T7079A,B
Solid State
Remote Temperature Controllers

FEATURES

• Switch selection of heat or cool mode.
• Temperature sensing up to 400 feet.
• Does not require field calibration.
• 10K NTC temperature sensor.
• Wide setpoint temperature range.
• LED annunciation for both power on and relay state.
• Dual setpoint scale (°F and °C).
• Isolation transformer for 24 Vac input.
• Single- or Dual-stage output.
• Dual-stage output models can be configured as two-heat, two-cool, or one-heat/one-cool.

APPLICATION

The T7079 Electronic Remote Sensor Temperature Controller is capable of providing on-off temperature control for ducts, tanks, heating and refrigeration units, greenhouses, animal confinement buildings and other applications where electronic accuracy in addition to remote sensing is desired.
SPECIFICATIONS

Models:
T7079: On-off wall-mount control with one temperature input and one or two relay output stages. Differential range of 1 to 30°F. Includes one sensor. See Table 1.

<table>
<thead>
<tr>
<th>Voltage (in Vac)</th>
<th>Setpoint Range in °F (°C)</th>
<th>Table 1. T7079 models.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>120/230</td>
<td></td>
</tr>
<tr>
<td>100 to 240</td>
<td>(38 to 116)</td>
<td></td>
</tr>
<tr>
<td>-25 to 105</td>
<td>(-32 to 40)</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>T7079A1004</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>T7079A1012</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>T7079A1046</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>T7079A1053</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>T7079B1028</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>T7079B1036</td>
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<tr>
<td>X</td>
<td>X</td>
<td>T7079B1044</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>T7079B1051</td>
</tr>
</tbody>
</table>

Dimensions: See Fig. 1.

Fig. 1. Dimensions of T7079 in in. (mm).

Electrical Ratings:
Voltage Input: 24 Vac, 50/60 Hz (+10%, -15%), Class 2 only.
120/230 Vac, 50/60 Hz (+10%, -15%).

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:
1. Your local Honeywell Automation and Control Products Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
   1885 Douglas Drive North
   Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Toronto, Ontario M1V 4Z9.
International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.
Table 3. 10K thermistor output.

<table>
<thead>
<tr>
<th>Resistance</th>
<th>°C</th>
<th>°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>97820</td>
<td>-20</td>
<td>-4</td>
</tr>
<tr>
<td>32740</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>19920</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>12500</td>
<td>20</td>
<td>68</td>
</tr>
<tr>
<td>10000</td>
<td>25</td>
<td>77</td>
</tr>
<tr>
<td>8056</td>
<td>30</td>
<td>86</td>
</tr>
<tr>
<td>5326</td>
<td>40</td>
<td>104</td>
</tr>
<tr>
<td>3604</td>
<td>50</td>
<td>122</td>
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<tr>
<td>2491</td>
<td>60</td>
<td>140</td>
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<tr>
<td>1756</td>
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<td>158</td>
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<tr>
<td>1281</td>
<td>80</td>
<td>176</td>
</tr>
<tr>
<td>920.9</td>
<td>90</td>
<td>194</td>
</tr>
</tbody>
</table>

Sensor Location

The sensor can be located up to 400 feet (122 meters) from the T7079 using standard AWG 18/2 unshielded wire. The sensor may be attached to pipes, in an immersion well, in a wall-mounted case or on a bulb holder.

NOTES:

- For cable runs greater than 25 feet, shielded cable is recommended.
- Multiple sensors can be parallel-series wired to sense average temperatures in large spaces. See Fig. 2.
- To maintain control accuracy, the number of sensors wired parallel-series must be $n^2$ (examples: 4, 9, 16).

**Fig. 2. Parallel-series wiring of sensors.**

Sensor Mounting

**IMPORTANT**

The T7079 is an operation control, not a limit or safety control. If used in applications requiring safety or limit controls, use a separate safety or limit control device in conjunction with the T7079.

Mount the sensor(s) in one of the following manners:

- Hot/cold water sensing: Strap sensor to a pipe or insert in a well (see Fig. 3).
- Space temperature sensing: Mount on a wall or panel (see Fig. 4).
- Duct air sensing: Tape to a standard cap or bulb holder.

