

Universal Communications Module

Section 1	Types of UCM	3
UCM/ETH02		3
UCM/USB		3
UCM/232F		3
UCM submodules		3
Section 2	UCM Settings	5
Getting Started		5
Connections		5
Set UCM ID using SW7		5
ID Setting using COPY Switch (from UCM 6.080)		6
Comfigurator > Modules Tab		6
LED Indications		7
Buttons on UCM Board		7
ICs		7
Other Settings (SW8)		8
J4 Select EEPROM		8
Physical		8
Connectors (Common to all UCMs)		8
UCM/ETH02		9
ETH02 Specifications		10
Ethernet Connector		10
Jumper Settings		10
SW101		10
Ethernet LED Indicators		10
Connect UCM/ETH02		11
DS Manager		11
DS Manager Settings		13
Device Explorer Software		15
Comfigurator Network Connection		17
UCM/USB		18
Parts Supplied		19
LED Indicators on Daughter Board		19
USB Connector		19
System Requirements		19
Installing the USB Driver		19

Universal Communications Module

Configurator Setup	20
UCM/232	22
RS232 Connector	24
Section 3 UCM Button Operation	25
The U2 EEPROM	25
Upload Button	25
Download Button	25
Test Button	25
Copy/ID Button	25
Compare Button	25
Section 4 Troubleshooting	27
Common Problems	27
“Unable to Communicate with UCM”	27
LED Status Indications	28
Section 5 Infrared Learning	29
Infrared Learning	29
Installation	29
Definitions	29
Specification	29
Limitations and Disclaimer	29
Operation	29
Infrared Learning Errors	35
Problems with Learned IR Codes	35
Section 6 Firmware and Vocab Upgrading	37
Manual Revision History	38

SECTION 1 TYPES OF UCM

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

UCM/ETH02

The UCM/ETH02 has a RJ45 jack for connection to an Ethernet Local Area Network (LAN) using the TCP/IP protocol. The UCM/ETH02 is a new model which replaces the UCM/Ethernet. UCM Firmware 5.228 and above is required for UCM/ETH02.

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 3.0.0 onwards.

The term UCM is used when describing functions common to all the above UCM modules which have identical functions.

UCM/232F

The UCM/232F provides RS232 serial interface to Comfort. UCM/232F is not usually used for Comfigurator since computers normally do not have serial ports.

UCM submodules

- 1 UCM06 is the baseboard to which RS232/F, R232/M USB01, ETH01 daughterboards can be added to make up UCM/232, UCM/USB and UCM/ETH02 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 ETH02 daughterboard. Plugs onto UCM06 to make UCM/ETH02.
- 4 RS232/M and RS232/F daughterboard with Male and Female RS232 connectors respectively. Plugs onto UCM06 to make UCM/232M and UCM/232F.

This manual describes the UCMs with firmware 6.080 and above. For UCMs with firmware < 6.080, the old manual 3.66 can be downloaded from http://www.cytech.biz/product_details.php?item_id=159

The UCM/USB, /ETH02 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.

Universal Communications Module

- 5 Allows other Flash-based Comfort and UCM firmware to be upgraded using Configurator Firmware Upgrade.
- 6 Comfort Voice/Vocabulary (new version of language) can be written to Comfort using Configurator.

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 switches, 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>

Getting Started

This section is common to UCM/232, UCM/ETH02 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. 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 A,B,C, D 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-A	SW7-B	SW7-C	SW7-D
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.

Universal Communications Module

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)

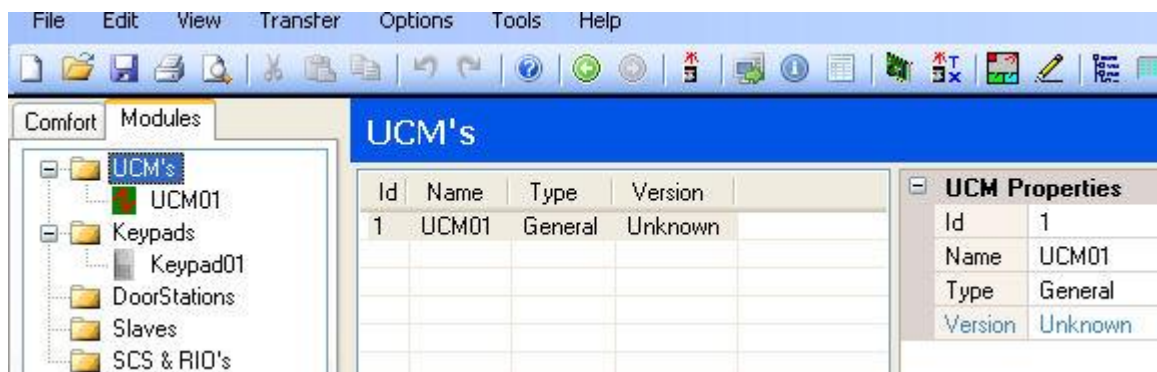
ID	ERR (D4)	BUSY2 (D3)	BUSY1 (D2)	RDY (D1)
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
Unassigned	On	On	On	On

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.

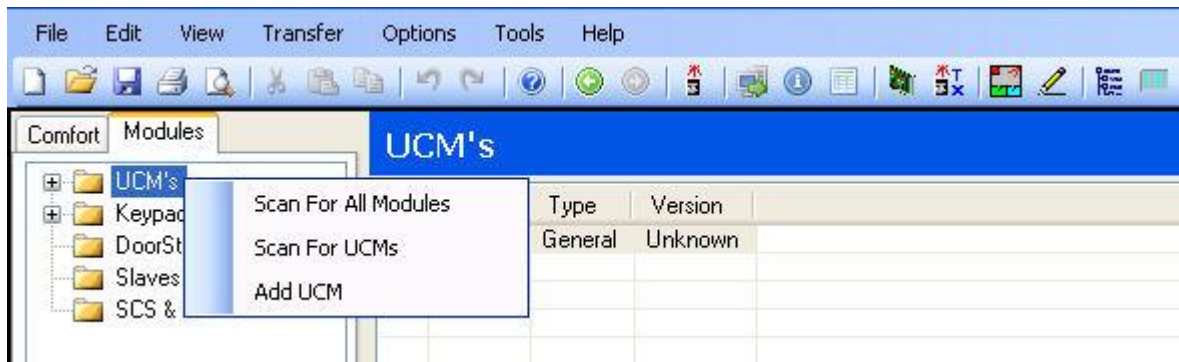
Configurator > Modules Tab

The UCMs in the system are shown in Configurator >> 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.

Universal Communications Module



After Scanning for modules, do a Transfer > Write to Comfort 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.

Table 2.3 has been removed

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 5.xxx".
- U2 - Backup EEPROM
- U5 - RS485 transceiver for Comfort Bus.

Universal Communications Module

- 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/ETHf01	UCM/ETH02
G	Not Used	Not Used
H	Not Used	Not Used

Table 2-4 - SW8 Settings

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

SW8 - H shunt. Not used. Hardware handshake is disabled in UCM 5.228 firmware. SEE NOTE below

- ☎ 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 U2.

Physical

- PCB size: 108 x 88 mm
- Mounting Holes: 103 x 83 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



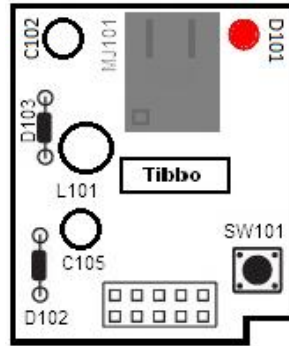


Figure 2.5 ETH02 Daughterboard

The UCM/ETH02 is equivalent to a UCM06 Baseboard with ETH02 daughter board plugged in.

