

## UI410

## Measuring and signalling module



### Summary

**UI410 is a module for measuring of two temperatures (internal, and external Pt1000) with one digital input, one digital output, indication LED and a buzzer. It communicates over Modbus / RS485.**

### Applications

- refrigeration boxes, ripening boxes, stores with controlled climate, archives etc.
- control and monitoring of technologies and room / technology temperature recording

### Function

The UI410 connects to the RS485 bus over a plug-in connector to the K+ and K- terminals. The bus can be chained to the other modules in the bus. Please keep line topology.

The communication is optically separated from the other circuits in the module. If the module is the first or the last on the bus, set the BUS END DIP switches 1 and 2 to ON to terminate the bus properly.

All module settings are in the EEPROM memory. There is a watchdog circuit in the module which supervises correct program execution. The module contains one internal temperature sensor and terminals for one external Pt1000 temperature sensor. The digital input is optically separated, the digital output provides one SSR (solid state relay). For signalling, there is a high-intensity LED and a buzzer.

The UI 410 provides actual internal and external temperatures and digital input status. It is possible to set latch for rising or falling edge, so even the shortest pulses are registered. The LED may be set as flashing and the buzzer as on-off beeping (step 10ms). If the step is set to zero, LED or buzzer are active continuously. It is possible to define startup and communication fail functions (after 1s – 4 min the outputs are set to predefined conditions).

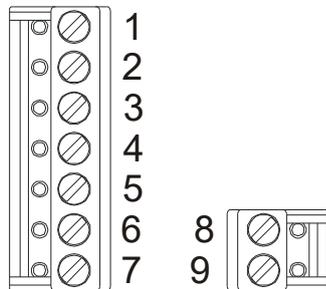
To power the module use AC or DC low voltage power source. In case of DC power, G is the positive terminal.

The module uses standard Modbus RTU protocol over RS485 and therefore may be easily integrated in a variety of PLCs and SCADAs. Modbus register table and communication example see separate document *UI... – Communication description*.

## Technical data

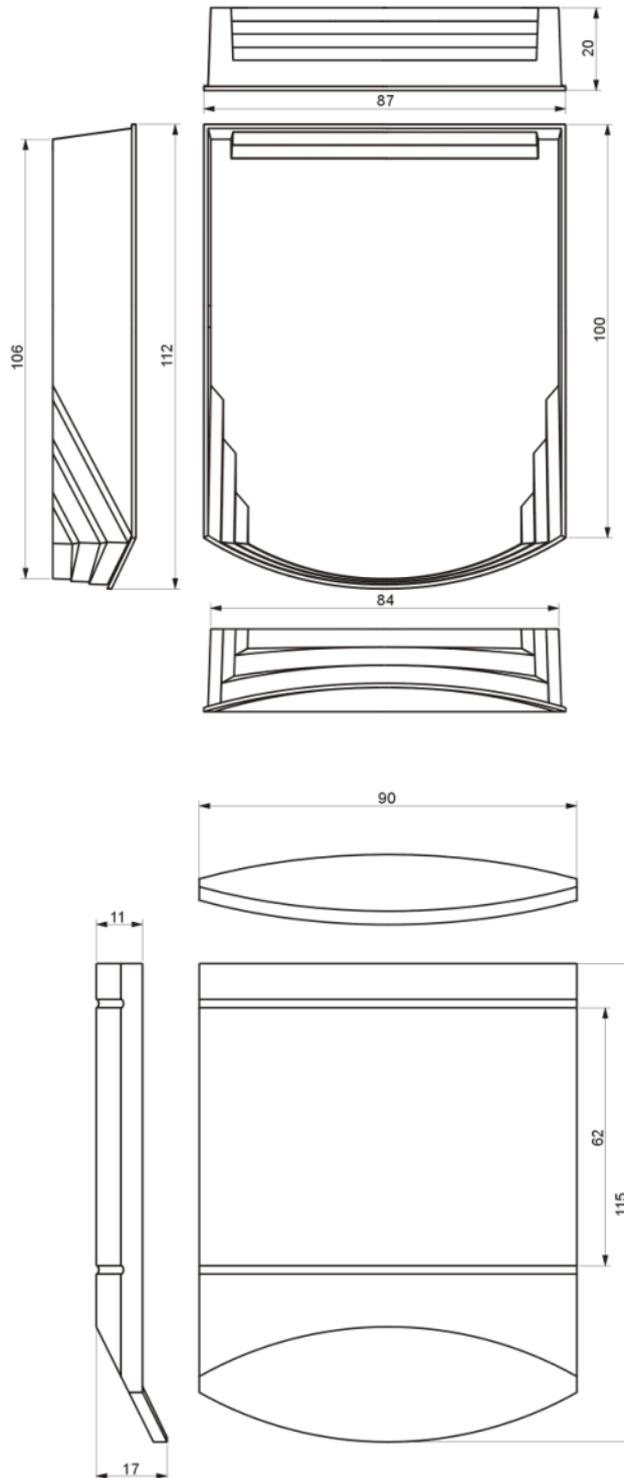
|                                      |   |
|--------------------------------------|---|
| Power                                | 12...24 V AC, 10...35 V DC  |
| Consumption                          | 500 mVA   |
| Temperature measuring range (Pt1000) | -30 ÷ 50 °C   |
| Protection degree                    | IP20  |
| Inputs                               | 1x DI for a potential-free contact, 24V AC, 5mA, NO/NC selectable in the software<br>1x AI for external temperature sensor Pt1000 |
| Outputs                              | internal: red high intensity LED, horn<br>1x DO - SSR relay : 0,5A / 24VAC  |
| Parametrisation                      | over the bus with a free configuration software   |
| Communication                        | RS485 - Modbus RTU, slave 1200...115200 bit/s   |
| 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



