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Eltako ELECTRONICS

RS485 bus actuator

Heating/cooling relay

FHK14

Only skilled electricians may install this electrical equipment otherwise there is the risk of fire or electric shock!

Temperature at mounting location:
-20°C up to +50°C.
Storage temperature: -25°C up to +70°C.
Relative humidity:
annual average value <75%.

valid for devices from production week 40/17 (see bottom side of housing)

Heating/cooling relay, 1+1 NO contacts potential free 4 A/250 V AC, with DX technology. Bidirectional.
Only 0.1 watt standby loss.

Modular device for DIN-EN 60715 TH35 rail mounting.
1 modul = 18 mm wide, 58 mm deep.

Connection to the Eltako-RS485 bus. Bus cross wiring and power supply with jumper.

Patented Eltako Duplex technology allows you to switch normally potential free contacts in zero passage switching when 230 V A/C voltage 50 Hz is switched. This drastically reduces wear. To achieve this, simply connect the N conductor to the terminal (N1) and L to 1 (L) and/or N to (N2) and L to 3 (L). This results in an additional standby consumption of only 0.1 watt.

When both relays of the FHK14 are switched on, 0.4 watts are required.

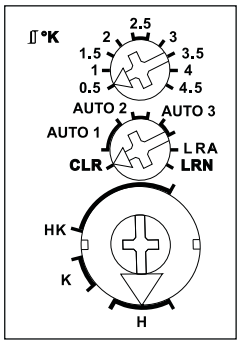
If supply voltage fails, the device is switched off in defined mode.

This heating/cooling relay assesses information about wireless temperature controllers or sensors. Possibly supplemented by window/door contacts, motion detectors, Hoppe window handles and wireless pushbuttons.

As an alternative to a wireless temperature controller, the temperature information on the set and actual values can be obtained from the GFVS software.

It is also possible to specify the set temperature via GFVS software and thus limiting the setting range of the wireless temperature controller.

Function rotary switches



Top rotary switch for adjustable hysteresis:

Left stop: lowest hysteresis 0.5°.

Middle position: hysteresis 2.5°.

Right stop: largest hysteresis 4.5°.

Inbetween, divisions in steps of 0.5°.

Middle rotary switch for regulation types:

AUTO 1: With PWM control at T = 4 minutes. (PWM = pulse width modulation). (suitable for valves with thermoelectric valve drive)

AUTO 2: With PWM control at T = 15 minutes. (suitable for valves with motor-driven valve drive)

AUTO 3: With 2-point control.

Bottom rotary switch for operating modes:

H: heating mode (Contact 1-2 and Contact 3-4);

K: cooling mode (Contact 1-2 and Contact 3-4);

HK: heating mode (Contact 3-4) and cooling mode (Contact 1-2)

Two-point control mode:
The hysteresis rotary switch sets the required difference between the switch-on and switch-off temperatures. When the 'actual temperature >= reference temperature', the device is switched off. When the 'actual temperature <= (reference temperature – hysteresis)', the device is switched on. The signs are the opposite in cooling mode.

PWM control mode:
The hysteresis rotary switch set the required temperature difference at which the device is switched on at 100%.
When the 'actual temperature >= reference temperature', the device is switched off.
When the 'actual temperature <= (reference temperature – hysteresis)', the device is switched on at 100%. If the 'actual temperature' lies between the 'reference temperature – hysteresis' and the 'reference temperature', the device is switched on and off with a PWM in steps of 10% depending on the temperature difference. The lower the temperature difference, the shorter the switch-on time. As a result of the settability of the 100% value, the PWM can be adapted to the heater size and inertia. The signs are the opposite in cooling mode.

In heating mode, the **frost protection function** is always enabled. As soon as the actual temperature drops below 8°C, the temperature is controlled in the selected operating mode to 8°C.

If one or several windows are open, the output remains off **provided the window/door contacts FTK or Hoppe handles** are taught-in. In heating mode, however, the frost protection remains enabled

As long as all taught-in **motion detectors FBH** detect no motion, the device is switched to setback mode. In heating mode, the reference temperature is set back by 2°; in cooling mode, it is raised by 2°. As soon as a motion detector signals movement again, the device is switched to normal mode.

When a **wireless pushbutton** is taught-in, the assignment of the 4 keys is assigned with the following fixed functions: Top right: Normal mode (can also be enabled by timer). Bottom right: Night setback mode by 4°; in cooling mode, raised by 4° (can also be enabled by timer). Top left: Setback mode by 2°, in cooling mode, raised by 2°. Bottom left: Off (in heating mode, frost protection enabled; in cooling mode permanent off). If the motion detector and wireless pushbutton are taught-in at the same time, the last telegram received is always the one that is valid. A motion detector therefore switches off a setback mode selected by wireless pushbutton when a movement is detected.