ETH02 Specifications

- Ethernet Interface: 10/100BaseT
- Network Protocols: TCP, UDP, HTTP
- Serial Interface baud rate: 9600 bits per second
- Current Consumption: 80 mA (typical) from Comfort 12V auxiliary output.

Ethernet Connector

- MJ101 - RJ45 connector for Ethernet Local Area Network.

Jumper Settings

- SW8-F (Ethernet) inserted for ETH01 and open for ETH02.

SW101

Pushbutton switch for reinitializing ETH02 to programming mode in case firmware is corrupted. DO NOT use in normal operations.

- Power off UCM/ETH02.
- Press and hold SW101 switch.
- Power on UCM/ETH02.
- Release the SW101 switch after at least 7 seconds upon powered on.
- The Green LED on RJ45 connector will turn steady on and D101 red LED will be flashing when the Ethernet cable is plugged in.
- Run Device Explorer software and refer to Device Explorer Software section on firmware upgrade instruction.

Ethernet LED Indicators

- D101 - Link Status LED (Red) - This turns on when 'active' Ethernet cable is plugged into the Ethernet port and blinks whenever an Ethernet packet is received.
- RJ45 connector LEDs (Green and Amber) - dual-function Ethernet status LEDs. The Green LED should be on when connection is established to its IP address/port, and blinks twice and repeats while there is no connection.

Universal Communications Module

The Amber LED should be off in normal operation and on as error indication or has a buffer overflow condition.

Connect UCM/ETH02

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 D101 (Red) should turn on and the two LEDs (Green and Amber) on RJ45 connector should flash 3 times initially. After that, the Green LED will blink twice every few seconds and D101 (R) will be flashing. When there is no Ethernet cable plugged in, D101(R) will stay off and the blinking of Green LED on RJ45 connector will be dimmer.

DS Manager

To set up the IP address and the other network and serial port settings for UCM/ETH, use DS Manager Software which is included in Comfigurator. The instructions here assume Comfigurator 3.6.x

In Comfigurator go to Options > Settings > UCM Connection. Select UCM Interface as Network (Local). The DS Manager Link is seen on the bottom right.

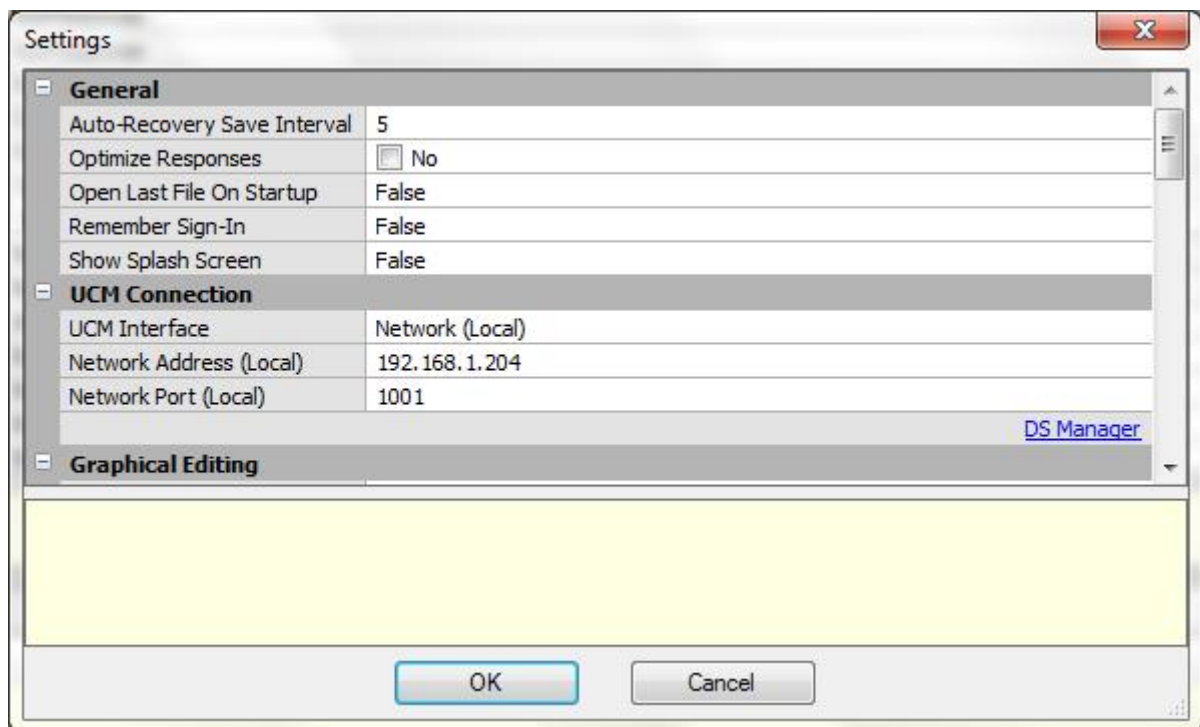


Figure 2.6 - DS Manager in Comfigurator 3.5

Universal Communications Module

Click DS Manager. The DS Manager opening screen is shown below;

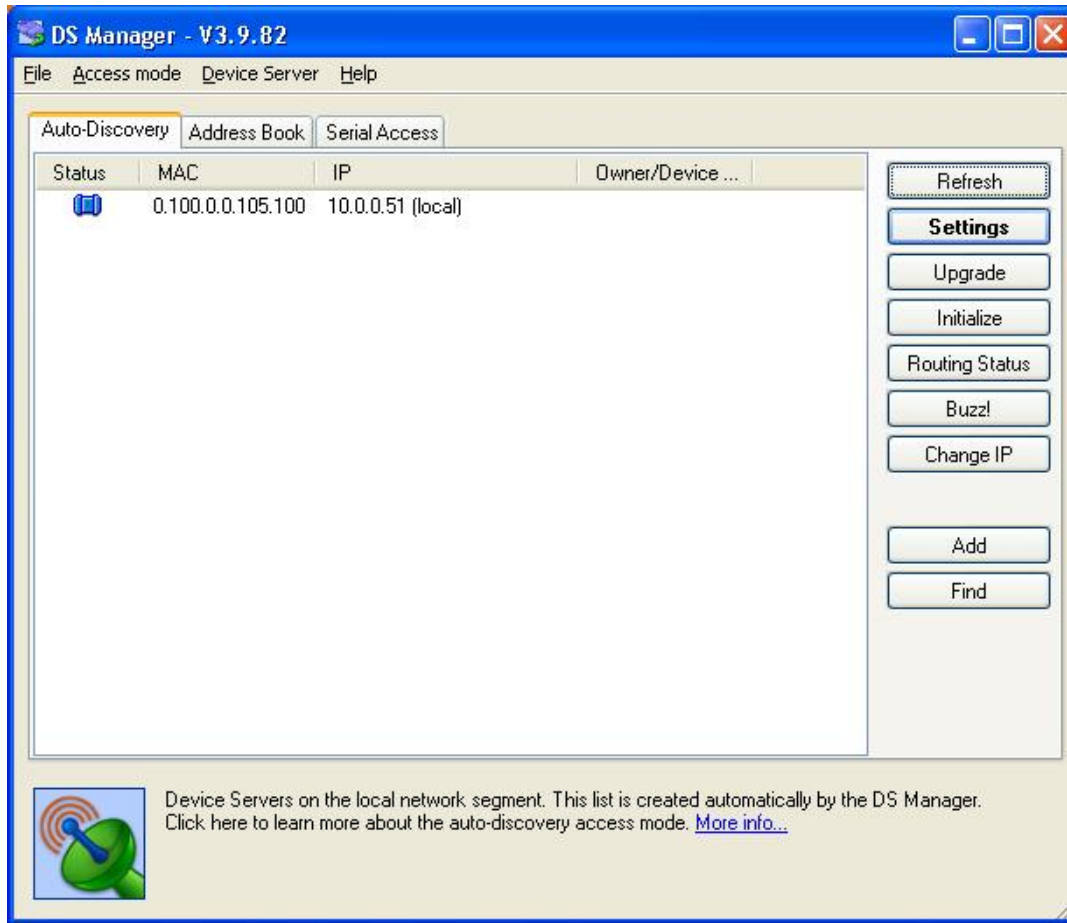


Figure 2.7 - DS Manager Screen

The barrel icon on the left is gray if it is not on the same network. The icon changes to blue if it is on the same network. If there is a connection, there will be blue arrows to the left of the icon. If there is a buffer overflow, the arrow will be in red dotted lines. To reset the buffer overflow condition, double click on settings button and press OK to confirm the settings.

