be used in a 3500 ENCORE System Rack.
2) For installation as a retrofit monitor for a 3300 System as in a 3500 ENCORE Rack Upgrade, 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

100M2179-01

Temperature I/O

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

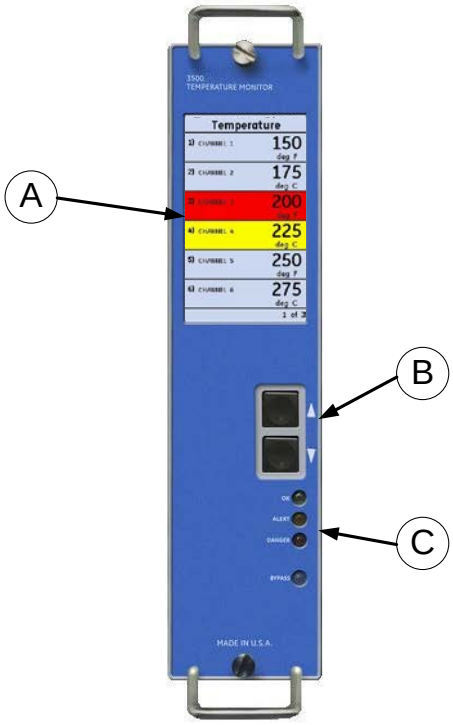
287547-01

3500/61E & 3500/67E Manual.

287199

Jumper, 18 Pin, 2 x 9

Graphs and Figures



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

Figure 1: Front view of the Temperature Monitor