



**GQ GMC-510/GMC-520/ GMC-520+  
Geiger Counter/Air Quality Monitor  
with Wifi/GPS/GPRS**

**User Guide**



**GQ Electronics LLC**

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## Overview

The GQ GMC-510/GMC-520/ GMC-520+ digital Geiger Counter with GPS/GPRS/Room Air Quality Monitor is designed to be a portable and convenient device. It can be used as industrial, commercial maintenance, research, evaluation, simulation and other analytical or scientific applications in areas such as industrial plants, public utilities, universities, laboratories, and electronic repair shops. The device comes with built in audible and visual signals for the level of radiation detected. It can be used for radiation detection and monitoring both indoor and outdoor, as well as in other similar environments. It features automatic data recording. It can continually monitor the ionized radiation on GMC-510, CO<sub>2</sub>(Carbon Dioxide),TVOC (Total Volatile Organic Compounds for air quality) on GMC-520, HCHO (Formaldehyde) on GMC-520+, temperature, humidity and log the data to a server via internet. When connected to a PC, software can download the ionized radiation history data to the computer and the user is able to analyze those data later. The GQ GMC-510/GMC-520/GMC-520+ installed a high contrast black/white LCD module, one front LED indicator and one analog data port. The analog data port can be connected to any third party device application as data input.

The GMC-510/GMC-520/GMC-520+ installed a WiFi module; user is able to log the data via WiFi wirelessly. It also installed GPRS and GPS module. With GPRS module user is able to send data via cellphone network. User also is able to operate the device via cell phone text messages. Such as get data by text message command. With GPS module, all data send to sever will be tied to GPS location. User is able to track the position of unit with GPRS module.

The device is equipped with an USB port, utilized for communication and external power supply/charging of the internal rechargeable Li-Ion 3.6V/3.7V battery.

The GQ GMC-510/GMC-520/GMC-520+ internal rechargeable battery can be charged with a standard USB port, USB charger or with a computer USB port. Using the external power, continuous data monitoring is possible. Using either power adapter you will not have to worry about the batteries charge condition or any data loss.

The main board also has a real time clock on board for time related data logging purposes.

The GMC-510/GMC-520/GMC-520+ installed multiple sensors to ensure full scale/range measurement and higher accuracy.

### Packing List:

1. GMC-510/GMC-520/GMC-520+ main unit.
2. USB cable
3. Quick start guide
4. Download link for Data Viewer software and USB driver for Windows 32 and 64 bits (see Quick start guide)
5. Download link for a complete user guide in PDF version.

## Specifications:

	GMC-510	GMC-520	GMC-520 Plus
CO2 Automatic Calibration	n/a	No	Yes
Carbon Dioxide Range	n/a	400-32768ppm	400-5000ppm
Carbon Dioxide Accuracy	n/a	+/- 150ppm	+/- 75ppm
TVOC	n/a	0 - 32768ppb	No
CO2/TVOC Warm Up Time	n/a	20minutes	2minutes
HCHO	n/a	No	Yes
GPRSS module (call and text feature)	Yes	Yes	Yes
GPS module (Latitude, Longitude, Altitude)	Yes	Yes	Yes
TVOC	n/a	0 - 1187ppb	No
Range of dose rate indications, $\mu\text{Sv/h}$	0.00 to ~4250		
Range of exposure dose rate indications, mRem/h	0.00 to ~425		
Range of registered beta radiation energy MeV	0.25 to 3.5		
Range of gamma radiation energy, MeV	0.1 to 1.25		
Range of registered X-ray radiation energy MeV	0.03 to 3.0		
Reproducibility of indication	10%		
Alarm levels by CPM	0 to 655350 (continuously)		
Alarm levels by $\mu\text{Sv/h}$	0.00 to 4250		
Alarm levels by mRm/h	0.00 to 425		
Date indication	YYYY-MM-DD (continuously)		
Time indication	HH-MM-SS (continuously)		
Elapsed time indication	99 years (maximum)		
Timed Count	1 Second to 256 days (programmable)		
Scheduled Timed Count	0 Second to 256 days (programmable)		
Radiation detection	, x		
Detectable Radiation Range	0.1 ~ 3 MeV		
Instrument Background	< 0,2 pulses/s		
Working Voltage	3.6-3.7V		
Display	LCD dot matrix, back lighted		
On board Memory	1M Bytes flash memory for data storage		
Power: Consumption	25mW – 125mW (count rate dependent)		
Power: Supply	3.7V Li-Ion battery / USB power		
Dimensions	135 x 78 x 25 mm (5.25"x 3" x 1")		
RPRS Cellular Network SIM Card supported	GSM Quad-Band 850/900/1800/1900 cellular network		
GPRS SIM card Size	Standard Micro SIM card		

## Caution

1. Avoid doing measurements when battery low.
2. Do not get the device wet. Use sealed plastic bag to void wet.
2. Avoid doing measurements in direct sunlight.
3. Avoid directly contact the radioactive material. Use sealed plastic bag if needed.
4. Turn off the unit when not in use.
5. Keep it in a protective pouch after use.
6. When the unit not in use, store it in a dry place or box. This will avoid mechanical part be oxidized, such as button or battery contacting points.

## Hardware setup



There are four buttons on the front of the unit: S1, S2, S3 and S4 (from left to right)

1. Power up the unit. Pressing the S4 (power) key for 3 seconds will turn on the unit. Check the battery level. Charge the battery fully when first time use. It may take a few hours to get the battery fully charged. Check the battery icon on the display, a fully charged battery icon will be filled with solid color, without flashing.
2. Set date/time. Press the S4 key to enter the menu and set the date and time. This is very important for time stamping the recorded data. Do not skip this step. Most of the data are related to the date and time.
3. Set the backlight timeout in second, in order to minimize the power consumption. Set the power savings mode. If the power savings mode is ON, then the LCD display will be turned off after 30 second if no key is being pressed during this period.
4. Now the unit is ready to use. You should see the background CPM rate in absence of a radioactive source.

## Software setup

Before connecting the GMC-510/GMC-520/GMC-520+ Geiger Counter to a computer, download the application software and install the USB driver. Download these from: <http://www.gqelectronicsllc.com>.

1. The unit needs an USB driver in order to communicate with the application software. Running **GQGMCGeigerCounterUSBDriverV4.exe** will install the USB driver.
2. GMCDataViewer.exe is for viewing the data on a computer.
3. SoftGeigerCounterGMC510.exe is a soft copy of GMC-510 demo software.
4. SoftGeigerCounterGMC520.exe is a soft copy of GMC-520 demo software.
5. SoftGeigerCounterGMC520Plus.exe is a soft copy of GMC-520+ demo software.

For technical questions and support, please use the forum at the following link:

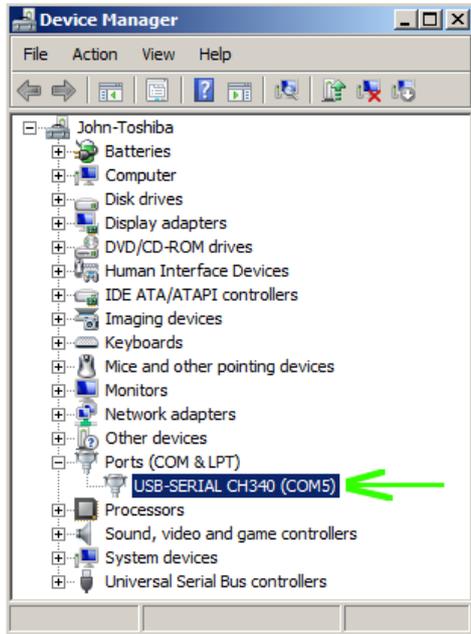
<http://www.GQElectronicsLLC.com/forum>

For the latest software, please visit our software download page:

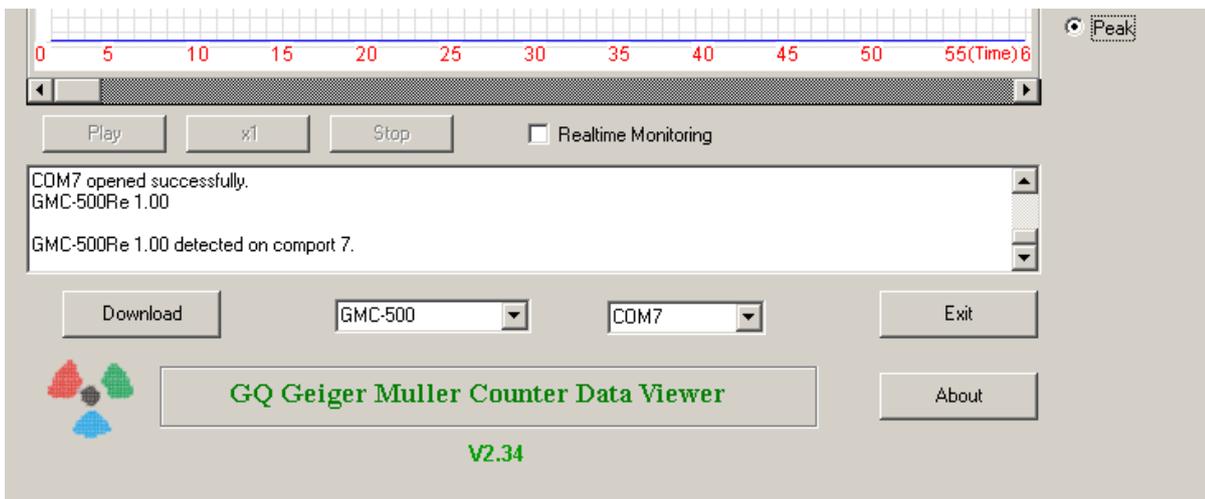
<http://www.gqelectronicsllc.com/comersus/store/download.asp>

## Verify USB driver installation in Windows

Once the GMC-510/GMC-520/GMC-520+ is connected to a computer, from the device manger, you should see which COM port is assigned to the unit. See the example below. Windows assigned COM3 to the GMC-510/GMC-520/GMC-520+ unit in this example.

