

## UI0xx

## Communicative room units and sensors



### Summary

The UI... room unit range is a family of universal communicative human-machine interface for control of HVAC units and plants, and IRC controllers. The units communicate over Modbus RTU / RS485 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.

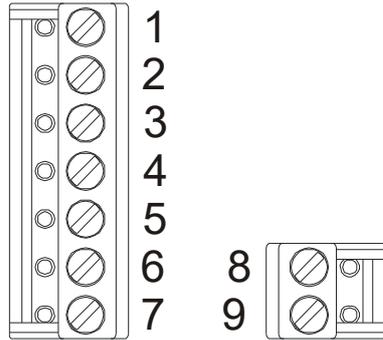
After definable inactivity time, the display goes back to its basic state with rolling display of selected values (e.g. actual temperature and humidity).

The unit Modbus address and functionality is defined over the RS485 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 the USB/485 converter **M080**, RS232/RS485 converter **M012**, or any suitable RS485 converter.

## Technical data

Power supply	24 V AC +/- 10%
Consumption	600 mVA
Temperature measuring range	0..60 °C (+/- 1.5K )
Humidity measuring range (selected types only, see table below)	10 ÷ 90 %rH (30-70% +/- 3.5%, 10-90 +/- 4.5%)
Protection	IP20
Inputs (selected types only)	2x for dry contacts, 24 V AC, 5 mA
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, +/- 10 to +/- 1 K
Communication	RS485 - Modbus RTU, slave, selectable speed 1200 ... 115200 bps, N,8,1 The interface is optically separated (except for UI010).
Display	LCD 60 x 60 mm, symbol set see above
Terminals	screw terminals for wires 0,14 – 1,5 mm <sup>2</sup>
Cover	ABS, RAL9010, <a href="#">other colours</a>
Weight	0,13 kg
Dimensions	see below

## 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.

### **UI010, UI0x1 (no hardware inputs / outputs)**

- 1: NC not connected
- 2: NC not connected
- 3: K- communication RS485 -
- 4: K+ communication RS485 +
- 5: G0 power – common point
- 6: G0 power – common point
- 7: G power

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

### **UI0x2 (2 binary inputs - from revision 03/2015, one binary SSR output)**

- 1: DI1 input1
- 2: DI2 input2
- 3: DO1 output 1, 24 V AC against G0
- 4: NC not connected
- 5: G0 power, output – common point
- 6: G0 power, output – common point
- 7: G power

- 8: K- communication RS485 -
- 9: K+ communication RS485 +

### **UI020, UI0x5 (2 binary inputs, 2 binary SSR outputs)**

- 1: DI1 input 1
- 2: DI2 input 2
- 3: DO1 output 1, 24 V AC against G0
- 4: DO2 output 2, 24 V AC against G0
- 5: G0 power, outputs, inputs – common point
- 6: G0 power, outputs, inputs – common point
- 7: G power

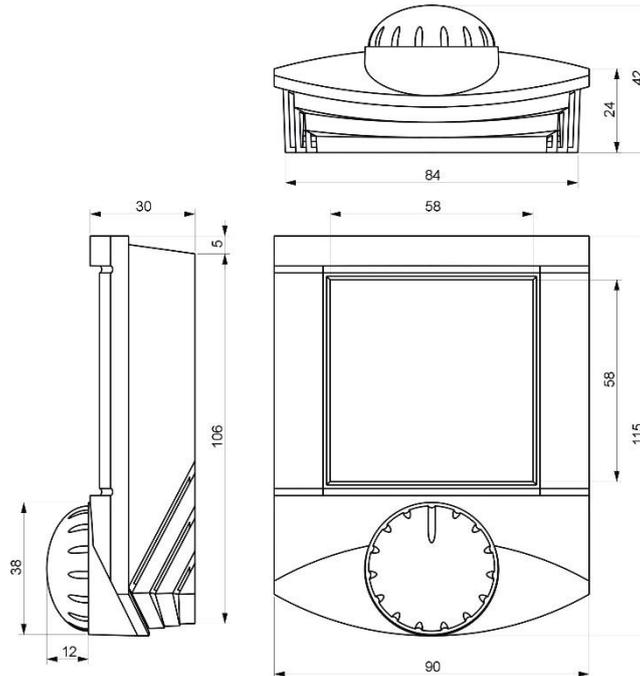
- 8: K- communication RS485 -
- 9: K+ communication RS485 +

**Type table**

Type	LCD	Knob	DI	DO	t	rH	RTC
UI010	✓	✓	-	-	✓		
UI011	✓	✓	-	-	✓		
UI012	✓	✓	2	1	✓		✓
UI020	✓	✓	2	2	✓		✓
UI041	✓	✓	-	-	✓	✓	
UI042	✓	✓	2	1	✓	✓	✓
UI045	✓	✓	2	2	✓	✓	✓
UI051	✓		-	-	✓		
UI052	✓		2	1	✓		✓
UI055	✓		2	2	✓		✓
UI061	✓		-	-	✓	✓	
UI062	✓		2	1	✓	✓	✓
UI065	✓		2	2	✓	✓	✓
UI071			-	-	✓		
UI072			2	1	✓		✓
UI075			2	2	✓		✓
UI081			-	-	✓	✓	
UI082			2	1	✓	✓	✓
UI085			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

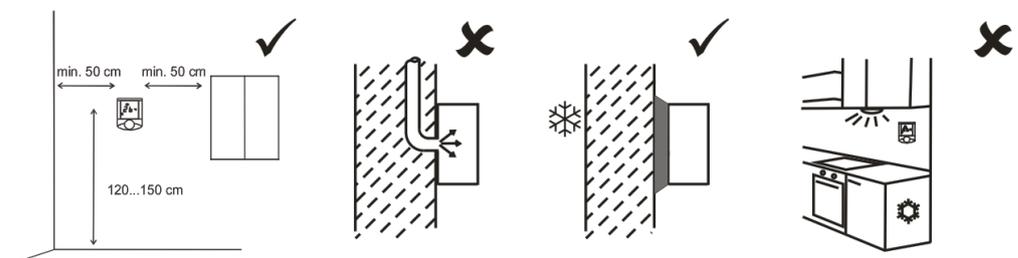


All dimensions in *mm*.

## 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, reffridgerator, 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.



## 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.

### Display



Over Modbus, it is possible to set / reset the complete symbol set except for the 7 segment digits, „Error“ and „Setting“ texts, and symbols of °C, °F, %, and rH. Those are part of the configurable menu profiles. The register description is available in a separate document *Room units UI... – Communication description*.

LCD symbol set (see in the picture).

### 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.

**Changes in  
version**

03/2015 — The UI0x2 from this revision have two extra digital inputs. For previous version are not accessible.

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

03/2017 — Added Intallation, Opening the cover, Diplay and link on the datasheet with other colours.