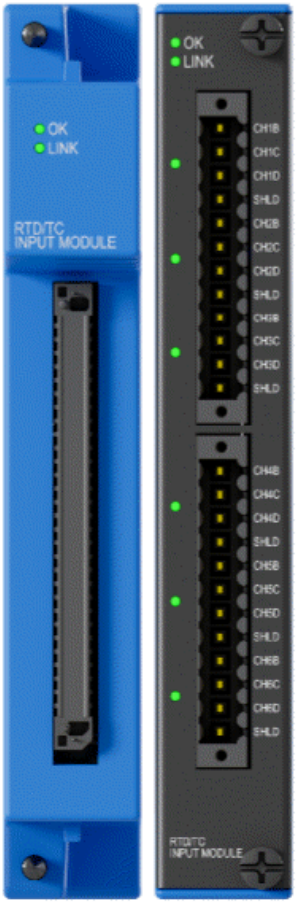
ORBIT 60 SERIES Temperature Module

Datasheet

Bently Nevada Machinery Condition Monitoring

137M0706 Rev. A



Description

TC/RTD Temperature Module

The primary purpose of temperature modules is to interface to the temperature transducers and convert the signal into a digital representation. These modules condition and digitize the inputs at a rate that completely encompasses the signal content and allows for removal of typical noise sources.

The Orbit 60 Series TC/RTD Temperature Input Modules provide six channels of either Thermocouple (TC) or Resistive Temperature Detector (RTD) temperature input sensors.

Each channel of the Orbit 60 Series TC/RTD input module is individually configurable for sensor type and range using Orbit Studio configuration software.

The RTD/TC inputs reference the internal system ground, and for this reason, should only connect to transducers isolated at the sensing end.

These modules occupy a single slot. The module OK LEDs indicate proper functioning and the LINK LEDs indicate good system communication. Six Channel Status LEDs on the utility side of the module indicate a connected sensor in OK condition.

Sensor Types

TC sensors - The thermocouple configured channels provide cold junction compensation for any J, K, E, or T Type Thermocouple.

RTD sensors - The RTD configured channels can be connected to the following:

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- 3-Wire 100 Ohm Platinum 0.00392 RTD
- 3-Wire 100 Ohm Platinum 0.00385 RTD
- 3-Wire 10 Ohm Copper RTD
- 3-Wire 120 Ohm Nickel RTD

TC/RTD Temperature

Temperature	
Thermocouple (TC) Temperature	
Thermocouple	Type J, K, E, T
Channel Supported	6
Nominal Error	±1C
Max Error	±3C
RTD Temperature	
RTD Type	Pt100 (385), Pt100 (392), Ni120, Cu10
Max Error	±1C, except Cu10 ±3C

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

Power Consumption	
Maximum	6 W
Typical	3 W
LEDs	
Channel Status LED (Rear Utility Side)	1 per unit channel indicates when the connected sensor is in an OK condition
Module OK LED	Indicates when the module is functioning properly
System Communication LED	Indicates when the module is communicating to the rest of the system
Physical Characteristics	
Required Rack Space	1 Slot

Environmental Limits	
Chassis Operating Temperature Range (indoor use only)	3U Chassis: -30°C to +70°C (-22°F to 158°F) ⚠ 6U Chassis: -30°C to +65°C (-22°F to 149°F) ⚠
Module Temperature Rating - Certification	-30°C to +70°C (-22°F to 158°F) You must still meet the Chassis Operating Temperature Range defined above.
Storage Temperature Range	-40°C to +85°C (-40° F to 185° F)
Relative Humidity	0% to 95% rH non-condensing operating and storage
Vibration	Without Isolators: 0 g to 0.35 g @ 57-500 Hz With Isolators: 0 g to 5 g @ 57-500 Hz.
Shock	2" Incline Drop
Altitude	< 2000 m (6,562 ft) Higher altitudes are possible but are site specific applications. Contact Bently Nevada support if you require higher altitudes.
Pollution Degree	Pollution Degree 2
Installation Category	Category II

Verify that temperature ratings on the wiring cables match the operating temperature range.

CAUTION

LOCATION TEMPERATURE AND HUMIDITY

If you install the hardware in a location where temperatures may exceed 40° C (104° F) or in excessive humidity, you should consider supplying environmental controls. High temperatures will reduce the operational life of the system.

Compliance and Certifications

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

EMC

European Community Directive:

EMC Directive 2014/30/EU

Standards:

EN 61000-6-2; Immunity for Industrial Environments
EN 61000-6-4; Emissions for Industrial Environments

Electrical Safety

European Community Directive:

LV Directive 2014/35/EU

Standards:

EN 61010-1;
EN 61010-2-201;

RoHS

European Community Directive:

RoHS Directive 2011/65/EU

Cyber Security

Designed to meet IEC 62443-4-2

*Maritime

ABS Rules for Condition of Classification, Part 1

- Steel Vessels Rules
- Offshore Units and Structures

* Approvals pending

Functional Safety

SIL 2

Hazardous Area Approvals

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

For additional technical documentation, please log in to bntechsupport.com and access the Bently Nevada Media Library.

cNRTLus

Class I, Zone 2: AEx/Ex ec nC IIC T4 Gc;
Class I, Zone 2: AEx/Ex nA nC IIC T4 Gc;
Class I, Division 2, Groups A, B, C, D T4;
Class I, Division 2, Groups A, B, C, D T4 (N.I.);

T4 @ Ta= -30˚C to +70˚C (-22˚F to +158˚F)

ATEX/IECEx

Ex II 3 G
Ex ec nC IIC T4 Gc
Ex nA nC IIC T4 Gc

T4 @ Ta= -30˚C to +70˚C (-22˚F to +158˚F)

Ordering Information

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

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RTD / TC Temperature Module

Ordering Option	Description
60R/INP07	
AA – Hazardous Area Certifications	
00	No Hazardous Area
01	CSA/NRTL/C (Class I, Div 2)
02	Multi (CSA, ATEX, IECEx)
XX	Country Specific Approvals
B – SIL Level	
0	No SIL
2	SIL 2

Accessories

Part Number	Description
60X/BTC01	Buffered Transducer Breakout Kit

External Barriers

175502	3-pin Transducer Barrier
177241	2-pin Velomitor Barrier
175990 or 170M3559	Thermocouple Barrier
170M3559	RTD Barrier

External Galvanic Isolators

103M7134	3-pin Transducer Isolator
103M7134	2-pin Transducer Isolator
154M1361	Thermocouple Isolator
103M7138	RTD Isolator

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