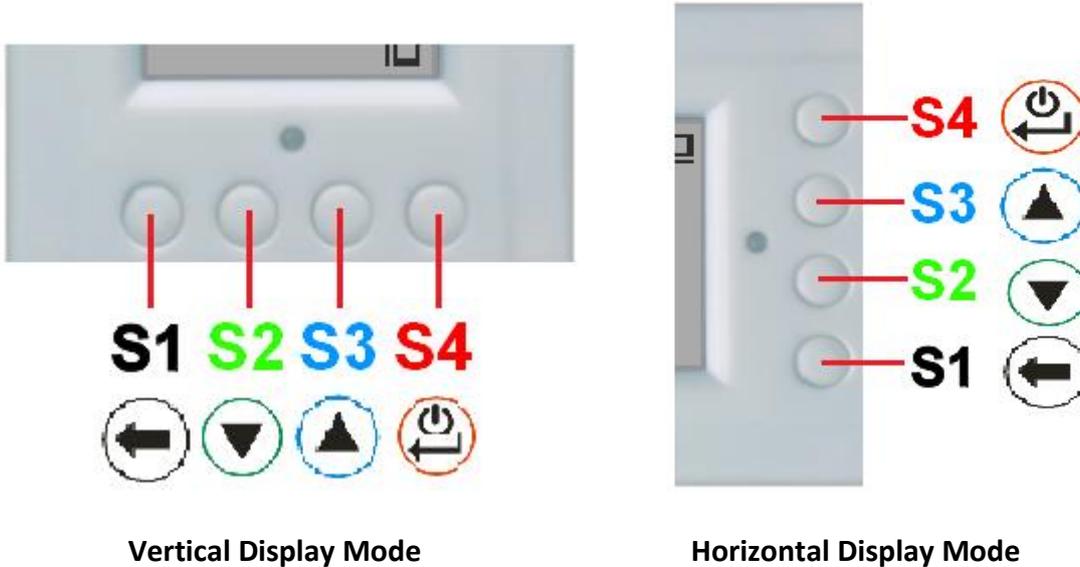


For the data viewer or the data logger software, selecting COM5 will establish the connection to the GMC-510/GMC-520/GMC-520+ Geiger counter for the above example



## GQ GMC Geiger Counter Multi-Function Keys

The multi-function keys S1, S2, S3 and S4 explained:



These keys' function will be reassigned dynamically based on the context of the current (sub-) menu being displayed.

### S1 key

1. There are three display modes: Text, Large Font and Graphic mode. Pressing the S1 key toggles between these modes.
2. In the menu screen, pressing the S1 key will exit the current menu and will return back one menu level.
3. In the data input mode, pressing the S1 key will delete the last character entered.

### S2 key

1. In text mode, pressing the S2 key will change the text information format.
2. In graphic mode, the S2 key will increase the graphic ZOOM factor.
3. In menu mode, the S2 key acts as the UP key to move the highlight menu item upwards.
4. In the menu mode, while a popup message box is opened, the S2 key changes the value by cycling through the predefined values.

### S3 key

1. In text mode, pressing the S3 key will change the displayed date/time selection.
2. In graphic mode, the S3 key will decrease the graphic ZOOM factor.
3. In menu mode, the S3 key acts as the DOWN key to move the highlight menu item downwards.
4. In the menu mode, while a popup message box is opened, the S3 key changes the value by cycling through the predefined values.

### S4 key

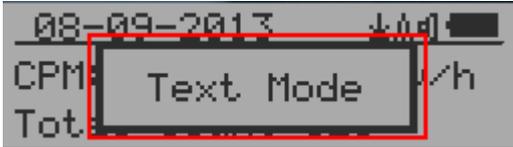
1. In power off state, only the S4 key acts as the power switch. Holding it for 3 seconds will power up the unit.
2. In power on state, holding S4 for 3 seconds will switch the unit off.
3. In menu mode, S4 is the "Confirm", "Select", "Enter" key.

## Power saving mode

The unit's factory default power saving mode is ON. In this mode, the unit will turn off the display after 30 seconds idle time. It turns on the LCD display when any key is pressed.

## Popup Windows

The Popup Windows will show the current status/value of selected features. The current status/value can be changed only when it is displayed in the Popup Window and the currently displayed status/value will be stored when the Popup Window has timed out after 3 seconds if no key has been pressed.



## Graphic User Interface (GUI)

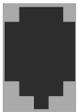
### Graphic Icons:



Graphic ZOOM factors: 0.5, 1.0, 2.0, AUTO



Battery Status.



GPS Location Found



GPS is ON but not still trying to find location data



Cell Phone Data Network/GPRS signal strength



Data saving enabled / (History data)



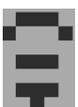
Alarm enabled



Sound enabled



Timed Count. It flashes if timed count in progress.



WiFi Connection

X3.0

Current graphic ZOOM factor

CPM:

Current CPM reading

↓CPM

History CPM reading

Total Count:

Total count since power on OR reset/clear.

Average CPM:

Average CPM of a specific time frame.

Maximum CPM:

Maximum CPM since power on.

Normal

Current radiation level is normal.

Medium

Current radiation level is medium.

High

Current radiation level is high.

## Dual Display Modes

GMC-510/GMC-520/GMC-520+ supports two display formats to fit user's display preferences: Vertical Display and Horizontal Display.

With the Horizontal Display, the user can select one information screen from: **Text, Graphic, Large Font, Carbon Dioxide, Environment** or **Menu**. The Vertical Display Mode displays **Large Font mode**.

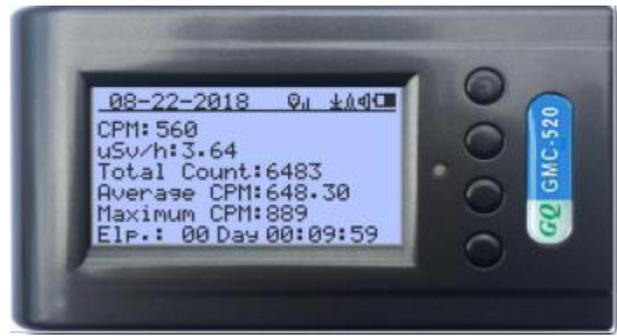
### Vertical Display



## Horizontal Displays



GMC-520 / GMC-520+



GMC-520 / GMC-520+



GMC-520 / GMC-520+



GMC-520 Only

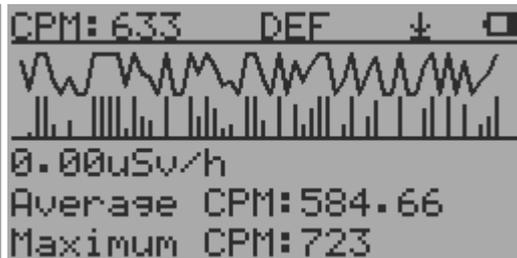
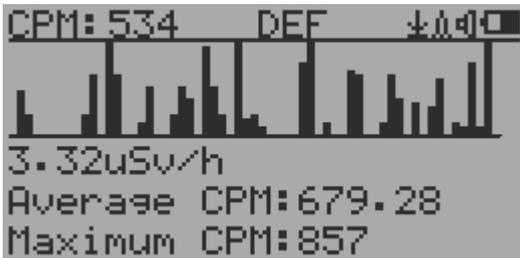
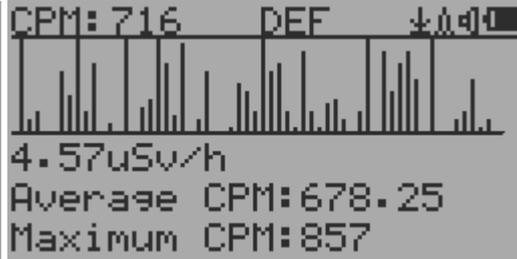
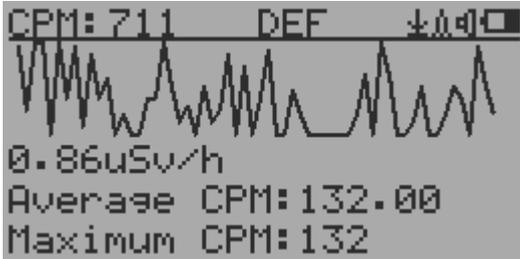


GMC-520 / GMC-520+

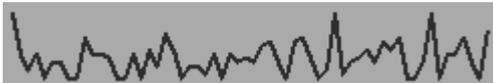
## Display Modes

There are five ways to display the information, Text Mode, Large Font Mode, Graphic Mode and Timed Count

### Graphic Mode:



**CPM: 606** Current radiation level reading in CPM format (Counts Per Minute)



CPS(Count Per Second) in last 60 seconds.

