UCM/Heatmiser Manual

The Comfort system supports integration to Heatmiser thermostats via the UCM/Heatmiser module. The communication interface may be by RS485 or Ethernet using plug-in submodules. The UCM/Heatmiser provides a two-way interface to the Heatmiser thermostats, providing the following benefits:

- allows control and temperature monitoring of Heatmiser thermostats from keypads, telephone, iPad/iPhone/Android app, SMS (with UCM/GSM), or software.
- allows control of Heatmiser thermostats by Time Programs.
- allows setting of the alarm to Away, Night, Day, Vacation and Security Off to change heating and cooling setpoints in Heatmiser.

Figure 1.1 - UCM/Heatmiser without RS485 or ETH03 submodule

Specifications

- Size 108 x 88 mm baseboard with 10 way connector for submodules.
- Power Supply 12V 50 mA (supplied from Comfort white 4 way cable)

What is Included

- White RS485 4-way cable 330 mm.
- Submodules UCM485 or ETH03 are ordered separately and not included.

Interfaces for UCM/Heatmiser

The UCM/Heatmiser can interface with RS485 or Ethernet using the appropriate submodules mentioned below. Hence it does not come with any fixed interface.

The following submodules can be used with UCM/Heatmiser;

- ETH03: This is the interface to the Ethernet Local Area Network with a RJ45 Socket. A LAN cable is not supplied.

Figure 1.2 - ETH03 Submodule

- AUX485: This is an isolated RS485 Interface. The terminal blocks V+/V- are for connection to the 12V power supply of the external device. The KA/KB terminals are for the external RS485 data - this is NOT the same as Comfort's internal RS485 KA/KB. The AUX485 V+/V- and RS485 are electrically isolated from Comfort. The V+ and V- can also be connected to Comfort 12V and COM but this means that the Heatmiser RS485 bus is no longer isolated from Comfort.

Figure 1.3 - AUX485 submodule

The submodules are supplied with mounting standoffs, screws and terminal blocks where required. The submodule should be plugged in via the 10 way male header to the P1 female header on the UCM/Heatmiser. Make sure the pins fit fully into the 10 way P1 header and are not misaligned. Standoffs are provided to fix the submodule onto the UCM/Heatmiser.

System Requirements

- Comfort II with firmware 7.042 and above
- UCM/USB or UCM/Ethernet for Comfigurator programming firmware version 7.xxx and above. Note that this is different from the UCM/Heamiser

- Comfigurator 3.7.8 and above http://www.cytech.biz/comfigurator.html
- UCM/Heatmiser 7.038 and above
- Submodule ETH03 or AUX485 (ordered separately)

Principle of Operation

The UCM/Heatmiser supports integration for up to 32 thermostats, 32 humidity/temperature sensors, and an outside temperature sensor (for RS485). Up to 8 wifi thermostats can be supported by UCM/Heatmiser with ETH03.

Comfort can be configured to control and monitor certain parameters of Heatmiser thermostats by first mapping them to Comfort's Register (Counter, Flag or Sensor).

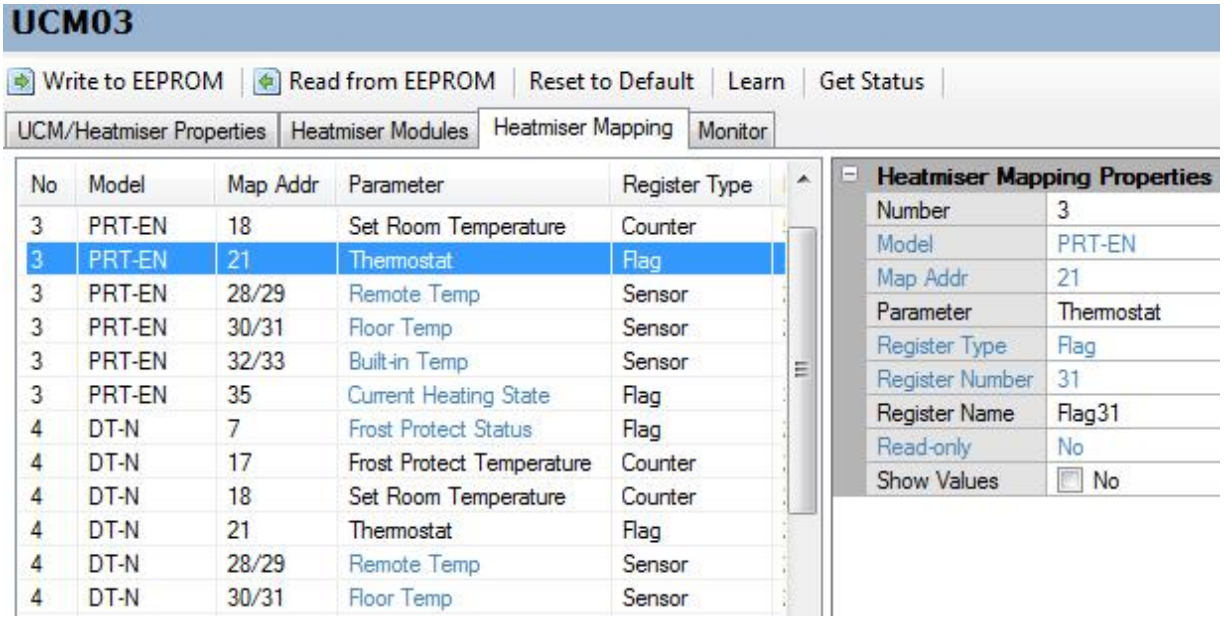

Figure 1.4 - Heatmiser mapping

Temperature is mapped to Comfort Sensors (0 to 31 in Ultra). Sensor values can be assigned as status feedback for Control Menu so that they can be heard on the keypad or phone or seen via the Comfort iPad/iPhone/Android Apps. A Comfort sensor can be mapped to only 1 Heatmiser temperature sensor to avoid conflict of values. Changing the Comfort sensor value will not have any effect on Heatmiser temperature reading.