**Fig. 3. Sensor inserted in an immersion well.**

Location and Mounting

Mount the controller on a convenient interior location using the three mounting holes provided on the back of the enclosure (mounting screws are not provided and must be obtained separately). Use controller dimensions in Fig. 1 as a guide.
**CAUTION**

Electrical Shock or Equipment Damage Hazard. Can shock individuals or short equipment circuitry. Disconnect power supply before installation.

Refer to Fig. 5 for locating the appropriate power input, remote sensor input and stage output terminals. To access the terminals, remove the four cover screws and lift off the cover.

Refer to Fig. 6 and 7 for typical wiring.

**IMPORTANT**

Erratic temperature readings from the sensor can be caused by poor wiring practices that must be avoided to ensure proper operation:

1. Do not route the temperature sensor wiring with building power wiring.
2. Do not locate the temperature sensor wiring next to control contactors.
3. Do not locate the temperature sensor wiring near electrical motors.
4. Do not locate the temperature sensor wiring near welding equipment.
5. Make sure good mechanical connections are made to both the sensor and the control.
6. Use 90°C copper wire.
OPERATION

Control Algorithm

On/Off Control
When used in heating mode, the relay is:
— Energized at setpoint minus differential on temperature fall.
— De-energized at setpoint on temperature rise.

When used in cooling mode, the relay is:
— Energized at setpoint plus differential on temperature rise.
— De-energized at setpoint on temperature fall.

NOTE: Each stage LED lights when its stage is energized.
The power LED lights when the controller is connected to 120/230 or 24 Vac.

Differential (Stage and Interstage) Adjustment
The stage and interstage differential values are adjusted using the internal potentiometers (see Fig. 8). Values for setting are marked on the inside cover:
— Minimum stage differential (DIFF1 or DIFF2): 1°F.
— Interstage differential: 0°F to 35°F.

NOTES:
— Actual minimum differential is typically between 1°F and 4°F. It is influenced by device tolerances and the rate of temperature change.
— The setpoint knob setting is the stage 1 setpoint.
— The stage 2 setpoint is created using the stage 1 setpoint and the interstage differential:
  — When stage 2 is used for heating, the stage 2 setpoint is the stage 1 setpoint minus the interstage differential.
  — When stage 2 is used for cooling, the stage 2 setpoint is the stage 1 setpoint plus the interstage differential.

Fig. 7. Typical line-voltage (120 Vac) wiring application.

Fig. 8. Adjustments (potentiometers and switches).

TWO-STAGE HEAT
1. Set ST1 and ST2 switches to HEAT.
2. Set interstage (INTER) and differential (DIFF1, DIFF2) to desired settings.
3. Position the setpoint knob at the setting for stage 1.

TWO-STAGE COOL
1. Set ST1 and ST2 switches to COOL.
2. Set interstage (INTER) and differential (DIFF1, DIFF2) to desired settings.
3. Position the setpoint knob at the setting for stage 1.

ONE-STAGE HEAT/ONE-STAGE COOL
1. Set ST1 switch to HEAT and ST2 switch to COOL.
2. Set interstage (INTER) and differential (DIFF1, DIFF2) to desired settings.
3. Position the setpoint knob at the setting for stage 1.

NOTE: See Fig. 9 for an example setup.

Fig. 9. Example one-stage heat/one-stage cool setup.

NOTE: Keep in mind that, based on the terminal board labels, the stage 1 relay is J4; the stage 2 relay is J5.
CHECKOUT

⚠️ CAUTION
Compressor Damage Possible. Rapid cycling can damage compressor and overload electrical circuits. When controlling a compressor, allow at least 5 minutes between cycles to equalize internal pressure.

NOTES:
— Checkout will depend on the type of hookup and controlled equipment.
— Keep in mind that, based on the terminal board labels, the stage 1 relay is J4; the stage 2 relay is J5.

With the controller installed and wired, use the following procedure:
1. Verify all settings.
2. Apply power.
3. Check for proper equipment response.
   a. Cooling applications: turn the setpoint knob counterclockwise until the stage LED lights.
   b. Heating applications: turn the setpoint knob clockwise until the stage LED lights.

NOTE: The stage LED indicates a call for cool/heat. When it lights, the equipment should respond.