### Navigation keys:

- S1: Text/Graphic Display/Large font/CO2/Environment Mode Selection
- S2: Change graph mode
- S3: Change zoom factor
- S4: Menu

### Text Mode:

```
04-06-2017  ±000□
CPM: 232
Current uSv/h:1.51
Total Count:232
Average CPM:232.00
Maximum CPM:232
Elp.: 00 Day 00:00:25
```

```
13:49:53  ±000□
CPM: 618
Total uSv/h:3.65
Total Count:1123
Average CPM:561.50
Maximum CPM:654
Elp.: 00 Day 00:01:55
```

```
04-06-2017  ±000□
CPM: 601
Current mR/h:0.391
Total Count:833
Average CPM:833.00
Maximum CPM:634
Elp.: 00 Day 00:01:26
```

```
13:50:18  ±000□
CPM: 625
Total mR/h:0.453
Total Count:1395
Average CPM:697.50
Maximum CPM:654
Elp.: 00 Day 00:02:20
```

08-09-2013 , 15:29:36

Current date and time (Press S3 for toggling between date and time)

CPM: 554

Current radiation level reading in CPM

Current uSv/h: 4.95

Current radiation level in  $\mu$ Sv/h or

Current mR/h: 0.414

mR/h format

Total Count: 10052

Total count.

Total mR: 0.432

Total cumulated radiation dose in mR since power on.

Total uSv: 4.26

Total cumulated radiation dose in uSv since power on.

Elp.: 00 Day 00:16:34

Elapsed time since power on (Press S2 for toggling displayed info)

Maximum CPM: 30

Maximum CPM since power on

Average CPM: 28.25

Average CPM since power on.

Navigation keys for both modes:

S1: Text/Graphic Display/Large font/CO2/Environment Mode Selection

S2:  $\mu$ Sv/h, mR/h, Total Count, Elapsed Time selection

S3: Date or Time on title selection

S4: Menu

**Large Font Mode:**



08-09-2013 , 15:29:36

Current date and time (Change it in Text Mode)  
S2 key toggles between CPM,  $\mu$ Sv/h and mR/h mode

Navigation keys:

S1: Text/Graphic Display/Large font/CO2/Environment Mode Selection

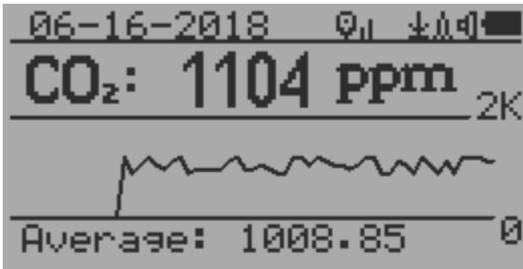
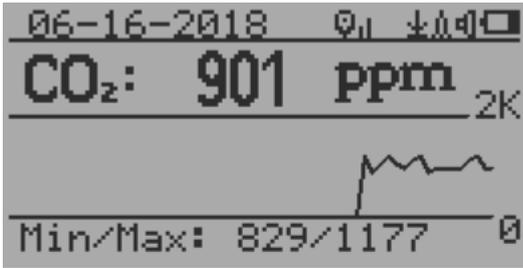
S2:  $\mu$ Sv/h, mR/h, CPM selection →

S3:  $\mu$ Sv/h, mR/h, CPM selection ←

S4: Menu

**NOTE:** Large Font Mode is available in firmware Ver. 2.20 or later only

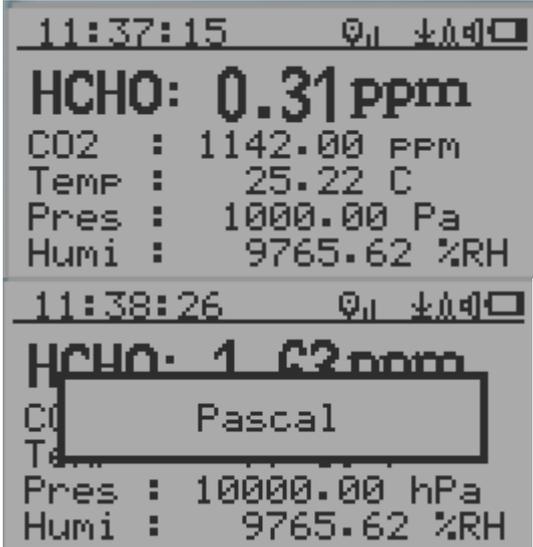
**Carbon Dioxide Mode:**



Navigation keys:

- S1: Text/Graphic Display/Large font/CO2/Environment Mode Selection
- S2: Toggle between Min/Max value and Average value.
- S3: Toggle between 5 minutes time duration and average duration.
- S4: Menu

**Environment Mode:**



Navigation keys:

- S1: Text/Graphic Display/Large font/CO2/Environment Mode Selection
- S2: Toggle between Fahrenheit (°F) and Celsius (°C).
- S3: Toggle between Pascal (Pa) and Hectopascal (hPa).
- S4: Menu

## Menu Display

### Main Menu

```
Main Menu  Q,  ±0000
→User Option
  Display Option
  Save Data
  Timed Count
  Auxiliary
  WiFi
  Server
```

```
Main Menu  Q,  ±0000
  Auxiliary
  WiFi
  Server
  Init Setup
  Others
  About
→Exit
```

### Navigation keys:

S1: Back S2: Up S3: Down S4: Select/Enter

### User Option

```
  User Option  ±0000
→Speaker
  Alarm
  LED Indicator
  Power Saving
  Motion Detect
  Reset Total Count
  Exit
```

### Navigation keys:

S1: Back S2: Up S3: Down S4: Select/Enter

### Alarm Set

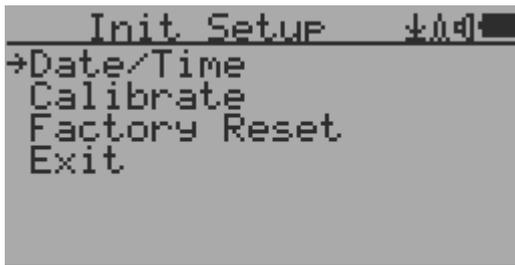
```
  Alarm  ±0000
→On/Off
  CPM(*)
  uSv
```

### CPM(\*)

Currently the CPM alarm mode is selected

The audio alarm will be triggered once the radiation level reaches the preset alarm threshold.

## Date and Time setting



### Navigation keys:

S1: Back/Exit

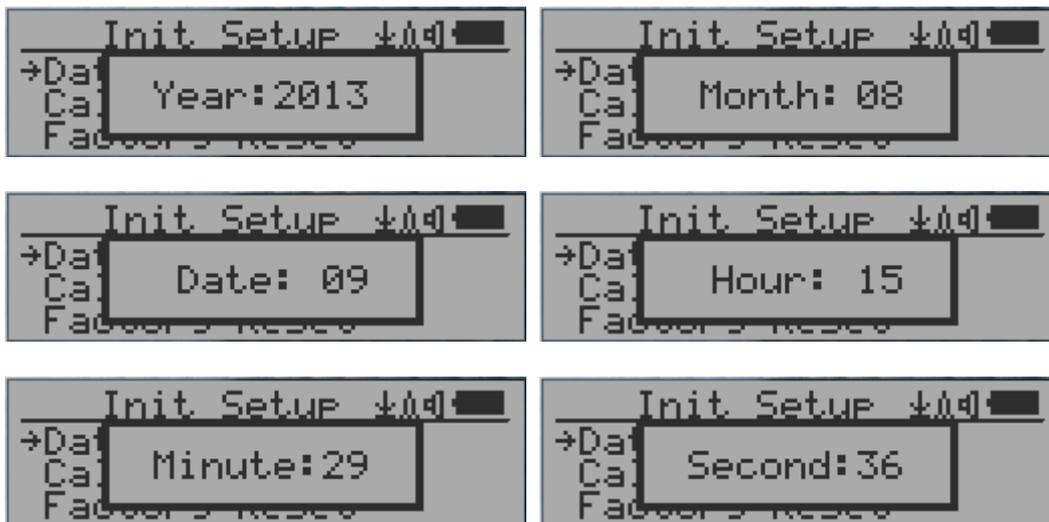
S2: Increase value by 1 (or hold the key down)

S3: Decrease value by 1 (or hold the key down)

S4: Select setting mode between Year, Month, Date, Hour, Minute and Second.

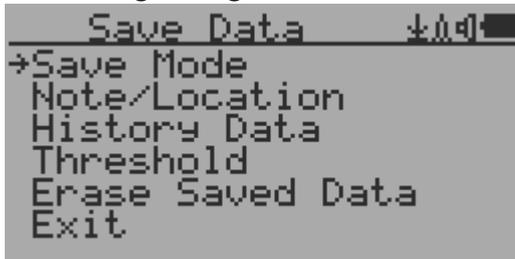
Each key press will change the mode to be set.

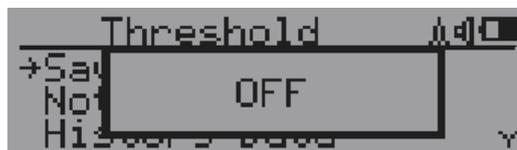
**NOTE: Setting of Date and Time is important, all history data use Date and Time as a time stamp reference.**



**NOTE:** you need to set the seconds to let unit complete the date & time setup.

## Data Saving Setting





Selecting this item will turn on/off the real time data saving from followings:

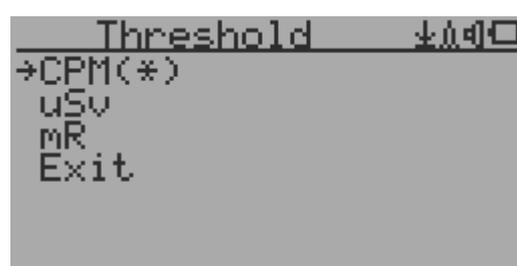
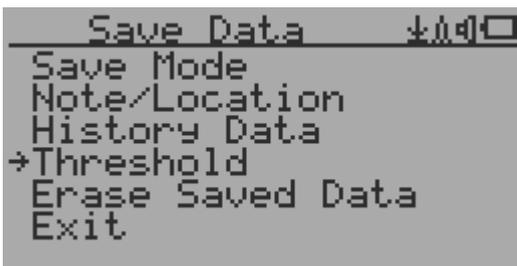
OFF -> Every Second ->Every Minute -> Every Hour->Every Second Threshold->Every Minute Threshold

**NOTE:** The history data memory will be used as a ring buffer. Once the end of the memory is reached, the oldest data will be over written. Carefully select the data saving interval to save memory space.

With Threshold saving mode, data only will be logged if it exceed the threshold value.

The data will not be logged while viewing history data in the History Data menu.

#### Threshold Data Saving Setting



Select threshold type you want to use: CPM, uSv OR mR



#### Add Note or Add Location for data saving



The user may add a note with up to 16 characters into the history data to identify the measurement or location. The GPS location data will be used if no data entered and GPS is available. This note/location information will be saved together with the radiation data.

### Note/Location Input

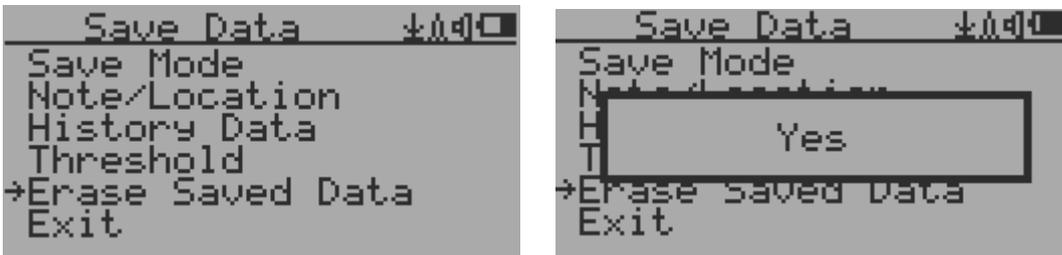


The cursor indicates the position of current character input.

### Navigation keys:

- S1: Backspace and erase
- S2: Move cursor right ←
- S3: Move cursor left →
- S4: Exit & Store

### Erase Saved History Data

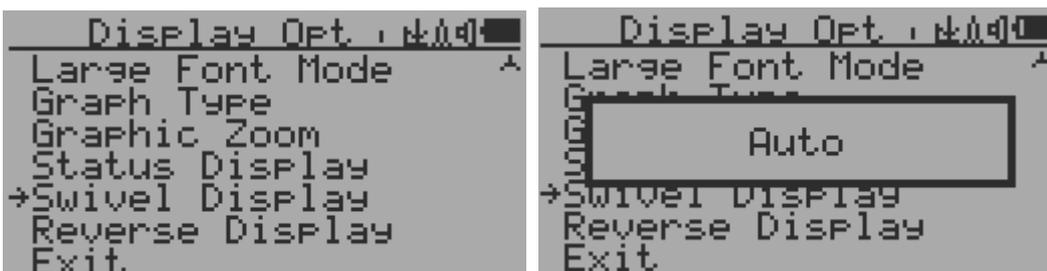


Use S2 and S3 to select Yes or No on the screen to confirm the request. After about 3 seconds with Yes confirmation, the unit will start to erase entire saved history data. It may take a few seconds to complete the task.

### Display Option



### Swivel Display Option



Pressing the S4 key will cycle between: Normal -> Swivel -> Auto Swivel modes

In the Auto Swivel mode, the display will be rotated by 180° if the unit is held upside down.

### WiFi Setup and Check

The WiFi tested with 802.11 n , 802.11 g/n, ,802.11 b/g/n under WPA2-PSK (AES), WEP, WPAWPA2-PSK (TKIP/AES) and Open security modes.



Select WiFi On/Off item will turn the WiFi connection On/Off

Make sure the WiFi SSID and Password have been set.

**Note: All WiFi settings available from GQ GMC Data Viewer Windows software for easier and faster setup.**

#### WiFi IP address



#### WiFi Mac address



#### WiFi Signal Level Checking



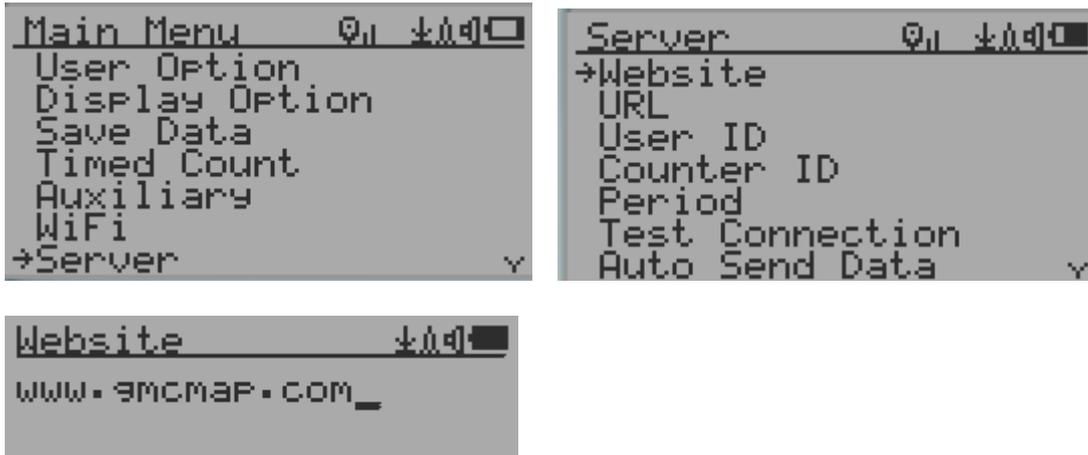
## Internet Data Server Setting

This menu setup is mainly for a data logging server. The unit data can be logged to a server automatically via WiFi internet HTTP connection.

Here is the default website server setup for: [www.gmcmap.com](http://www.gmcmap.com)

### Website server

User is able to change the server name to point to another http server.



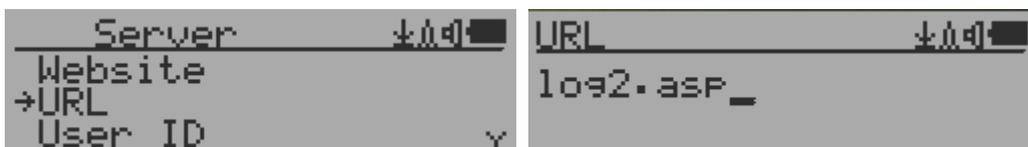
### URL for Website server

The default web server data receiving URL is log2.asp.

User is able to change the URL to user specific URL. However, the URL data parameters in a fixed format.

Example:

<http://www.GMCMAP.com/log2.asp?AID=0230111&GID=0034021&CPM=15&ACPM=13.2&uSV=0.075>



### Website server User ID

Each data submission has a user ID. The user ID is the user account ID from the data server. It will send to server with the data to log.

This is an example user ID from [www.gmcmap.com](http://www.gmcmap.com)



### Website server Geiger Counter ID

Each data submission has a Geiger Counter ID. The Geiger Counter ID is a unique ID in data server database. It will send to server with the data to log.

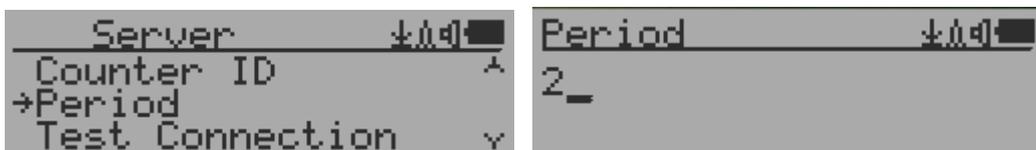
This is an example Geiger Counter ID from [www.gmcmap.com](http://www.gmcmap.com)



### WiFi Data Logging Period

The default data-logging period is 2 minutes. This will let unit to log the data to website server every two minute.

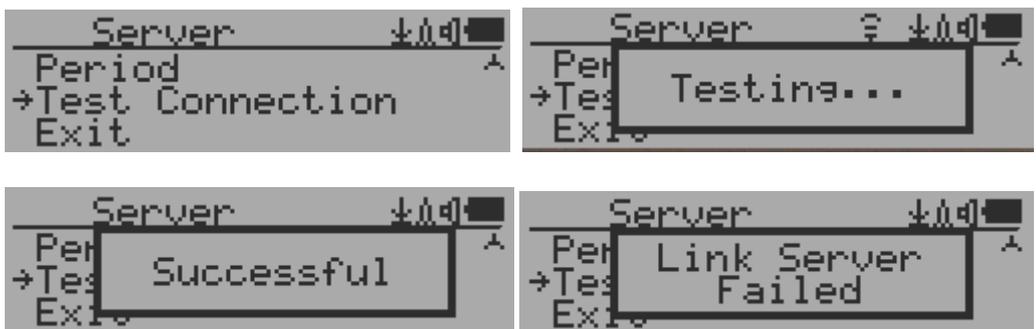
User is able to change the period from 1 to any minutes.



### WiFi Data Logging Testing

User can test the server settings anytime to confirm the server settings are working.

The result will be either Successful or Link Server Failed.



**Note:** All Server settings available from GQ GMC Data Viewer Windows software for easier and faster setup.

### Auto Send Data

User can choose between the option: send data automatically or not.

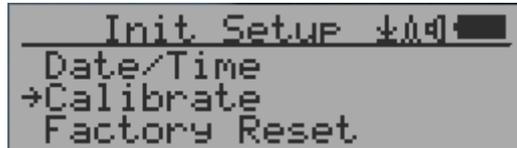


## Calibrate the reading

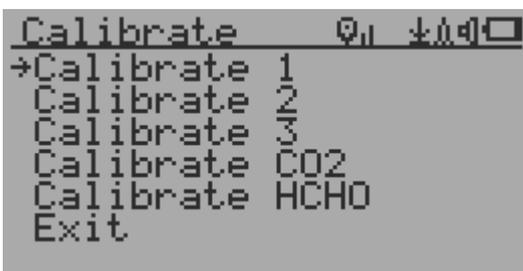
You do not need to do the calibration if you just want to qualitatively detect radiation. However, if you have standard radiation sources with known  $\mu\text{Sv/h}$  value, you may calibrate the instrument to get accurate readings.

The factory default calibration value is for general in-door and out-door measurements.

### Calibration



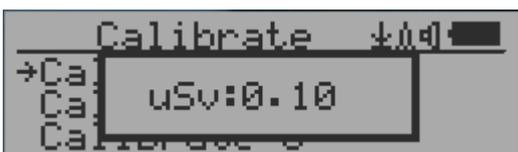
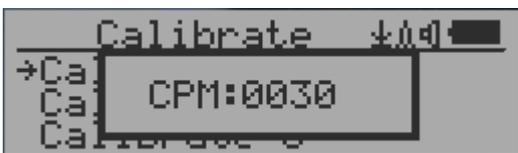
Select Calibrate from the Main Menu. There are three points provided for calibration.



Each calibration point needs two values to be entered, the CPM value and the  $\mu\text{Sv/h}$  value. The user can enter up to three calibration points from large to high count rates.

### Procedure:

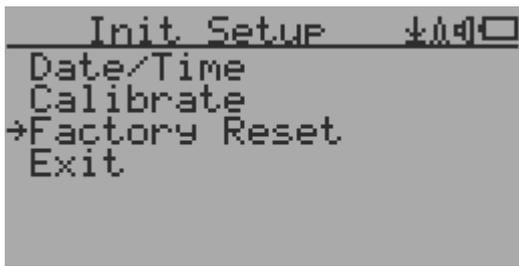
1. Place the testing radiation source  $\sim 30\text{mm}$  away to the center of unit Geiger tube side. In Text or Graphic mode, wait for at least 3 minutes.
2. Note the CPM value.
3. Select Calibrate menu item on the device, and then input both the CPM value you noted and the known  $\mu\text{Sv/h}$  value of the calibration source.
4. Wait for the popup window to close to save the data for this calibration point.
5. Continue with step 1 with other calibrated radiation sources.



### Navigation keys:

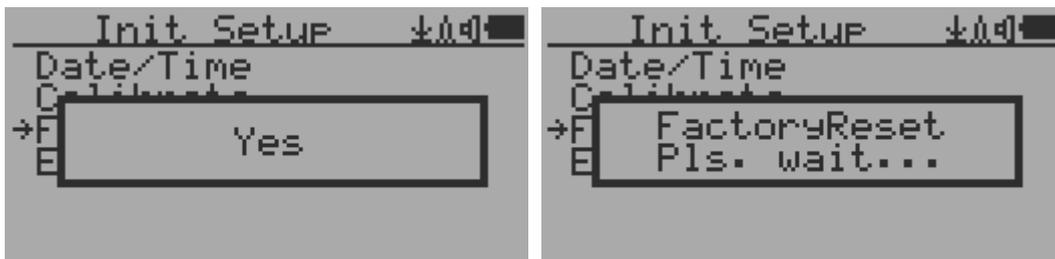
- S1: Back/Exit
- S2: Increase the value by 10 CPM or 0.1uSv/h respectively
- S3: Decrease the value by 1 CPM or 0.01uSv/h respectively
- S4: Toggle input data type between CPM and uSv/h

## Factory reset



Select Factory Reset to reset the unit to the factory default settings.

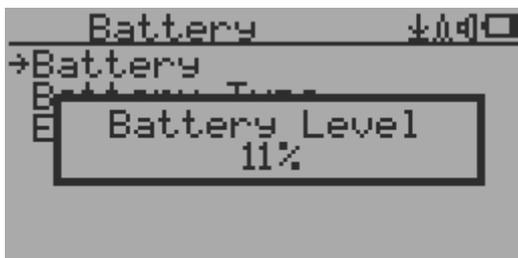
**Note:** The reset will erase all user settings and recorded history data.



Procedure:

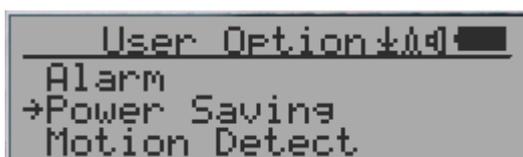
Select Factory Reset menu item and change the popup Windows message to Yes. Wait for popup message window's timeout to confirm the reset request. Any other key press will cancel the reset request. It may take up to 30 seconds to complete the reset.

## Battery Status



Select Battery item for checking the current battery voltage.

## Power saving mode



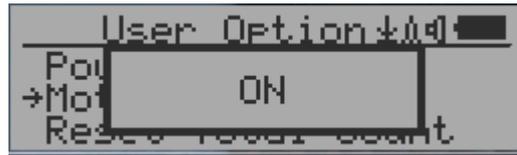
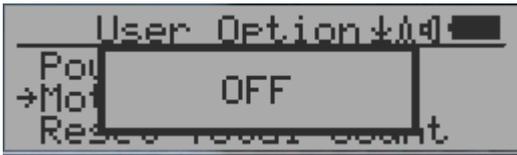
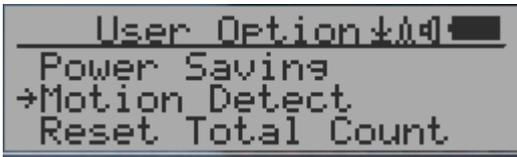
Pressing the S4 key will toggle the Power Saving mode ON and OFF.

In power saving mode, the units LCD display will be turned off after 30 seconds if no key is pressed to save battery power. The audio signal will not be turned off if it has been set to ON. The LCD back light will be off during the power saving mode.

Pressing any key will activate the LCD backlight again.

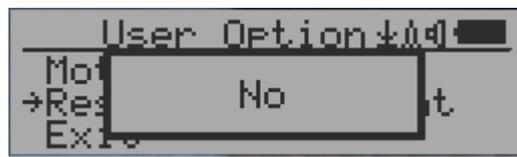
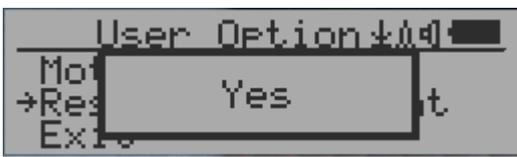
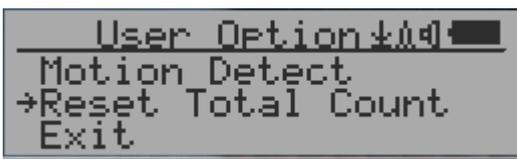
The unit movement does not weak up the unit if the motion detection is OFF.