Temperature Setpoints are mapped to Comfort Counters (0 to 254 in Ultra). Counters can be assigned as status feedback for Control Menu so that they can be heard on the keypad or phone or seen via the Comfort iPad/iPhone/Android Apps. A counter can be mapped to only 1 Heatmiser setpoint to avoid any conflict of values. Changing the value of the mapped counter will also change the setpoint on the mapped Heatmiser Setpoint.

Thermostat On/Off states are mapped to Comfort Flags (1 to 255). Flags can be assigned as status feedback for Control Menu so that they can be heard on the keypad or phone or seen via the Comfort iPad/iPhone/Android Apps. A flag can be mapped to only 1 Heatmiser state to avoid any conflict of values. Changing the value of the Comfort Flag will also change the state on the mapped Heatmiser State.

Connections to Comfort

- JP3 - 12V/COM terminal block. Connect to 12V/COM on Comfort using CAT5 cable. if JP2/2A not used. Do not connect if JP2/2A is used to connect to Comfort. JP3 and JP4 are used instead of JP2/JP2A if the distance between Comfort and the UCM is longer than the white 4-way cable.
- JP4 - KA/KB terminal block. Connect to KA/KB using CAT5 cable if JP2/2A not used. Do not connect if JP2/2A is used to connect to Comfort JP3 and JP4 are used instead of JP2/JP2A if the distance between Comfort and the UCM is longer than the white 4 way cable.
- JP2 and JP2A - 4 way headers (12V/COM/KA/KB). Either connector can be connected to Comfort' RS485 connector (J6) via the supplied cable when JP3 and JP4 are not used. This plug-in cable connection is used when the distance between the controller and Heatmiser interface is less than 30 cm. For longer distances, use the JP3 and JP4 terminal blocks.
- P3 (2 x 5 Female header). This is to plug in the submodule ETH03 or AUX485.

Jumper Settings

Comfort is able to support up to 8 UCMs of different types. SW7 is a set of 4 DIP switches which determines the UCM ID, according to the table below:

ID	SW7-1	SW7-2	SW7-3	SW7-4
1	On	On	On	On
2	Off	On	On	On
3	On	Off	On	On
4	Off	Off	On	On
5	On	On	Off	On
6	Off	On	Off	On
7	On	Off	Off	On
8	Off	Off	Off	On
COPY Button	**Off**	**Off**	**Off**	**Off**

The UCM/Heatmiser is supplied with the ID set to 2 as default.

By convention, ID=1 is reserved for the UCM used for programming. Any communications failure on UCM 1 will not cause a Communications Failure Trouble alarm. The UCM/Heatmiser should be set to ID 2 or above so that any RS485 communications failure can be reported by Comfort. The IDs must be consecutive without any missing IDs, i.e. if there are 5 UCMs, they must be set as ID 1 to 5, not 1,3,4,5,6 as that will cause ID 2 to report a Communications Failure.

The new way of setting ID is when all SW7- 1 to 4 are all in the OFF position. Press and hold the 'COPY' button for 2 seconds until the LEDs change state to the next ID, e.g. ID=2 or BUSY1 only is on. Press and release to increment the ID until 8 and then back to 1. If the COPY button is not pressed for 4 seconds, the new ID is confirmed and all LEDs will momentarily turn on. If any SW7 switch is ON, the 'COPY' button will not work.

It is important that no two UCMs have the same ID as this will cause both UCMs to lose communications.

Press 'RESET' button on the UCM/Heatmiser after changing the ID settings by SW7. It is not necessary to reset if using the 'COPY' Button to change the ID.

Check the D9 and D10 LEDs are both blinking to indicate correct communications with Comfort.

Buttons

- SW1 - RESET. This button re-initialises the UCM module. It does not change any parameters in Comfort or the UCM/Heatmiser.

LED Indicators

- D1 “RDY” (Green) – should be on at all times
- D2 “BUSY1” (Red) – should be off
- D3 “BUSY2” (Red) – should be off
- D4 “ERR” (Red) – error indicator flashes when no EEPROM in U2
- D9 (Red) – RS485 Transmit to Comfort
- D10 (Green) – RS485 Receive from Comfort
- D11 (Green) - indicates incoming data from Heatmiser
- D12 (red) - indicates outgoing data from Comfort

ICs

- U1 - Microcontroller IC. Label indicates the firmware version number “Heatmiser 7.XXX”
- U5 - RS485 Interface to Comfort
- U2 - EEPROM 256K for Configuration settings

Connections to RS485 Heatmiser Modules

The AUX485 submodule for UCM/Heatmiser is required.

- JP1 - KA/KB terminal block. Connect to Yellow/Blue wire respectively on UH-1 or a Heatmiser module.
- JP2 - V+/V- terminal block. Connect to +/- terminal of UH-1 or to a Heatmiser module. This supplies 12V from the Heatmiser network to the UCM/Heatmiser so that the Heatmiser is electrically isolated from Comfort. Electrical isolation prevents any faults from either Comfort or Heatmiser from affecting the other system.

