

Room unit configurator

User manual



V1_062010

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Any comments, questions and improvement suggestions to this manual are welcome at info@vedotec.nl Thank you for your feedback.

2 Introduction

The configuration software Tool is used for addressing and configuring of all Domat Modbus-based Control System I/O modules, room units, and room controllers.

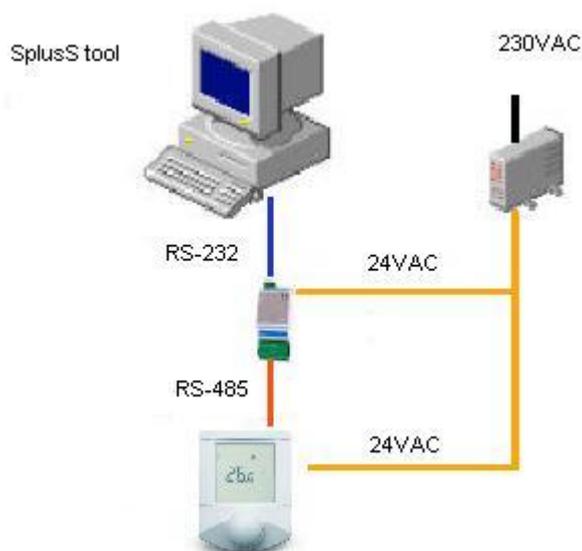
It is used by system engineers for pre-configuration in the office as well as by commissioning staff for I/O check and controller settings.

The tool runs in the Microsoft.NET V2.0 environment; the .NET files must be installed prior to running the software. No installation of domat.exe is necessary, just copy the files (.exe, .dll, and data.txt) into any suitable directory.

Naam	Grootte	Type	Gewijzigd op
channels.dd	1 KB	DCL-bestand	9-7-2009 14:13
Display V2.dll	192 KB	Toepassingsuitbreid...	7-7-2009 14:26
ESG.Graphs.Implementation.Base.dll	64 KB	Toepassingsuitbreid...	10-11-2008 11:26
ESG.Graphs.Implementation.dll	64 KB	Toepassingsuitbreid...	10-11-2008 11:26
ESG.RcWare.SCADA.Runtime.Channels.ClientUpdateChannels.dll	32 KB	Toepassingsuitbreid...	2-7-2008 12:58
ESG.RcWare.SCADA.Runtime.Drivers.Modbus.dll	40 KB	Toepassingsuitbreid...	2-7-2008 12:58
ESG.RcWare.SCADA.Runtime.Shared.dll	68 KB	Toepassingsuitbreid...	2-7-2008 12:58
ESG.WinControls.Graphs.dll	64 KB	Toepassingsuitbreid...	10-11-2008 11:26
readme	1 KB	Tekstdocument	9-7-2009 14:20
settings	2 KB	Tekstdocument	15-2-2010 7:55
SplusS Tool	3.372 KB	Toepassing	9-7-2009 11:59

3 Hardware configuration

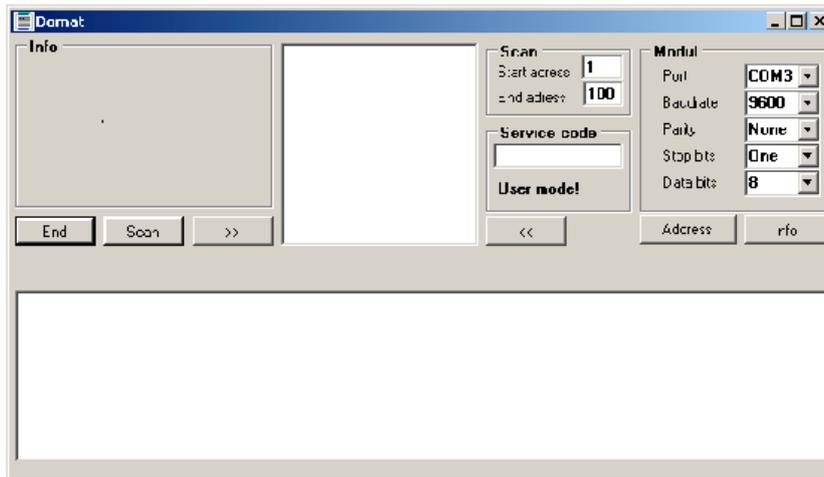
Connect the room unit, I/O module, or IRC controller to serial port of your PC through a RS232/RS485 converter. Power all components by 10..30V DC or 12..24 V AC.



See data sheets for terminals and correct module connection (bus end etc.).

4 Module detection

Run the Tool The main program window opens.



NB. The program should open in **User mode** (see indication below the service code input line).

There are three modes:

- **Light mode:** It is only possible to scan and address modules and read data. No internal settings are available.
- **User mode:** Most of the functions are available, it is possible to change address, parameters, setpoints, and all internal settings.
- **Service mode:** Same as User mode, but also possible to bring controllers to default state (factory settings) and perform analogue input calibration (special hardware tool needed).

If the program is not in User mode check if the data.txt file resides in the same folder as Domat tool .exe.

Light mode password: *(empty string)*

User mode password: ***rumcajs***

Service mode password: ***vecernicek***

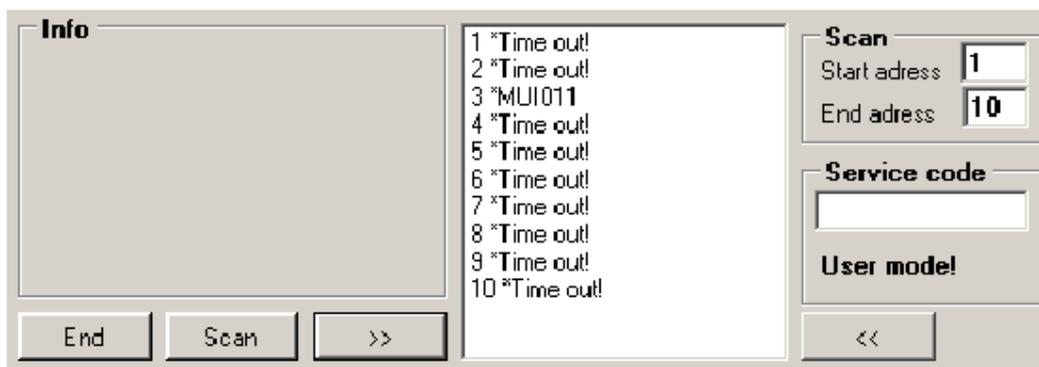
It is recommended to use the User mode for daily work. All descriptions and screenshots below are based on User mode.

4.1 Communication settings

In the Modul frame, select the serial port of your PC which is connected to the module bus. Default communication parameters are 9600, N, 1, 8; this is also the factory setting of all modules and room units.

4.2 Scanning the bus

Click the Scan button. The address range specified in the Scan frame (default 1 to 10) is scanned for present modules. All modules found in this range are listed in the window.



4.3 Possible problems

No modules scanned, TxD / RxD LED at M011 dark

Check COM port number and settings. Check serial cable (must be nullmodem). Check if COM port works with other software / hardware.

No modules scanned, TxD LED at M011 flashing, RxD LED dark

Check I/O bus cabling and polarity. Check if the internal setting of M011 is 9600, 8 bit (DIPs 1,2 ON, 3,4 OFF – default setting). Check if Modul setting in **SplusS** of Domat .exe is 9600, N, One, 8.

Try to bring the module / room unit into INIT mode (power off, INIT switch to ON, power on). The slave should respond at 9600, N, 8, 1 at address 1. Try to communicate with another (working) module or room unit to see if the converter, cabling, and software is set properly.

Another reason may be a non-standard type of RS232/RS485 converter. Try M011 if not used.

No modules scanned or communication dropouts, TxD / RxD LEDs flashing

Improperly terminated I/O bus (check bus termination switches at both ends), loose wires in the connectors, or EMC disturbances. Check the communication with one module only, apart from the cabinet and field wiring, preferably powered by a separate power source (transformer or stabilized power supply, eg. that supplied with IPCT.1).

This may also happen with the most recent notebooks which do not have serial ports over classical UART but over an internal USB interface (even if the notebook has the CANNON 9 Male connector). Then the driver does not catch the fast responses of the modules, typically M4xx, M300 etc. Try another notebook or communicate over the process station.

Another reason may be a non-standard type of RS232/RS485 converter. Try M011 if not used.

