Installation Instructions

Tracer™ ZN517 Unitary Control

Order Number: 4580-0596 (frame mount), 4580-0696 (enclosure mount)

The Tracer ZN517 controller is a field-installed device that provides direct digital zone temperature control. It can operate as a stand-alone device or as part of a building automated system (BAS) and control:

- 2-heat/2-cool/4-cool rooftop unit with optional economizer control
- 2-compressor heat pump with optional economizer/auxiliary heat control
- split system

Visually inspect all parts for obvious defects or damage. All components are thoroughly inspected before leaving the factory. Any claims for damaged equipment should be filed with the carrier.

SAFETY WARNING

Only qualified personnel should install and activate this equipment. The installation, starting up, and commissioning of heating, ventilating, and air conditioning equipment can be hazardous and requires special knowledge and training. Improperly installed, adjusted, or altered equipment by an unqualified person could result in death or serious injury. When working on this equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

Cautions, Warnings and Notices

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE

Indicates a situation that could result in equipment or property damage only.

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Agency Listings and Compliance

- CE marked
- UL and C-UL 916 listed:
  - Energy Management Equipment—PAZX (U.L.916)
  - FCC Part 15, Class A, CFR 47
- Setpoints:
  - In occupied mode, the controller can receive a setpoint from either a zone sensor (default) or from a BAS. If neither a zone sensor value or a communicated value is received, the Tracer ZN517 will operate at the following default setpoints:
  - Heating: 71.0°F (21.7°C)
  - Cooling: 74.0°F (23.3°C)

Factory Defaults

The controller is shipped with the following default settings. To change defaults, use DIP switches, a Rover service tool, or a BAS, as appropriate.

- Equipment type. The Tracer ZN517 ships from the factory configured to control a 2-heat/2-cool rooftop unit without economizer. To change this configuration, see “Configuring for equipment type.”
- Setpoints: In occupied mode, the controller can receive a setpoint from either a zone sensor (default) or from a BAS. If neither a zone sensor value or a communicated value is received, the Tracer ZN517 will operate at the following default setpoints:
  - Heating: 71.0°F (21.7°C)
  - Cooling: 74.0°F (23.3°C)

In unoccupied mode, the controller will operate at:
- Heating: 60.0°F (15.6°C)
- Cooling: 85.0°F (29.4°C)

Inputs and outputs. For individual input and output factory defaults, see Table 1, Table 2, and Table 3.

Mounting

To mount the controller:

1. For the metal enclosure mount controller, remove the two cover screws and then the cover; For the frame mount, leave the cover on.

2. Hold the controller or the enclosure up to the mounting surface and use the mounting holes to mark the mounting screw locations.

3. Drill the holes at the marked locations for #10 screws (5 mm) or #10 wall anchors. Use wall anchors if the mounting surface is drywall or masonry.

4. Insert wall anchors, if needed.

5. Fasten the controller or enclosure to the surface using #10 (5 mm) screws (not included). The controller must be fastened securely to withstand the vibrations typical of heating, ventilating, and air conditioning (HVAC) equipment.

Table 1. Analog inputs

<table>
<thead>
<tr>
<th>Label</th>
<th>Function</th>
<th>Description</th>
<th>Defaults</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZN</td>
<td>Zone temp.</td>
<td>Zone temperature</td>
<td>On</td>
<td>0-5 V (0-100% of range)</td>
</tr>
<tr>
<td>SET</td>
<td>Temp. setpoint</td>
<td>Temp. setpoint</td>
<td>On</td>
<td>4–20 mA (0–2000 ppm)</td>
</tr>
<tr>
<td>CO2</td>
<td>CO2 content</td>
<td>CO2 content</td>
<td>N/A</td>
<td>4–20 mA</td>
</tr>
</tbody>
</table>

