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UCM/CBUS2 INTRODUCTION

The Comfort system can be interfaced to Clipsal's C-Bus. This allows Comfort to control and monitor any Group Address on the C-Bus by connecting the C-Bus wires, without the C-Bus PC Interface. Comfort can act as a controller or gateway to the C-Bus system, providing the following benefits to a C-Bus system:

- Able to send any C-Bus command, activated by Comfort's keypads, Time Programs, Comfort Smart phone app, telephone or any Comfort event
- The status of Cbus Objects in the Lighting, Trigger, Enable and Measurement application can be monitored by telephone, keypad, or smart phone app
- allows alarm inputs and alarm conditions to be linked to the C-Bus Security Application. The C-Touch Mk2 touchscreen with the Security Application can be used as a keypad for Comfort, and can display zone and alarm status.
- C-BUS motion sensors can be Virtual Inputs in the Comfort Intruder Alarm system, to trigger alarms when armed, just like a realy zone/input.
- Comfort can be a Time Master in the C-Bus Clocks and Timekeeping Application. Comfort can receive time signals from an Internet Time server (requires UCM/ETH03)
- allows C-Bus Lighting objects switches to be mapped to Comfort Counters, Flags, Outputs, allowing control of non C-Bus appliances like air-conditioners, home entertainment systems. Lighting objects can be controlled by changing Counters, Flags, and Outputs in Comfort.
- Comfort Physical Inputs can be mapped to Lighting group addresses so provide feedback.
- Allows C-Bus Lighting, Enable, Trigger and Measurement applications to be mapped to Comfort Registers.
- Acts as a gateway to other systems e.g. KNX, Z-Wave, Dynalite etc..
- functions as a central controller for C-Bus. C-Bus is a distributed system with each device having its own intelligence and able to respond according to its own device type and the way it is programmed. In an intelligent home or office environment, it can be desirable to have a controller which is able to co-ordinate the functions of all the subsystems including security, lighting, HVAC, and others. Comfort is able to take action based on conditional logic, for example, when the time is between 7 PM and 7 AM and the security system is armed, and when the front door is opened, turn on the hall lights for 3 minutes. This would not be possible with C-Bus using Group address linkage alone.
- Able to send Label commands to DLT (Dynamic Labelling Technology) switches to dynamically change the text on **the LCD**

Cytech is a CBus-Enabled Partner, and Comfort is a certified C-Bus Enabled product.

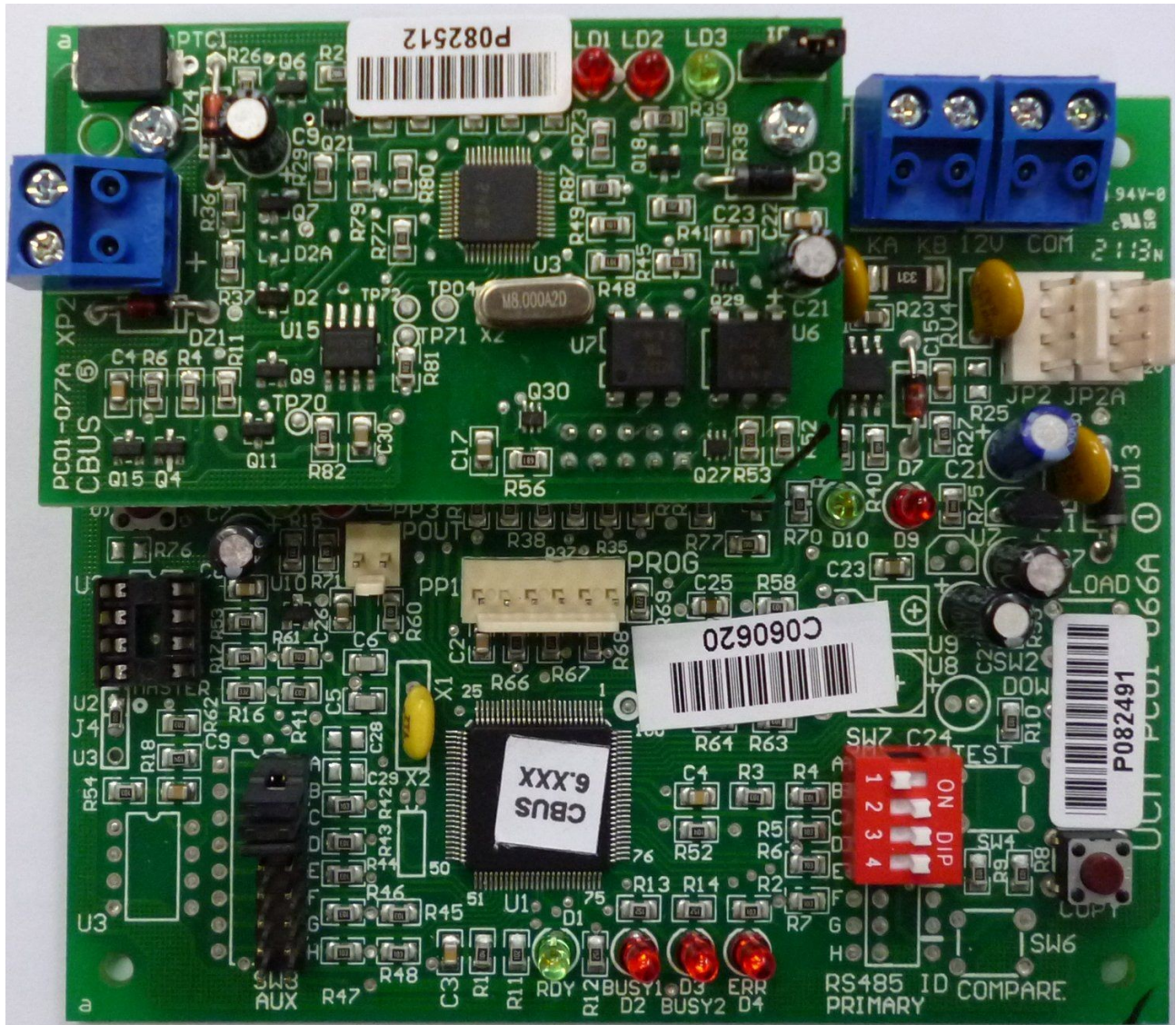
Specifications

- Size 108×88 mm UCM baseboard with C-Bus SIM (Serial Interface Module)

daughterboard.

- Power Supply: 12V 30 mA (supplied from Comfort)
- Connected to C-Bus via bus cable (2 wires). Comfort is electrically isolated from C-Bus. C-Bus power supply is from C-Bus.
- Sends messages to Lighting, Trigger, Enable Application or other Custom applications though local or remote network C-Bus Networks.
- Lighting Application Group Addresses can be mapped to Counters, Flags, Outputs, Virtual Inputs
- Trigger Application Group Addresses can be mapped to Counters.
- Enable Application Group Addresses can be mapped to Counters
- Measurement Application Group Addresses can be mapped to Sensors.
- Synchronises the date and time between Comfort and C-Bus via the Clocks and Timekeeping Application.
- Comfort implements the C-Bus Security application. Comfort automatically sends Alarm information which can be displayed on C-Touch. The following status messages are supported: Armed/disarmed, Exit Delay Started, Entry Delay Started, Alarm Active, Tamper active/Inactive, Panic Active, Battery Status, and Status Reports 1 & 2. The following Security Control messages are supported: Arm system, Activate/deactivate Tamper, Activate Panic, Emulate Keypad, Status 1 and 2 Request.

Setup



The package includes

- UCM/CBus2 with plug-in C-Bus SIM module, firmware version UCM/CBus2 v7.xxx. The function of this UCM is only to communicate with the C-Bus.

System Requirements

- Comfort II, firmware 7.xxx
- Configurator Version 3.8.6 and above

UCM/CBUS2 ID Settings by DIP Switch

SW7 DIP Switch (RS485 ID Primary) - Comfort is able to support up to 8 UCMs. SW7 is a set of 4 DIP Switches which determines the UCM ID, according to the table below:

ID	DIP - 1	DIP - 2	DIP - 3	DIP - 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

By convention, UCM ID=1 is used for Comfigurator. The C-Bus UCM should be set to ID 2 or above so that any RS485 communications failure can be reported by Comfort. Press RESET on the UCM after changing the ID settings.

UCM/CBUS2 ID Setting using COPY Switch

From the UCM ID can be changed by use of the COPY switch. If **SW7 1 to 4 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 off.**

If the ID is unassigned, all LEDs are ON.

- The Number of UCMs in Comfigurator Modules and Settings should be programmed according to the number of UCMs connected. Up to 8 UCMs can be connected to the Comfort network.
- JP1 on SIM Submodule: This is the C-Bus Network Burden jumper. The burden can be enabled by plugging the shunt on JP1 on the pins closer to the green LD3 LED and the centre pin. To disable the network burden place the shunt away from the green LD3 LED, or leave the shunt off altogether. **Only 1 network burden can be enabled or connected on a C-Bus Network.** The network burden is not required if the combined impedance of the C-Bus units on the network is below or equal to 1.5 K ohms, (about 70 standard C-Bus units). The C-Bus Installation calculator can be used to determine if the network requires a burden

Buttons

- SW1 – RESET. This button reinitialises the UCM/CBus. It does not change any parameters in Comfort or C-Bus.

LED Indicators on UCM/CBUS2

- D1 “RDY” (Green) should be on at all times.
- D2 “BUSY1” (Red) blinks if there is an incoming telegram from a monitored Group address.
- D3 “BUSY2” (Red) blinks when the UCM transmits a telegram to the C-Bus
- D4 “ERROR” (Red) Turns on if the C-Bus is not connected or power for the C-Bus is off.
- D9 (Red) RS485 Transmit to Comfort
- D10 (Green) RS485 Receive from Comfort
- D11 (Green) RS232 Receive Data from C-Bus.
- D12 (Red) RS232 Transmit Data to C-Bus.

LED Indicators on C-Bus SIM

- LD1 – indicates correct functioning of the SIM Module. This indicator also flashes briefly when a message is sent from the C-Bus network to the UCM.
- LD2 – indicates that the C-Bus supply voltage is sufficient (> 20V) and the network clock is present. If the C-Bus voltage is marginal (15 to 20V) the indicator will flash continuously.

ICs

- U1 – Microcontroller IC. Label indicates the firmware version number “UCM/C-Bus 6.xxx”.
- U5 - RS485 Interface.

Connection Procedure

- Before connecting the UCM to Comfort, set the UCM/CBUS2 ID to the ID of the UCM according to the instructions in the previous section.
- The UCM is connected to Comfort via the supplied 4-way white cable from 4-pin header JP2 to Comfort’s header J15. This supplies power to the UCM, as well as allowing communications between Comfort and the UCM. It is not necessary to switch off the power to Comfort before plugging in this connection.
- The Green RDY led on the UCM (D1) should light up and remain on. The LEDs D9 (red) and D10 (green) should blink rapidly showing that RS485 communications has been established between Comfort and the UCM. D9 (green) flashing shows that it is receiving communications from Comfort (poll). D10 (red) comes on when the UCM responds to a poll from Comfort.
- The ERROR LED should come on if the C-Bus is not connected. BUSY1 and BUSY2 LEDs should remain off.
- Screw in the C-Bus wires to the XP2 terminal block, taking care to ensure correct polarity. Plug in the terminal block to XP3 when the termination of the C-Bus is completed.
- The ERROR LED should go off if the C-Bus is connected and is powered on. If the C-Bus is disconnected or the C-Bus power supply is turned off, and a command is sent to the C-Bus, the Error LED will come on.
- The Green LED D11 flashes when there is data transmitted from the C-Bus, which will happen when there is any C-Bus activity, e.g. when a switch is pressed. The Red D12 LED

flashes when there is data from Comfort to the C-Bus. D11 and D12 monitor raw communications with the C-Bus.

- D2 (BUSY1) LED blinks when there is an incoming message from the C-Bus. D3 (BUSY2) LED blinks when a message is sent to the C-Bus.

C-BUS CONFIGURATION

The C-Bus Toolkit software is used to configure and program the C-Bus network prior to programming the Comfort to C-Bus interface. The list of group addresses used in the network should be provided for the programming of the Comfort system for integration with C-Bus. Comfort cannot be programmed with the C-Bus programming tools; it needs to be programmed separately. Comfort will communicate with the C-Bus through these Group addresses.

The UCM/CBus SIM Module has a default factory unit address of FF (hex) and will probably be seen and identified as “INT_MIND”. This should be changed via the C-Bus configuration software or C-Bus Toolkit to a unique unit address which does not conflict with any other device on the network. The C-Bus PCI (PC Interface) and C-Touch may also have the unit address FF by default.

