Product description for
KC-2, Humidity Controller

KC-2

Replaces: MTD0167

Humidity controller

Technical data	
Display	2 pcs 7-segment 15 mm digit LED and 2 pcs Ø3 mm LED diodes Diode Step 1 (red) Diode Step 2 (red)
Programming	4 pcs tactile switches
Humidity sensor	Honeywell HIH-4000-004
Sensor Connection	4-wire, 4/4 modular terminal RJ9
Measuring range	0..99 % RH. 0..2 % and 100 % is indicated as error [- -] with display flashing.
Measurement error	± 2 % RH
Number of switching limits	2 pcs programmable 3..99 %
Hysteresis	2 pcs. One for each step. 1..50 %
Alarm	1 pc high level 3..99 %, always higher than step 1
Output relays	2 pcs Relay 1 Step 1 (designed for 230 VAC, not for low voltage supply switching) Relay 2 Step 2 (designed for 230 VAC or low voltage switching) Max load: 230VAC 16A cosφ = 1 Isolation width on the PCB (printed circuit board) allows some mixture of both 230 VAC and low voltage switching when connecting to relay outputs. 230 VAC for step 1 and 230 VAC or 24 VAC for step 2 (alarm relay).
Manual reset	Not available, automatic reset.
Supply voltage	200 .. 240 VAC
Power consumption	7,5 VA
Ambient temp.	-20..55°C, non condensing
Degree of protection	IP 44, humidity sensor box IP20

Design

Humidistat for controlling dehumidifiers or humidifiers with three programmable limits. Current relative humidity (RH) is measured and displayed with two digits. Connected step or steps are indicated with two red light emitting diodes (LED) on the front cover. Alarm is indicated by display flashing. Malfunctioning humidity sensor is indicated with two dashes **[- -]** and display flashing.

KC-2 has two voltage-free relay outputs.

Limit values

The programmable limits are used to control dehumidifiers or humidifiers. If the relative humidity exceeds a programmable limit [3...99% RH], an output is activated with relay changeover and/or alarm is activated.

- ***Limit value 1 (P1). Step 1***
  Dehumidifying: Connection is made at set limit value. LED step 1 is lit and relay 2 is activated. Disconnection is made at the set value minus the value for the hysteresis, ***(P1 - P2 [% RH])****.*
  Humidifying: Connection is made at set limit value plus the value for the hysteresis, ***(P1 + P2 [% RH])****.*
- ***Limit value 2 (P3). Step 2***
  Dehumidifying: Connection is made at set limit value. LED step 1 is lit and relay 2 is activated. Disconnection is made at the set value minus the value for the hysteresis, ***(P3 - P4 [% RH])****.*
  Humidifying: Connection is made at set limit value plus the value for the hysteresis, ***(P3 + P4 [% RH])****.*
- ***Limit value 3 (P5). Alarm***
  Alarm is activated, (indicated only by the display flashing), when the humidity exceeds the programmable limit in parameter P5. This parameter includes a hysteresis not programmable of approx 2 % RH. The Alarm has automatic reset when current RH-value is below the limit value minus the hysteresis.
  (P5 - 2 [% RH])

Programming

Keep the **PGM**-key pressed for approx. 3 seconds, the display switches from showing the actual humidity value (%RH) to the parameter list´s first parameter **P0**. The Parameter list contain six parameters, where the first parameter **P0,** showing the internal programme version, is not programmable.

By pressing ▼▲ each parameter number **P0 ... P6** is shown.

By pressing **PGM** for a selected parameter number, the programmed parameter value is shown.

Actual programming of a parameter is started by pressing **PGM** once. The left digit starts to flash indicating that the digit value can be changed with ▼▲. Final confirmation of set value is done by pressing **PGM** again. When confirmed the right digit will start to flash and the same procedure is done to change this digit. When final confirmation is done both digits and the programmed new value is flashed three times to confirm a successful programming of the parameter.

Programming can be cancelled before the last confirmation is done by pressing **ESC**.

