

MinderPro to C-Bus Interface

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MinderPro to C-Bus Interface

Introduction to the C-Bus Interface - 5350CB

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

- telecontrol through any telephone inside or outside the premises to control and monitor the status of devices on the C-Bus
- Able to send any C-Bus command, activated by MinderPro's keypads, Time Programs, iPhone app, telephone or any MinderPro event
- allows alarm inputs and alarm conditions to be linked to C-Bus for true integration of alarm and lighting.
- allows C-Bus switches to trigger MinderPro Responses, allowing control of non C-Bus appliances like air-conditioners, home entertainment systems, and linking to all of MinderPro's security and control functions.
- allows C-Bus switches and inputs (e.g. temperature, light sensors) to trigger alarms to dial-out to programmed telephones when preset levels are exceeded.
- The C-Touch Mk2 touchscreen can be used as a keypad for MinderPro, and can display zone and alarm status.
- Acts as a gateway to other systems like KNX
- 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. MinderPro 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.
- 5350CB 5.216 and above is able to send Label commands to DLT (Dynamic Labelling Technology) switches to dynamically change the text on **the LCD**

Specifications

- Size 108 x 88 mm UCM baseboard with C-BUS SIM (Serial Interface Module) daughterboard.
- Power Supply: 12V 30 mA (supplied from MinderPro)
- Connected to C-BUS via bus cable (2 wires). MinderPro is electrically isolated from C-Bus.
- Sends messages to 256 Group addresses for Lighting Application or other applications though local or remote network C-Bus Networks.
- Monitors Lighting Application Group Addresses for 256 Group addresses 0 to 255.
- Synchronises the date and time between MinderPro and C-BUS via the Time/Date Application.
- MinderPro implements the C-Bus Security application. MinderPro 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.
- C-Touch can simulate a keypad allowing entry of user code and arming/disarming of

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MinderPro.

- MinderPro automatically sends zone information to C-Bus using a user-defined application 01, allowing display of zones in real time on C-Touch.

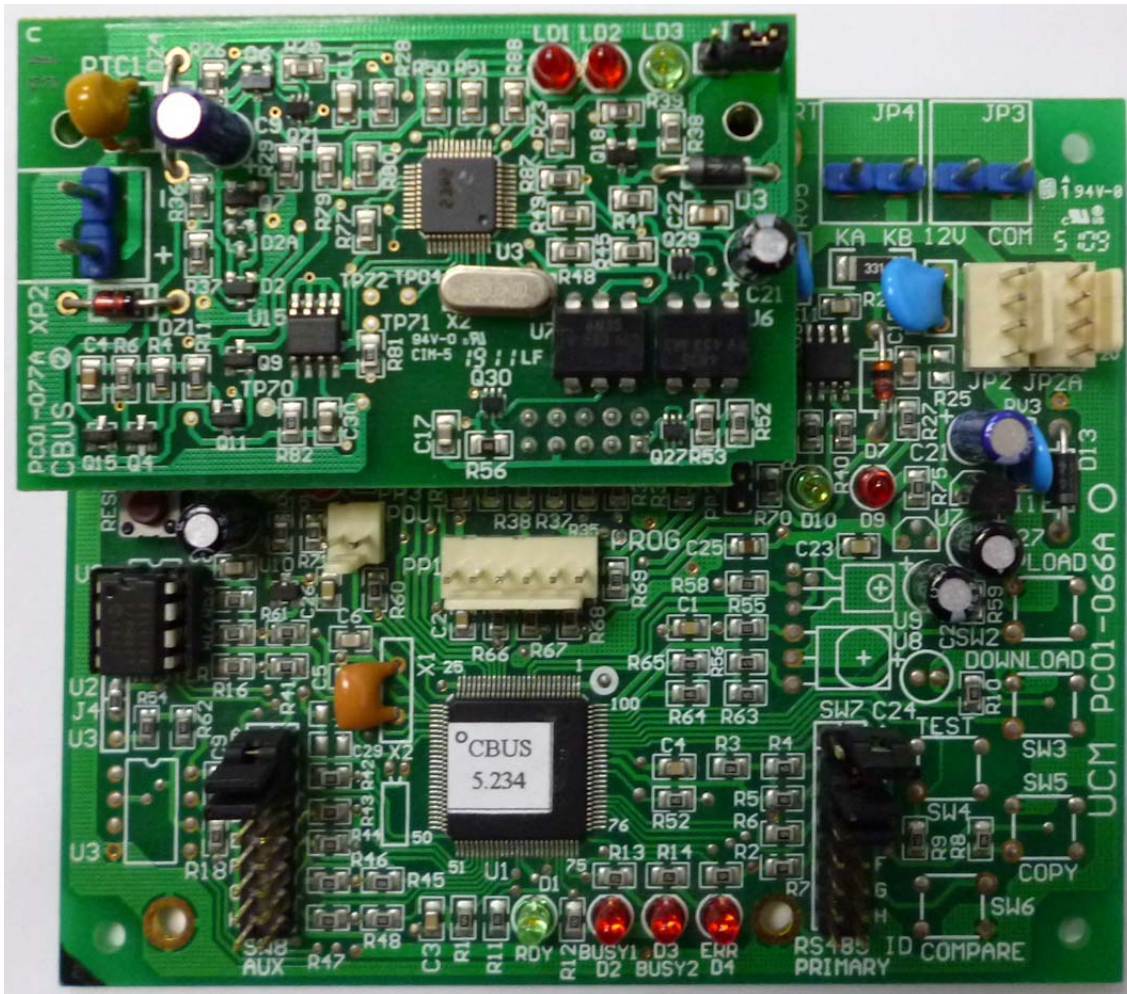
Equipment

The package includes

- UCM /CBus with plug-in C-BUS SIM module with firmware version 5350CB 5.154 or above. This UCM type cannot be used to upload/download using MindIT/MindIT/Comfigurator. The function of this UCM is only to communicate with the C-Bus. The C-BUS SIM Module provides an interface between the UCM and the C-BUS network.

MinderPro Requirements

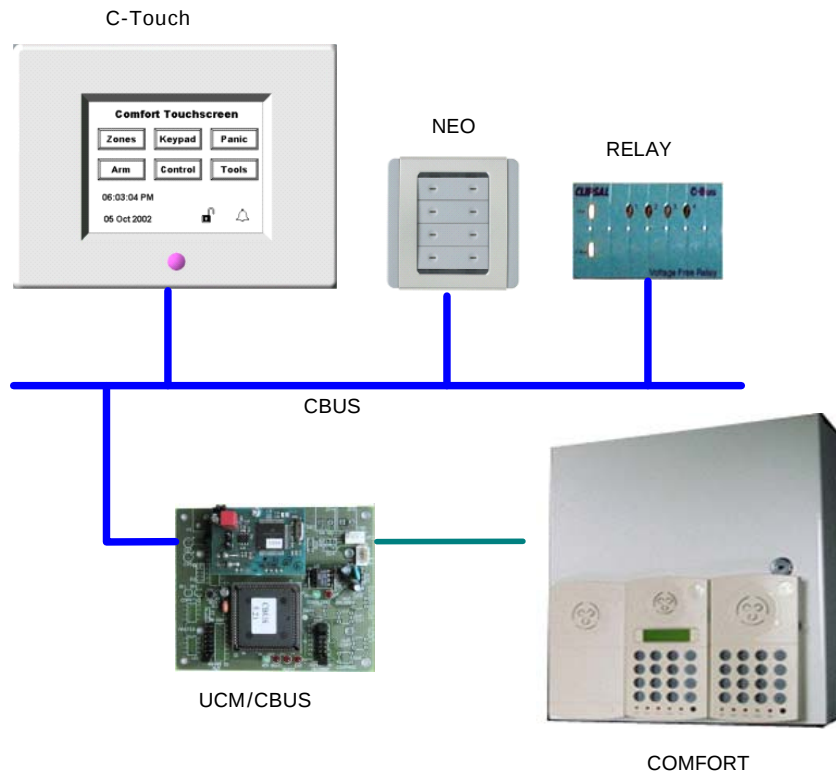
- Applicable to MinderPro II, for all firmware versions. For MinderPro I, firmware 4.204 and above only is compatible with the C-Bus Date/Time and Security Application, which are used for operation with the Clipsal C-Touch touchscreen.



5350CB with CBUS processor

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UCM Settings



MinderPro in a C-Bus Network

Connections

- JP2 -and JP2A 4-way headers (12V/COM/KA/KB). Either connector can be connected to MinderPro RS485 connector via the supplied cable when JP3 and JP4 are not used. This plug-in cable connection is used when the distance between MinderPro and UCM is less than 1 meter. For longer distances, use the JP3 and JP4 terminal blocks.
- JP3 - 12V/COM terminal block. Connect to 12V/COM on MinderPro.
- JP4 - KA/KB terminal block. Connect to KA/KB on MinderPro.
- XP03 on SIM - 2 position terminal block for C-Bus cable. Polarity + and - is marked

Jumper Settings

- SW7 (RS485 ID Primary) - set according to ID of the UCM (see “UCM ID Switch” settings below) MinderPro 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

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

- The Number of UCMs in MindIT/Comfigurator Modules and Settings should be programmed according to the number of UCMs connected. Up to 8 UCMs can be

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connected to the MinderPro network.

- SW8 -G: set Shunt G On for scaling of Level announcement to range 0 -100. (Refer below to the “Scaling” within section “Monitoring the C-Bus”).
- SW8-H: shunt H must NOT be inserted.
- JP01 on SIM: This is the C-Bus Network Burden jumper. The burden can be enabled by plugging the shunt on JP01 on the pins marked ON and the centre pin (the markings are on the underside of the SIM). To disable the network burden place the shunt on the OFF position and the centre pin, 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 5350CB. It does not change any parameters in MinderPro or C-Bus.

LED Indicators on UCM

- 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 MinderPro
- D10 (Green) RS485 Receive from MinderPro
- D11 (Green) RS232 Receive Data from C-Bus.
- D12 (Red) RS232 Transmit Data to C-Bus.

LED Indicators on C-BUS SIM

- LED1 - 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.
- LED2 - 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

- 1 Before connecting the UCM to MinderPro, set the ID on SW7 to the ID of the UCM according to the table in the previous section.
- 2 The UCM is connected to MinderPro via the supplied 4 way white cable from 4 pin header JP2 to MinderPro's header J15. This supplies power to the UCM, as well as allowing communications between MinderPro and the UCM. It is not necessary to switch off the power to MinderPro before plugging in this connection.
- 3 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 MinderPro and the UCM. D9 (green) flashing shows that it is receiving communications from MinderPro (poll). D10 (red) comes on when the

MinderPro to C-Bus Interface

UCM responds to a poll from MinderPro.

- 4 The ERROR LED should come on if the C-Bus is not connected. BUSY1 and BUSY2 LEDs should remain off.
- 5 Screw in the C-Bus wires to the XP03 terminal block, taking care to ensure correct polarity. The Positive (+) terminal is further from the red capacitor than the Negative (-) terminal. Plug in the terminal block to XP03 when the termination of the C-Bus is completed.
- 6 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.
- 7 The Green LED D11 flashes when there is data transmitted from the C-Bus, which will happen when there is any C-Bus activity, i.e. when a switch is pressed. The Red D12 LED flashes when there is data from MinderPro to the C-Bus. D11 and D12 monitor raw communications with the C-Bus.
- 8 D2 (BUSY1) LED blinks when there is an incoming message from the C-Bus which corresponds to one of the addressable Group addresses according to the settings in SW8. D3 (BUSY2) LED blinks when a message is sent to the C-Bus.

C-Bus Configuration

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

The 5350CB 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 a PCI has the same unit address as a 5350CB, 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 5350CB, 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

Programming MinderPro to send C-Bus commands

For an understanding of the C-Bus concepts, please refer to the appropriate C-Bus documentation. It is beyond the scope of this manual to provide details of C-Bus messages, operation and programming.

MinderPro can be programmed to communicate with C-Bus via action codes using the keypad or through Comfigurator software programming tool.

