



# GQ GMC-SE Geiger Counter User Guide



**GQ Electronics LLC**

Revision 2.14

May-2023

Document Revision History:

Re.1.00 ,May-2023 GQ Electronics LLC. Initial release for firmware 1.00

## Table of Contents

User Guide .....	1
Table of Contents.....	3
ACKNOWLEDGEMENTS.....	5
Specifications:.....	6
Packing List:.....	7
How it works?.....	7
Caution.....	7
Background Safe Levels .....	7
Hardware setup .....	8
Software set up (optional).....	8
Verify USB driver installation in Windows (Optional).....	9
GQ GMC Geiger Counter Multi-Function Keys .....	10
Key1 .....	10
Key2 .....	10
Key3 .....	10
Key4 .....	10
Power saving mode .....	10
Popup Windows.....	11
Graphic User Interface (GUI) .....	11
Graphic Icons:.....	11
Graphic Mode: .....	13
Text Mode:.....	13
Large Font Mode: .....	14
User Option .....	14
Alarm Set.....	14
Date and Time setting .....	15
Data Saving Setting .....	15
Threshold Data Saving Setting .....	16
Add Note or Add Location for data saving .....	16
Note/Location Input.....	16
History data searching.....	17
History data menu .....	17
Erase Saved History Data .....	18
Swivel Display Setting .....	18
Calibrate the reading .....	19
Factory reset .....	20
Battery Status .....	20
Battery Type.....	20
Power saving mode .....	21
Motion Detection.....	21
Reset Total Count .....	21
Temperature Display .....	22
Gyroscope Data Display .....	22
Communication Baud Rate.....	22
Reverse Display .....	22
Contrast Adjustment .....	23
Timed Count.....	23
Set a schedule .....	23
Set Timed Count Duration .....	23
Start a Timed Count.....	24
About.....	26
Model information.....	26
Firmware version.....	26
Unit serial number .....	26

GQ GMC Data Viewer Software.....	27
Online Geiger Counter World Map .....	29
www.GMCmap.com.....	29
Software .....	29
Auto Submit Data Protocol.....	29
Applications .....	30
Stationary Application.....	30
Other technical details you may want to know .....	30
Data Port.....	30
USB Port.....	30
Data collection time.....	30
Tube recovery time .....	31
Extend battery operating time .....	31
Third party software developers .....	31

## **ACKNOWLEDGEMENTS**

**[TO BE FILLED]**

## Overview

The GQ GMC-SE digital Geiger Muller Counter is specially designed to be a U.S. NRC compliant, portable and convenient device. It can be used in industrial, commercial maintenance, research, evaluation, simulation and other analytical or scientific applications in areas such as industrial plants, public utilities, hospitals, 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 for both indoor and outdoor environments. It features automatic data recording, continually monitoring the radiation level and logging the data into internal memory every second. Users can later check and analyze this data by connecting the GMC-SE to a computer and downloading it using the provided software. The GQ GMC-SE also comes with 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 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-SE internal rechargeable battery can be charged with a standard wall adapter. Using the adapters, continuous data monitoring is possible. The GMC-SE can run on only the wall adapter, giving users freedom from the limitations of a battery and guaranteeing consistent and accurate measurements.

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

The USB port communicates with the **GQ Geiger Counter Data Viewer** software.

The **GQ Geiger Counter Data Viewer** software can download the time stamped radiation (history) data from the unit and save it on a computer for future references and analysis.