After completed programming of a parameter return to the parameter list by pressing **ESC**.

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Parameters

Par. no.	Parameter	Range	Default
P0	Programme version	0,0 … 9,9	X.XX
P1	Connecting Step 1	3..99% RH	50
P2	Hysteresis. (disconnecting Step 1)	1..50% RH	5
P3	Connecting Step 2	3..99% RH	75
P4	Hysteresis. (disconnecting Step 2)	1..50% RH	10
P5	Alarm limit (high level)	3..99% RH	70
P6	Relay function	0..2	0

Manual operation

Keep both **PG**M and **ESC** pressed for at least a minimum of 3 seconds to change to manual operation mode. Possible manual operation is:

- *Both Step 1 and Step 2 turned off.*
- *Step 1 activated.*
- *Step 1 + Step 2 activated.*

The manual operation does not take any consideration to set hysteresis.

Changing from Manual mode to Automatic operation

Return to automatic operation mode can be made in two separate ways:

1. Press **ESC** for at least 0,5 sec.
2. If no key has been pressed for approx 30 minutes, the controller changes to automatic operation mode.

Relay function in parameter P6

This programmable parameter allow different relay output settings when the set limits are exceeded.

Programmed value in P6	Step 1	Step 2
0	Dehumidifying	Dehumidifying
1	Humidifying	Dehumidifying
2	Humidifying	Humidifying

General design

The humidistat consist of a main unit including display, power supply, relays and I/O-electronics. The humidity sensor is enclosed in a separate box with a 0-10 V output signal connected to the main unit using a 4-wire modular cable.

Externally installed Display module

The front cover of the main unit is detachable. The display is mounted to the front cover and the connection to the main PCB is done with a cable running on the outside of the enclosure connected with a 4/4 RJ9 modular connection. It is possible to relocate the display on a remote place if needed, max 50 metres, including length of cable to the Humidity sensor. The display is connected by a 4-wire modular cable to the main unit.

- *DGND, +18V, Relay control 0..5V, Humidity signal 0..10V*

Main unit with power supply

This unit consist of the power supply module with relay outputs and two 4/4 modular jacks for connecting the sensor and the display module.

- *One modular jack for the display module, 4/4 RJ9 jack with the following signals:*
  - *DGND, +18V, Relay control 0..5V, Humidity signal 0..10V*
- *One modular jack for the sensor module, 4/4 RJ9 jack with the following signals:*
  - *+18V, AGND, AGND, Humidity signal 0..10V*
- *Power supply to display and sensor module +18V*
- *Encoding of signal for relay ON/OFF reading, 0..5V*

The relay signal can combine the following functions for the relay output:

- *Level 0, No step activated*
- *Level 1, Step 1 activated*
- *Level 2, Step 1 + Step 2 activated*

Humidity sensor

This unit is connected with a 4-wire modular cable with 4/4 RJ9 modular plugs between the sensor box and the main unit:

- *+18V, AGND, AGND, Humidity signal 0..10V*

Protection against mis-connected modular cables to the main unit

To avoid damage to the main unit and problems with a faulty connection of the display and sensor module the design is developed to indicate the KC-2 in an unpowered state;

- *Display module gets no power and all LED´s are turned off.*
- *Relays are in an unpowered state.*

Disconnected cable between the display module and main unit;

- *Relays are in an unpowered state.*

Disconnected cable between the sensor module and main unit

- *Relays are in a powered state*
- *Display is flashing to indicate error.*

A correctly connected unit is indicated by;

- *The Display module is lit and indicates current humidity, LED´s for activated steps are lit.*
- *Relays switches as soon as the humidity level is above set limits.*

Connections for main supply voltage and relay outputs on the main unit are not protected against faulty wiring and therefore is incorrect wiring hazardous can cause personal injury, damage to the apparatus, fire or risc of short circuiting.

Disconnected supply voltage

If the main supply voltage is disconnected from the humidistat both relays changeover to an unpowered state (NO).