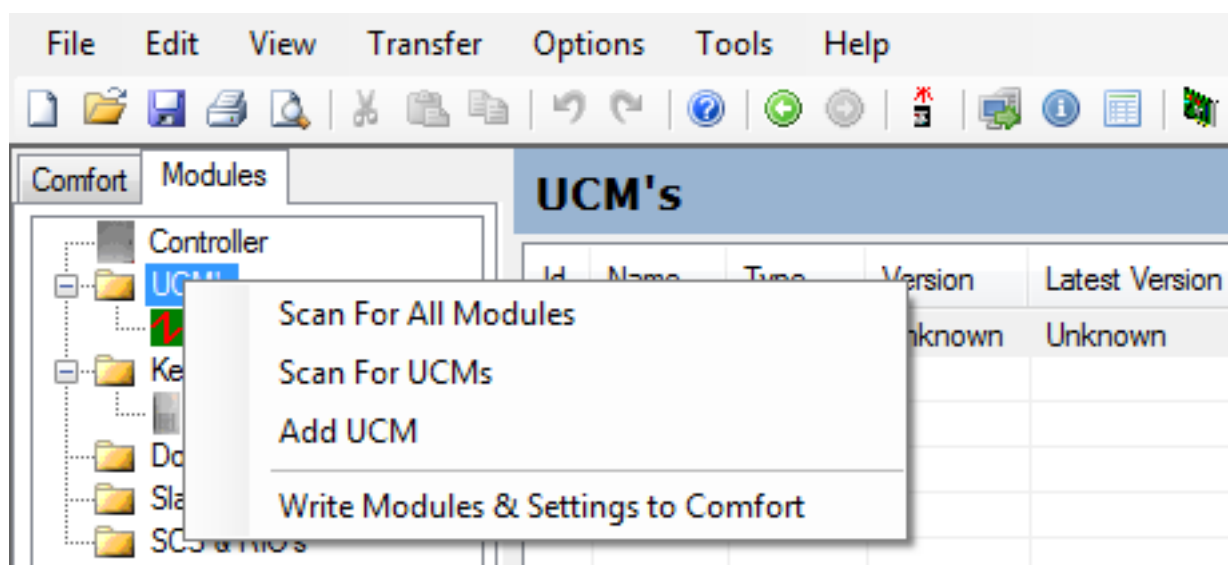
★ Note: If another PCI on C-Bus has the same unit address as a UCM/CBus, the C-Bus configuration software or C-Bus Toolkit will not detect the SIM Module and will not be able to resolve the conflict. If a standard C-Bus Dimmer or key input module has the same unit address as a UCM/CBus, the C-Bus configuration software or C-Bus Toolkit see the conflict and try to resolve it if the appropriate setting is enabled on the software. This applies to C-Bus V2 configuration software v 2.6

Using Configurator

Use the Configurator software version 3.8.6 or above to configure UCM/CBUS2. The software can be downloaded from <http://www.cytech.biz/configurator.html>

A UCM/USB or UCM/Ethernet is required to connect to the computer running Configurator.

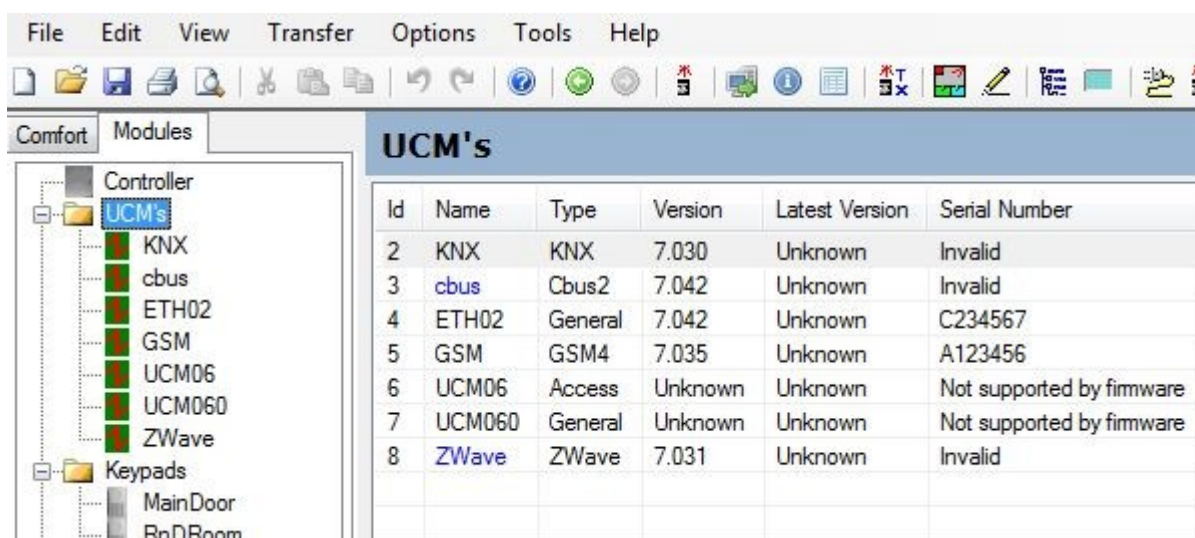
Run Configurator, go to the Modules Tab and right-click on UCMs folder symbol as shown below.



“Scan for All Modules” or “Scan for UCMs” will automatically detect all UCMs including the UCM/CBus2 if the ID is set correctly without any conflict with other UCMs.

“Add UCM” allows you to manually add a UCM/CBus if not currently connected to Comfort, i.e. when doing programming off-line.

The result of scanning or adding a UCM/CBus2 is shown below for UCM Id 2. Other UCM types are also shown in the screenshot, but these can be ignored.



“Name” is any text description for the UCM used to Identify it and serves no other function.

“Type” is the UCM Type which should be CBUS2. **The older UCM/CBUS will be shown as “CBUS” instead of “CBUS2”**

“Version” is the UCM/CBus firmware version which in this example shows 7.042. If the UCM/CBus2 was manually added instead of being scanned, the firmware information will not appear.

“Latest Version” is the latest release version available when internet connection is present.

“Serial Number” is the electronic serial number of UCM/Cbus2, if any..

“Status” shows the status of UCM/Cbus2. It is ‘Polled’ when the UCM/Cbus is detected and matched the number of UCMs programmed. ‘**Not Polled**’ will be displayed when the UCM/Cbus is detected by scanning but the number of UCMs programmed is less than the UCM/Cbus Id. ‘**Not Found**’ is shown when the UCM/Cbus is not connected to Comfort when scanning is done.

Click on the CBUS2 UCM on the left pane. This brings up the CBus2 Configurator as shown below;

cbus

Import from CBUS
Write to EEPROM
Read from EEPROM
Read Properties
Reset to Default

UCM/CBUS2 Properties
Lighting
Trigger
Enable
Measurement
Scaling
Physical Inputs
Monitor

UCM Properties

Id	3
Name	cbus
Type	Cbus2
Version	7.045
Latest Version	Unknown
Serial Number	Invalid
User Comments	

Built-in CBUS Applications

Clocks/Timekeeping	☒ Yes
--------------------	---

UCM/CBUS2 Properties

Unit Address	255
CBUS SIM Version	05.04.00
Network Voltage	33.09
SIM Option - Connect	☒ Yes
SIM Option - SRCHK	☒ Yes
SIM Option - Smart Mode	☒ Yes
SIM Option - Monitor	☐ No
SIM Option - IDMON	☒ Yes
SIM Option - PCN	☐ No
SIM Option - Local_SAL	☒ Yes
SIM Option - PUN	☒ Yes
SIM Option - EXSTAT	☐ No

UCM/CBUS Properties

UCM Properties

ID	1 to max for UCM RS485 ID
Name	as in Modules> UCM
Type	CBUS2 (subtype 22)
UCM/Cbus2 Firmware Version	version eg 7.045

Built-in Cbus Applications

These applications have a fixed relationship with Comfort and do not need to be mapped. The user

checks the boxes for the applications that are enabled.

Clocks/Timekeeping (checkbox) **

** Notes/Help

- Clocks/Timekeeping - This determines if Comfort will send and receive Time and Date to CBUS as a Time Master according to the Cbus Clock and Timekeeping Application.

CBUS2 Properties

UCM/CBUS Unit Address	* (00 to 255)
Cbus SIM Version	* xx.xx.xx (eg 04.00.00)
Network Voltage	* vv.vv
SIM Options	* (Y/N or checkbox) read only flags
Connect	
SRCHK	
Smart Mode	
Monitor	
IDMON	
PCN	
Local_SAL	
PUN	
EXSTAT	

* Note: Read Only values, not to be written

The SIM Options are read only data which indicate options and modes on the SIM for diagnostic purposes.

The UCM/Cbus2 will obtain the SIM properties at reset and write to eeprom if there is any change.

The Read Properties button on the menu will read the properties from the UCM/CBUS2.

Menu Bar

The Cbus2 menu items are; Import from Cbus, Write to EEPROM, Read from EEPROM, Read Properties, Reset to Default, Get Status.

Import from Cbus

This allows a .cbz file created by Cbus toolkit backup to be selected. A cbz file is a zip archive containing one or more xml files. One of the xml files can be selected if there are more than 1 xml file. The imported file contains the applications and group addresses in the network. This helps the user by filling up the group addresses in the applications that are programmed in the Cbus system. Cbz files are written and read by the Cbus Toolkit software which can be downloaded from http://www2.clipsal.com/cis/technical/downloads/c-bus_toolkit

The cbx file details various C-Bus applications and Group addresses in one or more networks.

The Local Network 254 is the normal base network in Cbus, and other networks are connected by Network bridges. The networks in the xml file can be selected for Import if there are more than 1 network.

The Applications that are supported in UCM/CBUS2 ie Lighting, Trigger, Enable, are found, and the

group addresses that are found in those applications are shown in the relevant Cbus Tabs. The descriptions of the group addresses are also copied to the relevant description field in the Cbus2 configurator

Write to EEPROM

This writes the tables into the UCM U2 EEPROM

Read from EEPROM

This reads the data from UCM U2 EEPROM and displays the data on screen

Reset to Default

This clears all the data in the Cbus tables to unused, but does not write any data to EEPROM. (after clearing, prompt "Write to eeprom?" should be seen")

Get Status

The Get status button causes the UCM/CBUS2 status to be shown on the status bar on bottom left
"Normal/No error"

"EEPROM missing/faulty"

"EEPROM insufficient capacity"

"EEPROM data invalid"

"Comms error between UCM and CBUS sub-module"

"CBUS Error/Not Connected"

"CBUS Initialisation error"

"CBUS message not acknowledged"

"Initialising CBUS Interface"

"CBUS module is lower than V5. Replace CBUS submodule"

When the cursor is moved away from the UCM/CBUS2 screen, Get status is automatically turned off, and when the cursor is on the UCM/CBUS2 screen the get status function is turned on if Configurator is logged in

CBUS Applications

The UCM/CBUS2 can accept the following Cbus Applications; Lighting, Trigger, Enable, and Measurement each with max 255 group addresses 0 to 254.

Each Cbus Application appears on a separate tab. The supported Application Ids can be mapped to Comfort Registers as shown in the table below

Application ID	Application	Map To	Comments (Tooltip)
\$38 (56)	Lighting	Counter/ Virtual Input/ Output/ Output Toggle/Output Pulse Flag	Map a Lighting Group to a Counter, Virtual Input, flag, Output, Output Toggle or Output Pulse
\$CA (202)	Trigger	Counter	Map a Trigger Group to a Counter

\$CB (203)	Enable	Counter	Map an Enable Group to a Counter
\$E4 (228)	Measurement	Sensor	Map a Measurement value to a Sensor

Each line on the screen shows the mapping between a CBUS group address and a Comfort Register Register Type depending on the application; Counter, Sensor, Virtual Input, Output, Flag

Duplication of Comfort Registers

Mapped Comfort registers should be unique, ie different Cbus objects cannot be mapped to the same Comfort register.

Lighting Application

The screenshot below shows the Lighting Application Table when populated.

The screenshot displays the 'cbus' software interface. At the top, there's a header bar with 'cbus' and several action buttons: 'Import from CBUS', 'Write to EEPROM', 'Read from EEPROM', 'Read Properties', 'Reset to Default', 'Learn', and 'Get Status'. Below this is a tabbed interface with 'UCM/CBUS2 Properties' selected, and sub-tabs for 'Lighting', 'Trigger', 'Enable', 'Measurement', 'Scaling', 'Physical Inputs', and 'Monitor'. The 'Lighting' sub-tab is active, showing a table with columns: Group Address, Name, Register Type, Register Number, and Register Name. The table is populated with 8 rows of data. To the right of the table is a 'CBUS2 Lighting Properties' panel with fields for Group Address (16), Name, Register Type (Counter), Register Number (16), and Register Name (CBusMtgAC).

Group Address	Name	Register Type	Register Number	Register Name
16		Counter	16	CBusMtgAC
17		Counter	17	CBusChiuAC
18		Counter	18	CBusOfficeAC1
19		Counter	19	CBusOfficeAC2
20		Counter	20	CBusOfficeScene
21		Counter	21	CBusChiuScene
22		Counter	22	CBusMeetingScene
23		Counter	23	CBusAllOffScene

The application and group address can be added by

- Import of cbz file OR
- Add Group Address Button

Importing a cbz file will cause the group addresses in the Lighting application to be displayed in the Lighting Table.

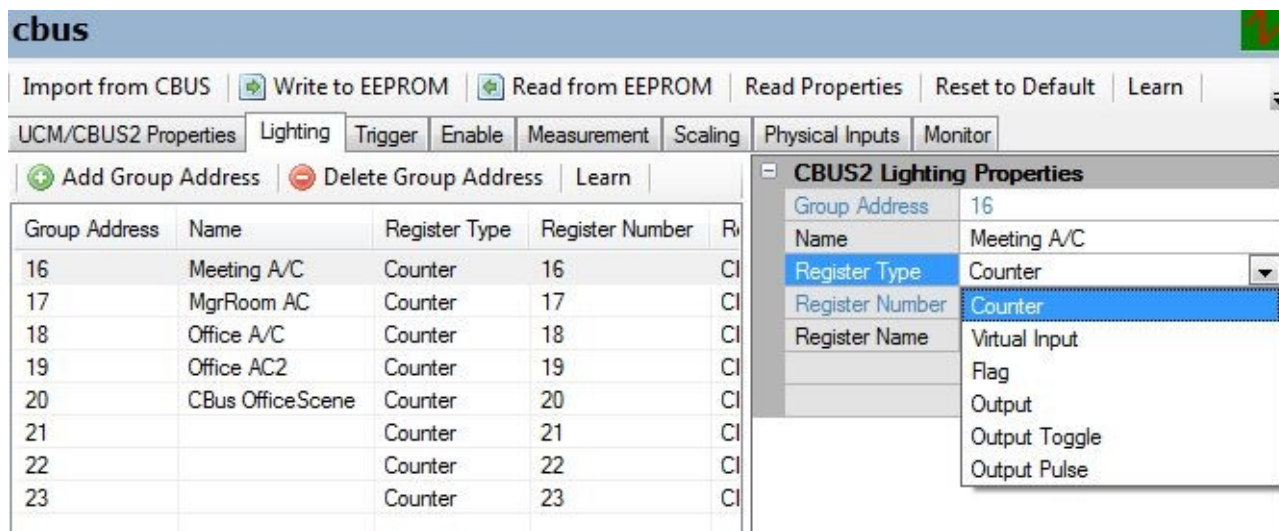
The “Add Group Address” button will add a new group address manually.

