

Comfort, the Intelligent Home System

Comfort UCM/GSM2 Module

Introduction to the Comfort UCM/GSM2 Module



The UCM/GSM2 provides a cellular phone connection to Comfort. This gives Comfort the following abilities;

- Acts as a backup for alarm dial-out when the land line is faulty or cut. Alternately, it can be used without a fixed telephone line, for installations where a telephone line is not available or not desired.
- Allows the user to dial to the GSM number instead of the fixed telephone line to access Comfort menus.
- Allows Comfort to report alarms to the users' cellular phones via SMS (Short Message Service). The SMS message will show the alarm type and Zone description as text.
- Allows users to send commands to control home appliances and the security system via SMS.

In order for the UCM/GSM2 to be used, there must be a GSM (Global System for Mobile Communications) service in the area. GSM is currently widely available in Europe and Asia.

Refer to <http://www.gsmworld.com/Roaming/GSMinfo/index.shtml> for network operators world-wide that offer services from the GSM family of Wireless Communications. Specific details included within this section are network, roaming, services and coverage information for over 500 operators in 207 countries/areas of the world. The UCM/GSM2 operates on dual -band frequency i.e. 900 MHz and 1800 MHz

The UCM/GSM2 requires a Subscriber Identity Module (SIM) card to be inserted, just like with a cellular phone. This can be a prepaid card, or one which is billed monthly according to a usage plan.

☎ The UCM /GSM2 replaces the UCM /GSM which has been phased out. The functionality remains the same except that UCM /GSM2 is dual-band compared to UCM /GSM which is Tri-band, and the behaviour of one of the leds on the daughterboard which are described here.

Specifications

UCM/GSM2

- PCB Size: 108 x 88 mm
- Power Supply (from Comfort): 12V 50 ma (idle), 250 ma (transmit)
- Operating Temperature: 0-55°C
- Frequency: EGSM dual-band 900/1800 MHz
- RF Sensitivity: < -106 dBm
- Operating Temperature Range: -20 to 75 deg C
- Relative Humidity: < 95 % RH non condensing

Equipment

The following equipment is required

- Comfort II with firmware version “5.172” or higher, recommended Comfort firmware 6.004. The UCM/GSM2 is not compatible with Comfort 1
- Configurator version 3.2.8 and above
- Applies to UCM/GSM2 Firmware 5.201 and above

SIM Card

A SIM (Subscriber Information Card) must be used in the GSM Module. This may be a prepaid card or one which is billed monthly as part of a service plan. However, it is not advisable to use a prepaid card as the user would not know when the amount remaining has been used up.

If SMS is to be sent, then the card must allow sending of SMS.

If incoming SMS commands are to be accepted, then Caller ID must be enabled. This may incur an additional charge.

The SIM card must not be password-protected. Disable any password protection.

The SIM card will come with a telephone number. Use this number to dial to the system via the GSM module

What is Included

The UCM/GSM2 package contains the following* :

- UCM/GSM2 module with GSM submodule. The submodule may contain GSM modules from different manufacturers due to availability, but all have the same functionality
- 5-way audio cable
- 4-way RS485 cable
- Antenna (with cable of approximately 1 metre long)

*Subject to change without prior notice

Settings

Connections (on Baseboard)

- JP3 - 12V/COM terminal block. Connect to 12V/COM on Comfort if JP2/2A not used. Do not connect if JP2/2A is used to connect back to Comfort.
- JP4 - KA/KB terminal block. Connect to KA/KB on Comfort if JP2/2A not used. Do not connect if JP2/2A is used to connect back to Comfort. JP2 and JP2A - 4 way headers (12V/COM/KA/KB). Either connector can be connected to Comfort's J6 connector via the supplied cable when JP3 and JP4 are not used. This plug-in cable connection is used when the distance between the controller and UCM/GSM2 is less than 30 centimetres. For longer distances, use the JP3 and JP4 terminal blocks.

Connections (on Daughterboard)

- J3 – 5-way connector for voice connection. The 5 way audio cable is to be connected from J3 to J54 (GSM) connector on Comfort II.
- U3 – SIM card holder.

Jumper Settings

- SW7 (RS485 ID Primary) – set according to ID of the UCM/GSM2 (see “UCM ID Switch” settings)
- SW8 (RS485 ID AUX) – positions A to G are unused. H is open for normal operations and shunted to indicate signal strength on the LEDs (refer to “Signal Strength Indicators”)

Buttons

- SW1 - RESET. This button reinitializes the UCM/GSM2 module. It does not change any parameters in Comfort.

LED Indicators (on UCM)

- D1 “RDY” (Green) – should be on at all times during normal operations
- D2 “BUSY1” (Red) – indicates when initialisation or communications error has occurred
- D3 “BUSY2” (Red) – indicates call in progress
- D4 “ERR” (Red) – error indicator, normally no network
- D9 (Red) – RS485 Transmit to Comfort
- D10 (Green) – RS485 Receive from Comfort

The LEDs also show the signal strength with SW8-H is shunted. Refer to the following table for the meaning of the LED combinations.