The IP address of the UCM/Ethernet is found by the auto-discovery process. The default IP address as shipped will range from 10.0.0.51 to 10.0.0.60. The IP address must be changed to one which resides on the same Subnet as the computers which will be accessing the UCM/Ethernet through the network. For example, if one of the computers on the network has an address like 10.0.0.1 and the Subnet mask 255.255.255.0, the IP address of the UCM/Ethernet can be set to any address in the range 10.0.0.2 to 10.0.0.254, making sure that it does not conflict with any assigned IP address on the network. Click on the "ChangeIP" button. Enter the new IP address of the UCM/Ethernet. This is not necessary if the DHCP feature is enabled in the Network Settings page.

On the DS Manager screen, the new IP address should be shown.

The UPGRADE button is used to upgrade the firmware over the network. on the ETH01 only not ETH02. The Ethernet firmware is for the Ethernet functions and is not the same as the UCM Firmware. To upgrade, press the Upgrade button and select the name of the firmware file. The current firmware for ETH01 is CYTEM334.BIN. Upgrading takes only a few seconds. Upgrading ETH02 firmware is done by another software, the DS Explorer described in a later section.

Universal Communications Module

The INITIALIZE button initializes all settings back to factory default, except for the IP address. Do this if any error is shown for the UCM/Ethernet IP address after refresh.

The BUZZ button causes the RED and GREEN Status LEDs to blink for a few seconds so that the UCM/ETH02 module which is being accessed can be identified. This is useful if you have several UCM/ETH02 modules connected (Comfort can be connected to 8 UCMs of various types)

The ROUTING STATUS button shows the status of Routing buffers, Network Connection and Serial Port, useful for debugging

Figure 2.8 has been removed

DS Manager Settings

Select the IP address in DS Manager and click on the Settings button. The General Tab screen is shown below;

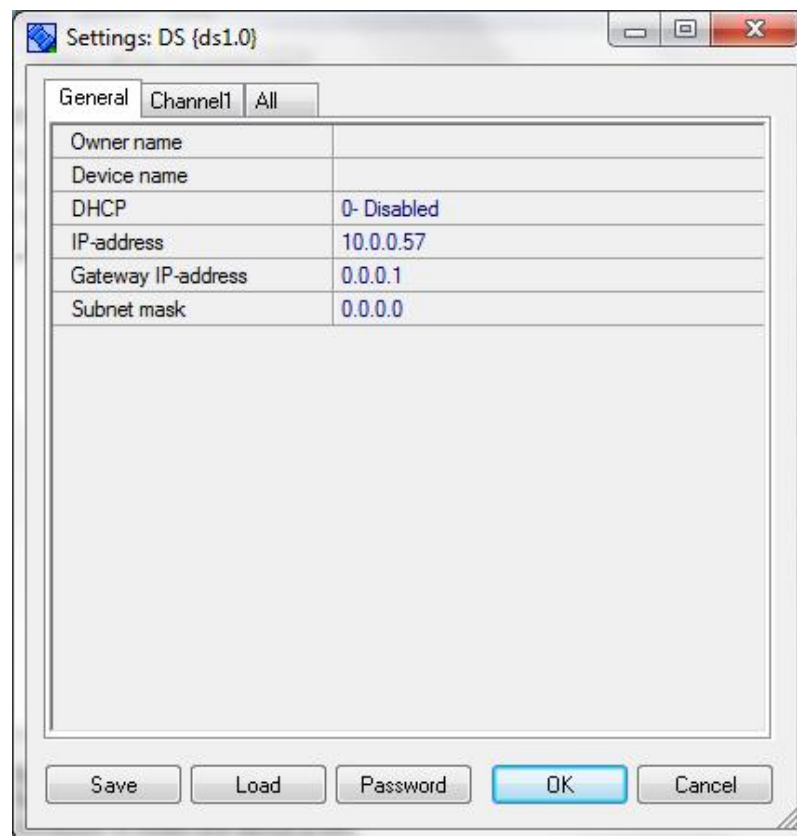


Figure 2.9 Device Server General Settings

- Owner Name and Device Name are for description only.
- DHCP if enabled, it allows the device to be automatically assigned an IP address if there is a DHCP server in the network. It is recommended that a fixed IP address be assigned to the device so that Configurator or the iPhone Application and other software can find it.
- IP-address is the current IP address of the device.

Next click the Channel1 tab

Universal Communications Module

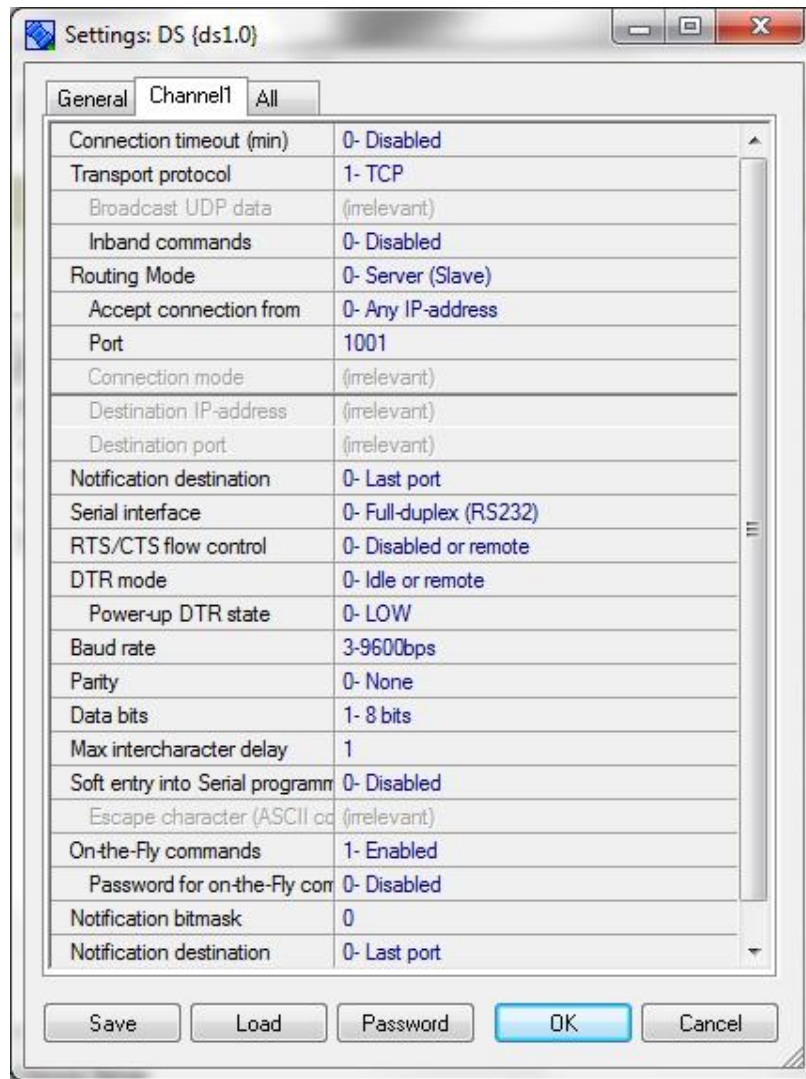


Figure 2.10 Device Server Channel1 Settings

- Connection timeout (min): This is the time in minutes (0 to 255) 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, eg for iPhone application. The UCM/Eth02 only allows one connection at a time.

