

UCM/ETH01 Manual

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SECTION 1 UCMS

The UCM/ETH01 (Formerly called UCM/Ethernet) Universal Communications Module allows Comfort to connect via Ethernet to a Local Area Network.



The types of UCM include;

- 1 UCM/232 with RS232 Interface - formerly called UCM05
- 2 UCM/ETH01 and UCM/ETH02. UCM/ETH02 is a replacement for UCM/ETH01. The Plug in submodule ETH02 may be purchased to replace the ETH01 submodule on the UCM, provided the UCM firmware is version 6.xxx and above.
- 3 UCM/USB with plug-in USB interface USB01

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

The manual is for the UCM/ETH01 only. UCM/ETH02 is described in the UCM Manual which can be downloaded from http://www.cyttech.biz/ucm_manuals.html

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 ETH01 and ETH02 daughterboard. Plugs onto UCM06 to make UCM/ETH

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- 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 Flash-based UCMs with firmware 5.100 and above which are able to upgrade firmware for Comfort, SEMs and UCMs using Configurator 3 software.

The UCM/USB, ETH02 and /232 have the following common functions:

- 1 It allows programs on the onboard Nonvolatile Memory (NVM) ICs ("Master") to be transferred to Comfort. This is a useful tool when programming, testing or troubleshooting Comfort installations.
- 2 Comfort's programming software Configurator requires the UCM to read and write the configuration file to Comfort.
- 3 It allows a PC or other controller to communicate with Comfort using an RS232 interface, allowing third party products or software (e.g. Wizcomfort) to work with Comfort . The RS232 command protocol can be downloaded from www.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 Configurator.
- 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.

SECTION 2 UCM SETTINGS

Getting Started

This section is common to UCM/232, UCM/ETH02 and UCM/USB

Set UCM ID on SW7

SW7 (RS485 ID) should normally be set to 1 according to the table below (Shunts A,B,C, D inserted) if this UCM is used for programming Comfort using Configurator, 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 set of 4 headers which determines the UCM ID, according to the table below.

ID	SW7-A	SW7-B	SW7-C	SW7-D
1	Short	Short	Short	Short
2	Open	Short	Short	Short
3	Short	Open	Short	Short
4	Open	Open	Short	Short
5	Short	Short	Open	Short
6	Open	Short	Open	Short
7	Short	Open	Open	Short
8	Open	Open	Open	Short

Table 2.1 - RS485 ID Settings (SW7)

Do not insert shunts E to H in SW7 if present as these will short the push buttons SW2 to SW5

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 no other UCM is set as ID=1 in the system, otherwise there will be a conflict which will prevent proper communication.

Number of UCMs

The Number of UCMs in Configurator >> Comfort tab >> Modules and Settings >> Number of UCMs is set to 1 by default. If there are more than 1 UCM in the system, enter the number of UCMs. This can also be done in Locations Menu on the keypad (Engineer Menu 7,4,1).

Always RESET the system after changing the number of UCMs.

Note: You can also SCAN for UCMs in the Modules Tab in Configurator after setting the UCM IDs correctly.

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

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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.

What to Watch Out For

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 UCM firmware is running. D10 indicates RS485 data is being received from Comfort, and D9 indicates the UCM is replying with RS485 data to Comfort. The BUSY1, BUSY2, and ERROR LEDs should be off. If the LED states are not as described, see the Troubleshooting section for an explanation of the behavior of the status LED indicators.

LEDs	Behavior when idle	Remarks
RDY (G)		Steady ON
BUSY1 (R)		OFF
BUSY2 (R)		OFF
D10 (G)		Blinking Fast
D9 (R)		Blinking
D11 (G)		Off
D12 (R)		Off

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

- SW1 - RESET
- SW2 - UPLOAD (NOT USED)
- SW3 - DOWNLOAD
- SW4 - TEST (NOT USED)
- SW5 - COPY (NOT USED)
- SW6 - COMPARE (NOT USED)