Table 1: LED Indications

RDY	BUSY1	BUSY2	ERR	Meaning
On	On	-	-	Initialising or GSM Network Error
On	-	On	-	Call in Progress
On	-	-	On	No GSM Network
-	On	On	-	No SIM Card or SIM Error
-	On	-	On	SIM card requires PIN code
On	-	-	-	Normal Operation, Idle
-	-	-	-	* Signal Strength 0 (Bad)
-	-	-	On	* Signal Strength 1 (Poor)
-	-	On	On	* Signal Strength 2 (Fair)
-	On	On	On	* Signal Strength 3 (Good)
On	On	On	On	* Signal Strength 4, 5 (Excellent)

SW8-H is shunted for GSM signal strength indication

The Signal Strength is updated every 8 seconds. Note that shunting SW8-H overrides the GSM operation status indication

DO NOT shunt SW8-H during reset, otherwise the UCM/GSM2 will report signal strength of 0 to Comfort and the GSM will not be operational until a change in signal strength is detected. Also DO NOT keep SW8-H shunted permanently to avoid this problem in case the UCM is reset for any reason. Always remove the shunt after checking the signal strength.

LED Indicators (on GSM Daughterboard)

- Green - flashes once every 3 seconds. Unlike UCM/GSM2 this LED does not flash when there is network activity.
- Red – indicates power is supplied to the daughterboard.

ICs

- U1 - Microcontroller IC. Label indicates the firmware version number “GSM 5.xxx or 6.XXX”
- U5 - RS485 Interface to Comfort.

UCM ID Switch

Comfort is able to support up to 8 UCMs. SW7 is a set of 3 headers which determines the UCM ID, according to the table below:

Table 2: UCM ID (SW7)

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

By convention, ID=1 is reserved for UCM/USB for writing/reading configuration

file. The UCM/GSM2 should be set to ID 2 or above so that any RS485 communications failure can be reported by Comfort.

Press RESET on the UCM/GSM2 after changing the ID settings.

Modules and Settings > Number of UCMs must be programmed according to the number of UCMs connected. Press RESET on Comfort after changing the number of UCMs or other modules.

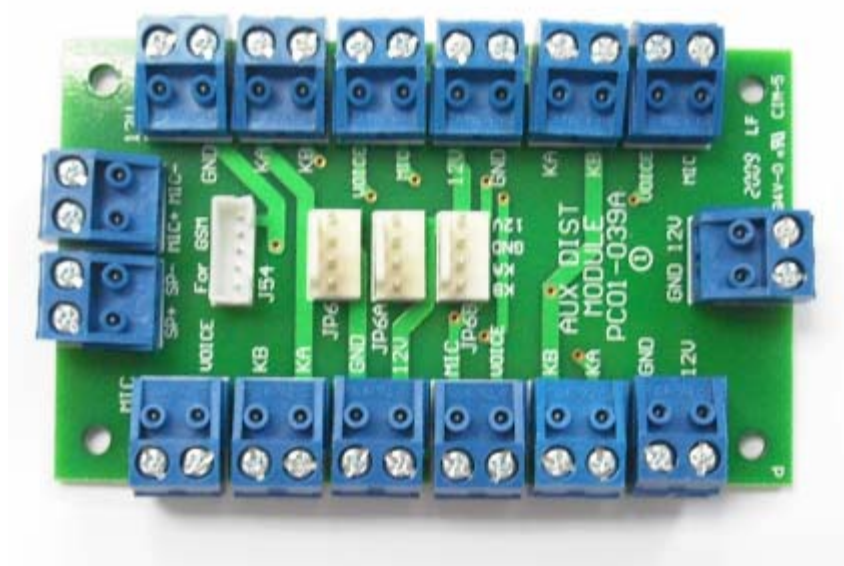
Mounting

Care must be taken to ensure that the antenna is not mounted in any metal casing to ensure there is GSM coverage. The UCM/GSM2 may be mounted internally in an enclosure with the antenna mounted outside.

Extending the Distance between Comfort and UCM/GSM

Normally the UCM/GSM must be mounted in the same enclosure as Comfort because of the length of the 5 way audio cable from J54 on Comfort and the UCM/GSM. If this location does not have sufficient network signal, there is a way to allow the UCM/GSM to be mounted in another room or location.

The ADM02 (Auxiliary Distribution Module) shown below which replaces the ADM01 has terminal blocks and connectors for the 4 way cable to allow more connections to be made to Comfort. There is a 5 way connector marked J54 and "GSM" on the ADM02. Connect the 5 way audio cable from this connector to J54 on Comfort. Use a shielded CAT5 cable to connect the terminal blocks marked SP+, SP-, MIC+, MIC- to the same terminals on another ADM02 in the location where the UCM/GSM2 is to be mounted. From the second ADM02 connect the 4 way RS485 cable to Comfort's 4 way RS485 connector, and connect another 5 way audio cable from this ADM02 to J54 on Comfort. The ADM02 is supplied with a 4 way RS485 cable and a 5 way audio cable.