### Motion Detection



GMC-320 has motion detection feature. It can detect unit movement, upside down, single tap and double tap. Turn off the motion detection disables all motion related features.

### Reset Total Count



The Reset Total Count menu item let user to clear the total count on main text mode screen. This may be used before a fixed time count measurement start.

### Gyroscope Data Display



The internal digital accelerometer is able to provide real-time gyroscope data. It displays current unit X,Y,Z axis data and detected motion event. Such as single tap OR double tap.

### Communication Baud Rate



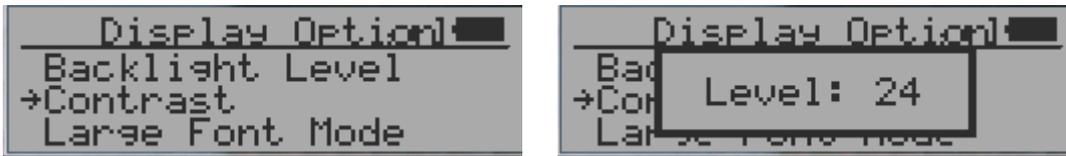
This Geiger counter serial communication baud rate is selectable from following value: 1200,2400,4800,9600,14400,19200,28800, 38400,57600,115200. Press S4 key changes baud rate.

The new baud will take immediate effect. The new value also be saved and used on next power up.

### Reverse Display



### Contrast Adjustment



Use S2 and S3 to adjust the contrast level. The contrast level will be saved and it will be used when the unit is ON.

### Timed Count

The Timed Count can be started with a schedule OR without a schedule.

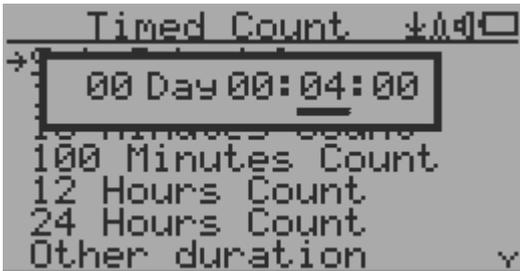
When it started with a schedule, the Timed Count will be started after a scheduled time period passed. This is useful if a testing target is not ready immediately.

When it started without a schedule, the Timed Count will be started immediately once the timed count period is set.

The Timed Count can be set from the menu:



**Set a schedule**



This example shows the schedule is set to 2 minute.

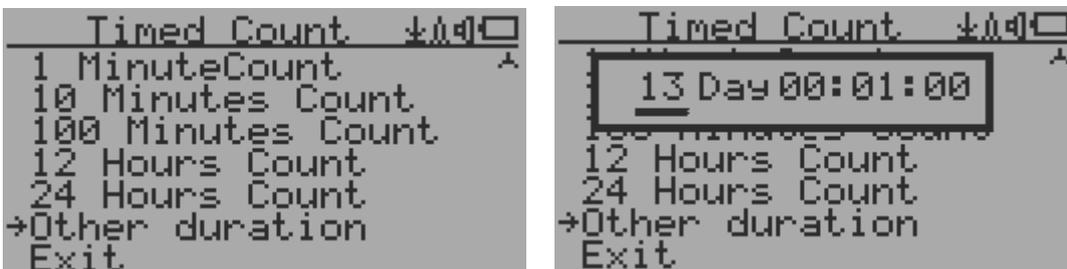
Navigation keys:

- S1: Back/Exit
- S2: Increase the cursor position value
- S3: Decrease the position value.
- S4: Move the cursor to input data type between Day, Hour, Minute and Second.

**Set Timed Count Duration**

There are 5 preset durations from menu: 1 minutes, 10 minutes, 100 minutes, 12 Hours and 24 Hours.

If the duration is not listed, then you can set a new duration (1 second to 256 days) from menu Other duration:



This example shows a 2 days duration is set for Timed Count.

Navigation keys:

- S1: Back/Exit
- S2: Increase the cursor position value
- S3: Decrease the position value.
- S4: Move the cursor to input data type between Day, Hour, Minute and Second.

## Start a Timed Count

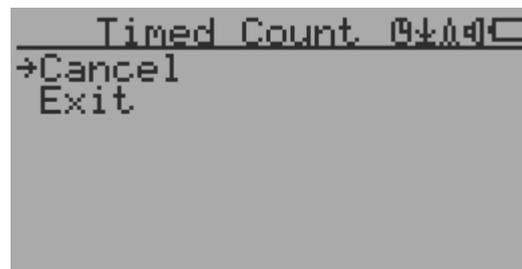
If no Schedule set, then the Timed Count starts immediately after the duration set.

If the Schedule is set, then the Timed Count will be started after a scheduled time period passed. This is useful if a testing target is not ready immediately.

Once the Timed Count schedule is active, the Timer icon will be showed on the top icon area.

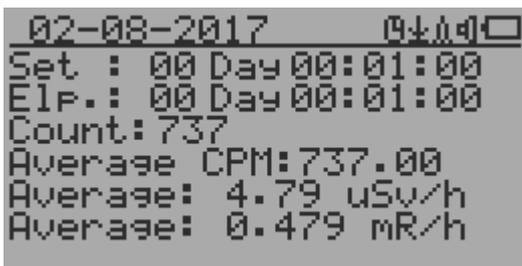


When the Timed Count started, the screen will pop up a message: Timed Count Started.



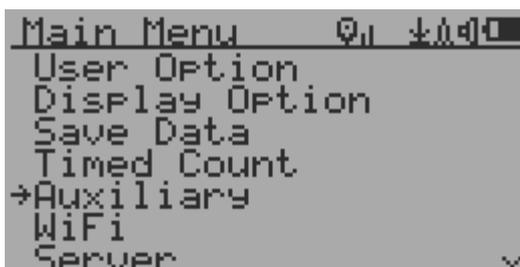
The Timed Count can be cancelled anytime.

Now you can exit the menu and see the Timed Count progress screen and information:

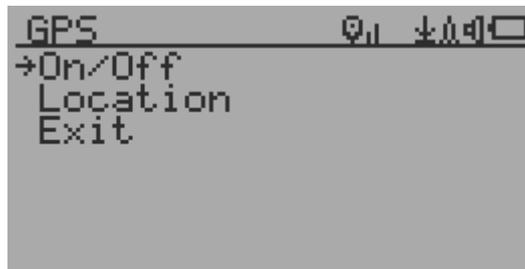
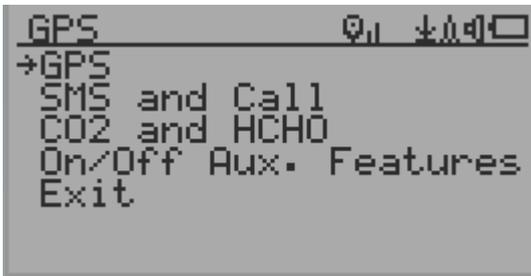


## Auxiliary

Access the auxiliary features: GPS, SMS and call, CO2 and HCHO, turn on/off auxiliary features.



## GPS

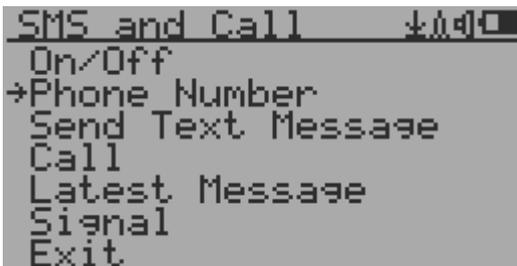


In the GPS submenu, you can turn on/off the GPS feature.

You can also check the GPS location information in the GPS submenu, such as GPS status, Satellites used, Latitude, Longitude, Altitude and Accuracy. GPS feature is already installed on this device.

The GPS function works best outside and under a clear sky.

### SMS and Call (GPRS)

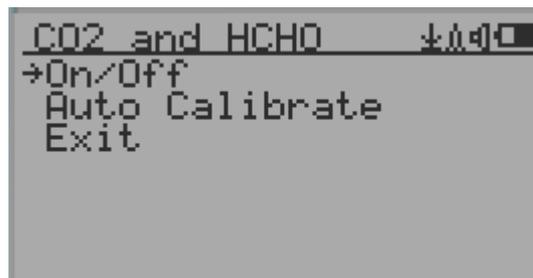
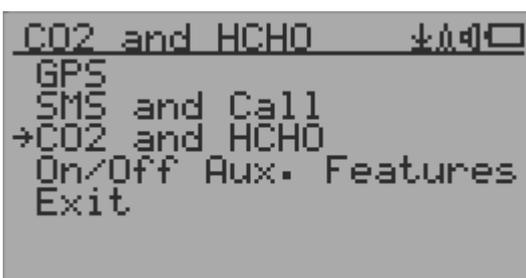


You need to install a SIM card on your device to make this feature work. You have to open the battery door or back case and then put the SIM card in the SIM card slot.

