LCF Touch (from firmware version 1.7)

Electronic Fan Coil Thermostat with Touch Display (Flush mounting)

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
Issue date: 26.10.2016

Application

Modern design flush mounting fan coil room thermostat, used for individual control of temperature in commercial, industrial and residential buildings. It is tailored for two-pipe and four-pipe fan coil units with two-wire electric valves. The device combines digital technology with a large LCD touch screen display, which enables the single room controller to be used intuitively. Integrated 7 day time clock with 4 time programs.

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.

General remarks concerning sensors

Especially with regard to passive sensors in 2-wire conductor versions, the wire resistance of the supply wire has to be considered. If necessary the wire resistance has to be compensated by the follow-up electronics. Due to self-heating, the wire current affects the measurement accuracy, so it should not exceed 1 mA.

When using lengthy connection wires (depending on the cross section used) the measuring result might be falsified due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

Sensing devices with a transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of the transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage (±0,2 V). When switching the supply voltage on/off, onsite power surges must be avoided.

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 the circulation of air occurs through the vents in the cover. Otherwise, deviations in temperature measurement will occur due to uncontrolled air circulation. Also the temperature sensor should not be covered by furniture or similar devices. Mounting next to doors (due to draught) or windows (due to colder outside wall) should be avoided.

The temperature dynamics of the wall will influence the temperature measurement. Various wall types (brick, concrete, dividing and hollow brickwork) all have different behaviours with regards to thermal variations.

Surface and Flush Mounting

The temperature dynamics of the wall influence the measurement result of the sensor. Various wall types (brick, concrete, dividing and hollow brickwork) have different behaviours with regard to thermal variations. A solid concrete wall responds to thermal fluctuations within a room in a much slower way than a light-weight structure wall. Room temperature sensors installed in flush 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 switch contact	5x normally open contact, 240 V load max. 3 A, 2x heating/cooling, 3x FanCoil
Power supply	90..265 V ~
Power consumption	0,9 VA (265 V ~)
Measuring range temperature	+1..+50 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	inputs 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. 1,5 mm²
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Weight	160 g
Mounting	flush mounted with standard EU box (Ø=55 mm)

Mounting Advices

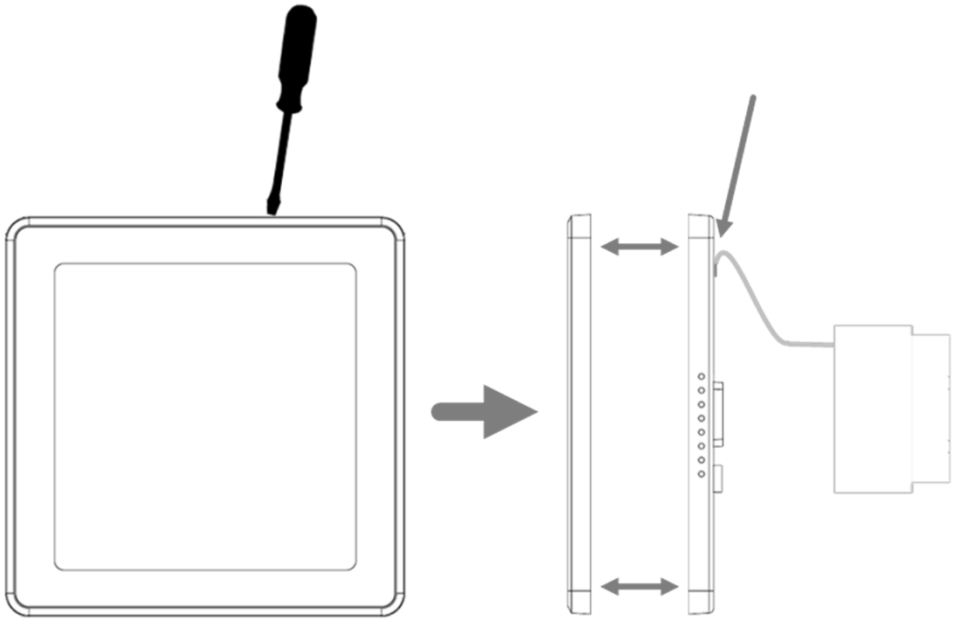
For installing or repairing, please make sure the power for the thermostat has been turned off.