Refer to the Heatmiser wiring diagram for PRTHW-N below as an example

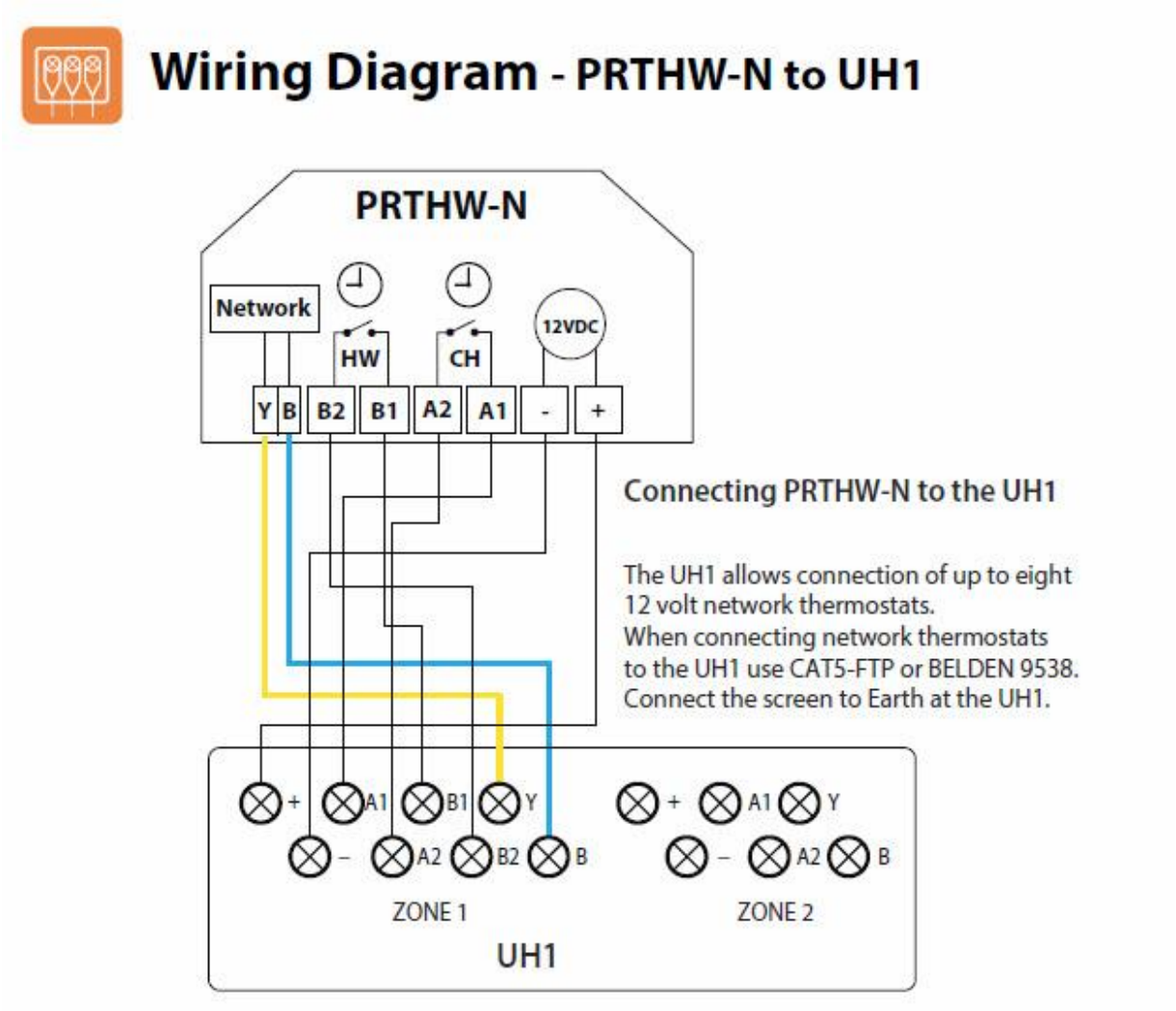

Figure 2.1 PRTHW-N to UH1 Wiring Diagram

Connections/Settings for WiFi Heatmisers

The ETH03 submodule for UCM/Heatmiser is required to communicate to WiFi Heatmisers.

- Connect the Ethernet port MJ101 on the ETH03 to the Local Area Network (LAN) by means of a hub or switch using a parallel CAT 5 cable. The WiFi Heatmisers should be connected to the same network

Comfort Server Manager (CSManager) software is used to configure ETH03 to have Heatmiser related settings. The software is included in Comfigurator 3.7.8 and above or can be downloaded from Cytech website at http://www.cytech.biz/comfort_server_manager.html

In Comfigurator 3.7.8, go to Options > Settings > UCM Connections and select Network (Local). Click on the link for Comfort Server Manager.