- 1: G power
- 2: G0 power, input, output – common
- 3: G0 power, input, output – common
- 4: DO SSR output (against G0)
- 5: DI digital input for a dry contact (against G0)
- 6: K- communication RS485 -
- 7: K+ communication RS485 +
  
- 8: T1 temperature sensor Pt1000
- 9: T1 temperature sensor Pt1000 – common

## Dimensions



All dimensions in *mm*.

### Opening the cover

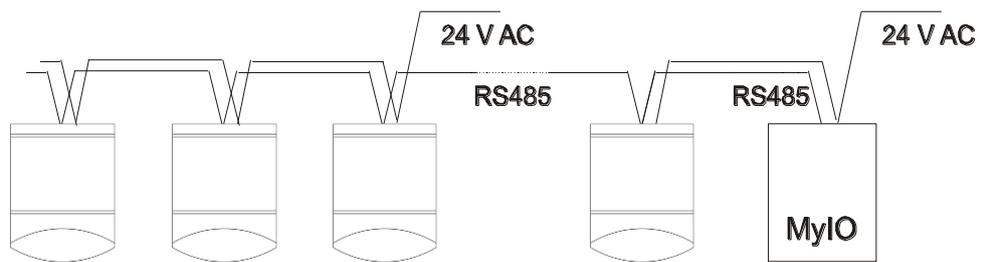
When removing the display part, proceed as follows:

- 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.

**Communication** The indicators are addressed in the range of 1 to 250. The maximum number of devices on one bus is thus limited to 250, while at larger distances repeaters are recommended. Do not exceed max. total bus length (1000 m). The bus connects to one of the following systems:

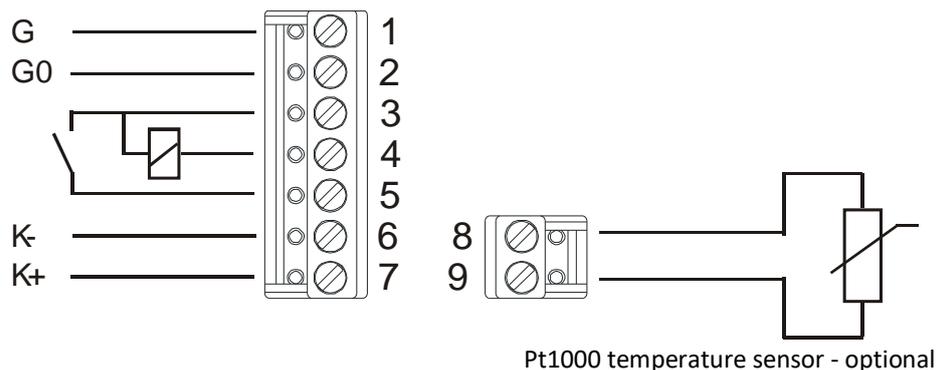
- web communicator MyIO with firmware for UI400 to transmit data to a remote server or local control over the web (see MyIO documentation)
- MiniPLC controller (display and buttons for local control, web access, e-mail and SMS alarming, connection to RcWare Vision or other SCADA over the Ethernet)
- over a M011 converter to the IPCT.1 touchscreen process station (8" colour touchscreen for local control, web access, e-mail and SMS alarming, connection to RcWare Vision or other SCADA over the Ethernet)
- over a M011 converter to a PC with RcWare Vision (plant graphics, trends, SMS alarms, web access...)
- any SCADA system with Modbus RTU communication.



Each terminal holds maximum 2 wires 0,5 mm<sup>2</sup>. This gives the limitation if the 2x2x0.8 mm cable is used: one branch is able to supply about 20 pcs, depending on the distances between the modules. Then a new power source must be added or another cable type must be used.

Recommended cable types are LAM DATATWIN 2x2x0.8 (diameter in mm), Draka DATA PAR 2x2x0.5 (cross-section in mm<sup>2</sup>), etc. Parallel run of 24V AC power and data line is possible.

**Peripheral connection**



**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.

02/2017 — Added section Opening the cover and link on the datasheet with other colours.

10/2017 — Added Safety note