SECTION 1 TYPES OF UCM

The Universal Communications Modules (UCM) allows Comfort to connect via RS232 interface, USB or Local Area network to a computer or external equipment. The types of UCM include;

UCM/ETH03

The UCM/ETH03 has a RJ45 jack for connection to an Ethernet Local Area Network (LAN) using the TCP/IP protocol. The UCM/ETH03 is a new model which replaces the UCM/Eth02. UCM Firmware 7.028 and above is required for UCM/ETH03.

UCM/USB

The UCM/USB has a USB interface for connection to the USB port of a PC. The UCM/USB is supported by Comfigurator 3 onwards.

UCM/Universal

The UCM/Universal is a different type of UCM which allows third party automation systems to communicate with Comfort. The UCM/Universal UCM is not covered in this manual. Its manual can be downloaded from http://www.cytech.biz/universal_ucm_manual.html

UCM submodules

1 UCM06 is the baseboard to which RS232/F, R232/M, USB01, ETH03 daughterboards can be added to make up UCM/232, UCM/USB and UCM/ETH03 respectively. The UCM06 allows the flexibility of using different interfaces by plugging in the appropriate daughterboard.
2 USB01 daughterboard. Plugs onto UCM06 to make UCM/USB.
3 ETH03 daughterboard. Plugs onto UCM06 to make UCM/ETH03.
4 RS232/M and RS232/F daughterboards with Male and Female RS232 connectors respectively. Plugs onto UCM06 to make UCM/232M and UCM/232F.

This manual describes the UCMs with firmware 7.028 and above. For UCMs with older firmware < 6.080, the old manuals can be downloaded from http://www.cytech.biz/ucm_manual.html?category_id=107

The UCM/USB, /ETH03 and /232 have the following common functions:

1 It allows configuration on the U2 EEPROM on the UCM to be transferred to Comfort. This is a useful tool when programming, testing or troubleshooting Comfort installations.
2 The Comfigurator software requires the UCM to read and write the configuration file to Comfort.
3 It allows a PC or other controller to communicate with Comfort allowing third party products or software (e.g. Wizcomfort) to work with Comfort . The Comfort command protocol can be requested from support@cytech.biz for the purpose of development of third party interfaces or software.
4 It also allows Infrared signals to be learned and saved as .ifr files which can be assigned to Comfort IR codes via Comfigurator.

5 Allows other Flash-based Comfort and UCM firmware to be upgraded using Comfigurator Firmware Upgrade.

6 Comfort Voice/Vocabulary (new version of language) can be written to Comfort using Comfigurator.

There are also application-specific UCMs which interface to specific third party systems for example, UCM/CBUS for Clipsal's CBUS, UCM/KNX for the KNX Bus, UCM/Ulti for Ulti lighting swtches, UCM/Zwave, UCM/GSM for GSM/SMS Interface, etc. These UCMs cannot be used for programming Comfort. They are described in their individual manuals. All user and installation manuals are available from the Cytech website http://www.cytech.biz/manuals.html

SECTION 2 UCM SETTINGS

Getting Started

This section is common to UCM/232, UCM/ETH03 and UCM/USB

Connections

Connect the UCM to Comfort using the supplied white cable with 4-way connector on both ends. It plugs into JP2 or JP2A on the UCM and "RS485" 4-pin header (J6) connector on Comfort II. This supplied cable can be used for short runs (about 30 centimeter). If the UCM is located further from the Comfort panel, up to 100 meters, use a cable with 3 twisted pairs. 12V/GND, KA/KB are to be paired with one pair as spare. Shielding is not necessary. The UCM may also be connected from the SEM modules. Ensure that polarity is correct as this is a common cause of problems with communications.

It is not necessary to switch off power to Comfort before plugging in the UCM connections. The UCM is often connected in order to transfer a configuration file using Comfigurator.

☎ **The firmware programming cable is used only when upgrading firmware on Comfort or other modules that has version older than 6.xxx. It should not be connected to Comfort in normal operations as it will disable Comfort.**

Set UCM ID using SW7

SW7 (RS485 ID) 4-way DIP Switch should normally be set to 1 according to the table below (positions 1,2,3, and 4 ON) if this UCM is used for programming Comfort using Comfigurator, because when this UCM ID is disconnected, Comfort does not report "Communications Failure", while with UCM IDs 2 to 8, communications failure will be reported.

Comfort is able to support up to 8 UCMs. SW7 is a 4-way DIP switch 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

Table 2.1 - RS485 ID Settings (SW7)

Other UCMs or types of UCM may be connected for interfacing to C-Bus, KNX, Velbus or others. These other UCMs should be set to higher-numbered IDs, up to 8. UCM IDs should be sequential, i.e. there should not be any missing ID numbers, i.e. 1,2,3,4 and not 1, 3, 4, 5

If the ID is changed while power is on, RESET the UCM by pressing the RESET switch SW1 on the UCM.

Make sure that only 1 UCM has ID=1 in the system, otherwise there will be an addressing conflict which will prevent proper communication.

ID Setting using COPY Switch (from UCM 6.080)

From UCM Firmware 6.080, the UCM ID can be changed by use of the COPY switch. If **SW7 A to D are all OFF**, then the UCM ID is determined by the saved setting in the U2 EEPROM. Pressing the COPY button momentarily will show the ID on its leds as shown below (in binary code)

ID	ERR (D4)	BUSY2 (D3)	BUSY1 (D2)	RDY (D1)
1	Off	Off	Off	**On**
2	Off	Off	**On**	Off
3	Off	Off	**On**	**On**
4	Off	**On**	Off	Off
5	Off	**On**	Off	**On**
6	Off	**On**	**On**	Off
7	Off	**On**	**On**	**On**
8	**On**	Off	Off	Off
Unassigned	**On**	**On**	**On**	**On**

To change the UCM ID assignment, press and hold the COPY button for at least 2 seconds. The UCM ID will be incremented to the next higher number up to 8. Press and release the COPY button to increment the ID until the desired ID is seen. If the COPY button is not pressed for 4 seconds, the ID is confirmed and the UCM is reset causing all the LEDs to momentarily turn on. **This setting only works if the U2 EEPROM is present and the SW7 DIP switches are all open.**

If the ID is unassigned, all leds are ON.

Comfigurator > Modules Tab

The UCMs in the system are shown in Comfigurator >> Modules Tab

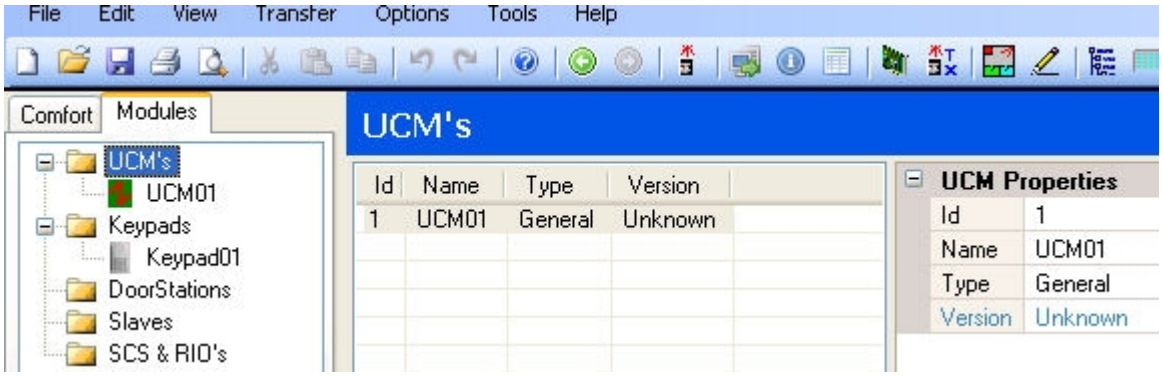


Figure 2.1 Comfigurator Modules Tab

Right Click UCMs and select Scan for UCMs or Scan for All Modules to discover all UCMs in the system provided the UCMs have been set so that each UCM has a unique ID.

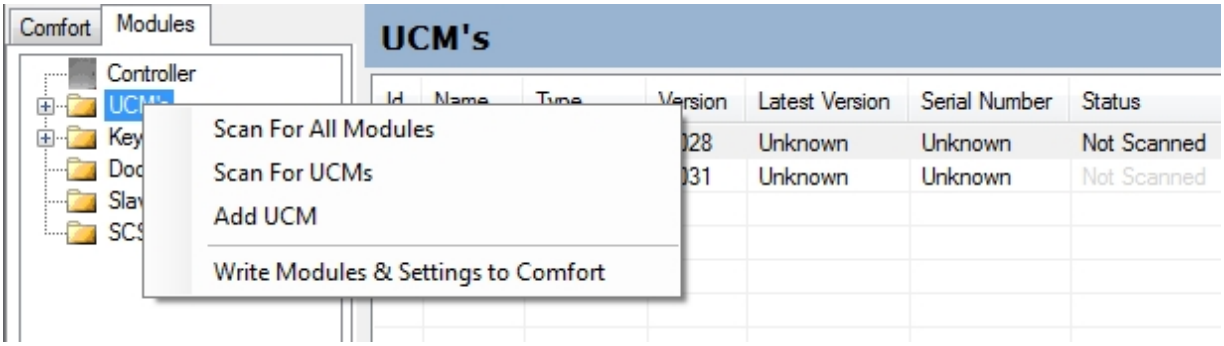


Figure 2.2 Scanning Function

After Scanning for modules, do a Transfer > Write (PC --> Comfort)... or select Write Modules & Settings to Comfort by from the scanning options to write the number of modules to Comfort.