Using MindIT/Comfigurator

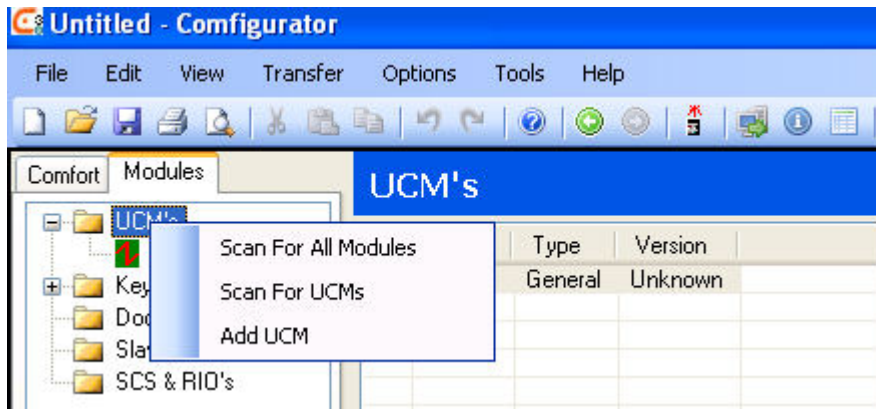
Use the MindIT/Comfigurator software to program MinderPro to communicate with C-Bus. The software can be downloaded from <http://www.cytech.biz/comfigurator.html>

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

MinderPro to C-Bus Interface

Configurator.

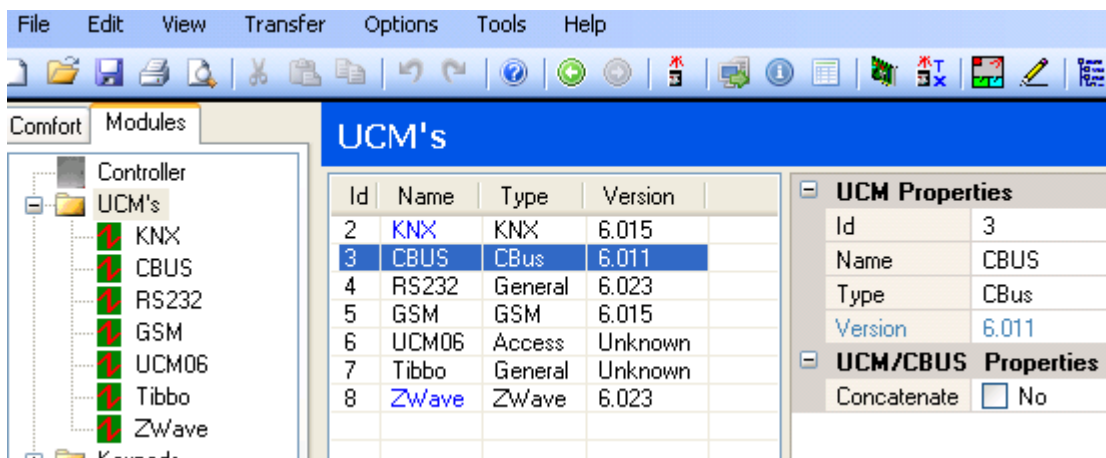
Run Configurator, go to the Modules Tab and right-click on UCMs folder symbol as shown below.



“Scan for All Modules” will automatically detect all UCMs including the 5350CB if the ID is set correctly without any conflict with other UCMs.

“Add UCM” allows you to manually add a 5350CB if not currently connected to MinderPro, i.e. when doing programming off-line.

The result of scanning or adding a 5350CB is shown below for UCM ID 3;



When the cursor is placed on the “CBUS” type UCM in the middle pane above, the UCM Properties are visible on the right pane.

“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 CBUS

“Version” is the 5350CB firmware version which in this example shows 6.011. If the 5350CB was manually added instead of being scanned, the firmware information will not appear.

The “Concatenate” checkbox in 5350CB properties when checked will cause several messages to the same application to be combined in a single message to the bus thus reducing the sending time on the bus.

Concatenated commands reduces traffic on C-Bus and is recommended. Do not send more than 14 CBUS On/Off commands or 10 Ramping i.e. dimming commands. If more C-Bus commands are required, use a Timer to set 1 to 2 seconds delay before the next concatenated command. This applies to

MinderPro to C-Bus Interface

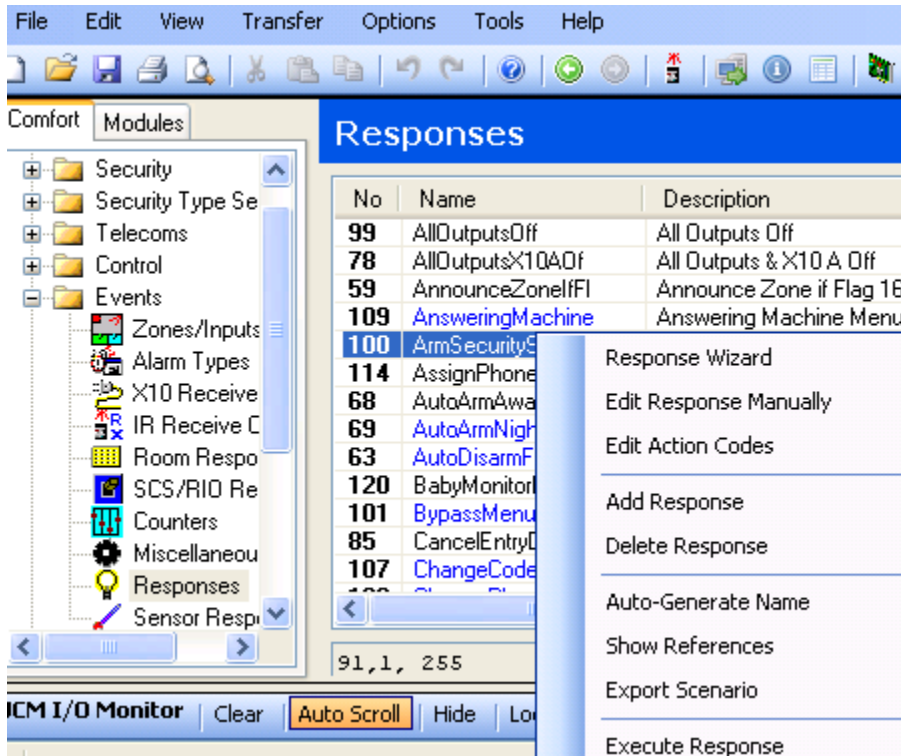
concatenated and non-concatenated commands.

Sending Commands to C-Bus: The Response Wizard

MinderPro Responses are programs that can be triggered by any Event in MinderPro, e.g. Zones, Alarms, Time Programs, as well as combinations of events using logic e.g. If Time is 11 PM to 6 AM then turn on Lights 1 and 2 for 3 minutes when Motion is detected AND Security system is armed. This is a very important tool to configure a customised behaviour according to a customer's needs.

The Response Wizard will allow valid commands to be sent to 5350CB

Go to Events > Responses, right click in the Responses Window



Select "Add Response" to create a new Response, or "Response Wizard" to edit the selected Response.

To Add a new Response, enter the Response Description in the pop-up window and press ENTER. The Name will be automatically generated as shown;

MinderPro to C-Bus Interface

Add New Response

Response Properties	
Number	27
Description	Cbus GroupAddress 1 On
Name	CbusGroupAddress

Name

This is a name which may be assigned to the Response to provide a meaningful description. You can see where a Responder is referenced by right-clicking on the Name and selecting Show References. This will display a list of references identified by type and name.

OK Cancel

Press OK. A new window will Open to append new action. Select UCM and CBUS as shown below. Note that this is visible only if the 5350CB has been added to the list of UCMs by scanning or manual addition.

CbusGroupAddress: Cbus GroupAddress 1 On

+ Append new action → Insert new action - Delete action

Action S

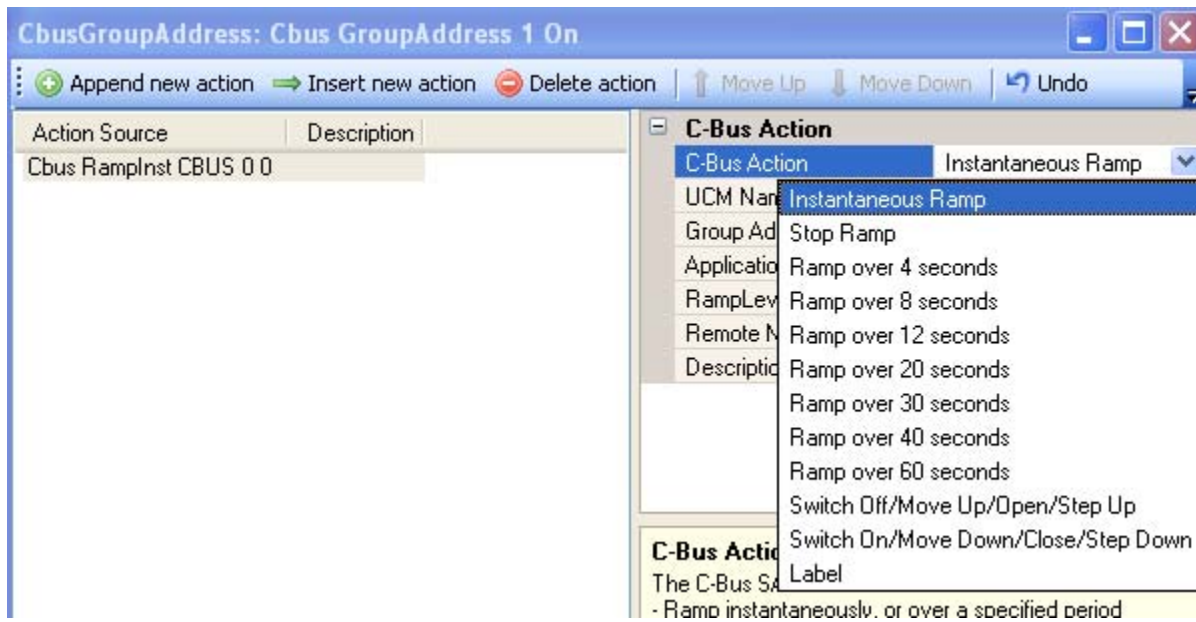
- Security ▶
- Keypad ▶
- DoorStation ▶
- Input ▶
- Output ▶
- Counter ▶
- Sensor ▶
- Flag ▶
- Do ▶
- X10 ▶
- Schedule ▶
- Test ▶
- Miscellaneous ▶
- UCM ▶**
- If ▶

OK

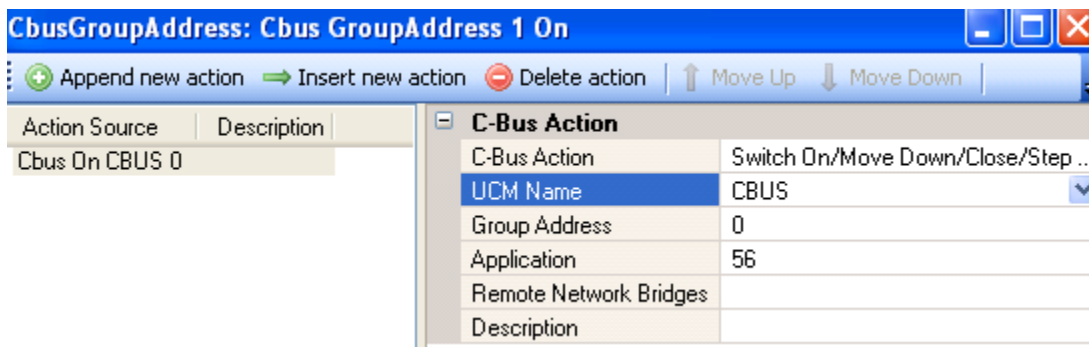
C-Bus
KNX
Entrv

The list of valid C-Bus commands will appear as shown below

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Select one of the commands. The parameters for the command can then be selected.



C-Bus Action

This includes Instantaneous Ramp, Stop Ramp, Ramp over 4 seconds, Ramp over 8 seconds, Ramp over 12 seconds, Ramp over 20 seconds, Ramp over 40 seconds, Ramp over 60 seconds, Switch Off/Up, Switch On/Down

UCM Name

This is the name given to the UCM as an identification

Group Address

A Lighting Group address 0 to 255 is entered

Application

Enter a CBUS Application ID Application 56 (Lighting) is the default value. MinderPro can send messages to any Application ID, but can only receive messages from the Lighting, Time/Date and Security Application.