LED Indicators

LED	Label	Function
D1 (G)	RDY	UCM Ready
D2 (R)	BUSY1	Busy/In Operation
D3 (R)	BUSY2	Test/Compare
D4 (R)	ERR	Error/ Compare Failure
D9 (R)		RS485 Transmit to Comfort
D10 (G)		RS485 Receive from Comfort
D11 (G)		RS232 Receive from USB/ETH/RS232
D12 (R)		RS232 Transmit to USB/ETH/RS232

Table 2.2 - LEDs indicators on UCM board

Table 2.3 is not present

ICs

- U1 - Microcontroller IC with Firmware marked "UCM x.xxx".
- U2 - IC socket with EEPROM Master
- 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/ETHf01	UCM/ETH02
G	Don't send STX/ETX in Action 197 DO NOT INSERT	Send STX/ETX for Action 197
H	Hardware Handshake	No Handshake

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-G shunt when inserted will suppress the STX header 03 character and Carriage Return 13 character after the data sent in Action 197 (Send RS232). DO NOT USE THIS FEATURE AS IT SHALL BE REMOVED. **DO NOT INSERT SW8-G**

SW8 - H shunt when inserted will enable hardware handshake for RS232 communications. If the shunt is off (default), handshake is disabled. This can normally be left off (no hardware handshake). 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.

NVM (Nonvolatile Memory) Selection

- J4 - selects U2 or U3 NVM (Nonvolatile memory) as “Master” for Copying and reading/writing operations. (older UCM PCB revisions (A,B,C) had fixed positions for “Master” and “Copy”).
- 📞 When changing the J4 shunt position to select the Master NVM, always disconnect and reconnect power to the UCM in order for the UCM to recognise the new position**

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**

The UCM/ETH01 is no longer in production has been replaced by the UCM/ETH02

ETH01 Specifications (for old UCM/Ethernet)

- Ethernet Interface: 10BaseT 10 Mbits per second
- Network Protocols: TCP, UDP, ICMP (ping), ARP
- Serial Interface baud rate: 9600 bits per second
- Current Consumption: 65 mA (typical), 100 ma max 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.
- SW8-G (Action 197 STX/ETX) should be left open for use with Configurator and Wizcomfort.

SW101 (ETH01)

Pushbutton switch for Setup - Not in use.

Ethernet LED Indicators (ETH01)

- D101 - Collision (Red) - This blinks when there is a data collision on the Ethernet Network
- D102 - Data Received (Green) - This is normally on and is blinks off when Ethernet data packets are received.
- D103 - Status (Green) and D104 - Status (red) provide status of operating modes and error conditions, as shown in the table.

D103 (Green) and D104 (Red) Status Indications	
Serial Programming Mode (Not in Use)	
D104	
D103	
Error Mode	
D104	
D103	
Ethernet Port Failure	
D104	
D103	
DHCP Enabled but IP address not obtained yet	
D104	
D103	
Connection is Closed	
D104	
D103	
Device Server sending ARP to get MAC address of destination	

D103 (Green) and D104 (Red) Status Indications	
D104	
D103	
Connection is being established	
D104	
D103	
Connection established, no data, no overrun	
D104	
D103	
Connection established, data transfer, no overrun	
D104	
D103	
Connection established, no data, data overrun	
D104	
D103	
TCP connection has been reset (rejected) by remote host	
D104	
D103	

Table 2.5 - LEDs indicators on Ethernet board

Connect UCM/ETH01

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. It is assumed that Comfort is already running. The RDY LED on the UCM should turn on steady and the LEDs D10 and D9 should be flashing continuously.

On the ETH01 module, D103 (G) and D104 (R) should flash 3 times initially. After that, D103 (G) will blink twice every few seconds and D102 (G) should be on.

DS Manager (Part of Configurator 3.5.x)

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 Configurator 3.5.x

In Configurator 3.5.x go to Configuration > System Information, and in Connection Properties, select UCM Interface as Network (Local). The DS

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Manager Link is seen on the bottom right.