Setup



- 1 Insert a GSM SIM card into the SIM card holder. The SIM card must not be password protected. Disable password protection if applicable.
- 2 Connect the antenna, and connect J3 on the UCM/GSM2 to J54 (GSM) on Comfort II via the 5-way cable provided.
- 3 Before connecting the power to UCM/GSM2 from Comfort, the ID on SW7 must be set according to Table 2, i.e. the ID has to be set according to the number of UCMs in the system. If there is only 1 UCM, the ID on the UCM/GSM2 must be set to 2. By convention, ID 1 is reserved for writing and reading from Comfort, and is not reported in case of Communications Failure. Comfort supports a combination of 8 UCMs. For instance, another UCM can be used to connect to the Comfort Webserver Module (CWM02).
- 4 The UCM/GSM2 power is connected to Comfort via the supplied 4 way white cable from the 4 pin header JP2 to Comfort's header J6, or Comfort II's RS485 header. This supplies power to the UCM/GSM2, as well as allowing communications between Comfort and the UCM/GSM2. It is not necessary to switch off the power to Comfort before plugging in this connection.
- 5 The RDY LED (green) should be turned on, indicating that the UCM firmware is running. The BUSY1 LED will be on while the UCM/GSM2 is establishing the GSM network connection.
- 6 The LEDs D9 (red) and D10 (green) on UCM/GSM2 should blink rapidly showing that RS485 communications has been established between Comfort and the UCM.
- 7 The red LED on the daughterboard should be steady on to indicate that

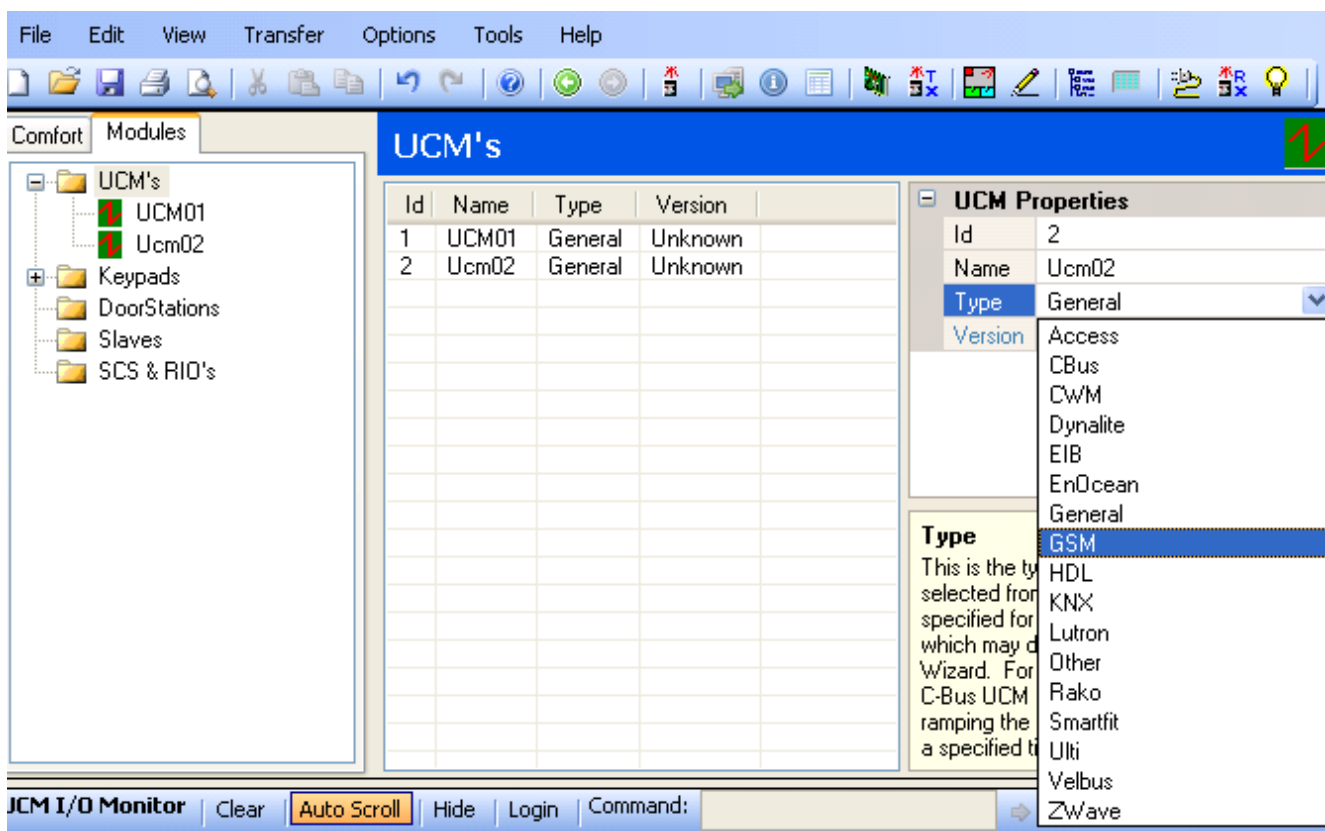
there is power supplied to the daughterboard. BUSY1 LED should go off. If there is no network, BUSY1 will turn off and ERROR will turn on. The UCM/GSM2 will periodically try to communicate with the network every 10 seconds.

