### 1794sc-IRT8i Install Guide

#### Important User Information
Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.rockwellautomation.com) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Spectrum Controls, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment. The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with solid state equipment, Spectrum Controls, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams. No patent liability is assumed by Spectrum Controls, Inc., with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual we use notes to make you aware of safety considerations.

#### North American Hazardous Location Approval

- **Identify information about practices or circumstances that can cause an explosion in a hazardous environment.** Explosions can result from electrical arcs, sparks, or high voltage. Electrical components, such as motors, relays, and switches, also need to be designed to prevent personal injury or death, property damage, or economic loss.

- **Identify information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.** Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

#### Environment and Enclosures

- This equipment is intended for use in a Pollution Degree 2 environment.
- This equipment is in overvoltage Category II if applications (as defined in IEC publication 61010-1), or applications in different types of solid state equipment such as 24 V dc, 120 V ac, and 230 V ac without derating. This equipment is considered Group 1, Class A industrial equipment according to IEC/EN61508 Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbance.
- The equipment is supplied as open-type equipment. It must be mounted within an enclosure that is suitably designed for those conditions. The enclosure must be sealed around the equipment and appropriately designed to prevent personal injury resulting from accessibility to live parts. The enclosure must have suitable flame-retardant properties to prevent or minimize the spread of flame, complying with a flame spread rating of IVA, V0, V1, V2 (or equivalent) non-combustible. The door of the enclosure must be accessible only by use of a tool.
- Subsequent sections of this publication may contain types of ratings that are required to comply with certain product safety certifications. Besides this publication, use the Industrial Automation Wiring and Grounding Guidelines, for additional installation requirements. Allen-Bradley publication 1775-A.1-1 IEC/EN Standards publication 285 and IEC publication 60364, as applicable, for explanations of the degrees of protection provided by different types of enclosures.

#### European Hazardous Location Approval

- **Observe the following additional Zone 2 verification requirements:**
  - This equipment is not resistant to sunlight or other sources of UV radiation.
  - This equipment must be installed in an enclosure providing at least IP65 protection when applied in Class I, Zone 2 environments.
  - This equipment shall be used within its specified ratings defined by Spectrum Controls.
  - Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 41% when applied in Class I, Zone 2 environments.

#### Install Your IRT8i Input Module

**ATTENTION Prevent Electrostatic Discharge**

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge static electricity.
- Wear an approved grounding wrist strap.
- Do not touch connectors or pins on component fronts.
- Do not touch circuit components inside the equipment.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.

During mounting of all devices, be sure that all docks (for example, metal clips or wire strands) is kept from falling into the module. Debris that falls into the module could cause damage on power up.

The module reviewers on a 1794-TBG or 1794-TBGS terminal base:

1. Route the keyswitch (1) on the terminal/base (2) clockwise to position 3 as required for this type of module.
2. Make certain the fixture connector (3) is pushed all the way to the left to connect with the neighboring terminal base/adaptor. You cannot install the module unless the connector is fully extended.
3. Make sure the pin on the bottom of the module are straight so they will align properly with the connector in the terminal base.

**WARNING**

- **Position the module (4) with its alignment bar (5) aligned with the groove (6) on the terminal base.**
- **Press firmly and evenly to seat the module in the terminal base unit.** The module is secured when the latching mechanism (7) is locked into the module.

Connect Wiring for the 1794-TBG or 1794-TBGS Terminal Base

- Connect individual input wiring and associated signal return to terminal numbers on the 0…15 row (A) and the 16…33 row (B) as indicated in the table. Use Unaked 876 cable for mV signal wiring, or the appropriate thermostat wire for your thermostat.

<table>
<thead>
<tr>
<th>Signal Wiring Shielding Connections</th>
<th>Connect Wiring for the 1794-TBG or 1794-TBGS Terminal Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal 34 -V dc power lead to terminal 34 on the 34…51 row (C).</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Terminal 34 -V dc common to terminal 35 on the 35…51 row (C).</td>
<td></td>
</tr>
</tbody>
</table>

- **To reduce susceptibility to noise, power analog modules and digital modules from separate power supplies. Do not exceed a length of 3 m (9.8 ft) for power cabling.**

Do not dry-chain power or ground from this terminal base unit to any ac or dc digital module terminal base units.