Unknown module type

May appear when using older versions of the configuration tool which do not support certain module / room unit types. Download the latest version at www.vedotec.nl or report the module ID together with version number of your to info@vedotec.nl

NB. The default I/O module and room unit setting is:

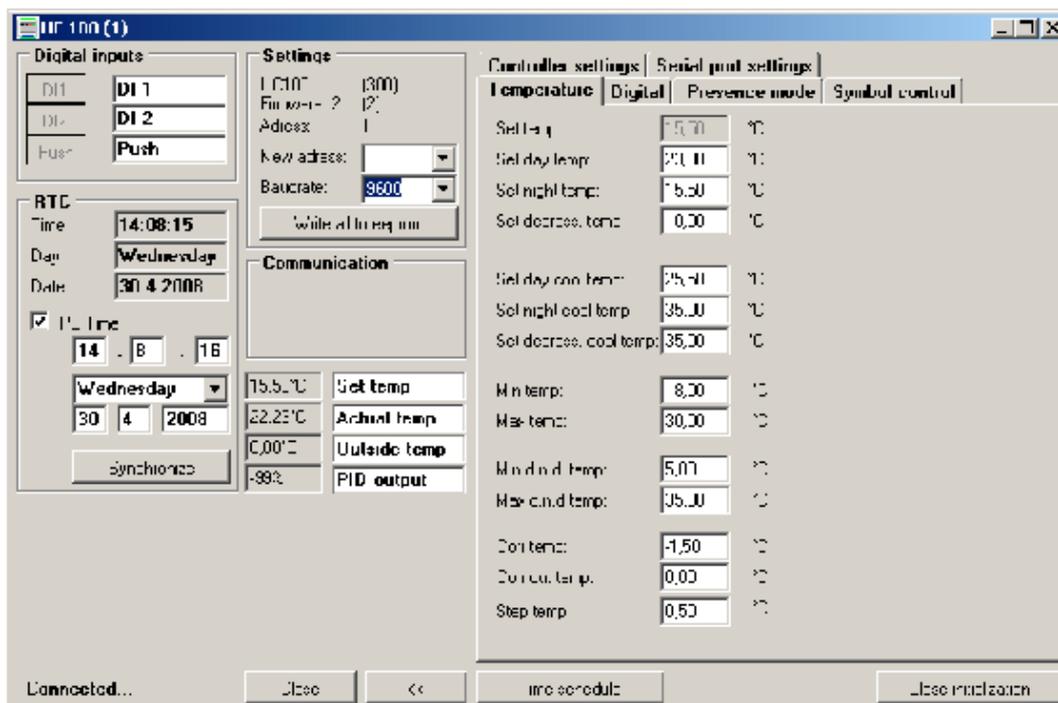
Address: 1

Communication: 9600, 8, N, 1

5 UC100 settings

Scan the bus and double click the listed controller in the field with scan results. The properties window opens.

5.1 General settings



In the upper bar there is module type and address.

5.1.1 Digital inputs

DI1, DI2: not relevant here; UC100 has no digital inputs

Push: status of the pushbutton. Goes green when the pushbutton is pressed.

5.1.2 RTC

Parameters of the real time clock (which control the weekly scheduler).

Time, Day, Date: current data in the controller

PC Time: tick if you want to synchronize according to the time of your PC. Untick if you want to set a special time (e.g. if the controller is being configured for supplies to another time zone).

Synchronize: writes the PC or given time, date, and weekday into the controller. All changes are immediately active.

5.1.3 Settings

Communication parameters.

In the upper part of the frame there is unit type (here UC100), and unit ID; each device (module / controller / room unit) type has its own ID, UC100 = 300 hex.

Firmware version: please report if you experience problems.

Address: Modbus slave address (1..255) of the device.

New address: select or enter the new address here when readdressing the unit.

Baudrate: for information only, can not be changed.

Write all to EEPROM: writes all the changed values (address, parameters etc.) to permanent memory. To make new address (and baudrate) active, power off and power on the device again. All other parameters are effective immediately.

NB. This button also stores all settings which are in the tabs on the right (operation modes, setpoints, etc.)

5.1.4 Communication

Communication statistics (sent and received telegrams). Only relevant for Service mode.

5.1.5 Others

Actual values

Set temp: current set temperature (PI controller setpoint) – selected temperature for actual operation and heating / cooling mode plus manual setpoint correction

Actual temp: measured temperature by the internal sensor plus sensor compensation
Outside temp: outdoor temperature optionally writable over Modbus to the room unit or controller; used just for display. See Controller settings, Show mode.

PID Output:: internal value of the room controller output: –100% (cooling) to 100% (heating). This value is processed in interlocking sequences and PWM modulators before it is sent to the outputs. For information and service only.

Other buttons and information

Connected/Disconnected – Connection status / communication with the unit

Close: Closes the unit window and returns to main program window

<<: Switches to simplified view (no tabs with values)

Time schedule: Opens the weekly scheduler window; see below

Open/close initialization: only relevant for initialization process, see below.

5.2 Tabs with setpoints and parameters

At the right of the window, there are tabs with advanced controller settings. Only use those settings when necessary. All settings are effective immediately and written to RAM. Permanent writing to EEPROM follows by clicking the „Write all to EEPROM“ button, see above, Settings.

5.2.1 Temperatures

Controller settings		Serial port settings	
Temperature	Digital	Presence mode	Symbol control
Set temp:	10,00		°C
Set day temp:	23,00		°C
Set night temp:	15,50		°C
Set depress. temp:	10,00		°C
Set day cool temp:	25,50		°C
Set night cool temp:	35,00		°C
Set depress. cool temp:	35,00		°C
Min temp:	18,00		°C
Max temp:	30,00		°C
Min d.n.d. temp:	5,00		°C
Max d.n.d. temp:	35,00		°C
Corr temp:	-1,50		°C
Corr out temp:	0,00		°C
Step temp:	0,50		°C

Set temp: Actual set temperature. It is updated only when the properties window is opened. For information only.

Set day temp.: Heating setpoint for Day/Comfort mode

Set night temp.: Heating setpoint for Night/Standby mode

Set depress.temp: Heating setpoint for Off/Depression mode

Set day cool temp.: Cooling setpoint for Day/Comfort mode

Set night cool temp.: Cooling setpoint for Night/Standby mode

Set depress. cool temp: Cooling setpoint for Off/Depression mode

Min. temp: Minimum temperature that can be set as corrected temperature (turning the knob overrides actual setpoint until next operation mode change)

Max. temp: Maximum temperature that can be set as corrected temperature

Min d.n.d. temp: Low limit for setpoint for all modes (Day, Night, Depression)

Max d.n.d. temp: High limit for setpoint for all modes (Day, Night, Depression)

Corr temp: Temperature correction which adds to the measured temperature (to compensate external influences). Default value is 1.5 °C which compensates internal heat losses

Corr out temp: Optional parameter which adds to the Outside temperature before sending to display

Step temp: Step for temperature settings when turning the knob.

5.2.2 Digital

Input	Clear latch	Latch state
L DI1	Clear latch	Disabled
L DI2	Clear latch	Disabled
L Push	Clear latch	Log(1)
L Heat	Clear latch	Log(1)
L Cool	Clear latch	Log(1)

Offline action	Start action
Relay 1: Relay Off	Relay 1: None
Relay 2: Relay Off	Relay 2: None
Wait time (s): 0	

Digital inputs

Optional latch function is implemented to keep even short signals at digital inputs readable: as soon as the signal appears on the input, it is written to the Modbus register. The latched state is then kept in the Modbus register until it is read out by the master.

Latch state:	Disabled	no function
	Log(0)	the input is normally closed, log.0 is latched
	Log(1)	the input is normally open, log.1 is latched

Clear latch: Reads out the register and sets the optional latch to its normal state

Offline action: Requested status of the digital output if the controller is offline (no communication from the Modbus master for a definable time). Usually None to let the controller do its job even if offline.

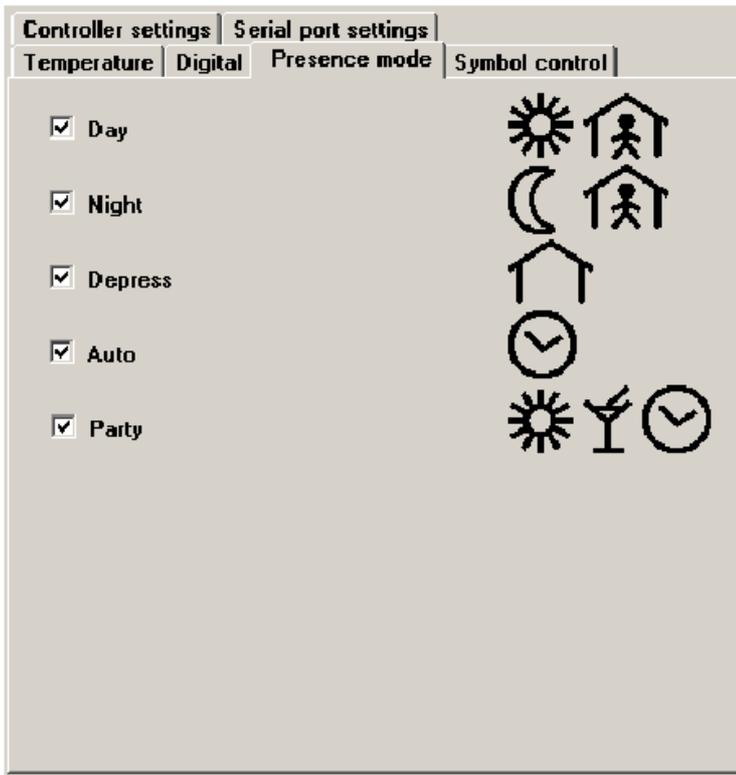
Wait time: Time of non-communication (no datagrams from master to slave) which is recognized as communication failure. It results in setting the outputs to the "Offline action" state (if defined). Entered in seconds, 1 to 255. Select from the drop-down box or write the value directly. If a value larger than 255 is entered, the default of 50 seconds is set.