“Delete Group Address” will delete the selected Group Address from the table

Each Lighting Group address is listed with its name as extracted from the cbz file. The cbus group name can also be edited in the right pane.

A Lighting Group address may be mapped to the following Comfort Registers;

Counter, Flag, Virtual Input, Output, Output Toggle, Output Pulse by clicking the Register Type handle on the right pane.



Map to Counter

Select a Comfort Counter to map to the Cbus Lighting group address.

This synchronises the group address with the Counter so that the counter has the same value 0 to 255 as the Cbus device. The counter value can be used to monitor the state of the mapped C-Bus group address for the Comfort control menu or for the smart phone apps, so if the Light is on at 50%, the counter value will be 128.

When the C-Bus value changes, it also triggers a Counter Response. This can be used to get Cbus trigger something on Comfort using the codes

```
If Last UCM Counter = 0 then
  do ThisResponse
Else
  do thatResponse
Endif
```

That means that if the C-Bus group is switched to off, it triggers ThisResponse, if other values 1 to 255, it triggers thatResponse

Changing the Counter value in Comfort will also set the Cbus device at the group address to the new value. This allows a simple way to control a Cbus dimmer,

eg

"Set Counter NN =128" will dim the mapped group address to 50%

"Set Counter NN = 255 " will turn on the device at mapped group address

"Set Counter NN = 0" will turn off the device at mapped group address

Note that changing counter values in Comfort does not trigger the Counter Response as that would be a circular action.

For advanced linkage, the same counter may also be mapped to another device eg Zwave or KNX so that the KNX device can be linked to Cbus via the counter

Map to Flag

Select a Comfort Flag to map to the Cbus Lighting group address. This synchronises the flag with the state of the Cbus device. There are only 2 states to a Flag; on and off. If the device is Off, the flag becomes Off, and if the cbus device has level 1 to 255, that will turn on the mapped flag. This is suitable for cbus relays.

Mapping to flags allows the cbus On/off device to be controlled by setting or clearing the flag, and the state of the cbus device to be monitored by means of the flag

However there are no Flag Responses, unlike the situation with Counters. The cbus device cannot trigger Responses by mapping to a flag.

The same flag may be mapped to other devices eg Comfort Thermostat or blinds function or other external devices. This will be a very powerful way to link devices in future

Map to Virtual Input

This allows a lighting Group Address to be mapped to a Comfort Input/Zone to be used as an alarm input. The Virtual Input can be any Comfort Input on the Controller, LEMs or Slaves. An input mapped as Virtual Input will no longer work as a physical input, ie the physical input is ignored. A virtual Input will have On and Off Response, its Zone Type and entry path settings will still be applicable, ie it will act exactly like a physical input. Virtual Inputs can also be on an input which is not present on any Slave or LEM, ie the zones may go up to 32 (ie with 1 slave) but Virtual Inputs can be on inputs 33 onwards which do not have a real slave or LEM.

Map to Output

A lighting group address can be mapped to a Comfort Output to synchronise the output to the Lighting device. This means that turning on the lighting group turns on the output and vice versa. Turning on the output in Comfort will also cause the lighting group to turn on, ie it is a 2 way mapping

Map to Output Toggle

This also maps an Output to a lighting group address. Every change of state of the lighting device causes the Output to be toggled. However this is one way only as the output change is not sent to the cbus group. Instead a Physical Input can be mapped to the cbus group to provide feedback. The application is for Cbus to control a Comfort TWS lighting module. The cbus device toggles the output and the Input from the TWS gives the feedback to the lighting switch.

Map to Output Pulse

This is another way to map an Lighting group address to an output. Every change of state of the Cbus device causes the Output to Pulse on for 1 second. The state of the output is not sent back to Cbus.

Instead a Physical Input can be mapped to the cbus group to provide feedback. The application is for C-Bus to control an airconditioning system (eg Daikin, Mitsubishi etc) by the manufacturers Interface card.

Test Buttons

For each Cbus group address in the list there is an On and Off test button on the right pane. This tests the ucm/cbus2 by sending On or Off commands to the group address

Trigger Application

In the Trigger Application table, each Trigger address is mapped to a Comfort Counter.

The screenshot shows the Cbus software interface. At the top, there's a title bar 'cbus' with a green up arrow icon. Below it are tabs: 'Import from CBUS', 'Write to EEPROM', 'Read from EEPROM', and 'Read Properties'. Underneath are more tabs: 'UCM/CBUS2 Properties', 'Lighting', 'Trigger', 'Enable', 'Measurement', 'Scaling', 'Physical Inputs', and 'Monitor'. The 'Trigger' tab is selected. Below the tabs are buttons: 'Add Group Address', 'Delete Group Address', and 'Learn'. The main area contains a table with columns: 'Group Address', 'Name', 'Counter Number', and 'Counter Name'. The table lists several trigger groups, all with 'Unassigned' counter numbers. To the right, the 'CBUS2 Trigger Properties' dialog is open, showing fields for 'Group Address' (0), 'Name' (Trigger Group - 000), 'Counter Number' (Unassigned), and 'Counter Name'. A dropdown menu is open for 'Counter Name', showing a list of available counters: CBusAllOffScene, CBusChiuAC, CBusChiuScene, CBusMeetingS..., CBusMtgAC, CBusOfficeAC1, CBusOfficeAC2, CBusOfficeSce..., CoolSetpt, Counter011, Counter015, Counter037, Counter038, Counter039, and Counter041. The 'Counter Name' field is highlighted in yellow.

Group Address	Name	Counter Number	Counter Name
0	Trigger Group - 000	Unassigned	
1	Trigger Group - 001	Unassigned	
2	Trigger Group - 002	Unassigned	
3	Trigger Group - 003	Unassigned	
4	Trigger Group - 004	Unassigned	
5	Trigger Group - 005	Unassigned	
103	Trigger Group 103	Unassigned	
118	Trigger Group 118	Unassigned	
140	Trigger Group 140	Unassigned	

Mapping a Trigger group to a Comfort counter causes the Trigger group and mapped Counter to be synchronised. If a trigger group changes its value, the same value is updated to the mapped counter. The Counter Response for the counter is triggered. The value of the counter is accessed by action "If Last UCM Counter"

eg

Counter Response:

If Last UCM Counter = 1 Then
do ResponseA

Endif

Changing a Counter value also sends the counter value to the mapped trigger group

Enable Application

Each Enable application address can be mapped to a Comfort Counter

cbus

Import from CBUS | Write to EEPROM | Read from EEPROM | Read Properties | Reset to Default | Learn | Get Status

UCM/CBUS2 Properties | Lighting | Trigger | Enable | Measurement | Scaling | Physical Inputs | Monitor

Group Address	Name	Counter Number	Counter Name
0	Group 00 - Disable Keys 0	Unassigned	

CBUS2 Enable Properties

Group Address	0
Name	Group 00 - Disable Keys 0
Counter Number	Unassigned
Counter Name	
On	
Off	

Counter Number

The Comfort register to be mapped to a CBUS group address.

Mapping an Enable group to a Comfort counter causes the Enable group and Counter to be synchronised

If an enable group changes its value, the same value is updated to the mapped counter. Hence the Enable Group can be enabled or disabled by setting the value of the mapped Counter to 00 or 255. The Counter Response for the counter is triggered. The value of the counter is accessed by action "If Last UCM Counter"

Measurement Application

In the Measurement application, each Device ID and Channel can be mapped to a Comfort Sensor 0 to 31.

The screenshot shows the 'cbus' software interface. The top menu bar includes 'Import from CBUS', 'Write to EEPROM', 'Read from EEPROM', 'Read Properties', and 'Reset to Default'. Below this is a tabbed interface with 'UCM/CBUS2 Properties', 'Lighting', 'Trigger', 'Enable', 'Measurement' (selected), 'Scaling', 'Physical Inputs', and 'Monitor'. In the 'Measurement' tab, there are buttons for 'Add Measurement' and 'Delete Measurement'. A table with columns 'Device ID', 'Channel', 'Sensor Number', and 'Sensor Name' is visible. To the right, the 'CBUS2 Measurement Properties' panel shows 'Device ID' as 10, 'Channel' as 10, 'Sensor Number' as 'Unassigned', and a dropdown for 'Sensor Name'. Below this, a yellow box titled 'Sensor Name' contains the text: 'Map a Group Address to a Comfort Sensor. Changes in sensor value are NOT sent to Cbus (1-way)'. At the bottom, there are buttons for 'Scroll', 'Hide', 'Login', and a 'Command:' input field.

Select a sensor name from the dropdown list

When the measurement device channel changes its value, the value is sent to the mapped Sensor. The measurement value in cbus is a signed floating point value and can take on a very large range of values with many decimal places.

Comfort sensors are signed 16 bit fixed point numbers in the range -32768 to +32768 so there is a disparity between the range of Cbus measurement values and Comfort sensor values. Comfort sensors are for practical real world applications like temperature, energy, etc.

In order to convert the Cbus measurement values into the range which can be accepted by Sensors, a

The screenshot shows the 'cbus' software interface with the 'Scaling' tab selected. The top menu bar is the same as in the previous image. The 'Scaling' tab contains a table with columns 'Unit Code', 'Unit', and 'Scale Factor for Measurement Application'. The table lists units from 0 to 18, including Deg C, Amps, Angle (deg), Coulomb, True/False, Farad, Henry, Hertz, Joules, Katal, Kg/m, Kg, Litre, Litre/hr, Litre/min, Litre/sec, Lux, Metre, and Metre/min. To the right, the 'CBUS2 Scaling Properties' panel shows 'Unit Code' as 0, 'Unit' as 'Deg C', and 'Scale Factor for Measurement Application' as 1.

Unit Code	Unit	Scale Factor for Measurement Application
0	Deg C	1
1	Amps	1,000
2	Angle (deg)	1
3	Coulomb	1
4	True/False	1
5	Farad	1,000
6	Henry	1
7	Hertz	1
8	Joules	1
9	Katal	1
10	Kg/m	1
11	Kg	1,000
12	Litre	1,000
13	Litre/hr	1,000
14	Litre/min	1,000
15	Litre/sec	1,000
16	Lux	1
17	Metre	1
18	Metre/min	1

Scaling Factor is used

Go to the Scaling Table as shown below;

The Measurement Application values include a Unit code which tells what type of unit it is, eg unit 0 = deg C, 1 = Amps, 2 = Angle etc. These unit codes are listed numerically in the Scaling table.

For each Unit code, it is possible to specify a Scaling factor for Comfort to multiply to the Cbus measurement value so that the final value is within the range -32768 to + 32767 which can be stored in the Comfort sensor

For example Unit code 0 (deg C) has a default scaling factor of 1. There is no need to do any scaling on the temperature values as it would not exceed the range -32767 to 32768 degrees. Any decimal part of the measurement would be lost

For Unit code 1 (Amps), if the measurement value is typically 1 to 999 milli-amps ie 0.001 to 0.999 Amps, the value of 0 would be saved to the sensor which would be useless. Hence a scaling factor of 1000 is used to scale to value to 1 to 999 which can be saved in the sensor.

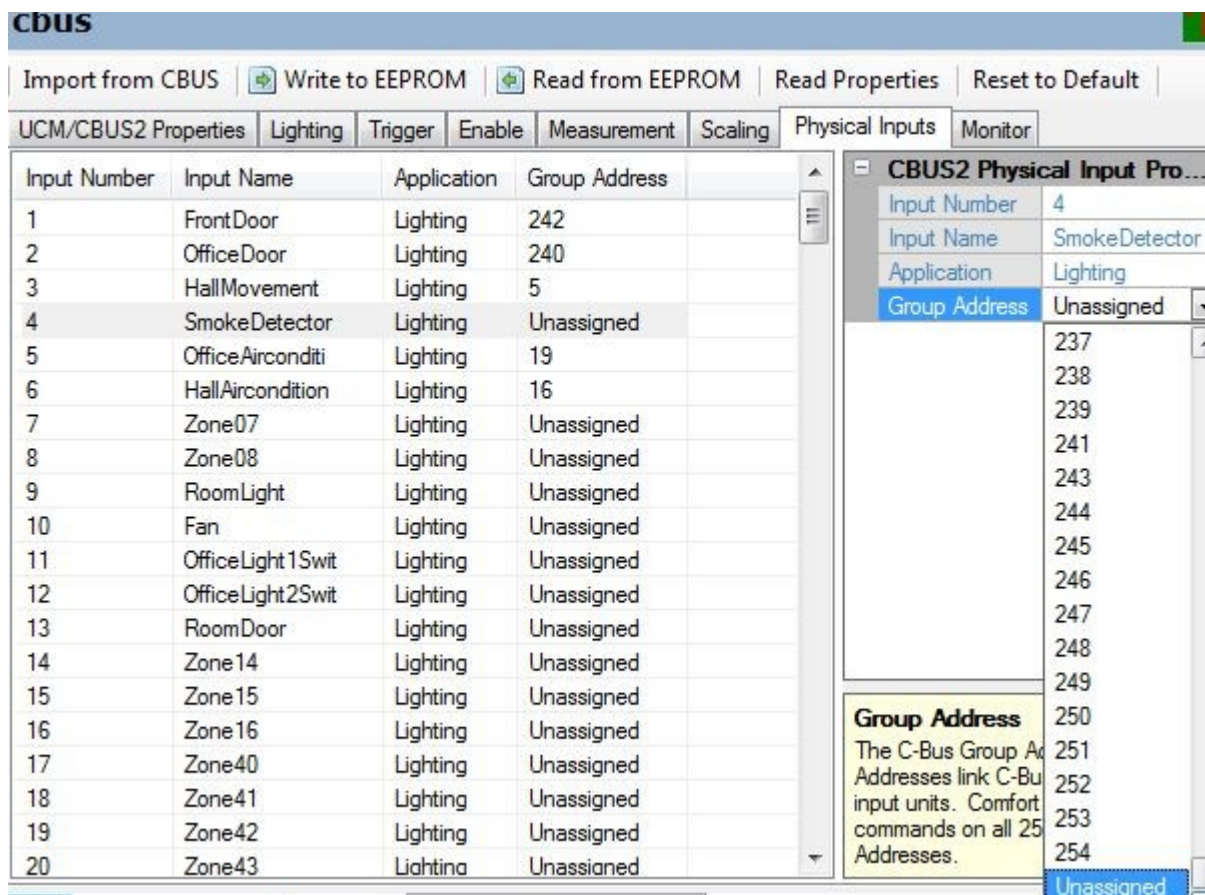
The scaling factors have default values but can be changed