- Transport protocol: Choose TCP.
- Inband commands: should be disabled.
- Routing Mode: should be 0- Server (Slave).
- Accept connection from: 0 - Any IP address, or 1 to specify an IP address to accept connection from.
- Port: is the network port through which the data is sent and received from the UCM. By default, the port is set to 1001.
- Notification destination: select 0 - Last port.
- Serial interface: 0 - Full-duplex (RS232).
- RTS/CTS flow control: 0 disables Flow control. RTS/CTS flow control should be disabled.
- DTR mode: 0 - Idle or remote.
- Power-up DTR state: 0 - Low.

Universal Communications Module

- Baud rate: 3 - 9600bps.
- Parity: 0 - None.
- Data bits: 1 - 8 bits.
- Soft entry into Serial programming mode: 0 - Disabled.
- On-the-Fly commands: 1 - Enabled.
- Password for on-the-Fly commands: 0 - Disabled.
- Notification bitmask: 0
- Notification destination: select 0 - Last port.

The TAB called ALL displays the same settings as the General and Channel1 Settings screens combined. The use of this screen is thus not needed, but it may be used for future expansion of settings.

The button SAVE at the bottom saves the profile under a file name that you specify with the extension .ds. The button LOAD allows you to load a previously saved profile.

The PASSWORD button is not used. Ignore it

Device Explorer Software

To upgrade the Ethernet module ETH02 firmware (DOES NOT apply to UCM/ETH01), install the Device Explorer Software. This is available from Cytech website at http://www.cytech.biz/device_explorer.html Unzip the file tdevexplore-2-50-11.zip (the current version at the time of writing) and install the software.

After Installation, run Device Explorer.

The Device Explorer opening screen is shown below;

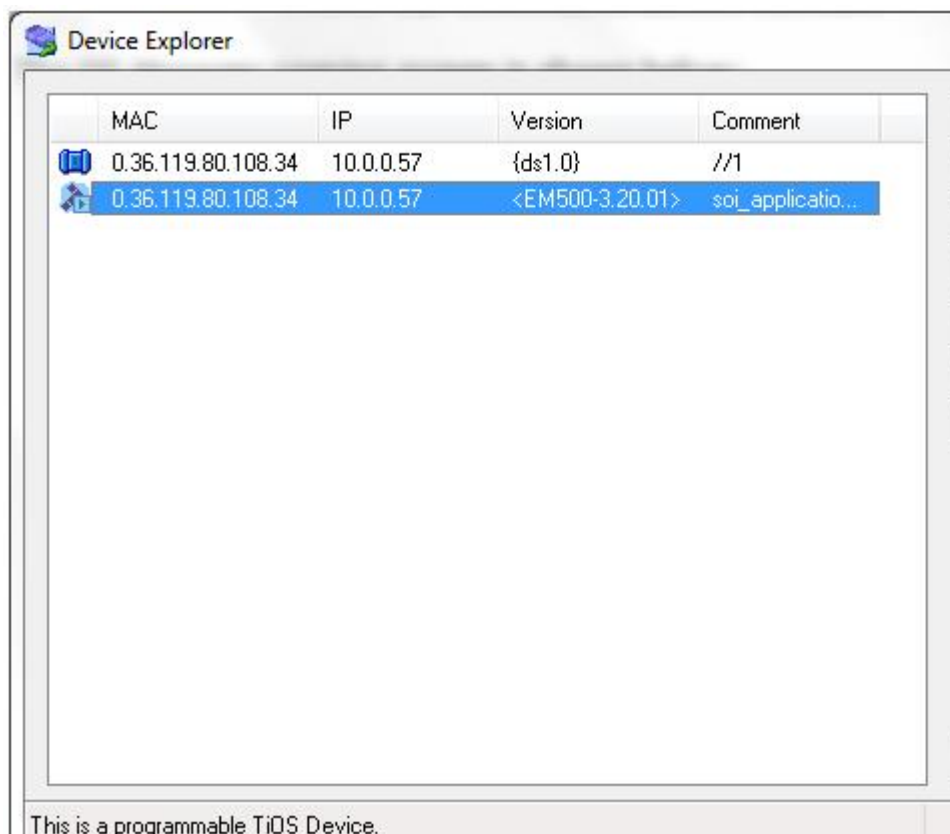


Figure 2.15 - Device Explorer Screen

Universal Communications Module

The IP address of the UCM/ETH02 is found by the auto-discovery process. The IP address can also be changed using the DS Manager software.

There will be two display lines shown for the same unit. One is shown with a blue icon (“programmable TiOS Device” on the status bar) and another is hammer icon (a “fixed firmware Device Server” on the status bar). Both show the same MAC address and IP address.

The BUZZ button causes the RED and GREEN Status LEDs to blink for a few seconds so that the UCM/ETH02 module which is being accessed can be identified. This is useful if you have several UCM/ETH02 modules connected

The CHANGE MAC button is used to change the physical Ethernet Address of the module. This should not be changed.

Upgrading Firmware on ETH02 Submodule

The ETH02 firmware is NOT the same as the UCM firmware of the baseboard. The ETH02 firmware runs on the Ethernet module and not the UCM.

The UPLOAD button is used to upgrade the ETH02 firmware on the submodule over the network. Select the “programmable TiOS Device” shown with a hammer icon NOT the blue icon



and not the blue icon. Firmware upgrades are available from the Cytech Technology website at http://www.cytech.biz/eth02_firmware.html. To upgrade, press the Upload button, select “Load Firmware Through the Network”, NOT “Load Application”. Select the firmware file. The current ETH02 firmware is cytech_nowifi_3.11.bin at the time of writing.

The message “The Firmware you have chosen may not be compatible with the selected device. Do you still want to proceed?” Enter Yes.