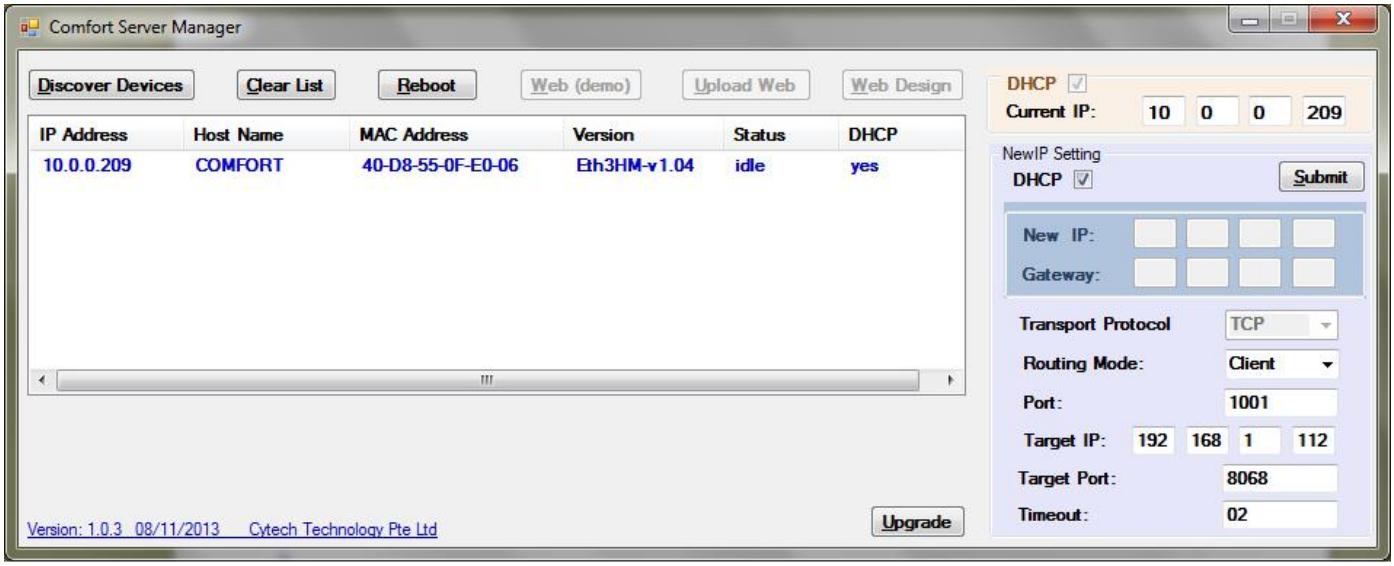

Figure 2.2 Comfort Server Manager screen

When the ETH03 is connected in the same physical network then Comfort Server Manager will automatically discover it.

Ensure the Version has the word HM (for Heatmiser) i.e. Eth3HM-v1.04 for the current release. The ETH03 firmware for Heatmiser can be downloaded from http://www.cytech.biz/eth03_firmware.html Download ETH03-heatmiser.zip and unzip to a hex file.

To upgrade to change the ETH03 firmware to Heatmiser, select the ETH03 IP address and click on the 'Upgrade' button on the bottom right. Select the downloaded ETH03-heatmiser.hex file

- 'Clear List' button clears the display on the Comfort Server Manager screen.
- The 'Discover Devices' button is used to discover any ETH03 module that is connected to the same network e.g. after 'Clear List'
- 'Reboot' button reinitialises the ETH03 module.

By default the ETH03 is set as DHCP enabled. Uncheck the DHCP checkbox and enter the new IP and Gateway fields to assign a fixed IP address for the ETH03 module. Press the 'Submit' button to confirm.

- Routing Mode: Client (mode in use for Heatmiser)
- Port: 1001 (default)
- Target IP: The IP address of any one of WiFi Heatmiser module
- Target Port: 8068 (port in use in WiFi Heatmiser, this is fixed)
- Timeout: Not used in UCM/Heatmiser

The UCM/Heatmiser is configured using the Comfigurator software (min. version 3.7.8) which can be downloaded from http://www.cytech.biz/comfigurator.html

Scanning or Adding the UCM/Heatmiser

In Comfigurator, go to the Modules Tab as shown below.

If Comfort is connected via UCM/USB or UCM/Ethernet, right click and select "Scan for UCMs". The UCM/Heatmiser must be connected to Comfort for Scanning to work.

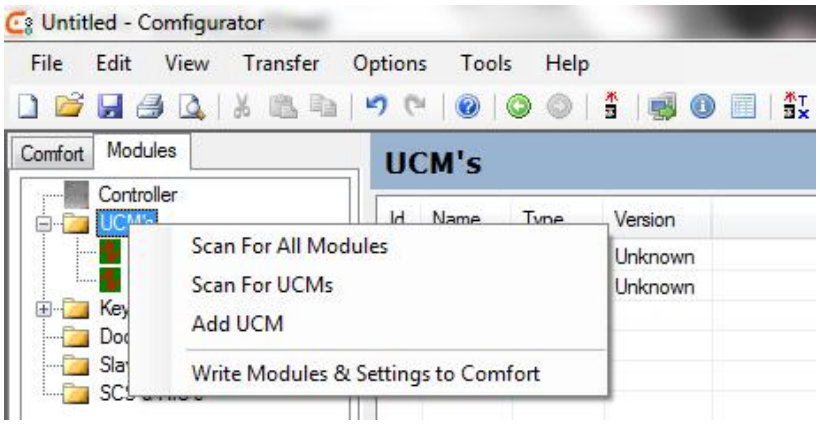

Figure 3-2 Scan for UCMs

This will auto-detect the UCM/Heatmiser according to the ID provided all the UCMs Ids are set correctly with no conflicts.

If Comfort is not connected i.e. the system is being programmed off-line, right-click on the UCM's folder and select 'Add UCM'. A dropdown list of UCM types is shown as in the screenshot below. Select Heatmiser.