How the sensor value is used in Comfort depends on the the requirement. For example, the temperature from Cbus can be used in the Comfort Thermostat function, or the current can be used for energy display and logic in Comfort

Currently the mapping is only 1 way, ie Sensor values are not sent to C-Bus. We are looking for feedback to see if this would be useful to implement

Physical Inputs to Cbus

This allows a Comfort Input to send its status to a C-Bus lighting Group address



For each Comfort Input or Zone, assign a Lighting Group address as shown above

Any change in the Input will send the state to the mapped lighting group

This allows cbus switches to see the state of the mapped input. It is extremely useful when C-Bus controls airconditioning, lighting or other equipment on Comfort where the status is monitored by Current sensors or relay contacts

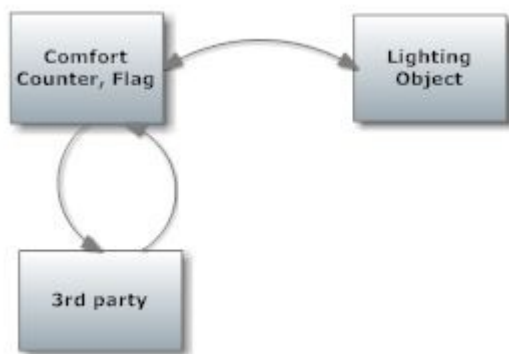
The same Lighting group addresses may also be mapped to Comfort Output Pulse, Output toggle or Counters in the Lighting Application table

Note that Virtual Inputs should not be mapped to Group addresses in this table (as Virtual Inputs are not physical)

Comfort and C-Bus Linkage

The following diagrams help to illustrate how C-Bus Applications and group addresses are linked to Comfort Registers and vice versa.

Lighting object mapped to Counter or Flag

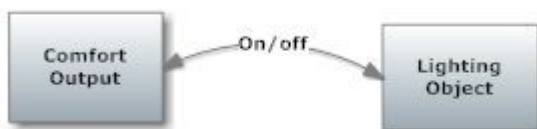


The connection is two way so the lighting object state is updated to the Comfort counter or Flag and changes in the counter or flag are also sent to the mapped group address.

In the case of Flags, only off and on values are maintained, while for Counters the values are 0 to 255

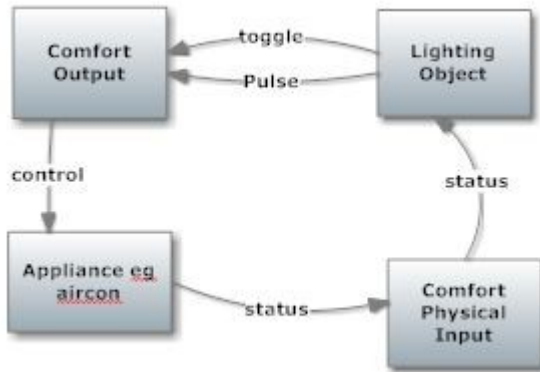
Counters and Flags can also be linked to 3rd party objects and appliances like Zwave and KNX or Comfort thermostat and blinds functions

Lighting object mapped to Comfort Output



This synchronises the output with the lighting object so the cbus Lighting switch can control the output on or off, and changes in the output state controlled by comfort also update the object status.

Lighting object mapped to Comfort Output Toggle or Pulse



In this case the output status is not sent to C-Bus, ie this is one way from C-Bus to the output. Instead Comfort Physical Input can be mapped to the Lighting group to send status to the C-Bus button. This is useful when C-Bus controls airconditioning or two way lighting via Comfort where the status is provided by Comfort current sensor or external relays.

Lighting object mapped to Virtual Input



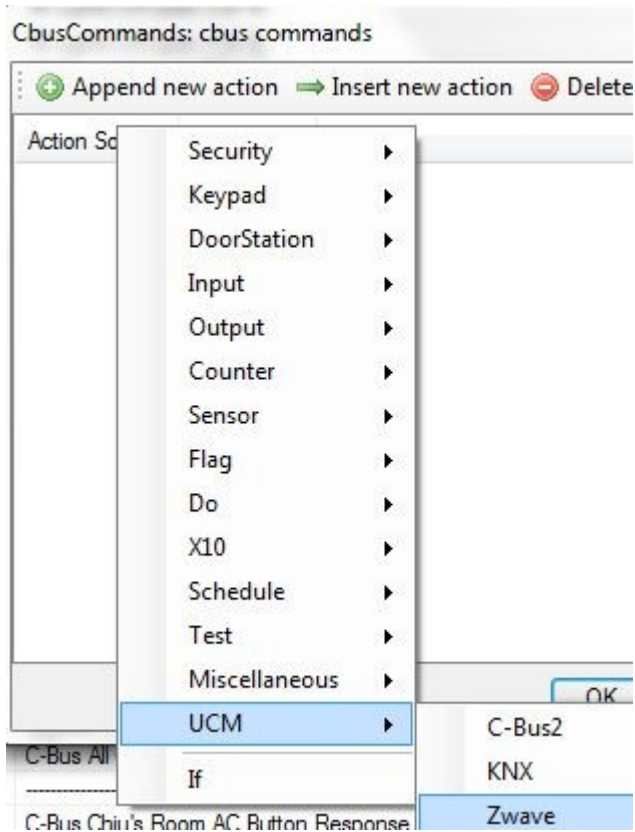
A C-Bus Lighting Application motion sensor can be mapped to a Virtual Input to act as an alarm input in Comfort.

Sending Commands to C-Bus2

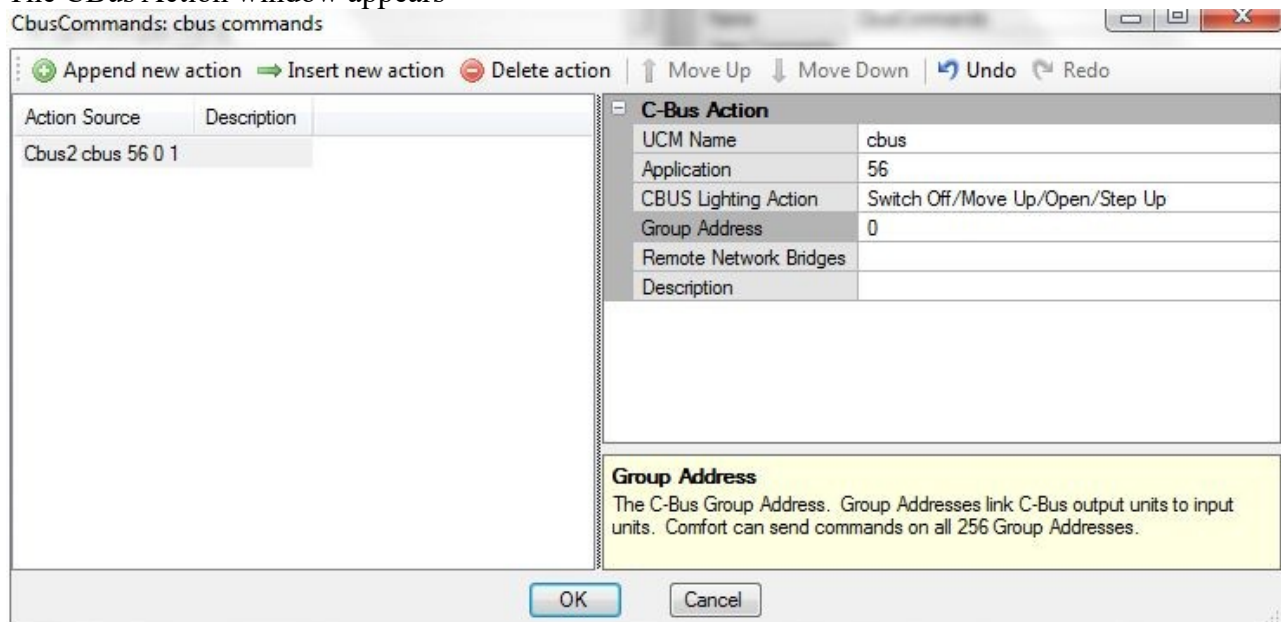
There are 2 ways to send commands to Cbus; the Direct and Indirect method

Direct Commands

Direct commands can be send to C-Bus using the Response Wizard Actions. In Response Wizard, select UCM > C-bus2



The “C-bus2” selection will only appear if a UCM/C-Bus2 is in the UCM Modules Tab.
The CBus Action window appears



Select the application, eg 56 for Lighting
Select the Group Address

A dropdown list of C-Bus Lighting commands are shown

CbusCommands: cbus commands

Append new action Insert new action Delete action Move Up Move Down Undo Redo

Action Source	Description
Cbus2 cbus 56 0 1	

C-Bus Action

UCM Name	cbus
Application	56
CBUS Lighting Action	Switch Off/Move Up/Open/Step Up
Group Address	Switch Off/Move Up/Open/Step Up
Remote Network	Instantaneous Ramp
Description	Stop Ramp
	Ramp over 4 seconds
	Ramp over 8 seconds
	Ramp over 12 seconds
	Ramp over 20 seconds
	Ramp over 30 seconds
	Ramp over 40 seconds
	Ramp over 60 seconds
CBUS Lighting Action	Switch On/Move Down/Close/Step Down
CBUS Lighting Action	Label

OK Cancel

Select the command

If the command is to go through Remote Network Bridges enter the bridge numbers in the list separated by commas as shown

CbusCommands: cbus commands

Append new action Insert new action Delete action Move Up Move Down Undo Redo

Action Source	Description
Cbus2 cbus 56 0 1	2,4,5

C-Bus Action

UCM Name	cbus
Application	56
CBUS Lighting Action	Switch Off/Move Up/Open/Step Up
Group Address	0
Remote Network Bridges	
Description	2,4,5

Description
This is a description of the response.

OK Cancel

Press OK to confirm the C-Bus Action

You can add more Cbus actions to be sent to C-Bus in the same Response. Sequential C-Bus commands are concatenated together automatically.

Indirect Commands to C-Bus

Indirect commands can be sent to C-Bus by means of the Comfort Registers that are mapped to C-Bus Group addresses. This is a useful new feature in UCM/CBUS2 and is a more powerful way to link C-Bus to Comfort features as well as other systems connected to Comfort.

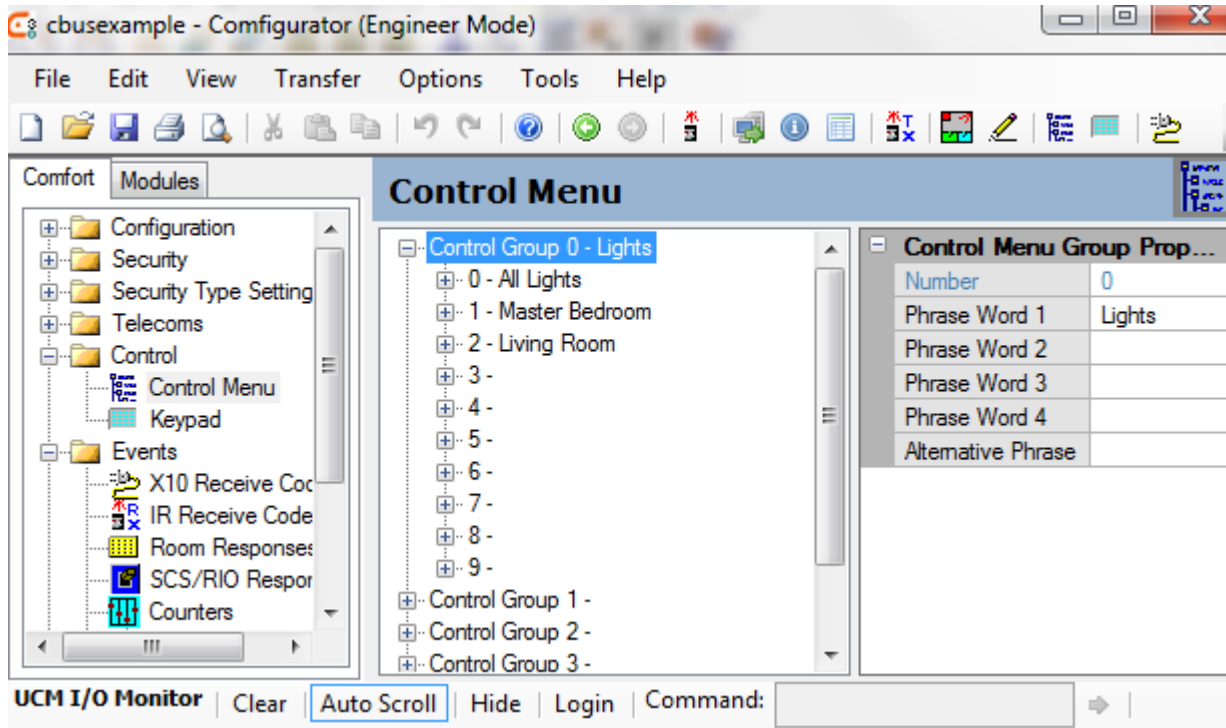
For example, if Lighting Group Address 5 is mapped to Counter 1, changing Counter 1 to 0 will switch off Lighting Group 5, changing Counter 1 to 255 will switch on Lighting group, and putting a value of 1 to 254 into the counter will dim the Group to the same level