Start action: Requested status of the digital output between power-up and the first datagram from master. Usually None.

5.2.3 Presence mode

The Presence mode configuration tab allows to enable and disable various operation modes. It is possible to switch between those modes either remotely, or in the controller menu (after long push), or pressing the button shortly (short push, see the Controller settings tab, Quick edit mode). Unchecked states are not available for the user. However, they can be set remotely over Modbus, so that the user can switch between

Day, Night, and Auto, while a central unit can – on top of that - set the controller to Depression (Central Off).



Day: Comfort mode, Day temperature setpoints apply, room occupied.

Night: Reduced mode, Night temperature setpoints apply.

Depress: Depression mode, the room is unoccupied for a longer time, energy savings temperature setpoints apply.

Auto: Temperature setpoints change according to the time scheduler between Day, Night and Depress modes. Together with the Clock symbol, the current mode symbol(s) is displayed.

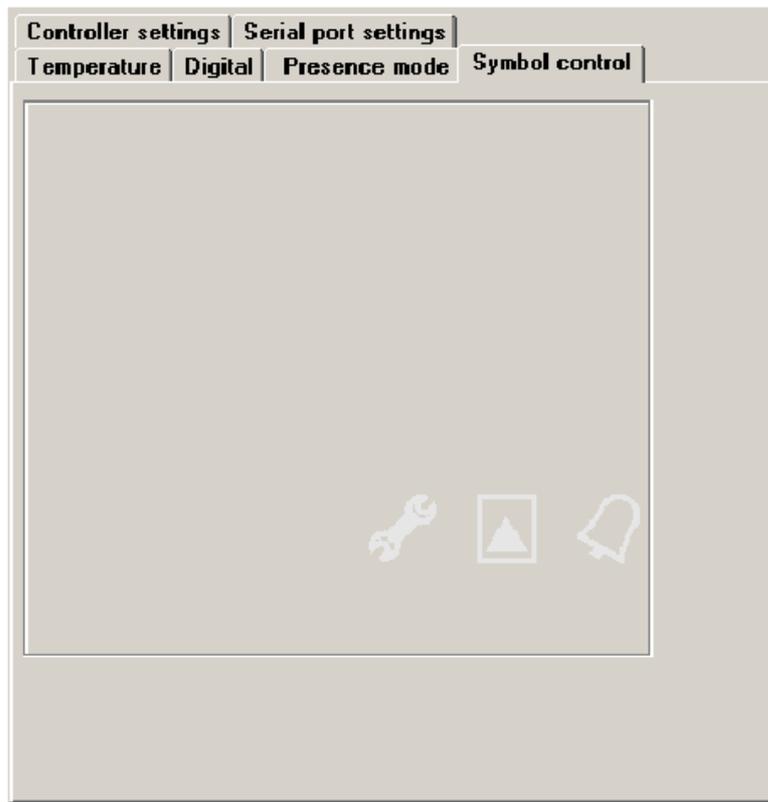
Party: Controller goes to Comfort mode for a predefined time of 2 hours. Then it goes back to previous mode.

5.2.4 Symbol control

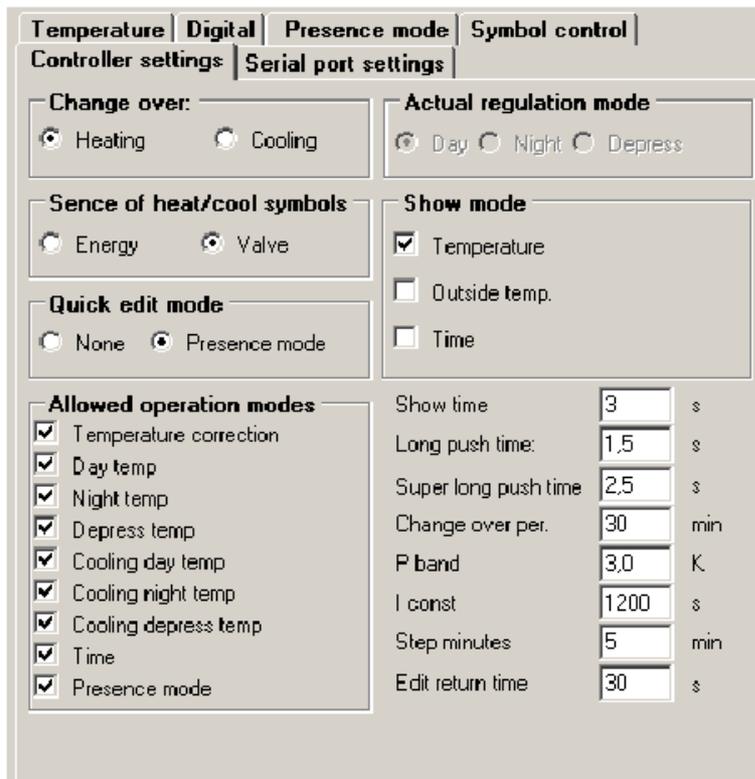
Not relevant here, just to check if the symbols of spanner, boiler and alarm bell are displayed properly.

Those symbols may be switched on and off by the Modbus master and indicate various system statuses and system and maintenance alarms.

Click the symbol to make it active at the display. Click it again to disable it.



5.2.5 Controller settings



Change over – this signal is usually sent to the controller over the bus according to available media temperature; if there is hot water available, the controller should be in the Heating mode. The default value is Heating and usually there is no need to change this.

Heating: sets the controller to Heating mode (valve opens if actual setpoint is above measured temperature)

Cooling: sets the controller to Cooling mode (valve opens if actual setpoint is below measured temperature).

Sense of heat/cool symbols:

Energy: the heating and cooling symbols display the status of the change-over signal, which actually means the type of energy which is available for heating or cooling, regardless of the actual valve status (i.e. may be that the heating symbol is on – hot water in the piping - but the valve is closed, as there is no need to heat the room now)

Valve: the symbol appears as soon as the valve in the corresponding mode starts to open. This is used most, and also is the default settings.

Quick edit mode: defines the function of short push of the button.

None: short push has no effect

Presence mode: short push of the button changes between the modes predefined (checked) in the Presence mode.

Allowed operation modes: functions and values available in the settings menu after a super long push. This is what the user actually can control at the device.

Temperature correction: change of the actual setpoint, sets back to 0 with presence mode change. If disabled here, even turning the knob has no effect.

Day temp ... Cooling depress temp: Setpoints for heating and cooling for Day, Night, and Depression mode – see the Temperature tab.

Time: real time clock setting (hours, minutes, weekday).

Actual regulation mode: displays the current operation mode (Day / Night / Depression)

Show mode: select values which periodically swap at the display in the Show mode.

Temperature: actual room temperature

Outside temp.: outside temperature – must be communicated to the controller by a Modbus master, use as an option only

Time: real time (hh.mm, day of week together with the clock symbol)

Show time: period of swapping the values of Show mode.

Long push time: time to push the button to select the Time schedule menu.

Super long push time: time to push the button to select the Settings menu (and get access to the settings enabled in Allowed operation modes).

Change over period: time of inactivity after the change-over signal comes, 1 to 255 mins. Intended to let the hydraulic system adapt and deliver proper media temperature.

P band: proportional band of the controller; control deviation (setpoint – actual value) to open the valve at 100 %.

I const: integrating part, time to increase the output by the P contribution at constant deviation.

Step minutes: time resolution for time schedule settings.

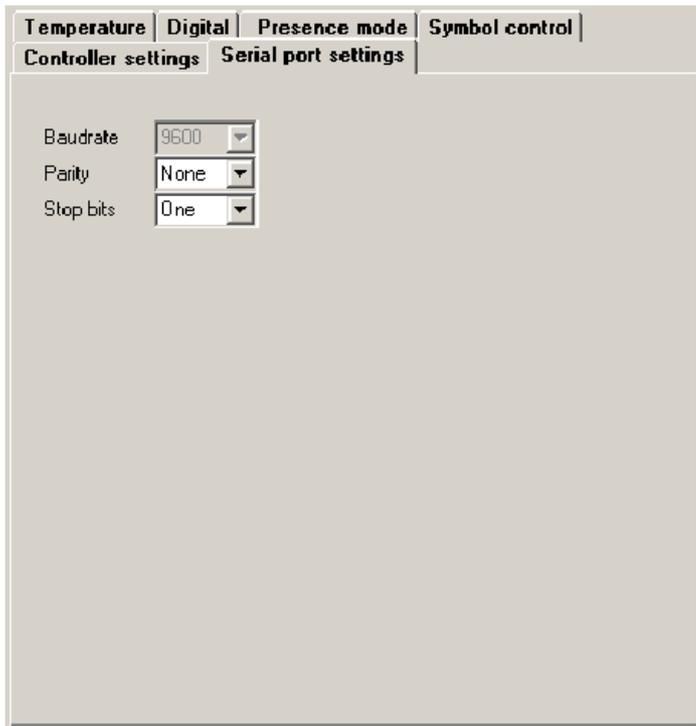
Edit return time: time to return to the basic display (show mode) in case of user inactivity.