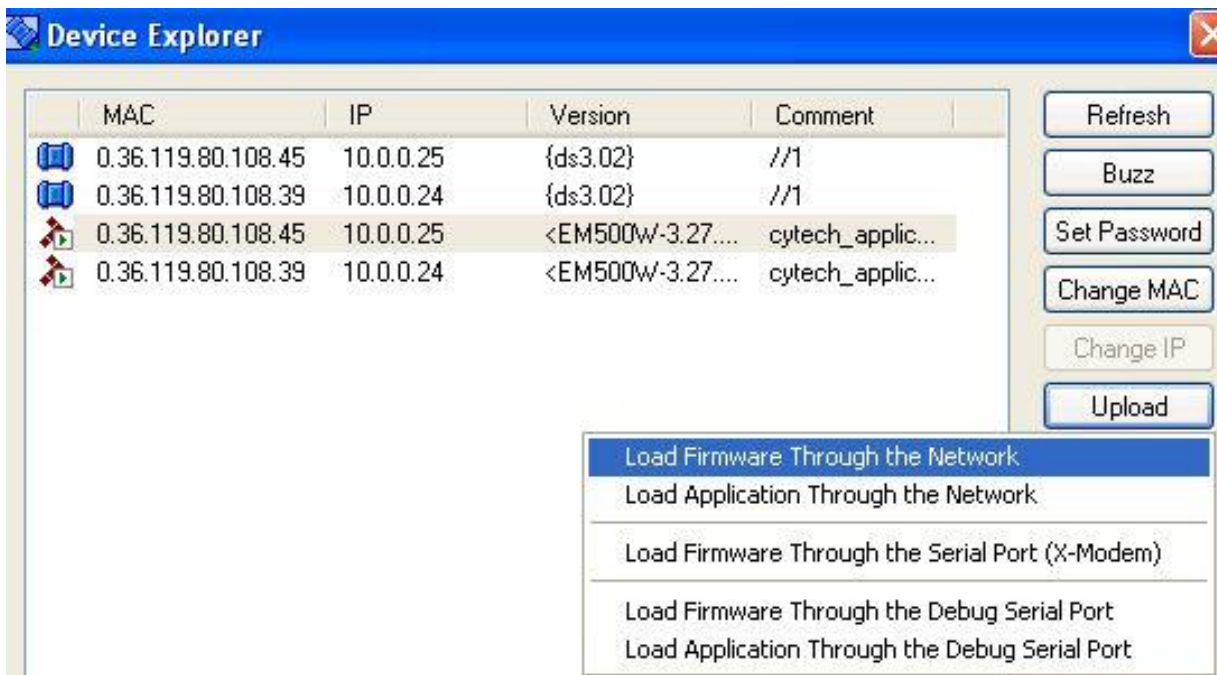


Figure 2.16 Upload Firmware for ETH02

Universal Communications Module

Firmware Upgrading takes only a few seconds. The Network Upload progress window is seen as shown below;

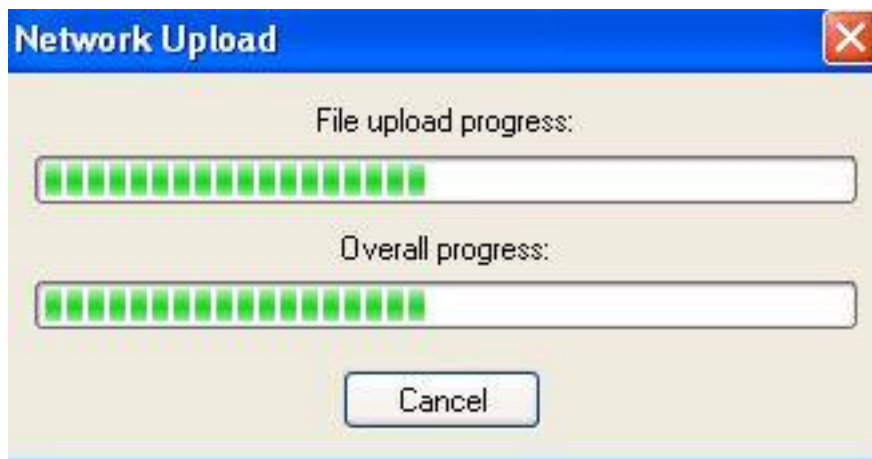


Figure 2.17 - Network Upload Progress

- ☎ If the Network Upload window does not show any progress after a few seconds, this is usually due to a firewall. Disable the firewalls on your PC eg Zone Alarm before upgrading the firmware.
- ☎ After upgrading the ETH02 firmware go back to DS Manager. If there is an error message on DS Manager, press the Initialise button to initialise the module. This defaults all settings except the IP Address. Enter the parameters as shown above if necessary.

Features of ETH02 Firmware cytech_3.13.bin

Presets DS Manager settings like baud rate, enable Inband commands, Connection Time-out 2 minutes. These settings are the default settings after the Initialise Button is pressed in DS Manager

Configurator Network Connection

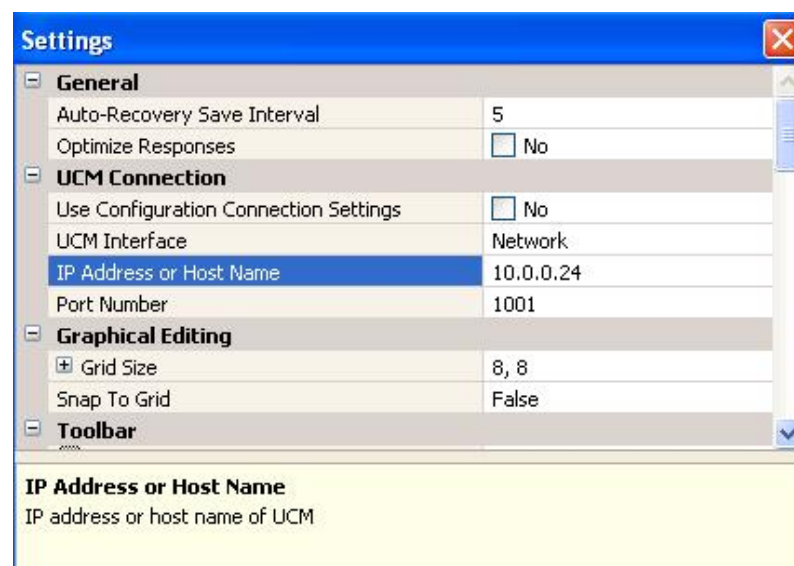


Figure 2.18 Configurator Network Connection

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

Universal Communications Module

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/ETH02 and click OK.

UCM/USB

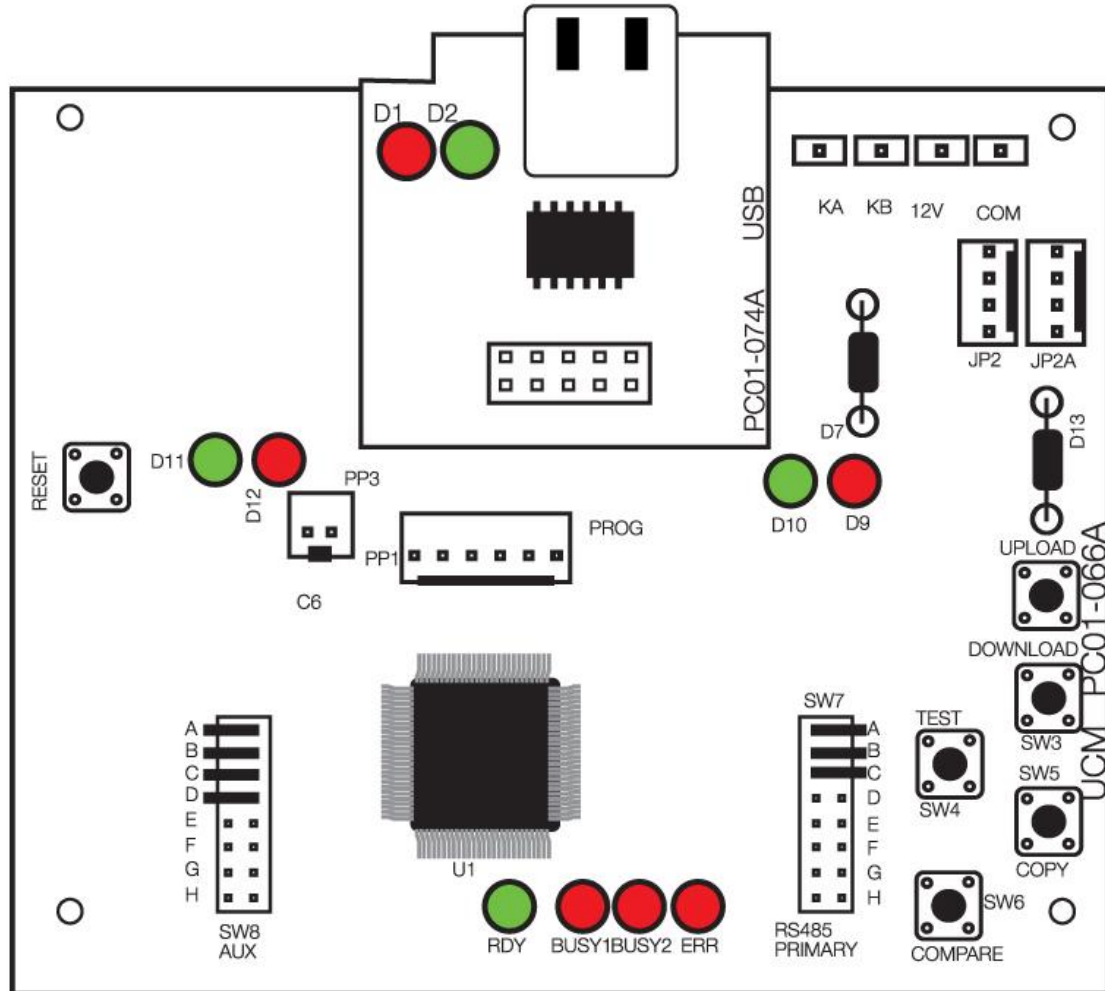


Figure 2.19 UCM/USB

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.