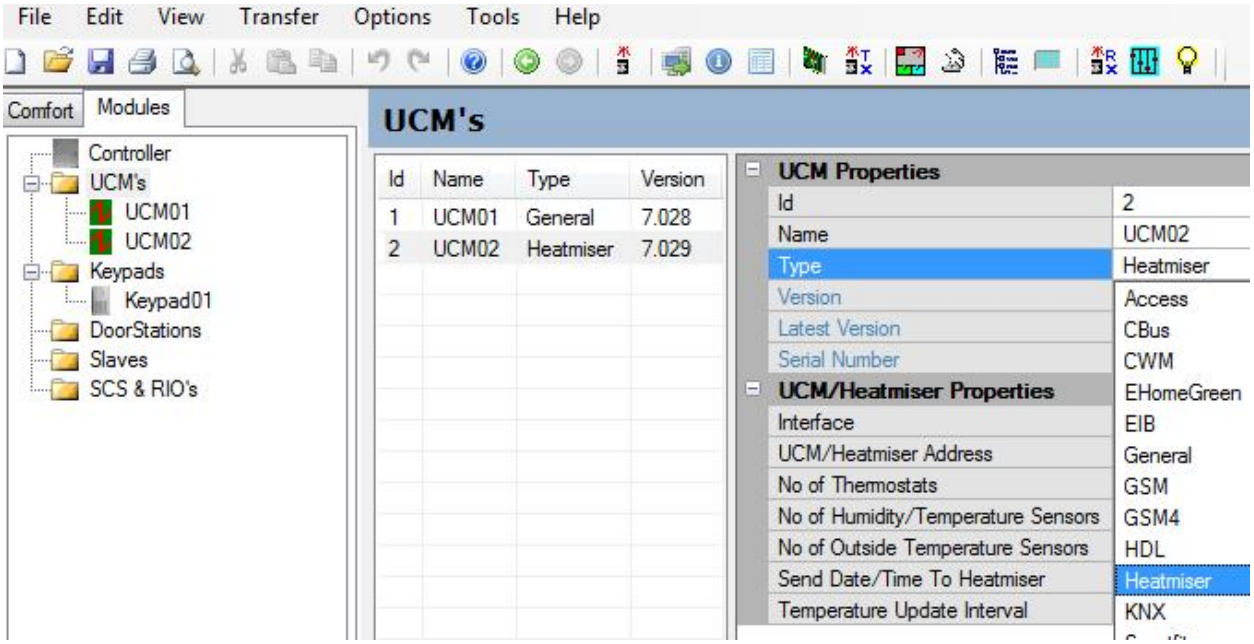

Figure 3.1 - Add UCM

In both cases the UCM/Heatmiser will be added to the list of UCMs. Select the 2nd UCM in the list on the left pane. This shows the UCM/Heatmiser Configurator screen on the right pane as shown below;

