

UC013

Room unit for controller FCR013



Summary

The UC013 room unit is a communicative human-machine interface for EC motors or VAV unit controller FCR013.

According to production type, each version of the unit may contain display, backlight and knob.

UC013 – basic version with display and knob

UC013BL – version with display, knob and backlight

UC013DK – version without knob and display

Application

- EC motors or VAV systems – measurement and control of room temperature.

Function

The unit reads room temperature, temperature correction / setpoint by a knob, and required operation mode which is set by a short push. Data is transmitted to the room controller. The main controller, FCR013, may send to the unit other data (heating / cooling mode, fan stage, day / night / standby mode etc.) which are displayed on the LCD display.

Connect the room unit to FCR013 over a 4 core cable, the most suitable types are JY(St)Y or LAM 2x2x0.8. Use the same type which powers the FCR013 controller as if the room unit power is taken from the FCR013 terminals, the cores in a terminal should be of the same cross-section.

If there is communication failure between UC013 and FCR013, there is a wrench and alarm bell icon at the UC013 display. Check signal polarity (terminals 3, 4), bus termination, and correct wiring at the FCR013 side (see FCR013 data sheet).

Technical data

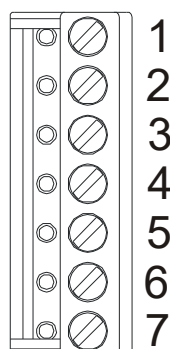
Power supply	24 V AC +/- 20%
Consumption	1 W
Communication	RS485, Modbus RTU, selectable speed 1200 ... 115200 bps
SW	ModComTool

Temperature measuring range	-20 ÷ 70 °C (accuracy ±1 °C)
Humidity measuring range	10 ÷ 90 rH (accuracy ±3 % rH)
Setpoint	as configured, +/- 10 to +/- 1 K
Display	LCD 60 x 60 mm
Terminals	screw terminals for wires 0,14 – 1,5 mm ²
Cover	ABS, RAL9010, other colours
Protection	IP20
Weight	0,13 kg
Dimensions	90x115x30 mm
Ambient temperature	External conditions: -5 – 45 °C; 5 – 95 % relative humidity; non-condensing gases and chemically non-aggressive conditions (according to EN 60721-3-3 climatic class 3K5) Storage: -5 – 45 °C; 5 – 95 % relative humidity; non-condensing gases and chemically non-aggressive conditions (according to EN 60721-3-1 climatic class 1K3)
Standards conformity	EMC EN 61000-6-2 ed.3:2005, EN 61000-6-4 ed.2:2006 + A1:2010 (industrial environment) Electrical safety EN 60950-1 ed.2:2006 + A11:2009 + A12:2011 + A1:2010 + A2:2014 + Opr.1:2012 + Z1:2016 Hazardous substances reduction EN 50581:2012

Version UC013DK without knob and display is available.

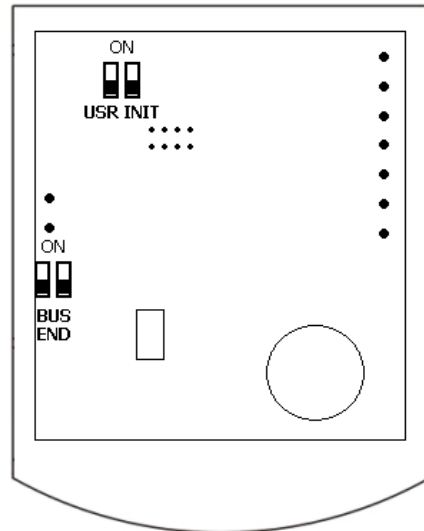
Version with display and without knob is also available, need to be specified in order.

Terminals



- 1: NC not connected
- 2: NC not connected
- 3: K- communication, RS485 –
- 4: K+ communication, RS485 +
- 5: GND technical earth (TE)
- 6: GO power – common point
- 7: G power

DIP switches



Back of the PCB

BUS END: if ON, the bus is terminated (if last device on the line)

USR: not used, reserved for future applications

INIT: sets the controller into default state and sets bus address to 1, baud rate to 9600.