- 8 BUSY2 LED will turn on when there is a call in progress.

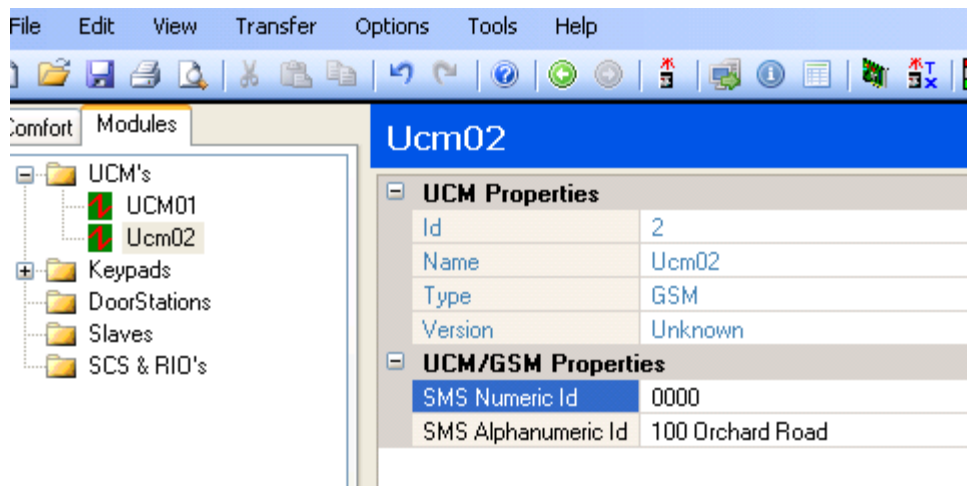
Programming

Programming SMS Dial-out

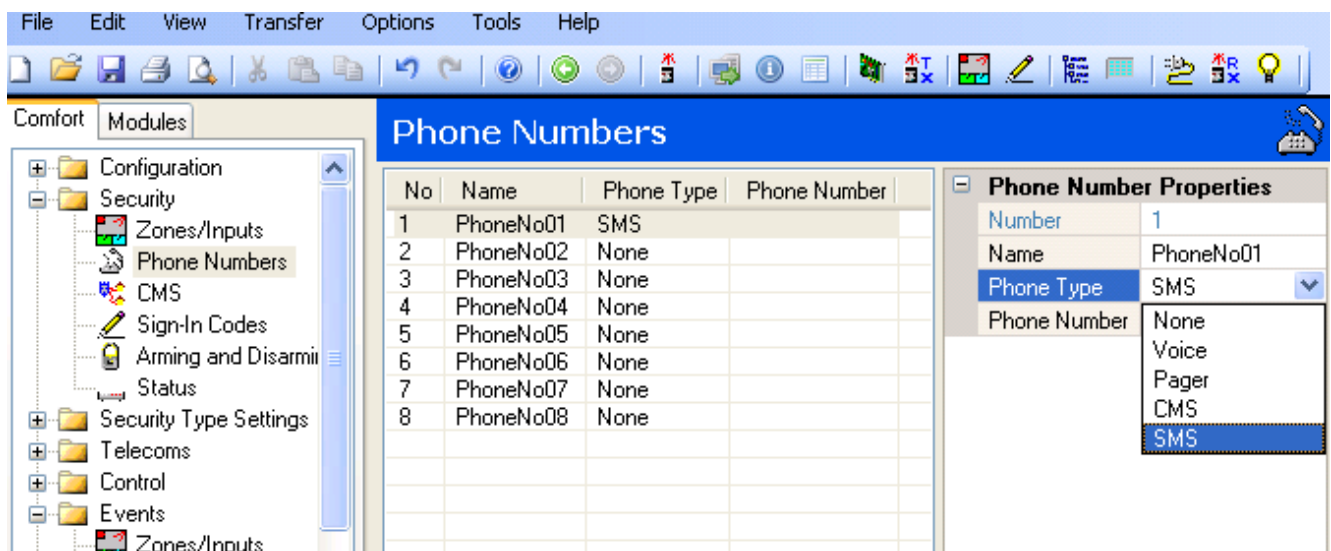
- 1 Click on Modules tab ->UCMs. Right Click on UCMs and select Add UCM, Select the type of UCM as GSM as shown in the picture below. This assumes that the UCM/GSM2 ID is 2. If the UCM/GSM2 ID is higher than 2, then other UCMs must be defined first.