Insert the screw driver in the plastic teeth of the thermostat to open the enclosure.

Please follow the wiring diagram to connect the wires.

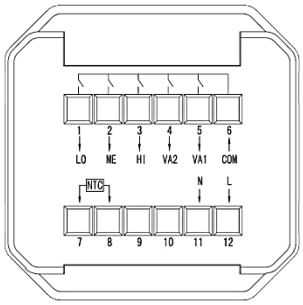
Fix the thermostat base plate to the wall by using the four screw holes with a distance between the axes of 60mm.

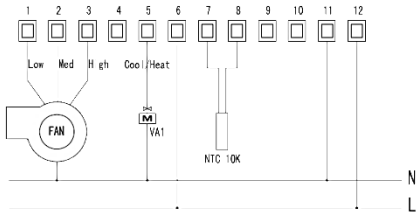
Fasten base plate and front cover. Do not press the panel in order to protect LCD



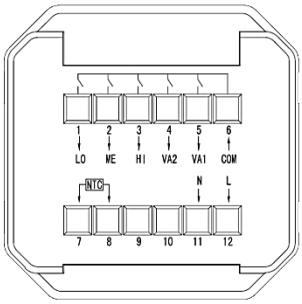
Connection Plan

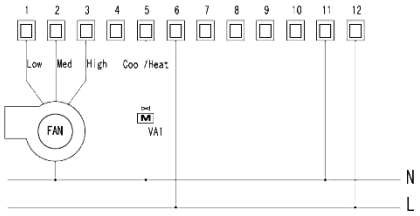
LCF Touch Standard – Change-over mode wiring diagram for 2-pipe fan coil



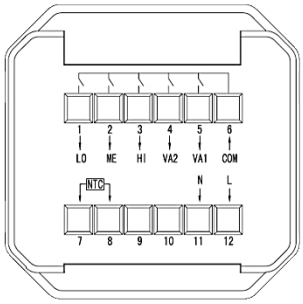


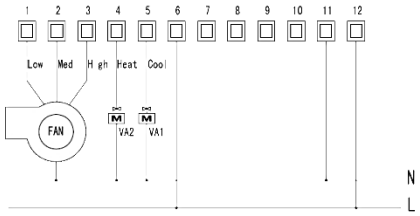
LCF Touch Standard – Manual mode wiring diagram for 2-pipe fan coil



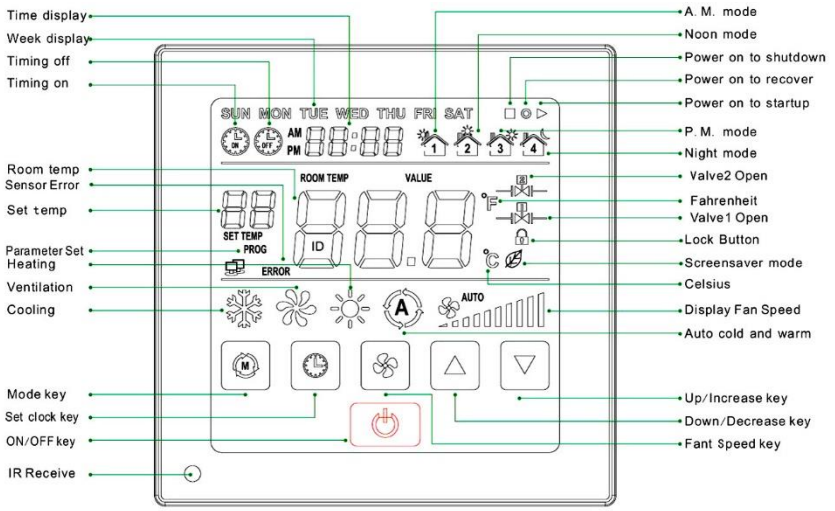


LCF Touch Standard –wiring diagram for 4-pipe fan coil





Commissioning



Setting parameter No. 13, the selection of the fan coil system has to be done. 2-pipe or 4-pipe systems can be selected.