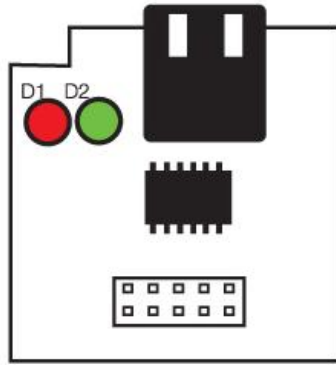


Figure 2.20 USB01

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

Parts Supplied

- UCM/USB Firmware 5.228 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.

Universal Communications Module

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. displayed. 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\Configurator\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 as shown below. 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.

Configurator Setup

The UCM/USB is supported by Configurator 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 Configurator, go to Options > Settings > UCM Interface. Select USB from

Universal Communications Module

the dropdown list.

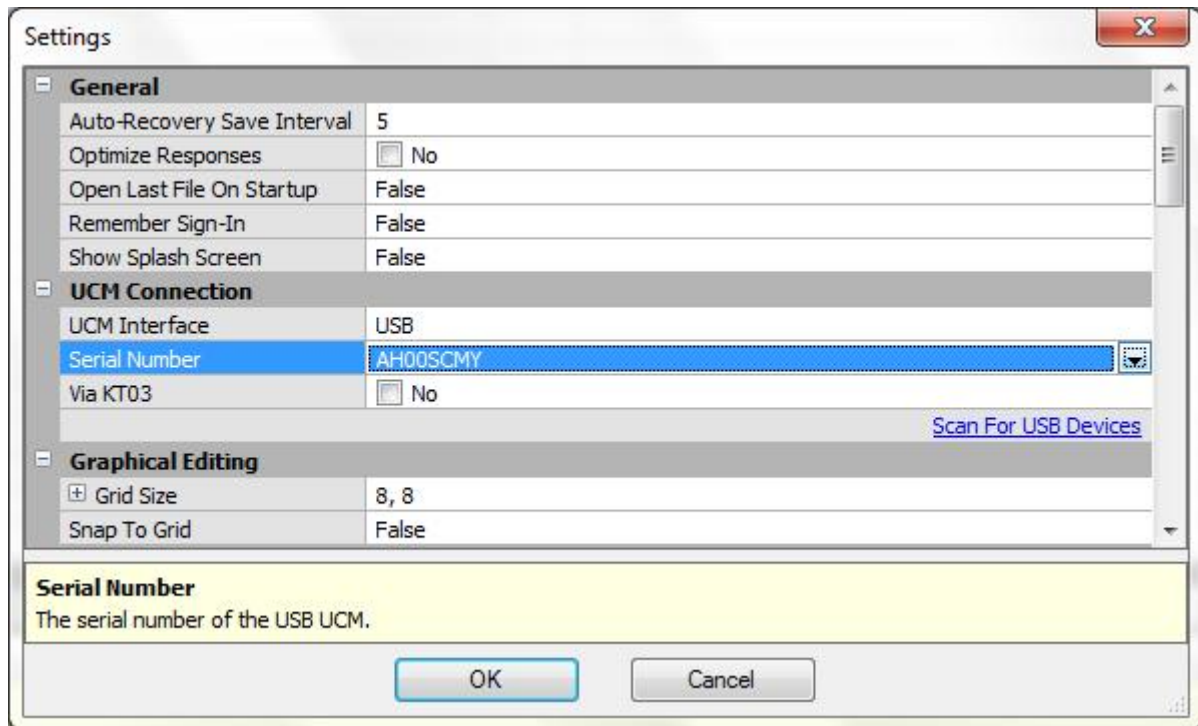


Figure 2.21 Connection Setting for USB

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"

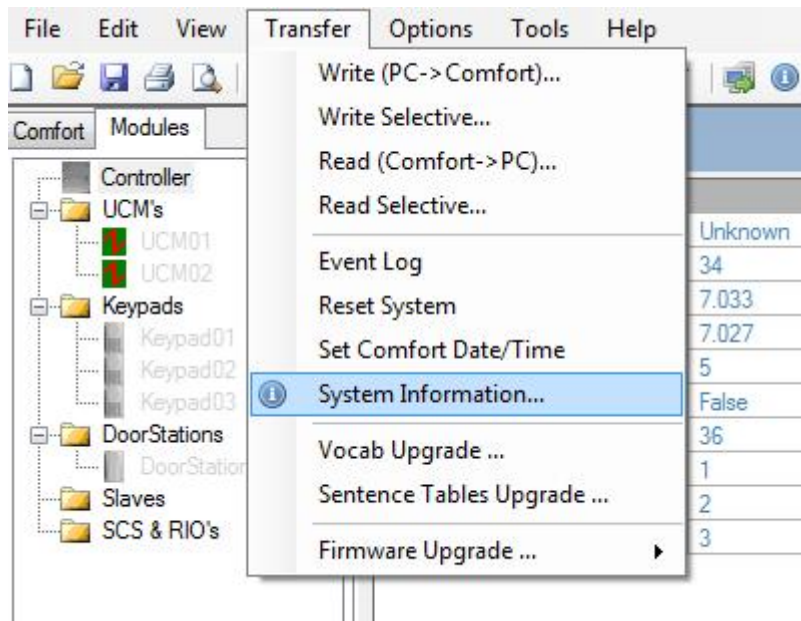
Do not check "Via KT03" unless the USB interface connected to KT03

- ☎ 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.

Universal Communications Module



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.