5.2.6 Serial port settings

Baudrate: for information only, to be changed in the main window (see above: General settings, Settings)

Parity: None, Even, Odd, default is None.

Stopbits: One or Two, default is One.



5.3 Time schedule

The weekly time schedule in the controller is stored in EEPROM and controls the operation modes according to real time clock and the defined settings. Each of the 7 days has 6 events which either can be disabled or set the controller into a particular operation mode (Day / Night / Depression). A disabled event does not influence the operation mode and it does not matter what time (hh:mm) it is set to.

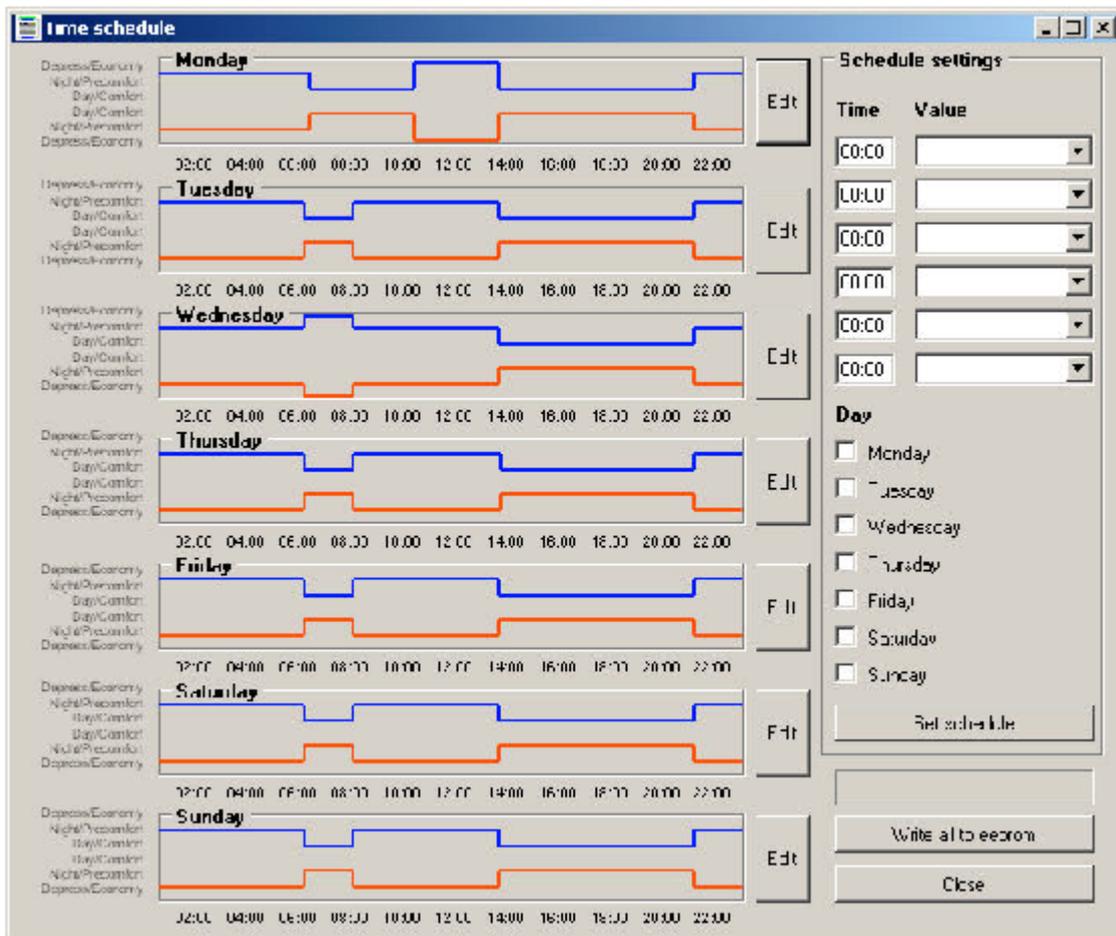
Click the Time schedule button in the main window to open the Time schedule window. There are predefined events. The Edit button at each weekday copies this particular weekday to the Schedule settings frame. Then it is possible to modify the events of the day:

Time: for your comfort, type "1205" to set 12h 05m. No colon necessary.

Value: select from the drop-down box (Day, Night, Depression, Disabled).

After all six events are defined, click Set schedule to write the schedule to the controller. If multiple days are marked (ticked) prior to pressing the Set schedule button, the same schedule is written to all of them.

In the graphic pan on the left there is the complete weekly list of changes; the closer the blue and red setpoint lines are, the more comfortable the mode is. The graph does not reflect real temperature values, it is just a symbolic representation of the operation modes.



After you have finished the editing, click the Write all to EEPROM button. The data is written permanently to the controller's memory. The progress bar above the button shows the writing progress, in the end of the process there comes a pop-up window Writing complete.

Click Close to close the Time schedule window and return to the main controller window.

6 UI011 settings

The UI011 is a room unit with no control function. It only provides actual temperature and user-entered data to a master device (PLC or any controller) and displays operation statuses, alarms etc. For full description of the master to UI011 communication, see the Room units and controllers: Communication protocol description document.

Scan the bus and double click the listed controller in the field with scan results. The properties window opens.

6.1 General

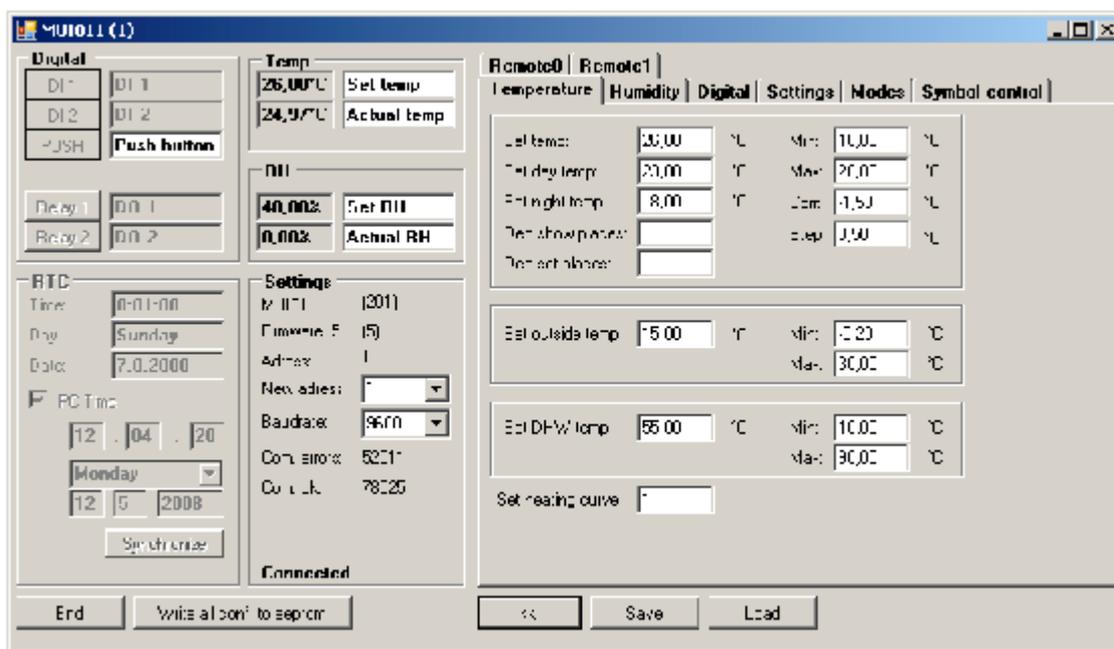
In the upper bar there is module type and address.

6.1.1 Digital

DI1, DI2: not relevant here; UI011 has no digital inputs

Push: status of the pushbutton. Goes green when the pushbutton is pressed.

Relay 1, Relay 2: not relevant here; UI011 has no digital outputs



6.1.2 RTC

Not relevant here; UI011 has no real time clock.

6.1.3 Temp

Set temp: Temperature setpoint set by user. The setpoint can be changed in the Min...Max limits defined in the Temperature tab – see below.

Actual temp: Actual measured room temperature inclusive correction Corr defined in the Temperature tab – see below

6.1.4 RH

Not relevant here, UI011 has no humidity sensor

6.1.5 Settings

Communication parameters.

In the upper part of the frame there is unit type (here UI011), and unit ID; each device (module / controller / room unit) type has its own ID, UI011 = 201hex.

Firmware version: please report if you experience problems.

Address: Modbus slave address (1..255) of the device.

New address: select or enter the new address here when readdressing the unit.