If a lighting Group is mapped to a Flag which has states on and off, then setting the flag will turn on the Lighting Group and clearing the flag will switch off the Lighting Group

If a lighting group is linked to Output (but not Output Pulse or Output Toggle), then turning on the Output will turn on the Lighting Group and turning off the Output will switch off the Lighting Group

Control Menu for CBus

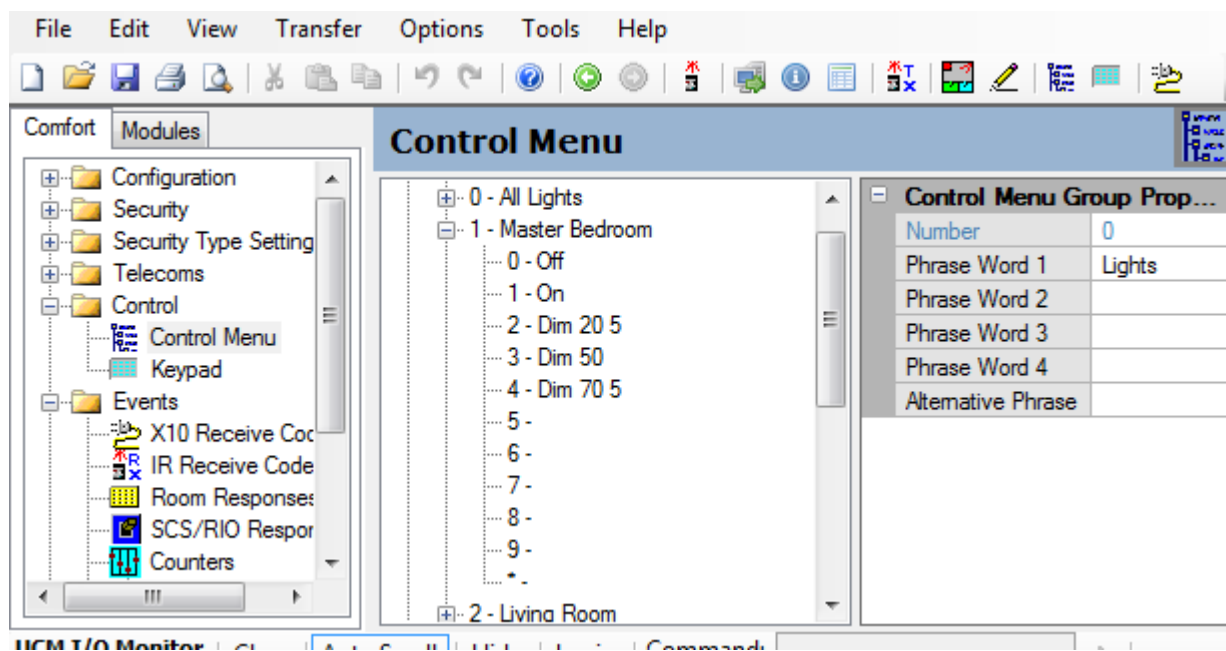
The Home Control Menu can be programmed to control Cbus addresses. The screenshot below shows an example of a Home Control Menu. Comfort Ultra has 6 Control Groups, which may be programmed as Lights, Air-cons, Blinds etc.. Each Control Group can have 10 Control Keys e.g. for All lights, Living Room Light, Bedroom light etc., and each Control Key can have 10 Actions or commands e.g. On, Off, Dim, Bright, Up, Down etc.. Each Group, control key and Action Key can have words assigned for announcement



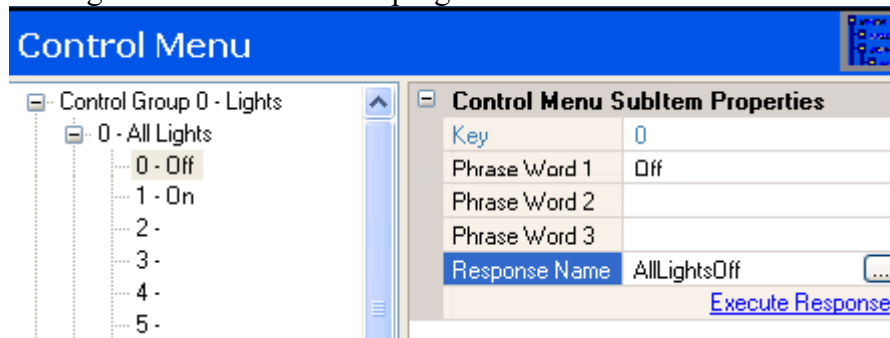
In the above screenshot, Control Group 0 “Lights”, Control Key 1 is Master Bedroom and action keys are 0 for Off and 1 for On.

The Off key and On key activates Responses to control the CBus Group Addresses

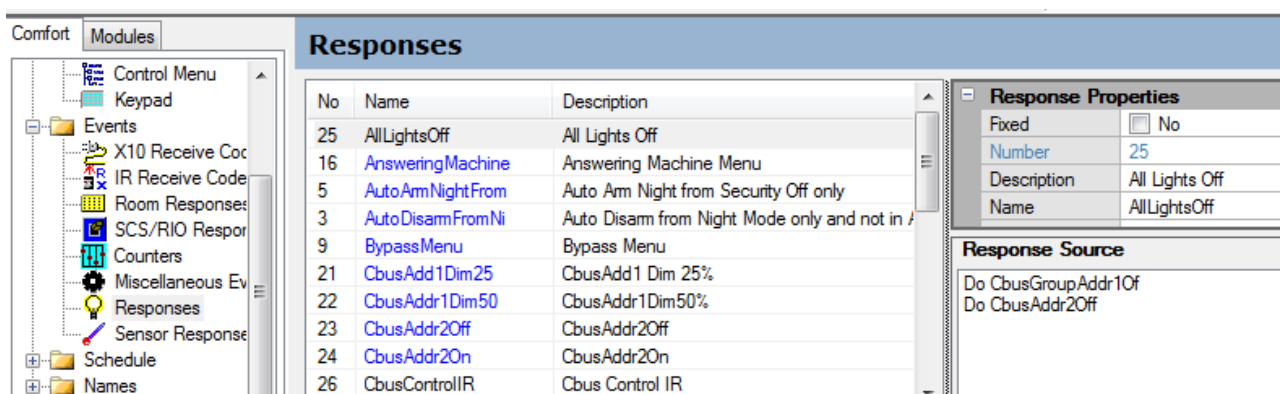
The example below shows how on, off and dimming to various levels can be programmed for a single Lighting address.



All Lights On and Off can be programmed to switch on and off all Cbus lights in the premises.



A Response can combine several previously programmed Responses, e.g. All Lights Off can have Do CbusGroupAddress1 Off and Do CbusGroupAddress2 Off as shown below;



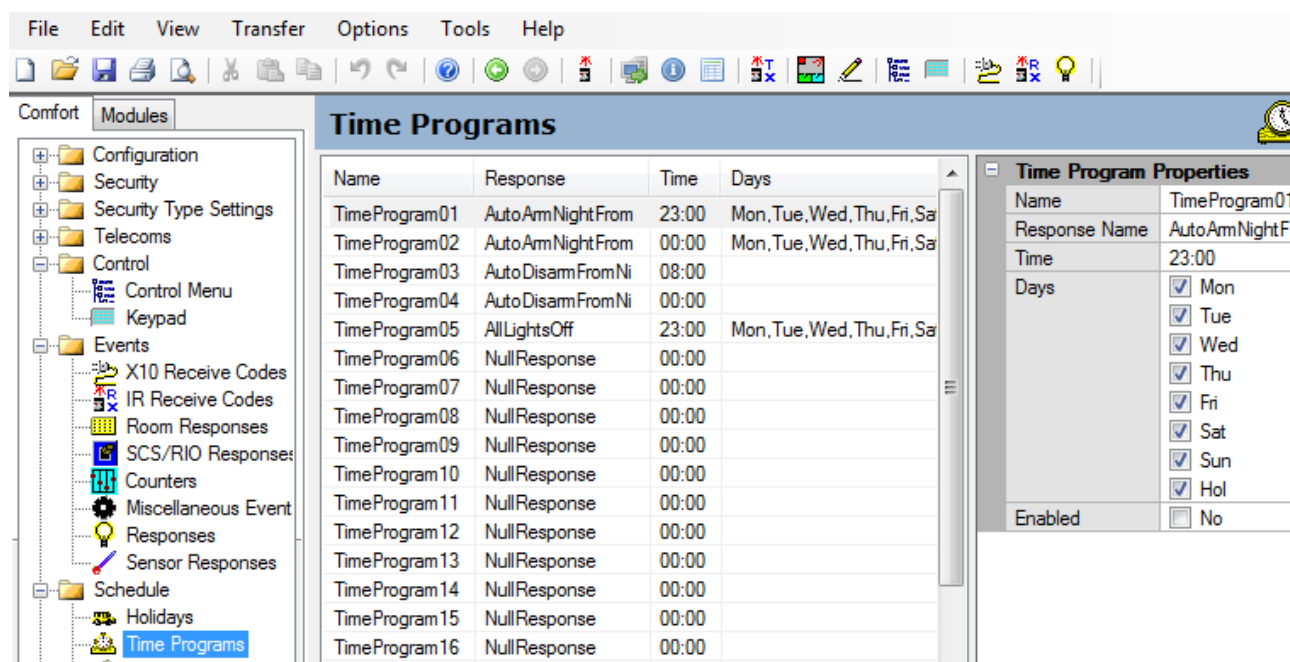
★ The Comfort iPhone App also uses on the programmed Home Control Menu to control and monitor the status of the programmed devices

Time Programs

Comfort Time Programs can be scheduled to send commands to CBus

In Configurator, go to Schedule > Time programs.

In the above example, Time Program 5 is programmed at 11 PM Monday to Sunday and Holidays to



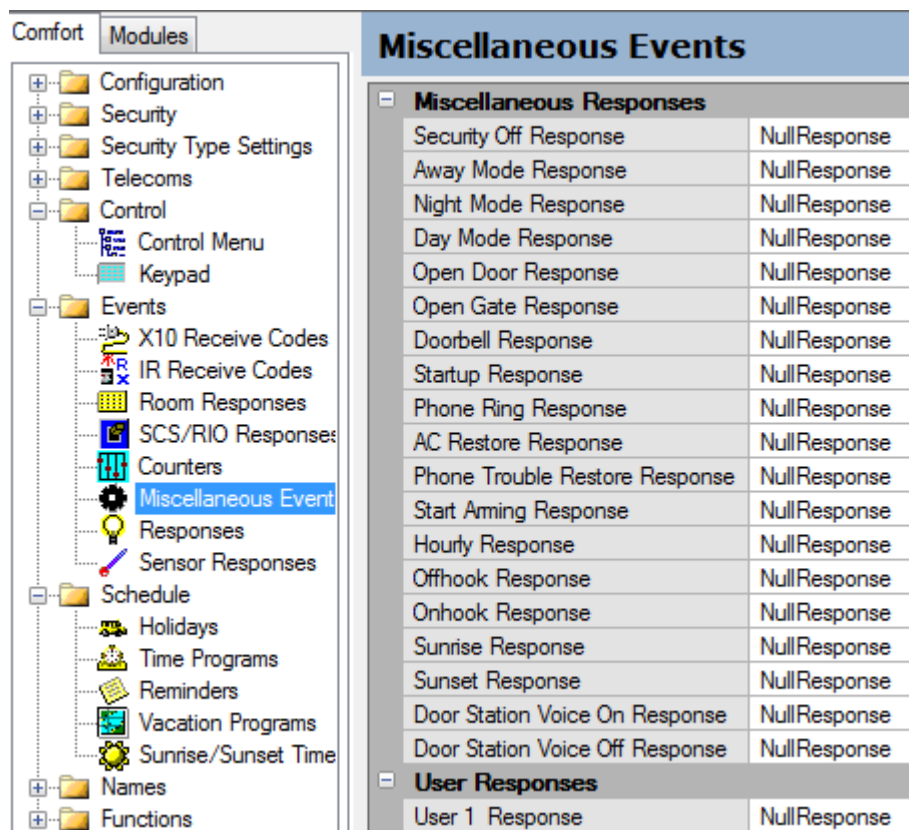
send All Lights Off command.