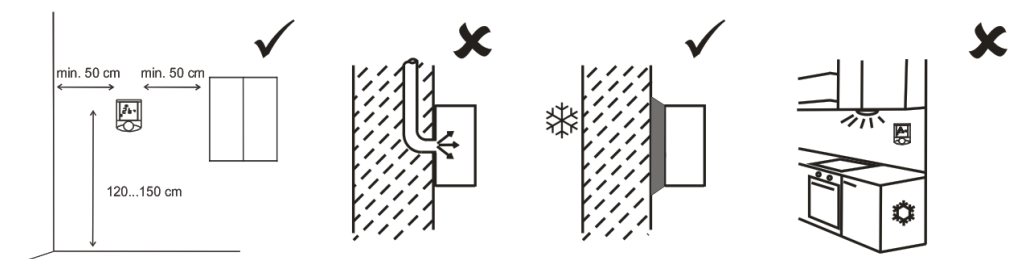
To init, proceed as follows:

- connect the device over RS485 to a PC with ModComTool config tool
- set INIT to ON
- apply power (use only the connector without bottom)
- find the controller in the tool (Scan)
- set INIT to OFF
- in the ModComTool, open the controller window
- click the Init button in the tool
- remove and apply power.

Installation

Units are intended for operating in a normal and chemically non-aggressive environment. They do not need any servicing or maintenance. Install them in a vertical position at places where they can be operated easily and measure correct values of temperature, i.e. in the height of about 150 cm, with no direct sunlight or other heat / cool source (AHU outlets, refrigerator, electrical appliances). The device consists of two parts: bottom with screw terminal block and cover containing PCB, display, and the knob. The bottom part is fixed by 2 or 4 screws to any flat surface or a flush-mounting box \varnothing 50 mm. At the back of the bottom there is an aperture for cabling. The bottom should be installed and cabling connected first, and the upper part inserted after the construction works have been finished to prevent damage to the unit.

Seal the conduits to avoid influencing the sensor by draught. Use insulating pad when installing the sensor on cold walls. Avoid sensor exposition to sunlight or other heat sources.



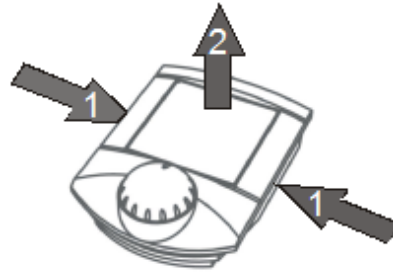
Cover opening

When removing the display part, proceed as follows:

- press gently the side parts of the unit and pull the right of the display part by several millimeters
- pull the left of the display part

- pull the display part and remove it from the bottom.

Do not bend the display part too much, the connector pins could be damaged. The locks are only at the sides of the display part, not at the top nor bottom.



Operation

The following settings are defaults. The engineer may set another way of fancoil control, disable some functions etc., so the text below is a description of the default functionality of the controller rather than the user operation manual.

Temperature correction:

Turn the knob clockwise to increase setpoint, turn it counterclockwise to decrease setpoint. The maximum correction range can be modified over the bus e.g. with the ModComTool configuration tool.

Fancoil stage setting:

Push the knob shortly (<1 s). Every push changes the fancoil stage cyclically: Stage 1 – Stage 2 – Stage 3 – Off – Auto. When changing between the Comfort and Standby modes, the controller falls back into automatic fancoil stage control according to the control deviation.

Operation mode change:

The operation mode in the Hotel mode (used for fancoils in hotels and offices) is changed over bus communication or by activating digital inputs. The DI1 switches between the Comfort and Standby modes (e.g. card reader), while DI2 brings the controller into the Off mode (e.g. window contact). The time scheduler is used with Residential mode only.

Time schedule settings:

Switch to the time schedule settings mode with a long push (>1 s). The controller switches to settings mode (clock icon).

Turn the knob to select the weekday (1 to 7). Then short push to confirm the selection. Turn the knob to select the event (large number 1 to 6). Each event displays the mode activated by this event.

Short push to confirm the event selection. Turn the knob to select the operation mode (Day, Night, Off, Event inactive) invoked by this event. If the event is not active, the operation mode is not changed at the set time.

Short push to confirm the operation mode setting. The event time displays. Turn the knob to set the time of the event and confirm by a short push. Then turn the knob to select another event or long push and turn the knob to select another weekday.

After all desired events have been edited, long push to leave the time schedule settings. The controller goes to the basic display mode also after 30 secs of user inactivity.

Change of setpoints and controller time:

Switch to the settings mode with a superlong push (>2.5 s). The controller switches to settings mode (flashing thermometer icon).