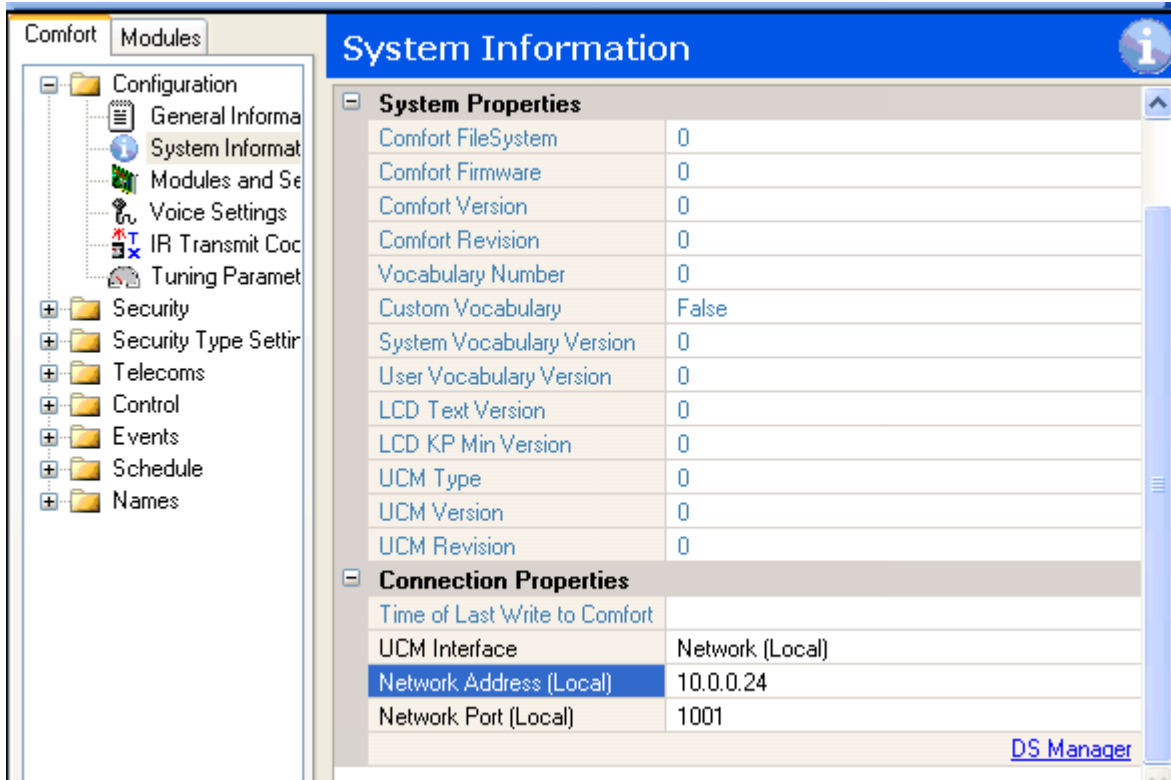


Figure 2.6 - DS Manager in Configurator 3.5

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

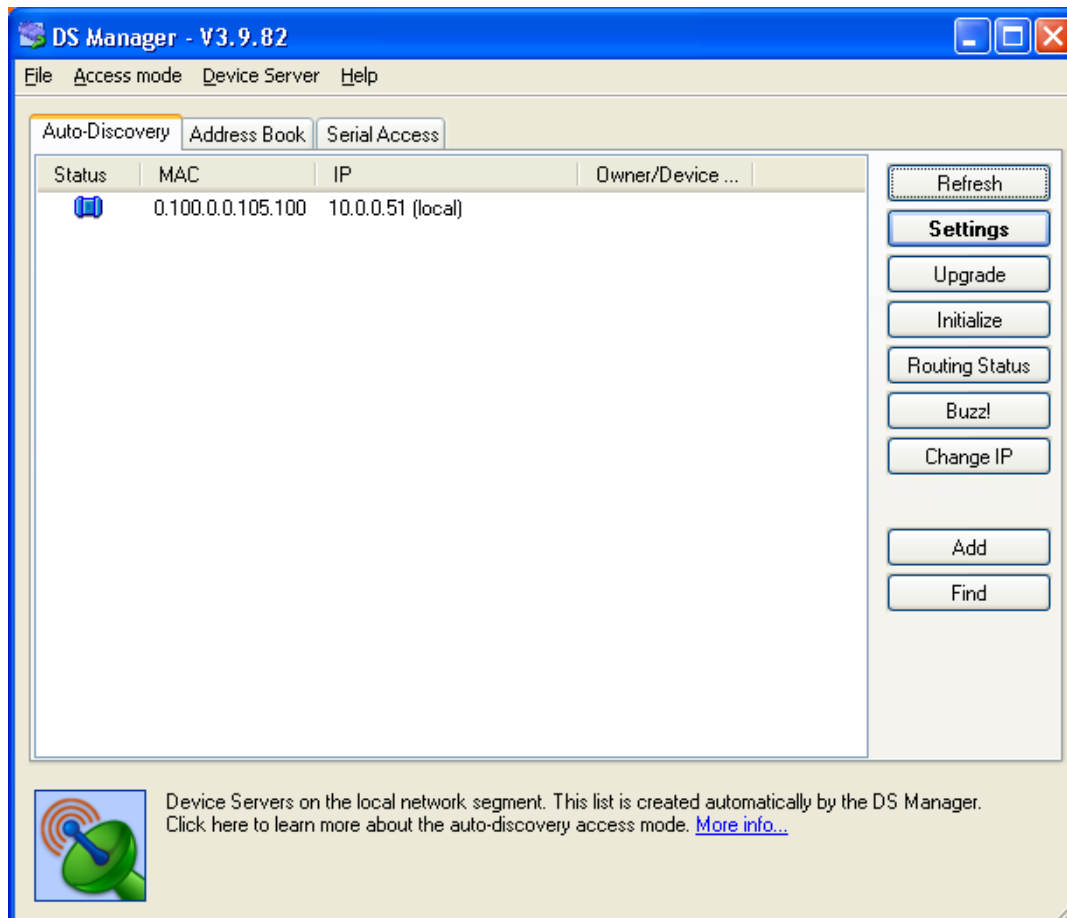


Figure 2.7 - DS Manager Screen

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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.

The INITIALIZE button initializes all settings back to factory default, except