Hysteresis: 1 K + 1 minute switching delay

Operation in 2-pipe system (parameter No. 13 set to 2):

When using a change-over sensor, the thermostat can detect whether the fluid is convenient for cooling or for heating:

- Operation without a change-over sensor:
  In the 2-pipe system, a fluid can be used only for cooling or only for heating depending on the temperature of the fluid. When no change-over sensor is used, heating, cooling and ventilating mode have to be selected manually using MODE settings (depending on the desired action of the heating/cooling system).
- Operation with a change-over sensor:
  By using an change-over sensor, the system recognizes, whether the fluid has the necessary temperature for cooling or for heating. The heating or cooling control sequence will be automatically selected. When temperature is ≤+19 °C, cooling mode is activated; when the temperature is ≥+30 °C, the heating mode is active.
  MODE key has no function in this case.

Operation in 4-pipe system (parameter No. 13 set to 4):

The thermostat switches automatically between cooling and heating. A time delay between cooling/heating mode changes is implemented to ensure safe and eco-friendly operation. Parameter No.14 has to be set to 1 to enable the device for operating in auto mode.

Mode selection:

Manual Mode: 2-pipe-System: Cooling → Ventilating → Heating
4-pipe-System: Cooling → Ventilating → Heating → Auto mode (only when parameter No. 14 is set to 1!)

AUTO-Mode: The mode will be selected automatically.

Fan Stage selection:

In Cooling, Heating or Auto mode, following fan stages can be selected: Low → Med → Hi → Auto

In Ventilation mode, following fan stages can be selected: Low → Med → Hi

Ventilation mode can be deactivated by setting parameter No. 15.

Auto mode:
$\Delta T \leq 1°C$ → Low
$1 °C < \Delta T < 3 °C$ → Med
$\Delta T \geq 3 °C$ → Hi

Display °C or °F

Display of the units °C or °F can be selected using parameter No. 12. Fahrenheit temperature display range is 32..99 °F, °C temperature display range is 0..50 °C. Factory default is °C.

Note: Under Parameter No.1 the temperature offset can be adjusted. This feature should be used if the temperature at the mounting place of the Room Thermostat is not accurate to the average room temperature.

Temperature Room Temperature set point selection:

By pressing “▲” or “▼” button, the room temperature set point can be adjusted. °C Range is 16..30 °C, Fahrenheit temperature range is 60..86 °F.

By using Parameter No. 4 and No. 5, the set point ranges can be adjusted.

Fan stage/Valve control selection:

Under Fan operation “INDEPENDENT”, the fan will always operate according to the selected or automatically assigned fan stage; under Fan operation “DEPENDENT”, the fan will be tuned off in case the valve is closed. If the valve is open, the fan will operate according to the selected or automatically assigned fan stage.

By using parameter No. 16, the “INDEPENDENT” or “DEPENDENT” mode can be selected.

Key lock selection (No. 2), power failure selection (No. 3), screen save mode (No. 6) can be set by Parameters.

Also in parameter No. 7 you are able to read the LCD display status.

Sensor failure alarm:

If the temperature sensor is out of range, the thermostat will switch off the fan and close the valve, error code “E01” will be shown.

Language selection

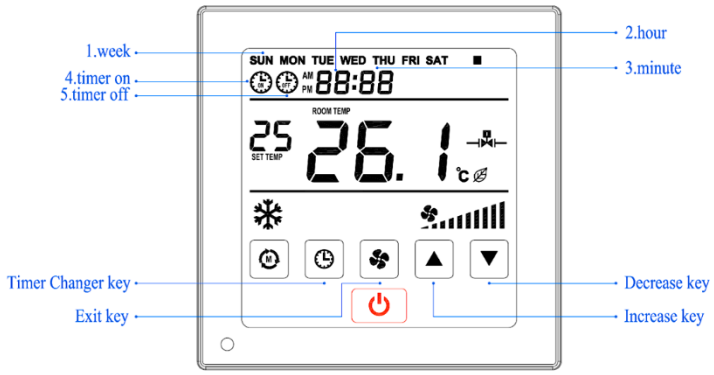
You can change the display language with parameter No. 11.