These are simple examples of how Comfort Responses can be triggered by Events to send commands to CBus

Other Events Trigger C-Bus

Other examples of Events which can trigger Responses to control CBus are;

- Zones (Inputs) triggered and Restored. See Security > Zones/ Inputs
- Alarms – each Alarm Type triggers an Alarm Response, see Security Types > Alarm Types.
- IR Receive Codes (using RC01 remote Control), see Events > IR Receive
- Sunrise and Sunset times, see Schedule > Sunrise/Sunset Times
- Hourly, see Events > Misc Events

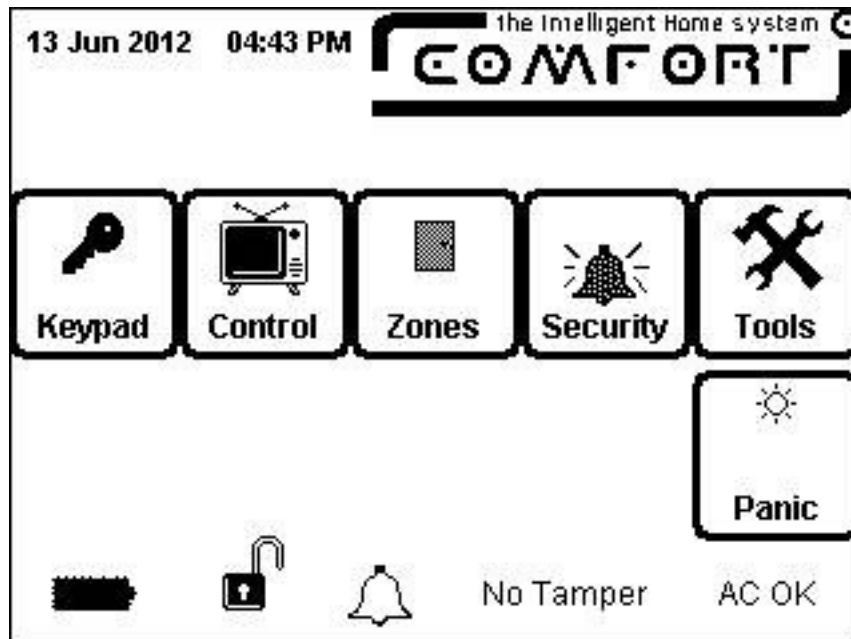


C-Touch for Security Application

The C-Touch Colour and B&W touchscreens can be used as a keypad for Comfort, or to display zone and alarm information from Comfort, as well as to set the time and date in Comfort. To demonstrate the capabilities which are possible, a sample file `comfort.cdt` in a zip archive is provided which can be downloaded from http://www.cytech.biz/product_details.php?item_id=148

PICED software version 3.8.0 or above should be used. Comfort II with the UCM/CBUS2 supports the C-Bus Security and Clocks/Timekeeping applications.

Load the `comfort.cdt` file using the PICED software. You may encounter a warning message saying that “There is no Unit Address selected. A unit address will be needed if downloading via C-Bus”. If so, click on “OK” and proceed



on the main page, 5 buttons are displayed, namely Keypad, Control, Zones, Security, Panic, and Tools. The date and time are also shown on the screen for all pages will be updated upon any change in change in date and time for Comfort and, similarly, for Comfort, any change in date and time for C-Touch will change the time for Comfort.

The Battery, Arm State, and Alarm State icons, as well as text indicators for Tamper Alarm and AC Failure indicate the current status of Comfort. A Low Battery condition will result in a change of the battery icon from  to .

When Comfort is armed (be it Away, Night, Day or Vacation), the lock symbol switches from  to .

In alarm conditions, the Bell icon will then be changed from  to .

For cases of Tamper alarm, the text “No Tamper” will indicate “TAMPER” instead. Similarly, the “AC OK” text will become “AC Fail” when Comfort encounters an AC power failure (in cases where the Standby Battery provides the backup power).

Status Icons

This section serves to illustrate how the various status's shown on the main page is depicted.

Arm Status

This status shows the current arm status, but does not show the security mode. The icon is used is a lock and its status is reflected as such:



System is disarmed



System is armed.

This status utilises the Security Application. To program the status, double-click on the lock icon to bring up the following page. Select the System IO Tab.

Button Component Properties

General | **Visual Properties** | Page Link | Special Function | Remote Control | C-Bus | **System IO** | Status

Key Function: Status

System IO Variable:

- ☐ User defined
- ☒ In-built

Value:

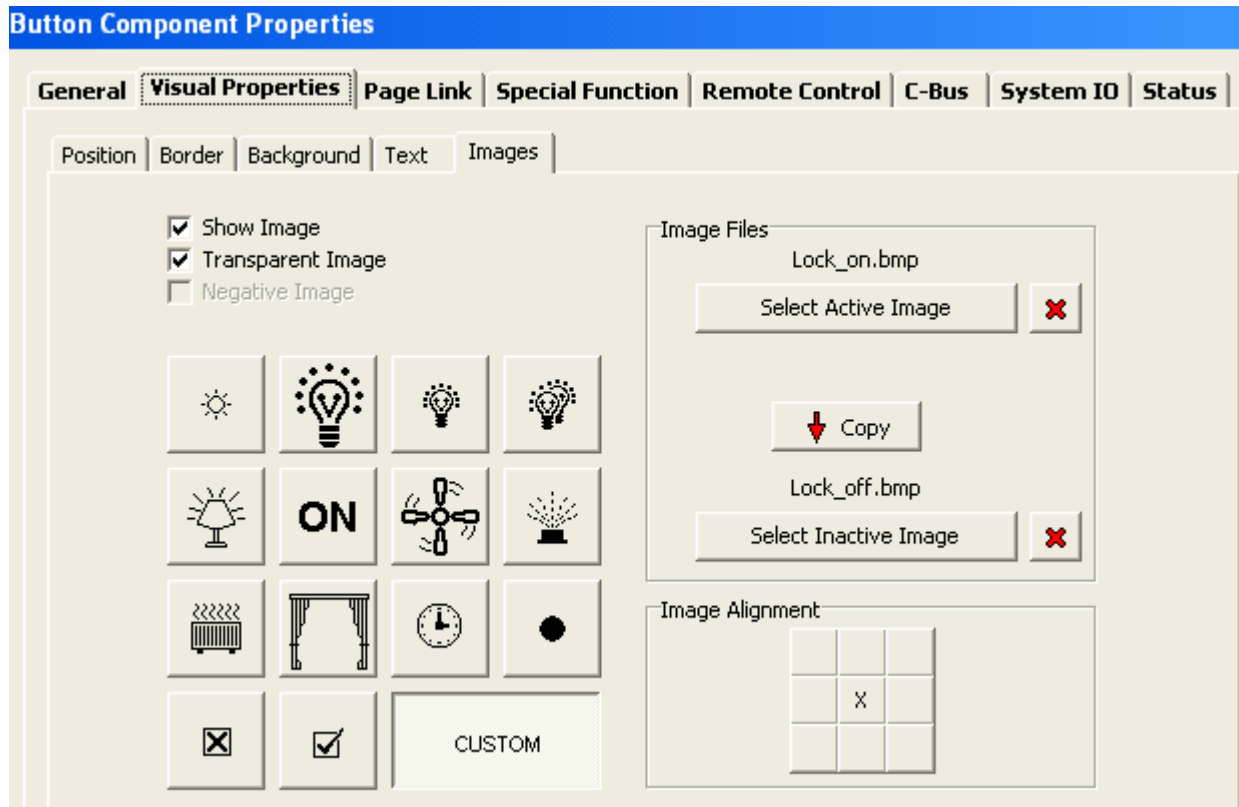
- Security Armed State
- Security Battery Charging
- Security Entry Delay
- Security Exit Delay
- Security Fire Alarm Sounding
- Security Gas Alarm Sounding
- Security Line Cut Alarm Sounding
- Security Low Battery
- Security Mains Failure
- Security Normal Operation
- Security Other Alarm Sounding
- Security Panic
- Security Password OK
- Security Password Status
- Security Tamper
- Security Zone Isolated
- Security Zone Secure
- Security Zone Status
- Startup Date
- Startup Time

OK Cancel Help

To show the Security arm status, the following must be set:

- Key function: Status
- System I/O Variable = In-built, Security Armed State
- Value N/A

To show the images for Armed and Disarmed states, select Visual Properties Tab, select Images sub-tab. To use custom images, select CUSTOM, then select Active Image (for system Armed) and Inactive Image (for system disarmed)



Alarm State

This icon serves to show when the system is in Alarm.



: System is not in alarm (idle, trouble, or alert)



: System is in alarm.

To program the status, double-click on the lock icon to bring up the following page. Select the System IO Tab.

Button Component Properties

General | Visual Properties | Page Link | Special Function | Remote Control | C-Bus | **System IO** | Status

Key Function: Status

System IO Variable:
☐ User defined
☒ In-built Security Alarm Sounding

Value: 0

To show the alarm status, the following must be set:

- Key function: Status
- System I/O Variable = In-built, Security Alarm Sounding
- Value - N/A

To show the images for Armed and Disarmed states, select Visual Properties Tab, select Images sub-tab. To use custom images, select CUSTOM, then select Active Image (Alarm) and Inactive Image (No Alarm)

Battery State

This reflects the current battery condition.



Battery is in normal condition (i.e. no low battery condition). If no battery is connected, the low battery will not appear.



Battery is weak

Programming the battery state is similar to the arm and alarm status, double-click the battery icon. Select the System IO Tab

To show the battery status, the following must be set:

- Key function: Status
- System I/O Variable = In-built, Security Low Battery
- Value - N/A

To show the images for Armed and Disarmed states, select Visual Properties Tab, select Images sub-tab. To use custom images, select CUSTOM, then select Active Image (Low Battery) and Inactive Image (Battery OK)

Mains Failure

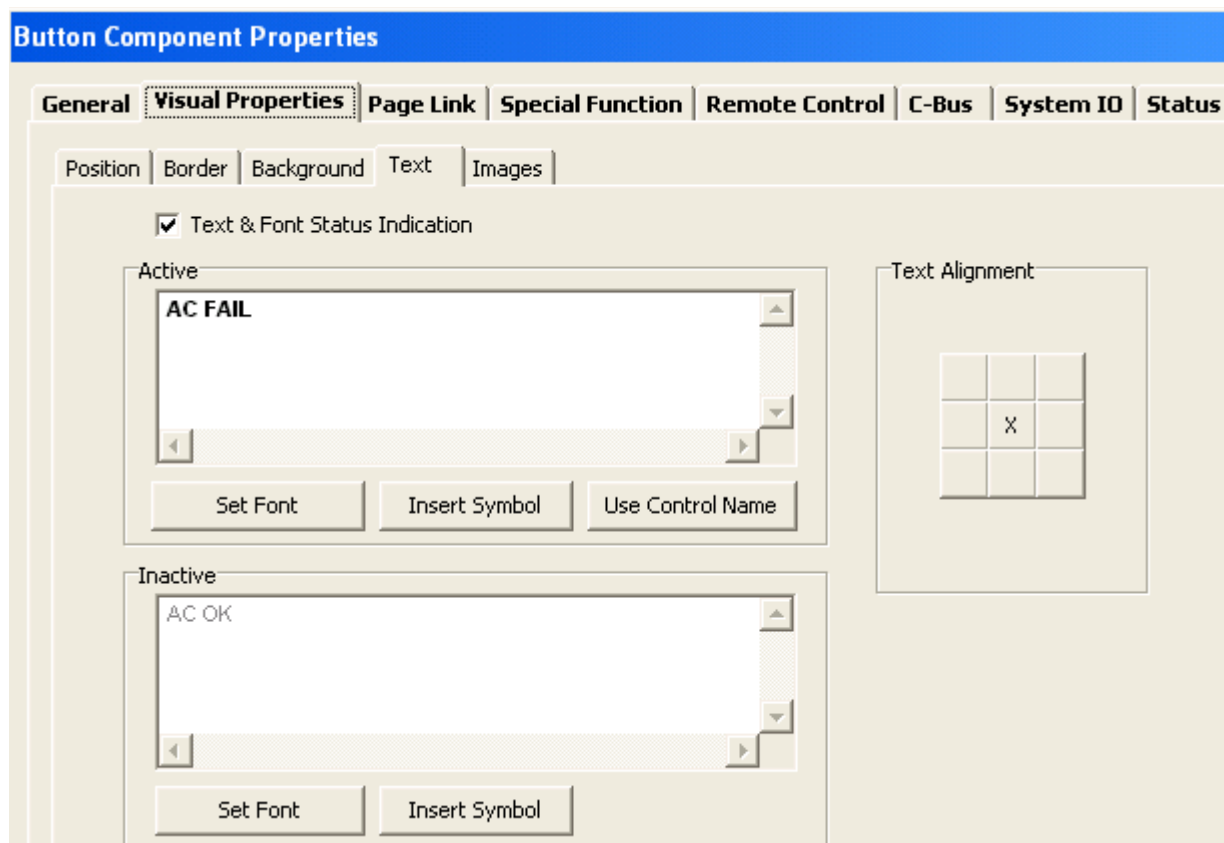
The sample C-Touch program uses the Text Font Status to indicate the mains status (AC OK for mains normal, AC FAIL for mains failure situations).

Programming the mains status is similar to the previous example, double-click on the text (AC OK) Select the System IO Tab.

To show the Mains OK/Failure Status, the following must be set:

- Key function: Status
- System I/O Variable = In-built, Security Mains Failure
- Value - N/A

To show the Text Status for AC Fail and AC OK, select Visual Properties Tab, select Text sub-tab. Enter the Active Text (AC Failure) and Inactive Text (AC OK)



Tamper Status

The status of the tamper inputs can be displayed as well. This is programmed in the same way as the previous status with the following settings:

- Key function: Status
- System I/O Variable = In-built, Security Tamper
- Value - N/A

To show the Text Status for AC Fail and AC OK, select Visual Properties Tab, select Text sub-tab. Enter the Active Text ("Tamper") in BOLD and Inactive Text (Tamper OK)

Arm Ready Status

This is used to inform the user whether the system is ready to be armed or not (i.e. when there are open zones).

To program for such a display, a button or a text display can be created, with the following settings set for the C-Bus settings under its Component Properties:

- Key function: Status
- System I/O Variable = In-built, Security Arm Ready
- Value - N/A

This status is active if all monitored zones are closed and hence the security system can be armed. To show the Text Status for this, select Visual Properties Tab, select Text sub-tab. Enter the Active Text (Arm Ready) and Inactive Text (Arm Not Ready)

Entry Delay Status

This is used to inform the user when an Entry Delay is active, i.e. when an Entry door is opened while the system is armed.

To program for such a display, a button or a text display can be created, with the following settings set for the C-Bus settings under its Component Properties:

- Key function: Status
- System I/O Variable = In-built, Security Entry Delay
- Value - N/A

To show the Text or Image Status for this, select Visual Properties Tab, select Text sub-tab or Image subtab.

Password OK Status

This is used to inform the user when a valid code has been entered

To program for such a display, a button or a text display can be created, with the following settings set for the C-Bus settings under its Component Properties:

- Key function: Status
- System I/O Variable = In-built, Security Password OK
- Value - N/A

To show the Text or Image Status for this, select Visual Properties Tab, select Text sub-tab or Image subtab.