Teaching in the reference temperature of the temperature controller and temperature sensor: On the temperature controller FTR, it does not matter what the position of the hysteresis rotary switch is since the reference temperature is adjustable.

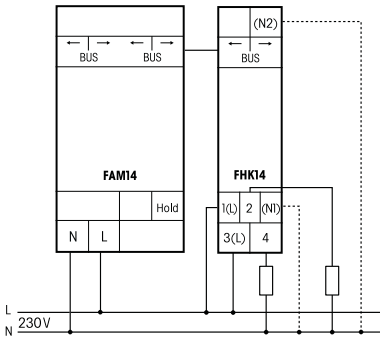
Temperature sensors FTF:
The position of the hysteresis rotary switch defines the reference temperature during the teach-in process. In middle position (2.5), the reference temperature is 21°C. It is adjustable in steps of 1° from 17°C for left stop (0.5) to 25°C for right stop (4.5). In operation, the rotary switch then determines hysteresis again.

Only one temperature sensor can be taught-in at one time. During teach-in, a sensor that is already taught-in is automatically erased.

Malfunction mode:
If no wireless telegram will be received from a temperature sensor for more than 1 hour, the LED lights up and it will be switched to fault mode: in heating mode it will be switched on for 1.2 minutes and switched off for 2.8 minutes at AUTO 1. At AUTO 2 and AUTO 3 the times are 4.5 minutes 'on' and 10.5 minutes 'off'.
The device is switched off in cooling mode. When a wireless telegram is again received, the LED goes out and the device switches back to normal mode.

The LED below the upper function rotary switch performs during the teach-in process according to the operating instructions. It shows control commands by short flickering during operation.

Typical connection



Teaching-in wireless sensors in wireless actuators

All sensors must be taught-in into the actuators so that they can detect and execute commands.

Teaching-in actuator FHK14

The teach-in memory is clear on delivery from the factory. To ensure that a device was not previously taught-in, **clear the complete memory:**
Turn the middle rotary switch to CLR. The LED flashes at a high rate. Within 10 seconds, turn the upper rotary switch three times to right stop (turn clockwise) and back again. The LED stops flashing and goes out after 2 seconds.
All taught-in sensors are cleared.

Clear individual taught-in sensors in the same way as in the teach-in procedure, except that you set the middle rotary switch to CLR instead of LRN, and operate the sensor. The LED previously flashing at a high rate goes out.

Teaching-in sensors

1. Set the top rotary switch to the required teach-in function:
   Set FTR, FUTH, 4 way wireless push-button, FBH, FB65B, FTK or Hoppe window handles to right stop (4.5).
   On FTF, FAFT and FIFT, the position of the rotary switch defines the reference temperature during the teach-in process. In middle position (2.5) the reference temperature is 21°C. It can be set in steps of 1° from 17°C at left stop (0.5) to 25°C at right stop (4.5).
2. Set the middle rotary switch to LRN. The LED flashes at a low rate.
3. Operate the sensor to be taught-in. The LED goes out.

To teach-in further sensors, turn the middle rotary switch briefly away from position LRN. Continue the procedure from pos 1.

After teach-in, set the rotary switches to the required function.

Issue device address for the FHK14:
Turn the rotary switch on the FAM14 to Pos. 1 and its lower LED lights up red. Turn the middle rotary switch on the FHK14 to LRN and the LED flashes at a low rate. After the address of the FAM14 is issued, its lower LED lights up green for 5 seconds and the LED of the FHK14 goes out.

Clear device configuration:
Set the middle rotary switch to CLR. The LED flashes at a high rate. Within the next 10 seconds, turn the upper rotary switch three times to left stop (turn anticlockwise) and away again. The LED stops flashing and goes out after 5 seconds. The factory settings are restored.

Clear device configuration and device address:
Set the middle rotary switch to CLR. The LED flashes at a high rate. Within the next 10 seconds, turn the upper rotary switch six times to left stop (turn anticlockwise) and away again. The LED stops flashing and goes out after 5 seconds. The factory settings are re-stored and the device address is cleared.

Configure FHK14:
The following points can be configured using the PC tool PCT14:

- Teach in buttons and wireless Hoppe window handles with single or double click
- actuator: NC or NO (NC ex works)
- feedback: operating or switching state (operating state ex works)
- dew point evaluation: inactive or active (inactive ex works)
- dew point per channel (15°C ex works)
- set temperature for FAFT, FIFT, FTF and FUTH (21°C ex works)
- Add or change sensors

Caution: Do not forget the 'Disconnect link to FAM' in the PC Tool. No wireless commands are executed while there is a link between the PC Tool PCT14 and the FAM14.

⚠ When an actuator is ready for teach-in (the LED flashes at a low rate), the very next incoming signal is taught-in. Therefore, make absolutely sure that you do not activate any other sensors during the teach-in phase.

Must be kept for later use!
We recommend the housing for operating instructions GBA14.

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