Set time format

With parameter No. 8 the time format can be defined (12h or 24).

Time setting

Press the “ ” button, to set the time. The changing parameter is flashing, press “▲”or“▼”-button to set:
Order: Weekday→hour→minute→Timer on→Timer off→weekday→hour→…



Set timer

Press the “ ”-button, the parameter to be changed is flashing, the timer will be set on or off.

Finish: Timer on, LCD display ;

Finish: Timer off, LCD display ;

To delete timer on/off, press the “ ” button, the parameter to be changed is flashing. Then select “ ” or“ , set the time like the following image to leave the timer mode: “ ”.

The system saves the user settings to set the timer on / off automatically.

Selection timer on / off

The timer on/off has 2 options to be selected: single action or rule.

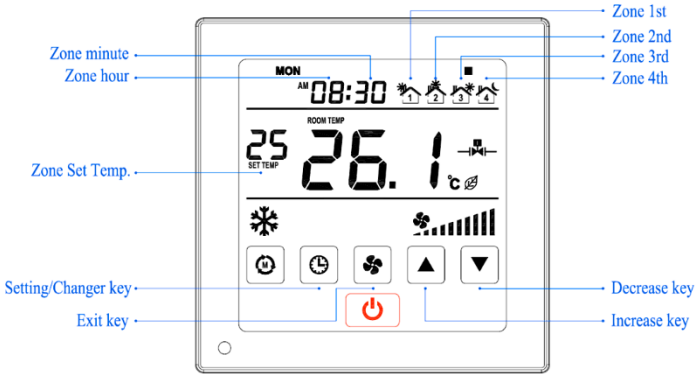
To set, please look up parameter No. 9 in the parameter table.
7 days 4 periods programmable timer
One day is split into 4 periods. The user can set temperature for every period individually.
To set the time zones, please look up parameter No. 10 in the parameter table.
If the user has set a set temperature during operation, the current period runs with the last set temperature. The next period will adopt the changed settings.

Please follow the instructions below:

Press the “ ” button for more than 5 seconds, the parameter to be changed is flashing. Now you can set the 4 programmable periods.