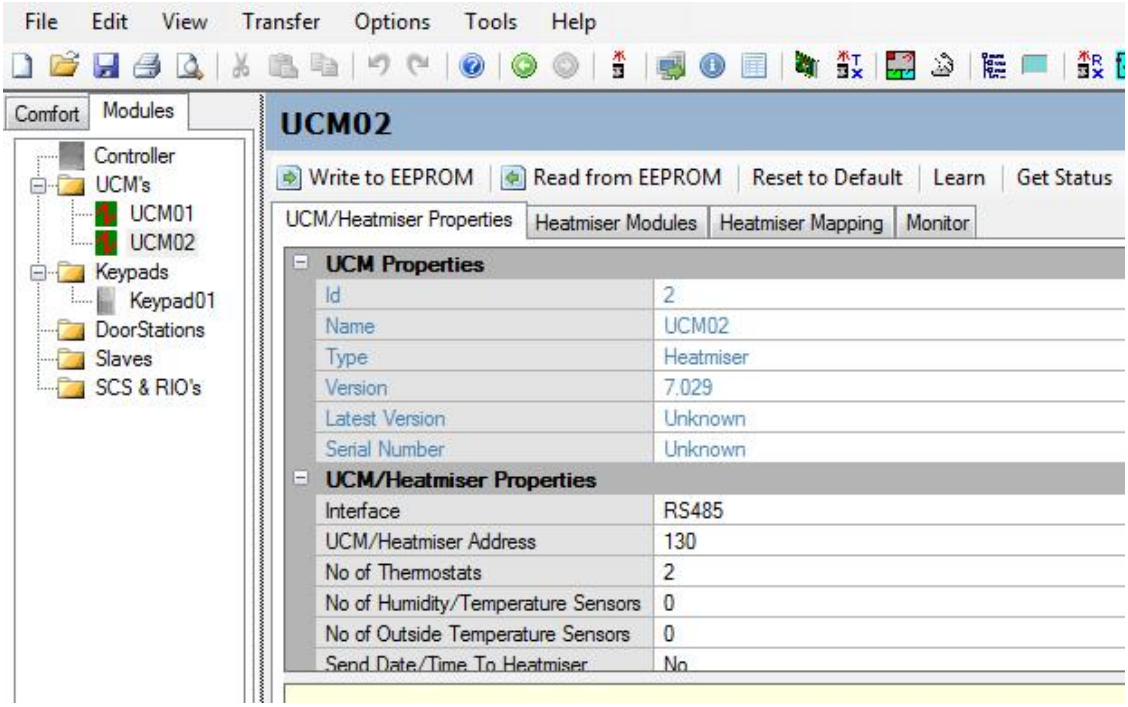

Figure 3.3 - UCM/Heatmiser Configurator

Configuring the UCM/Heatmiser

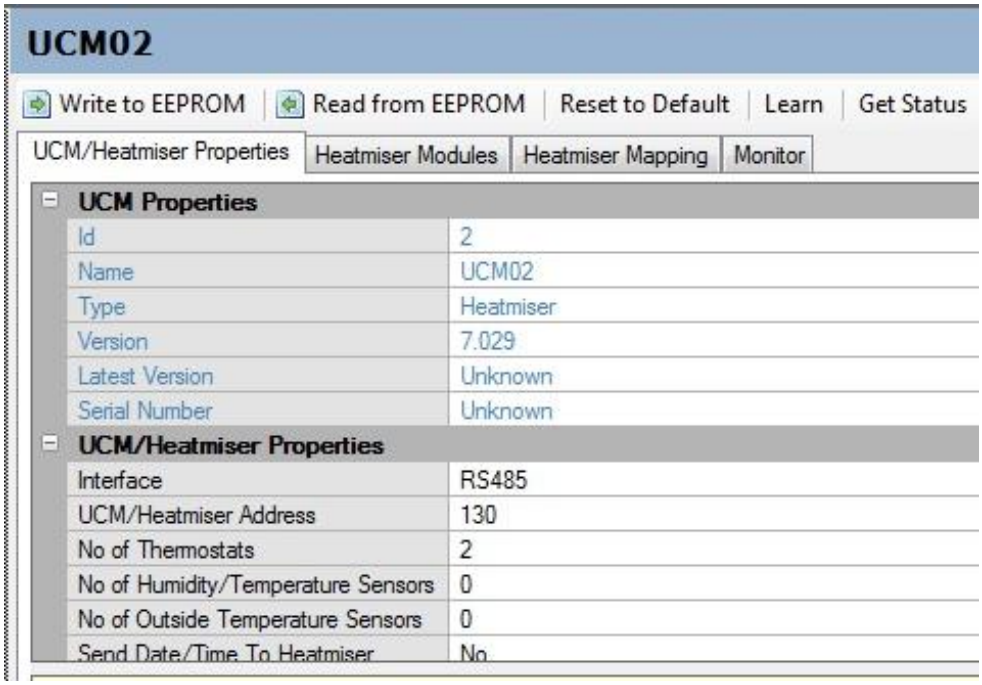

Figure 4.1 - UCM/Heatmiser Configurator

The menu on top of the UCM/Heatmiser Configurator screen shows

- Write To EEPROM

- Read From EEPROM
- Reset to Default
- Learn
- Get Status

Write to EEPROM

Write the Comfort Registers (Counter/Sensor/Flag) mapping assignments in Heatmiser Mapping tab to the UCM/Heatmiser EEPROM (U2 IC). This is necessary after changing the register assignments. Note that READ from EEPROM or LEARN operation is required before assigning registers and writing to EEPROM. Writing to EEPROM does NOT change the Heatmiser properties, it affects only the Register assignments to Comfort.

Read from EEPROM

This reads the Heatmiser configuration and Register assignment from the UCM/Heatmiser EEPROM (U2). Read from EEPROM is automatically performed after a Learn operation.

Reset to Default

This clears the Heatmiser Modules and Mapping tabs. Select Write to EEPROM afterward to clear the U2 EEPROM as well.

Learn

This is to detect all the connected Heatmiser module according to the No. of Thermostats set in the UCM/Heatmiser Properties.

☎ Note that the Heatmiser Netmonitor (if present) should be removed during learning as this could cause errors as the Netmonitor and UCM/Heatmisers act as Masters on the RS485 Bus.

Get Status

This is to query the current status of the UCM/Heatmiser. The status query allows the status to be known (at the bottom left of Comfigurator software). The possible status values are:

- Normal / No error.
- EEPROM missing / faulty.
- EEPROM insufficient capacity.
- EEPROM data invalid.
- Communication error between UCM baseboard and sub-module.
- Heatmiser Bus Error.
- Heatmiser Data Error.
- Heatmiser Sensor Error.
- WiFi PIN Error.

There are 4 tabs across the top of the right pane;

- UCM/Heatmiser Properties
- Heatmiser Modules
- Heatmiser Mapping
- Monitor

The Properties screen is shown in Figure 3.3 below

The Heatmiser Tabs below the Heatmiser menu have Heatmiser properties, Heatmiser Modules, Heatmiser Mapping and Monitor mode.

Press the Learn button to read the Heatmiser data into Comfigurator.

UCM Properties

- ID - This is the ID 1 to 8 of the UCM in Comfort
- Name - this is a descriptive label for this UCM.
- Type - this should be Heatmiser.
- Version - After Scanning for UCMs, the UCM firmware version will be shown.
- Latest Version: the version available from Cytech server (requires Internet connection)
- Serial Number: the serial number of UCM/Heatmiser (if available), displayed after Scanning for UCMs is performed

UCM/Heatmiser Properties (RS485)

- Interface — Heatmiser interface: RS485
- UCM/Heatmiser address — 130 - 160 (Default 130)
- No. of Thermostat — 0 - 32 (Default 1)
- No. of Humidity/Temp Sensors — 0 - 32 (Default 0)
- No. of Outside Temp Sensors — 0 - 1 (Default 0)
- Send Date/Time to Heatmiser — Yes (Default)
- Temperature Update Interval — 30 - 255 seconds (Default 60)

The UCM/Heatmiser address is the RS485 address of the 1st Heatmiser.