## Specifications:

<b>Range of dose rate indications, <math>\mu\text{Sv/h}</math></b>	0.00 to 2000
<b>Range of exposure dose rate indications, mRem/h</b>	0.00 to 200
<b>Range of registered beta radiation energy MeV</b>	0.25 to 3.5
<b>Range of gamma radiation energy, MeV</b>	0.1 to 1.25
<b>Range of registered X-ray radiation energy MeV</b>	0.03 to 3.0
<b>Reproducibility of indication</b>	20%
<b>Gamma Sensitivity <math>\text{Co}^{60}</math> (cps/mR/hr)</b>	22
<b>Alarm levels by CPM</b>	0 to 999999 (continuously)
<b>Alarm levels by <math>\mu\text{Sv/h}</math></b>	0.00 to 9999 (continuously)
<b>Alarm levels by mRm/h</b>	0.00 to 999 (continuously)
<b>Date indication</b>	YYYY-MM-DD (continuously)
<b>Time indication</b>	HH-MM-SS (continuously)
<b>Elapsed time indication</b>	99 years(maximum)
<b>Timed Count</b>	1 Second to 256 days(programmable)
<b>Scheduled Timed Count</b>	0 Second to 256 days(programmable)
<b>Radiation detection:</b>	$\beta, \gamma, x$
<b>Detectable Radiation Range:</b>	0.1 ~ 3 MeV
<b>Instrument Background:</b>	0-2 pulses/s
<b>Working Voltage:</b>	3.6-3.7V
<b>Display:</b>	LCD dot matrix, back lighted
<b>On board Memory:</b>	2M Bytes flash memory for data storage
<b>Power: Consumption</b>	25mW – 125mW (count rate dependent)
<b>Power: Supply</b>	3.7V Li-Ion battery / USB power

*This device is calibrated to GQ Electronics' strict QA standard and eligible to be calibrated to U.S. Nuclear Regulatory Commission (NRC) regulation 10-CFR-34, 10-CFR-35, ANSI/NCSS Z540.3-2006(R2013), ISO/IEC 17025:2017(E), MIL-I-45208A, and traceable to the National Institute of Standards and Technology.*

## Packing List:

1. GMC-SE main unit.
2. USB cable
3. Quick start guide
4. Protective Silicon Case

## How it works?

The GQ-SE Geiger Counter installed a Geiger tube to detect radiation.

When the radiation passes through the Geiger tube, it triggers electrical pulses for the CPU to register as count. The basic count rate unit is CPM (Count Per Minute). The CPM count rate indicates the radiation level and it can be converted to other traditional radiation units, such as uSv/h or mR/h.

After GMC-SE is turned on for one minute, it will show the background radiation reading. The background radiation reading (in CPM) indicates the nature radiation detected at that minute. This reading may change from time to time and location to location. To get an accurate reading, user may need to get an average value over a longer time period.

## Caution

1. Avoid doing measurements when the battery is low.
2. Do not get the Geiger counter wet. Use a sealed plastic bag to avoid moisture.
2. Avoid doing measurements in direct sunlight.
3. Avoid directly contact with the radioactive material. Use a sealed plastic bag if needed.
4. Turn off the unit when not in use.
5. Keep it in a protective pouch after use.

## Background Safe Levels

Suggested background readings levels:

1. **Safe level.** Less than 50CPM or 0.25uSv/h. Nothing to worry about
2. **Attention level.** 51CPM – 99CPM. OR 0.26uSv/h – 0.39uSv/h . Unnaturally high, time to figure out what is wrong
3. **Warning level.** More than 100CPM or more than 0.40uSv/h. Dangerous to stay in this area for long.

## Hardware setup

There are four buttons on the front of the unit: **Key1, Key2, Key3 and Key4 (from left to right)**

1. Power up the unit. Pressing the Key4 (power) key for 3 seconds will turn on the unit. Check the battery level. Charge the battery fully for 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 Key4 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 recorded 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.

Note: There is a transparent protective sheet covering the unit's surface. Users may need to remove it to get better view of the LCD display.

## Software set up (optional)

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

1. For the Win 10/11, no USB driver is needed to install. Other earlier Windows version may need 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.