LED Indications

Once the UCM is connected with the ID setting set correctly, the LEDs D10 (green) and D9 (red) will flash continuously, and the D1 RDY green LED should stay on. The RDY LED indicates that the power is on. D10 green led blinking indicates RS485 data is being received from Comfort, and D9 Red led blinking indicates the UCM is replying to Comfort. The BUSY1, BUSY2, and ERROR LEDs should be off. If the LED states are not as described, see the Comments column or the Troubleshooting section.

LEDs	Idle Behavior	Comments
D1/RDY (Green)	Steady ON	Off means no power or module faulty
D2/BUSY1 (Red)	OFF	Blinks if Busy (operation in progress)
D3/BUSY2 (Red)	OFF	
D4/ERR (Red)	Off	ON if Error or Operation Failure
D10 (Green)	Blinking (Receive RS485)	Off means RS485 not connected to Comfort
D9 (Red)	Blinking (Send RS485)	Off means ID is incorrect or not polled by Comfort
D11 (Green)	Off	Blinks when receive data from USB/RS232/Ethernet
D12 (Red)	Off	Blinks send data to USB/RS232/Ethernet

Table 2.2 - LEDs states on UCM board in idle mode

If the RDY LED is not on, press the RESET button on the UCM. This may happen when connecting the UCM 4-way cable to Comfort without turning off power. RESET on the UCM usually starts the UCM to operate correctly.

Buttons on UCM Board

See UCM Button Operation in the next Section for an explanation

- SW1 - RESET
- SW2 - UPLOAD Comfort to U2
- SW3 - DOWNLOAD U2 to Comfort
- SW4 - TEST
- SW5 - COPY /ID button
- SW6 - COMPARE (NOT USED)

ICs

- U1 - Microcontroller IC with Firmware marked "UCM 7.xxx".
- U2 - Backup EEPROM

- U5 - RS485 transceiver for Comfort Bus.
- U8, U9 are Infrared LED receivers for learning IR signals.

Other Settings (SW8)

SW8	On - Short	Off - Open
A to E	Not Used	Not Used
F	UCM/ETH01	UCM/ETH02 and UCM/ETH03, USB, 232
G	Not Used	Not Used
H	Not Used	Not Used

Table 2-3 - SW8 Settings

SW8-F shunt should be inserted for UCM/ETH01 and left out for UCM/ETH02 and ETH03 or if the UCM is not an Ethernet Module. See NOTE below

SW8 - H shunt. Not used

☎ **Note that for UCM firmware 5.228 and above, SW8-H for hardware Flow control is ignored, i.e. no flow control, and SW8-H need not be inserted**

J4 Select EEPROM

- J4 - selects U2 or U3 EEPROM socket for reading/writing operations (Found on earlier UCMs). **Always set J4 to U2 position where the EEPROM is inserted.** Note that later UCM hardware will NOT have the J4 shunt and there will be no IC socket for U3.

Physical

- PCB size: 108 x 88 mm
- Mounting Holes: 98 x 78 mm (M3 holes 5 mm from corners)

Connectors (Common to all UCMs)

- JP2, JP2A - 4 way headers (12V/COM/KA/KB).
- JP3 - 12V/COM.
- JP4 - KA/KB.
- PP1 and PP3 - for Firmware Upgrading of other modules, **DO NOT CONNECT THE FIRMWARE PROGRAMMING CABLE IN NORMAL OPERATION**

UCM/ETH03

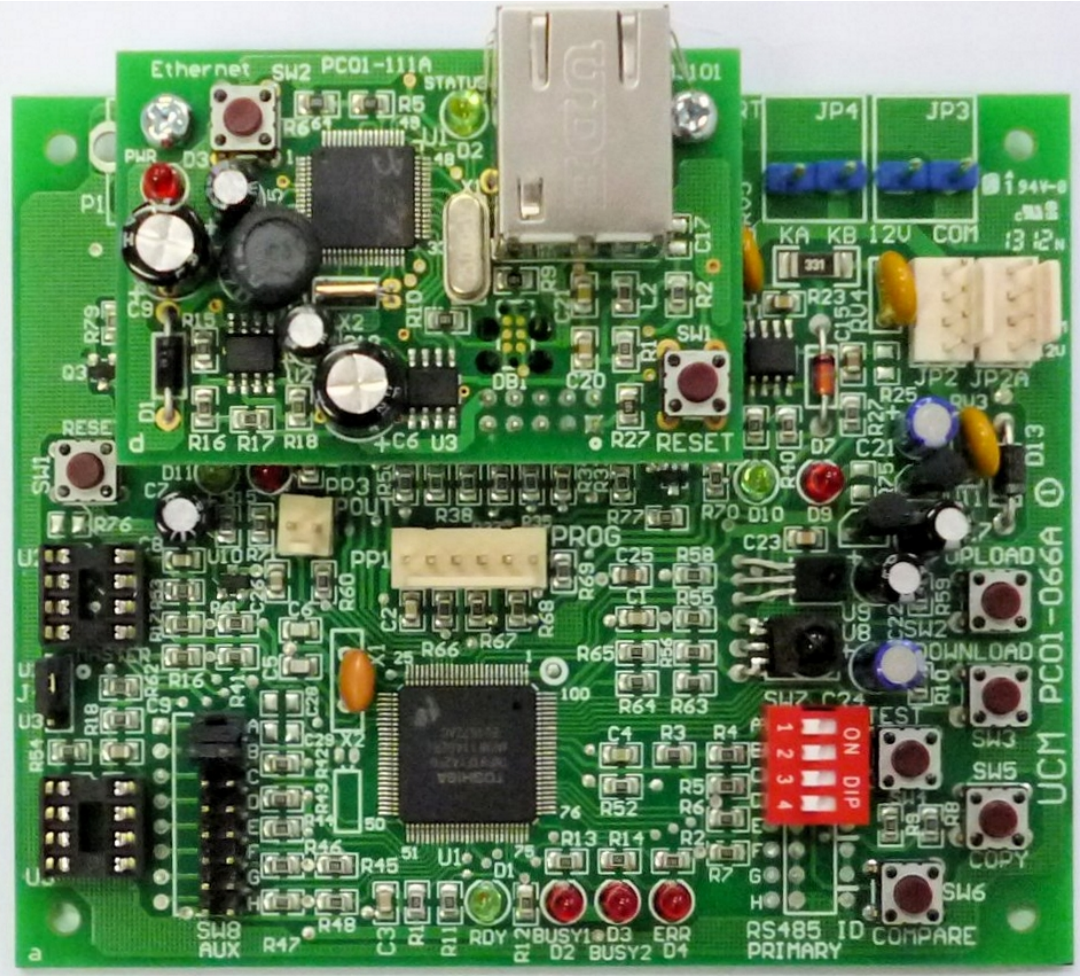


Figure 2.3 UCM/ETH03

The UCM/ETH03 module allows the Comfort system to be connected to a Local Area Network. This module converts the serial data of the UCM over TCP/IP on the LAN. This allows Comfigurator to program Comfort as well as Comfort Android/iPad/iPhone App to access Comfort over the LAN, see:

- http://www.cytech.biz/android_app.html
- http://www.cytech.biz/comfort_ipad_app.html
- http://www.cytech.biz/iphone_app_1

The Comfort serial protocol is also available and can be used by third party developers to develop customized applications for Comfort over the LAN or Internet.

Figure 2.4 ETH03 Daughterboard

The UCM/ETH03 is equivalent to a UCM06 Baseboard with ETH03 daughter board plugged in.

ETH03 Specifications

- Ethernet Interface: 10/100BaseT
- Network Protocols: TCP, UDP, HTTP2, TFTP, SMTP, FTP
- Serial Interface baud rate: 9600 bits per second
- Current Consumption: 70 mA (typical) from Comfort 12V auxiliary output.

Ethernet Connector

- MJ101 - RJ45 connector for Ethernet Local Area Network.

SW1 - RESET

Resets ETH03 module together with SW2

SW2 - Default

Reset ETH03 to default settings and DHCP in case it is corrupted.

- Press and hold SW2 switch.
- Press SW1 RESET once.
- The Green D2 LED on the ETH03 will turn off for about 5 seconds and then turn back on.
- Maintain the press-and-hold of the SW2 switch until another cycle of turning off and turning on of the D2 LED on the ETH03 module. This will take around 10 more seconds.
- Run the CS Manager software to discover the ETH03 module.

ETH03 LED Indicators

- D2 STATUS LED (Green) - Steady on to indicate ETH03 application is running correctly.
- D3 PWR (Red) - Steady on to indicate power to the ETH03 module.

- RJ45 connector LEDs (Green and Amber) - dual-function Ethernet status LEDs. Both LEDs are off when there is no connection. The Green LED should be on when it is connected to the LAN. Amber LED blinks slowly when the connection is idle and flashing fast when there is data transfer.

Connect UCM/ETH03

Connect the Ethernet port MJ101 to the Local Area Network (LAN) by means of a hub or switch using a parallel CAT 5 cable.