Turning the knob selects between following settings:

- Controller time and day of week (Clock icon, Day of week)
- Setpoint temp. Heating Day mode (Temperature, Heating, Day are flashing)
- Setpoint temp. Heating Night mode (Temperature, Heating, Night are flashing)
- Setpoint temp. Heating Off mode (Temperature, Heating, Empty house are flashing)
- Setpoint temp. Cooling Day mode (Temperature, Cooling, Day are flashing)
- Setpoint temp. Cooling Night mode (Temperature, Cooling, Night are flashing)
- Setpoint temp. Cooling Off mode (Temperature, Cooling, Empty house are flashing)

Select the requested value by a short push. Turn knob to change value. Confirm by a short push again.

If there is no user activity for 30 s, the controller goes to the basic display mode.

Default values:

The default values as well as all other settings (PI parameters, address, baudrate...) can be set by the configuration program, ModComTool.

Display

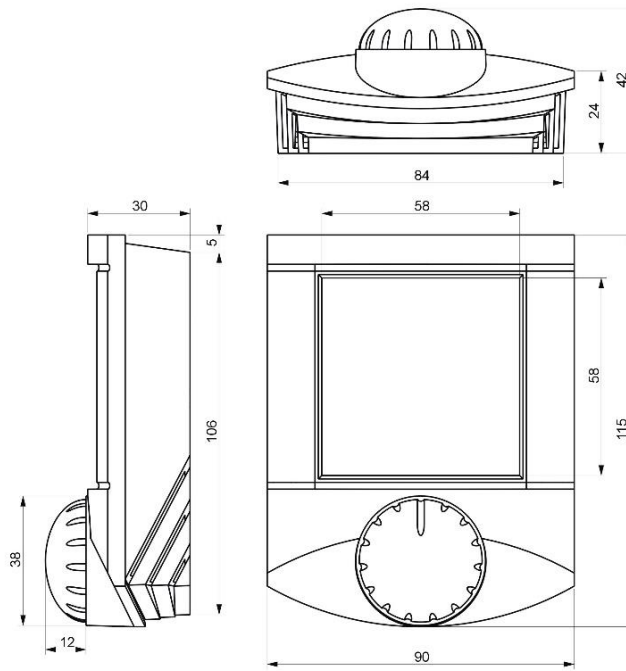


A large (60 x 60 mm) display clearly shows actual room temperature and controller status with 7-segment digits and standard Day, Night, Off, and Time scheduler symbols. Active output is indicated by a heating symbol. In the upper part, there are week days used for time scheduler setup. Other symbols are not used.

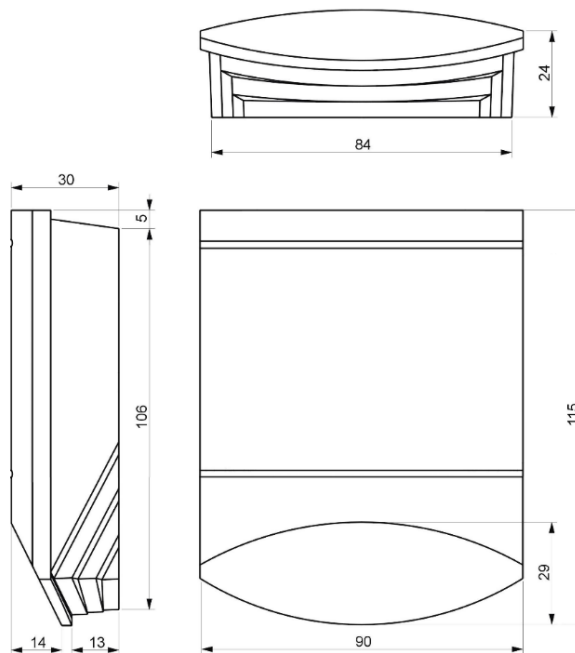
LCD symbol set

Dimensions

UC013



UC013DK



Safety note

All dimensions in *mm*.

The device is designed for monitoring and control of heating, ventilation, and air conditioning systems. It must not be used for protection of persons against health risks or death, as a safety element, or in applications where its failure could lead to physical or property damage or environmental damage. All risks related to device operation must be considered together with design, installation, and operation of the entire control system which the device is part of.

Changes in versions

04/2015 – Added UC010/DK version.

08/2016 – Changed the format and reference to the configuration software.

03/2017 – Added picture and description of the installation and link on the datasheet with other colours.

07/2017 – Change of technical data, standards and images. BL version added.

08/2017 – Controller description change (FC to FCR version).

08/2018 – Minor changes.