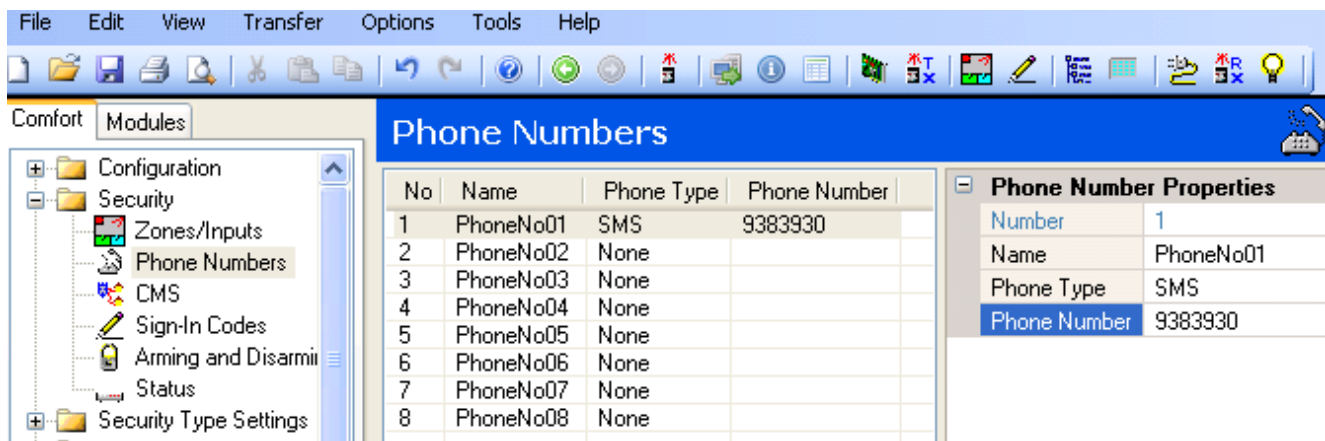
- 2 Click on UCM2 on the left pane. The screen below is seen.



- 3 SMS Alphanumeric Id is a 16 character text field that is shown on the SMS Text message sent to phones assigned as SMS Phone Type to identify the location of the Comfort system.
eg: 100 Orchard Road - Intruder Alarm - Kitchen Movement
- 4 SMS Numeric Id is a 4 digit numeric field that is displayed on the SMS text message if the Alphanumeric Id is left blank OR if the Comfort firmware version is older than 5.172 which do not support Alphanumeric Id.
- 5 To program the phone number(s) for SMS dial-out, go to Security > Phone Numbers.



- 6 In the Phone Number Properties, click on the Phone Type field to reveal the pull-down menu and select SMS. "SMS" is only seen if a UCM/GSM2 is selected as one of the UCMs.
- 7 Enter the phone number of the mobile phone for SMS reporting. The phone must operate by the GSM network (900, 1800 or 1900 MHz) and be able to receive SMS messages. Check with your cellular operator if you do not know whether your phone and service meets these requirements. The same mobile phone number can be programmed in 2 phone indexes as Voice Phone and SMS



Operation

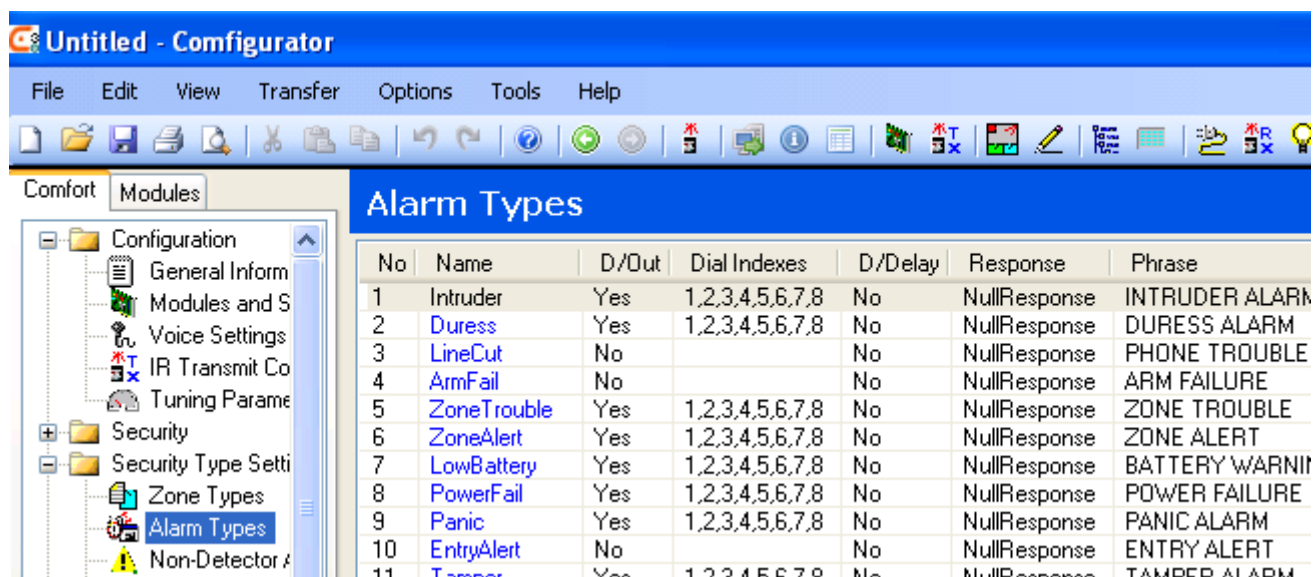
Comfort has a buffer of 16 events for SMS reporting to cater for multiple alarms occurring around the same time (16 events for Comfort firmware 5.145 onwards, 12 events for older firmware). If there is a backlog of 16 SMS events which have not been sent because of network or other problems, new events will not be reported. If SMS messages are not sent because of a temporary loss of signal, they will be sent out when the network communication is restored. However, if there is a communications failure for the UCM/GSM2 on the RS485 network, SMS messages will be lost and will not be sent out when the communications is restored.

