Mounting and Removing the UC600 Controller

The Tracer™ UC600 controller should be properly mounted on a DIN rail. Control cabinets that include DIN rails are available from Trane.

To mount or remove the controller from the DIN rail, follow the illustrated instructions in Figure 1 and Figure 2. If using a DIN rail from another manufacturer, follow the recommended installation procedures that accompany it.

**Important:** When mounting the controller in a control cabinet, provide adequate spacing between modules to allow for ventilation and heat dissipation.

**Notice:** Avoid Equipment Damage

Do not use excessive force to install the controller on the DIN rail. Excessive force could result in damage to the enclosure.

Figure 1. Mounting the controller

To mount the controller:

1. Hook device over top of DIN rail.
2. Gently push on lower half of device in the direction of arrow until the release clip clicks into place.

Figure 2. Removing the controller

To remove or reposition the controller:

1. Disconnect all connectors before removing or repositioning.
2. Insert screwdriver into slotted release clip and gently pry upward with the screwdriver to disengage the clip.
3. While holding tension on the clip, lift device upward to remove or to reposition.
4. If repositioned, push on the device until the release clip clicks back into place to secure the device to DIN rail.

Storage and Operating Environment Specifications

**Storage**

- Temperature: -4°F to 203°F (-20°C to 95°C)
- Relative humidity: 5% to 95% (noncondensing)

**Operating**

- Temperature: -40°F to 158°F (-40°C to 70°C)
- Humidity: Between 5% to 95% (noncondensing)
- Power: 24 Vac ±10%, device max load 600 mA

Agency Compliance

- UL61010 PAZX, Open Energy Management Equipment
- UL60950, Flammability
- CE Marked
- FCC Part 15, Subpart B, Class B Limit

Powering the Controller

All wiring must comply with the National Electrical Code (NEC™) and local electrical codes.

**WARNING**

Hazardous Voltage!

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

**CAUTION**

Personal Injury and Equipment Damage!

After installation, verify that the 24 Vac transformer is grounded through the controller as illustrated in Figure 3 on panel 9. Failure to do so could result in personal injury and/or damage to equipment. Measure the voltage between chassis ground and any ground terminal on the controller. Expected result: Vac = 4.0 V.

Wiring Requirements

To ensure proper operation of the controller, install the power supply circuit in accordance with the following guidelines:

- The controller should receive AC power from a dedicated power circuit; failure to comply may cause the controller to malfunction.
- A dedicated power circuit disconnect-switch must be near the controller, easily accessible by the operator, and marked as the disconnecting device for the controller.
- DO NOT run AC power wires in the same wire bundle with input/output wires; failure to comply may cause the controller to malfunction due to electrical noise.
- 18 AWG copper wire is recommended for the circuit between the transformer and the controller.

Transformer Requirements

- AC transformer requirements: UL listed, Class 2 power transformer, 24 Vac ±10%, device max load 26 VA. The transformer must be sized to provide adequate power to the UC600 controller (26 VA) and outputs (maximum 12 VA per binary output).
- UC600 requires 26VA: 26VA is for UC600 + IO + two expansion modules (XM30 or XM32).
- DC power supply requirements: UL listed, Class 2 power transformer, 24 Vdc ±10%, device max load 600 mA.
- CE-compliant installations: The transformer must be CE marked and SELV compliant per IEC standards.

**NOTICE:**

Avoid Equipment Damage!

Sharing 24 Vac power between controllers could cause equipment damage.

A separate transformer is recommended for each controller. The line input to the transformer must be equipped with a circuit breaker sized to manage the maximum transformer line current.

If a single transformer is shared by multiple UC600 controllers:

- The transformer must have sufficient capacity.
- Polarity must be maintained for every UC600 controller powered by the transformer.

Important: If polarity is inadvertently reversed between controllers that are powered by the same transformer, a difference of 24Vac will occur between the grounds of each controller. The following symptoms could result:

- Partial or full loss of communication on the entire 4Wire MS/TP link
- Improper function of UC600 controller outputs
- Damage to the transformer or a blown transformer fuse
Controller Startup and Power Check

1. Verify that the 24 V ac connector and the chassis ground are properly wired. 
2. Set aique and valid address for each device. 
3. The BACnet Device ID is set by combining the Tracer SC rotary switch address, link number and UC600 rotary switch address, or soft-set through Tracer TU. A unique MAC address is required and set by the rotary address switches of the UC600. Valid rotary switch settings are “001” through “127”.