Baudrate: 1200...19200 bps.

Com. errors: Communication error counter.

Com. OK: Number of correctly received packets.

Connected/Disconnected – Connection status / communication with the unit

6.1.6 Others

End: Closes the unit window and returns to main program window

Write all conf. to EEPROM: writes all the changed values (address, parameters etc.) to permanent memory. To make new address and baudrate active, power off and power on the device again. All other parameters are effective immediately.

NB. This button also stores all settings which are in the tabs on the right (operation modes, setpoints, etc.)

<<: Switches to simplified view (no tabs with values)

Save: Saves the actual settings of the unit to a file. The settings can be retrieved for download of the same configuration to more units.

Load: Loads settings from a file. The loaded settings are written to the device's memory (as if they were entered manually). For permanent saving, click Write all conf. to EEPROM.

6.2 Tabs with setpoints and parameters

At the right of the window, there are tabs with advanced controller settings. All settings are effective immediately and written to RAM. Permanent writing to EEPROM follows by clicking the „Write all conf. to EEPROM“ button, see above, Others.

6.2.1 Temperature

Temperature	Humidity	Digital	Settings	Modes	Symbol control
Set temp:	<input type="text" value="26,00"/>	°C	Min:	<input type="text" value="18,00"/>	°C
Set day temp:	<input type="text" value="23,00"/>	°C	Max:	<input type="text" value="26,00"/>	°C
Set night temp:	<input type="text" value="18,00"/>	°C	Corr:	<input type="text" value="-1,50"/>	°C
Dec show places:	<input type="text" value="1"/>		Step:	<input type="text" value="0,50"/>	°C
Dec set places:	<input type="text" value="1"/>				
Set outside temp	<input type="text" value="15,00"/>	°C	Min:	<input type="text" value="-0,20"/>	°C
			Max:	<input type="text" value="30,00"/>	°C
Set DHW temp:	<input type="text" value="55,00"/>	°C	Min:	<input type="text" value="10,00"/>	°C
			Max:	<input type="text" value="90,00"/>	°C
Set heating curve:	<input type="text" value="1"/>				

Set temp: Temperature setpoint, for writing only. Actual temperature setpoint is displayed and continuously updated in the Temp section – see above. Writing to this variable has the same effect as changing the setpoint by turning the knob.

Set day temp: Setpoint for day mode.

Set night temp: Setpoint for night mode.

Both those setpoints can be set and read by the master device.

Dec show places: may be 0, 1, or 2 – number of decimal places to display the actual temperature. Example:

0 23 °C
1 23.2 °C
2 23.27 °C

Dec set places: may be 0, 1, or 2 – number of decimal places to display when changing a setpoint.

Min, Max: Minimum and maximum limits for changing the temperature setpoint. May also be relative, such as Min: -3.5, Max: +3.5 °C. The interpretation must be programmed at the master device.

Corr: Internal correction; adds to the measured temperature before it is displayed and send to the Modbus table. The default value of 1.5 °C compensates the internal heat dissipation within the room unit.

Step: Value to change setpoint on one step of the knob. The knob has 24 steps to complete one turn.

Set outside temp: Outside temperature at which heating mode starts. Symbols: Thermometer, Empty house. This temperature can be set by the user and then read by master for further processing in the primary heating circuits. It is set in whole degrees (no decimals) in the Min.. Max range:

Min, Max: Minimum and maximum limits for changing the outside temperature to start heating.

Set DHW temperature: Setpoint of domestic hot water. Symbols: Water tap. This temperature can be set by the user and then read by master for further processing in the DHW preparation circuit. It is set in whole degrees (no decimals) in the Min.. Max range:

Min, Max: Minimum and maximum limits for changing the DHW temperature setpoint. Set heating curve: Type of heating curve (relation between outside temperature and heating water setpoint). Symbols: Heating, Boiler. Can be set to 1, 2, 3, or 4. It may be read by master for further processing in the heating circuit.

6.2.2 Humidity

Temperature	Humidity	Digital	Settings	Modes	Symbol control
Humidity					
Set RH:	<input type="text" value="40,00"/>	%			
Min RH:	<input type="text" value="10,00"/>	%			
Max RH:	<input type="text" value="90,00"/>	%			
Corr RH:	<input type="text" value="0,00"/>	%			
Dec show places:	<input type="text" value="0"/>				
Dec set places:	<input type="text" value="0"/>				
Step 1:	<input type="text" value="1,00"/>	%			

Parameters for setting relative humidity setpoint.

Set RH: Humidity setpoint set by user.

Min RH, Max RH: Minimum and maximum rH values the user is allowed to set by turning the knob.

Corr RH: Internal correction; adds to the measured relative humidity before it is displayed and send to the Modbus table. Not relevant now as UI01x does not contain humidity sensor.

Dec show places: may be 0, 1, or 2 – number of decimal places to display the actual relative humidity. Example:

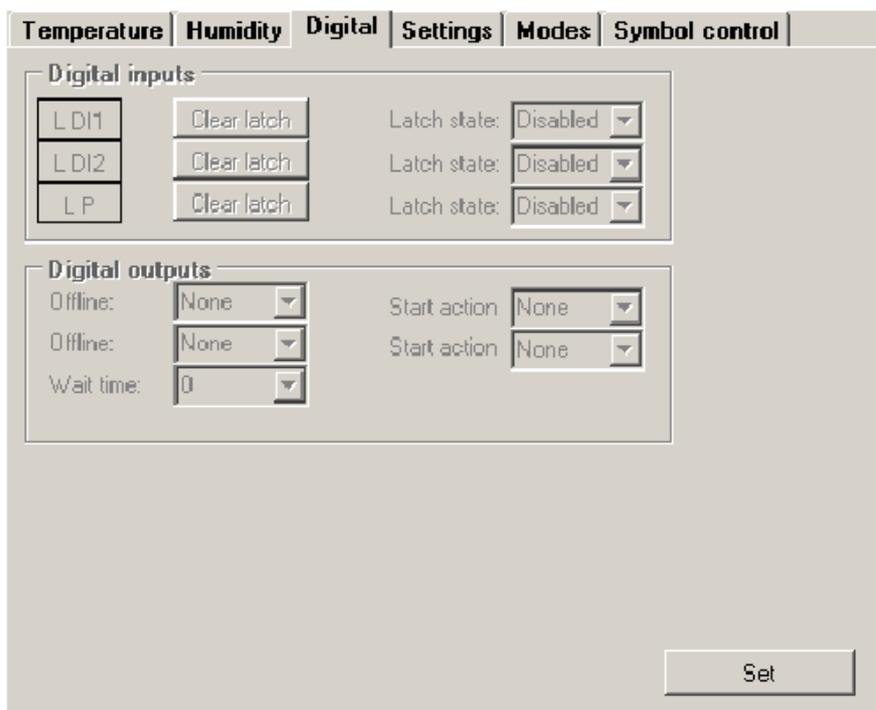
- 0 45 %rH
- 1 45.2 %rH
- 2 45.25 %rH

Not relevant here as UI01x does not contain humidity sensor.

Dec set places: may be 0, 1, or 2 – number of decimal places to display when changing the relative humidity setpoint.

Step1: Value to change relative humidity setpoint on one step of the knob. The knob has 24 steps to complete one turn.

6.2.3 Digital



Not relevant here as UI010 and UI011 have no digital inputs and outputs.

6.2.4 Settings

The Show mode defines swapping of displayed values. There may be up to 5 different values periodically displayed:

- Temperature – actual (measured) temperature incl. correction
- Humidity - actual (measured) humidity incl. correction (not relevant for UI01x)
- Time – real time of the internal clock (not relevant for UI010, UI011)
- Remote 0 – any value sent from the master, see below
- Remote 1 – any value sent from the master, see below.

The checked values are periodically changed at the display. By pushing the button the unit goes from Show mode to Quick edit mode or Edit mode.

Show time: period to display each of the values selected in Show mode. Default: 2 secs.

Edit return time: Timeout – if user inactivity in the Edit mode is longer than the Edit return time, the unit automatically goes to Show mode.

Long push time: if the button is pushed for Long push time or longer, the unit switches to Edit mode. In the Edit mode it is possible to change selected setpoints (values) and states.

Quick edit mode: by pushing the button shortly (less than Long push time) the value selected in the Quick edit mode is changed according to its enabled states – see below.

None: if the unit is given a short push, nothing happens.

The screenshot shows a control panel with several tabs: Temperature, Humidity, Digital, Settings, Modes, and Symbol control. The 'Settings' tab is active. It is divided into two main sections: 'Show mode' and 'Quick edit mode'.
The 'Show mode' section contains a list of checkboxes: Temperature °C/°F (checked), Humidity %, Time, Remote 0, and Remote 1. To the right of these are three input fields: 'Show time' with the value 2.00, 'Edit return time' with the value 10.00, and 'Long push time' with the value 1.50.
The 'Quick edit mode' section contains a list of radio buttons: None (selected), Presence mode, Day/night mode, Fan, and Heat/cool mode.

