

## UI5xx

## Communicative room units, Ethernet



### Summary

The UI5xx room unit is a family of universal communicative human-machine interface for control of HVAC units and plants, and IRC controllers. The units communicate over Modbus TCP / Ethernet and they can be used as open system components with majority of building control system and controllers.

### Application

- ripening and cooling boxes, datacenters, controlled climate storage rooms, alarm messaging systems etc.
- systems with fancoils, convectors, floor and radiator heating, AHUs, air conditioning units.
- control of boilers, DHW, heating circuits, building controls in general
- monitoring of room temperature and humidity
- with a SCADA system: temperature, humidity and status recording, remote control.

### Function

The units acquire temperature and optionally relative humidity in room, temperature correction (knob) and required operation status which is set by push of the button or in menu. In the configurable menu following values can be set and displayed:

- temperature, actual temperature correction
- humidity (actual value only at room units containing the humidity sensor)
- time (only display at room units with RTC)
- basic setpoint - day
- basic setpoint - night
- outside temperature for heating enable
- DHW temperature
- heating curve type (1...4)
- operation mode (Residential with Day, Night, Time schedule, Off, or Hotel / Office with Comfort, Standby, Party, Off)
- fan stage (Auto, Off, St.1, St. 2, St. 3)
- A/C mode (Auto, Heating, Cooling, Off, Fan only)

- weekly scheduler: 7 days, up to 6 events per day
- another 5 variables (air quality, fan speed etc.) – each has a profile where max. and min. values, step, number of decimals, and symbol set are defined.

It is also possible to set / reset any of the LCD symbols on the display over Modbus.

The turn / push knob has three basic functions:

- instant edit (turning the knob) – settings of one predefined analogue value, usually room temperature correction
- quick edit (short push) – change of predefined state, e.g. Presence (Comfort / Standby / Off), Air condition (Auto / Heating / Cooling / Fan only / Off) etc.
- long push – jump to menu where values are listed by turning the knob, short push selects the value to be edited, and the value is changed by turning the knob followed by short push for confirmation.

After definable inactivity time, the display goes back to its basic state with rolling display of selected values (e.g. actual temperature and humidity).

The unit functionality is defined over the Ethernet interface with service software **ModComTool** which is free for download at <http://domat-int.com/en/downloads/software>. To interface the room unit to the computer use an Ethernet cross cable or switch.

Default IP address is 192.168.1.99.

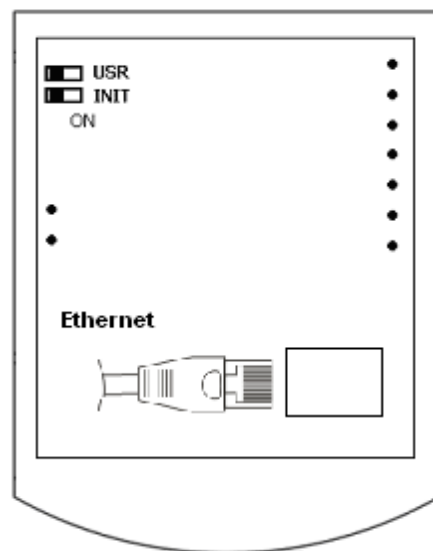
The integrated temperature sensor range is -20 to +70 °C. Read and entered values are available at the bus where a controller or SCADA can read them. The supervising system can also write values to the unit (operation mode, fan stage, etc.), which are displayed on a large LCD display. Models with digital inputs and outputs also have those data available. A control algorithm must be implemented in the master; for independent communicative control use the UC..., FC... controllers.