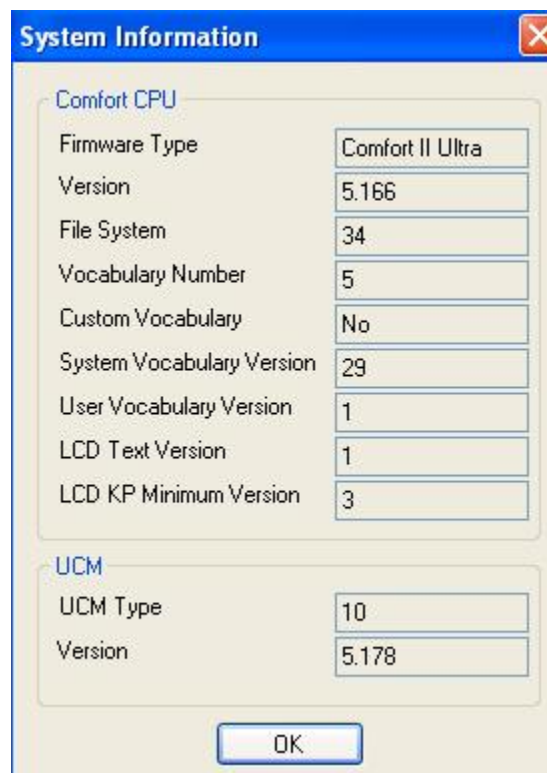


Figure 2.22 - System Information

UCM/232

Universal Communications Module

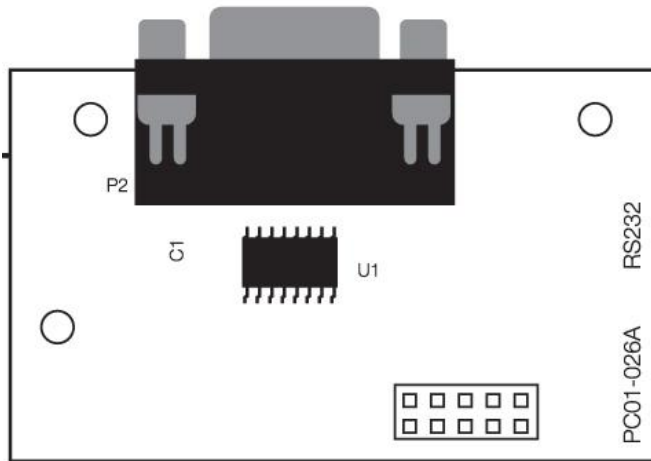


Figure 2.1 RS232/F daughterboard

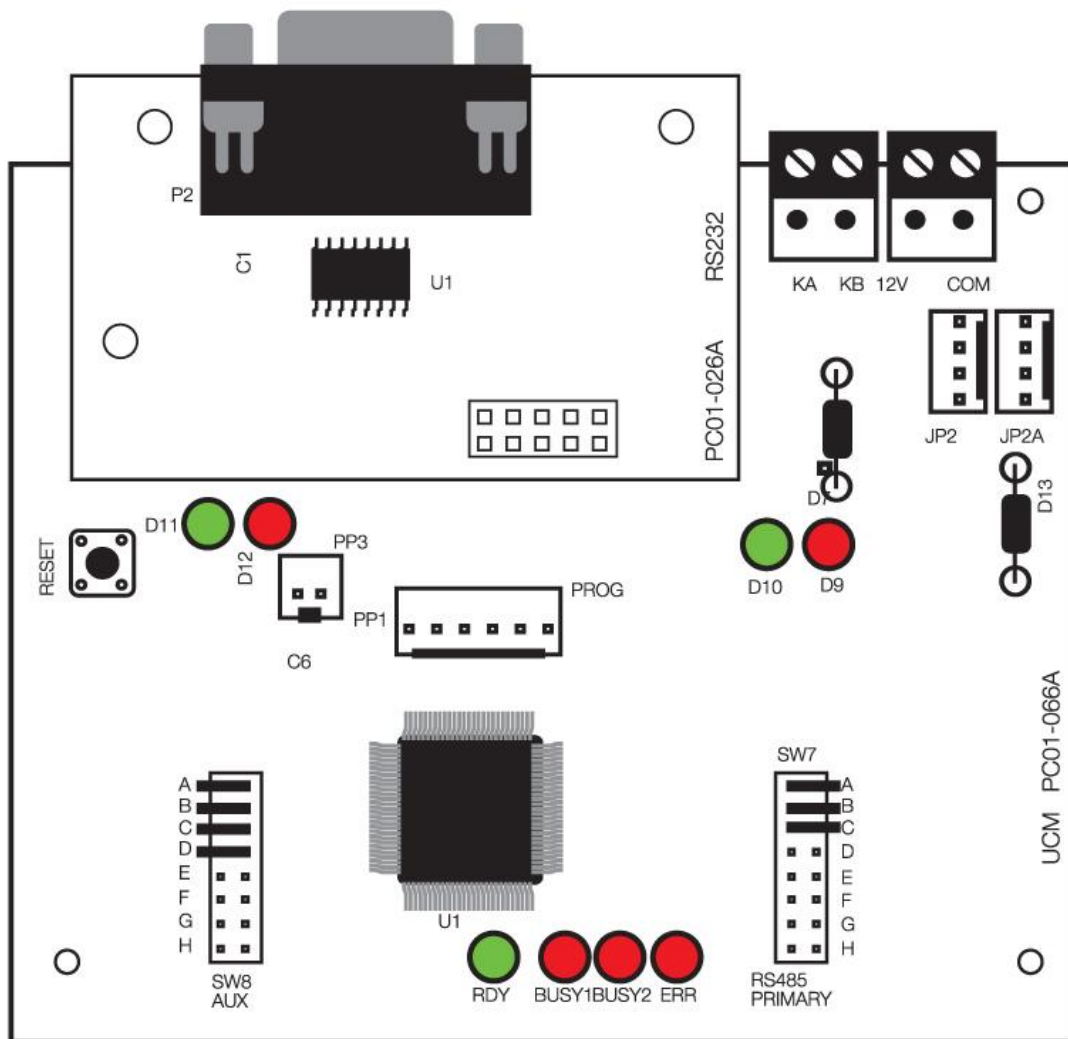


Figure 2.2 - UCM/232

The UCM/232 is equivalent to a UCM06 baseboard with a RS232/F daughterboard plugged in. A RS232/M daughterboard with Male RS232 connector for connection directly to RS232 ports of 3rd party products is also available.

The UCM/232 is mainly used to communicate with 3rd party applications using the Comfort Protocol.

Universal Communications Module

The Universal UCM with RS232 is another product that is used to communicate with 3rd party products using the 3rd party protocol.

RS232 Connector

- P1 - 9 way D RS232 Female connector

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.

Table 3.1 has been removed

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 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/ETH02, 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.



Universal Communications Module

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/232

The most common problem with UCM/232 communications is with the serial port on the computer. Make sure that the UCM is connected to the correct COM port, and that same port is specified in the Serial Port setting for Comfigurator.

There may be compatibility problems with certain USB to Serial and PC-Card to serial converters. These need to be tested with the UCM.

UCM/ETH02

Check that the IP address and Port of the UCM/Ethernet corresponds to that shown in DS Manager. Run DS 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/ETH02/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/ETH02 and 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> Check the website for the latest version of Comfigurator which may have later versions of the infrared learner software.

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 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.

Cytech Technology makes no claim about the efficacy of this device or software to capture, encode or transmit any specific Infrared signal.

Operation

Universal Communications Module

Run the infrared learning program by double-clicking on infrared.exe or from Configurator > Tools > Infrared Utility.

The opening screen is shown below:

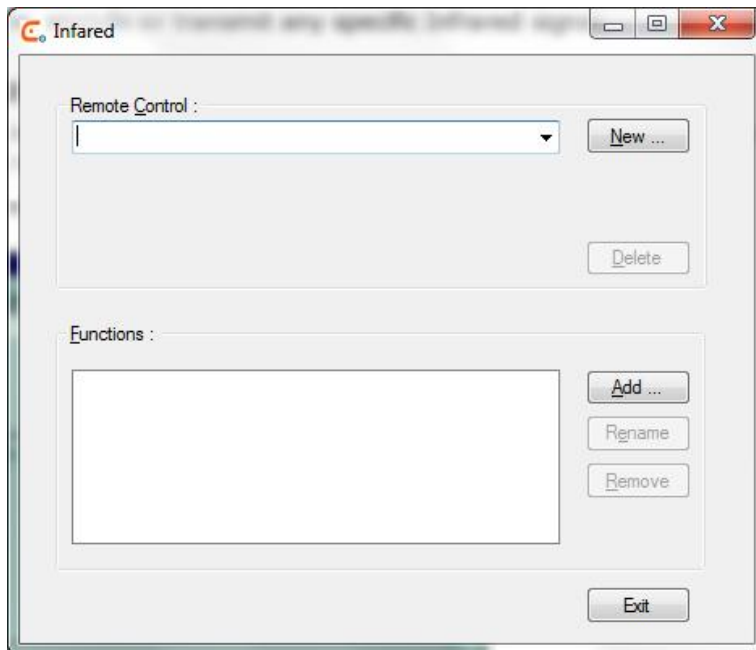


Figure 5.1 - IR Learning Tool

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.