6.2.5 Modes

Probably the most important part of the functionality of the unit.

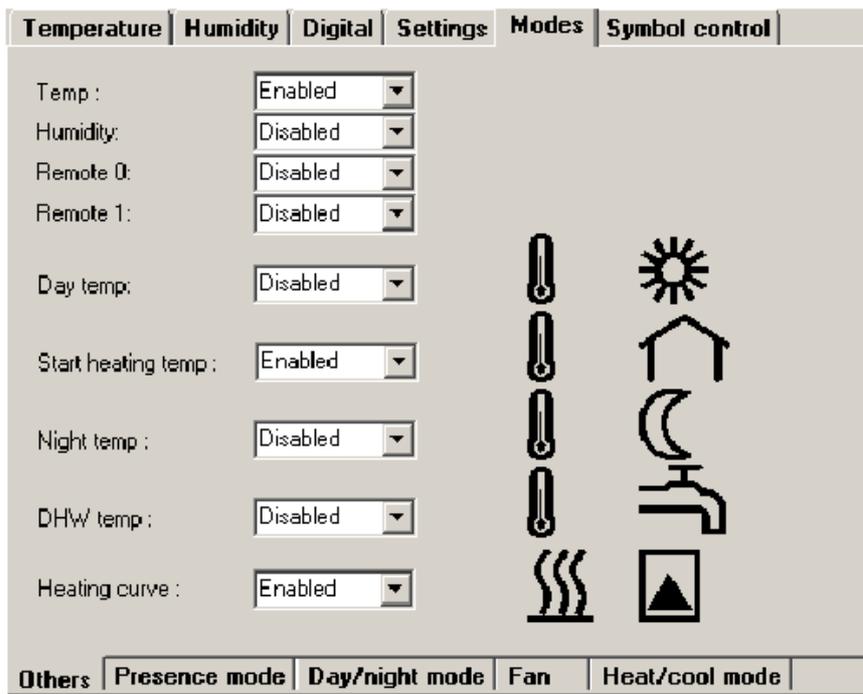
After the unit is given a long push, it switches to the Edit mode. In the Edit mode it is possible to select different parameters and change them. The selection follows by turning the knob. The active parameter together with its symbol set is flashing. If you want to change a particular parameter, give a short push. The symbols stop flashing and the parameter can be changed by turning the knob.

Confirm the parameter by a short push, and select another parameter to change. As soon as you have finished settings, give a long push which switches the unit back to the Show mode. Inactivity time longer than Edit return time also switches back to Show mode.

Here in the Modes tab the engineer selects which modes are relevant for his application and what the user will be able to change. E.g. it apparently makes no sense to enable humidity setpoint if no humidity control is installed.

The Modes tab incorporates several sub tabs. Switch between the sub tabs clicking on the lower brink of the Modes tab.

In the main tab, Others, there are parameters and values which do not require any additional settings, such as selection of the enabled states. They are:



Temp: Temperature setpoint. If disabled, it can not be changed even by turning the knob in the Show mode. Symbols: °C/°F

Humidity: Relative humidity setpoint. Symbols:%rH.

Remote 0: Any value read and written by master. See the Remote 0 tab.

Remote 1: Any value read and written by master. See the Remote 1 tab.

Day temp: Temperature setpoint for Day mode. Symbols: Thermometer, Sun.

Start heating temp: Outside temperature at which heating mode starts. Symbols: Thermometer (outside the) Empty house.

Night temp: Temperature setpoint for Night mode. Symbols: Thermometer, Moon.

DHW Temp: Domestic hot water setpoint. Symbols: Thermometer, Water tap.

Heating curve: Heating curve type (1..4). Symbols: Heating, Boiler.

At the screenshot above, the modes Temperature setpoint (room), Start heating at..., and Heating curve are enabled. This means that the user can change room temperature setpoint, outside temperature at which heating is enabled or disabled, and heating curve type. Those values can be read out by the master. No other values are available for the user except those for display selected in the Show mode.

Another modes are in the other sub tabs. Enable each of those modes if the user is allowed to change it. Enable the mode also if it should be changed in the Quick edit mode.

Check the states that the user may select from. For instance on the screenshot below the user only can select between Comfort and Standby modes, however, the presence mode can be set to Off remotely from the master.

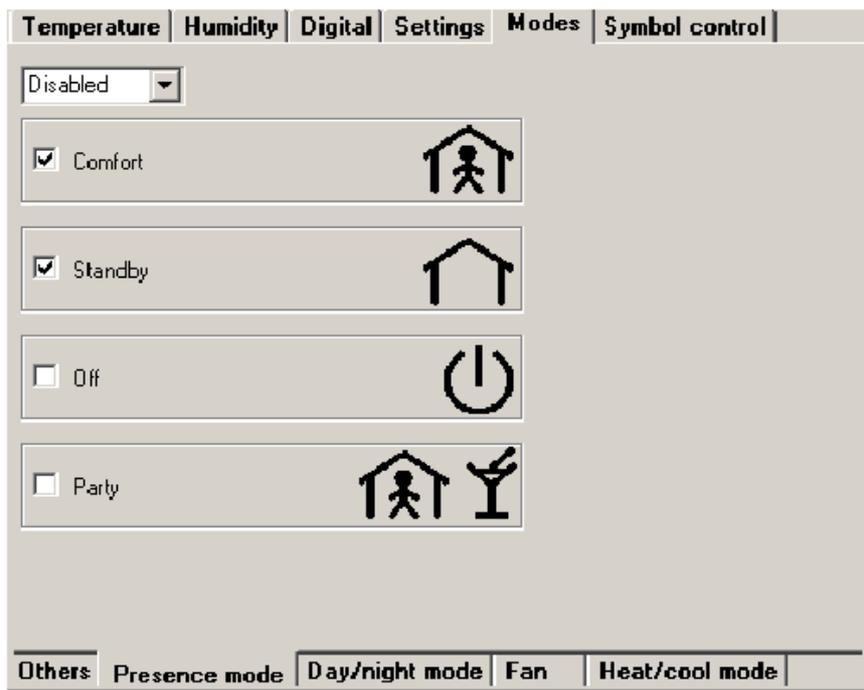
6.2.6 Presence mode

Comfort: maximum heating and minimum cooling temperature, all aggregates are functional. Symbols: Occupied house.

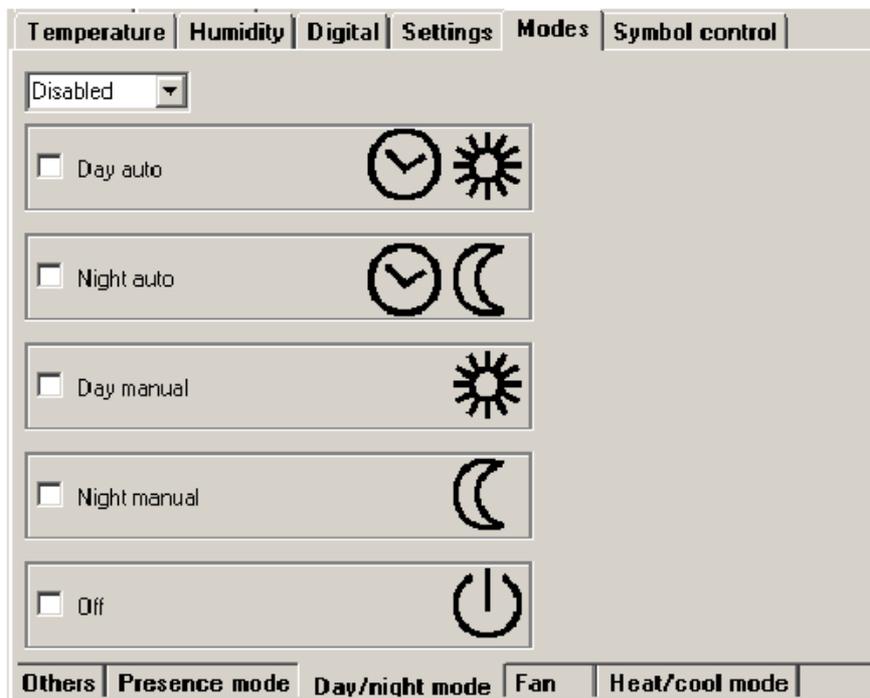
Standby: Temporary absence. Symbols: Empty house.

Off: Long-term absence, holidays, weekend, room unoccupied etc. Symbols: Off symbol.

Party: Temporary occupancy, long office hours etc. Should be set back to Standby after a certain time (usually 2 hours) by master.



6.2.7 Day / night mode



The Day / night mode is mainly used for residential applications.

Day auto: Day mode set by a time scheduler (this is done by master; the UI010 and UI011 do not possess real time clock). Symbols: Clock, Sun.