SMS Messages for Comfort II

The format of the SMS Text message is as follows

XXXXXXXXXX - AlarmName - ZZ ZoneName

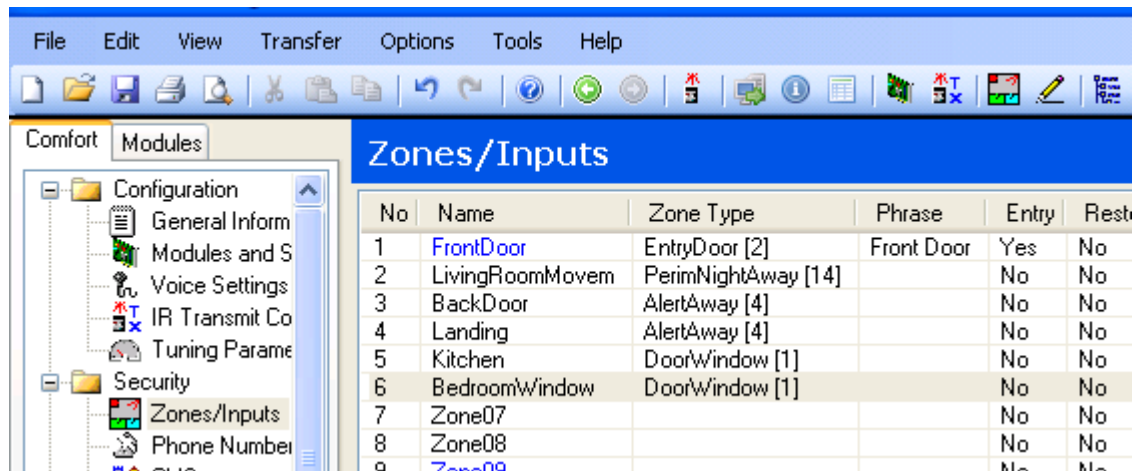
where XXXXXXXX is either a 16-character text (SMS Alphanumeric Id) or a 4-digit identification number (SMS Numeric Id) to identify the source of the message (applies from Comfort firmware 5.172). AlarmName is the Alarm Name field in Security Types > Alarm Types.



The name is a single word without any spaces. The default Alarm names can be changed if desired, although it is best to leave them unchanged to maintain

consistency with other systems.

The ZoneName following the Zone Number ZZ is taken from Security > Zones/Inputs.



The screenshot shows the 'Comfort' software interface. On the left is a tree view with categories like Configuration, Security, and Zones/Inputs. The 'Zones/Inputs' category is selected, displaying a table with the following data:

No	Name	Zone Type	Phrase	Entry	Rest
1	FrontDoor	EntryDoor [2]	Front Door	Yes	No
2	LivingRoomMovem	PerimNightAway [14]		No	No
3	BackDoor	AlertAway [4]		No	No
4	Landing	AlertAway [4]		No	No
5	Kitchen	DoorWindow [1]		No	No
6	BedroomWindow	DoorWindow [1]		No	No
7	Zone07			No	No
8	Zone08			No	No
9	Zone09			No	No

The Name field will be displayed when that zone is activated to cause an alarm

For example, if zone 2 - Kitchen Window causes an intruder alarm, the SMS message will be

100 Orchard Road - *Intruder* - 02 KitchenWindow

A power failure will be reported as

100 Orchard Road - PowerFail - 01

In this case, there is no zone/input associated with Power Failure.

If a Communications Failure from keypad 1 occurs, the message would be

100 Orchard Road - RS485Comms - 65

Where 65 is the ID of keypad 1.

For a Low Battery on Slave 1,

100 Orchard Road - LowBattery - 33

where 33 is the ID of SEM 1

When Trouble alarms are restored, "Restore" is appended after the message e.g.

100 Orchard Road - PowerFail Restore

100 Orchard Road - LowBattery Restore

100 Orchard Road - RS485Comms - Restore

Note that the ID when restored is not reported

- "Restore" is automatically appended for when Trouble alarms like Power Failure, Low Battery, Phone Trouble, RS485 Comms alarms are restored. Reporting of Trouble alarm restore is automatically enabled and does not

need to be programmed.

- OK may be appended after the message if a zone (input) has been restored after a zone-related alarm, if the Zone Restore field is enabled in Security > Zones/Inputs. For example if zone 2 (window) which caused an intruder alarm has been closed, the SMS message will be

100 Orchard Road - Intruder - 02 KitchenWindow Restore

The Zone Restore report is enabled in Security > Zone Settings screen. The “Restore” field should be set to “Yes” for each zone which should report when restored.