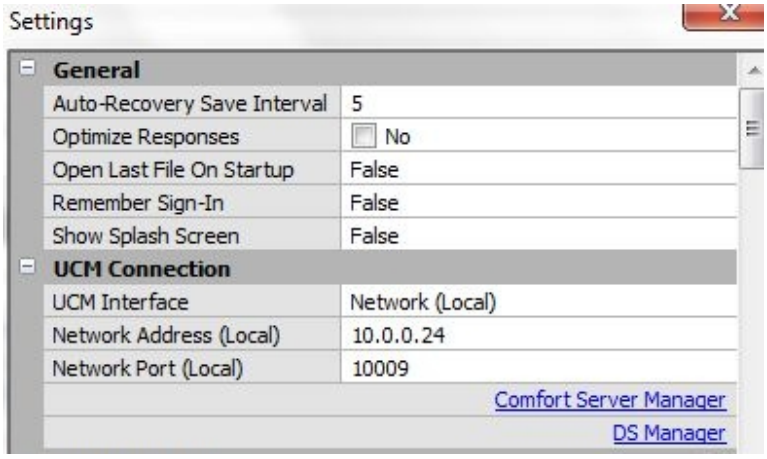
Plug in the 4-way cable from JP2 or JP2A on the UCM to "RS485" (J6) on Comfort II, and press the RESET button on the UCM. The RDY LED on the UCM should turn on steady and the LEDs D10 and D9 should be flashing continuously.

The PWR (Red) and STATUS (Green) LEDs on ETH03 should turn on. The Green LED on the RJ45 connector should also turn on and the Amber LED should be blinking. When there is no Ethernet cable plugged in, both the Green and Amber LEDs on RJ45 connector will stay off.

Comfort Server Manager

To set up UCM/ETH03, use Comfigurator 3.7.8 or above .

In Comfigurator, Select Options > Settings > UCM Interface = Network Local



Click on the Comfort Server Manager link

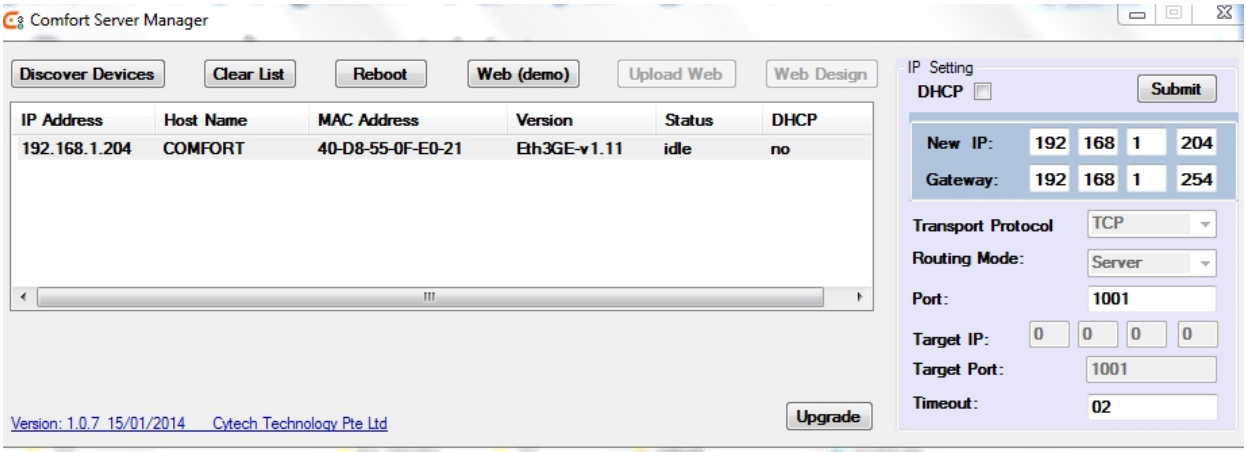


Figure 2.5 - Comfort Server Manager

The window should show all UCM/ETH03s that are connected physically to the network. It is in blue colour if it is on the same subnet, otherwise it will be shown in red. The current firmware version for the UCM/ETH03 is shown (1.07 in the above example). The Status of the UCM/ETH03 will normally be shown as "idle"; if there is a connection, the Status field will show "busy".

The IP address of the UCM/ETH03 is found by the discovery process. The default IP address setting has DHCP so the IP address is automatically assigned by a Router with DHCP enabled. It is recommended to assign a fixed IP address for UCM/ETH03, making sure that it does not conflict with any assigned IP address on the network, as you will need to enter the IP address of the UCM/ETH03 in Comfigurator and for the purpose of allowing Port Forwarding for remote access. Uncheck the DHCP checkbox under the New IP Setting and enter the New IP and Gateway address of the UCM/ETH03.

- Port: is the network port through which the data is sent and received from the UCM. By default the port is set to 1001.
- Timeout: is the time in minutes for which the TCP connection will remain open if there is no data in either direction. A value of 0 means the connection will never time-out.

☎ **It is recommended that 2 minute connection time-out is used when there may be more than 1 application trying to use the connection at the same time, e.g. for iPhone application. The UCM/Eth03 only allows one connection at a time.**

Click the 'Submit' button to effect the new changes. Press the 'Discover Devices' button once to rediscover the UCM/ETH03.

Clear List button clears all the display on the Comfort Server Manager screen.

Reboot button reinitialises ETH03 submodule without changing any parameters.

Web (demo) and Upload Web buttons are for future use.

Upgrading Firmware on ETH03 Submodule

The ETH03 firmware is NOT the same as the UCM firmware of the baseboard. The ETH03 firmware runs on the ETH03 submodule module and not the UCM.

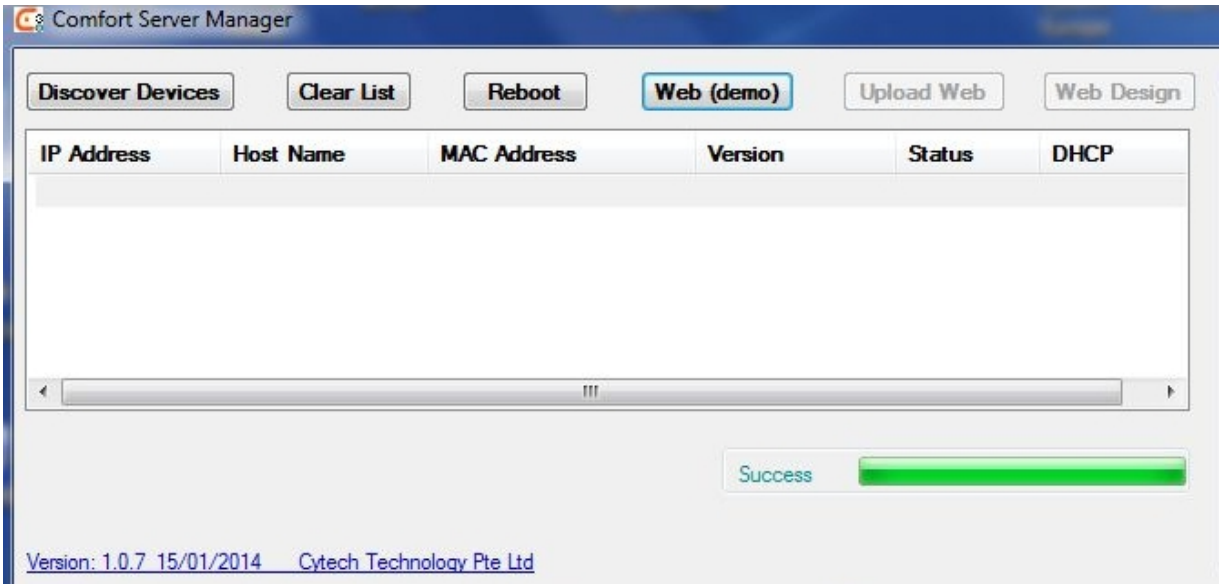
The 'Upgrade' button is used to upgrade the ETH03 firmware on the submodule over the network. Firmware upgrades are available from the Cytech Technology website at http://www.cytech.biz/eth03_firmware.html

There are 3 zipped .hex files available

- ETH03-General.hex is for UCM/ETH03
- ETH03-client.hex is for UCM/Universal
- ETH03-heatmiser is for UCM/Heatmiser (wifi)

After downloading the zip file and unzipping, select the ETH03-Server firmware (.hex file). Press the Upgrade button to select the .hex file.

The upgrade progress is shown on the progress bar on the bottom. At the end, the "Success" status should be seen. The IP address of the UCM/ETH03 will disappear during the upgrade. Press the "Discover Devices" button to detect the UCM/ETH03 and to show the new firmware version



It is advisable to check the website for the latest ETH03 firmware and upgrade the firmware before use.

Comfigurator Network Connection

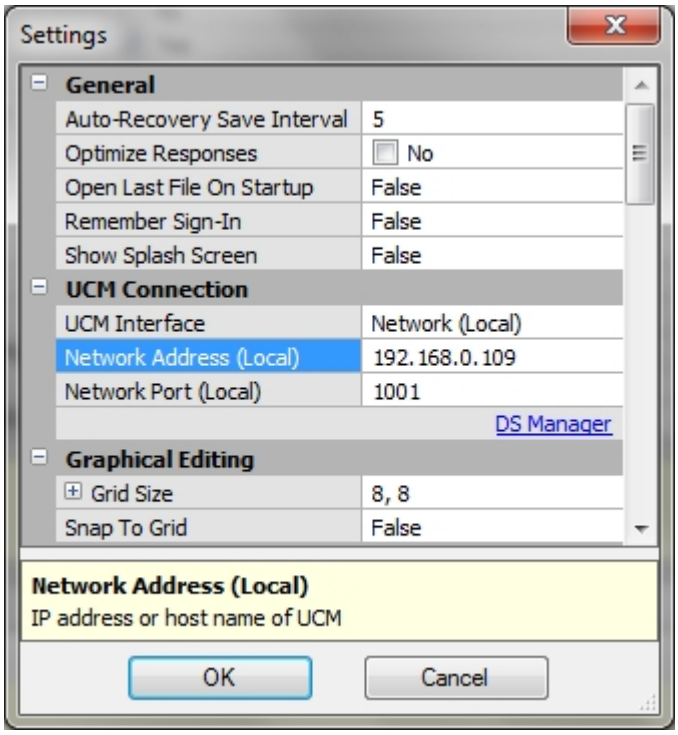


Figure 2.6 Comfigurator Network Connection

To use Comfigurator to connect to Comfort over the network, select Menu Options > Settings.