for the IP address. Do this is 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, as shown in the screenshot below.

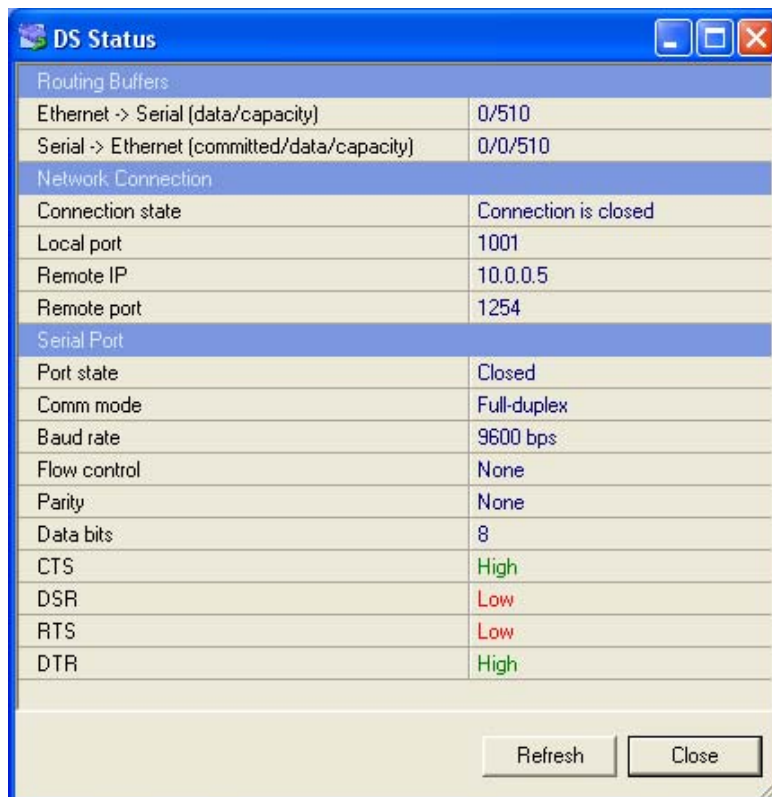


Figure 2.8 DS Manager Routing Status

DS Manager Settings for ETH01

For ETH01 used in the older UCM/Ethernet, the screens may be slightly different but the parameters should be the same. The Settings screen for ETH01 is shown below;