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

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

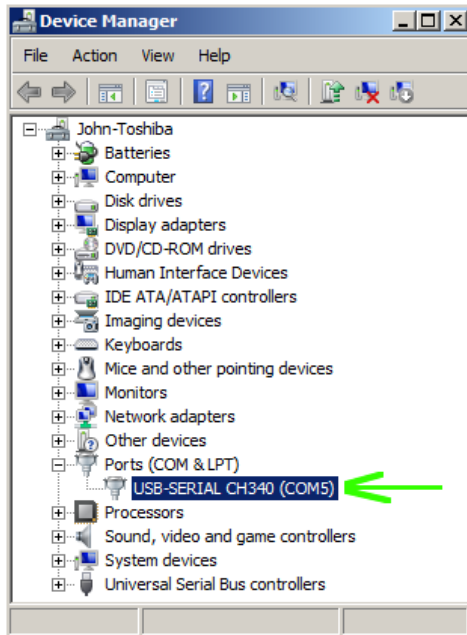
For the latest software, please visit our software download page:

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

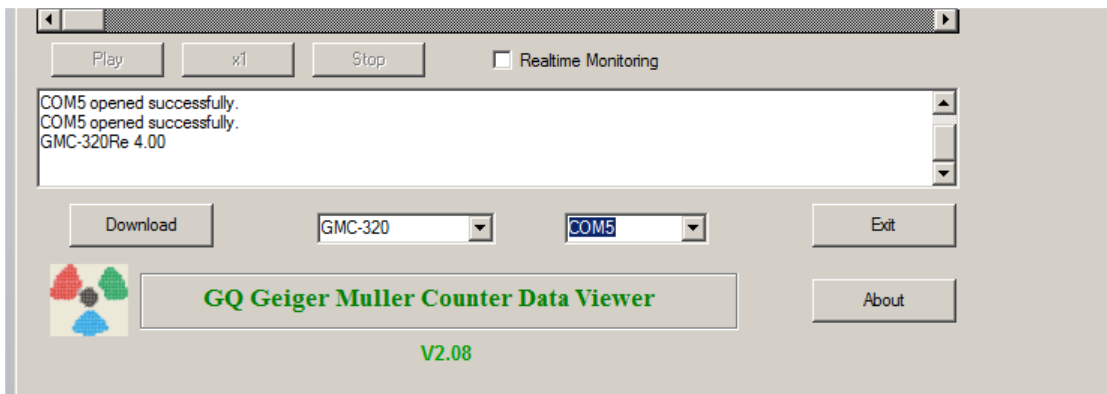


## Verify USB driver installation in Windows (Optional)

Once the GMC-SE is connected to a computer, from the device manager, you should see which COM port is assigned to the GMC-SE. See the example below. Windows assigned COM5 to the GMC-SE unit in this example.



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



## GQ GMC Geiger Counter Multi-Function Keys

The multi-function keys, Key1, Key2, Key3 and Key4 explained:



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

### Key1

1. There are three display modes: Text, Large Font and Graphic mode. Pressing the Key1 toggles between these modes.
2. In the menu screen, pressing the Key1 will exit the current menu and will return back one menu level.
3. In the data input mode, pressing the Key1 will delete the last character entered.

### Key2

1. In text mode, pressing the Key2 will change the text information format.
2. In graphic mode, the Key2 will increase the graphic ZOOM factor.
3. In menu mode, the Key2 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 Key2 changes the value by cycling through the predefined values.

### Key3

1. In text mode, pressing the Key3 will change the displayed date/time selection.
2. In graphic mode, the Key3 will decrease the graphic ZOOM factor.
3. In menu mode, the Key3 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 Key3 changes the value by cycling through the predefined values.

### Key4

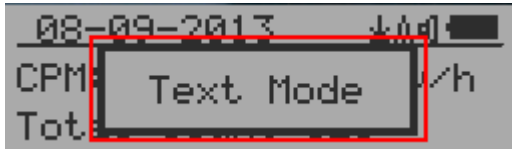
1. In power off state, only the Key4 acts as the power switch. Holding it for 3 seconds will power up the unit.
2. In power on state, holding Key4 for 3 seconds will switch the unit off.
3. In menu mode, Key4 is the "Confirm", "Select", "Enter" key

### 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 of 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: 0.1, 0.2, 0.3, ...1.0, 2.0, 3.0, 4.0, 5.0, AUTO



Battery Status.



Data saving enabled / (History data)



Alarm enabled



Sound enabled



Timed Count. It flashes if timed count in progress.



Current graphic ZOOM factor



Current CPM reading



History CPM reading



Total count since power on OR reset/clear.

