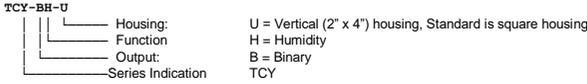


**TCY-BH Intelligent indoor humidistat for wall mounting**

**General description**

The TCY-BH is a stand-alone electronic binary humidity stat. The TCY-BH features one internal humidity sensor, one external NTC temperature sensor input and two binary outputs (relays). A detailed parameterization is possible with the use of a simple configuration routine. The TCY-BH can be configured using the standard operation terminal. No special tools or software is required. Ordering, name convention



| Item name          | Item code  | Variant                                 | Features   |
|--------------------|------------|---|--|
| TCY-BH-W50         | 40-10 0050 |   | Binary controller with:<br>1 Internal humidity input<br>1 external temperature input (For set point shift)<br>1 DO (Relay) for humidifier or dehumidifier<br>1 DO (Relay) for fan (optional) |
| <b>Accessories</b> |            |   |  |
| SOD-Tn10-1         | 40-20 0108 | Outdoor sensor                          |  |
| AES3-HT-A5         | 40-50 0104 | Replacement humidity sensor 5% accuracy |  |

**Selection of actuators and sensors**

External temperature sensors: Use only our approved NTC sensors to achieve maximum accuracy. Recommended is SDB-Tn10-15 as Duct sensor and SOA-Tn10 as outdoor sensor. Binary auxiliary devices: E.g. humidifiers, de-humidifiers and fans. Do not directly connect devices that exceed 2(1.2) A. Observe startup current on inductive loads!

**Mounting location**

- Install the controller on an easy accessible interior wall, approx. 1.5 m above the floor in an area of average temperature.
- Avoid direct sunlight or other heat sources, e.g. the area above radiators and heat emitting equipment.
- Avoid locations behind doors, outside walls and below or above air discharge grills and diffusers.
- Location of mounting is less critical if external temperature sensors are used.

**Installation**

1. Connect the wires to be connected to the terminals of the power case according to wiring diagram
2. Install the mounting plate to the flush mounting box. Make sure that the nipple with the front holding screw is facing to the ground. Make sure the mounting screw heads do not stand out more than 5 mm (0.2") off the surface of the mounting plate.
3. Ensure that the jumpers are set correctly.
4. Slide the two latches located on the top of the front part into the hooks at the upper side of the mounting plate.
5. Carefully lower the front part until the interconnector reaches the mounting-plate. Continue pressing in a gentle way until the front part is fully connected. While inserting the connectors, a slight resistance can be felt. This is normal. Do not use excessive force!
6. With a Philips-type screw driver of size #2, carefully tighten the front holding screw to secure the front part to the mounting plate. This screw is located on the front lower side of the unit. There is no need to tighten the screw too much.

**Technical specification**

|                   |   |   |
|-------------------|---|---|
| Power Supply      | Operating Voltage   | 24 V AC/DC $\pm 10\%$ , 50...60 Hz  |
|                   | Power Consumption   | Max. 2 VA   |
|                   | Electrical Connection   | Terminal Connectors, wire 0.34...2.5 mm <sup>2</sup> (AWG 24...12)  |
| Signal Inputs     | Deluxe type only: Power backup for real time clock  | Min 48h if charged for 24h  |
|                   | Humidity Input: Range   | Element: Polymer-Based Capacity Sensor<br>0...100% r.H.   |
|                   | Accuracy  | 10%...90% r.H. $\pm 5.0\%$<br>0...10% and 90...100% $\pm 7.0\%$<br>$\pm 1\%$ r.H.   |
|                   | Hysteresis  |   |
| Temperature Input | Range   | External NTC (Sxx-Tn10 sensor):<br>-40...70°C (-40...158°F)   |
|                   | Accuracy  | -40...0°C (-40...32°F): 0.5 K<br>0...50°C (32...122°F): 0.2 K<br>50...70°C (122...158°F): 0.5 K                                     |
| Signal Outputs    | Digital Switching Outputs<br>Switching type<br>Switching power  | DO1...DO2<br>Relays, Normally open<br>2(1.2) A  |
| Environment       | Operation<br>Climatic Conditions<br>Temperature<br>Humidity   | To IEC 721-3-3<br>class 3 K5<br>0...50 °C (32...122 °F)<br><95 % r.H. non-condensing  |
|                   | Transport & Storage<br>Climatic Conditions<br>Temperature<br>Humidity<br>Mechanical Conditions  | To IEC 721-3-2 and IEC 721-3-1<br>class 3 K3 and class 1 K3<br>-25...70 °C (-13...158 °F)<br><95 % r.H. non-condensing<br>class 2M2 |
| Standards         | conform according to EMC Standard<br>EMEI Standard 73/23/EEC  | EN 61 000-6-1/EN 61 000-6-3   |
|                   | Product standards<br>Automatic electrical controls for household and similar use<br>Special requirement on temperature dependent controls | EN 60 730 -1<br>EN 60 730 - 2 - 9   |
|                   | Degree of Protection<br>Safety Class  | IP30 to EN 60 529<br>III (IEC 60536)  |
| Housing           | Materials<br>Cover, back part<br>Mounting Plate   | Fire proof ABS plastic (UL94 class V-0)<br>Galvanized Steel   |
| General           | Dimensions (H x W x D)  | Front part: 88 x 88 x 21 mm (3.5" x 3.5" x 0.8")<br>Power case: ø 58 x 32 mm (ø 2.3" x 1.3")  |
|                   | Weight (including package)  | 260 g (9.2 oz)  |