Keypad Emulation

The Keypad Button directs the user to the Keypad Page as shown below:



Here the various buttons work as if they were pressed via a Comfort keypad . When the system is armed, entering the user code will disarm the system.

In PICED, double-click on the key or button to access the Button Properties page. Select the Special Function Tab.

Button Component Properties

General | **Visual Properties** | Page Link | Special Function | Remote Control | C-Bus | System IO | Status

Special Function: Security Keypad

Keypad Key: 1

1
2
3
4
5
6
7
8
9
*

Enter
Shift
Panic
Fire
Arm

Select the fields as follows;

- Special function: Security Keypad
- Keypad Key: select a key function from the dropdown list

The following keys can be implemented on the simulated keypad;

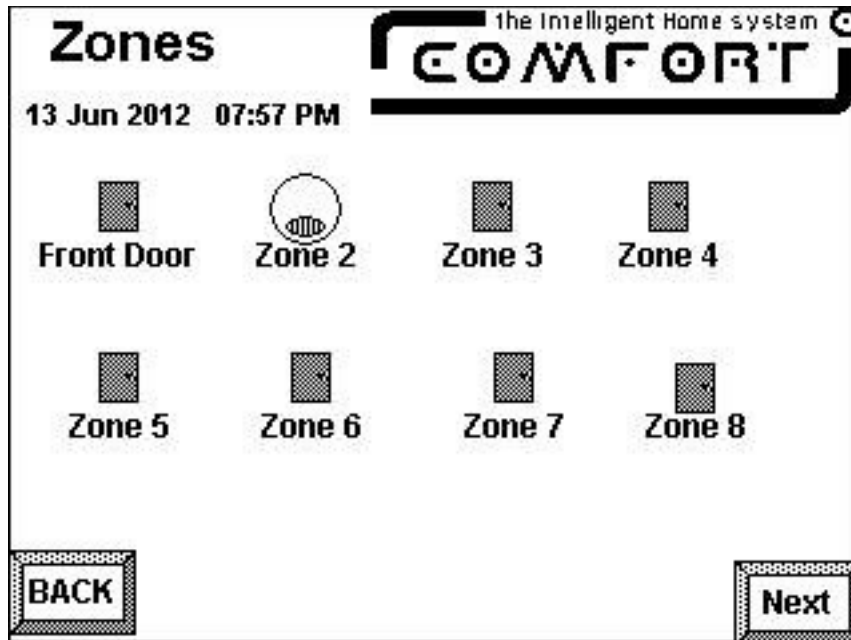
0 to 9, *, #, Enter, Panic, Fire, Arm, Away, Night, Day, Vacation

Away, Night and Day, Vacation keys arm to the selected mode, and the Panic and Fire keys will activate the Panic and Fire alarm respectively. Arm key will arm to Away Mode. The # key acts like the # key on the keypad. Pressing the code and # key when the system is not armed will play the voice menu on the “keypad” but as there is no speaker on C-Touch, the voice menu will not be heard. The Enter key is like the # key i.e. it will enter the code, except that the system will not try to play the voice menu

Panic and Fire keys will activate an Immediate Panic and Fire alarm respectively.

Zone Status

The security page allows users to monitor Comfort zones on C-Touch. The status shown is their real-time status.



In this example, 8 security zones are monitored. Any number of zones can be monitored subject to the size of the touchscreen. The zones can be split up into be several pages denoting different levels or areas in the home. It is possible to design a bitmap for the layout of the rooms in the house and to position the sensors in the appropriate locations.

To select the zones to be monitored, double-click on any zone to show the Button Properties page. Select the System IO Tab.

- Key function: Status
- System I/O Variable = In-built, Security Zone Status
- Value - N/A
- Zone - Select Zone Number

Button Component Properties

General | Visual Properties | Page Link | Special Function | Remote Control | C-Bus | **System IO** | Status

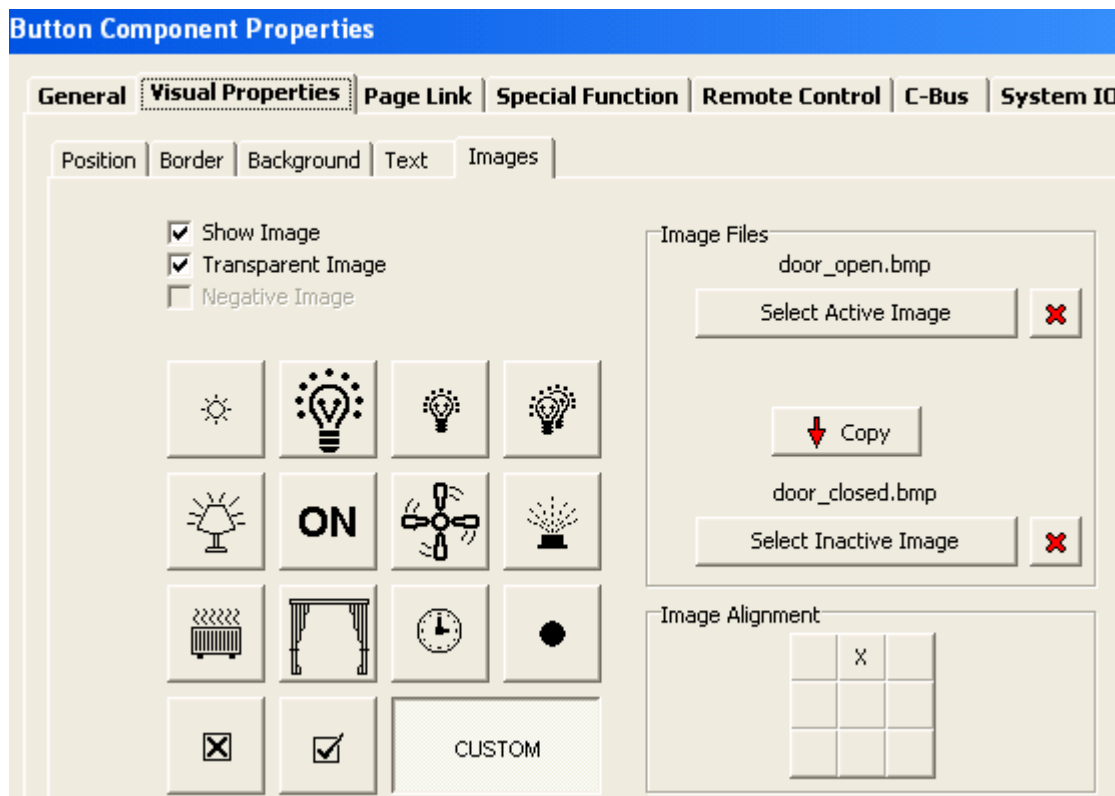
Key Function
Status

System IO Variable
☐ User defined
☒ In-built
Security Zone Status

Value
0

Zone
Zone 1

Under the Visual Properties Tab, the visual appearance for the button can be customised to display the zone status when the zone is on and off. Select Custom and select the Active Image (zone open) and Inactive Image (zone closed). On the Text Tab you can enter the fixed text to identify the zone, e.g. "Front Door".



Time and Date Synchronisation

When the date and time is changed via C-Touch, it is similarly updated in Comfort and vice versa. In Comfort, enter the user code, go into Program menu (user menu 9), then select 2 to change date and time. Changes in the system time will result in a change in C-Touch displayed time. The Clocks / Timekeeping Application is used to relay this information.

Security Status Messages (Comfort -> C-Bus)

Security Status Messages	Group Address (hex)	C-Touch Key Function	Status
System Armed/ Disarmed	80	Status	Disarmed=OFF, Armed = On
Exit Delay Started	81	-	ON when exit delay started
Entry Delay Started	82	-	ON when entry delay started
Alarm Status	83	Status	Idle, Trouble, Alert = OFF, Alarm state = ON
Tamper	84	Status	Tamper = On, No Tamper = OFF
Panic activated	85	Status	On when Panic activated
Zone Not Ready	86	Dimmer	Ready = OFF, Not ready = Zone number
Zone "unsealed"	86	Status	
Zone "sealed"	87	Status	
Zone open circuit	88	Not implemented	
Zone short circuit	89	Not implemented	
Zone Isolated	8A		Not used for C-Touch
Battery	8B	Status	Low = ON, OK = OFF

Security Status Messages	Group Address (hex)	C-Touch Key Function	Status
Battery Charging	8C	Not implemented	
Zone Name	8D	Not implemented	
Status Report 1	8E	-	Not used for C-Touch
Status Report 2	8F	-	Not used for C-Touch
Password Entry	90	-	1- Valid 2 - Invalid (See Note) 3 - Disabled 4 - re-enabled, not implemented
Mains Failure	91	Status	OK = Off, Mains Fail = On
Arm Ready/Not Ready	92	Dimmer	Ready = OFF, Not ready = Zone number
Line Cut	94	Status	OK = Off, Cut = On
Arm Fail	95	-	Arm Fail = On
Status Report 1	AC	-	
Status Report 2	AD		

Note: The Invalid Password Entry message is received when there is a wrong sign-in code entered from C-Touch, or after pressing the F-key as Comfort expects another key after the F, or if a key is pressed while another keypad is active.

Security Control Messages (C-Bus -> Comfort)

Security Control Messages	Group Address (hex)	Key Function	Tag
Status 1 request	A0		
Status 2 Request	A1		
Arm System	A2	Preset, Instantaneous	Away=1, Night=2, Day = 3
Tamper On/Off	A3	On/Off	-
Activate Alarm (Panic)	A4	On	-
Keypad Emulation	A5	Preset, Instantaneous	Keypad digit
Display Messages	A6	Not implemented	
Request Zone Name	A7	Not implemented	

UPGRADING FROM UCM/CBUS1

Differences from UCM/CBUS1

The UCM/CBUS2 is similar to recently produced UCM/CBUS hardware (which shall be referred to as “UCM/CBUS1”). It has a U2 EEPROM and the CBUS SIM Module is the ST7 version as shown in the photo on page 2.

UCM/CBUS1 can be upgraded to UCM/CBUS2 under the following circumstances

- There is a 8-pin socket for the U2 EEPROM. If the IC socket is empty then you must purchase a 256K bits EEPROM IC04-64 to insert in the socket. If there is already an EEPROM then the module may be upgraded to UCM/CBUS subject to the submodule being the new ST7 type. If the U2 IC socket is not on the UCM baseboard, then this UCM/CBUS1 cannot be upgraded to UCM/CBUS2.
- The C-Bus plug in submodule is the ST7 type as shown in the photo on Page 2. If it is not, then a new CBUS01 submodule (which will be the ST7 type) must be purchased

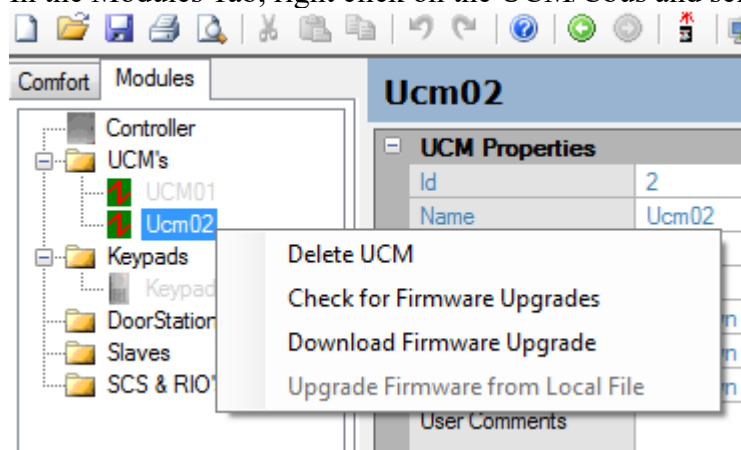
New Features of UCM/CBUS2

1. C-Bus lighting group addresses are not automatically mapped to the Counter numbers in a fixed 1 to 1 numbering. Instead they can be mapped to Comfort Counters, Flags, Outputs, and Virtual Inputs via Configurator. Virtual Inputs allow C-Bus motion sensors (Lighting Application) to act as alarm inputs. Mapping to Outputs allows Comfort Outputs to be controlled by Cbus. Mapping to Flags allows Comfort Flags to control Cbus. Flags can also link to other Comfort functions like Thermostats and Blinds.
2. Comfort Physical Inputs can be mapped to Cbus Lighting Group Addresses. This allows Comfort Input status to provide feedback to Cbus Lighting groups, eg for Airconditioner and appliance status from Current sensors.
3. The Group addresses can be imported from a.cbz file (which is an export file from the C-Bus Toolkit) making it easy to map to Comfort
4. Trigger, Enable, Measurement Applications are also supported. Each of these applications can be mapped to appropriate Comfort registers.
5. Built-in C-Bus Applications Security, Date/Time, and Zones can be enabled or disabled. Built-in applications are supported in Comfort without having to do any programming.
6. The C-Bus Properties like SIM Firmware version, Cbus Network voltage, and SIM Options can be read from the UCM/CBus
7. The Status Bar in Configurator shows the C-Bus status, eg Normal, C-bus not connected, EEPROM not installed, SIM Firmware too old, instead of having to see the UCM/Cbus LEDs
8. Monitor Mode shows incoming traffic from C-Bus
9. The Response Wizard creates actions to send to Cbus Lighting, Enable, Trigger Applications.

Upgrading Procedure for UCM/CBUS

Upgrading from UCM/CBUS1 to UCM/CBUS2 (provided the 2 conditions above are met) is a See <http://www.comfortforums.com/forum92/3400.html> for general instructions on how to upgrade firmware.