The screenshot shows a window titled "Settings: DS <V3.34(S)>+N [Cytech]". It has five tabs: "Network", "Connection", "Serial port", "Outbound packets", and "All". The "Connection" tab is selected. Below the tabs is a table with the following settings:

Owner name	
Device name	
MAC-address	0.100.0.0.105.100
DHCP	0- Disabled
IP-address	10.0.0.24
Port	1001
Registration at dDNS Server	0- Disabled
dDNS Server IP-address	(irrelevant)
dDNS Server port	(irrelevant)
Auto-registration on Link Serv	0- Disabled
Gateway IP-address	0.0.0.1
Subnet mask	0.0.0.0

At the bottom of the window are five buttons: "Save", "Load", "Password", "OK", and "Cancel".

Figure 2.11 ETH01 Network Settings

The Connection tab is shown

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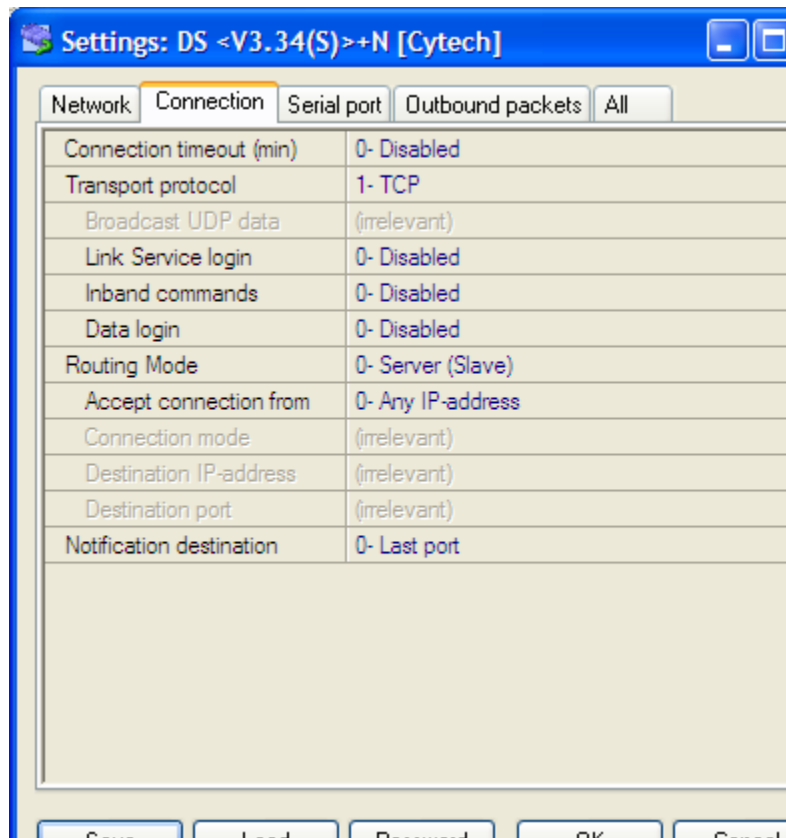


Figure 2.12 ETH01 Connection Settings

The Serial Port tab is shown below.

