LCF

Electronic Fan Coil Thermostat (Flush mounting)

Datasheet

Subject to technical alteration
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Application

The fan coil room thermostat has been designed for individual control of temperature in commercial, industrial and residential buildings. It is tailored for two-pipe fan coil with two-wire electric valves. With its flush mounted modern design the device combines digital technology with a large LCD display and additional buttons, which enables the single room controller to be used intuitively.

Security Advice – Caution

The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

CAUTION! Risk of electric shock due to live components within the enclosure, especially devices with mains voltage supply (usually between 90..265 V).

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

Notes on Disposal

As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most of the products may contain valuable materials that should be recycled and not disposed of as domestic waste. Please note the relevant regulations for local disposal.

Remarks to Room Sensors

Location and Accuracy of Room Sensors

The room sensor should be mounted in a suitable location for measuring accurate room temperature. The accuracy of the temperature measurement also depends directly on the temperature dynamics of the wall. It is important, that the back plate is completely flush to the wall so that there is sufficient circulation of air through the vents in the cover, otherwise, deviations in temperature measurement will occur due to uncontrolled air circulation. The temperature sensor should not be covered by furniture or other objects. Mounting next to doors (due to draught) or windows (due to colder outside wall) should be avoided.

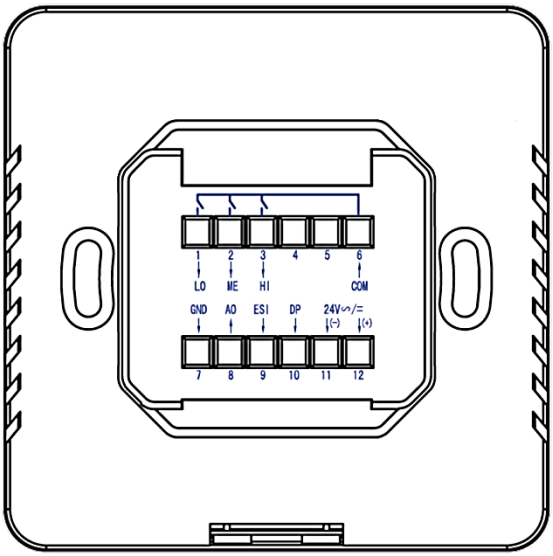
Surface and Flush Mounting

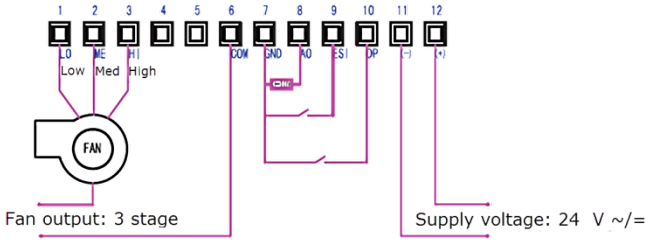
The measuring result is influenced by the thermal characteristics of the wall. A solid concrete wall responds to thermal fluctuations within a room in a much slower than a light-weight structure wall. Room temperature sensors installed in flush-mounted boxes have a longer response time to thermal variations. In extreme cases they detect the radiant heat of the wall even if the air temperature in the room is lower for example. The quicker the dynamics of the wall (temperature acceptance of the wall) or the longer the selected inquiry interval of the temperature sensor is the smaller the deviations limited in time are.

Technical Data

Measuring values	temperature
Output voltage	0..10 V = (cooling)
Output switch contact	3x normally open contact, 250 V load max. 5 A, 3x FanCoil
Power supply	24 V = | 24 V ~
Power consumption	3 W (24 V =)
Measuring range temperature	+1..+50 °C
Accuracy temperature	±1 °C (typ. at 21 °C)
Inputs	input for change-over sensor (NTC 10 K)
Control functions	set point adjustment +1..+50 °C, (default +16..+30 °C)
Display	LCD-module with Touch and LED-illumination
Enclosure	ABS, scratch-resistant acrylic glass
Protection	IP20 according to EN 60529
Connection electrical	terminal block max. 2,5 mm²
Ambient condition	-10..+50 °C, max. 95% rH non-condensing
Weight	160 g
Mounting	flush mounted with standard EU box (Ø=55 mm)

Connection Plan





Display Panel

Function Description

1 Fan coil selective

LCF is designed for a 2-pipe cooling fan coil only.

2 Mode selective

Press the “Mode Key”, to adjust the mode cyclically (Cooling > Ventilating > Cooling…).