Enter the Number of thermostats, Humidity/Temp sensors, Outside Temp sensors (OTS) , if any, in the system. The learn process will process the number of modules according to these numbers.

Temperature Update Interval is the time between each update of the Heatmiser modules parameters to the Mapped Comfort Sensor, flags and counters, not just temperature.

UCM/Heatmiser Properties (Wi-fi)

- Interface — Heatmiser interface: Wi-fi
- No. of Thermostat — 0 - 8 (Default 1)
- IP Address of Wi-fi Thermostat #1
- PIN Code — 4-digit WiFi Heatmiser PIN
- Send Date/Time to Heatmiser — Yes (Default)
- Temperature Update Interval — 30 - 255 seconds (Default 60)

Enter the Number of thermostats installed in the system. The IP Address fields for other Wi-fi thermostats and the learn process will process the number of modules according to these numbers.

PIN Code must be identical for all the WiFi thermostats installed in the system.

Temperature update interval is the time between each update of the Heatmiser modules parameters to the Mapped Comfort Sensor, not just Temperature

Heatmiser Modules

This tab displays detected Heatmiser modules after the ‘Learn’ process depending on the Numbers of Thermostat, Number of Humidity/Temperature

Sensors and Numbers of Outside Temperature Sensors set in the UCM/Heatmiser Properties. The parameters of the Heatmiser thermostat is shown on the right pane. These parameters are read-only.

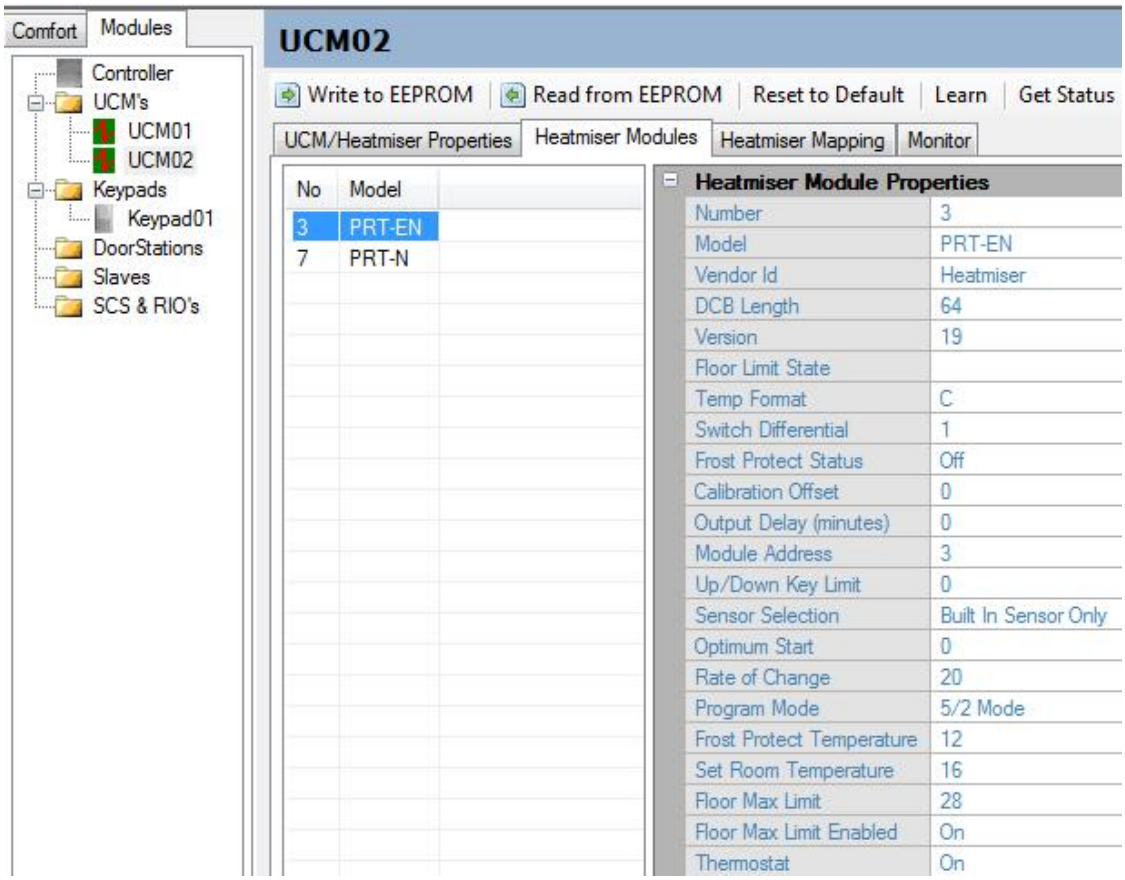

Figure 3.4 - Heatmiser Modules tab

Heatmiser Mapping

This is where the mapping of Heatmiser modules to Comfort registers (Counters, Flags or Sensors) are done. This can only be done after the Heatmiser Modules are learned.

Go to the Heatmiser Mapping Tab. This tab shows all the Heatmiser modules which have been found during the Learn process. The right pane shows the properties of the Heatmiser parameter selected in the left pane. Note that the Read Only parameters are shown in BLUE. Read only parameters cannot be changed by Comfort.