In UCM Interface, select Network. In IP Address or Host Name, enter the IP Address and the Port number which was set for the UCM/ETH03 and click OK.

Note that DS Manager is for UCM/ETH02, not UCM/ETH03. Use Comfort Server Manager for UCM/ETH03.

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UCM/USB

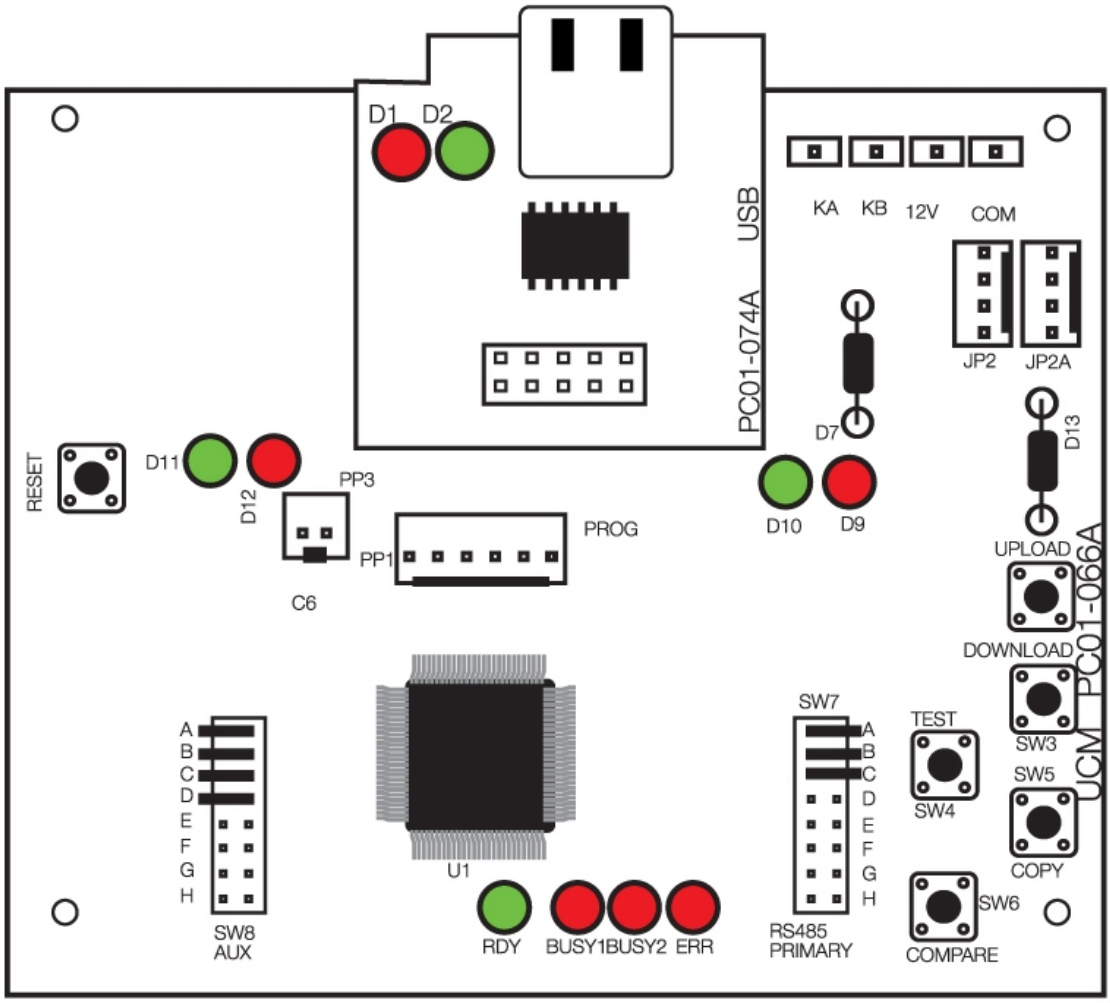


Figure 2.7 UCM/USB

The UCM/USB module provides a USB interface to Comfort. It has the same functionality as the UCM/232 which has a serial (RS232) interface. The UCM/USB uses the same firmware as a UCM/232 and UCM/ETH03.

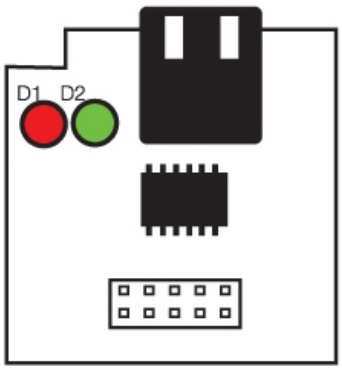


Figure 2.8 USB01

The UCM/USB is equivalent to a UCM06 Baseboard with a USB01 daughter board plugged in.

Parts Supplied

- UCM/USB Firmware 7.xxx and above
- USB Cable A to A
- RS485 4-way cable
- 6-way programming cable

LED Indicators on Daughter Board

- D1 (Red) – Receive from PC.
- D2 (Green) – Transmit to PC.

USB Connector

P2 - USB connector for USB interface.

System Requirements

- UCM 5.178 and above.
- Comfigurator version 3.0.0 and above.
- Windows XP/Vista/7

Installing the USB Driver

The USB drivers can be found in the folder "C:\Program Files\Cytech\Comfigurator\USB Drivers" depending on your Comfigurator installation folder. The latest version of the driver if needed can be downloaded from http://www.ftdichip.com/Drivers/D2XX.htm This driver should be of version 2.06.00 or above.

☎ **If a device of the same type has already been installed on your machine and the drivers that are about to be installed are different from those installed already, this may prevent the UCM/USB from communicating. The original drivers need to be uninstalled before installing the new driver. Delete the driver by going to My Computer > Control Panel > System > Hardware Tab > Device Manager. Look for USB Serial Bus Controller > USB to serial converter. Right Click and select Delete Driver.**

Connect the device to a spare USB port on your PC. If there is an available Internet connection, Windows will silently connect to the Windows Update website and install any suitable driver it finds for the device. If the automatic installation takes place there is no need to continue with the procedure outlined below.

For Windows XP

- If there is no available Internet connection or Windows XP SP 2 is configured to ask before connecting to Windows Update, the "Found New Hardware" screen appears. Select "No, not this time" from the options available and then click "Next" to proceed with the installation. Select "Install from a list or specific location (Advanced)" and then click "Next".
- Select "Search for the best driver in these locations" and browse to the folder Program Files\Cytech\Comfigurator\USB Drivers. Click next to proceed.

- If the message dialogue that "the software has not passed Windows Logo Testing" appears, click on "Continue Anyway" to continue with the installation.
- The Wizard will install the necessary driver files and show when the installation has been completed. Click Finish to complete the installation.

For Windows 7

- If no suitable driver is automatically found then the following procedure should be followed.
- Press the Windows start button to bring up the start menu and select "Control Panel".
- From the Control Panel window select Hardware and Sound. At the next screen select Device Manager
- In the Device Manager window there will be a device under Other Devices with a yellow warning symbol to indicate a problem i.e. no driver installed. The text next to this device will depend on the device attached. In this example the device was a TTL232R device. Right click on the other device (TTL232R in this example) to bring up a menu. From the displayed menu select "Update Driver Software…"
- This then displays the option for an automatic search or a manual search. Select the second option to browse manually. In the address box put the exact location where the drivers have been saved to.
- After entering the address select "NEXT" to start the installation. When the installation has finished a completion screen is displayed.

Comfigurator Setup

The UCM/USB is supported by Comfigurator 3.0.0 and above. Switch on Comfort with the UCM/USB and connect the USB cable to the computer. The new hardware should be detected and installed automatically by the computer. In Comfigurator, go to Options > Settings > UCM Interface. Select USB from the dropdown list.

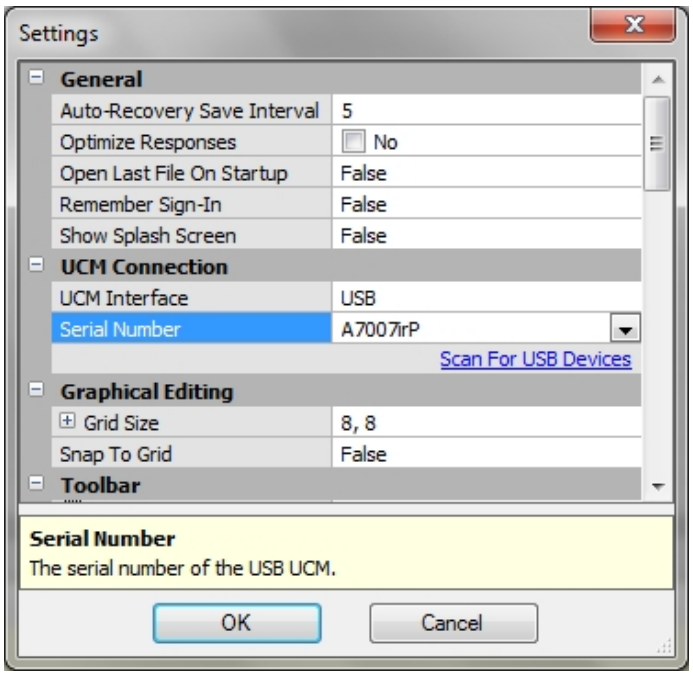


Figure 2.9 Connection Setting for USB

Click on the blue link "Scan for USB Devices " as shown above.