Remote Network Bridges

Enter the list of Remote Network Bridges if any

Description

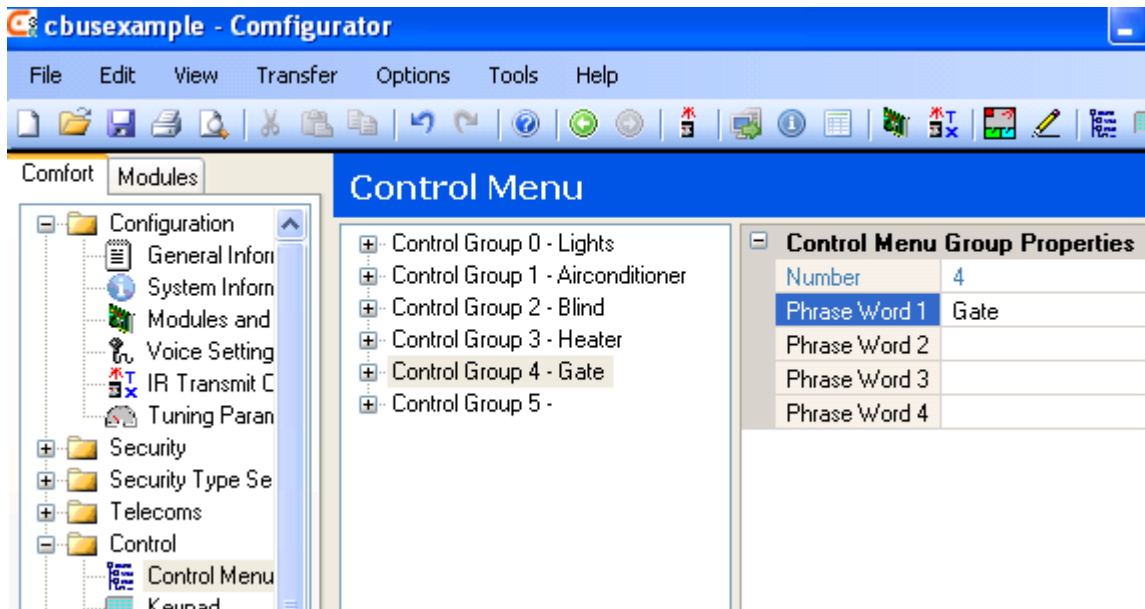
This is a text description to identify the command, used as documentation.

Control Menu for CBUS

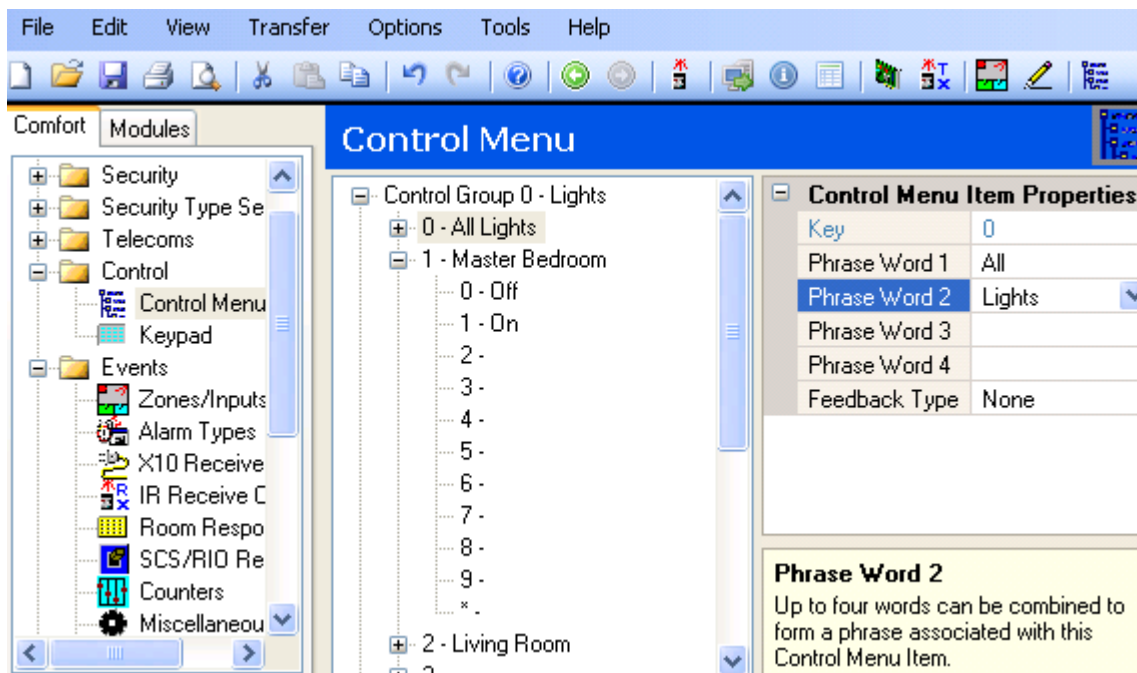
The Home Control Menu can be programmed to control Dupline addresses. The

MinderPro to C-Bus Interface

screenshot below shows an example of a Home Control Menu. MinderPro Ultra has 6 Control Groups, which may be programmed as Lights, Aircons, 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.



The screenshot below shows the programming of the Control Group 0 "Lights" when expanded.

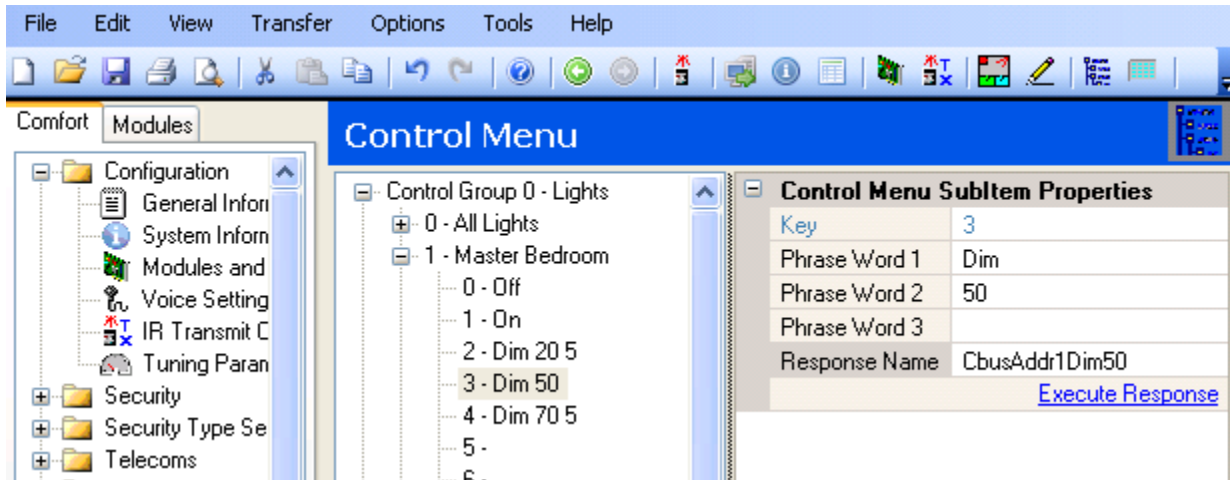


In the above screenshot, Control Group 0 "Lights", Control Key 1 is Master Bedroom and action keys are 0 for Off and 1 for On.

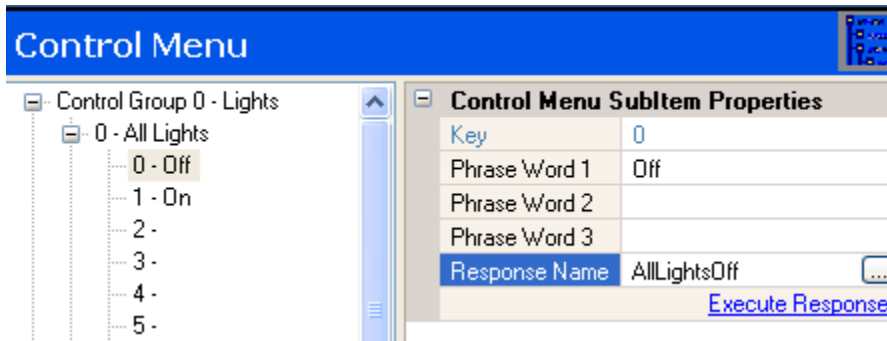
The Off key and On key activates Responses to control the CBUS Group Addresses

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

MinderPro to C-Bus Interface



All Lights On and Off can be programmed to switch on and off all Dupline 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;

Select a Response		
No	Name	Description
25	AllLightsOff	All Lights Off
16	AnsweringMachine	Answering Machine Menu
5	AutoArmNightFrom	Auto Arm Night from Security Off only
3	AutoDisarmFromNi	Auto Disarm from Night Mode only and not in Alarm
9	BypassMenu	Bypass Menu
21	CbusAdd1Dim25	CbusAdd1 Dim 25%
22	CbusAddr1Dim50	CbusAddr1Dim50%
23	CbusAddr2Off	CbusAddr2Off
24	CbusAddr2On	CbusAddr2On
2	CbusGroupAddr1Of	Cbus Group Addr 1 Off
1	CbusGroupAddress	Cbus GroupAddress 1 On
15	ChangeCodeMenu	Change Code Menu
14	ChangePhoneMenu	Change Phone Menu
19	ChangeTimeProgr0	Change Time Program
17	EngineerCodeEnab	Engineer Code Enable. Activate Alarm 30
13	EventLog	Event Log
Do CbusGroupAddr1Of		
Do CbusAddr2Off		

The MinderPro iPhone App can also work on the programmed Home Control Menu to control and monitor the status of the programmed devices.

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Time Programs

MinderPro Time Programs can be scheduled to send commands to CBUS

In MindIT/Comfigurator, go to Schedule > Time programs.

The screenshot shows the MindIT/Comfigurator software interface. The 'Modules' tab is selected in the top bar. The left sidebar shows a tree view of system components, with 'Events' expanded. The central pane displays the 'Time Programs' table, which lists 15 programs. The right pane shows the 'Time Program Properties' for the selected 'TimeProgram05'.

Name	Response	Time	Days
TimeProgram01	AutoArmNightFrom	23:00	Mon,Tue,We
TimeProgram02	AutoArmNightFrom	00:00	Mon,Tue,We
TimeProgram03	AutoDisarmFromNi	08:00	
TimeProgram04	AutoDisarmFromNi	00:00	
TimeProgram05	AllLightsOff	23:00	Mon,Tue,We
TimeProgram06	NullResponse	00:00	
TimeProgram07	NullResponse	00:00	
TimeProgram08	NullResponse	00:00	
TimeProgram09	NullResponse	00:00	
TimeProgram10	NullResponse	00:00	
TimeProgram11	NullResponse	00:00	
TimeProgram12	NullResponse	00:00	
TimeProgram13	NullResponse	00:00	
TimeProgram14	NullResponse	00:00	
TimeProgram15	NullResponse	00:00	

Time Program Properties

Name	TimeProgram05
Response Name	AllLightsOff
Time	23:00
Days	☒ Mon ☒ Tue ☒ Wed ☒ Thu ☒ Fri ☒ Sat ☒ Sun ☒ Hol
Enabled	☒ Yes

In the above example, Time Program 5 is programmed at 11 PM Monday to Sunday and Holidays to send All Lights Off command.