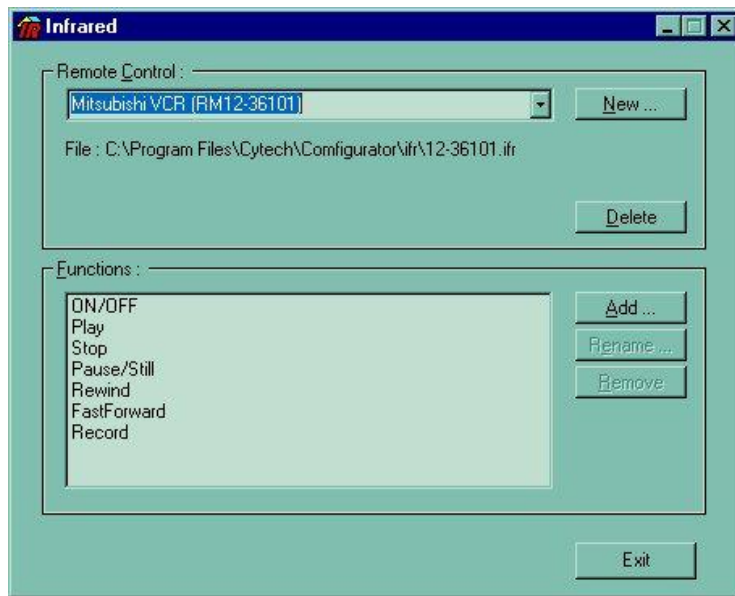


Figure 5.3 - IR Commands

The above screen example for Mitsubishi VCR 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

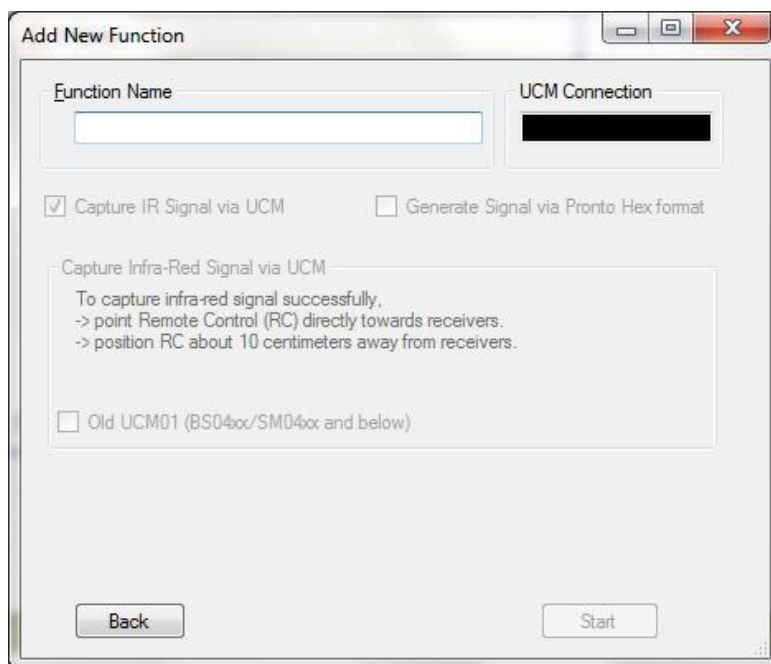


Figure 5.4 - IR Add New Command

Universal Communications Module

Enter the Function Name for the command, e.g. Play, Stop, On, Off etc.. The UCM Connection field will be taken from Configurator'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.

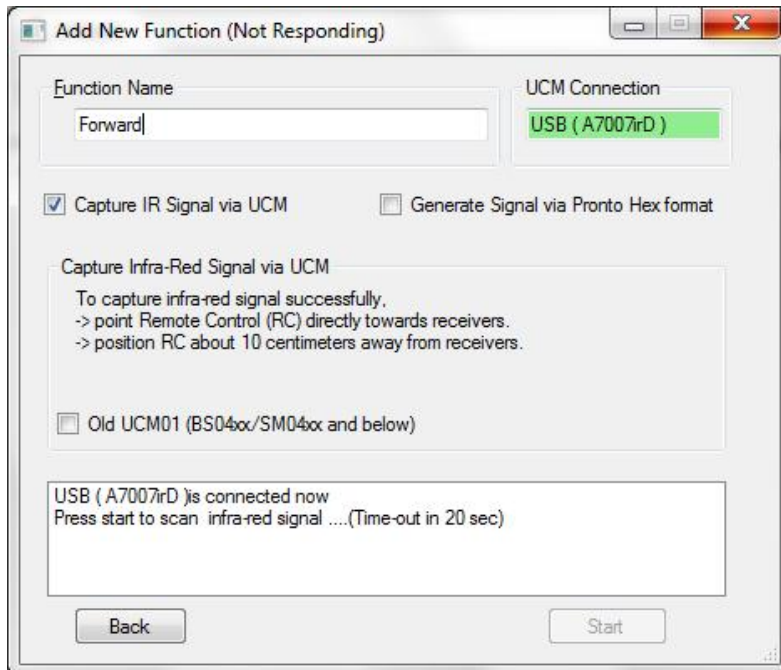


Figure 5.5 - IR Capture

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 and 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 Configurator) and the following screen will appear.

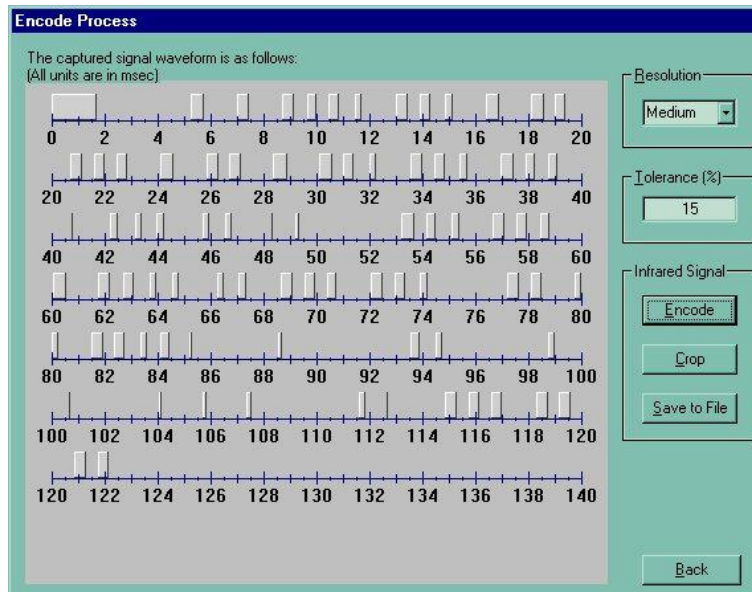


Figure 5.6 - IR Captured Waveform

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.

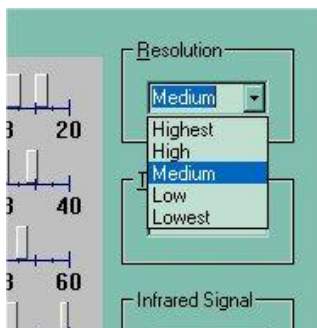


Figure 5.7 - Waveform Resolution

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

Universal Communications Module

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 filename 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.

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

Universal Communications Module

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 IRM01 transmitter may not be connected to the designated output, or the polarity of the IRM01 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

4.05 (8 January 2014)

Improve description of ETH02 RJ45 green led

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 idoes not match.
Changed upgrading firmware section.

4.0.2 (1 June 2013)

Revised USB and ETH02 settings for Configurator 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 Configurator 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

Universal Communications Module

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

3.4.1 (22 October 2008)

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

Universal Communications Module

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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