3 Fan speed selective

Switches the fan speed cyclically (Low > Med > Hi > Auto > Low…).

4 °F/°C selective

With the device switched ON, press “▲” and “▼” key at the same time for more than 3s, to change from °F to °C or vice versa. Temp display range is 32 °F..99 °F, respectively 0 °C..50 °C (factory default is degC).

5 Temperature offset correction

The internal sensor will be affected by the Thermostat’s self-heating. As a consequence it would display a higher room temperature than the average of indoor temperature (real value). Item 1 of the parameter table does contain the correction of temperature offset.

6 Set the Temperature set point range

Press “▲”or “▼” key to adjust the temperature set point range. Factory default (degC) is 16 °C..30 °C，When °F has been selected Temp range is 60 °F..86 °F (Item 4 and item 5 of the parameter table).

7 Fan Mode Auto/ON Selection (item 7 in parameter table)**:**

ON: provided the Thermostat is turned ON, fan is always ON, (according to the selected fan speed) regardless the valve position.

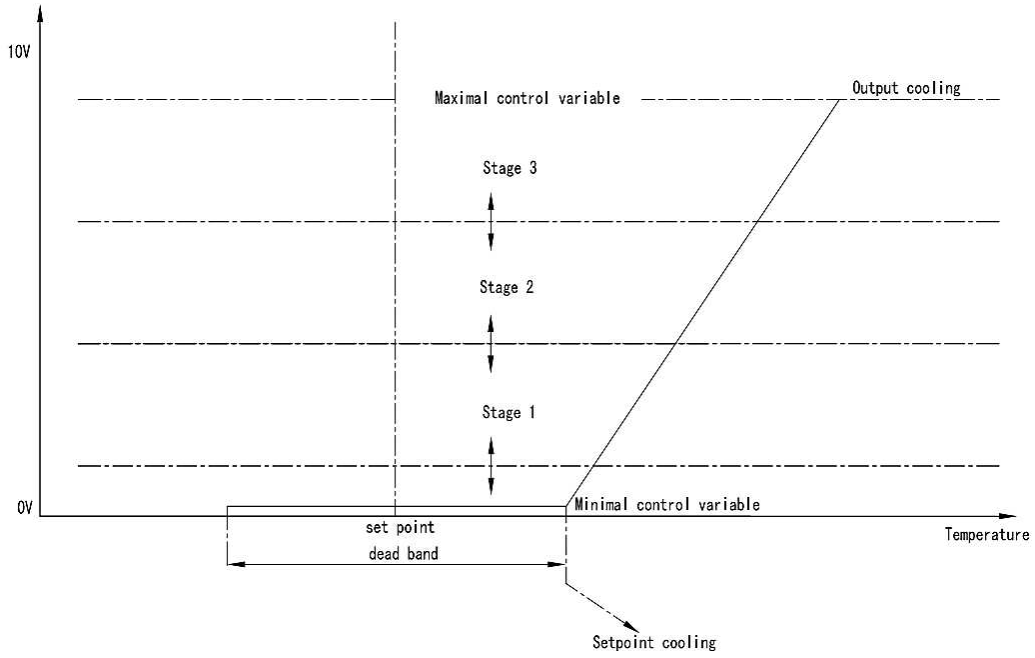
AUTO: Fan will follow the valve, when the valve is switched on /off the fan will do the same.

8 Cooling mode logic

Set point temp range: 16 °C..30 °C/ Fahrenheit temp 60 °F..86 °F.

Control logic is a PI loop according to below figure:

Minimum and maximum control variable are set in the parameter table (item 8 & 9)



The fan speed of fan control

- Fan speed according to manual setting: Low > Med > High. When auto fan speed is selected the fan speed will be according to the temperature difference of room and set point temperature.
- When Fan Mode is set to ON: fan is always ON, (according to the selected fan speed) regardless the valve position. When Fan Mode is AUTO: Fan will follow the valve, when the valve is switched on /off the fan will do the same.
- When fan speed “Auto” is selected, the fan speed will be according to below table: (ΔT = TR-TS)

Condition	Fan status
ΔT ≤ 1 °C	Low speed
1 °C < ΔT <3 °C	Med speed
ΔT ≥ 3 °C	High speed

9 Ventilating mode running logic

In ventilating mode, the valve is closed, the fan speed is according the manual selection: Low > Med > Hi. In case AUTO is selected in Ventilating mode, it will follow above table.