In the Modules Tab, right click on the UCM/Cbus and select “Check for Firmware Upgrades”



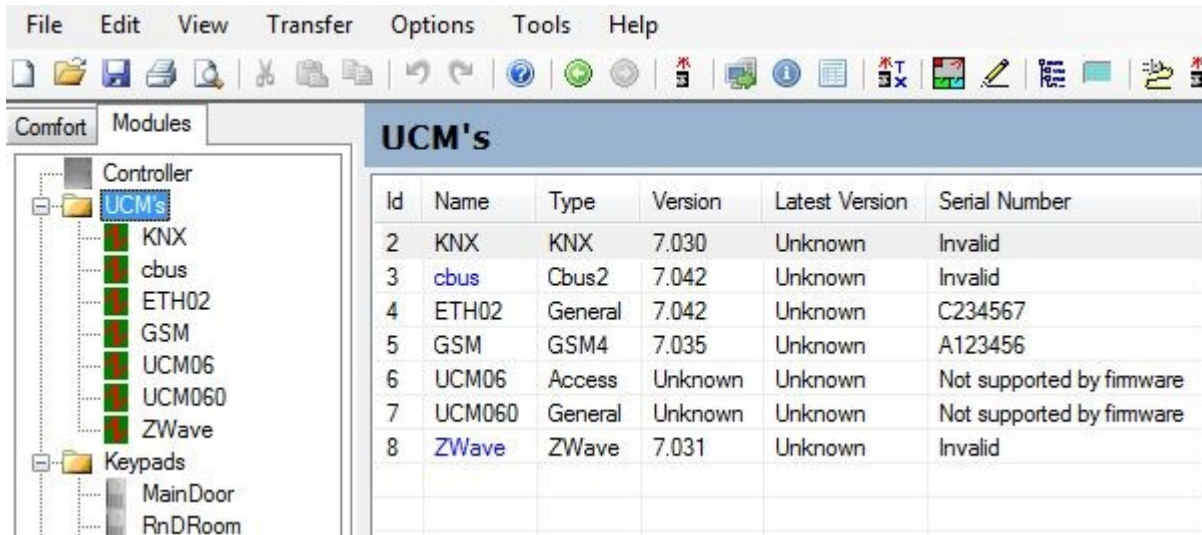
This will upgrade the UCM/Cbus1 firmware to the latest version (Cbus 7.045 or later), which is required before upgrading to UCM/CBUS2. If the firmware upgrade fails or is interrupted for any reason, repeat the firmware upgrade immediately. DO NOT reset or power off the Comfort system, otherwise it may corrupt the firmware.

If the firmware is already up to date, then the system will not upgrade the UCM/CBUS1.

A second firmware upgrade to UCM/CBUS2 is then needed. Download the firmware file from http://www.cytech.biz/ucmcbus2_firmware.html Unzip the file to a .cbf file. It should be Cbus2v7_045.cbf (or later version). Save the file on a local folder.

Right click on the UCM/CBUS as shown above, but this time, select “Upgrade Firmware from Local File” and browse to the folder containing the downloaded cbf file. The firmware will be upgraded to UCM/CBUS2.

You should see the UCM/Cbus2 firmware 7.xxx as shown



The screenshot shows a software interface with a menu bar (File, Edit, View, Transfer, Options, Tools, Help) and a toolbar. On the left, a tree view under 'Modules' shows a 'Controller' folder containing 'UCM's', 'KNX', 'cbus', 'ETH02', 'GSM', 'UCM06', 'UCM060', and 'ZWave'. Below this is a 'Keypads' folder with 'MainDoor' and 'RnDRoom'. The main area displays a table titled 'UCM's' with the following data:

Id	Name	Type	Version	Latest Version	Serial Number
2	KNX	KNX	7.030	Unknown	Invalid
3	cbus	Cbus2	7.042	Unknown	Invalid
4	ETH02	General	7.042	Unknown	C234567
5	GSM	GSM4	7.035	Unknown	A123456
6	UCM06	Access	Unknown	Unknown	Not supported by firmware
7	UCM060	General	Unknown	Unknown	Not supported by firmware
8	ZWave	ZWave	7.031	Unknown	Invalid

Note that UCM/CBUS2 can also be "downgraded" to UCM/CBUS1 if required

TECHNICAL DETAILS

Response Wizard Action 197 for CBUS2

These are technical details which are not necessary to know for configuration of UCM/CBUS2.
Note that the Response Wizard for UCM/CBUS2 differs from that of UCM/CBUS1

Changes from old format

Application byte is always needed even for lighting

An extra byte 00 is appended after application for local network to cater for future enhancements

The position of the group address and application bytes are changed in the SAL data

The new format for CBUS2 shall be as follows for No of bridges = 0

197, <ID>, <Header=\$05>, <Application>, <00> <SAL DATA> [<SAL DATA>],... 255

The parameters within the square brackets [] are optional concatenated commands.

The UCM Type designation of the UCM/CBUS2 shall be “CBUS2” to differentiate from the old “CBUS” when adding a UCM in Modules Tab.

<ID>

ID is the address of the UCM/CBUS on the Comfort RS485 bus, i.e.. 17 = ucm 1, 18 = ucm 2..., 24 = ucm 8.

<UCMID>

ID of the originating UCM

<Header>

Header determines what sort of message is to be sent to CBUS

\$05 SAL Message

\$03 SAL Message with Remote Bridges

\$06 CAL message (normally not used)

<Application>

The Application ID is selected from Lighting, Trigger, Enable, Custom (see Applications Table above). Note that more Application Ids are supported for sending commands to Cbus compared to the Cbus application Tabs.

<SAL Data>

The following applications are supported in Response Wizard

Lighting
Trigger
Enable
Custom

<SAL Data> - Lighting Application

SAL Data is Command, Group address, and level if any

Command	Argument	Function
\$01	Group	Switch Off
\$79	Group	Switch On
\$02	Group , Level	Instantaneous Ramp to <ramplevel>
\$09	Group	STOP Ramp
\$0A	Group, Level	Ramp over 4 seconds to <ramplevel>
\$12	Group, Level	Ramp over 8 seconds to <ramplevel>
\$1A	Group, Level	Ramp over 12 seconds to <ramplevel>
\$22	Group, Level	Ramp over 20 seconds to <ramplevel>
\$2A	Group, Level	Ramp over 30 seconds to <ramplevel>
\$32	Group, Level	Ramp over 40 seconds to <ramplevel>
\$4A	Group, Level	Ramp over 60 seconds to <ramplevel>
\$A0 + Length	Group, Options, Lang, Text (16 max)	See Label commands

<Group>

Valid Group address values range from 00 to \$FE.

<level>

is the ramp level for a SAL ramp Command. This ranges from 0 for Off, 255 for On, and any value in-between for intermediate dim levels. If the SAL command is ON or OFF, this parameter can be left out. It will be ignored if included. <ramplevel> can be left out if <SAL Command> is \$01 or

eg

197, 18, 05, 56, 0, 121, 01, 255 sets Group address 1 ON for UCM ID=2

197, 19, 05, 56, 0, 1, 16, 255 sets Group address 16 OFF for UCM ID=3

<SAL Data> - Trigger Application

Application ID \$CA (202)

Command	Argument	Function
\$02	Trigger Group (0 to 254), Action Selector (0 to \$255)	Trigger Event
\$09	Group 0 to 254	Indicator Kill
\$A0 + Length	Group, Options, Lang, Text (16 max)	See Label commands

For the Trigger Event, select Trigger Group 0 to 255, and Action selector 0 to 254

Eg 197, 18, 05, 202, 0, 02, 11, 05 means send UCM 2 Trigger Application, TriggerEvent , Trigger Group 11, Action Selector 5

The label commands are applicable for this application

<SAL Data> - Enable Application

Application ID \$CB (203)

Command	Argument	Function
\$02	Enable Network Variable 0 - 255 , Value (0 to 255)	

Select Group Address (Network Variable) 0 to 255, and Value 0 to 255

Eg

197, 18, 05, 203, 0, 2, 5, 16 means send to UCM2, Enable application, network variable 5, value 16

<SAL Data> - Custom Application

Application ID: all applications not covered above

Command	Argument	Function
\$01	Group	Switch Off
\$79	Group	Switch On
\$02	Group , Level	Set level to <level>
\$09	Group	STOP

Select Application by Number

Select Group 0 to 254

Select Command Switch Off, Switch On, Set Level, Stop (LABEL is not selected)

The format is similar to lighting application

Eg

197, 18, 5 20, 0, 02, 1, 80 means application 20, set level to 128

Command Format for Remote Network:

197, <ID>, <\$03>, <No of Bridges> <bridge1>, <bridge2>, ..., <bridgeN>, <Application>, <SAL Data> [<SAL Data>]...., <255>

Network routing for transmitted commands to C-Bus is supported.

The number of bridges is up to a maximum of 6 is followed by the unit addresses of the bridges.

Example:

197,18, 03, 04, 25,31, 62, 67, 56,121,1 255

The above line sends a command through 4 bridges via addresses 25, 31, 62, 67. The command turns on group address 1 on the remote network through 4 bridges

It is also possible to send concatenated commands can also be sent to a remote network using the format specified above

Label Command

The Label command uses the same format as what was described for Local and Remote Bridges
The SAL data will be described here.

Applications applicable

\$38 - Lighting

\$CA - Trigger

SAL Data

<Command> <Group> <Options> <Language> <Bytes.....>

Labelling commands cannot be concatenated although a labelling command can be the last command in a concatenated message

Command

This is in the format %101LLLLL (Binary) where LLLL is the number of bytes including Options, language and Bytes and Group Address. The shortest possible message has 3 bytes with Group address, Options and Language with no other bytes.

Group

Group address 0 to 255

Options Byte

Bit 0	Fixed at 0
Bit 2,1	00 = Text Label
	01 = Predefined Icon
	10 = Load Dynamic Icon
	11 = Set Preferred Language
Bit 3	Fixed at 0. 1 if loading dynamic icons
Bit 4	Fixed at 0
Bit 6,5	00 = Flavour 0
	01 = Flavour 1
	10 = Flavour 2
	11 = Flavour 3

(For a label to be displayed the Flavour must match that stored in units that receive label commands)

Bit 7 0

Language (in Language Byte)

The following table is a limited subset of the languages available which are to be implemented in

Comfigurator

Language	Code
English	0x01
English Aust	0x02
English UK	0x0c
English USA	0x0D
Catalan	0x42
Danish	0x43
Dutch (netherlands)	0x45
French	0x4A
German	0x50
Indonesian	0x55
Italian	0x56
Malay	0x59
Norwegian	0x5a
Portuguese (Brazil)	0x5b
Portuguese	0x5c
Spanish (argentina)	0x5e
Spanish	0x68
Spanish (Mexico)	0x69
Swahili	0x72
Swedish	0x73
Chinese cp936	0xca

Bytes

<Bytes> is either a variable number of label text, an index to a predefined icon

For text, this is up to 16 ASCII characters

For predefined Icons, these bytes must be 0x01, Icon_H, Icon_L where Icon_H and Icon_L are high and low order bytes of the predefined icon number to display

The Response wizard shall handle Text Label and set Preferred Language commands, and will not handle Load Dynamic Icon and Predefined Icon commands.

Examples

For Predefined language command

Select Flavour 0 to 3 from dropdown list

Select Predefined Language according to the language table

<197>, <ID>, <05>, <Application>, <163 (0xA3)>, <group> <options> <language>, 255

For Text Label command

Select Flavour 0 to 3 from dropdown list

Select Predefined Language according to the language table

<197>, <ID>, <Application>, <0A0H + no of text chars +3>, <group> <options>, <language>, text1, text2,... [text16]

Max of 16 text characters

Concatenation of messages

Concatenation is the default behaviour in UCM/CBUS2.

A concatenated command consists of 2 or more commands in the changed format

197, <ID>, <\$05>, <Application>, <00> <SAL command> [<SAL Data>],... 255

197, <ID>, <\$03>, <No of Bridges> <bridge1>, <bridge2>, ..., <bridgeN>, <Application>, <SAL Data> [<SAL Data>]...., <255>

Limitation of message length to Cbus

The CBUS SIM command length is limited to 21 bytes between \ and CR

For Action 197 concatenated messages, the length of message transmitted to Cbus should be limited, according to the formula,

$(\text{No of Bridges}) + (2 * \text{No of On/Off commands}) + (3 * \text{no of Ramp commands}) \leq 18$ (as there are 3 overhead bytes in the message)

If the number of concatenated commands in a Response exceeds this number and the concatenated option is enabled then the command should be broken up into 2 or more messages so that the limit applies

Eg consider the response

Cbus Off 2 0

Cbus On 2 1

Cbus On 2 2

Cbus RampInst 2 3 0

Cbus RampInst 2 4 0

Cbus RampInst 2 5 0

Cbus RampInst 2 6 0

Cbus RampInst 2 7 0

Cbus RampInst 2 8 0

Cbus RampInst 2 9 0

Cbus RampInst 2 10 0

Cbus RampInst 2 11 0

Cbus RampInst 2 12 0

Cbus RampInst 2 13 0

There are 3 on/off command and 11 ramp commands and no bridges hence total of $6+33 = 39$ bytes which exceeds the limit of 18 bytes

This should be broken up into 3 groups which should be separated by a dummy action eg Get Flag 1

Cbus Off 2 0

Cbus On 2 1

Cbus On 2 2

Cbus RampInst 2 3 0

Cbus RampInst 2 4 0

Cbus RampInst 2 5 0

Cbus RampInst 2 6 0

(2 * 3 + 3 * 4 = 18 bytes)

Get Flag Flag001

Cbus RampInst 2 7 0

Cbus RampInst 2 8 0

Cbus RampInst 2 9 0

Cbus RampInst 2 10 0

Cbus RampInst 2 11 0

Cbus RampInst 2 12 0

(3 * 6 = 8 bytes)

Get Flag Flag001

Cbus RampInst 2 13 0

(3 bytes)

This prevents the message from being corrupted in the Cbus SIM Module

Document History

16 April 2014 – Initial Draft

31 July 2014 – amended

15 August 2015 – added dummy action in Limitation of commands to cbus

30/10/23 Learn Mode text removed