Assign the Comfort Register i.e. Counter for Temperature setpoints, Sensor for Temperature reading and Flags to status or controls for each parameter of each Heatmiser module. The default assignment for Comfort Registers in unassigned. Leave the Comfort Register unassigned if not required.

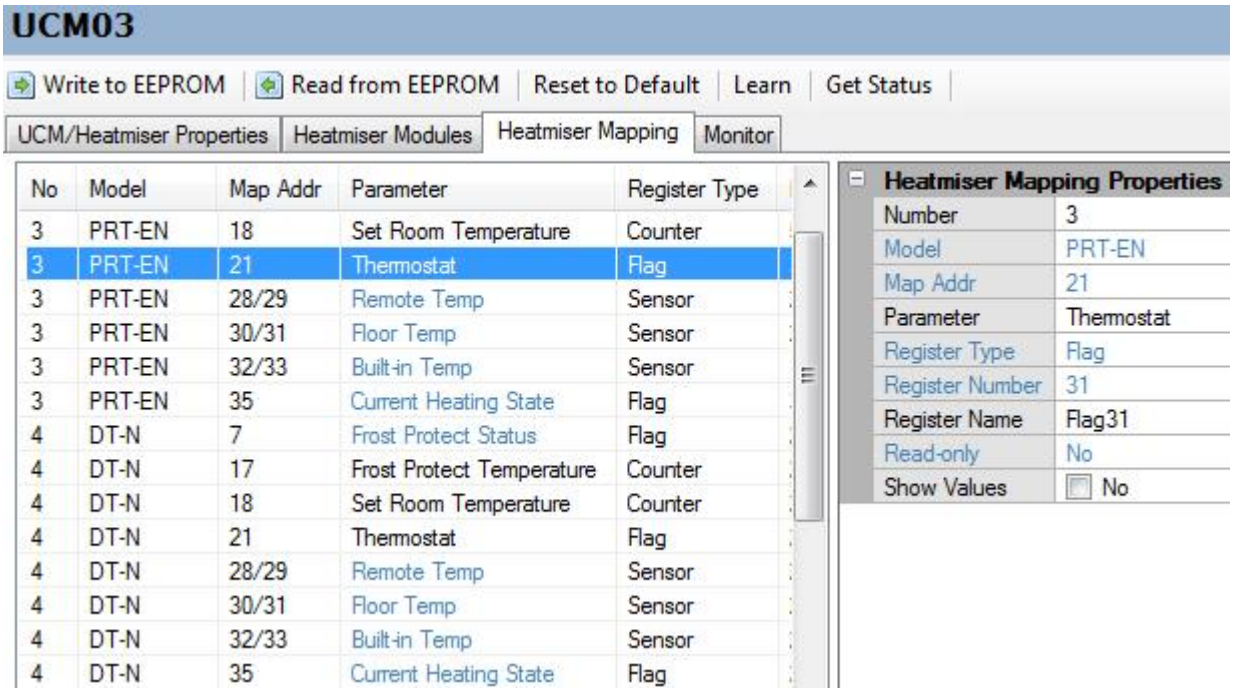

Figure 3.5 - Heatmiser Mapping tab (Left Pane not shown)

Heatmiser temperature sensors are mapped to Comfort Sensors, hence the mapped Comfort sensors will have the current temperature read from Heatmiser.

Heatmiser setpoints are mapped to Comfort Counters, so changing the value of the mapped Counter will change the related setpoint.

Comfort Flags are mapped to on/off parameters. For example, Thermostat on/off, Cooling On/off, Frost Protect Status (Read Only), Current Heating State (Read Only). The Read only parameters in blue cannot be changed by changing the state of the mapped flags. The read/write parameters can be controlled by means of the flag, for example setting the mapped Flag to Thermostat on/off will turn on the thermostat and vice versa.

The Show Values checkbox causes the mapped parameter value eg Flag, Counter, Sensor to be shown. Note that this does NOT cause the new value to be read from Heatmiser - updating of heatmiser values depends on the Temperature Update Interval in heatmiser properties

The Response Wizard has actions to set, clear and toggle flags, and to load Counters with any value.

After assigning the counters, Sensors and Flags to the Heatmisers, do a Write to EEPROM. This will reset the UCM/Heatmiser and apply the mapping assignments

Commands to Heatmiser

Note that there are no special commands or actions in Response Wizard to send commands to Heatmiser. Instead use the mapped Counters to change temperature setpoints and the mapped flags to change the related parameters in Heatmiser

Monitor mode

Feature to be implemented

Firmware History

- Heatmiser 7.029 - Initial Release
- Heatmiser 7.033 - Fix date/time sync issue
- Heatmiser 7.038 - fixed updating and buffer overflow issues.

Document Revision History

Version 1.0.1 - 10 October 2013

Initial Draft with Wi-fi interface

Version 1.0.2 - 13 November 2013

ETH03 settings and occasional Heatmiser Data Error message description

Version 1.0.3 - 30 January 2014

Updated instructions for Comfigurator 3.7.8

Important Note

The printed manual may not always be the most current version. Please check and download the latest version from http://www.cytech.biz/manuals.html

This manual is in A4 format. To print this manual as an A5 Booklet, on HP PCL printers select Page Scaling = Fit to Printable Area. Select Properties> Finishing Tab, Document Options = Print on Both Sides, Booklet Layout = Left Side Binding. Other printers may have different settings to achieve the same result.

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