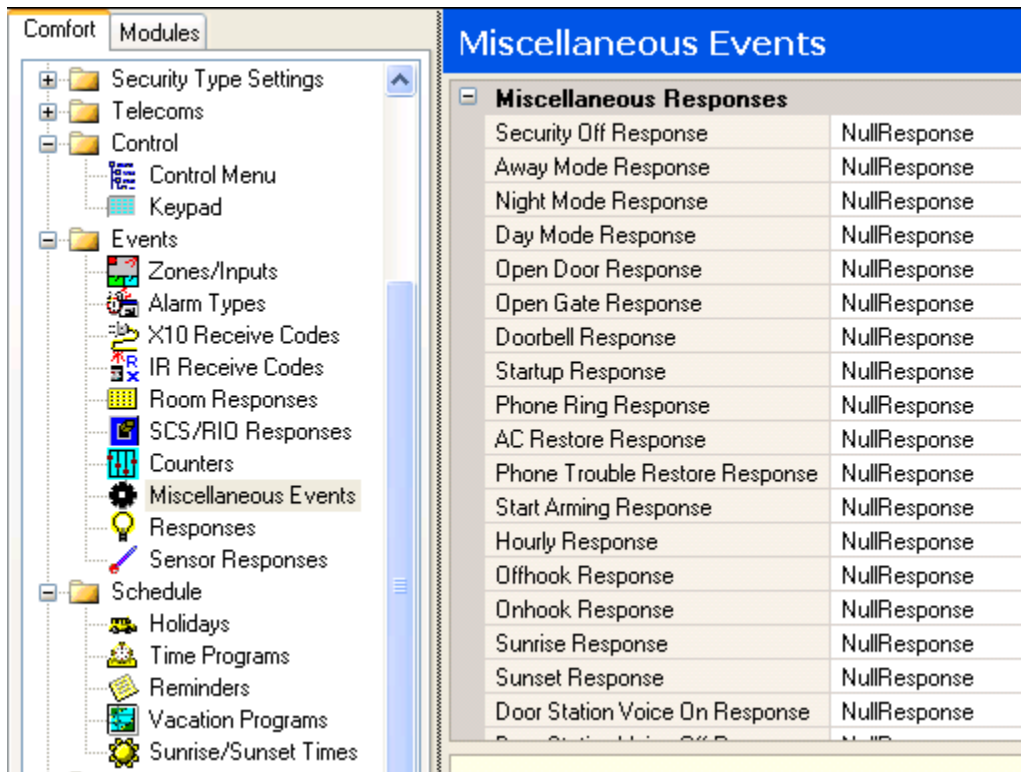
These are simple examples of how MinderPro Responses can be triggered by Events to send commands to CBUS

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

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Monitoring C-Bus Status

5350CB and above will monitor the C-Bus for Date and Timekeeping Application (DF) and Security Application (D0) as well as the Lighting Application (38). Date/Time and Security Applications require no programming as the behaviour is fixed based on the C-Bus communication protocol. Monitoring of the Lighting application is described here. At reset the UCM/C-Bus issues a Status request command to the C-Bus and receives the Status Reply, which reports the state of all Lighting Application Group addresses, which Group Addresses are unused, off, or their level if they are used. Then it sets Smart Mode on the PC Interface which causes it to report changes of group address levels. Subsequently, when the Group addresses are changed (for example by a key press), the UCM will receive the report from the C-Bus. These changes can be used to activate MinderPro Responses, see "Activating Responses" below.

UCM/C-Bus is able to monitor commands from remote networks.

MinderPro Counters

The Group addresses are monitored using MinderPro Counters. MinderPro 2 Ultra has 256 Counters (0 to 255) which are mapped directly to the corresponding Lighting Group Address (0 to 255). When a Group address on C-Bus changes its level due to a switch being pressed, the corresponding MinderPro Counter is set to the same value. The level for any Group Address may be set to any value between 0 and 255. Switching On the light corresponds to a level of 255 and switching Off to a level of 0.

The status of the Light level can be heard on the Home Control menu by selecting Feedback Type = Counter and entering the appropriate Counter number for each Control Key. Each Control Key is associated with a Feedback Type and Feedback Value. These Feedback Locations can be used to announce the state of an Input, Output, or the value of an Analogue Input or Counter. When the feedback type is Counter and the Counter number is specified in the feedback location of a control key, the value of the counter will be announced when the key is selected. For example pressing "3 for

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Bedroom Lights” on the control menu gives the announcement “Bedroom Lights, 50” if the Group address has a value of 50. If the counter specified in the feedback location is 0 or 255, then instead of the numeric value, the words programmed for Action Key 0 (e.g.. “Off”) or Action key 1 (e.g.. “On”) will be announced. The control key will say (e.g..)

“Light is ON (or OFF),

Press 0 for Off, 1 for On”

If the light is dimmed the menu would be

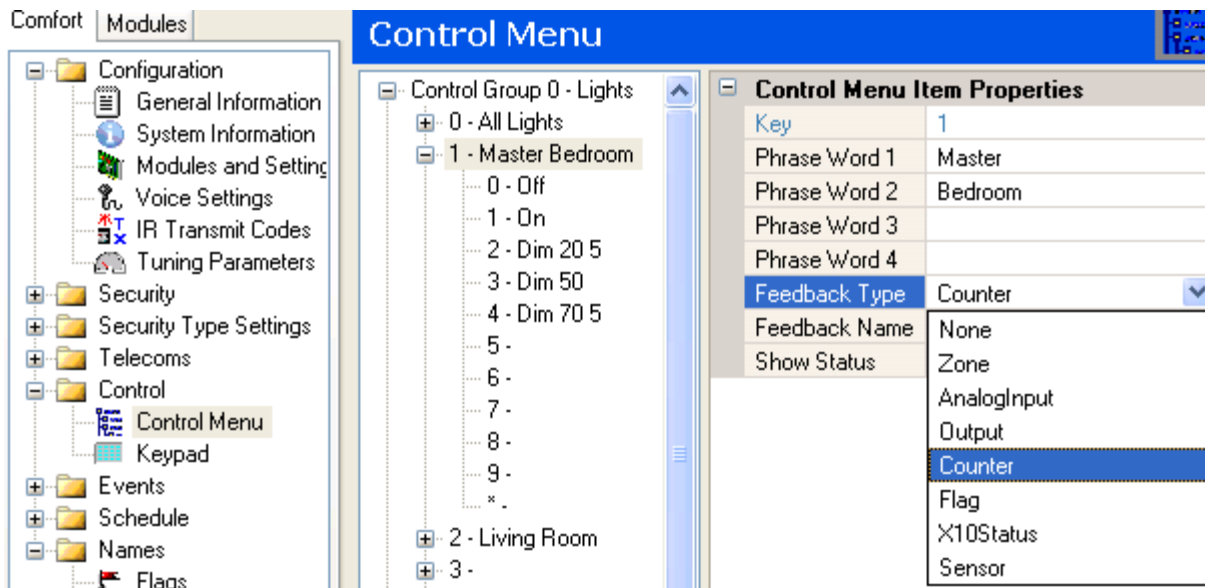
“Light is (number)

Press 0 for Off, 1 for On”

Where the number announced corresponds to the level from 1 to 254 of the Group address.

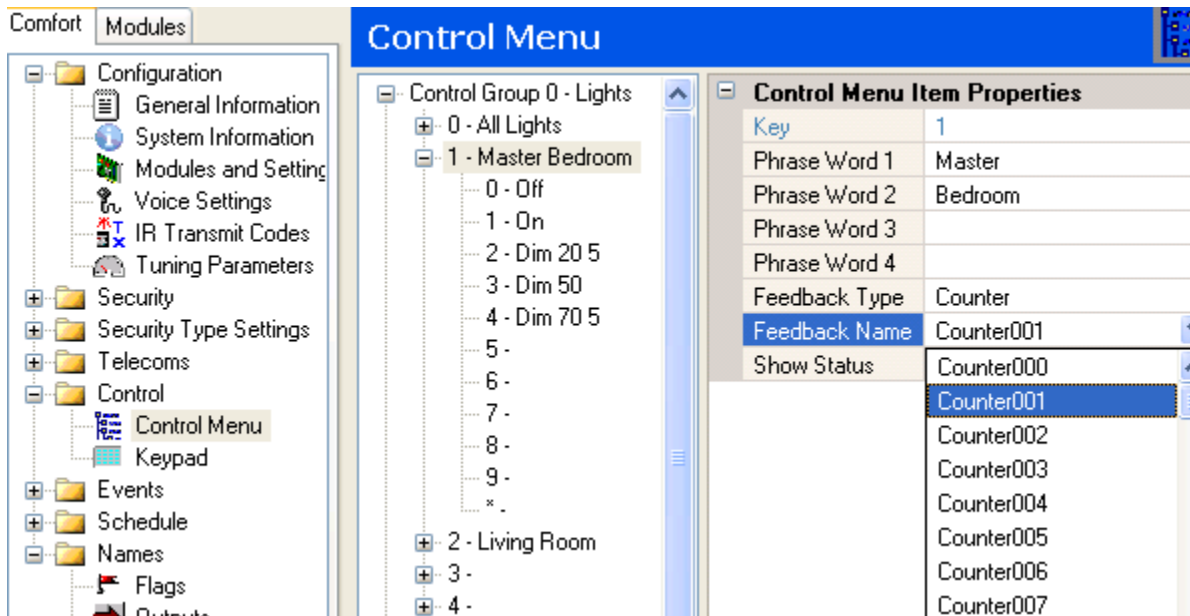
C-Bus Group address 0 corresponds with Counter 0, ..., Group address 63 corresponds to Counter 63 etc.

This can be easily programmed using MindIT/Comfigurator. Select Control -> Control Menu, and select any control key which controls a C-Bus device. The example below shows Control Group 0 - Control Key 1 “Master Bedroom”.



For “Feedback Type”, select “Counter” from the list of possible Feedback Types in the dropdown list above. Next select a Counter from the list Counters in “Feedback Name” in the screenshot below.

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MinderPro monitors C-Bus group addresses, and saves the contents of each Group address in the equivalent Counter corresponding to the group address number.

When MinderPro sends a CBUS command to change the level of a CBUS Lighting group address, the corresponding Counter is also updated. E.g. If MinderPro turns on the CBUS Lighting Group Address 2, then Counter 2 is also changed to 255.

Scaling of Counter values

A Group address which is On has a value of 255, while a Group address which is off has a value of 0. For dimming Group addresses the value can be from 1 to 254.

There is an option to scale the level values (0 to 255) to a range of 0 to 100 corresponding to the percentage brightness which is readily understandable to most people. This is achieved by setting the shunt G in SW8. If the shunt is out, there is no scaling and if the shunt is inserted, scaling will be done. If scaling is selected, a level of 128 will correspond to a counter value of 50.

When MinderPro receives an update of the counter values from the C-Bus Interface, it will broadcast the counter address and the new value to other UCMs so other applications, for example the CWM MinderPro Webserver Module will know what is happening on the C-Bus and display the state of these devices.

Activating MinderPro Responses by C-Bus Group Addresses

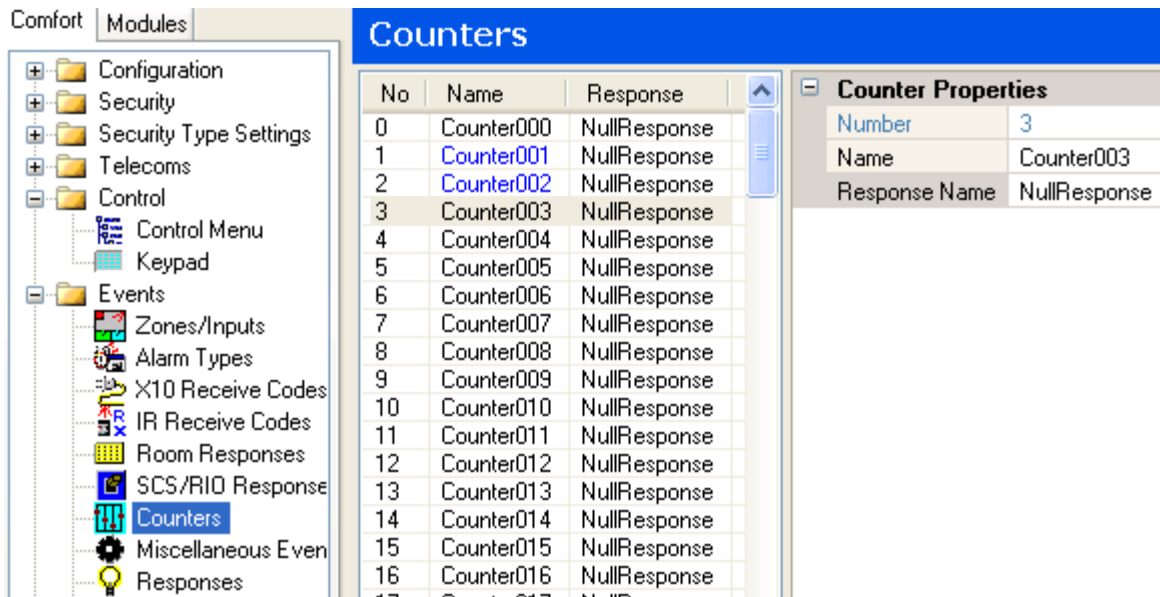
When a Lighting Group Address change is communicated to MinderPro using the counter mechanism, a Counter Response can be activated which can then control other appliances not on the C-Bus, like air-conditioners, gates, home entertainment systems or perform any function which can be programmed in MinderPro.