10 Key lock selection

Please follow up item 2 in parameter table.

11 Power failure – Restart selection

Please follow up item 3 in parameter table to set.

On the LCD, there are three symbol ■ ○ ▶, please find the meaning as below:

■ Keep thermostat switched OFF upon power-on

○ Switch thermostat to last state before power failure upon power-on (Record and Memorize)

▶ Keep thermostat switched ON upon power-on

12 LCD backlight selection

Please follow up item 6 in parameter table to set.

13 parameter table

To enter the parameter table, switch off the thermostat and while switched off press the “Mode Key for more than 3s. Once the Display comes on, the parameter can be increased / decreased using the “▲”or “▼” keys. With the “Mode Key” the display will move on to the next parameter. Once the end of the table is reached the parameter setting will be exited to normal operation.

14 Dew point function

If the input is configured as Dew point (Item 10 in parameter table to set Dew Point), the “Dew Point” Symbol will be displayed. The cooling valve will be closed as long as the input will be active, the other function can work normally when the input will not be active, thermostat will run under cooling only.

15 Window contact (ESI) function

If the input is configured as window contact (Item 11 in parameter table to set window contact), the “Window open” Symbol will be displayed the thermostat will detective every 3seconds to check the input whether active, the cooling valve will be closed as long as the input will be active if the input will be active, press “Stand-by/ON“ key, thermostat does not turn on, and “Window open” symbol will be flash 3s. When the input will not be active, thermostat can turn on by manually.

16 Memo while the power failure

The status will be kept in EEPROM, while the power failure, so no data will be lost.

17 Sensor failure alarm

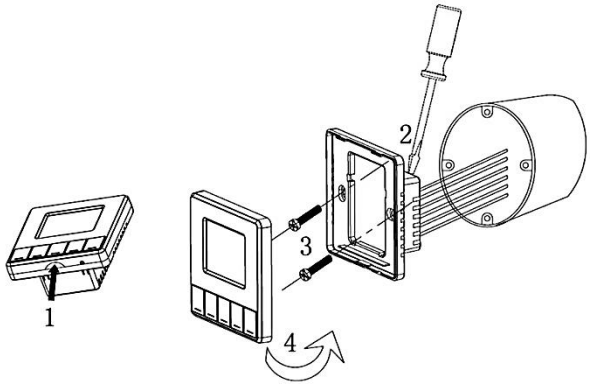
Room NTC temp sensor is open or short, thermostat switches fan to Med and the valve to 50% (5V output). The display will show error code: “E1” Thermostat will allow to control fan manually as well as the valve output using the “▲”or “▼” keys. Every operation of the “▲”or “▼” keys will decrement / increment the output voltage by 1V = 10%. The percentage is shown in the display.

Parameter table

No.	Name of parameter	Parameter definition	Factory default
1	Temp offset	range：-10 – 10 °C	0
2	Key-lock	0-unlocked，1-lock on/off，2-lock Mode，3-lock fan speed，4-lock temp setting，5-lock all the keystrokes (Even if all keystrokes are disabled the Mode Key will work with thermostat powered OFF to enter parameter table)	0
3	Power failure	0-keep power off，1-Memo status before power failure，2-switch on with power on	1
4	Temp upper limit	range：1 °C-50 °C / 34 °F-99 °F	30 °C / 86 °F
5	Temp lower limit	range：1 °C-50 °C / 34 °F-99 °F	16 °C / 60 °F
6	LCD backlight	0- backlight OFF，1- backlight ON	1
7	Fan Mode	0- fan is ON permanently，1- fan stops when valve closes	0
8	Minimal Control Variable	0= 0.0V… 40 = 4.0V,	0
9	Maximal Control Variable	60= 6.0V… 100 = 10.0V,	100
10	Dew point	0=w/o dew point 1=dew point (NO)	0
11	Windows contact	0=w/o window contact 1= window contact (NO)	0
12	KP	0=0… 100	25
13	KI	0=0… 100	12

Installation

For Installing or repairing, please make sure the power is disconnected.



Insert the screw driver in the plastic teeth of thermostat. Clockwise rotation of the screwdriver will separate front cover from base plate. Please follow the wiring diagram to connect the wires. Fix the thermostat base plate to the wall through the four screw holes with distance between axes of 60 mm. Fasten base plate and front cover. Do not press the panel in order to protect LCD.

Dimensions (mm)