Then click on the dropdown list to the right of Serial Number. You should be able to see a serial number in the dropdown list. If the dropdown list is blank, unplug and reconnect the USB cable and repeat clicking on "Scan for USB Devices".

In Comfigurator older than 3.7.6, do not check "Via KT03" unless the USB interface connected to KT03.

☎ **If the USB Serial number still is blank following the above instructions, then there is a problem with the driver. Remove the old USB driver as described above in "Installing the USB Driver", then reconnect the USB cable to install the driver again.**

If more than 1 UCM/USB are used, the serial number helps to identify the one selected. When the USB serial number has been selected, click OK to close the window. If the Serial number shows a blank field in the drop down window, wait a while and try again. Otherwise try the Driver installation again according to the instructions above.

Go to Transfer > System Information.

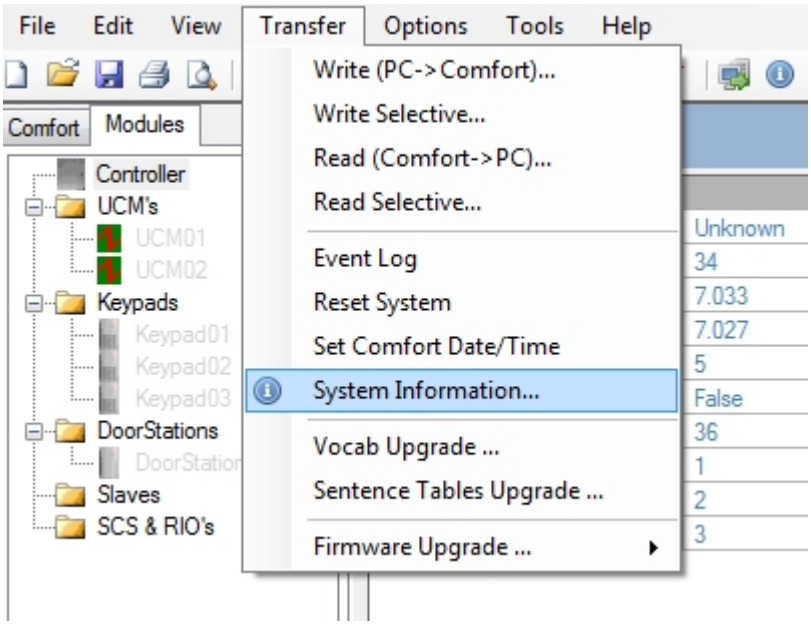


Figure 2.10 Transfer > System Information

Enter the user code for Comfort in the login window (default 1234) and press OK. The System information window should be displayed as shown, which means the USB connection is operating correctly.

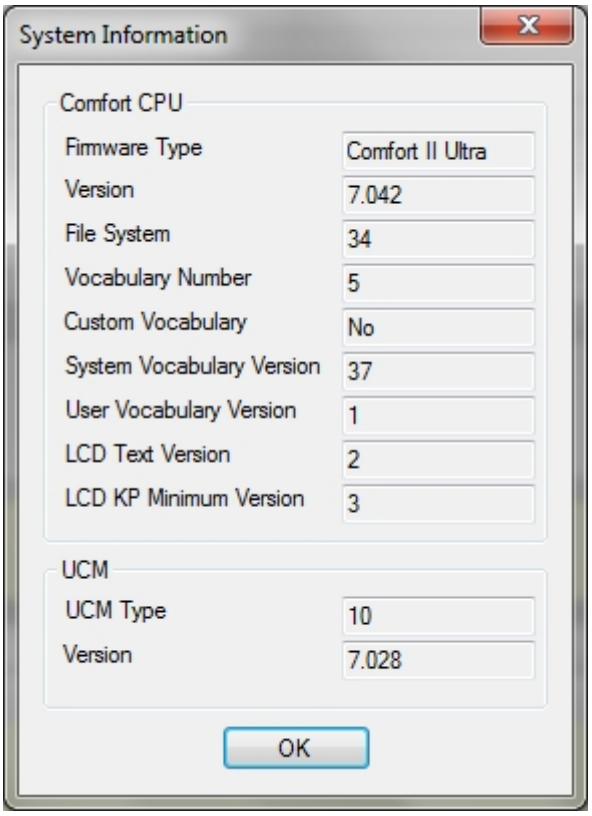


Figure 2.11 - System Information

SECTION 3 UCM BUTTON OPERATION

The instructions in this section apply to UCM Firmware 6.080 and above

The U2 EEPROM

The UCM comes with an EEPROM (256 Kilobit) in the U2 position. This is used to save the UCM ID setting from UCM firmware 6.080 onwards and is used to read and write the configuration from/to Comfort.

Upload Button

The Upload button allows Comfort configuration in the Comfort U4 EEPROM to be transferred to the UCM U2 EEPROM for backup purposes. Press and hold UPLOAD for 2 seconds until the BUSY1 red led (D2) starts blinking. This shows that the data is being transferred to the UCM. When the transfer is complete the BUSY1 led will stop blinking. This should take about 2 minutes. Later the DOWNLOAD button can be used to write the saved data back to Comfort.

The Red ERR led turns on if the if there is no EEPROM in U2 or if the U2 EEPROM capacity is incorrect.

Download Button

The Download button transfers the configuration data in the U2 EEPROM to Comfort's U4 EEPROM. The Upload button should have been used previously to read the data from a Comfort system. This is useful if the comfort configuration has been corrupted, or if the user codes have been lost.

Press and hold the DOWNLOAD button for 2 seconds until the BUSY2 led starts blinking. This shows that the data is being transferred to Comfort.

The Red ERR led turns on if the File System in the UCM U2 EEPROM File System does not match that in Comfort or if there is no EEPROM in U2 or if the U2 EEPROM capacity is incorrect.

☎ **The Download Button will not work if the U2 File system does not match that in Comfort. This prevents wrong information from being written into Comfort**

Test Button

This tests the EEPROM in U2 by writing and reading every location. Press and hold the TEST button for 2 seconds until the BUSY2 led turns on and stays on. This takes about 2 minutes, and the RDY led will turn on if the test is successful and the EEPROM has passed the test.

Copy/ID Button

This button sets the UCM ID as described in the ID setting section described earlier.

Compare Button

This button has no function

Common Problems

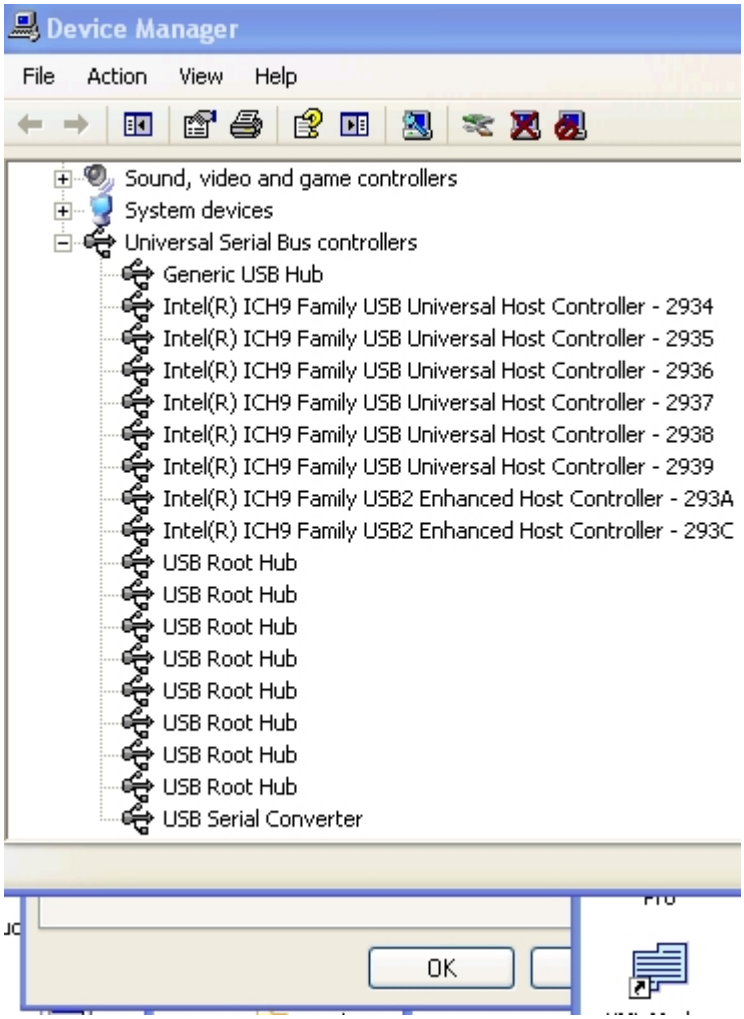
"Unable to Communicate with UCM"

UCM ID

The main cause of unable to communicate is incorrect setting of the UCM ID. Check that there is no other UCM, UCM/ETH03, UCM/CBUS, etc. installed with the same ID on SW7. This will cause a conflict of addresses with more than 1 UCM responding to the poll from Comfort. The UCM is normally set to ID=1. Check that the number of UCMs matches the UCM with the highest ID number installed in the system. The number of UCMs should not be 0, otherwise the UCM will not communicate.

UCM/USB

Failure to communicate is normally due to problems with the USB driver. See instructions on USB driver installation in the relevant section of UCM/USB. Sometimes an outdated USB driver can causes incompatibility problems. If an existing version of the USB Driver has been installed, this may prevent the UCM/USB from communicating. In this case upgrade the driver by going to My Computer > Control Panel > System> Hardware Tab > Device Manager.