Zones/Inputs						
No	Name	Zone Type	Phrase	Entry	Restore	On Response
1	FrontDoor	EntryDoor [2]	Front Door	Yes	No	NullResponse
2	Zone02			No	No	NullResponse

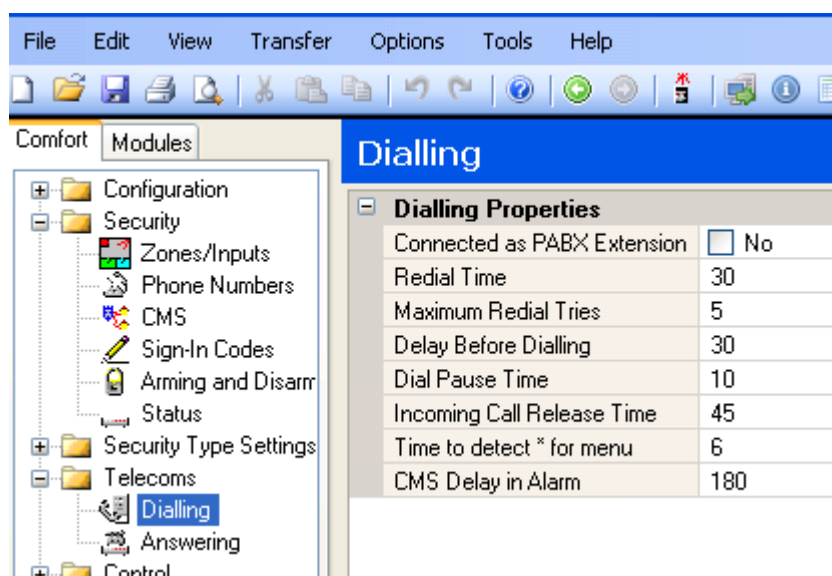
The Zone Restore feature for SMS reporting is normally only useful for monitoring inputs from industrial equipment or machinery, or from smoke and gas sensors where it is important to know whether the monitored sensor has been restored to its normal state after the alarm. It should not be used for alarm sensors like magnetic contacts and Motion detectors where reporting of zone restore would increase the amount of SMS messages transmitted without any useful purpose. For example, a motion detector or PIR (Passive Infrared sensor) would restore after each activation, so reporting of restore would double the SMS traffic.

Zone Restore can be programmed by Engineer Menu 1,4.

Dialling out via GSM

Normally, Comfort will not dial to the programmed numbers (maximum 8) by GSM if there is a fixed telephone line connected. It will only do so if it detects that the telephone line is faulty, i.e. has a low voltage on it causing a “Phone Trouble” alarm or is not connected. It also dials out by GSM if the telephone line is working, but a dial tone is not obtained, perhaps by an incoming caller holding on to the connection. Thus, it acts as a backup telephone line to the fixed line for high security installations.

If Comfort is connected to an analog extension of a PABX as programmed in Telecoms > Dialling, Comfort will not dial the PABX access digit (9 in the picture below) when dialling via the GSM Module.



When dialling to a Voice Phone, Comfort knows when the called party has answered, so unlike a normal dial-out, it will not wait for a “hello” from the line before giving the alarm message

When the telephone line is restored, dial-outs will once again be by the fixed telephone line.

Dialling In via GSM

To access Comfort using the UCM/GSM2, dial the number which comes with the SIM card. Comfort will answer immediately, instead of waiting for the programmed number of rings, and will say “Please Sign In” or the Greeting message if any. Enter the user code to access the system as usual.

Comfort knows when the calling party has ended the call via GSM, and will clear the line immediately and attend to its other tasks. With a fixed line, Comfort needs to detect busy tone to know that the caller has hung up.

Sending SMS Commands to Comfort

SMS messages can be sent to Comfort from a cellular phone to perform any programmed action on the Home Control Menu or to arm and disarm the security system.

The sending mobile phone number must be programmed as one of the 8 telephone numbers for dial-out in Security > Phone Numbers, as a Voice Phone or SMS phone type. SMS messages from other phone numbers not programmed in the Phone number list will not be accepted.

The format of SMS messages to be sent to Comfort is as follows:

(menulevel1 menulevel2 menulevel3...)

Where the command is placed between the “(“ and “)” characters. Any characters outside (...) are ignored.

Menulevel1, menulevel2, etc. are the menu commands in the User Voice Menu. The numeric commands can be separated by space e.g. (1 2) , or they may be sent without any separator , e.g. (12). Voice Menu (refer to the User Manual for the User Menu Flowchart). Only the Arm Security Menu (Menu 1) and the