Notes:
- The UC600 is limited to ten 0-20mA current inputs/outputs if using 2 expansion modules. Universal inputs require the following to meet the 25Hz specifications without notice.
- Do not mix Class 1 and Class 2 voltage wiring in an enclosure or on a controller without an approved barrier between the wiring.
- For more details on this topic, refer to the Tracer XM30 Installation Instructions (X3964144B) and the Tracer XM32 Installation Instructions (X3964174D) for application and installation information.

Input and Output Wiring

Notice:
Avoid Equipment Damage!

Remove power to the UC600 controller before making input or output connections. Failure to do so may cause damage to the controller, power transformer, or input/output devices due to inadvertent connections to power circuits.

Maximum wire lengths are as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Inputs</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binary</td>
<td>1,200 ft (360 m)</td>
<td>1,200 ft (360 m)</td>
</tr>
<tr>
<td>0–20 mA</td>
<td>1,000 ft (300 m)</td>
<td>1,000 ft (300 m)</td>
</tr>
<tr>
<td>0–10 mA</td>
<td>300 ft (100 m)</td>
<td>300 ft (100 m)</td>
</tr>
<tr>
<td>Thermistor/Resistor</td>
<td>300 ft (100 m)</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

- All wiring must be in accordance with the NEC and local codes. (Use only 18–22 AWG (0.65 mm to 0.55 mm diameter), stranded, tin-plated copper, shielded, twisted-pair wire.
- Analog and 24 V dc output wiring distances are dependent on the receiving unit specifications. 
- Use shielding for analog and 24 V dc outputs.
- DO NOT run input/output wires or communication wires in the same wire bundle with AC power wires.

Electrical Shock Hazard!
Do not mix Class 1 and Class 2 voltage wiring in an enclosure or on a controller without an approved barrier between the wiring.

Input and Output Specifications and Wiring Examples

The following table provides specifications for input and output configuration.

<table>
<thead>
<tr>
<th>Input/Output Type</th>
<th>Quantity</th>
<th>Type</th>
<th>Range</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal input</td>
<td>1</td>
<td>Internal</td>
<td>0–10 Vdc</td>
<td>Wiring examples for universal inputs/outputs, 0-20 mA, 0-10 Vdc, and I/O port, 1 kV</td>
</tr>
<tr>
<td>Universal input</td>
<td>1</td>
<td>External</td>
<td>0–10 Vdc</td>
<td>Wiring examples for universal inputs/outputs, 0-20 mA, 0-10 Vdc, and I/O port, 1 kV</td>
</tr>
<tr>
<td>Outputs</td>
<td>1</td>
<td>0-20 mA</td>
<td>0–20 mA</td>
<td>Wiring examples for universal inputs/outputs, 0-20 mA, 0-10 Vdc, and I/O port, 1 kV</td>
</tr>
<tr>
<td>Outputs</td>
<td>1</td>
<td>0-10 Vdc</td>
<td>0–10 Vdc</td>
<td>Wiring examples for universal inputs/outputs, 0-20 mA, 0-10 Vdc, and I/O port, 1 kV</td>
</tr>
<tr>
<td>Analog outputs</td>
<td>1</td>
<td>0-20 mA</td>
<td>0–20 mA</td>
<td>Wiring examples for universal inputs/outputs, 0-20 mA, 0-10 Vdc, and I/O port, 1 kV</td>
</tr>
<tr>
<td>Analog outputs</td>
<td>1</td>
<td>0-10 Vdc</td>
<td>0–10 Vdc</td>
<td>Wiring examples for universal inputs/outputs, 0-20 mA, 0-10 Vdc, and I/O port, 1 kV</td>
</tr>
</tbody>
</table>

Tug Test for Terminal Connectors

If using terminal connectors for wiring the controller, strip the wires to expose 1/4 in. (7 mm) of bare wire. Insert each wire into a terminal connector. 

Electromagnetic Immunity for Industrial:

- EN61000-4-1: 2001 - Conducted
- EN61000-4-3: 2002 - Radiated Fields
- EN61000-4-4: 2004 - Electrostatic Discharge
- EN61000-4-5: 2002 - Surge
- EN61000-4-6: 1996 + A1: 2001 - Conducted
- EN61000-4-11: 2nd Edition: 2004 - Voltage Dips

For more information, visit www.T rane.com.