Each Counter 0 to 255 corresponding to a Group address activates a Response specified in MindIT/Comfigurator > Counters.

The list of 256 Counters, each with a Counter Response appears as shown below. For each counter, you can specify a Response which will be activated when a Group address corresponding to the Counter is received from the C-Bus. For example, when C-Bus Lighting Group address 3 switch to ON is received from C-Bus, Counter 3 is loaded with the value 255. The Counter Response for Counter 3 will be activated. When C-Bus

MinderPro to C-Bus Interface

Lighting Group address 3 OFF is received from C-Bus, Counter 3 is loaded with the value 0. The Counter Response for Counter 3 will be activated.



No	Name	Response
0	Counter000	NullResponse
1	Counter001	NullResponse
2	Counter002	NullResponse
3	Counter003	NullResponse
4	Counter004	NullResponse
5	Counter005	NullResponse
6	Counter006	NullResponse
7	Counter007	NullResponse
8	Counter008	NullResponse
9	Counter009	NullResponse
10	Counter010	NullResponse
11	Counter011	NullResponse
12	Counter012	NullResponse
13	Counter013	NullResponse
14	Counter014	NullResponse
15	Counter015	NullResponse
16	Counter016	NullResponse

Counter Properties	
Number	3
Name	Counter003
Response Name	NullResponse

In the example above, Counter 3 Response Name is “NullResponse” which means there is No Response activated. To change this and create a Response which switches on an Airconditioner by IR when CBUS Lighting Group Address 3 is received from CBUS, click on the Response Name on the Right Pane. A window “Select a Response” pops up as shown below.

Select a Response		
No	Name	Description
0	NullResponse	
1	CbusGroupAddress	Cbus GroupAddress 1 On
2	CbusGroupAddr1Of	Cbus Group Addr 1 Off
3	AutoDisarmFromNi	Auto Disarm from Night Mode only and not in Alarm
5	AutoArmNightFrom	Auto Arm Night from Security Off only
6	KEYARMDayModeFro	KEY ARM Day Mode from Security Off
7	KEYARMAwayFromSe	KEY ARM Away from Security Off
8	KEYARMNightFromS	KEY ARM Night from Security Off or Day Mode
9	BypassMenu	Bypass Menu
10	HomeControlMenu	Home Control Menu
11	TestMenu	Test Menu

New	Edit	OK	Cancel
-----	------	----	--------

Either scroll through the Responses list to select an existing Response, or select the “New” button. This opens a new Window titled “Add New Response”. Enter a Description for the Response and press Enter to auto-generate the Name and press OK

MinderPro to C-Bus Interface

Add New Response

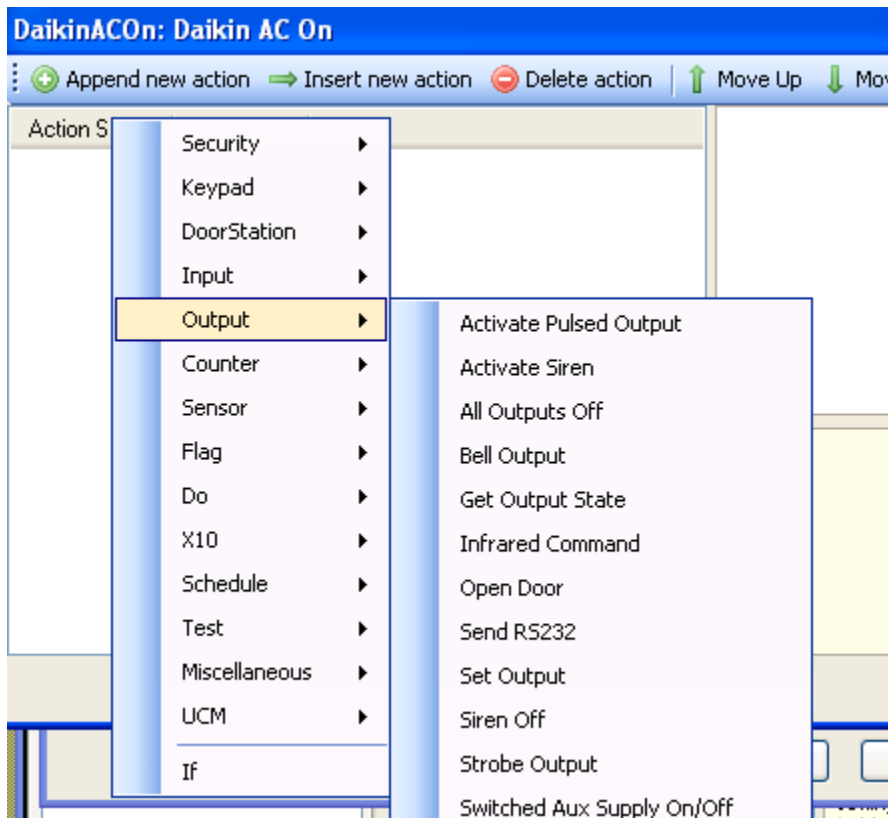
Response Properties	
Number	28
Description	Daikin AC On
Name	DaikinACOn

Name
This is a name which may be assigned to the Response to provide a meaningful description. You can see where a Responder is referenced by right-clicking on the Name and selecting Show References. This will display a list of references identified by type and name.

OK Cancel

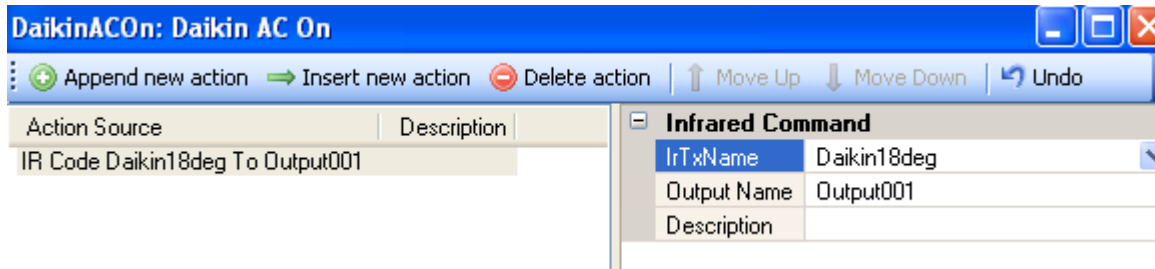
Press Append New Action.

A list of Actions appears as shown below. In this example, to send an IR signal to an Output, select “Output” and “Infrared Command”



The next screen allows you to select the list of IR codes (which are defined in Configuration > IR Transmit Codes). Select the Output Name.

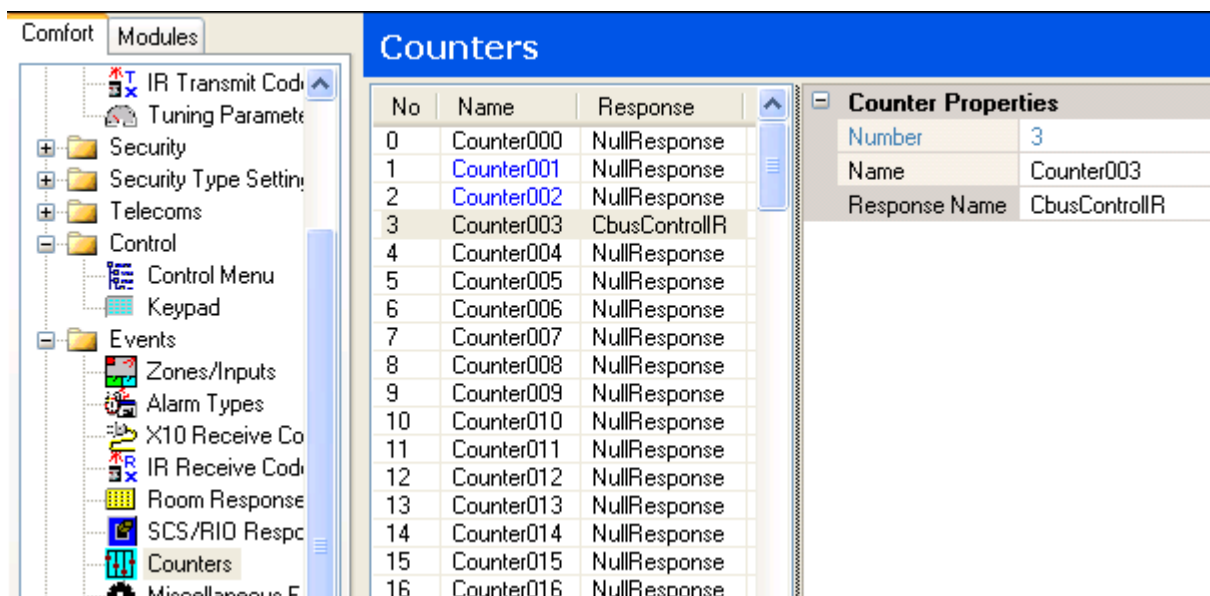
MinderPro to C-Bus Interface



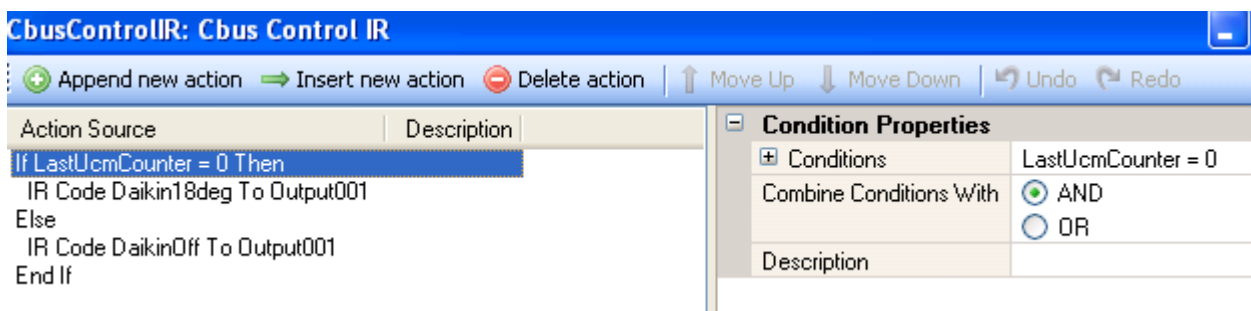
Click OK. This example shows how to create a Response to send an IR signal to any output when a CBUS Lighting Group address is received.

In practice, the system would be programmed to switch on the Aircon when the CBUS button is switched to the ON state and vice versa. This can be done using the conditional logic capability of MinderPro.

See the following example on how this can be done.



In the example above, Counter 3 Response is named "CbusControlIR" with the programming as shown below.



If Last UCM Counter = 0 means if the Value of the Counter that triggered the Response is 0. Hence the above Response will do "IRCodeDaikin18deg to Output001" when the CBUS command is OFF and do "IRCodeDaikinOff to Output001" when the CBUS command to the group address is On.

⚠ Sending CBUS commands to a Lighting Group Address will change the corresponding Counter, but will not activate the Counter Response.