If your network has data, you can use it to send your log online instead of using WiFi.

You can make calls and texts to other people under SMS and Call submenu. Just enter the number you want to call or text and then you can write text messages to that number or make a call. When you received a message from someone, you can see their latest text message in "Latest Message" and you can reply to them by deleting their message, writing your message, then sending it by pressing the S4 (OK) button.

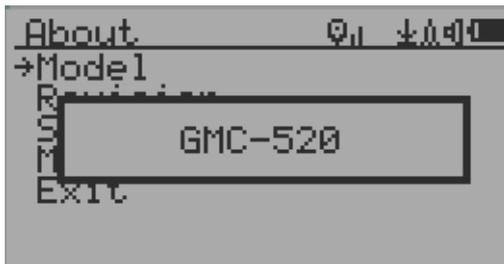
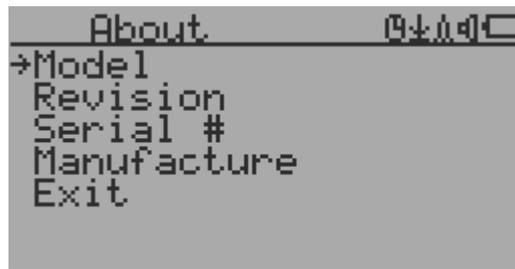
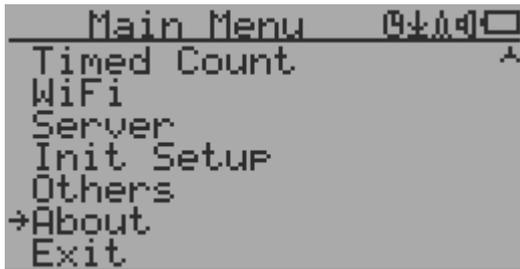
### CO2 and HCHO



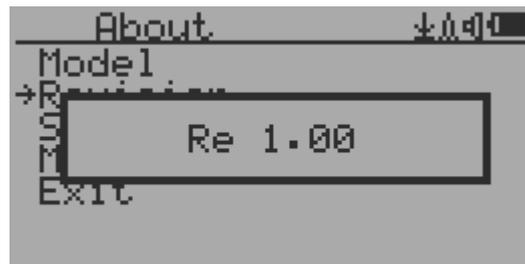
When using auto calibrate, you should place the unit somewhere with 25°C and ~500ppm (for example: outdoor environments like a park). The auto calibration will be done in about 6 minutes.

## About

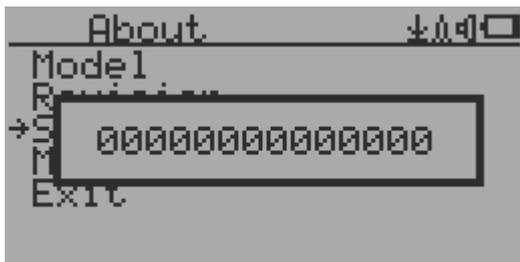
This menu item is used to gather information about the instruments model number, firmware revision and serial number.



Model information



Firmware version



Unit serial number

## SIM Card installation

The SIM card slot is in the upper layer of battery compartment. The SIM card can be pushed in to the slot. Push again the SIM card will pop out.



## GQ GMC GPRS Cellular Message Text Command

The GMC-510/GMC-520/GMC-520+ support GPRS Cellular Text Message command. User is able to send command via text message from user's cell phone to the GMC unit, the unit will replay with the requested result via text message.

User text message commands:

GETDATA: Get current data from the device.

GETGPS: Get current GPS data from the device.

REBOOT: Request a reboot action from the device.

CO2OFF: Turn off the CO2 function from the device.

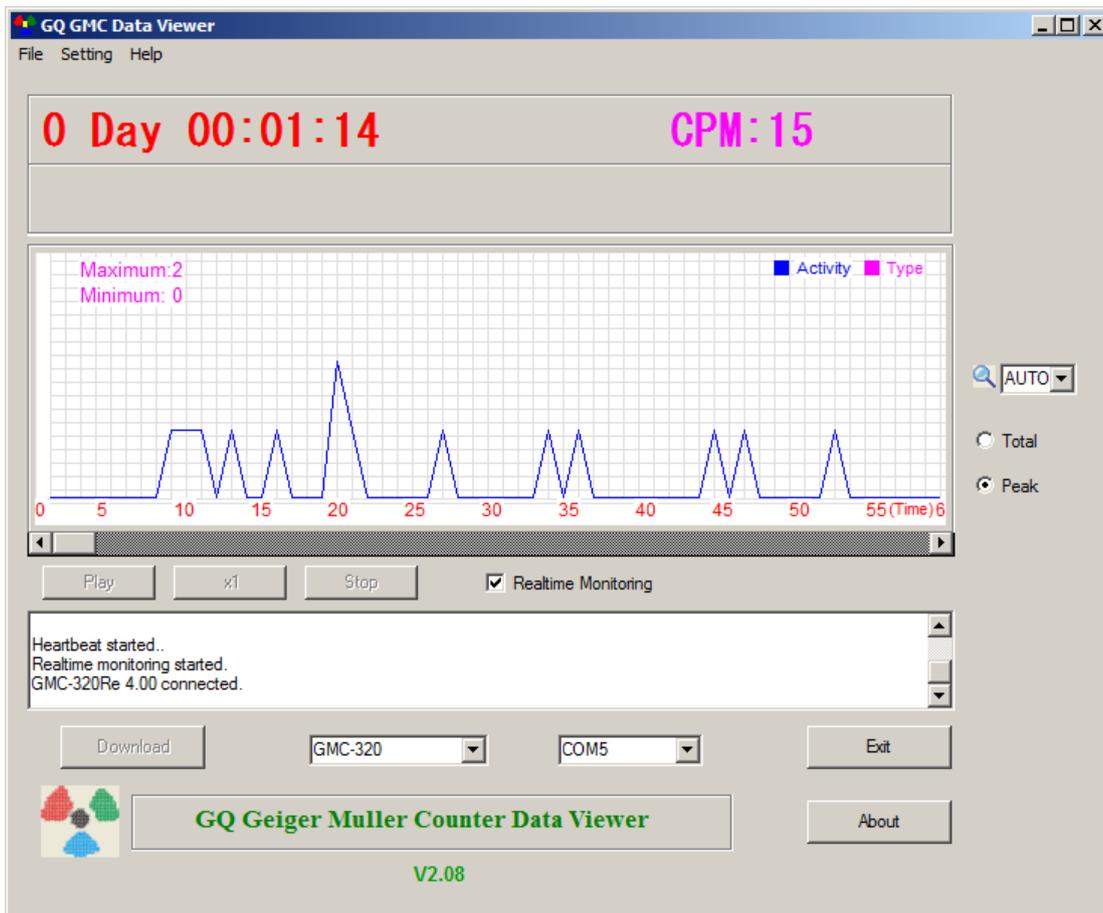
CO2ON: Turn on the CO2 function from the device.

GPSOFF: Turn off the GPS function from the device.

GPSON: Turn on the GPS function from the device.

# GQ GMC Data Viewer Software

The GQ MGC Data Viewer software is utility software comes with the GMC-510/GMC-520 package.



Main features:

- Download the history data from GMC-510/GMC-520/GMC-520+
- Real time monitoring with graphic when it connected with GMC-510/GMC-520/GMC-520+
- Save the history data in .bin OR .csv MS Excel format.
- Synchronize the data and time to GMC-510/GMC-520/GMC-520+ with computer's data and time
- User defined automatic date and time synchronization period.
- GQ Terminal feature provide a detailed communication protocol exercise interface.
- Provide a fast and efficient way to setup device WiFi and server settings.

Settings->Other menu dialogue.

The screenshot shows a 'Settings' dialog box with two main sections:

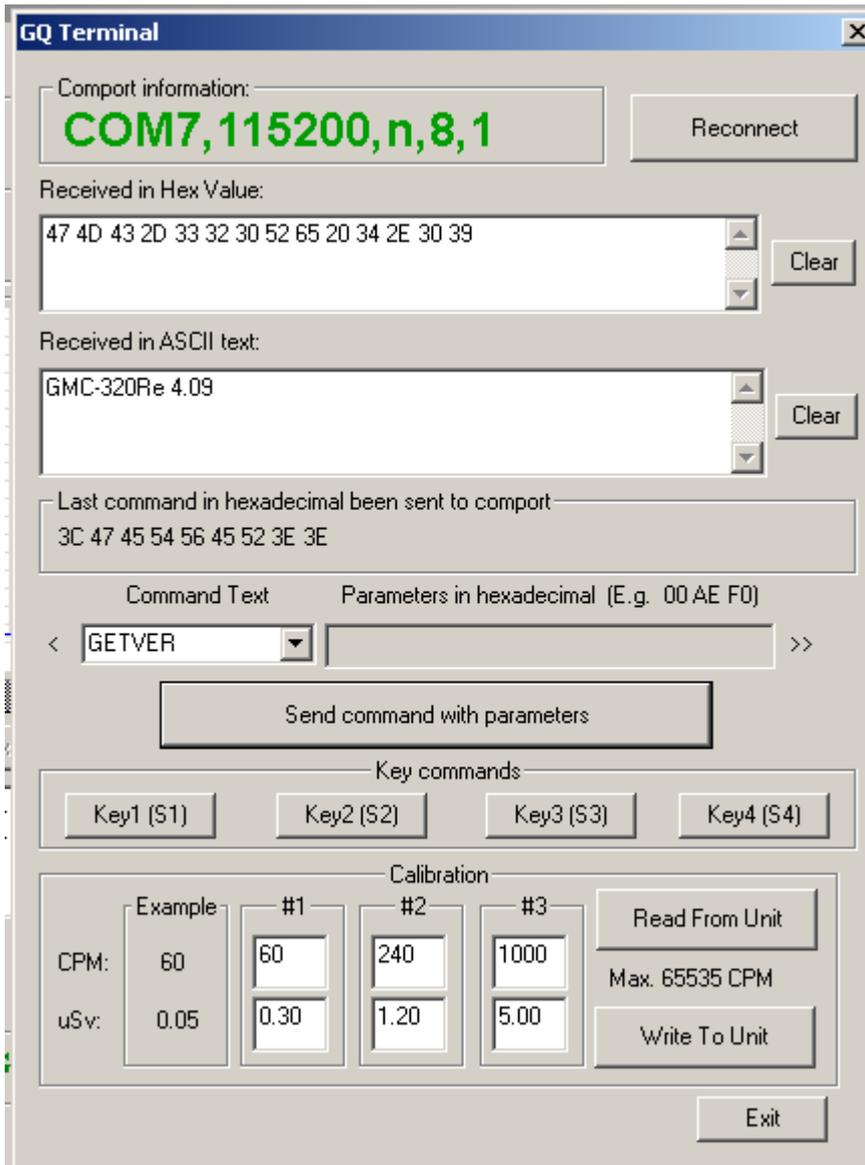
- Date Time Synchronization With PC:**
  - Auto Sync Period: 1 Hours
  - [ 0 for disable auto sync ]
  - Auto detect device when start up software
  - Buttons: Sync Date Time Now, Get Time From Unit
- Geiger Counter WiFi Data Setup:**
  - SSID: [ ] Password: [ ]
  - Website: [ ] URL: [ ]
  - User ID: [ ] Peroid: [ ]
  - Geiger Counter ID: [ ]
  - Buttons: Read From Geiger Counter, Write to Geiger Counter

At the bottom of the dialog are 'Cancel' and 'OK' buttons.

Read From Geiger Counter button reads the current device setting and display it.

Write to Geiger Counter button write all fields of software into device.

## GQ Terminal



The GQ Terminal provides an immediate access interface to the GMC-510/GMC-520 communication protocol.

Followings are click to send commands in software, for not listed commands user can type into the command box of software:

GETVER, GETSERIAL, GETCPM, KEY0, KEY1, KEY2, KEY3, SPEAKER0, SPEAKER1, ALARM0, ALARM1, GETVOLT, GETGYRO, GETCFG, GETCPS, GETTEMP, HEARTBEAT0, HEARTBEAT1, GETDATETIME, CFGUPDATE, POWEROFF, POWERON, SETDATETIME, FACTORYRESET

For detailed communication protocol commands, please see:

<http://www.ggelectronicsllc.com/downloads/download.asp?DownloadID=62>

An optional software is the GQ GMC Data Logger PRO. It is a generic software for different brand and model Geiger Counters. It has much more advanced features for advanced users.

See download page for the demo version.

# Online Geiger Counter World Map



[www.GMCmap.com](http://www.GMCmap.com)

The Geiger Counter World Map is free and open protocol map. Anyone can use it for free. It provides a free space to all Geiger Counter users.

As a registered user, each user can have multiple Geiger Counters at different locations. All registered Geiger Counters have free history data storage space. User is able to retrieve their history data anytime, anywhere. User is able to publish their history data to others by set the data properties.

## Software

The GMCmap accepts any software automatically submitted data.

The following tested software are free for automatic submit data feature.

1. GQ Geiger Counter Data Logger PRO (works on all Geiger Counter)
2. GQ Geiger Counter Data Viewer (works on GMC-300, GMC-320 series Geiger Counters)

Both software can be found and downloaded from GQ Electronics LLC download page

The GMC-510/GMC-520/GMC-520+ are able to submit the data via internal WiFi/GPRS connection without other software.

## Auto Submit Data Protocol

In order to use automatically submit data, user has to be registered from GMCmap.com, so that to get a valid user account ID and Geiger Counter ID. Each user can have multiple Geiger Counters at the different locations.

Auto submit data url format:

<http://www.GMCmap.com/log.asp?id=UserAccountID+GeigerCounterID+CPM+ACPM+uSV>

At least one reading data has to be submitted.

Here: 1. UserAccountID: user account ID. This ID is assigned once a user registration is completed. 2. GeigerCounterID: a global unique ID for each registered Geiger Counter. 3. CPM: Count Per Minute reading from this Geiger Counter. 4. ACPM: Average Count Per Minute reading from this Geiger Counter (optional). 5. uSv: uSv/h reading from this Geiger Counter(optional).

Followings are valid data submission examples:

1. [www.gmcmap.com/log2.asp?AID=304&GID=97784528160&CPM=12&ACPM=13.97&uSV=0.08&co2=-1&hcho=1.08&tmp=26.18&ap=1007.98&hmdt=31.52&lat=0&lon=0&alt=0&sat=0/0&accy=213.7&type=gprs](http://www.gmcmap.com/log2.asp?AID=304&GID=97784528160&CPM=12&ACPM=13.97&uSV=0.08&co2=-1&hcho=1.08&tmp=26.18&ap=1007.98&hmdt=31.52&lat=0&lon=0&alt=0&sat=0/0&accy=213.7&type=gprs)

The result will be returned immediately.

The following are the returned result examples:

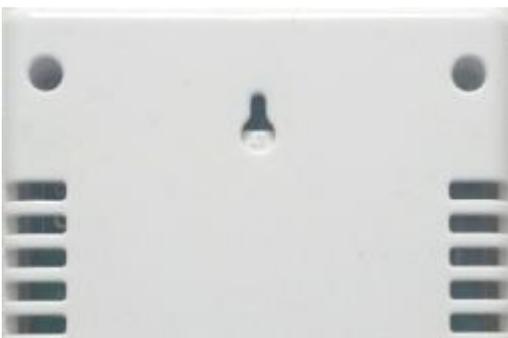
1. OK.
2. Error! User is not found.
3. Error! Geiger Counter is not found.
4. Warning! The Geiger Counter location changed, please confirm the location.

If a location change warning received, the user need to confirm the location from that Geiger Counter profile. OR Create another Geiger Counter from your account. In this case, you can have two locations share one Geiger Counter.

## Applications

### Stationary Application

The unit has two holes on its back for hanging the unit on the wall for stationary monitoring of radiation and long term surveillance applications. With the wall adapter, it is able to monitor the data continuously, 24/7.



### Mobile Application

To use the unit in the car while driving, use the provided car adapter to charge/power the unit. Position the unit where it can easily detect radiation, i.e. on the dashboard or similar locations in the car. You may need to fix the unit to an appropriate location for safety reasons.

## **Other technical details you may want to know**

### **Data Port**

This model has a 3.5mm analog data output port. It uses standard 3.5mm audio stereo plug, and this port is not for the earphone. The audio signal is for third party device and software. The signal can be connected to other devices or computer microphone port directly.

### **USB Port**

The USB port is the standard mini-USB port. It is used for data communication, external power and the battery charger connection.

### **Data collection time**

The GMC-510/GMC-520/GMC-520+ radiation data is collected continuously, and every second the measured data is being transmitted to the CPU for processing.

### **Extend battery operating time**

Turn on the Power Saving mode to extend the battery operating time. Turn off the speaker if it is not necessary. If a fully charged battery run-out in less than 5 operating hours, then the battery needs to be replaced. Use a standard 18650 (18 x 65.0 mm) rechargeable Li-ion battery.

The GMC-510/GMC-520/GMC-520+ will operate normally when a non-rechargeable battery is installed. Select the battery type to none rechargeable battery from the unit menu.

### **Third party software developers**

The GMC-510/GMC-520/GMC-520+ is an open application protocol product. Users are able to develop their own software based on the published GQ-RFC1201 protocol. We encourage you to share your generic software with other users. Please contact [support@ggelectronicllc.com](mailto:support@ggelectronicllc.com) if you have any questions.

You can find the GQ-RFC1201 protocol at the software download page.

<http://www.ggelectronicllc.com/comersus/store/download.asp>