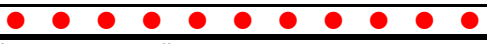
Look for USB Serial Bus Controller > USB to serial converter as shown above. Right click and select Update Driver. Browse to the folder "C:/Program Files/Cytech/Comfigurator/USBDrivers" and select the folder and then press OK. The new driver will be installed.

UCM/ETH03

Check that the IP address and Port of the UCM/Ethernet corresponds to that shown in Comfort Server Manager. Run Comfort Server Manager on the LOCAL network and check that the UCM/Ethernet is detected. Check the IP address and port.

LED Status Indications

The following describes what is regarded as normal LED indications which will be seen on the UCM module when it is connected to Comfort.

D9 (Red) and D10 (green) status indications for RS485	
Communications OK (Idle)	
D10 (green)	
D9 (Red)	
UCM is receiving data, but not responding.	
Cause	UCM SW7 ID shunts may be set wrongly or No of UCMs in Comfigurator may be wrong.
D10 (green)	
D9 (Red)	
No Communications	
Cause	KA/KB or 12V/COM not connected
D10 (green)	
D9 (Red)	

The D10 (green) LED indicates RS485 data received from Comfort, and D9 (Red) indicates data transmitted to Comfort.

D12 (Red) and D11 (green) status indications for USB/ETH03/RS232	
Writing or Reading from PC (Comfigurator)	
D11 (green)	
D12 (Red)	
UCM receives command from RS232 and Responds (e.g... login)	
D11 (green)	
D12 (Red)	
UCM receives command from RS232 and does not Respond	
D11 (green)	
D12 (Red)	
UCM sends a report to RS232	
D11 (green)	
D12 (Red)	

The D11 (green) LED indicates RS232 data received from the PC and D12 (Red) indicates RS232 data transmitted to the PC

SECTION 5 INFRARED LEARNING

Infrared Learning

The Comfort Infrared learning software is a Windows application which uses the UCM/232, UCM/ETH03 or UCM/USB with IR receiver to learn new infrared signals and save the codes in the .ifr file format which is used by Comfigurator.

Installation

The program is included with the Comfigurator software which is downloaded from the Cytech Technology web site, link
http://www.cytech.biz/comfigurator.html

To start the program, run it from Comfigurator in Tools > Infrared Utility.

Definitions

Ifr file

A .ifr file contains the encoded infrared data for the commands for a specific appliance. For example, a TV file may have On/OFF, Channel 1, Channel 2, Mute, etc.. Each command in the ifr file can be assigned as an IR Transmit code and downloaded to Comfort via Comfigurator to be sent to any output using Infrared Command (action 129).

The commands in an ifr file can be learned with the infrared learner software.

The .ifr files are contained in the ifr sub directory in the Comfigurator directory.

Specification

Infrared Carrier Frequency: 35 kHz to 50 kHz

Learning distance: 5 to 10 cm.

Angle for reception: +/- 25 degrees

Encoding: ifr format

Limitations and Disclaimer

Some infrared signals cannot be captured or encoded by the software algorithm or used by Comfort because of limitations in the encoding system. The IR learner captures and encodes the IR signals, while Comfort decodes the encoded signals to transmit from any programmed output. The process of encoding and decoding will introduce errors between the reconstructed signal and the original signal. This works well in the majority of remote control signals tested, but not for all possible remote controls.

Operation

Run the infrared learning program from Comfigurator > Tools > Infrared Utility.

The opening screen is shown below:

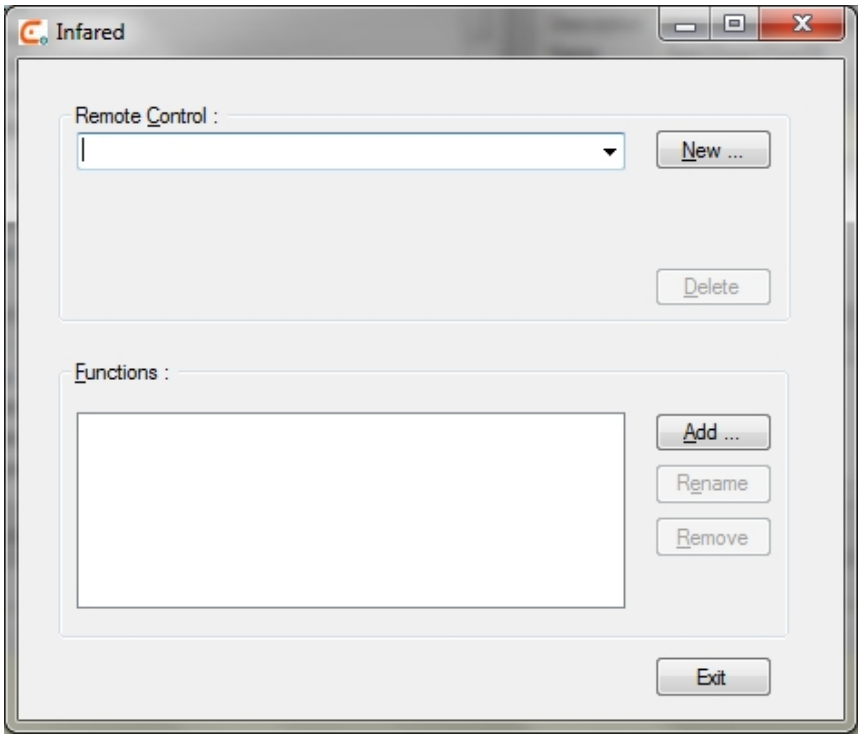


Figure 5.1 - IR Learning Tool

To start learning IR signals for a new device which is not in the IR code library (in the ifr sub directory), press New... You will be asked for the Brand, Device and Model number as in the screen below;

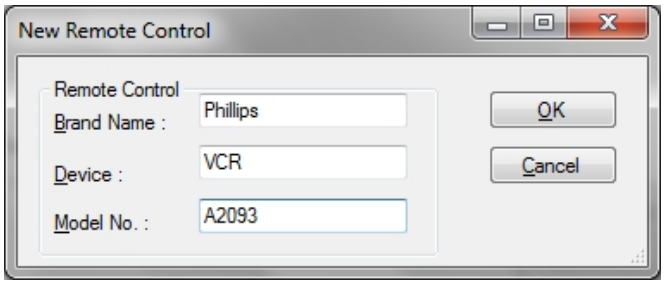


Figure 5.2 - New Remote Control Dialog

Press OK to confirm. This defines the filename for the ifr file which is to be generated. You can now start to learn new functions using the remote control.

To add new IR codes for devices currently in the ifr directory click on the arrow to the side of the window and select from the dropdown list of appliances shown.

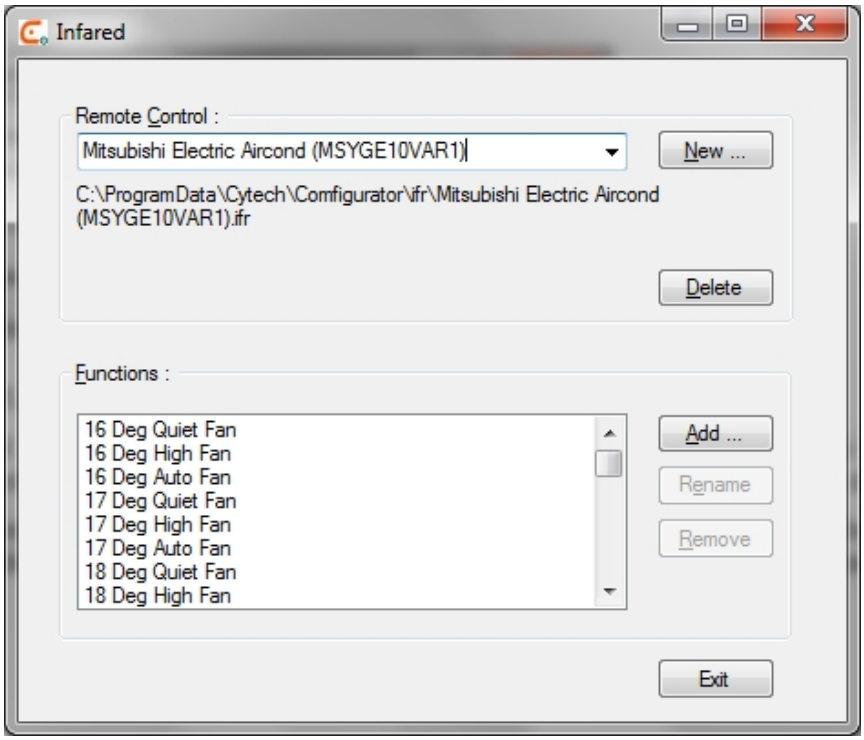


Figure 5.3 - IR Commands

The above screen example for Mitsubishi Electric Air Conditioner shows the learned commands for this device in the bottom screen.

Rename

You can rename the function by selecting it with the cursor and pressing the Rename button.

Remove

You can delete the function by selecting it and pressing the Remove button.