MinderPro to C-Bus Interface

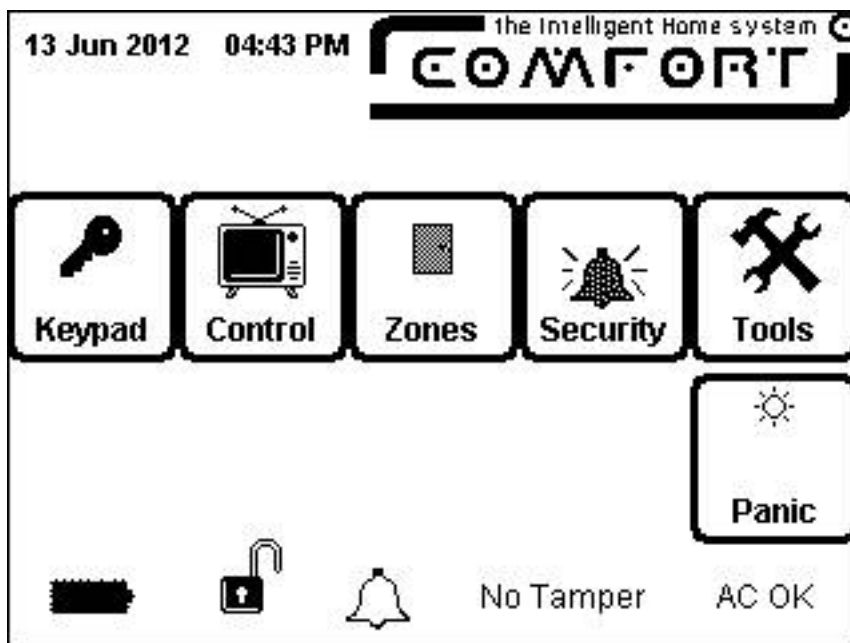
Programming C-Touch for Security Integration

The C-Touch Colour and B&W touchscreens can be used as a keypad for MinderPro, or to display zone and alarm information from MinderPro, as well as to set the time and date in MinderPro. To demonstrate the capabilities which are possible, a sample file MinderPro.cdt in a zip archive is provided which can be downloaded from

http://www.MindIT/Configurator.biz/product_details.php?item_id=148

PICED software version 3.8.0 or above should be used. MinderPro II supports the C-Bus Security and Date/Time Applications.

Load the 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 MinderPro and, similarly, for MinderPro, any change in date and time for C-Touch will change the time for MinderPro.

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

When MinderPro 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 MinderPro 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

MinderPro to C-Bus Interface

This status shows the current arm status, but does not show the security mode. The icon 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.

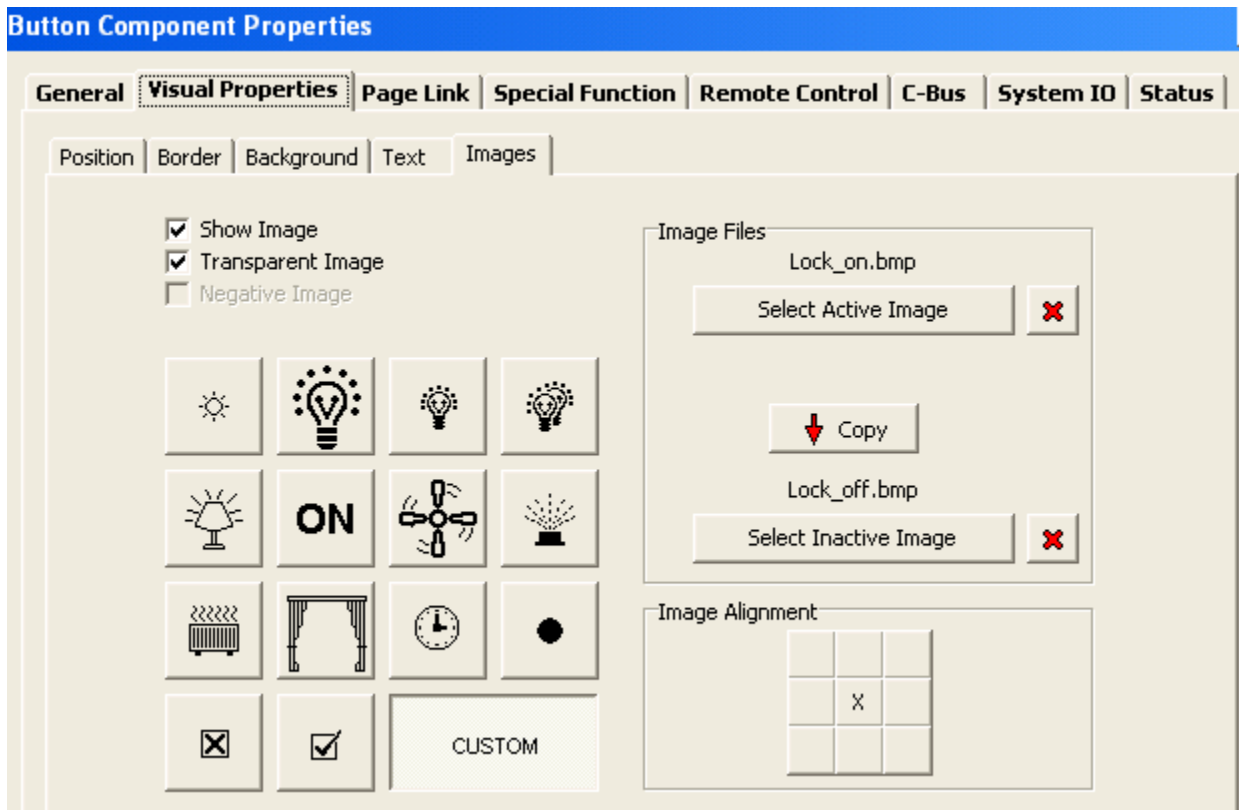
The screenshot shows the 'Button Component Properties' dialog box with the 'System IO' tab selected. The 'Key Function' dropdown is set to 'Status'. Under 'System IO Variable', the 'In-built' radio button is selected, and the dropdown menu is open, showing a list of security-related variables. 'Security Armed State' is highlighted at the top of the list. Other variables include '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', and 'Startup Time'. The 'Value' field is empty. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

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

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

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

MinderPro to C-Bus Interface



Alarm State

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

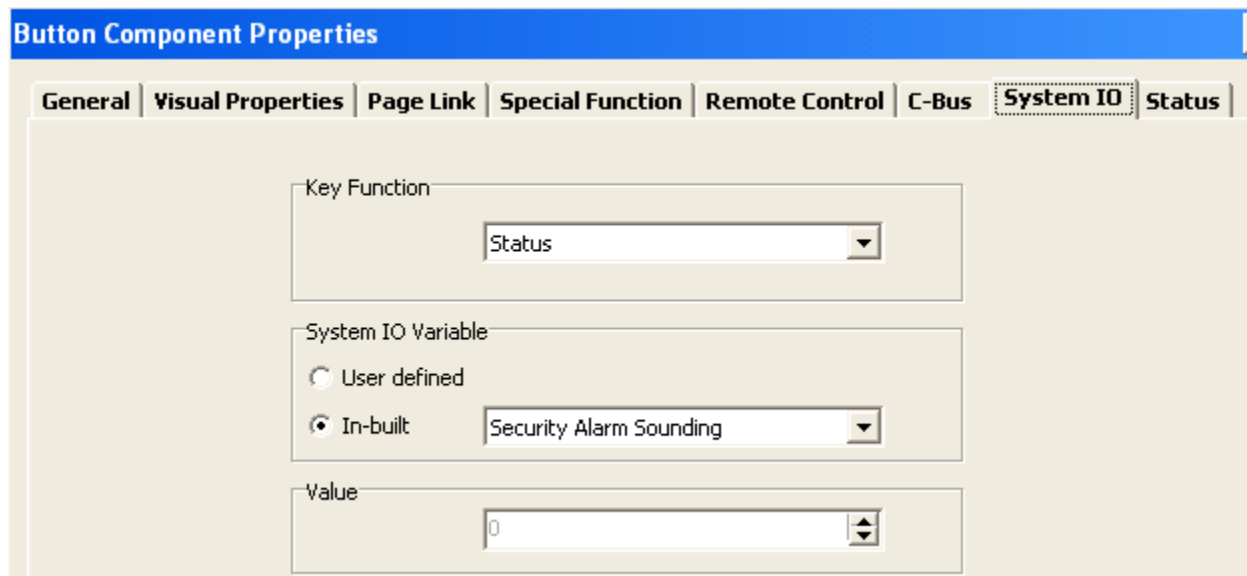


: System is not in alarm (idle, trouble, or alert)



: 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.



MinderPro to C-Bus Interface

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

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

To show the images for Armed and Disarmed states, select Visual Properties Tab, select Images subtab. 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 low.

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 = Inbuilt, Security Low Battery
- Value - N/A

To show the images for Armed and Disarmed states, select Visual Properties Tab, select Images subtab. 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).

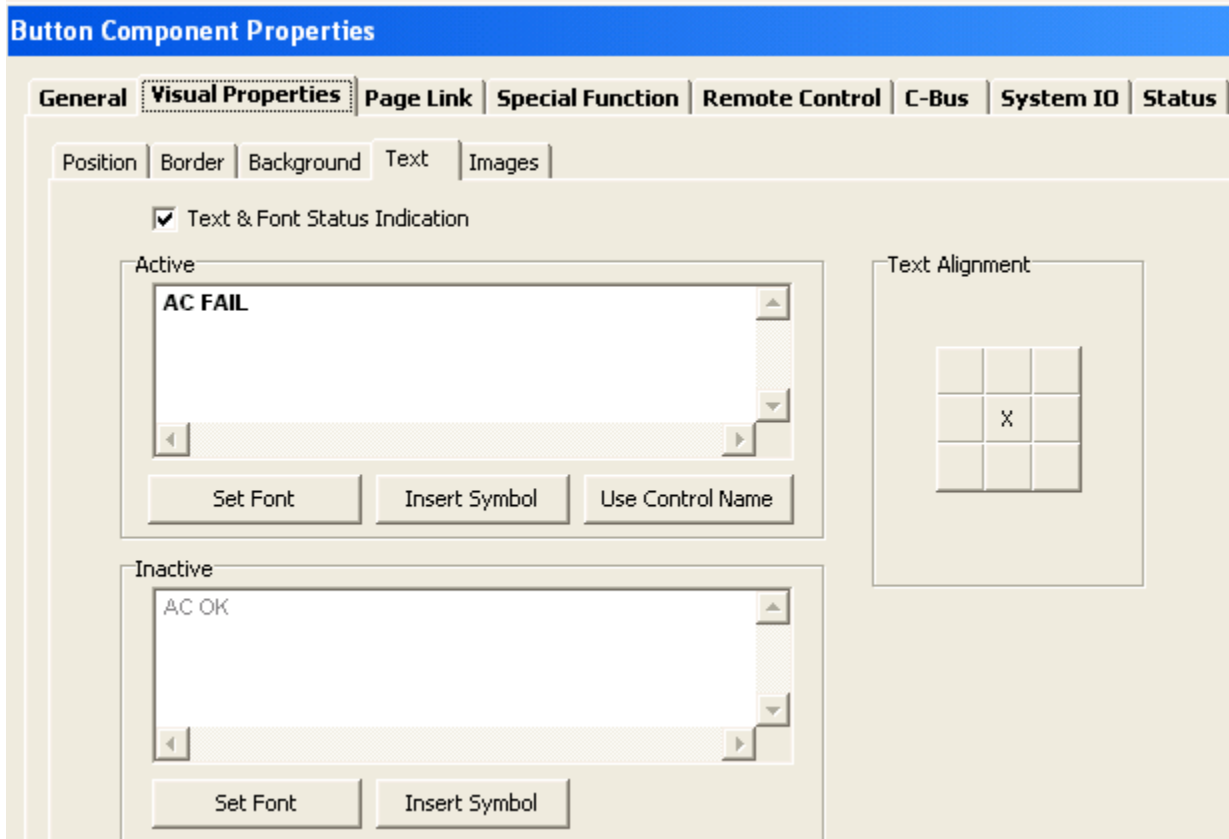
Programming the mains status is similar to the previous example, double-click on the text (AC OK) Select the System IO Tab.