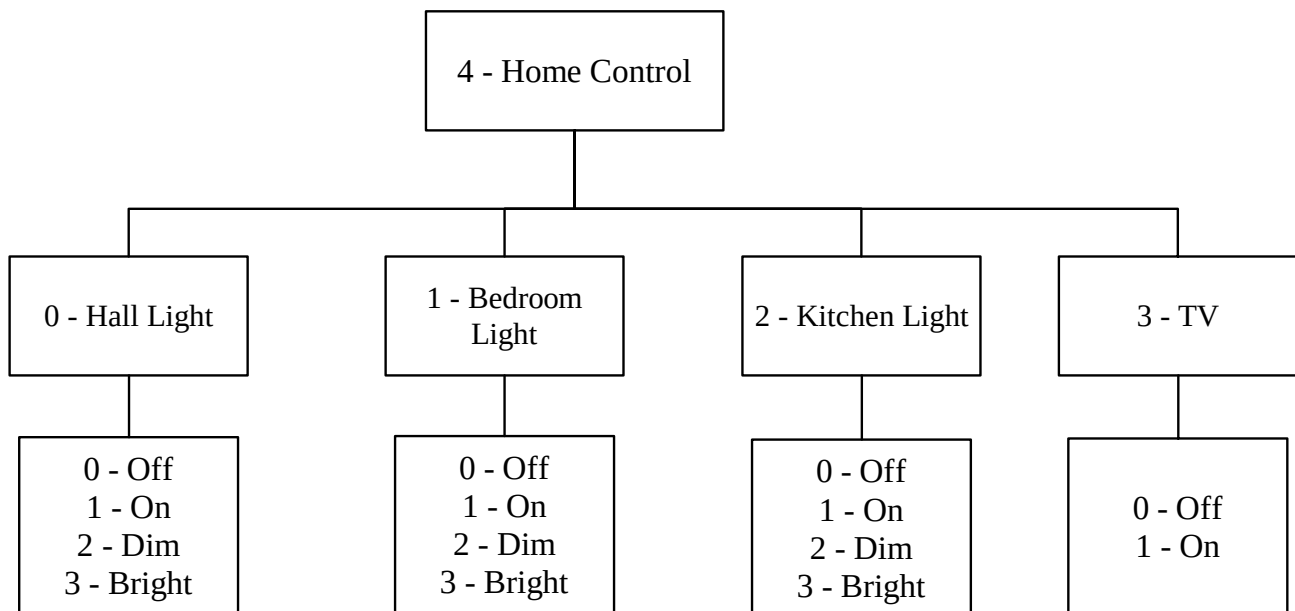
Home Control Menu (menu 4) can be accessed by SMS messages.

Whenever a message is sent successfully to Comfort, Comfort will reply with a SMS "(xxxx)-OK!" to indicate so (from GSM5.78).

To arm and disarm the security system, the following commands are used;

- (10) Disarm Security System
- (11) Arm Security to Away Mode
- (12) Arm Security to Night Mode
- (13) Arm Security to Day Mode
- (14) Arm Security to Vacation Mode

To access Home Control Menu, assume it is set up as a two-level menu without Control Groups as shown in the following diagram, (as an example).



Example of a Home Control Menu

The commands to activate the home control menu are:

- (400) Hall Lights Off
- (401) Hall Lights On
- (402) Hall Lights Dim
- (403) Hall Lights Bright
- (410) Bedroom Lights Off
- (411) Bedroom Lights On
- (412) Bedroom Lights Dim
- (413) Bedroom Lights Bright
- (420) Kitchen Lights Off
- (421) Kitchen Lights On

- (422) Kitchen Lights Dim
- (423) Kitchen Lights Bright
- (430) TV Off
- (431) TV On

The control menu can be programmed as a 3-level menu with Control Groups, as shown below.

- (4000) Hall Lights Off
- (4001) Hall Lights On
- (4002) Hall Lights Dim
- (4003) Hall Lights Bright
- ..
- ..
- (4100) Bedroom Heater Off
- (4101) Bedroom Heater On
- (4102) Garage Heater Off
- (4103) Garage Heater On
- ..
- ..
- (4200) Bedroom TV Off
- (4201) Bedroom TV On

Commands can be stored as templates in most mobile phones. Texts outside the pair of brackets (...) are ignored, so they can be used to describe the action performed by the command

Upgrading Firmware

The UCM/GSM firmware can be upgraded in 2 ways;

- 1 Using UCM with Programming Cable Require Configurator 3
- 2 Using UCM and Configurator 3.3.0 Upgrade module firmware by Comfort Bus. Requires UCM 6.007, and Comfort Firmware 6.004

Refer to the UCM Manual for details of the Firmware Upgrade procedure, download from http://www.cytech.biz/ucm_manuals.html

Document History

1.1.5 - 2 August 2011 - UCM 6.006 with Comfort Bus Upgrade

1.1.4 - 12 August 2010 - new GSM2 module

Firmware Version History

UCM/GSM 6.006 (10 August 2011)

- 1 Supports SIM900 Module, as well as SIM300Dd, TC35i and Sony
- 2 Supports firmware upgrade using Comfort Bus, Requires UCM 6.007

UCM/GSM 5.201 (15 February 2010)

- 1 Supports SIMCOM, TC35i
- 2 Supports scanning of UCM/GSM IDs

UCM/GSM 5.163 (15 July 2008)

Supports TC35i, Q64 modules

UCM/GSM 5.133 (December 2006)

Version for GR64 Module

UCM/GSM 5.98 (April 2006):

Minor changes

UCM/GSM 5.78 (May 2005)

Incorporated automated reply "(xxxx)-OK!"

UCM/GSM 5.68 (July 2004):

Initial release for GM29

Important Note

The printed manual may not always be the most current version. Please check and download the latest version from <http://www.cytech.biz/manuals.html>

This manual is in A4 format. To print this manual as an A5 Booklet, on HP PCL printers select Page Scaling = Fit to Printable Area. Select Properties> Finishing Tab, Document Options = Print on Both Sides, Booklet Layout = Left Side Binding. Other printers may have different settings to achieve the same result.



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