Add

To learn a new infrared code, click on the Add... button

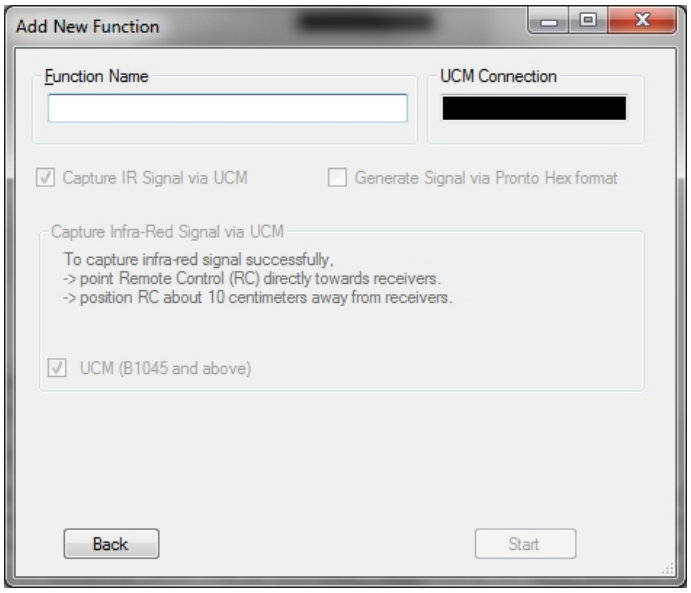


Figure 5.4 - IR Add New Command

Enter the Function Name for the command, e.g. Play, Stop, On, Off etc.. The UCM Connection field will be taken from Comfigurator's UCM Connection setting i.e. it will show Serial (with its COM port number), USB (with USB serial number) or Network (with the IP address) depending on what kind of UCM is connected.

Click on "Start" to start the capture.

Always use new batteries on the remote control, as this gives the best chance of successfully capturing the signal.

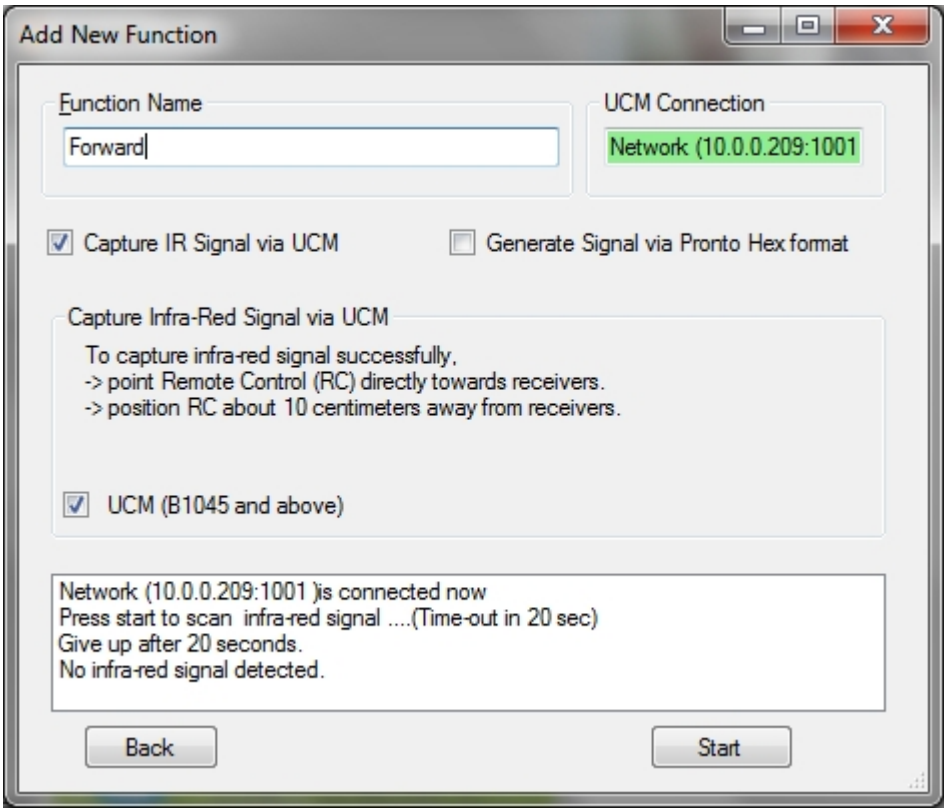


Figure 5.5 - IR Capture

When the screen above appears, point the remote control directly at the IR receiver LEDs U8 and U9 about **5 to 10 cm away**. **Do not place the remote control too close to the UCM board because the exact location of infrared transmitting LED of the remote control behind the lens may not be known.** Press and release the button on the remote control which is to be learned. Do not keep pressing the button unless it is required, e.g. for dimming lights.

☎ **The BUSY1 Red LED should turn on when the UCM is ready to learn an infrared signal. If the BUSY1 LED is not on, click Back and try again.**

If a valid infrared signal is not received within 20 seconds, the screen will time-out.

If the capture is complete, the BUSY2 Red LED will blink, followed by the D12 Red LED (to indicate that the information was sent to Comfigurator) and the following screen will appear.

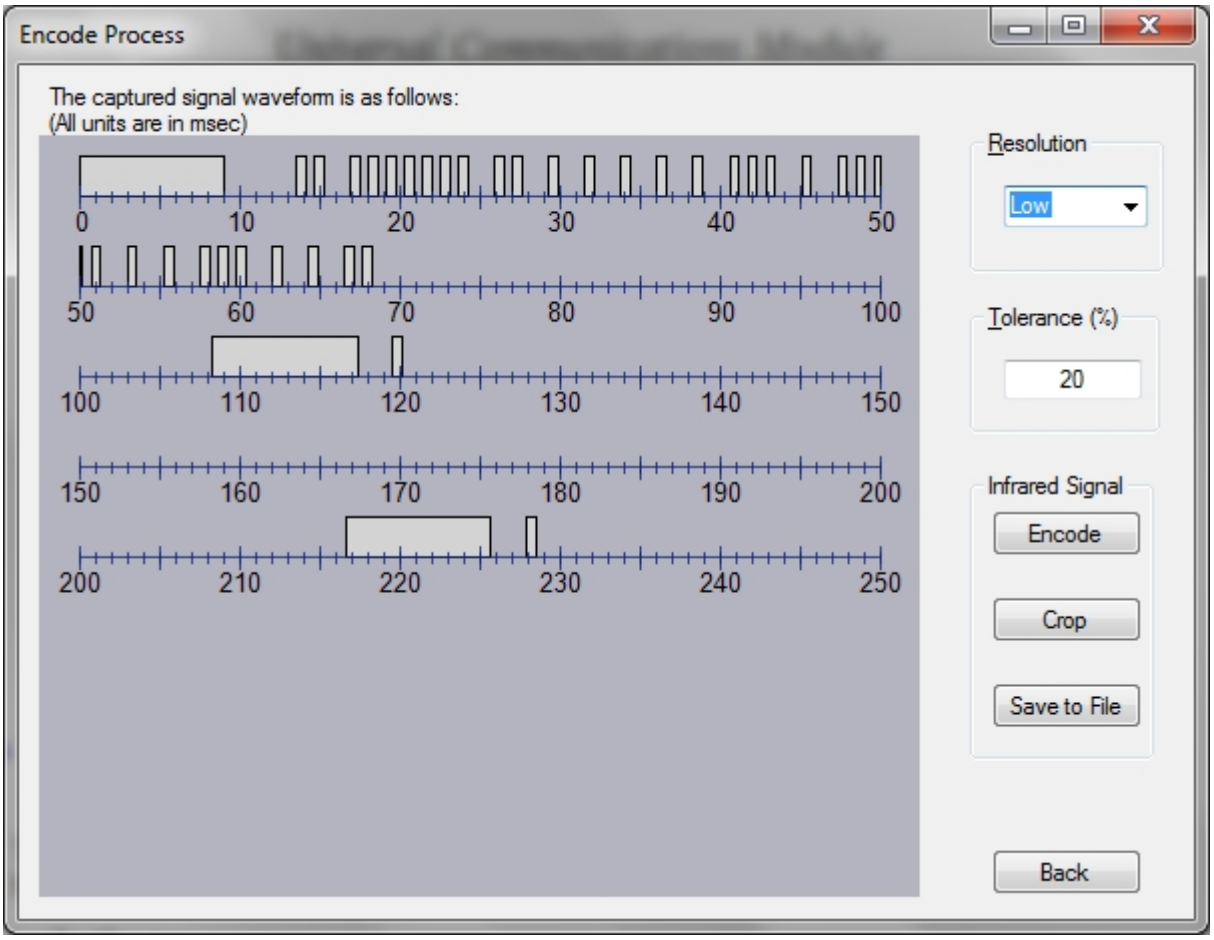


Figure 5.6 - IR Captured Waveform

This shows the waveform of the captured IR code. The numbers on the horizontal scale show the time in milliseconds.

Resolution

The Resolution window on the top right allows you to specify different scales to observe the infrared signal. The selection does not change the signal in any way, just the magnification of the signal on the screen.

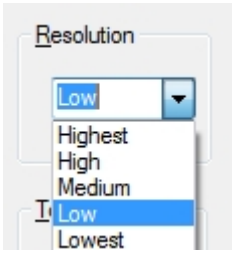


Figure 5.7 - Waveform Resolution

Tolerance

The Tolerance window allows you to specify the tolerance which the encoding algorithm uses. The IR signal is encoded in the Comfort ifr format, so that the space required in Comfort's memory is minimized. In encoding the signal using the IR learner and decoding the encoded code in Comfort, there will be differences between the original IR signal and the reconstructed signal transmitted from Comfort. These differences are in the length of the pulses and

the gaps in the captured waveforms as well as the carrier frequency. Specifying a larger tolerance may allow the algorithm to encode the signal more efficiently, resulting in fewer bytes required for the signal. Comfort imposes a limit on the size of the encoded IR signal due to memory limitations. For Comfort II ULTRA firmware the limit is 4096 bytes while for OPTIMUM firmware, the limit is 540 bytes. Specifying a larger tolerance may result in a code which is less than the limit allowed. However, applying too large a tolerance could result in incorrect encoding of the signal.