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

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

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

MinderPro to C-Bus Interface



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 = Inbuilt, Security Tamper
- Value - N/A

To show the Text Status for AC Fail and AC OK, select Visual Properties Tab, select Text subtab. 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 = Inbuilt, 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 subtab. 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

MinderPro to C-Bus Interface

following settings set for the C-Bus settings under its Component Properties:

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

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

Exit Delay Status

This is used to inform the user when an Exit Delay is active, i.e. when the security system is being armed but before completion of the arming process.

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 = Inbuilt, Security Exit Delay
- Value - N/A

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

Password OK Status

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

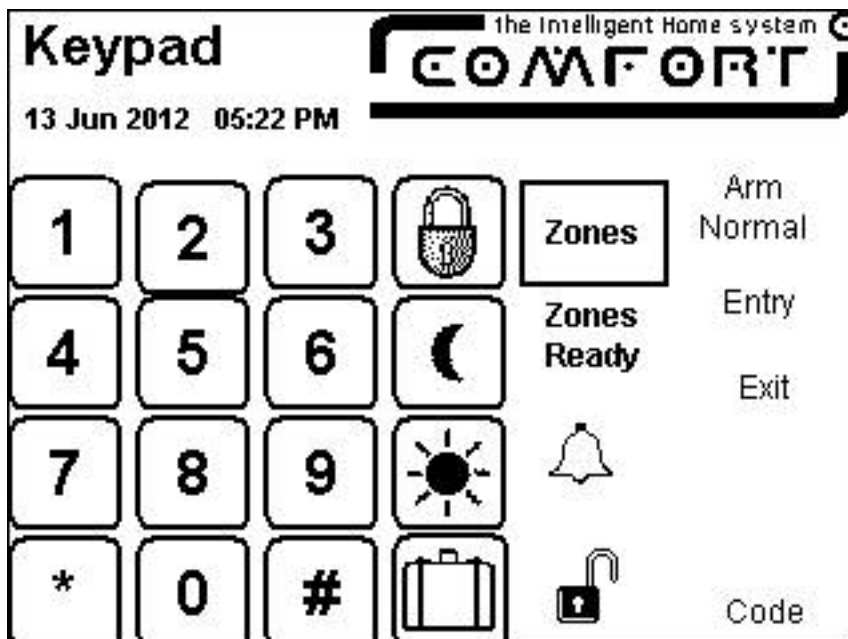
To program for such a display, a button or a text display can be created, with the following settings set for the C-Bus settings under its Component Properties:

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

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

Keypad Emulation

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

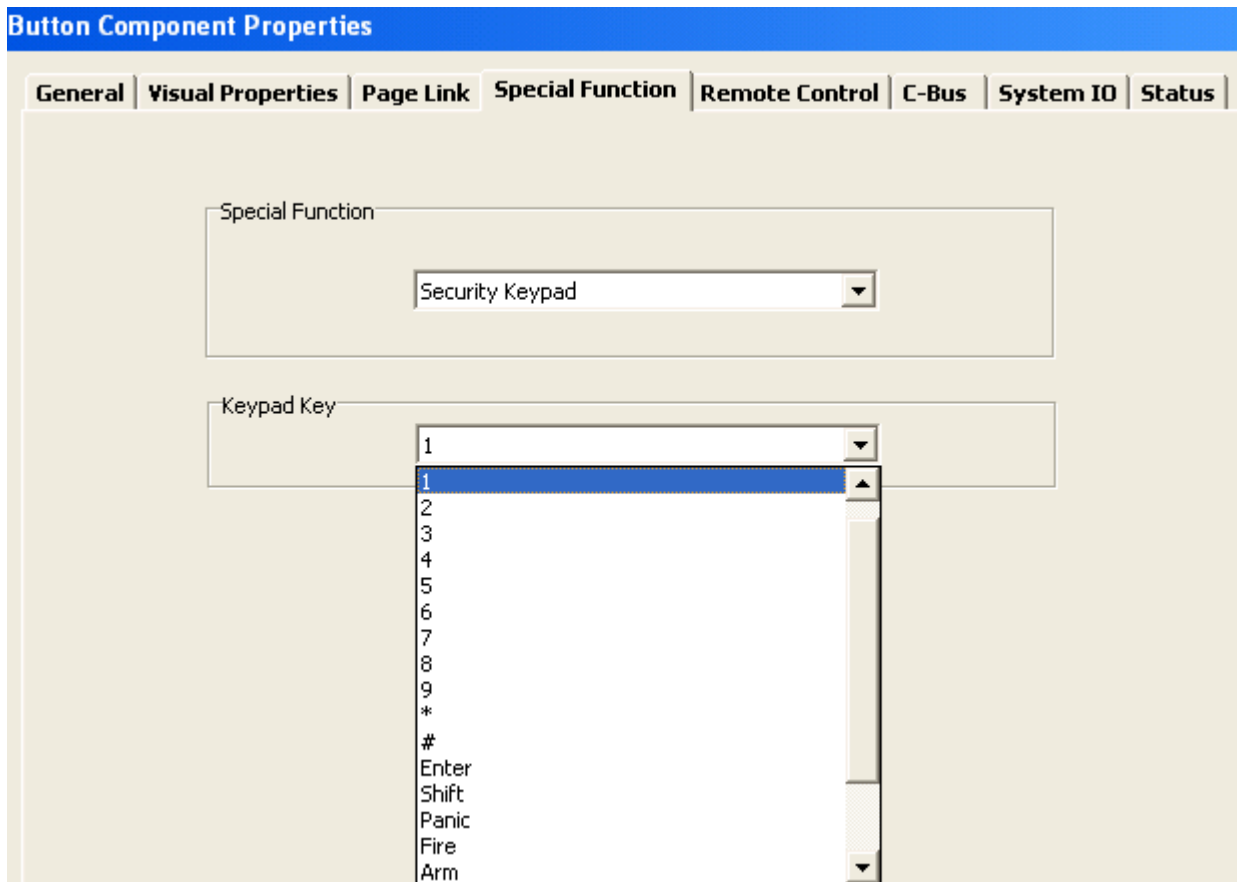


Here the various buttons work as if they were pressed via a MinderPro keypad . When

MinderPro to C-Bus Interface

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.



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

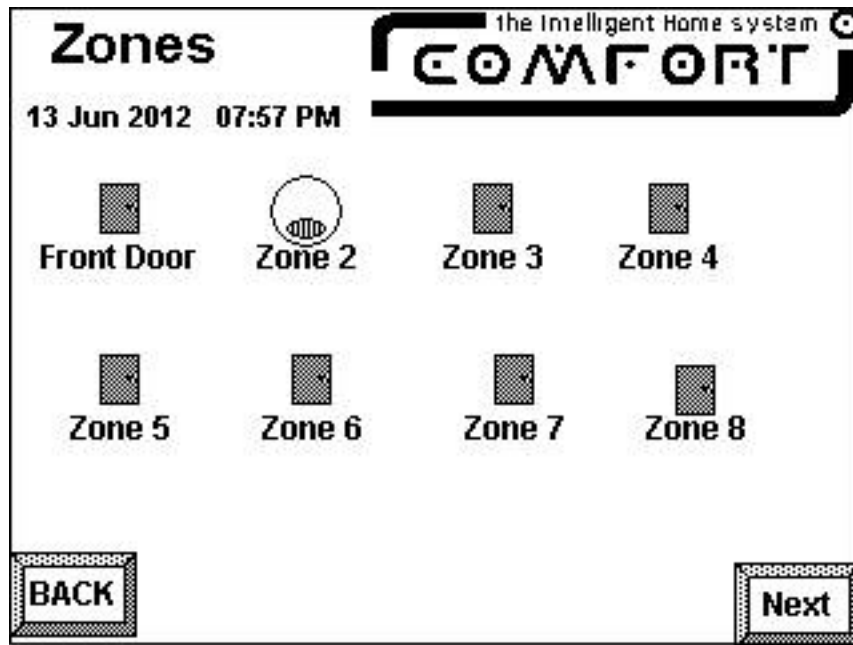
Away, Night and Day, Vacation keys arm to the selected mode, and the Panic and Fire keys will activate the Panic and Fire alarm respectively. Arm key will arm to Away Mode. The # key acts like the # key on the keypad. Pressing the code and # key when the system is not armed will play the voice menu on 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 MinderPro zones on C-Touch. The status shown is their real-time status.

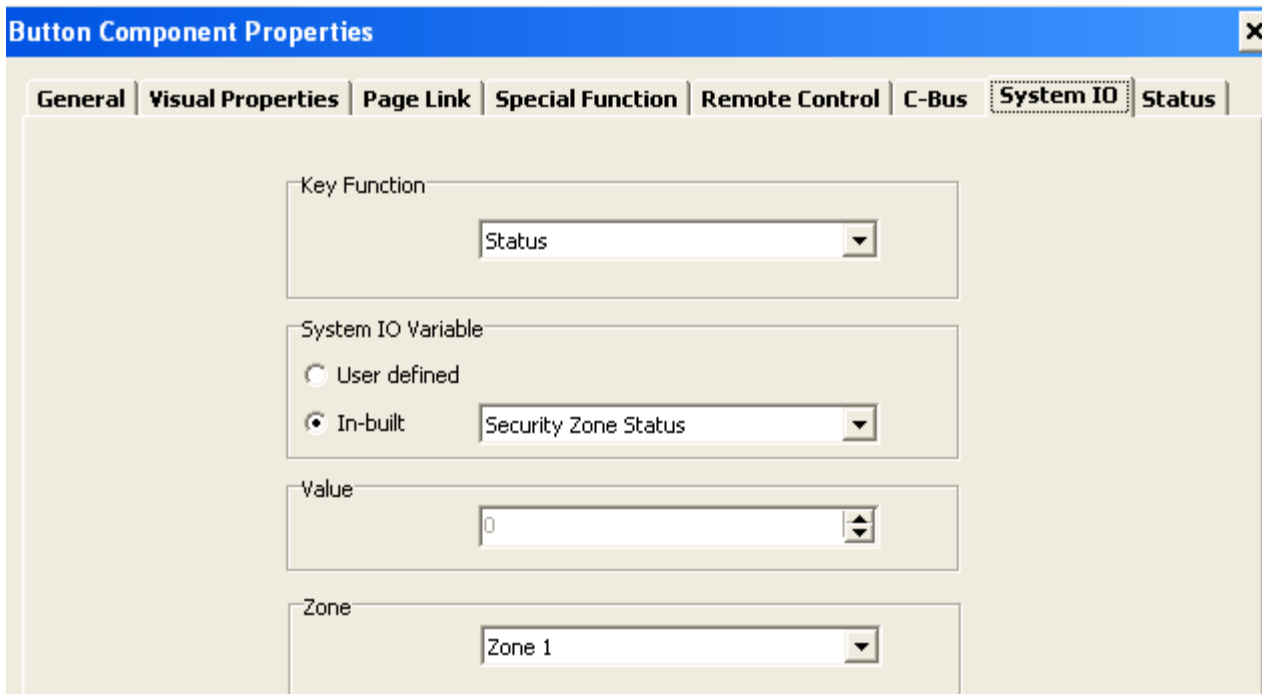
MinderPro to C-Bus Interface



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 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.