5. If dry-chaining power to the next terminal base unit, connect a jumper from terminal 50 (+V dc) on the base unit to +V terminal on the next terminal base unit.

6. If using cold junction compensators, make these connections as shown in the CJC Sensor chart below.

### Identify RTD Wire Pairs

If the RTD type is color-coded, the wires that are the same color are connected together. If the wires are not color-coded, use an ohmmeter to determine the pairs as explained below.

#### How to Connect a 3-Wire RTD

If the 3-Wire RTD type is all different colors, use an ohmmeter to determine which lead is connected together. Either lead of the pair can be the compensation lead. Attach one lead of the pair to terminal E and the other to –. Attach the single lead to –.

Refer to the following table.
Wire Connections for the Isolated Universal Input Module

RTD/Resistance

Thermocouple

mV Source

Example of RTD/Resistance Wiring to a 1794-TB3G Terminal Base Unit

Terminal Base Unit Wiring Connections 1794-TB3G and 1794-TB3G2 Terminal Base Units

Example of Thermocouple Wiring to a 1794-TB3G Terminal Base Unit

Input Map and Configuration (EDT)

Input Map (Read)

EDT Configuration Table

Input Filter

Data Format

BIM Ch n (Broken Input Mode Channel n)

DC Ch n (Disable CJC for Channel n)

T Ch n (Temperature Units for Channel n)

Input Map and Configuration (EDT)

Terminal Base Unit Wiring Connections

Numbers 0, 1, 2, and 3 are wiring numbers of the sensor used. For terminal numbers corresponding to R, IN+, IN-, refer to Terminal Base Unit Wiring Connections below.

Install Guide

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### Specifications

<table>
<thead>
<tr>
<th>Number of inputs</th>
<th>8 channels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal input voltage range</td>
<td>±10 V, ±20 V, 0-5 V, 0-10 V, 1-5 V, 0-20 mA, 4-20 mA, 0-10 V, 0-5 V, 0-100 mA</td>
</tr>
<tr>
<td>Input voltage range</td>
<td>±10 V, ±20 V, 0-5 V, 0-10 V, 1-5 V, 0-20 mA, 4-20 mA, 0-10 V, 0-5 V, 0-100 mA</td>
</tr>
</tbody>
</table>

**Environmental Conditions**

- **Temperature, operating**: 0...35 °C (32...95 °F)
- **Temperature, storage**: -40...85 °C (-40...185 °F)
- **Relative humidity**: 0%...100% non-condensing
- **Emissions**: Group 1, Class A (with appropriate equipment)

### Accuracy Specifications

<table>
<thead>
<tr>
<th>Thermocouple with 4-17 Hz filter using Linearization per ITU-60</th>
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<th>Thermocouple with 4-17 Hz filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy Limit at 25°C ±1.5°C only 4 Hz filter</td>
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<td>Accuracy Limit at 25°C ±1.5°C only 4 Hz filter</td>
</tr>
<tr>
<td>±1°C (±0.5°F) with 4 Hz filter</td>
<td>±1°C (±0.5°F) with 4 Hz filter</td>
<td>±1°C (±0.5°F) with 4 Hz filter</td>
</tr>
</tbody>
</table>

### Environmental Conditions

- **Voltage range**: 24V ac or dc
- **Supply current**: 240 mA (24V dc)
- **Dimensions (with module installed in base)**: 54.5 x 48.89 mm (2.15 x 1.92 in.)

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1. Use this category information for planning conductor routing as described in Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1.
2. For the latest up-to-date information, see the Product Certification link at www.spectrumcontrols.com for Declarations of Conformity, Certificates and other certification details.
3. (1) Use this category information for planning conductor routing as described in Industrial Automation Wiring and Grounding Guidelines, Allen-Bradley publication 1770-4.1.
4. (2) For the latest up-to-date information, see the Product Certification link at www.spectrumcontrols.com for Declarations of Conformity, Certificates and other certification details.
5. If the limits are not met when the module is used as a general purpose component to comply with Group 1, Class A (with appropriate equipment).