ON/OFF HUMIDIFIER CONTROL (ROOM OR DUCT SENSOR) WITH OUTDOOR TEMPERATURE RESET

OVERVIEW

For wall applications use:
• **TCY-BH-T-U** wall mount on/off controller with humidity sensor.

For duct applications use:
• **TDC-BH-T-U** duct mount on/off controller with humidity sensor.

For optional outdoor temperature reset in wall or duct applications add:
• **SOA-Tn10** outdoor temperature sensor.

WALL CONTROLLER INSTALLATION (TCY-BH-T-U)

Location:
1. The wall controller should not be installed on an outside wall away from any heat source and direct sunlight.
2. The wall surface should be flat and clean.
3. Any draft originating from the wall interior should be prevented from interacting with the humidity sensor. A vapor barrier should be installed.
4. Use a sealed, single-gang electrical mounting box (recessed in wall) to mount the controller.

Installation:
1. Pull cables 6” (15cm) out of the wall.
2. To remove the front face with the digital display, loosen the retaining screw at the bottom of the case. The front face will un hinge from the top retaining clips.
3. Unclip the back power case from the metal bracket by gently squeezing the sides of the case.
4. Connect the control wires to the terminals according to the wiring diagram(s). Table 1 outlines the terminal layout of the controller.
5. Re-clip the back case to the metal bracket, pull the connection cable through the central hole in the bracket and insert the back base into the mounting box. Make sure the retaining screw is pointing towards the ground.
6. Secure the metal bracket to the mounting box using 2 screws. Make sure the screw heads do not stand out more than 1/5” (5mm) from the mounting surface.
7. Connect the plug on the back of the front face.
8. Mount the front face onto the metal bracket. Ensure the top clips engage the grooves on the top of the metal bracket and tighten the retaining screw to secure the face.

DUCT CONTROLLER INSTALLATION (TDC-BH-T-U)

Location:

1. The duct controller should be installed directly on the duct in an area where the air is well mixed with uniform flow.
2. The supply air duct controller should be mounted downstream of the steam distributor at a distance 1.5 times the absorption distance. (typically 10-12 feet or 3-3.7 m)
3. If a return air duct controller is used it should be mounted close to the air inlet but downstream from a return fan if one is present.

Installation:

1. Open the housing by removing the screw securing the face of the housing.
2. Drill a 1/2” (13mm) hole in the duct and insert the probe into the air stream.
3. Secure the duct humidistat to the duct using 4 sheet-metal screws.
4. Close the cover and secure using the screw removed in step 2.
WALL CONTROLLER LCD DISPLAY (TCY-BH-T)

Legend
1. Display of current humidity value.
2. Snowflake indicates that outdoor temperature setback for winter compensation is in effect.
3. Setpoint display.
4. Buttons for operating the controller:
   - POWER button: Toggles the controller on or off.
   - UP/DOWN buttons: Change setpoint, calibration value.
   - OPTION button: Used for accessing the sensor calibration routine.

DUCT CONTROLLER LCD DISPLAY (TDC-BH-T)

Legend
1. Display of current humidity value.
2. Display of setpoint
3. Snowflake displayed if outdoor temperature setback active.
4. Adjusts setpoint and calibration (up)
5. Power ON/OFF
OUTDOOR TEMPERATURE RESET FUNCTION

Use SOA-Tn10 outdoor temperature sensor

Both controllers are equipped with an integrated reset function that will lower the setpoint during cold weather operation. This will prevent condensation on windows and building structures. Figure 2 illustrates how the setpoint reset feature operates. When the outdoor temperature setback feature is in effect, the controller will normally display the calculated setpoint limit based on the outdoor air temperature. A snowflake will also be displayed to indicate cold weather operation. When any key on the controller is pressed the LCD screen will display the customer specified setpoint for a short duration. Wire the outdoor temperature sensor to terminals 8 and 1. To disable this function add a jumper between terminals 8 and 1. Outdoor temperature reset is active between -22°F and 32°F. The minimum humidity setpoint is 10% and the maximum is 90%. At -22°F the humidity setpoint will be 10%.

SENSOR CALIBRATION

The humidity sensor is factory calibrated, however, it can be field recalibrated. The calibration routine can be accessed by pressing and holding down the option button for more than three seconds. A new screen will appear with the calibration adjustments. Press the up or down buttons until the text CALH appears on the LCD screen. Press the Option button. The screen will display the current calibration trim. The calibration trim can be adjusted by pressing the up or down buttons to the desired level and then pressing the option button to confirm the settings. Press the Power button to return to the normal display.

POWER FAILURE

Upon power-interruption, all parameters and setpoints are memorized in non-volatile memory and therefore do not have to be re-entered again.
DIMENSIONS