**Average CPM:**

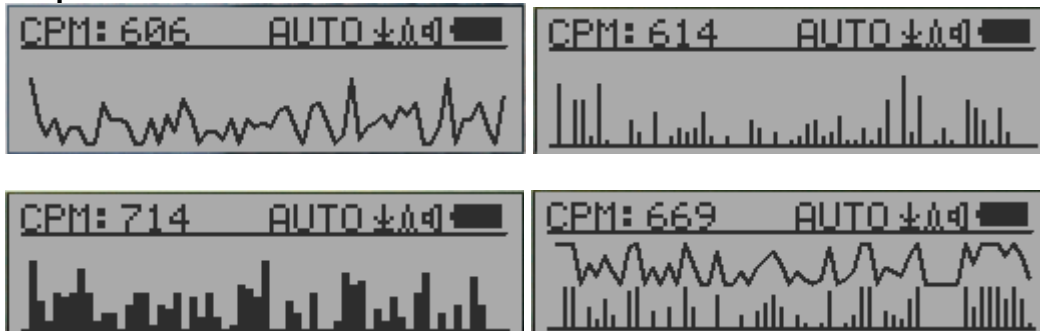
Average CPM of a specific time frame.

**Maximum CPM:**

Maximum CPM since power on.

There are four 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.

**Text Mode:**

08-09-2013    ±0.00  
 CPM: 625    2.08uSv/h  
 Total Count: 6119

15:29:36    ±0.00  
 CPM: 509    1.70uSv/h  
 Total Count: 6470

15:29:36    ±0.00  
 CPM: 710    0.237mR/h  
 Elp.:00 Day 00:11:01

15:29:36    ±0.00  
 CPM: 661    0.220mR/h  
 Total Count: 7866

01-01-2015    ±0.00  
 CPM: 33    0.017mR/h  
 Average CPM: 28.25

01-01-2015    ±0.00  
 CPM: 28    0.14uSv/h  
 Maximum CPM: 30

**08-09-2013 , 15:29:36**

Current date and time (Press Key3 for toggling between date and time)

**CPM: 554  
 1.78uSv/h**

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

**0.185mR/h**

mR/h format

**Total Count: 10052**

Total count.

**Elp.:00 Day 00:16:34**

Elapsed time since power on  
 (Press Key2 for toggling displayed info)

**Maximum CPM: 30**

Maximum CPM since power on

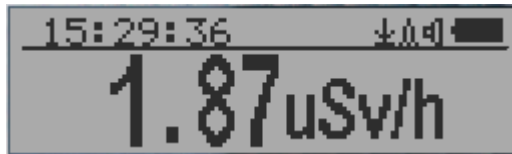
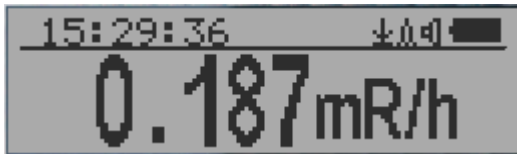
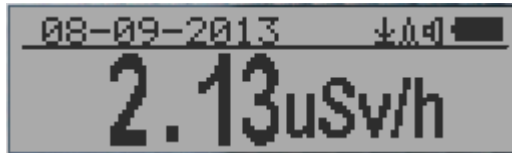
**Average CPM: 28.25**

Average CPM since power on.

Navigation keys for both modes:

- Key1: Text/Graphic Display Mode Selection
- Key2:  $\mu$ Sv/h, mR/h, Total Count, Elapsed Time selection
- Key3: Date or Time on title selection
- Key4: Menu

### Large Font Mode:



08-09-2013 , 15:29:36

Current date and time (Change it in Text Mode)  
Key 2 toggles between CPM,  $\mu$ Sv/h and mR/h mode