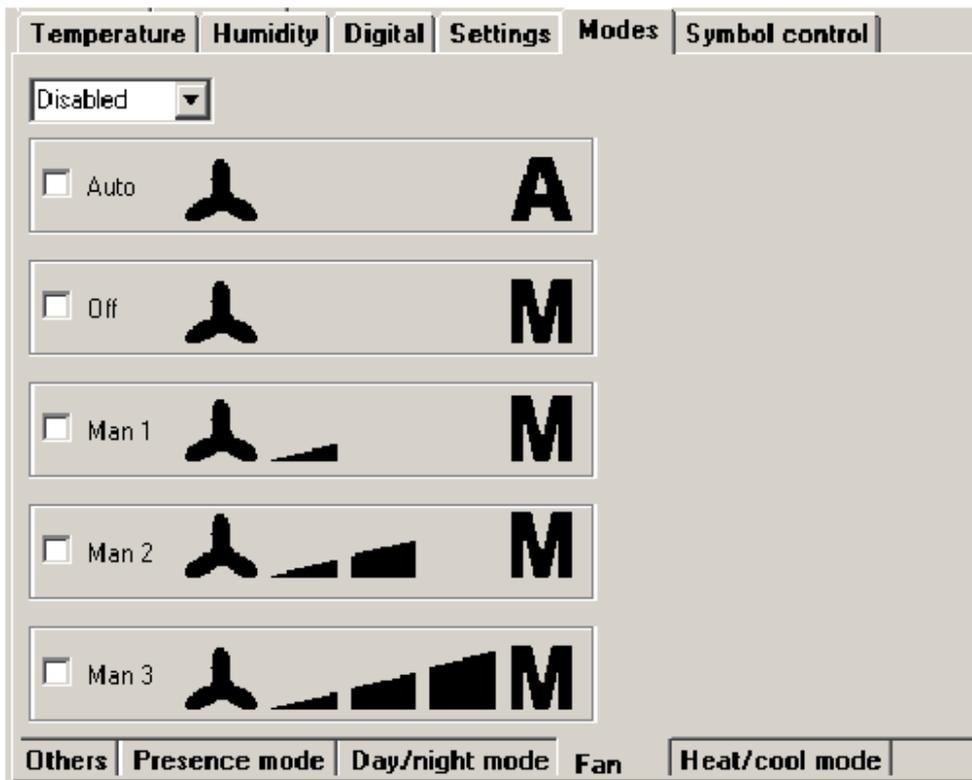
Night auto: Night mode set by a time scheduler. Symbols: Clock, Moon.

Day manual: Manual override to Day mode, or just Day mode if scheduler not present. Symbols: Sun.

Night manual: Manual override to Night mode, or just Night mode if scheduler not present. Symbols: Moon.

Off: Energy savings mode, long-term unoccupancy.

6.2.8 Fan



For applications where manual fan control is required (fancoils, split units, convectors).

Auto: Fan stages controlled by the master. Will probably also display actual fan stage (written by master, see the Modbus table). Symbols: Fan, A.

Off: Manual off. Symbols: Fan, M.

Man1: Fan manually on Stage 1. Symbols: Fan, M, Stage1.

Man2: Fan manually on Stage 2. Symbols: Fan, M, Stage2.

Man3: Fan manually on Stage 3. Symbols: Fan, M, Stage3.

6.2.9 Heat / cool mode

For split units, heat pumps etc.

Off: Unit is off, no operation. Symbols: Off.

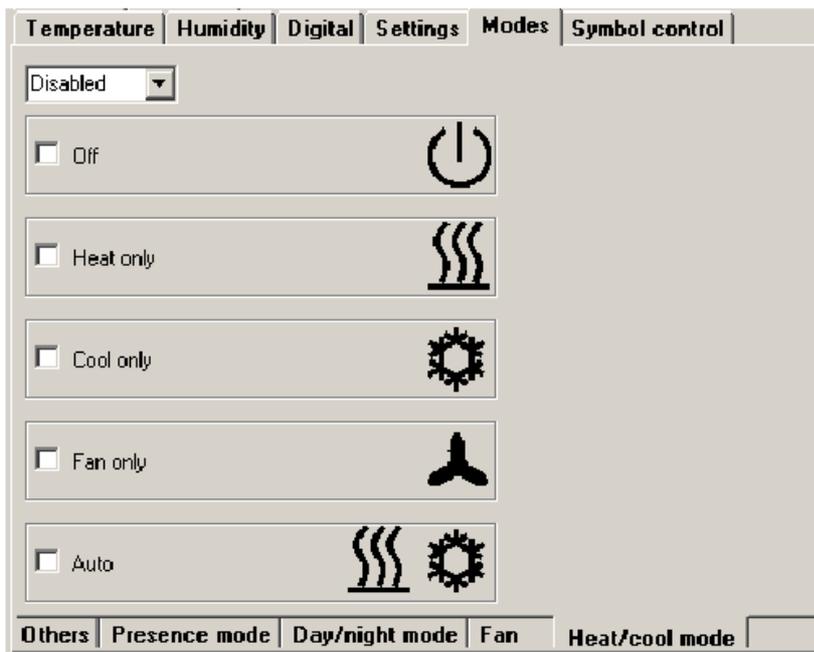
Heat only: Heat only mode, cooling disabled. Symbols: Heat.

Cool only: Cool only mode, heating disabled. Symbols: Cool.

Fan only: Brings fresh air in or air circulation without energy (heating / cooling).

Symbols: Fan.

Auto: Heating or cooling according to actual energy demand, both functions enabled. Symbols: Heat, Cool.

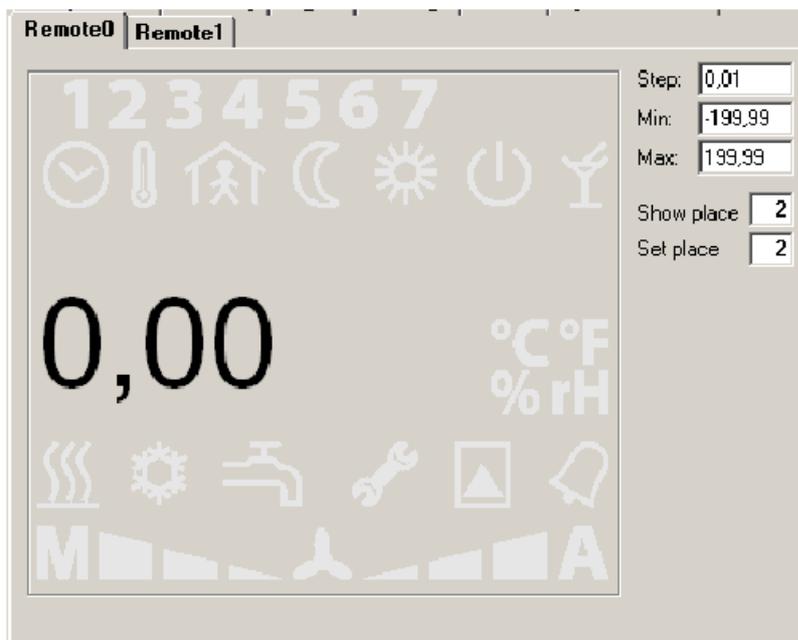


6.2.10 Symbol control

Not relevant here.

6.2.11 Remote 0

Defines the way Remote value 0 is displayed and set.



Step: Value to change setpoint on one step of the knob. The knob has 24 steps to complete one turn.

Min, Max: Minimum and maximum limits for changing the value by user.

Show place: Number of decimal places to display.

Set place: Number of decimal places to display when setting the value.

See the Modbus table for a detailed overview of values to read and write the Remote value 0 by master.

6.2.12 Remote 1

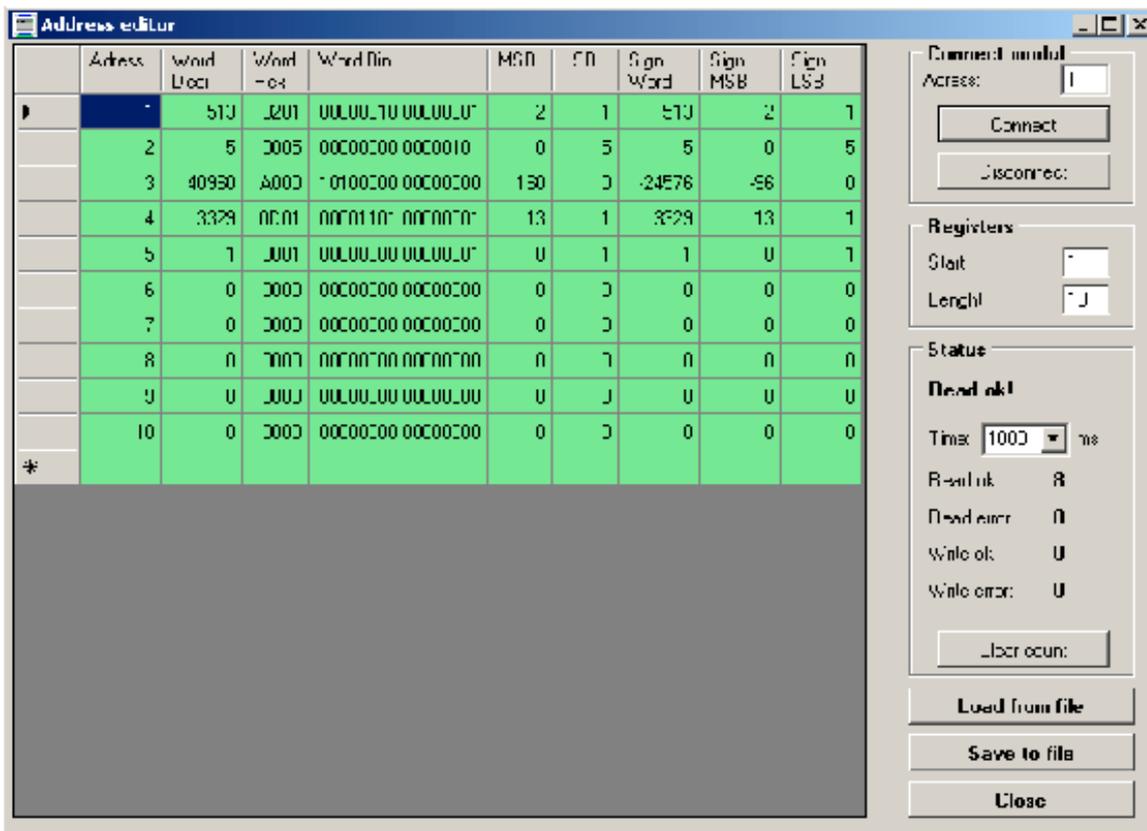
Same as Remote 0, but defines the way Remote value 1 is displayed and set.