→ hour → minute → temperature 1 → hour → minute → temperature 2

→ hour → minute → temperature 3 → hour → minute → temperature 4

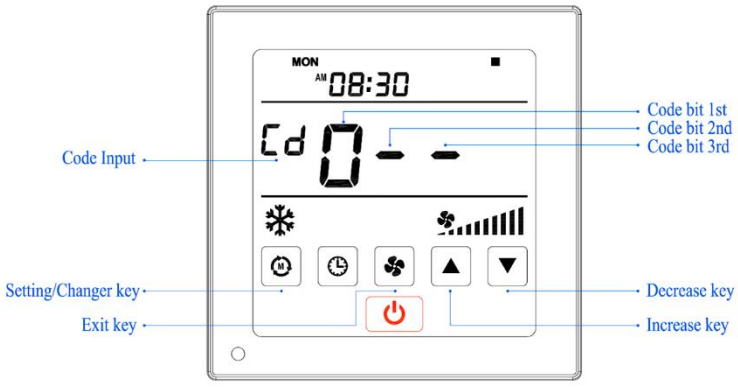


Configuration

Parameters

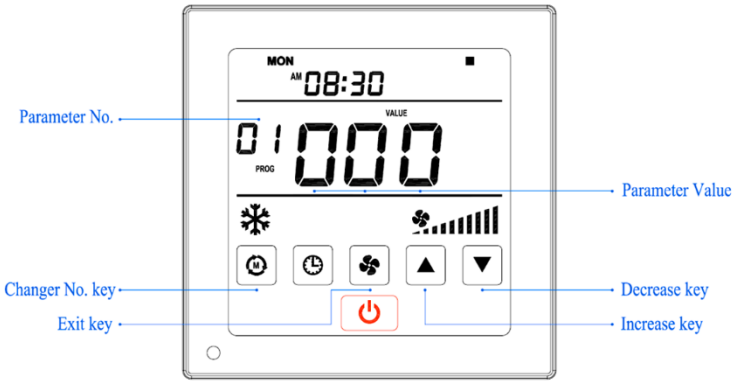
= MODE button

In order to change the parameters, please press the MODE button for more than 5 seconds. Please follow figure below. If you are asked to enter the password, use “▲”or “▼” key to enter each digit of the password. Press MODE button to switch to the next digit.



The standard password is 260.

If the password has been entered correctly, you will see the parameter settings screen as below shown.



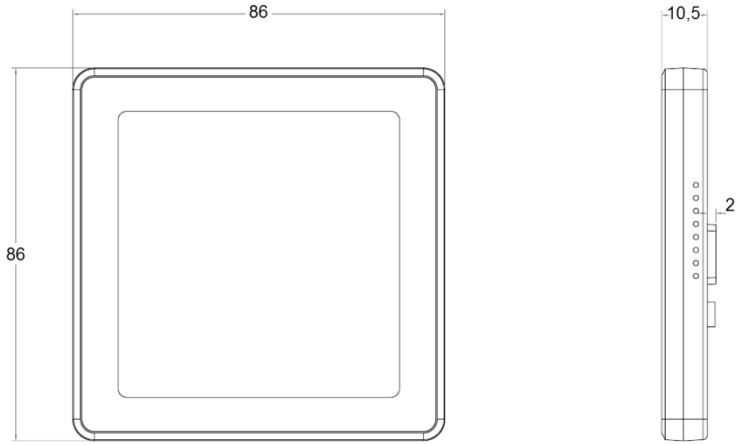
Press the MODE button to select the parameter you would like to change. Then use "▲" or "▼" to change the parameter. Please refer to the parameter table on the following page:

No.	Name of parameter	Parameter definition	Factory default
1	Temperature offset:	Range -20..+20 K	0
2	Key-lock: (Note: You can only chose one option. To lock two or more options at the same time is not yet possible.)	0- unlocked 1- lock on / off 2- lock mode-selection (heating/ventilating/cooling) 3- lock clock 4- lock fan speed 5- lock temperature setting 6- lock all keystrokes	0
3	Power failure:	0- stay power off 1- restore last status before power failure 2- turn power on after power failure	1
4	Upper temperature limit:	Range: +1..+50 °C / +34..99 °F	30 °C / 86 °F
5	Lower temperature limit:	Range: +1..+50 °C / +34..99 °F	16 °C / 60 °F
6	LCD backlight delay:	10..150 seconds	20 seconds
7	Screensaver mode:	0- display on / off 1- room temperature and on / off 2- display clock, room temperature and on / off 3- display all status	0
8	Time format:	12- 12 hours 24- 24 hours	12
9	Timer on / off:	0- once 1- loop	0
10	7 days, 4 periods programmable:	0- forbidden 1- allowed	0
11	Display language:	1- English	1
12	Temperature format:	0- °C 1- °F	0
13	Selection Fan Coil:	2- 2-pipe Fan Coil 4- 4-pipe Fan Coil	2
14	Auto cooling & heating modus:	0- deactivated 1- activated	0
15	Fan modus:	0- deactivated 1- activated	1
16	Selection fan on / off:	0- independent 1- dependent	0
17..20	Temporarily not defined		0
21	Summer/winter time	0-forbidden, 1-summer /winter time automatically	1
22	Individual password setting	001-999	260
24	Infrared receiver (remote)	0 - deactivated, 1 - activated	0

All parameters are stored within an EEPROM (electrically erasable programmable ROM), ensuring no data loss if the Thermostat is powered off.

Dimensions (mm)

Display unit:



Base plate: