# CH-MG

## Cellular Home Alarm System

### Installation and Operation Guide

3 Dec 2020

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# 1. Introduction

## 1.1. CH-MG

CH-MG is an indoor cellular alarm system with Wi-Fi and RF capabilities. It is capable of playing voice prompts to raise the users' self-awareness and reporting events via Speech, SMS and IP (Mobile Network) protocols to directly communicate with the monitoring centers.

CH-MG can be programmed by using programming software via RJ-11 connection, providing intuitive graphical interface for installers to program the panel easily from a computer.
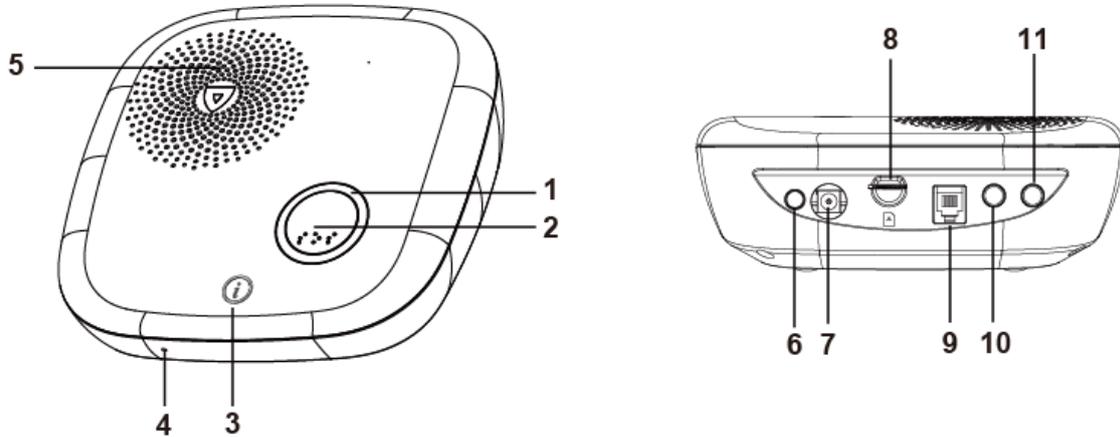
## 1.2. What's in the Box

Your CH-MG package includes the following items:

| Items |
|---|
| ● CH-MG<br>● 12V 1A Adapter<br>● Programming Cable (Optional) |

# 2. System Overview

## 2.1. Identifying the Parts



| Button/LED/Component | Behavior | Function/Indication |
|---|---|---|
| **1. White Backlight** | Dimly lit | Idle/normal mode |
| | ON | Alarm Reporting |
| | Flash | During Guard time or Retrying report |
| **2. Help Button** | Press once | Activate alarm |
| | Press once when CH-MG is ringing | Pick up an incoming call |
| | Press and hold for 5 seconds during a call | Terminate the call |
| **3. Info Button** | Press once | 1) Check cellular signal strength, power status, and system status via voice prompt<br>2) Cancel Alarm |
| | Press and hold for 3 seconds | Enter Test Mode |
| LED (Red) | Flash | During Guard Time |
| LED (Blue) | 1 Flash every 2 seconds | In learning mode |
| LED (Amber) | 1 Flash every 3 seconds | Panel Low Battery/ Cellular Network fault/battery disconnected |
| | 1 Flash every 5 seconds | Device low battery/Device tamper/Device out-of-order |
| LED (Green) | ON | AC power connected |
| | Flash | AC power disconnected |
| | All LEDs ON | During Local Firmware Update |
| **4. Microphone** | | |
| **5. Speaker** | | |
| **6. Power Button** | Press the Power Button once to power on/off the panel. | |
| **7. DC Jack** | Connects to an AC-DC 12V/1A switching power adapter. | |
| **8. Micro SIM Card Slot** | | |

| Button/LED/Component | Behavior | |
|---|---|---|
| 9. **Programming Telephone Jack** | The programming cable (QT cable A) needs to be plugged into this jack and connected to a PC for PC Programming. | |
| 10. **Volume Adjustment Button** | Press the button to adjust the volume level. 5 levels are available for selection. Each button press will lead to next level. The cycle of 1-5 will be repeated sequentially. | |
| 11. **Learn Button** | Press and hold for 6 seconds in normal mode | Enter RF device learning mode |
| | Press once in learning mode | Exit learning mode |

## 2.2. Power Supply

● An AC power adapter is required to connect to a wall outlet. Be sure only to use an adapter with the appropriate AC voltage rating to prevent component damage. A DC 12V output and 1A switching power adapter is generally used to power CH-MG.

● In addition to the adapter, there is a rechargeable battery inside CH-MG which serves as a back-up in case of a power failure.

● During normal operation, the AC power adapter is used to supply power to CH-MG and at the same time recharge the battery. It takes approximately 72 hours to fully charge the battery.

● After power is supplied to CH-MG, press the power button once to power on the Control Panel.

# 3. Getting Started – Setting up CH-MG

## 3.1. Insert a SIM card

CH-MG Panel features built-in Cellular network communication facility to report to the Monitoring Station.

**To Insert SIM card:**

- It is recommended to disable the SIM card PIN code before inserting into the Control Panel.
- The SIM card base is located on the rear side of the unit. Insert the SIM card with the chip side facing up.
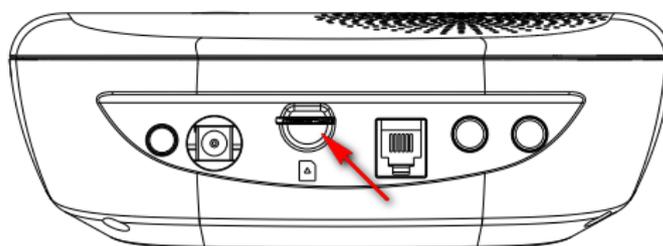


- Push to the furthest extend, then press on the edge of the SIM card firmly to secure it.
- SIM Card will delete its SMS messages whenever the CH-MG is powered on.

**To remove SIM card:**

Press and release on the edge of SIM card, the card will spring out.

## 3.2. Locating a suitable position for the Control Panel

- The Control Panel requires main power and a constant cellular network reception.
- The Control Panel should be easily accessible.
- The Control Panel should not be placed in a damp location, such as a bathroom.
- The Control Panel should not be placed close to any heat source, such as microwave ovens, which can reduce signal strength.
- The Control Panel should not be located alongside other radio transmitting devices, such as mobile phones, cordless phone, or wireless computer network (Wi-Fi) devices.

## 3.3. Hardware Installation (For PC Programming)

### Programming QT cable A

● CH-MG has a QT cable A for PC programming **(optional item, sold separately)**.



### Panel Connection

**Step 1.** Plug a DC 12V 1A power adapter into the DC Jack of your panel and connect to power supply. Press the power button to power on the panel.

**Step 2.** Plug the QT cable A into the Programming Telephone Jack of CH-MG.

**Step 3.** Connect the the QT cable A to the USB port on your computer.

See **Figure 1** for connection diagram between medical panel and computer.

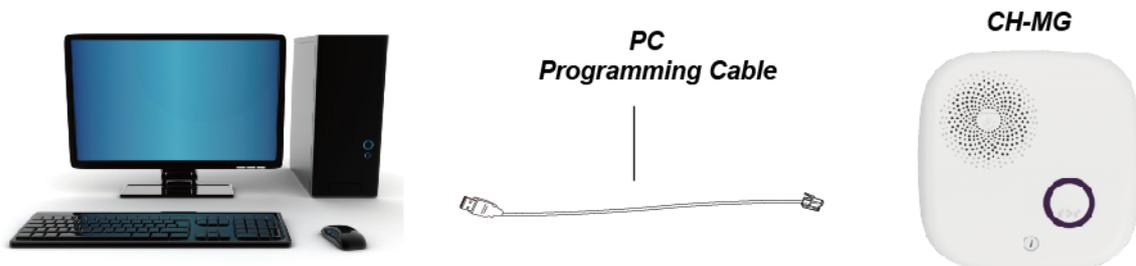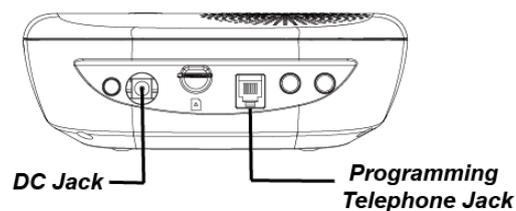See **Figure 2** for CH-MG connection jack locations.

### Figure 1



### Figure 2

## 3.4. Software Installation (For PC Programming)

## 3.4.1. Installing USB Driver

CH-MG can be programmed via USB port connection of a computer using the PC Programming Tool software (using the Programming Cable).

If the computer cannot recognize the USB connection, please try installing the USB driver as instructed below.

**Step 1.** Make sure CH-MG is connected properly (please refer to *3.3. Hardware Installation*)

**Step 2.** Please go to http://www.ftdichip.com/Drivers/VCP.htm. Scroll down the webpage and select the driver file according to your operation system, download and install the driver.

| Operating System | Release Date | Processor Architecture | | | | | | | Comments |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | x86 (32-bit) | x64 (64-bit) | PPC | ARM | MIPSII | MIPSIV | SH4 | |
| Windows* | 2017-08-30 | 2.12.28 | 2.12.28 | - | - | - | - | - | WHQL Certified. Includes VCP and D2XX. Available as a setup executable Please read the Release Notes and Installation Guides. |
| Linux | - | - | - | - | - | - | - | - | All FTDI devices now supported in Ubuntu 11.10, kernel 3.0.0-19 Refer to TN-101 if you need a custom VCP VID/PID in Linux VCP drivers are integrated into the kernel. |
| Mac OS X 10.3 to 10.8 | 2012-08-10 | 2.2.18 | 2.2.18 | 2.2.18 | - | - | - | - | Refer to TN-105 if you need a custom VCP VID/PID in MAC OS |
| Mac OS X 10.9 and above | 2017-05-12 | - | 2.4.2 | - | - | - | - | - | This driver is signed by Apple |
| Windows CE 4.2-5.2** | 2012-01-06 | 1.1.0.20 | - | - | 1.1.0.20 | 1.1.0.10 | 1.1.0.10 | 1.1.0.10 | |
| Windows CE 6.0/7.0 | 2016-11-03 | 1.1.0.22 CE 6.0 CAT CE 7.0 CAT | - | - | 1.1.0.22 CE 6.0 CAT CE 7.0 CAT | 1.1.0.10 | 1.1.0.10 | 1.1.0.10 | For use of the CAT files supplied for ARM and x86 builds refer to AN_319 |
| Windows CE 2013 | 2015-03-06 | 1.0.0 | | | 1.0.0 | | | | VCP Driver Support for WinCE2013 |

## 3.4.2. Installing PC Programming Tool

PC Programming Tool for CH-MG is a portable application and requires no installation. After installing the USB driver, simply unzip the file to a desired folder and execute the "Mobile_Tool_MG.exe" file.



Mobile_Tool_M
G

# 4. Programming CH-MG

CH-MG can be programmed by using a PC Programming Tool.

## 4.1. PC Programming Tool (Installers Only)

For system setting programming with PC Programming Tool software via USB port, follow instruction below.

**Step 1.** Execute the programming tool:



Mobile_Tool_M
G

The following configuration screen will be opened.
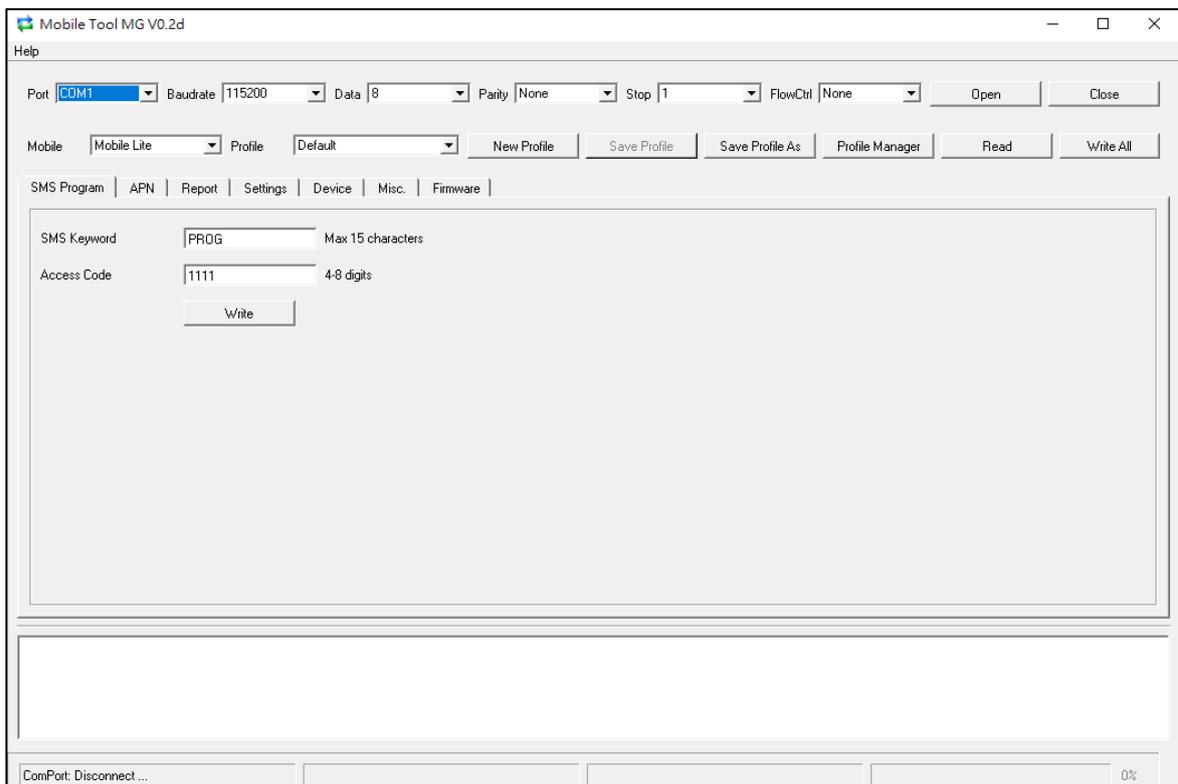


**Step 2.** Select the following settings in the top section of the configuration screen and click "Open."

- Port: Select the COM port generated for CH-MG after installing the USB Driver (the USB port connected to CH-MG).

- Baud rate: 115200
- Data: 8
- Parity: None
- Stop: 1
- FlowCtrl: None
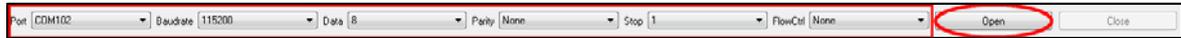


## Step 3. Read Configuration

To start configuring CH-MG settings, click on "**Open**". A Read configuration success message will pop up, click "**OK**" to proceed:
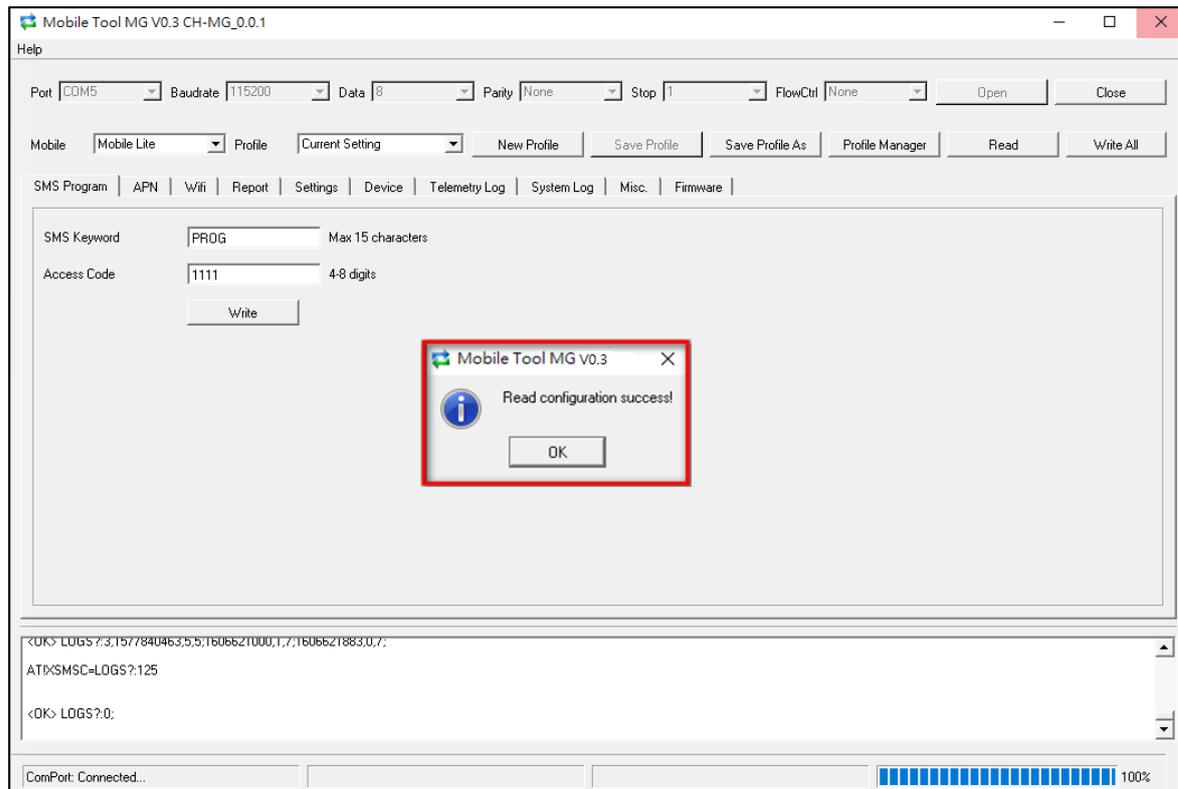


The current CH-MG setting will be displayed. Click on different tabs to see and edit CH-MG functions.

### 4.1.1. SMS Program

This tab allows the user to program SMS Keyword (15 characters max.) and Access Code 1 (4-8 digits) which are used for SMS Programming feature. Enter th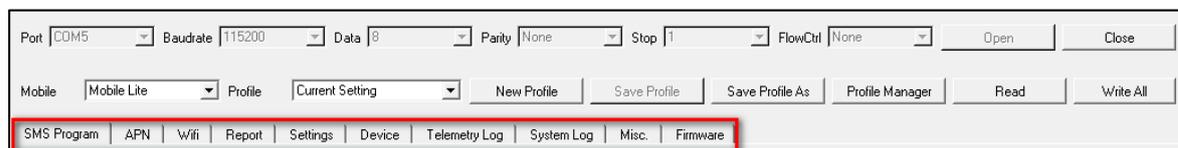e information and click "Write" to complete programming. Please note that SMS Keyword is case-sensitive. For detail information, please refer to *4.2. SMS Programming*.

- SMS Keyword: PROG (default)
- Access Code: 1111 (default)



### 4.1.2. APN

The APN setting must be completed for CH-MG to report events via cellular network.

Click "APN" to set APN Name, APN User and APN Password and click "Write" to confirm.

- **APN Name:** The name of an access point for GPRS. Please ask your SIM card service provider for your APN.

- **APN User:** Offered by your SIM card service provider. Please ask your service provider for your GPRS username. If no username is required, you may skip this step.

- **APN Password:** Offered by your SIM card service provider. Please ask your service provider for your GPRS password. If no password is required, you may skip this step.

### 4.1.3. Wi-Fi

The "**Wi-Fi**" tab allows the user to configure the panel's Wi-Fi setting.



- **UUID:** Enter the Wi-Fi network name.

- **Wi-Fi Password:** Enter the Wi-Fi password..

### 4.1.4. Report

The "**Report**" tab allows the user to configure report settings.

CH-MG reports over 3 media: IP (Mobile Network), Speech channel, and SMS message.

5 **Report Indexes** are available for setting:



4 programmable settings are available per Report Index:

1. **Report Destination**

Enter a report destination. The format of the report destination will depend on the Reporting Format (Type). Please see **Report Destinations** below.

If there are no report destinations programmed, CH-MG will not report upon alarm activation and will emit 1 beep as a reminder.

**2. Event Filter**

Select an event filter. The event filter determines which events are reported to the selected Report Destination.

**3. Reporting Format (Type)**

Select a reporting format. The reporting format determines how the events are reported to the Report Destination.

**4. (Reporting) Groups**

Assign the Report Index to a Reporting Group. The Reporting Group determines the sequence of reporting.

Click "Write" to apply the settings to CH-MG.

## Report Destinations

After Report Format is determined, enter the Report Destinations according to the designated Report Format:

- **JSON** reporting: http://iota.medicalguardian.com

  **JSON udi:** Please input the device UDI (Unique Device Identifier) for JSON Report. Maximum of 15 numeric characters or alphanumeric letters.

- Speech reporting and SMS Text Report Format: **PhoneNumber**

  Example: **0912345678**

  **Speech Reporting**: When activated, CH-MG will dial to the telephone number and open two-way voice communication directly.

  **SMS Text Reporting**: When activated, CH-MG sends a SMS text message to the recipient. The message contains event information.

- If two-way communication is required after an IP or SMS report, please program a separate Speech Report. Alternatively, the user can also utilize Callback operation.

## Event Filter

This parameter determines which events are reported to the selected Report Destination.

3 options: "**All**", "**Emergency**" and "**Status**". When an event is triggered, it will be reported to the reporting destination according to the setting. If set to **All**,

the panel will report all events regardless of event type.

For example:

- CH-MG being low on battery is a "status" event. If report index 3 and 5 are set as "status" and index 4 as "all" in event filters, this status event will be reported to destinations 3, 4, and 5.

- For more information, refer to **8. Appendix** for event code types.

## Reporting Format (Type)

The available reporting formats include:

- **JSON:** The default IP report format for CH-MG.

- **Speech:** CH-MG reports over the Speech channel to allow the user to talk directly to the call recipient.

- **SMS TEXT:** CH-MG sends a SMS text message containing event information.

## Group

The Reporting Group determines the sequence of reporting.

One Report Index can only be assigned to one Group.

Reporting within a Group:

If there are multiple Report Indexes programmed within a Group:

- CH-MG will report according to the numeric order (e.g. 1 > 2 > 3, etc.) of the Report Index in a Group. Report will stop when one report is successful and CH-MG will regard reporting to this Group successful.

  For example, if Report Index 1 and 4 are assigned to Group 1, CH-MG will stop reporting if reporting to Index 1 is successful. If reporting to Index 1 failed, CH-MG will carry on reporting to Index 4.

- If all reporting in a group failed, CH-MG will retry reporting.
  CH-MG will try reporting within the same group for **up to three times**, (or until one of the reports is successful). If three times of trying within the same group failed, CH-MG will regard reporting to this Group unsuccessful.

  From the example above, suppose all report failed, the report sequence would be:

  1 > 4 > 1 > 4 > 1 > 4

Reporting Cycle

- If multiple groups are assigned to the same event type (emergency or status), CH-MG will report according the group numeric order from the first

programmed Group to the last programmed group. This report sequence is one reporting cycle.

- Reporting cycle is regarded as successful if any Group is successful, but CH-MG will terminate reporting only after completing the reporting cycle (going from the first programmed group to the last programmed group).

- Reporting behavior depends on the event type:

  - **Emergency Events**:

    - When reporting to the first group is successful, Reporting is regarded as successful. CH-MG will still report to the next group until all groups have been tried to complete the reporting cycle.

      For example, Groups 1 and 3 are assigned to Emergency Events:

      If Group 1 is successful, CH-MG will still report to Group 3.

      If reporting to Group 3 is successful, CH-MG will terminate reporting.

      If reporting to Group 3 is unsuccessful (going through all the Report Indexes within the group for 3 times), CH-MG will also terminate reporting.

    - When reporting to the first group failed (going through all the Report Indexes within the group for 3 times), CH-MG will start reporting to the next group. When reporting to the second group succeeds, reporting is regarded as successful. If no other group is programmed, CH-MG will stop reporting. If there are more groups programmed, CH-MG will continue reporting until all groups have been tried to complete the reporting cycle.

    - If reporting to all the programmed groups failed in a reporting cycle, CH-MG will wait for 5 minutes. After 5 minutes, CH-MG will retry as it starts another reporting cycle.

      For Emergency event, CH-MG will try reporting for up to three reporting cycles. If going through three reporting cycles and all failed, CH-MG will terminate reporting.

      Example 1, if Groups 1 and 3 are programmed for "Emergency" reports, and assuming NO successful report until Group 1 is successful after the second try:

      Group 1 > Group 3 > <u>Wait 5 minutes</u> > Group 1 (Success!) > Group 3 > Stops reporting whether Group 3 is successful or not.

      Example 2, if Groups 1 and 3 are programmed for "Emergency" reports, and assuming there is NO successful report:

Group 1 > Group 3 > <u>Wait 5 minutes</u> > Group 1 > Group 3 > <u>Wait 5 minutes</u> > Group 1 > Group 3 > Stops reporting

- **Status Events**:

CH-MG will only go through one reporting cycle for Status reports.

For example, if Groups 1 and 3 are programmed for "Status" reports:

Group 1 > Group 3 > Stops reporting whether Groups 1 and 3 succeeded or not

## SMS Report text format

● Below are the SMS Text messages sent to user according to the condition of the CH-MG.

**SMS text table:**

| CH-MG Condition | SMS Text format |
|---|---|
| Low battery status | CH-MG Low Battery |
| Battery voltage restored | CH-MG Battery Restored |
| Wakes up time | CH-MG Periodic Test |
| Weak Signal strength from the Local Base Station | CH-MG Weak Signal Strength |
| AC Power disconnected | CH-MG Power Failure |
| AC Power connected | CH-MG Power Restored |

● When help is sent by pressing the CH-MG's Help Button, in which according to CID event code, the user will receive SMS text format as follows:

| CH-MG Medical Help |
|---|

## 4.1.5. Setting

The Setting tab allows you to program general configuration for CH-MG. Click "Write" when you have completed all settings to confirm.



- **Guard Time:**

  - When the Help Button on CH-MG is pressed, the panel will play voice prompt "Connecting" and enter guard time.

  - During guard time, the panel will emit one beep every second. After Guard Time expires, CH-MG will begin report.

- **Guard Time Fall Sensor:**

  - The Guard Time for Fall Sensor's fall detection function is set separately from regular Guard Time.

  - After the Guard Time Fall Sensor expires, CH-MG will begin report.

  - This function is only used when a fall is detected, if the Help Button on CH-MG or the Active Button of the learnt-in Fall Sensor is pressed to activate alarm, normal guard time is used instead.

- **Fall Sensor Sensitivity:**

  - Select a preferred sensitivity level for the learned-in Fall Sensor FS-3. (5 is the highest sensitivity level while 1 is the lowest sensitivity level.)

  - After setting the sensitivity level from CH-MG, please press and hold the button on the fall sensor for 8 seconds to receive the sensitivity level data from the Control Panel. (Refer to the Fall Sensor FS-3 user manual to complete sensitivity setting.)

- **Speaker Volume Level**

  - Adjust the speaker volume of CH-MG from a scale of 1-5, where

    1 = minimum speaker volume

    5 = maximum speaker volume

- **Caller ID:** Caller ID #1 & Caller ID #2

    - The panel will instantly pick up the call if the incoming caller ID matches with the number(s) programmed in this function.

    - The panel will match the numbers starting from the last digit. For example, if a number string 321 is programmed, the panel will instantly pick up any call that has a caller ID of 321 as the last 3 digits.

    - Up to 15 numeric digits are allowed per setting.

## 4.1.6. Device

Click on the "**Device**" tab for Device settings where you can view device zone, type, add or remove devices.
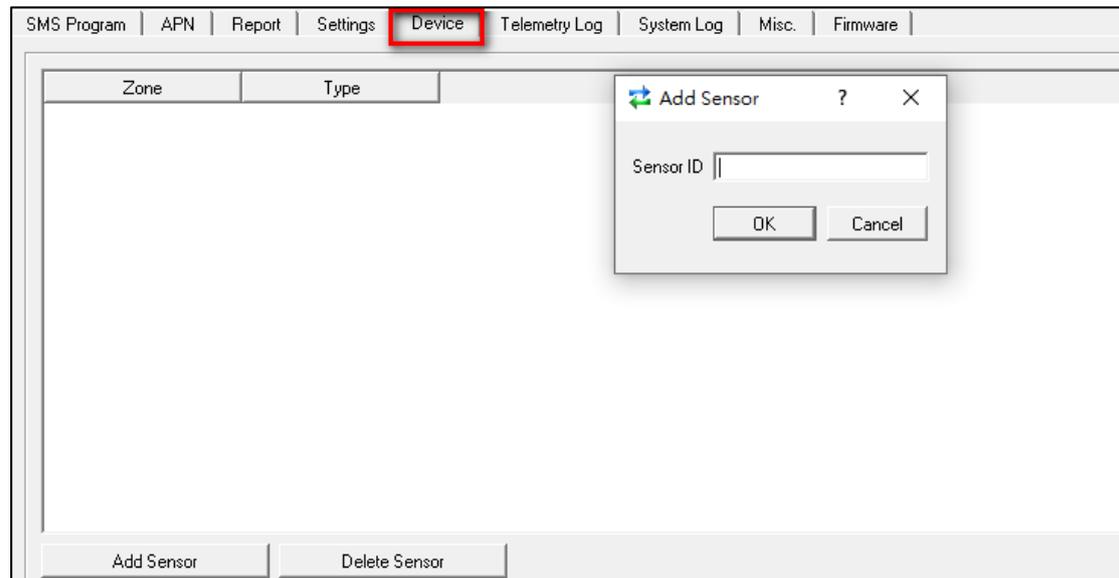


For learning new device(s), please use local learning mode or use the PC Programming Tool.

**Add Sensor:**

Depends on the supplier, a Sensor ID of the device may be labeled (usually on the back of the device). Users can use the "Add Sensor" function to include sensors into the Base.

- Click on the "**Add Sensor**" button:
- Enter the Sensor ID (the barcode on the back of the sensor). A sensor ID is a combination of digits 1-9 and characters A-F and can contain 10 or 14 characters (can be uppercase or lowercase characters).
- If the sensor is successfully added, the sensor will be assigned from Zone 1 to 15 in sequence.

**Removing sensors:**

- Click on the device entry you wish to delete from the Device List, and then click the "**Delete Sensor**" button.

### 4.1.7. Telemetry Log

The Telemetry log tab logs the control panel's detailed cellular connection history.



| SMS Program | APN | Wifi | Report | Settings | Device | Telemetry Log | System Log | Misc. | Firmware |

| | Time | Type | Log |
|---|---|---|---|
| 1 | 2020/11/29 03:38:30 | GSM | "LTE",466,1,"187E90D",-91 |
| 2 | 2020/11/29 03:44:34 | GSM | "LTE",466,1,"187E90D",-92 |
| 3 | 2020/11/29 03:50:38 | GSM | "LTE",466,1,"187E90D",-93 |
| 4 | 2020/11/29 03:56:42 | GSM | "LTE",466,1,"187E90D",-92 |
| 5 | 2020/11/29 04:02:46 | GSM | "LTE",466,1,"187E90D",-94 |
| 6 | 2020/11/29 04:08:50 | GSM | "LTE",466,1,"187E90D",-93 |
| 7 | 2020/11/29 04:14:54 | GSM | "LTE",466,1,"187E90D",-92 |
| 8 | 2020/11/29 04:20:58 | GSM | "LTE",466,1,"187E90D",-92 |
| 9 | 2020/11/29 04:27:02 | GSM | "LTE",466,1,"187E90D",-92 |
| 10 | 2020/11/29 04:33:06 | GSM | "LTE",466,1,"187E90D",-92 |
| | | GSM | "LTE",466,1,"187E90D",-93 |

### 4.1.8. System Log

The system log tab logs the control panel's detailed system operation history.



| SMS Program | APN | Wifi | Report | Settings | Device | Telemetry Log | System Log | Misc. | Firmware |

| | Time | Type | Log |
|---|---|---|---|
| 1 | 2020/01/01 01:01:02 | GSM | Start |
| 2 | 2020/01/01 01:01:02 | System | Reboot |
| 3 | 2020/01/01 01:01:03 | WIFI | wifi ready |
| 4 | 2020/11/26 06:03:10 | GSM | NTP update |
| 5 | 2020/11/26 06:03:19 | RF | Zone2Trigger |
| 6 | 2020/11/26 06:03:26 | RF | Zone2Tamper |
| 7 | 2020/11/26 06:03:51 | RF | Zone2Tamper Restore |
| 8 | 2020/11/26 06:03:54 | RF | Zone2Tamper |
| 9 | 2020/11/26 06:04:09 | RF | Zone2Trigger_Restore |
| 10 | 2020/11/26 06:04:11 | RF | Zone2Trigger |
| | | | connect to AP |

## 4.1.9. Miscellaneous

Click on the "Misc." tab to program miscellaneous options:
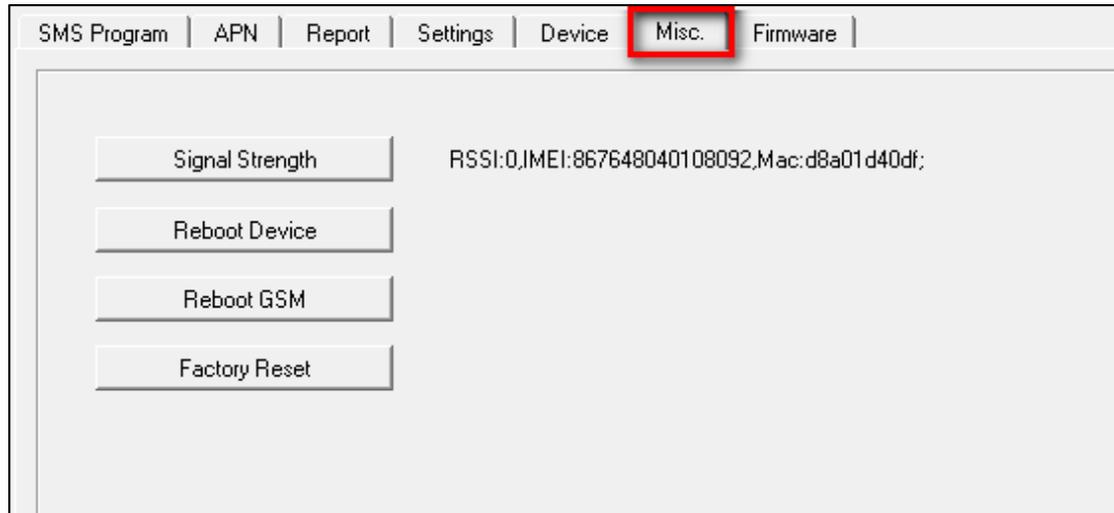


- **Signal Strength**

  - Click on the Signal Strength button to obtain GSM signal strength. The IMEI number of GSM module will be displayed on the right side of GSM signal strength.

- **Reboot Device**

  - Click "**Reboot Device**" to reboot CH-MG. This will not remove any programmed parameters on CH-MG.

- **Reboot GSM**

  - Click "**Reboot GSM**" will reset the Cellular module.

- **Factory Reset**

  - Factory Resetting CH-MG will clear all programmed parameters.

## 4.1.10. Firmware

To update the firmware of CH-MG:

**Step 1.** Click "**Firmware**".
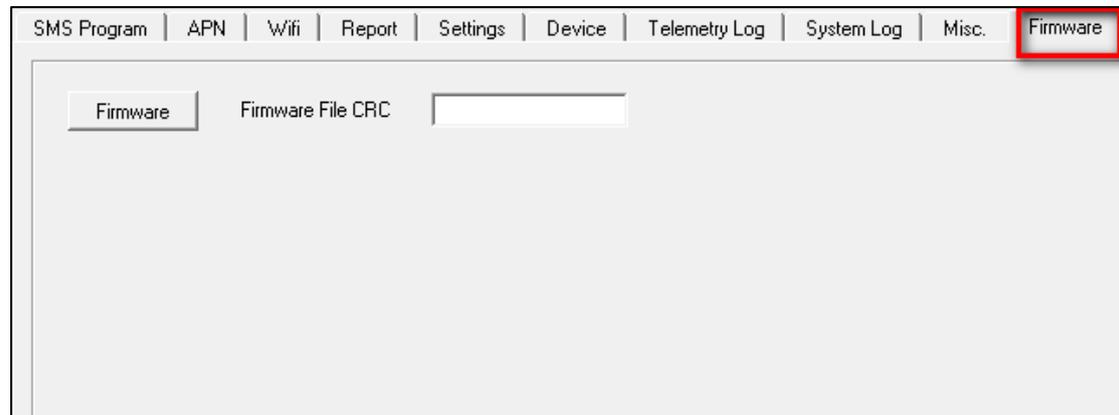


**Step 3.** Select the provided firmware in your computer. A small window will pop-up with the message "Read file ! OK!". Click on the "**OK**" button and the update process will start.

Total elapsed time will be displayed to show how long the updating process has elapsed.

**Step 3.** When updating process is completed, a message "Firmware update success!" will be displayed in a pop-up window.

**Step 4.** Click on "**OK**" and the programming tool will read the settings of CH-MG again.

### *<WARNING>*

☞ During updating process, please DO NOT disconnect CH-MG from the computer nor clicking on the "**Close**" button of the programming tool.

## 4.2. SMS Remote Programming

**Step 1.** Enter the SMS screen on your mobile phone or smartphone.

**Step 2.** Enter the programming command (see the SMS remote programming commands tables below).

**Step 3.** Enter a colon (**:**).

**Step 4.** Enter SMS Keyword (default is **PROG**).

**Step 5.** Enter a comma (**,**).

**Step 6.** Enter the Access Code (default is **1111**).

**Step 7.** Enter a comma (**,**).

**Step 8.** Enter the parameter(s).

**Step 9.** The composition of the command is completed. You can send the command to CH-MG now.

*<NOTE>*

☞ If the SMS message text format of your mobile phone is not English, please change it to English for SMS remote programming.

Example: To set IPOG as the keyword, you can send the following command:

| SUPPR:PROG,1111,IPOG | | |
|---|---|---|
| **SUPPR** | = | Programming command |
| **:** | = | Colon |
| **PROG** | = | SMS Keyword |
| **,** | = | Comma |
| **1111** | = | Access Code |
| **,** | = | Comma |
| **IPOG** | = | Programmed parameter |

*<NOTE>*

☞ You can compose multiple commands in one SMS text message by using "**;**" to separate each command.

Please refer to the Appendix for the *7.1. SMS Remote Programming Commands Table*.

# 5. Local RF Device Management

CH-MG can learn up to **15** RF devices which can be used to activate CH-MG to make emergency report.

## Entering Learning Mode

Press the Learn Button of CH-MG for 6 seconds. CH-MG will emit one beep at 1st, 3rd and 6th second. Release the button after the beep at 6th second to enter learning mode. CH-MG will play voice prompt "Entering Pairing Mode, press the button on the peripheral to connect to the device."

## Device Learning and Testing

**Step 1.** Press the Button on RF device to transmit signal. Refer to RF device manual for detail.

**Step 2.** CH-MG will emit 2 beeps when it receives the signal from the pendant to indicate it has learned in the pendant.

**Step 3.** Repeat Step 2~3 to learn in all devices, device learnt in will be assigned from Zone 1 to 15 in sequence.

To test learnt in device, press the device button again after learning, CH-MG will emit a long beep if it successfully receives signal from already learnt in device.

After complete learning, press the Learn Button on CH-MG once to exit learning mode. CH-MG will emit 1 beep.

# 6. Operation

## 6.1. Answering Incoming Calls

- CH-MG will ring when there is an incoming call.

- Press CH-MG's Help Button to pick up the call.

- If the number of the incoming call matches any of the Caller ID, CH-MG will instantly pick up the call.

- Press a DTMF key for over 1 second to enable a designed shortcut function.

    - Enter (**1**) to talk only.
    - Enter (**2**) to open two-way voice communication.
    - Enter (**3**) to listen in only.
    - Enter (**9**) to hang up. You can also put the handset back to the base cradle to end the call.

- Press CH-MG's Help Button for 5 seconds to hang up or press the learnt-in RF device (WTR, Fall Sensor or PB) button once to hang up.

- The caller can press either DTMF (9) key, Active Button of RF device, or put the handset back to the base cradle to hang up.

- Pressing any DTMF (except DTMF 9) can reset the communication time to 5 minutes.

## 6.2. Current Operation Condition

CH-MG uses its LED to remind the user of its Current Operation Condition.

- **LED indicators:**

| LED | Behavior | Indication |
|---|---|---|
| **LED (Red)** | Flash | During Guard Time |
| **LED (Blue)** | 1 Flash every 2 seconds | In learning mode |
| **LED (Amber)** | All LEDs On | During Remote Update |
| | 1 Flash every 3 seconds | Panel Low Battery/ Cellular Network fault/battery disconnected |
| | 1 Flash every 5 seconds | Device low battery/Device tamper/Device out-of-order |
| **LED (Green)** | ON | AC power connected |
| | Flash | AC power disconnected |

If CH-MG is activated while having a Cellular Network fault (Amber LED flashes once every 3 seconds), it will play voice prompt "Poor cellular connection. Please call 911."

## 6.3. Test Mode

- Test Mode is for user to test if the CH-MG can make a successful report to the CMS.

- To enter Test Mode:

  **Step 1.** Press and hold the Info button for 3 seconds. CH-MG will emit one beep at 1st and 3rd second. Release the button after the beep at 3rd second to enter Test mode.

  **Step 2.** CH-MG will play voice prompt "Entering Test Mode, press the Help Button to connect to the test center."

  **Step 3.** Press the Help Button once to continue with the Test. If no action is taken, CH-MG will come out of test mode in 5 minutes.

## 6.4. Alarm Activation

- When an alarm is activated by pressing the Help Button of CH-MG or the learnt-in RF device (WTR, Fall Sensor or PB), or pulling the cord of PCU, CH-MG will emit a voice prompt "Connecting" as it enters guard time (default 10 seconds).

  If alarm is activated by fall detection, CH-MG will enter guard time fall sensor (default 30 seconds).

- If CH-MG is activated while having a Cellular Network fault (Amber LED flashes once every 3 seconds), it will play voice prompt "Poor cellular connection. Please call 911." to alert user to call 911 by themselves.

- If there are no report destinations programmed, CH-MG will not report upon alarm activation and will emit 1 beep as a reminder.

## Guard Time

- When the Help Button on CH-MG is pressed, the panel will play voice prompt "Connecting" and enter guard time.

- During guard time, the panel will emit one beep every second. After Guard Time expires, CH-MG will begin report.

## Guard Time Fall Sensor

- The Guard Time for Fall Sensor's fall detection function is set separately from regular Guard Time.

- This function is only used when a fall is detected, if the Active Button of the learnt-in Fall Sensor is pressed to activate alarm, normal guard time is used instead.

- After the Guard Time Fall Sensor expires, CH-MG will begin report.

## Confirmation Voice Prompt

- After guard time expires, CH-MG will summon help based on the programmed reporting methods. When CH-MG is reporting, it will play a voice prompt "Call in progress" every 10 seconds to indicate that the call is in progress.

- When CH-MG is connected to CMS successfully, it will play the voice prompt "Call Connected".

- After connecting to CMS successfully and until a call recipient picks up the call and presses any DTMF, CH-MG will repeat the voice prompt "Please standby for an operator" every 10 seconds.

### 6.4.1. Callback Mode

● After reporting an alarm successfully to the CMS, CH-MG will enter callback mode by default.

<u>*&lt;NOTE&gt;*</u>

☞ CH-MG will enter callback mode only after all groups have been reported to and at least one report was successful.

● If the number of the incoming call matches any of the Caller ID, CH-MG will instantly pick up the call, emit one beep (at the caller handset) and open a two-way communication.

● The caller can call back multiple times during the callback period.

● The caller can use the following DTMF commands to control the call:

- Enter (**1**) for talk-only mode.
- Enter (**2**) for two-way voice communication.
- Enter (**3**) for listen-in only mode.
- Enter (**9**) to hang up.
- Put the handset back to the base cradle to end the call.
- Press and hold the Help Button of CH-MG for 5 seconds, or press Active Button of RF device (WTR, Fall Sensor or PB) once to end the call.
- Press any DTMF key except for the designated hang-up key (**9**) to reset the communication time to 5 minutes. When a DTMF key is pressed, its designed shortcut function will also be executed along with the communication time reset.

<u>*&lt;NOTE&gt;*</u>

☞ If you wish to enable a designed shortcut function, please press the DTMF key for at least 1 second.


### 6.4.2. Speech Reporting Method

● If speech reporting method is selected, CH-MG will dial the programmed number for reporting. It will establish a two-way voice communication between the call recipient and CH-MG user.

● The CMS can remotely control CH-MG during the voice communication period using the DTMF commands below:

- Enter (**1**) for talk-only mode.
- Enter (**2**) for two-way voice communication.
- Enter (**3**) for listen-in only mode.
- Enter (**9**) to hang up.
- Put the handset back to the base cradle to end the call.
- Press and hold the Help Button of CH-MG for 5 seconds, or press the Active Button of RF device (WTR, Fall Sensor or PB) once to end the

call.

- Press any DTMF key except for the designated hang-up key (**9**) to reset the communication time to 5 minutes. When a DTMF key is pressed, its designed shortcut function will also be executed along with the communication time reset.

*<NOTE>*

☞ If you wish to enable a designed shortcut function, please press the DTMF key for at least 1 second.

● At 20 and 10 seconds before the communication time expires, CH-MG will emit 1 beep via the telephone handset to alert the user.

● If the call recipient needs more talk time, he can press any key except for (**9**) to reset the communication time to its preset duration.

● If no DTMF command is pressed during the speech period, the call will automatically hang up and be recorded as an unsuccessful report. Each phone number will be retried up to a maximum of 5 times accordingly.


### 6.4.3. Report Sequence

The Reporting Group determines the sequence of reporting.

One Report Index can only be assigned to one Group.

Reporting within a Group:

If there are multiple Report Indexes programmed within a Group:

● CH-MG will report according to the numeric order (e.g. 1 > 2 > 3, etc.) of the Report Index in a Group. Report will stop when one report is successful and CH-MG will regard reporting to this Group successful.

For example, if Report Index 1 and 4 are assigned to Group 1, CH-MG will stop reporting if reporting to Index 1 is successful. If reporting to Index 1 failed, CH-MG will carry on reporting to Index 4.

● If all reporting in a group failed, CH-MG will retry reporting.

CH-MG will try reporting within the same group for **up to three times**, (or until one of the reports is successful). If three times of trying within the same group failed, CH-MG will regard reporting to this Group unsuccessful.

From the example above, suppose all report failed, the report sequence would be:

1 > 4 > 1 > 4 > 1 > 4

Reporting Cycle

● If multiple groups are assigned to the same event type (emergency or status), CH-MG will report according the group numeric order from the first

programmed Group to the last programmed group. This report sequence is one reporting cycle.

- Reporting cycle is regarded as successful if any Group is successful, but CH-MG will terminate reporting only after completing the reporting cycle (going from the first programmed group to the last programmed group).

- Reporting behavior depends on the event type:

  - **Emergency Events**:

    - When reporting to the first group is successful, Reporting is regarded as successful. CH-MG will still report to the next group until all groups have been tried to complete the reporting cycle.

      For example, Groups 1 and 3 are assigned to Emergency Events:

      If Group 1 is successful, CH-MG will still report to Group 3.

      If reporting to Group 3 is successful, CH-MG will terminate reporting.

      If reporting to Group 3 is unsuccessful (going through all the Report Indexes within the group for 3 times), CH-MG will also terminate reporting.

    - When reporting to the first group failed (going through all the Report Indexes within the group for 3 times), CH-MG will start reporting to the next group. When reporting to the second group succeeds, reporting is regarded as successful. If no other group is programmed, CH-MG will stop reporting. If there are more groups programmed, CH-MG will continue reporting until all groups have been tried to complete the reporting cycle.

    - If reporting to all the programmed groups failed in a reporting cycle, CH-MG will wait for 5 minutes. After 5 minutes, CH-MG will retry as it starts another reporting cycle.

      For Emergency event, CH-MG will try reporting for up to three reporting cycles. If going through three reporting cycles and all failed, CH-MG will terminate reporting.

      Example 1, if Groups 1 and 3 are programmed for "Emergency" reports, and assuming NO successful report until Group 1 is successful after the second try:

      Group 1 > Group 3 > <u>Wait 5 minutes</u> > Group 1 (Success!) > Group 3 > Stops reporting whether Group 3 is successful or not.

      Example 2, if Groups 1 and 3 are programmed for "Emergency" reports, and assuming there is NO successful report:

Group 1 > Group 3 > <u>Wait 5 minutes</u> > Group 1 > Group 3 >
<u>Wait 5 minutes</u> > Group 1 > Group 3 > Stops reporting

■ **Status Events**:

CH-MG will only go through one reporting cycle for Status reports and will not retry if report failed.

For example, if Groups 1 and 3 are programmed for "Status" reports:

Group 1 > Group 3 > Stops reporting

## 6.5. Check Panel Status

To check CH-MG's status, press the info button once in normal mode. The panel will play voice prompt to annouce the panel state including cellular signal strength/power status/system status.

## 6.6. Voice Prompts

CH-MG will play voice prompts according to different conditions.

Below is a quick reference chart of all the voice prompts of CH-MG and the conditions under which they are played.

| No | Voice Prompt | Condition |
|----|--------------|-----------|
| 1 | Connecting | Plays when the Help Button is pressed to trigger emergency alarm |
| 2 | Call in progress | Plays once every 10 seconds after guard expires and until connecting to Center Monitoring Station (CMS) |
| 3 | Call connected | Plays once when connecting to CMS successfully |
| 4 | Please standby for an operator | Plays once every 10 seconds after connecting to CMS and until an operator presses any DTMF |
| 5 | Poor cellular connection. Please call 911 | Plays twice if the cellular signal is bad and the system cannot connect to 911. The user need to dial 911 by himself. |
| 6 | Your alarm is now canceled | Reserved |
| 7 | Cellular signal good | Plays along with a beep when pressing the Info Button once shortly and there are 2,3 or 4 signal bars |
| 8 | Cellular signal good, battery level low, charge your device | Plays along with a beep when pressing the Info Button once shortly and there are 2,3 or 4 signal bars but the battery level is below 20% |
| 9 | Cellular signal good, battery level very low, charge your device immediately | Plays along with a beep when pressing the Info Button once shortly and there are 2,3 or 4 signal bars but the battery level is below 10% |
| 10 | Cellular signal poor | Plays along with a beep when pressing the Info Button once shortly and there is 1 signal bar or less |

| 11 | Cellular signal poor, battery level low, charge your device | Plays along with a beep when pressing the Info Button once shortly and there is 1 signal bar or less and the battery level is below 20% |
|---|---|---|
| 12 | Cellular signal poor, battery level very low, charge your device immediately | Plays along with a beep when pressing the Info Button once shortly and there is 1 signal bar or less and the battery level is below 10% |
| 13 | Device ready | Plays once when pressing the Info Button once shortly and the system is ready |
| 14 | On AC Power | Plays once when pressing the Info Button once shortly and the Panel is connected to AC power |
| 15 | On Battery Power | Plays once when pressing the Info Button once shortly and the Panel is on Battery power |
| 16 | Powering off | Plays after pressing the Power Button to power off the Panel |
| 17 | Entering Test Mode, press the Help Button to connect to the test center | Plays after pressing the Info Button for 3 seconds to enter the Test Mode. |
| 18 | Entering Pairing Mode, press the button on the peripheral to connect to the device | Plays after pressing` the Learn Button for 6 seconds to enter Pairing Mode. |

# 7. Appendix

## 7.1. SMS Remote Programming Commands Table

| Item | Command | Example & Usage | Default |
|---|---|---|---|
| Cellular Module Reset | RSTG | RSTG:PROG,1111<br>To reset Cellular Module | -- |
| GPRS APN, username & password | APN | APN:PROG,1111,internet,,<br>To set GPRS APN, username and password (31 characters max. for APN, 31 characters max. for username, 31 characters max. for password) | APN: Internet Username and password: empty |
| Report settings | RPT | RPT:PROG,1111,1,0933111222,1,0,0,1<br>To configure report settings (index number, report destination, group, type, miscellaneous and event filter)<br>Report Index: 1-5<br>Report destination: Depending on the reporting format<br>Group: 1-5<br>Type: 0 = Speech, 11 = CID_SIA_IP, 13 = SIA_CID_UDP, 17 = JSON, 18 = AG_XML, 20= CID_SIA2_IP, 22= CID_SIA2_UDP, 30 = SMS_CID, 31 = SMS_TEXT<br>Miscellaneous: Enter 0 for this parameter<br>Event filter: 255 = all, 1 = status, 4 = emergency | No report destination |
| Keyword setting | KEYWD | KEYWD:PROG,1111,IPOG<br>To set the keyword<br>15 characters max. for the keyword | PROG |
| Access Code | ACCES | ACCES:PROG,1111,1,1234<br>To set the Access Code (index number, code)<br>8 digits max. for the Access Code | 1111 for user 1 |
| Guard time settings (normal and fall sensor) | GUDT | GUDT:PROG,1111,10,15<br>To set the length of guard time periods (normal: __ seconds, fall sensor: __ seconds)<br>Normal: 5 = 5 secs, 10 = 10 secs, 15 = 15 secs, 20 = 20 secs, 25 = 25 secs, 30 = 30 secs<br>Fall sensor: 5 = 5 secs, 10 = 10 secs, 15 = 15 secs, 20 = 20 secs, 25 = 25 secs, 30 = 30 secs | 10 |
| Factory reset | FTSET | FTSET:PROG,1111<br>To execute a factory reset | -- |
| To reboot CH-MG | RESET | RESET:PROG,1111<br>To restart CH-MG | -- |
| To check whether CH-MG is operational | ECHO | ECHO:PROG,1111 | -- |
| To obtain Cellular signal strength | CSQ | CSQ:PROG,1111 | -- |

| Item | Command | Example & Usage | Default |
|---|---|---|---|
| Adjust Speaker Volume | SPKVL | SPKVL:PROG,1111,3<br>Adjusts speaker volume of CH-MG<br>Parameter: 1-5 speaker volume<br>1 = minimum<br>5 = maximum | 4 |
| Set Caller ID | CALID | CALID:PROG,1111,1,0227942014<br>Parameter 1: Select Caller ID: 1 = ID #1, 2 = ID #2<br>Parameter 2: Caller ID number: Enter a number up to 15 digit long | -- |
| Remote Firmware Upgrade | FWUG | FWUG:PROG,1111,59.124.230.221,53033,/img/123.bin,042d<br>Upgrade CH-MG firmware by downloading firmware file from server remotely.<br>Parameter 1: Server IP Address (Max 44 characters)<br>Parameter 2: Server Port Number<br>Parameter 3: File path(max 31 characters)<br>Parameter 4: crc16 check sum | |
| Remove RF Device | DEVRM | DEVRM:PROG,1111,1<br>Remove RF Device in CH-MG<br>Parameter 1: Zone number to be removed (1~5) | |
| Add RF Device | DEVAD | DEVAD: PROG,1111,1234567890<br>Add RF Device into CH-MG using device RF code<br>Parameter 1: Device RF Code (Max 10 digits) | -- |

### *Federal Communication Commission Interference Statement*

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Part 22, Part 24, and Part 27 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:
. Reorient or relocate the receiving antenna.
. Increase the separation between the equipment and receiver.
. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
. Consult the dealer or an experienced radio/TV technician for help.

**FCC Caution**: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

### *FCC Radiation Exposure Statement*

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
This device complies with Part 15, Part 22, Part 24, and Part 27 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.