## Technical data

Power supply	10...35 V DC, 24 V AC $\pm$ 10%
Consumption	2 W
Temperature measuring range	0 ÷ 60 °C, accuracy according to DIN IEC 751, Class B
Humidity measuring range (selected types only, see table below)	10 ÷ 90 %rH (30-70% $\pm$ 3.5%, 10-90 $\pm$ 4.5%)
Protection	IP20
Inputs (selected types only)	2x for dry contacts, 24 V AC, 5 mA, max. switching frequency 10Hz
Outputs (selected types only)	1x - 2x solid state relay, zero switching, AC load, 24 V AC, maximum switched current 0,4 A
Setpoint	according to configuration, $\pm$ 10 to $\pm$ 1 K

Communication	Ethernet 10 Mbit/s: Modbus: TCP port 502, max. 3 TCP connections web (http): TCP port 80  Default IP address: 192.168.1.99.
Terminals	screw terminals for wires 0,14 – 1,5 mm <sup>2</sup>
Cover	ABS, RAL9010
Display	LCD 60 x 60 mm, symbol set see above
Weight	0,16 kg
Dimensions	see below

## DIP switches



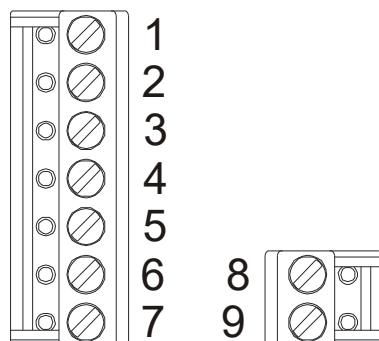
## Back of the PCB

**USR:** in the ON position, the web access is blocked to increase security

**INIT:** to set default IP values (IP address 192.168.1.99, mask 255.255.255.0, default gateway 192.168.1.1) set the INIT switch to ON and apply power. After new values have been set and saved over the web interface, set the INIT switch back to OFF, so that the new data is not overwritten by the default values at the next reboot, and switch the power off and on.

After successful configuration, you may want to disable the web access by setting the USR switch to ON to prevent unauthorised access to the web configuration pages.

## Terminals



As seen when removing the display part.

The wiring goes towards the center of the unit so that the cable can be brought through the aperture in the middle of the bottom part.

## UI5x1 (no hardware inputs / outputs)

- 1: NC not connected
- 2: NC not connected
- 3: NC not connected
- 4: NC not connected
- 5: G0 power – common point
- 6: G0 power – common point
- 7: G power (+)

- 8: -- connector not installed
- 9: -- connector not installed

#### UI5x2 (one binary SSR output)

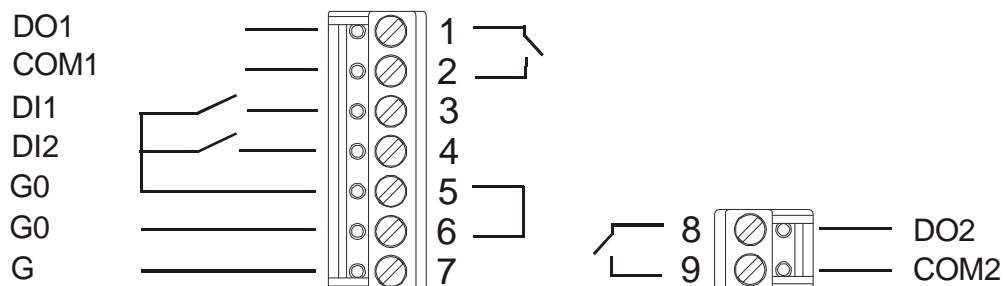
- 1: DO1 digital output 1
- 2: COM1 digital output 1
- 3: NC not connected
- 4: NC not connected
- 5: G0 power, output – common point
- 6: G0 power, output – common point
- 7: G power (+)

- 8: -- connector not installed
- 9: -- connector not installed

#### UI5x5 (2 binary inputs, 2 binary SSR outputs)

- 1: DO1 digital output 1
- 2: COM1 digital output 1
- 3: DI1 input1, activated by connection to G0
- 4: DI2 input2, activated by connection to G0
- 5: G0 power, inputs – common point
- 6: G0 power, inputs – common point
- 7: G power (+)
- 8: DO2 digital output 2
- 9: COM2 digital output 2

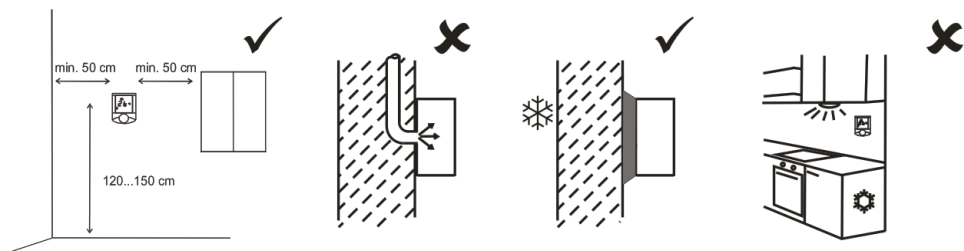
#### Peripheral connection



#### 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 and humidity, i.e. in the height of about 150 cm, with no direct sunlight or other heat / cool source (AHU outlets, refridgerator, 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 Ø 60 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.



### Opening the cover

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.

When removing the Ethernet cable, use a small flat screwdriver or similar tool to bend the Ethernet connector lock and unplug the cable at the same time.

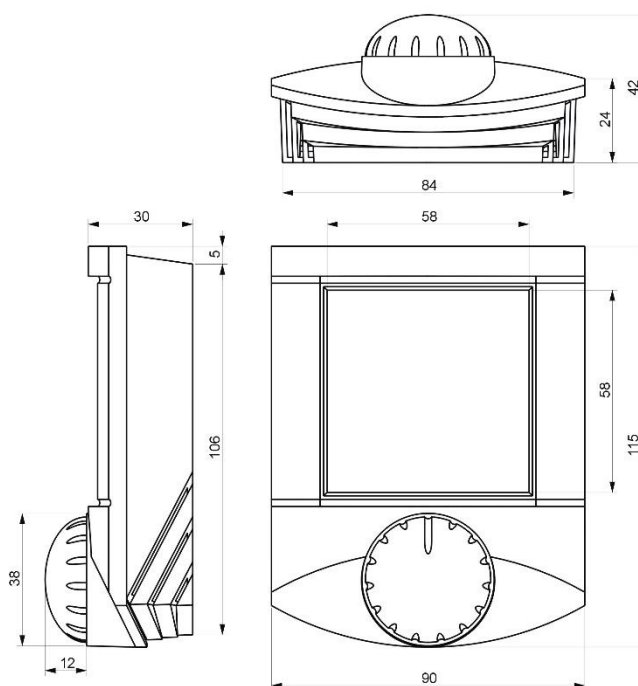
### Type table

Type	LCD	Knob	DI	DO	t	rH	RTC
UI511	✓	✓	-	-	✓		
UI512	✓	✓	-	1	✓		✓
UI520	✓	✓	2	2	✓		✓
UI541	✓	✓	-	-	✓	✓	
UI542	✓	✓	-	1	✓	✓	✓
UI545	✓	✓	2	2	✓	✓	✓
UI551	✓		-	-	✓		
UI552	✓		-	1	✓		✓
UI555	✓		2	2	✓		✓
UI561	✓		-	-	✓	✓	
UI562	✓		-	1	✓	✓	✓
UI565	✓		2	2	✓	✓	✓
UI571			-	-	✓		
UI572			-	1	✓		✓
UI575			2	2	✓		✓
UI581			-	-	✓	✓	

<b>UI582</b>	-	1	✓	✓	✓
<b>UI585</b>	2	2	✓	✓	✓

Units with no knobs are used as indicators, units with no knobs / display are used as communicative temperature / rH sensors, both optionally with remote controlled inputs / outputs. Process control algorithms (activating of the outputs by increased / decreased temperature, humidity etc.) must be implemented in a master controller.

## Dimensions



All dimensions in *mm*.

## RoHS notice

The device contains a non-rechargeable battery which backups the real-time clock and part of the memory. After the device is not operable, please return it to the manufacturer or dispose of it in compliance with local regulations.

## Safety note

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**

09/2016 – Changed the format and reference to the configuration software.

03/2017 – Edited text format and Added picture and description of the installation, Opening the cover and link on the datasheet with other colours.

10/2017 – Added Safety note.

05/2018 – Change technical data.

20/2020 – Box Ø corrected, added max. switching frequency and terminal description, new logo.

11/2021 – Added default IP address, new logo.