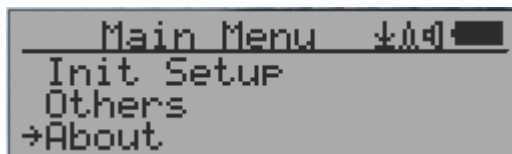
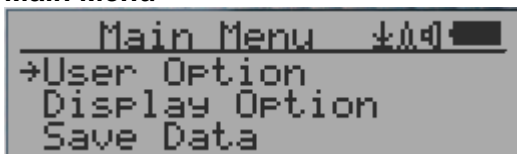
### Navigation keys:

- Key1: Text/Graphic/Large Font Display Mode Selection
- Key2:  $\mu$ Sv/h, mR/h, CPM selection →
- Key3:  $\mu$ Sv/h, mR/h, CPM selection ←
- Key4: Menu

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

### Menu Display

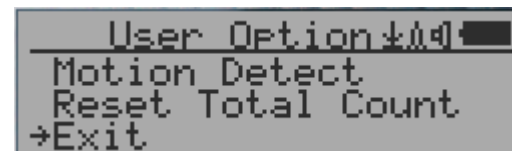
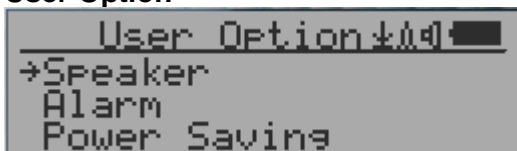
#### Main Menu



### Navigation keys:

- Key1: Back
- Key2: Up
- Key3: Down
- Key4: Select/Enter

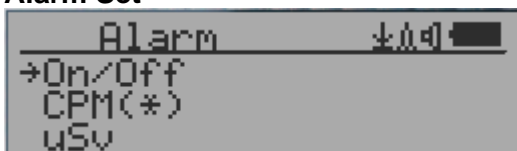
#### User Option



### Navigation keys:

- Key1: Back
- Key2: Up
- Key3: Down
- Key4: Select/Enter

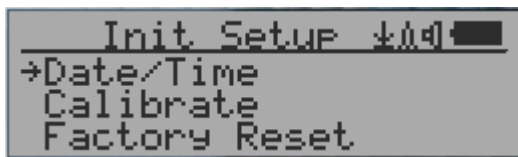
#### Alarm Set



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:

Key1: Back/Exit

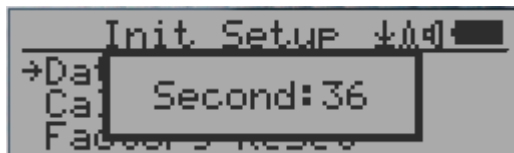
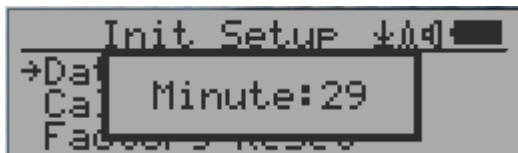
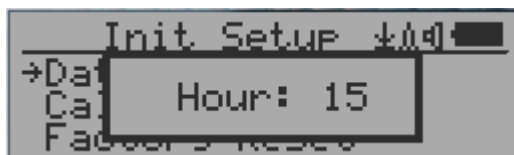
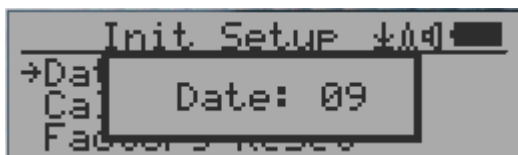
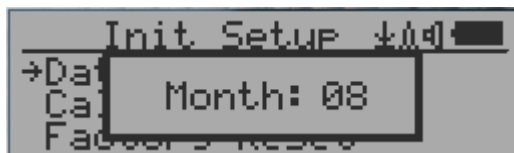
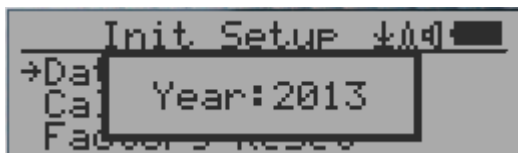
Key2: Increase value by 1

Key3: Decrease value by 1

Key4: Select between Year, Month, Date, Hour, Minute and Second.

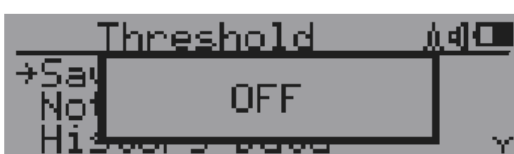
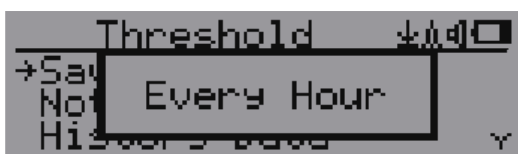
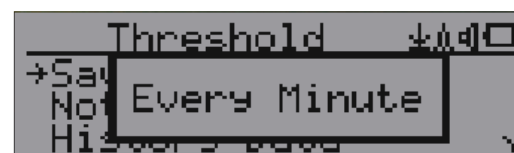
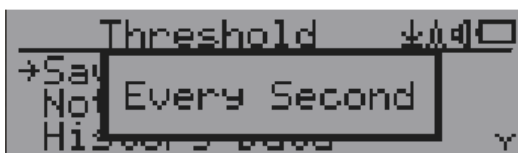
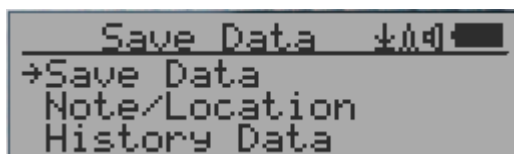
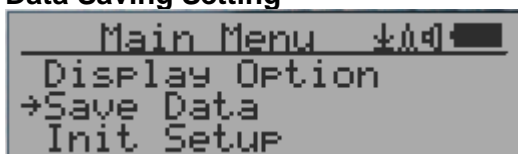
Each key press will change the mode to be set.

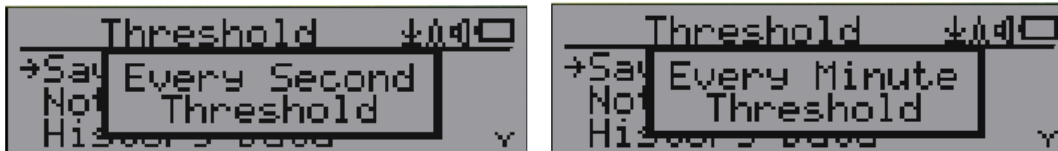
**NOTE: Setting of Date and Time is important, all history data use Date and Time as a time stamp reference. Do not skip this setting!**



**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 exceeds the threshold value.

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

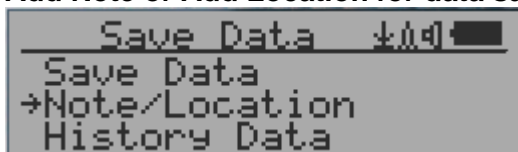
### Threshold Data Saving Setting



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



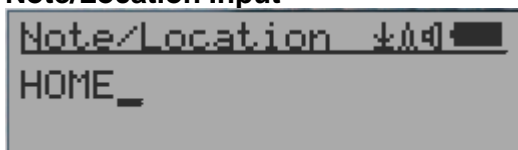
### Add Note or Add Location for data saving



The user may add a note with up to 16 characters into the history data to identify the measurement or location.

This note/location information will be saved together with the radiation data.

### Note/Location Input



The cursor indicates the position of current character input.

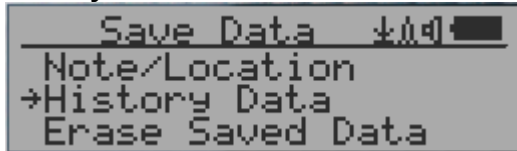
Navigation keys:



Key1: Backspace and erase  
 Key2: Move cursor right ←  
 Key3: Move cursor left →  
 Key4: Exit & Store

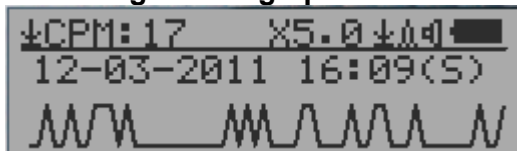
## History data searching

### History data menu



This is for searching the history data stored in flash memory.