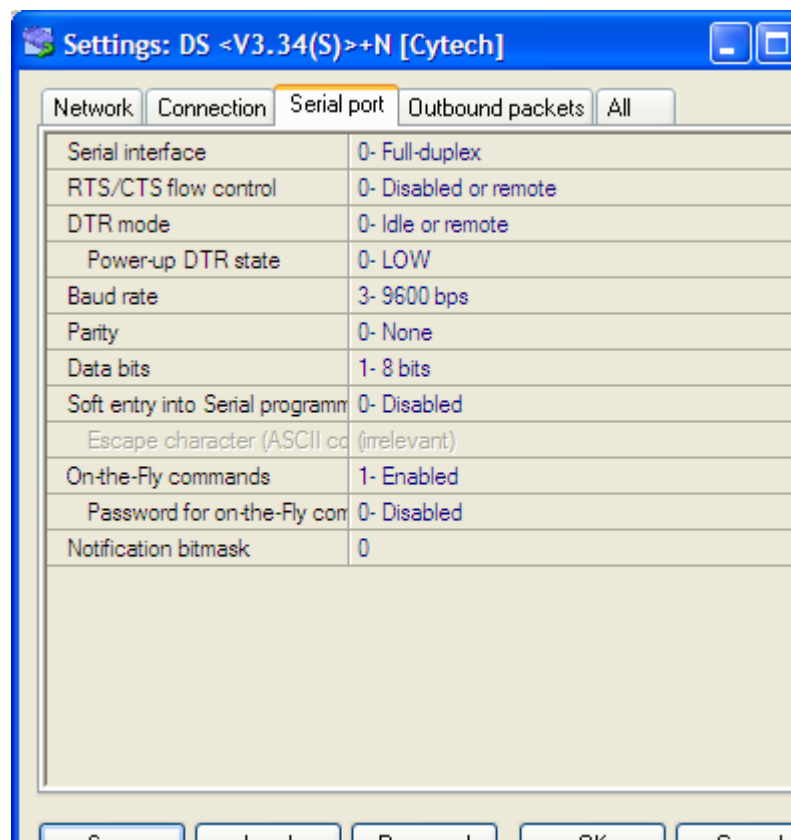


Figure 2.13 ETH01 Serial Port Settings

The Outbound Packets tab is shown

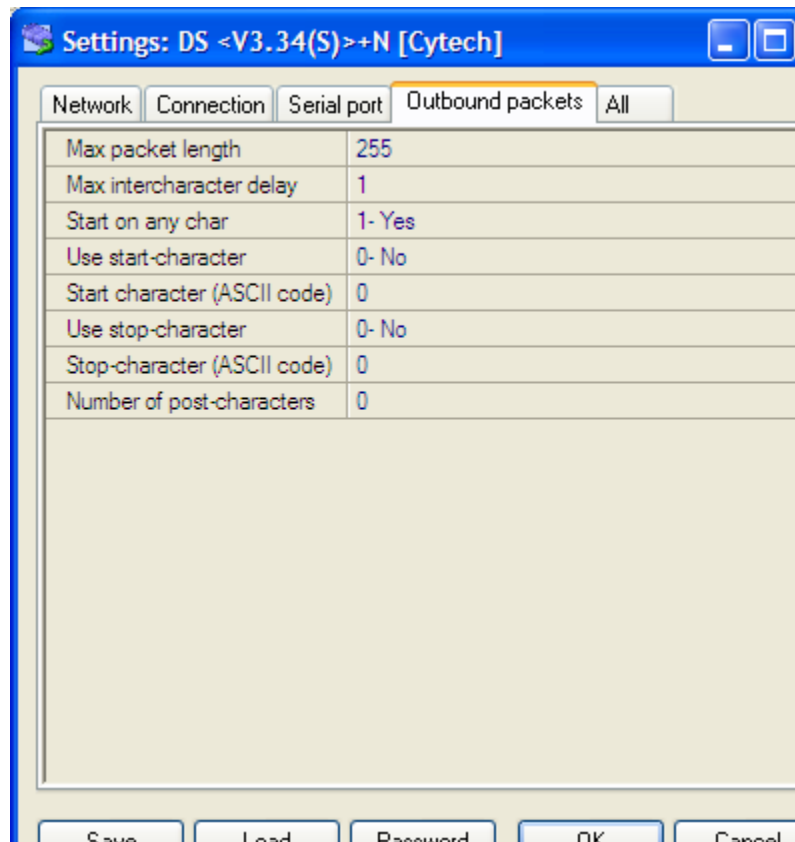


Figure 2.14 ETH01 Outbound Packets

Configurator Network Connection

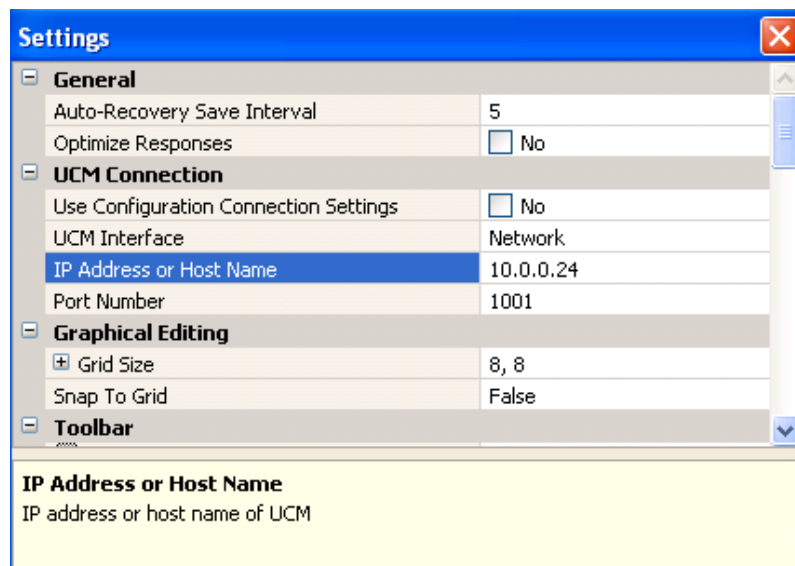


Figure 2.18 Configurator Network Connection

To use Configurator 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/ETH02 and click OK.

SECTION 3 OPERATION

Writing and Reading Configuration

In Configurator, select Options > Settings > UCM Connection and select the UCM Interface be it serial, network, or USB. Select Network, and enter the IP address and port number.

To transfer the programmed configuration to Comfort ("write"), in Configurator, select Transfer > Write (PC --> Comfort). To transfer the programmed configuration from Comfort to the PC ("read"), select Transfer > Read (Comfort --> PC).

During reading and writing, both D11 (Green) and D12 (Red) LEDs will be blinking rapidly indicating data being received and transmitted through the RS232 port or network or USB. D9 and D10 LEDs will also be blinking fast simultaneously. Keypads and other modules may not be able to communicate properly during this process.

Refer to the Configurator Reference Manual for details on using the software.

Master and Copy NVMs

IC sockets U2 are meant for the EEPROM for the DOWNLOAD (write) operations. The shunt in J4 should be inserted in the position which is closer to U2.

The EEPROM should be inserted in U2 with the UCM disconnected from Comfort (i.e. with power removed)

Download (WRITE) "Master" to Comfort EEPROM (U4)

- 1 With the UCM disconnected from Comfort (i.e. with power removed), insert the Master NVM into either of sockets U2 and U3. The NVM should have the same or greater capacity as the NVM in U2 or U3 of UCM.