Table 2. Digital inputs

<table>
<thead>
<tr>
<th>Label</th>
<th>Function</th>
<th>Description</th>
<th>Defaults</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>TUS</td>
<td>Sensor temp.</td>
<td>Sensor temperature</td>
<td>On</td>
<td>0–5 V (0-100% of range)</td>
</tr>
<tr>
<td>BI</td>
<td>Sensor temp.</td>
<td>Sensor temperature</td>
<td>Off</td>
<td>4–20 mA</td>
</tr>
<tr>
<td>LED</td>
<td>Sensor temp.</td>
<td>Sensor temperature</td>
<td>N/A</td>
<td>4–20 mA</td>
</tr>
</tbody>
</table>

Table 3. Digital outputs

<table>
<thead>
<tr>
<th>Label</th>
<th>Function</th>
<th>Description</th>
<th>Defaults</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS</td>
<td>Sensor temp.</td>
<td>Sensor temperature</td>
<td>N/A</td>
<td>4–20 mA</td>
</tr>
<tr>
<td>PI</td>
<td>Sensor temp.</td>
<td>Sensor temperature</td>
<td>N/A</td>
<td>4–20 mA</td>
</tr>
<tr>
<td>FA</td>
<td>Sensor temp.</td>
<td>Sensor temperature</td>
<td>N/A</td>
<td>4–20 mA</td>
</tr>
</tbody>
</table>

Note: For best results and accuracy, use only factory temperature sensors.
### AC Power Wiring

**Important:** Ensure that the 24 Vac power supplies are consistently grounded. Do not share 24 Vac between controllers.

The recommended wiring for an AC power system is a 16 AWG copper wire. All wiring must comply with National Electrical Code and local codes. If providing a new transformer for power, use a UL-listed Class 2 power transformer supplying a nominal 24 Vac (20-30 Vac). The transformer must be sized to provide adequate power to the MP500 (10 VA) and outputs (a maximum of 12 VA per output utilised).

#### Communication Link Wiring

The controller communicates with the BAS and with other controllers on a Communication Link (BMTX-SVN01A), the Tracker Building Automation System Hardware Installation guide (BMTK-SVN01D), or another BAS installation manual.

### HVAC Unit Electrical Circuit Wiring

**WARNING**

**Hazardous Voltage!**

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

**CAUTION**

**Injury and Equipment Damage!**

Ensure that the 24 Vac transformer is properly grounded. Failure to do so may result in personal injury and/or damage to equipment.

**CAUTION**

**Equipment Damage!**

Complete input/output wiring before applying power to the controller. Failure to do so may cause damage to the controller or power transformer due to inadvertent connections to power circuits. Do not share 24 Vac between controllers. Failure to do so may cause controller damage.

### Input/Output Terminal Wiring and Typical Applications

- **Input/output terminals are identified by label and function in the preceding tables. Wiring configurations for standard and optional input and output components are shown in the illustration to the right.** When wiring the input/output connections:
  - Satisfy any local code requirements and the National Electrical Code.
  - Use 18–22 AWG, stranded, tinned-copper, shielded, twisted-pair wires.
  - Do not exceed 300 ft (100 m) for any input or output wire.
  - Do not bundle input or output wires with ac power wires.

![Input/Output Terminal Wiring and Typical Applications](image)

### Wiring AC Power to Controller Terminals

The illustration in Panel 13 shows the location on the controller for the AC power supply. Comply with the following guidelines:

1. Locate the jumper at J1 on the controller circuit board. Place the jumper on both pins at J1.
2. Wire the RC terminal to the transformer on the unit (refer to Transformer 1).
3. Form A relay, powered by 24 Vac.
4. Caution: Ensure that the 24 Vac transformer is properly grounded. Failure to do so may result in personal injury and/or damage to equipment.

### Communication Link Wiring

The terminals labeled RC and RH are provided for 24 Vac power from the controller and 12 VA per output device connected to the controller. The controller is shipped from the factory with terminals RC and RH. If using the metal enclosure controller and it is mounted to a surface that is not grounded, connect a ground wire to the grounding screw at the location shown below.

![Communication Link Wiring](image)