# 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.