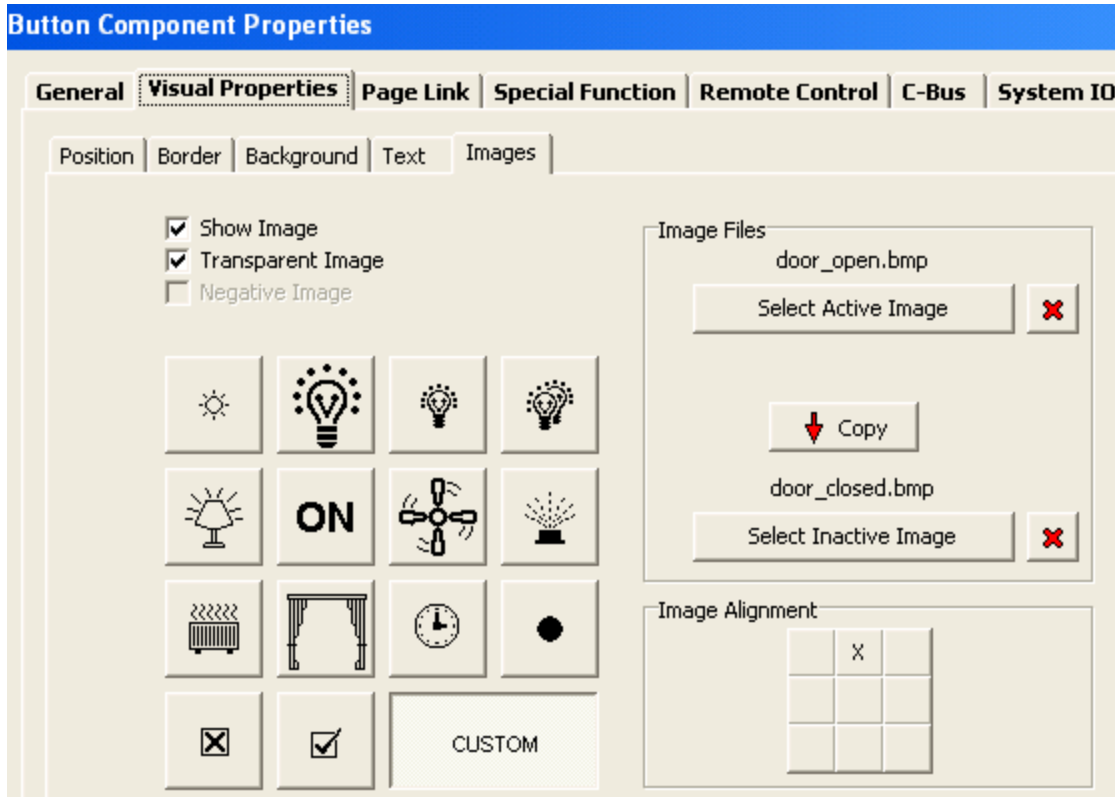
To select the zones to be monitored, double-click on any zone to show the Button Properties page. Select the System IO Tab.

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



MinderPro to C-Bus Interface

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 MinderPro and vice versa. In MinderPro, 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.

MinderPro to C-Bus Interface

Summary of Security Application Messages

Security Status Messages (MinderPro -> C-BUS)

Table 2: Security Status Messages

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	Replaced by Zone Not Ready function	
Zone "sealed"	87	Not implemented	
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
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 MinderPro expects another key after the F, or if a key is pressed while another keypad is active.

Security Control Messages (C-Bus -> MinderPro)

Table 3: Security Control Messages

Security Control Messages	Group Address (hex)	Key Function	Tag
Status 1 request	A0		Not used for C-Touch
Status 2 Request	A1		Not Used for C-Touch
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	

MinderPro to C-Bus Interface

Security Control Messages	Group Address (hex)	Key Function	Tag
Request Zone Name	A7	Not implemented	

C-Bus Communications Notes

When the C-Bus UCM starts, it puts the C-Bus Interface into Basic Mode, i.e. without monitoring of the C-Bus, then requests for a Status Report of all Group Addresses. The C-Bus PC Interface then reports the state of all Group addresses used in the system. MinderPro saves the state (but not the level) of each Group address in the respective Counter (which corresponds to the Group address number). However, only the ON/OFF status of each Group address is reported, and not the level if it is not fully on or off (for dimming lights). When the Status report has been received, MinderPro puts the PC Interface into Smart Mode which means all Group address changes are reported to the PCI Interface and hence to MinderPro. MinderPro will then keep track of all group address changes in the respective counter. If the C-Bus power supply is not switched on when MinderPro is powered up or reset, the UCM/C-Bus will continue to request for C-Bus Status until a Status Reply is received.

If the C-Bus network switched off, the BUSY and ERROR LED on 5350CB come on when a command to C-Bus is sent but not acknowledged. When the C-Bus comes on line again, 5350CB will request for a status report in order to synchronise with the state of the monitored group addresses. This can be seen from activity on the BUSY and ERROR LEDs.

There are several types of C-Bus SIM which may be used with 5350CB;

- 1 Firmware Version 3 with marking 1551/1 on the SIM Module
- 2 Firmware Version 4 and higher

There are minor differences in protocol between these versions, the most important difference being the Power-Up Notification message is available for version 4. Both are supported by 5350CB and detected automatically. For SIM firmware Version 3, when C-Bus is powered off when MinderPro remains on, the BUSY and ERROR LEDs will turn on after 10 seconds. This does not occur for SIM firmware version 4 because Power-Up Notification allows 5350CB to know when the C-Bus network has been powered off. In either case, 5350CB is able to take the appropriate action to set the SIM to the correct mode if the C-Bus network has been powered off and back on.

The BUSY1 LED blinks when a monitored group address in the Lighting, Time/Date or Security Application is received. The BUSY2 LED turns on when UCM/C-Bus sends a message to C-Bus. BUSY2 LED is turned off when the acknowledgement from C-BUS is received indicating that the message was transmitted successfully. If a message was not acknowledged in time, the command is resent once (The C-Bus SIM has its own retransmission mechanism).

UCM/C-Bus is able to send and receive messages to and from remote networks through bridges. It can send and receive concatenated messages in the supported applications

Technical Note: Action Code 197

Action 197 is used to send commands to the C-Bus. For single group addresses, this has 3 to 5 parameters

Single Command Format for Local Network

Format: 197, <ID>, <GroupAddress>, <SAL command> [, <ramplevel>] [, <application>]

MinderPro to C-Bus Interface

The parameters within the square brackets [] are optional depending on the message.

<ID> is the ID of the UCM, i.e.. 17 = UCM 1, 18 = UCM 2 etc..

<GroupAddress>

Valid values range from 00 to 255. Refer to C-Bus documentation for a full description of the Group address concept. Group addresses link C-Bus output units to input units. MinderPro can send commands to all 256 Group addresses.

<SAL Command>

SAL Command	Function
1	Switch Off
121 (79H)	Switch On
2	Instantaneous Ramp to <ramplevel>
10	Ramp over 4 seconds to <ramplevel>
18	Ramp over 8 seconds to <ramplevel>
26	Ramp over 12 seconds to <ramplevel>
34	Ramp over 20 seconds to <ramplevel>
42	Ramp over 30 seconds to <ramplevel>
50	Ramp over 40 seconds to <ramplevel>
58	Ramp over 60 seconds to <ramplevel>

<ramplevel>

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 121.

<Application>

is the C-Bus application ID. If not specified, 56 (38H) for Lighting is used.

<Application> is required only if the Application is not the default 56. If <application> is included, <ramplevel> must also be included, but if ramplevel is included, application may be left out

Examples

197, 18, 1, 121, 255 sets Group address 1 ON for UCM ID=2

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

197, 18, 2, 10, 128, 255 sets Group address 2 to ramp over 4 seconds level 128 for UCM ID=2

197, 18, 3, 18, 200, 56,255, sets Group address 3 to ramp 8 seconds to level 200 for Application 38 for UCM ID=2. <Application> is not needed unless an application different than the default of 56 (38H) is specified.

“Escape” Character 15 within Action 197

In Action 197, 15 is an “escape” character - it has a special meaning.

15, 254 terminates the action 197. This is needed as action 197 can have a variable number of parameters, so 15,254 ends the action string and allows other actions to be added after Action 197. If there are no actions following action 197 with its parameters, 255 can be entered as a terminator.

- i If action 197 is not the last action in the response, terminate it (action 197) with 15,254 before adding the next action

e.g. 197, 18,1,121,15,254, 128,1,1,255. After setting Group address 1 ON, the MinderPro Response “Output 1 ON” follows.

MinderPro to C-Bus Interface

e.g. 197, 18, 1, 121, 255 sets Group address 1 to ON and terminates. Since there is no action following this, there is no need to enter 15,254 to end the action string.

15, 253 sends 255 (FF in hexadecimal) without terminating the response. You cannot send 255 by entering 255# because that is taken by MinderPro as a terminator.

e.g. 197, 19, 15, 253, 121, 255 sets Group address 255 to ON for UCM id=3.

15,15, i.e.. "escape character" 15 followed by 15 sends 15

E.g. 197, 17, 15, 15, 121, 255 sets Group address 15 to ON for UCM ID=1.

15, *value* will send the *value* itself provided it is not 253 or 254 which have special meanings as explained above.

Concatenated Command Format:

Format: 197, <ID>, <GroupAddress1>, <SALcommand1>, <ramplevel1> , <application>, [GroupAddress2], [SALcommand2], [ramplevel2], [GroupAddress3], [SALcommand3], [ramplevel3],...

UCM/C-Bus 5.45 and above supports concatenated commands, where more than 1 C-Bus command can be sent on the same line in order to reduce traffic on the C-Bus and speed up the execution of multiple C-Bus commands. For concatenated commands, the ramplevel and application arguments of the first command are mandatory, unlike the single command format. For the second and subsequent commands, the ramplevel is mandatory even if it is not needed for ON and OFF commands (where it is ignored). The application for all the commands on the line must be the same, and is specified once.

Example 1 - Non-concatenated

197, 18, 1, 121, 15, 254, 197, 18, 3, 2, 128, 15, 254, 197, 18, 5, 10, 64, 15, 254, 197, 18, 4, 1, 255.

This shows a non-concatenated command string with 4 C-Bus commands. The first command is Group address 1 ON. 15,254 is the escape string for termination of C-Bus command. The second command is for Group address 3 to ramp instantaneously to level 128 (50%). The 3rd command is for Group address 5 to ramp to 64 (25%) over 4 seconds. The 4th command is for Group address 4 to switch off.

Example 2 - Concatenated

197, 18, 1, 121, 0, 56, 3, 2, 128, 5, 10, 64, 4, 1, 255.

This example shows how the same 4 commands can be concatenated. Only commands to the same Application can be concatenated. Each command must contain the ramp level, even if the command is on/off, in which case the ramp level information is ignored. The first command is an ON command. The ramplevel 0 for the command is ignored. Note that the last command does not need a ramplevel, as it is not followed by another concatenated command.

Concatenation shortens the response and also reduces traffic on C-Bus. The C-Bus SIM has limited buffer space so if too many commands are sent to it, some may be lost.

Do not put more than 7 concatenated commands on the same line.

Concatenated commands are supported from MindIT/Configurator 1.1.6.

Command Format for Remote Network:

Format: 197, <ID>, <15> <253>, <no of bridges N>, <bridge1>, <bridge2>, ..., <bridgeN>, <Group Address>, <SAL Command>,...

UCM/C-Bus 4.45 and above supports network routing for transmitted commands to C-Bus.

The escape sequence 15,253 sends value 255 as the group address which means the

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command is for a Remote network. This is followed by the number of bridges (up to a maximum of 6), and the unit addresses of the bridges. After the routing network has been specified, the rest of the commands follow, starting with SAL command.

Group address 255 cannot be addressed because 255 is used to indicate network routing. UCM/C-Bus is limited to group addresses 0 to 254.

Example:

197,18,15,253, 3, 25,31, 62, 1,121,255

The above line sends a command through 3 bridges via addresses 25, 31 and 62. The command turns on group address 1 on the remote network

It is also possible to send concatenated commands can also be sent to a remote network using the format specified above, but this should be avoided as it may complicate the network messages

Commands for Remote networks are supported from MindIT/Configurator 1.1.6.

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Document History

3.0.7 - 13 June 2012

Complete revision to reflect MindIT/Configurator 3 programming, and C-Touch Mk 2 pieced Programming

3.0.5 - 31 October 2011

- Updated to firmware 6.011

3.0.1 - 16 February 2010

- Removed reference to 128 counters for MinderPro I Pro/Outside

2.2.8 – 12 October 2008

- Corrected Error in Keypad keys description

2.2.7 – 20 March 2008

- Update for Flash version

2.2.6 – 28 June 2007

- Included PICED for Keypad Emulation and programming, Updated on using PICED to program C-Touch, Included starting address for C-Bus SIM

2.2.5 - 5 November 2006

- Removed reference to PC Interface in Introduction

2.2.4 - June 2004

- amendments

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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/5350cb_manual.html

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