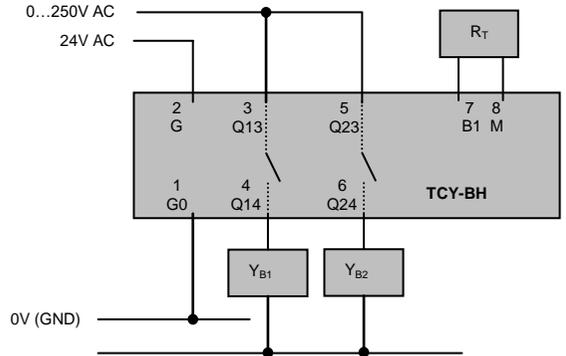
**Power failure**

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

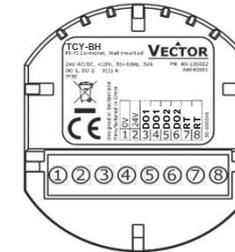
**Error messages**

- Err1: Humidity sensor faulty. The humidity sensor is damaged.  
Err2: External input for temperature setback missing or damaged.

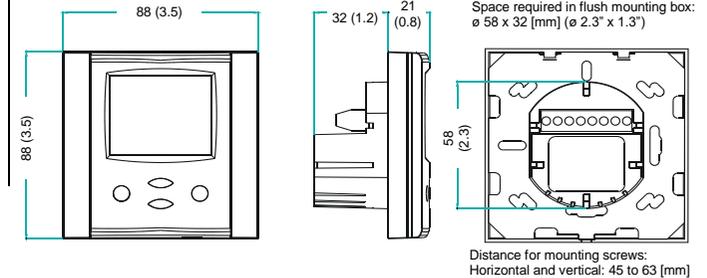
**Wiring diagram**



**Terminal connections**



**Dimensions [mm] (in)**



**Description:**

1. Connection for power-supply (24 V AC/DC,  $\pm 10\%$ ). In case of DC, connect the negative power-terminal. Common connection for analog in- and outputs.
2. Connection for power-supply (24 V AC/DC,  $\pm 10\%$ ). In case of DC, connect the positive power-terminal
3. Normally open contact "DO 1" Humidify or Fan
4. Normally open contact "DO 2" Dehumidify or Fan
5. Normally open contact "DO 2" Dehumidify or Fan
6. Normally open contact "DO 2" Dehumidify or Fan
7. Thermistor input "RT" (Thermistor Sxx-Tn10)
8. Thermistor input "RT" (Thermistor Sxx-Tn10)

**Observe maximum switching power of 2(1.2) A per output!**

### Configuration parameters

The TCY-BH can be adapted to wide variety of applications. The adaptation is done with parameters. The parameters can be changed on the unit without the need of additional equipment.

#### Identifying the firmware version

The parameters and functionality of controller depend on its firmware revision. It is therefore important to use a matching product version and parameter set. The firmware version is marked on the package box of your product. In order to identify the firmware version of an installed controller, press UP and DOWN keys simultaneously for three seconds: The display will indicate the firmware version in the upper large digits and the revision in the lower small digits. Press the LEFT key to return to normal operation.

### Setting of user parameters

The TCY-BH can be adapted to fit perfectly into your application. The control operation is defined by parameters. The parameters are set during operation by using the control buttons. The parameters may only be accessed by entering a code. There are two levels of parameters: User operation parameters for access control settings, and Expert parameters for control functions and unit setup. The codes for user levels and expert levels are different. Only control experts should be given the control parameter code.

The parameters can be changed as follows:

1. Press UP and DOWN button simultaneously for three seconds. The display shows the software version in the large digits and the product code in the small digits.
2. Pressing the OPTION button will indicate CODE on the small digits and 000 on the large digits.
3. The code for accessing the user parameters is 009
4. Select this using UP or DOWN buttons.
5. Press OPTION button after selecting the correct code.
6. Once logged in, the parameter is displayed immediately.
7. Select the parameters with the UP/DOWN buttons. Change a parameter by pressing the OPTION button. Three triangles will show up on the lower right and indicate that the parameter may be modified now. Use UP or DOWN buttons to adjust the value.
8. After you are done, press OPTION or POWER in order to return to the parameter selection level.