- 2 Insert the shunt in J4 so that it is towards the "Master" NVM containing the program to be downloaded to Comfort. In this context "Download" means to transfer from UCM to Comfort.
- 3 Connect the 4-way cable between JP2 or JP2A on the UCM and "RS485" (J6) on Comfort. The RDY LED should turn on and D9 and D10 LEDs should start flashing.
- 4 Press the DOWNLOAD button. All the data in the Master NVM will be downloaded into Comfort's NVM. The RDY LED goes off and the BUSY2 LED is flashing during the upload operation.
- 5 The download operation should take about 30 seconds for a 24LC32 (for FS17) and 60 seconds for a 24C64 (for FS31), and up to 4 minutes for 24C256 (for FS34).
- 6 When the download is completed, the RDY LED should come on and the BUSY2 LED should go off.
- 7 The UCM resets Comfort automatically after a DOWNLOAD.

SECTION 4 TROUBLESHOOTING

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/ETH

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.

SW8 Settings

SW8-F must be open for normal UCM, UCM/232, UCM/Audio, UCM/USB and closed for UCM/ETH01

SW8-G should normally be open.

SW8-H should be open for No Hardware Handshake.

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 Configurator may be wrong.
D10 (green)	
D9 (Red)	
No Communications	
Cause	KA/KB or 12V/COM not connected
D10 (green)	

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D9 (Red) and D10 (green) status indications for RS485

D9 (Red)	
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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 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

Version History

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

Manual Revision History

20 August 2012 - Released UCM/ETH01 manual separately from UCM Manual.
UCM Manual will refer to UCM/ETH02 only.

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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