Encode

Press the ENCODE button to initiate the encoding process. The screen below shows a typical result;

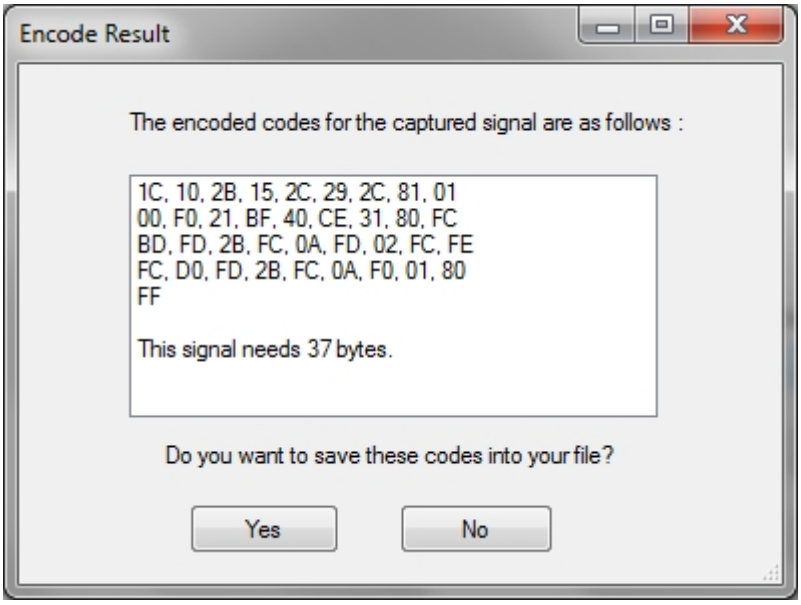


Figure 5.8 - IR Encoding Screen

The number of encoded bytes is shown at the end of the data in the above window. To save the code into the .ifr file, click on the YES button. The encoded data is saved as an ifr file. The file name is automatically generated from the equipment type, manufacturer, and model number which were entered earlier.

Clicking on the No button will return to the previous screen where a different tolerance can be specified.

Crop

The Crop button on the waveform display screen allows you to delete the last part of the signal in order to achieve a code size within the limit. Some IR codes have single or repeated pulses at the end of the signal which may not be needed to achieve the function. The presence of these pulses defeats the algorithm which looks for repetitions of patterns in the signal. If a pattern is repeated in the signal, but followed by some pulses which are part of the pattern, then the entire signal cannot be coded as a repetition. To crop a signal, click on the point in the signal after which the signal is to be cropped. The remaining part of the signal before the cursor will be acted upon by the encoding algorithm.

Save to File

This button saves the waveform in .raw format. This file can then be sent to Cytech Technology (email: support@cytech.biz with full details) for analysis in

case of problems with encoding. **This does not save the encoded file in the .ifr format**

Infrared Learning Errors

"Infrared Signal is too long"

If this message appears **before** the remote control button is pressed during learning, it means that random IR signals are being received. This could be due to certain types of fluorescent lights**.** Try again with the lights off or in another room.

If the error message is seen after the infrared signal is sent, it means that the signal being learned is too long for the system to encode, probably because it has an unusual format.

This may also be caused by pressing and holding the remote control button. Try again after clicking the "Start" button, by pressing and releasing the button. Note that a small percentage of infrared signals are really too long to be learned by the UCM. The UCM is not able to encode all types of remote controls.

"Erroneous signal or Out of Frequency Range Detected"

This message may be received if the remote control is not pointed directly at the receivers or is too far away. The remote control should be pointed directly at the infrared receivers U8 and U9 at a distance of 5 to 10 cm away.

Some remote controls operate outside the frequency range of 35 to 50 kHz in which the receiver can not detect. Such infrared signals cannot be learned by the UCM.

"Error Encountered during Encoding - Exceeded Bytes"

This message is received when the infrared signal is not one of the known formats which requires too many bytes to encode. Such infrared signals cannot be learned by the UCM.

Common Problems with Learned IR Codes

Sometimes, the infrared signals can be captured and encoded successfully, but when transmitted through an infrared transmitter LED connected to an output, it does not activate the device. The possible causes and solutions are:

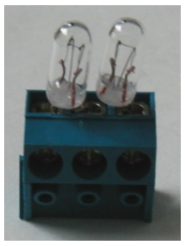
Encoding Errors

The UCM may encode the signal incorrectly if the remote control is not pointed correctly at the receivers. The remote control should be pointed directly at the infrared receivers U8 and U9 at a distance of 5 to 10 cm away. The remote control should not be too close to the receivers because the actual location of the transmitter LED behind the infrared lens is not known. The transmitter may not be at the center of the lens so it may be pointing at the wrong angle. Positioning the remote control 5 to 10 cm away will reduce the effect of the uncertainty of the location of the transmitter.

Programming Errors

The infrared code is sent to any output using Action 129 (or using the Response Wizard in Comfigurator). Check that the correct infrared code number is sent to

the designated output. A useful diagnostic tool is to plug in a Test Lamp terminal Block into the output header.



This consists of two 12V DC lamps which light up when the output is turned on. When an infrared signal is sent to the output, the lamp will briefly blink. It should not be permanently turned on. This shows that the output is receiving an infrared signal, but it does not mean that the IR signal is the correct one. A useful tool in any installation where infrared transmission is needed is a long length of wire, about 30 meters with an IRM01 transmitter on one end and a terminal block on the other. This can be quickly connected to any output and the transmitter pointed at the appliance to operate it. This will show if the programming is correct.

Wiring Errors

The most common cause of infrared signals not working is wiring errors. The infrared transmitter IRM01, IR01W or IR03W may not be connected to the designated output, or the polarity may be reversed. Use the long length of wire with IRM01 at one end and a terminal block at the other to determine if the programming is correct or the wiring is correct.

SECTION 6 FIRMWARE AND VOCAB UPGRADING

Instructions on how to upgrade firmware by UCM can be found on the Comfort Forum at http://www.comfortforums.com/forum92/3400.html

See http://www.comfortforums.com/forum81/ for the UCM firmware history.

Manual Revision History

4.0.11 (1 June 2017)

Removed UCM/232

4.0.10 (11 Dec 2015)

Corrected ucm hole mounting dimension

4.0.9 (6 Feb 2014)

Corrected ETH03 D1 to D2 led

4.0.8 (20 Jan 2014)

Remove ETH02 and added ETH03, CS Manager descriptions

4.0.4 (20 August 2013)

Improved description of ETH02 LEDs and DS Manager

4.0.3 (15 June 2013)

Added note Download does not work if File System in U2 does not match. Changed upgrading firmware section.

4.0.2 (1 June 2013)

Revised USB and ETH02 settings for Comfigurator 3.6. Removed AUD01

4.0.1 (16 November 2012)

Applicable to UCM Firmware 6.50 and above. Supports COPY button to set ID and new functions for Upload and Download buttons

3.6.6 (21 August 2012

1 Removed UCM/ETH01 references. UCM/ETH01 has its own manual.

3.6.5 (3 July 2012)

1 Update operation for Comfigurator 3.5.0
2 SW8-G NOT to be shunted for STX/ETX as the feature will be removed
3 UPLOAD, TEST, COPY buttons are not used. U3 socket is removed.

3.6.2 (20 November 2011)

1 Updated UCM/ETH02, DS Explorer firmware upgrade

3.6.1 (24 August 2011)

1 Added instructions for Firmware upgrade - 3 types
2 Instructions to delete the old USB Driver for UCM/USB
3 IR Learning - Note about Busy1 LED should be on.
4 Firmware History link to Forum

3.5.6 (27 April 2011)

1 Added description of the new Ethernet module (ETH02)
2 Introduce the use of Device Explorer software for ETH02
3 Remove the VSP software description

3.5.5 (14 November 2010)

1 Amended USB Driver Installation
2 Added UCM/232M, RS232/F and RS232/M

3.5.3 (17 March 2010)

1 Removed reference to UCM05. Replaced photos with illustrations

3.5.2 (6 November 2009)

1 Added USB Driver Installation instructions.

3.5.1 (17 October 2009)

1 Corrected the VSP software setting i.e. Connection mode should be 'Immediately', not 'On data'.
2 Added Vocabulary Upgrade Section
3 Added Min UCM05 firmware 5.178 requirement for Firmware Upgrade
4 Added warning that Vocab Upgrade will erase all messages
5 Added pictures of Upgrading Comfort and UCM

3.4.7 (4 August 2009)

Added new UCM/USB. Rearranged chapters and content

3.4.3 (21 February 2009)

Added more comments about UCM firmware suitable for Firmware upgrading. Firmware UCM 5.178

3.4.2 (27 December 2008)

Updated Firmware history. Added note on Copy, Download/ Upload, Test buttons about Busy1 and Busy2 leds Added warning about not connecting Firmware Programming cable in normal operation. Added instruction on Getting Started on Ethernet to shunt SW8-F and remove SW8-G and H Improved Firmware Upgrade instructions

3.3.9 (25 July 2008)

Updated UCM/ETH02 of firmware and software revisions and DS Manager settings. Added warning that ETH01 plug-in cannot be used for old UCM01

3.3.6 (5 March 2008)

Flow control in Comfigurator and Hyperterminal should be set to NONE

3.3.4 (10 January 2008)

Changed connection to Comfort from J15 to J7 (Comfort II) Added instructions for UCM 5.156 and warning about resetting UCM

3.3.0 (12 July 2007)

Applies to Flash-based UCM. Added Chapter 8 on Firmware download

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/ucm_manuals.html

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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