3500/65 16-Channel Temperature Monitor

Datasheet

Cordant™

172930 Rev. P

Description

The Bently Nevada™ 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.

Baker Hughes

Specifications

Inputs

Power Consumption	3 watts nominal
Signal	Accepts from 1 to 16 RTD or isolated tip TC transducer signals.
Input Impedance	Greater than 1 MΩ for each lead input.

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)

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 3500/65 is operating properly.
TX/RX LED	Indicates when the 3500/65 is communicating with other modules in the 3500 rack.
Bypass LED	Indicates when the 3500/65 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.

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)

Physical

Main 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 lbs.).
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	0.45kg (1.0 lb.).
Rack Space Requirements	
Main Module	1 full-height front slot
I/O Modules	1 full-height rear slot

Cables

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

134544-AAAA-BB

A: Cable Length	
0005	5 feet (1.5 metres)
0007	7 feet (2.1 metres)
0010	10 feet (3 metres)
0025	25 feet (7.5 metres)
0050	50 feet (15 metres)
0100	100 feet (30.5 metres)
B: Assembly Instructions	
01	Not Assembled
02	Assembled

Spares

Part Number	Description
172931	3500/65 User Guide
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) Specifications

When replacing an older I/O module with a newer one,172109-01 Rev D, 172103-01 Rev F, 172115-01 Rev E, or future revisions; it is necessary to upgrade the firmware to the monitor with the latest released version. You must remove the I/O module before upgrading the monitor to the latest firmware. Failure to do this will result in an I/O Module Mismatch and 562 ADC Failure in the System Event List.