Get In Touch

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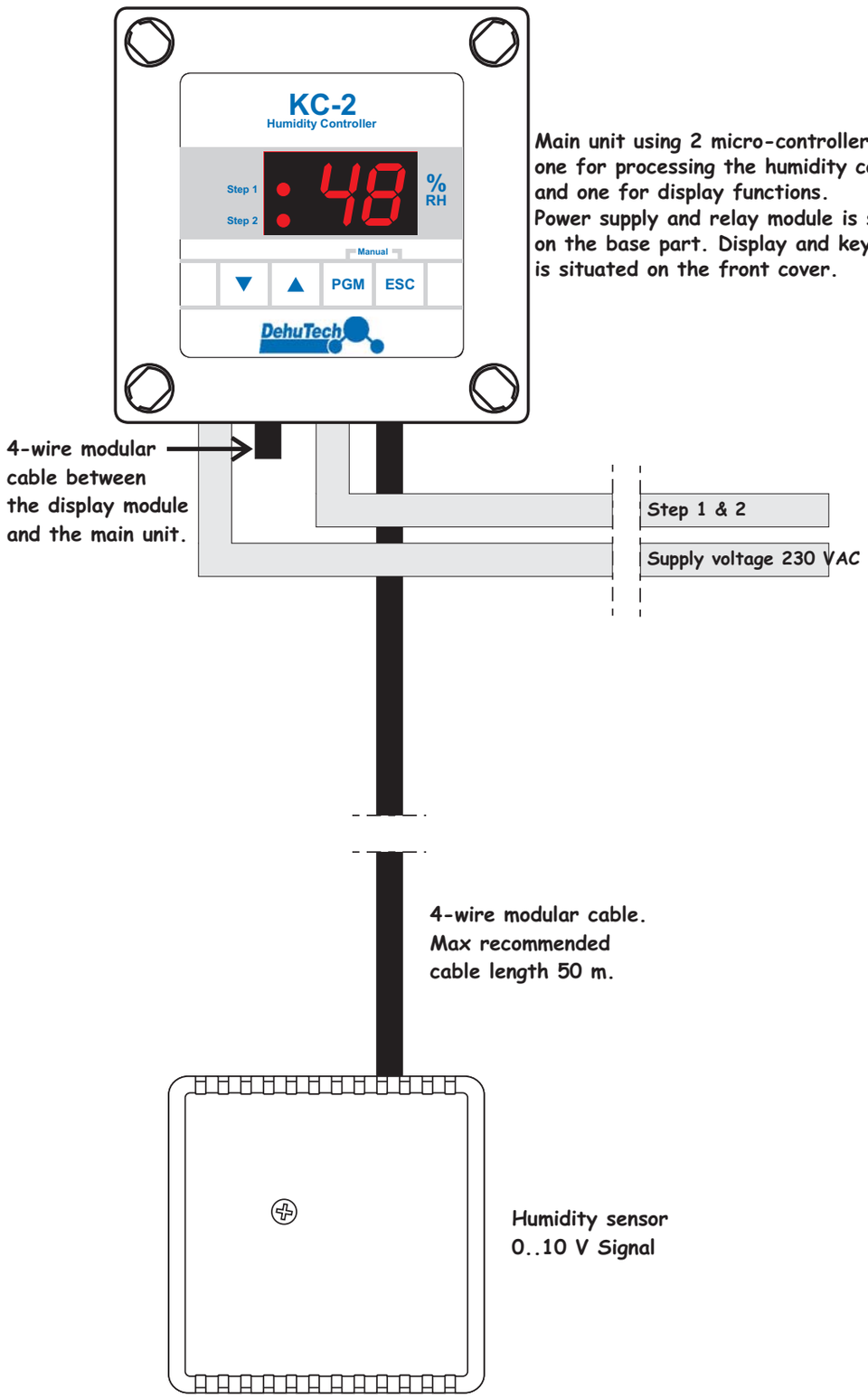
KC-2 display



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