7 Advanced functions

7.1 Address

The configuration.exe tool also brings advanced Modbus addressing functions.

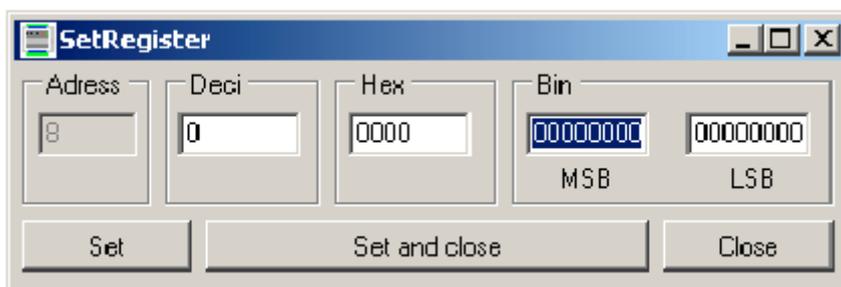
1. Start the tool in User mode.
2. Check if the modules are connected by scanning the bus.
3. Instead of clicking directly to the module address, click the Address button.
4. Enter a valid module address in the Connect module: Address field.
5. Click Connect.



A table with read values from the controller or room unit opens. Here it is possible to read and write directly to the Modbus registers of the device.

Please keep in mind that this is an activity which requires advanced knowledge of the register table. By improper writing, the device may be damaged.

1. Click a register row to open a window for writing.



2. Enter a new value in your favourite format.

3. Click Set if you want to set the new value and leave the dialog open. Click Set and close to set the new value and close the dialog. Click Close to cancel the operation.

7.2 Info

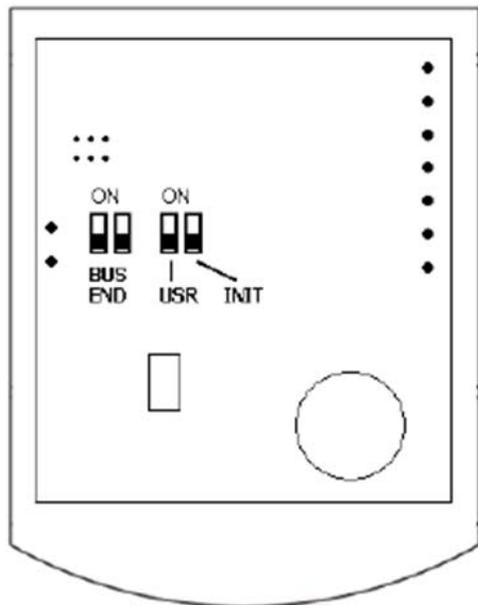
In the main program window, click the Info button.

In the window there is a list of all the supported modules. Check here if the tool is not able to detect your module / room unit / controller.

Appendix I

UC200 Programming notes

DIP switches



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 the 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 configuration tool, open the controller window
- click the Init button in the tool
- remove and apply power.

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 configuration tool.

Operation mode change:

Push the knob shortly (<1 s). Each push changes the operation mode to Party – Day – Night – Off – Auto.

In the Auto mode, the Day / Night / Off modes change according to time schedule).

The Party mode overrides to Comfort for 120 minutes, then follows the actual time schedule.

The weekly time schedule switches between Day, Night, and Off modes according to the event list. There may be up to 6 events per day.

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 tool.

Appendix II

RS-485 Network recommendations for UC200 controllers.

Recommended cable types are LAM DATATWIN 2x2x0.8 (diameter in mm), Draka DATAX PAR 2x2x0.5 (cross-section in mm²), etc. Parallel run of 24V AC power and data line is possible.

If communication and power are in the same cable, use 4-core 2x2x0.8, or 4x1. Up to 100-120 meters, parallel lines of 24 V and data bus are no problem.

Also suitable cable types are Belden 8205 - 2x0.8 (cross-section in mm²), or 2x1 (diameter in mm) etc. Regarding to EMC it is better if the pairs are twisted, such as with the Draka or Belden cable.

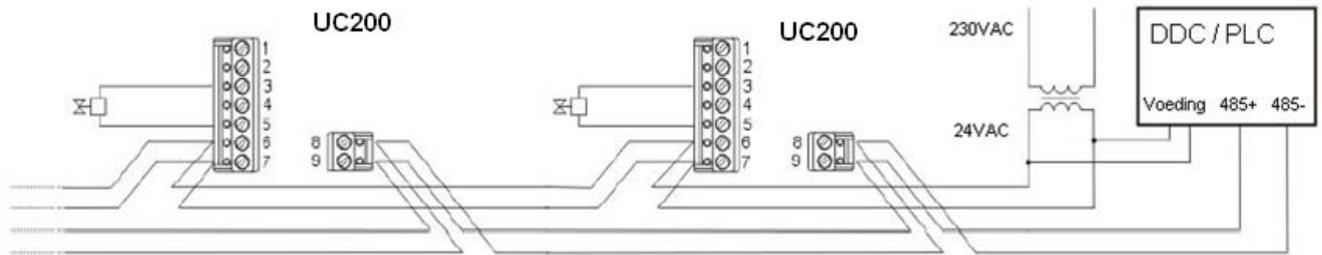


Fig. 2: Connection of the controllers (without AC adaptor, DDC of PLC powered together with the controllers)

A terminal is designed for maximum 3 wires of 0.8 mm². With cable types as above, maximum (starting) power of the controller and valve of ca. 7 VA and acceptable voltage drop of max. 15 %, the maximum cable length for 10 controllers is about 50 m.

If the controllers and valves are at higher distance than 50 m from the transformer or more valves are connected to the transformer (max. 2 valves per controller), it is more suitable to supply the controllers locally (Fig. 3). The RS485 bus is galvanically separated and connects all controllers, regardless of the way they are powered.

If there are higher voltage drops at the power cabling, the thermic actuators may not fully open. The radiator bodies then provide less heat. However, the electronics in the controllers works OK until the power drops below 12 V AC.

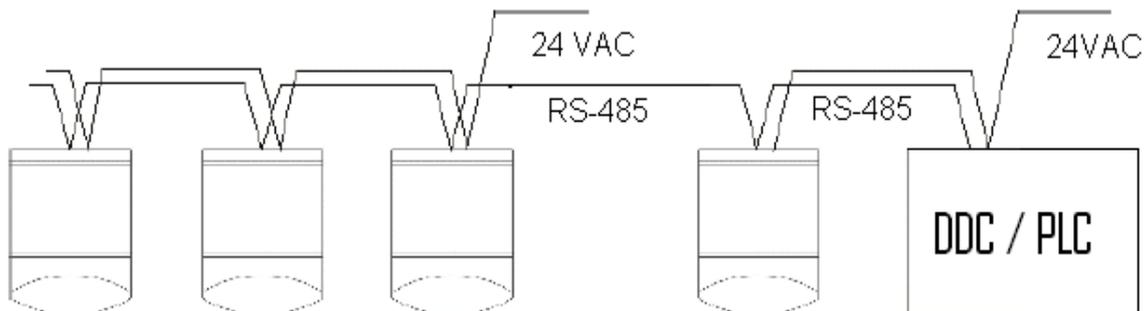


Fig. 3: Two transformers for long distant controllers

VEDOTEC B.V.

De Vijfboeken 1-k
2911 BL Nieuwerkerk aan den IJssel
Tel: + 31 (0)88 833 68 00
Fax: + 31 (0)88 833 68 68
info@vedotec.nl
www.vedotec.nl