TCY-BH-T-U wall mount controller

TDC-BH-T-U duct mount controller
## SPECIFICATIONS TCY-BH-T-U, TDC-BH-T-U

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<th>Section</th>
<th>Details</th>
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<tr>
<td><strong>Power Supply</strong></td>
<td><strong>Operating Voltage</strong> 24 V AC/DC ± 10 %, 50...60 Hz</td>
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<td><strong>Power Consumption</strong> Max. 1.5 VA</td>
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<td><strong>Electrical Connection</strong> Terminal Connectors, wire 0.34...2.5 mm² (AWG 24...12)</td>
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<tr>
<td>Deluxe type only:</td>
<td><strong>Power backup for real time clock</strong> Min 48h if charged for 24h</td>
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<tr>
<td><strong>Signal Inputs</strong></td>
<td><strong>Humidity Input:</strong> Element: Polymer-Based Capacity Sensor&lt;br&gt;0...100 % r.H.&lt;br&gt;10%...90% r.H. ± 5.0 %&lt;br&gt;0...10% and 90...100% ± 7.0 %&lt;br&gt;±1% r.H.</td>
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<td><strong>Temperature Input:</strong> External NTC (Sxx-Tn10 sensor):&lt;br&gt;-40...70 °C (-40...158 °F)&lt;br&gt;-40...0 °C (-40...32 °F): 0.5 K&lt;br&gt;0...50 °C (32...122 °F): 0.2 K&lt;br&gt;50...70 °C (122...158 °F): 0.5 K</td>
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<td><strong>Signal Outputs</strong></td>
<td><strong>Digital Switching Outputs</strong>&lt;br&gt;Switching type: Relays&lt;br&gt;DO1...DO2 Relays&lt;br&gt;AC Switching power 2(1.2) A, 24VAC</td>
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<td><strong>Environment</strong></td>
<td><strong>Operation</strong>: To IEC 721-3-3&lt;br&gt;Clamatic Conditions: class 3 K5&lt;br&gt;Temperature: 0°C...50°C (32°F...122°F)&lt;br&gt;Humidity: &lt;95% R.H. non-condensing</td>
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<td><strong>Transport &amp; Storage</strong>: To IEC 721-3-2 and IEC 721-3-1&lt;br&gt;Climatic Conditions: class 3 K3 and class 1 K3&lt;br&gt;Temperature: -25°C...70°C (-13°F...158°F)&lt;br&gt;Humidity: &lt;95% R.H. non-condensing&lt;br&gt;Mechanical Conditions: class 2M2</td>
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<td><strong>Standards</strong></td>
<td><strong>EMC Standard 89/336/EEC</strong>&lt;br&gt;EMEI Standard 73/23/EEC&lt;br&gt;EN 61 000-6-1/ EN 61 000-6-3&lt;br&gt;Product standards Automatic electrical controls for household and similar use&lt;br&gt;Special requirement on humidity dependent controls EN 60 730 –1&lt;br&gt;EN 60 730 – 2 - 9&lt;br&gt;<strong>Degree of Protection</strong> IP30 to EN 60 529&lt;br&gt;<strong>Safety Class</strong> III (IEC 60536)</td>
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<td><strong>Housing</strong></td>
<td><strong>TCY-BH-T-U wall controller</strong>&lt;br&gt;Cover, back part: Fire proof ABS plastic (UL94 class V-0)&lt;br&gt;Mouting plate Galvanized Steel&lt;br&gt;<strong>TDC-BH-T-U duct controller</strong>&lt;br&gt;Cover, back part: Polycarbonate PC (UL94 class V-0)&lt;br&gt;Filter material PTFE coated 1μm pores</td>
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</table>
| **General**                  | **Dimensions (H x W x D):**<br>TCY-BH-T-U wall controller<br>Front part: 112 x 73 x 15 mm (4.4” x 2.9” x 0.6”)<br>Power case: ø 58 x 32 mm (ø 2.3” x 1.3”)<br>TDC-BH-T-U duct controller<br>Transmitter case: 91 x 68 x 47 mm (3.7” x 2.7” x 1.9”)<br>Probe length: 156 mm (6.1”)<br>**Weight (including package)** 220g TDC-BH-T-U, 270g TCY-BH-T-U,
ADJUSTING CONTROL VALUES

TCY-BH-T-U and TDC-BH-T-U have been optimized for humidifier control applications, however, default control parameters can be changed as follow: Warning! Only experts should change these settings! The parameters are grouped according to the following control modules.

1. The parameters can be changed as follows:
2. Press UP and DOWN button simultaneously for three seconds. The display will indicate the firmware version in the upper large digits and the revision in the lower small digits. Pressing any key will show: CODE.
3. Select a password using UP or DOWN buttons. Select 0241 in order to get access to the engineering parameters. Press OPTION after selecting the correct password.
4. Once logged in the parameter group can be selected with the UP and DOWN key. Enter the group with the OPTION key.
5. Once the group is selected, the parameter is displayed immediately
6. Select the parameters with the UP/DOWN keys. Change a parameter by pressing the OPTION key. The MIN and MAX symbols show up and indicate that the parameter may be modified now. Use UP and DOWN key to adjust the value.
7. After you are done, press OPTION or POWER in order to return to the parameter selection level.
8. Press the POWER key again so as to leave the menu and return to the group selection. Press POWER while in the group selection to return to normal operation.
9. The unit will return to normal operation if no key is pressed for more than 5 minutes.

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<td>Parameter</td>
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<td>CP 00</td>
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<tr>
<td>CP 01</td>
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<td>CP 02</td>
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<td>CP 03</td>
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<table>
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<tr>
<th>Temperature setback configuration</th>
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<tbody>
<tr>
<td>Parameter</td>
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<tr>
<td>CP 04</td>
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<td>CP 05</td>
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<td>CP 06</td>
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<td>CP 07</td>
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Humidity Source LLC, 90 Dayton Ave. Suite 58 Passaic, NJ 07055
TYPICAL WIRING WALL APPLICATIONS

- Dry contact
- Terminals 5/6 available for optional fan control

**Diagram**

- Dry contact enable
- Terminals 5/6 for optional fan control
- Transformer
- 24VAC
- Line Volts
- 1 RT1
- 2 RT2
- SOA-Tn10
  - Optional outdoor temperature sensor

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TYPICAL WIRING WALL APPLICATIONS

- 24v switching
- Terminals 5/6 available for optional fan control

![Diagram of ON/OFF HUMIDIFIER control wiring]

- 24VAC Transformer
- Line Volts
- COM
- HOT
- +HOT (24V)
- COM
- RT1
- RT2
- SOA-Tn10
  Optional outdoor temperature sensor
TYPICAL WIRING DUCT APPLICATIONS

- Dry contact
- Terminals 5/6 available for optional fan control