Press the POWER button again so as to leave the menu. The unit will return to normal operation if no button is pressed for more than 5 minutes.

### User parameters (password 09)

| Parameter            | Description   | Range   | Default  |
|----------------------|---|---------|--|
| UP 00                | Enable change of operation modes  | ON, OFF | ON (Enabled)   |
| UP 01                | Enable change of set points   | ON, OFF | ON (Enabled)   |
| UP 02                | Enable access to Time programs  | ON, OFF | ON (Enabled)   |
| UP 03                | State after power failure:<br>0 = Switched OFF, 1 = Switched ON, 2 = state before power failure   | 0, 1, 2 | 2  |
| UP 04                | Enable Economy functionality  | ON, OFF | OFF (Disabled)                                       |
| UP 05                | Celsius or Fahrenheit, Select ON for Fahrenheit, OFF for Celsius  | ON, OFF | OFF (Celsius)  |
| UP 06                | Select contents of small digits in standard mode:<br>00 = OFF<br>01 = Set point<br>02 = Humidity Sensor<br>03 = External Temperature Sensor<br>04 = Clock   | 0...5   | 04 Deluxe: show clock<br>01 Standard: show set point |
| UP 07                | New: Resolution 0.5% or 1% RH<br>OFF = Display resolution is 0.5% RH<br>ON = Display resolution is 1% RH  | ON, OFF | OFF (0.5% RH)  |
| UP 08<br>Deluxe only | Clock display type:<br>OFF = Show 24hour clock<br>ON = Show 12hour clock (AM, PM)   | ON, OFF | OFF (24h)  |
| UP 09<br>Deluxe only | Reset timer for override mode: Only available for deluxe version<br>0 = Reset of override mode is not active.<br>1...255 = delay in minutes to return to scheduled operation if the device is activated while scheduled to be in OFF or ECO mode. | 0...255 | 60 (Min)   |

### Control parameters (access code: 241)

Warning! Only experts should change these settings! See user parameters for login procedure.

| Parameter                                | Description  | Range                     | Default       |
|--|--|---------------------------|---------------|
| CP 00                                    | Minimum set point limit in humidification mode   | 0...100%                  | 10%           |
| CP 01                                    | Maximum set point limit in humidification mode   | 0...100%                  | 90%           |
| CP 02                                    | Minimum set point limit in de-humidification mode  | 0...100%                  | 10%           |
| CP 03                                    | Maximum set point limit in de-humidification mode  | 0...100%                  | 90%           |
| <b>Controls configuration</b>            |  |                           |               |
| CP 04                                    | Economy humidity shift   | 0...100%                  | 10%           |
| CP 05                                    | Dead zone between humidifying & de-humidifying set point X <sub>oz</sub>   | 0...100%                  | 0             |
| CP 06                                    | Delay on humidity – de-humidity change over  | 0...255 min               | 0             |
| CP 07                                    | Switching Hysteresis   | 0...100%                  | 0             |
| CP 08                                    | Delay OFF (Minimum running time) [MM:SS]   | 00:00 to 98:30            | 0             |
| CP 09                                    | Delay ON (Minimum stopping time) [MM:SS]   | 00:00 to 98:30            | 0             |
| CP 10                                    | Configuration of control mode<br>0 = Both Humidification and de-humidification<br>1 = Humidification only<br>2 = De-humidification only  | 0 - 2                     | 1             |
| <b>Output configuration</b>              |  |                           |               |
| CP 11                                    | Enable fan (only if CP 10 ≠ 0)   | ON, OFF                   | ON            |
| CP 12                                    | Start delay for fan [MM:SS]<br>(Time the fan runs before control output starts)  | 00:00 – 98:30             | 00:10         |
| CP 13                                    | Stop delay for fan [MM:SS]<br>(Time the fan keeps running after control output stops)  | 00:00 – 98:30             | 01:30         |
| <b>Temperature setback configuration</b> |  |                           |               |
| CP 14                                    | Enable temperature setback<br>OFF = Temperature setback is disabled<br>ON = Temperature setback is enabled                               | ON, OFF                   | OFF           |
| CP 15                                    | Set point limit at full setback  | 0...100%                  | 20%           |
| CP 16                                    | Lower temperature limit:<br>Outside temperature with maximum setback<br>The set point will be equal to the minimum set point limit       | -40...60°C<br>-40...160°F | -30°C (-22°F) |
| CP 17                                    | Upper temperature limit:<br>Outside temperature at begin of setback.   | -40...60°C<br>40...160°F  | 0°C (32°F)    |
| <b>Input signal configuration</b>        |  |                           |               |
| CP 18                                    | Number of seconds taken into account to calculate the averaging input signal.<br>Low value = fast response<br>High value = slow response | 0...100                   | 10            |