### Searching data in graphic mode

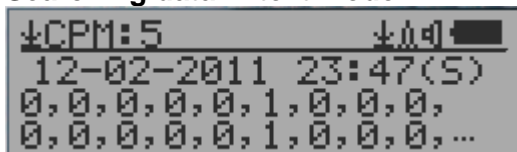


**±CPM:17** The first symbol indicates this is saved history data, to distinguish from real time data display. The current history data point reading is 17 CPM.

**12-03-2011 16:09(S)** This is the date and time stamp of the recorded data point.

(S) indicates that data has been recorded every second  
 (M) indicates that data has been recorded every minute.  
 (H) indicates that data has been recorded every hour.

### Searching data in text mode



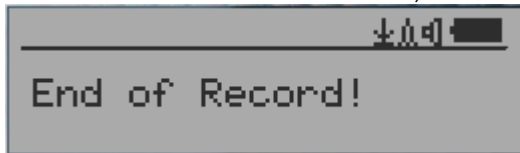
**±CPM:5** The first symbol indicates this is saved history data, to distinguish from real time data display. The current history reading is 5 CPM.

ACPM: If the data has been recorded every minute, averaged CPM will be displayed, and ACPM will be displayed instead of CPM to indicate the averaging mode. Averaging time period is one minute.

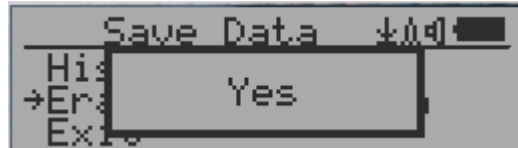
### Navigation keys for both data search modes:

Key1: Back/Exit  
 Key2: Select searching mode:  
       Next Day, Next Hour, Next Minute, Next Note/Location ←  
 Key3: Select searching mode:  
       Next Day, Next Hour, Next Minute, Next Note/Location →  
 Key4: Step: Each key press will go to next data point based on the searching mode selected via S2, Key3 →

**NOTE:** If no more data is found, the following message will be displayed in both modes:

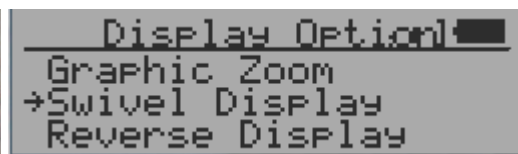
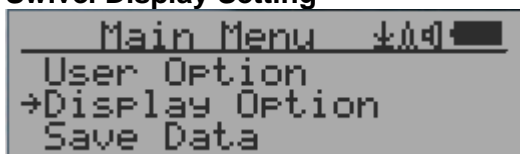


### Erase Saved History Data



Use Key2 and Key3 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.

### Swivel Display Setting



Pressing the Key4 key will cycle between: Normal -> Swivel -> Auto Swivel modes

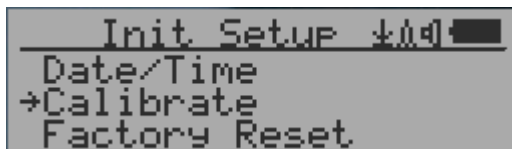
In the Auto Swivel mode, the display automatically rotate to match how the user is holding the device.

## Calibrate the reading

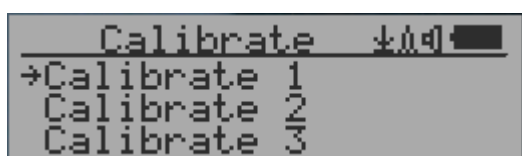
You do not need to do the calibration if you just want to qualitatively detect radiation. However, if you have standard radiation sources with known  $\mu\text{Sv/h}$  value, you may calibrate the instrument to get accurate readings.

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

### Calibration



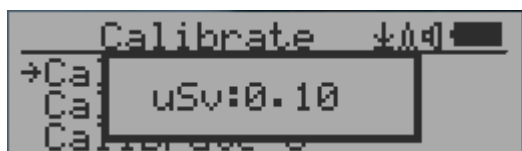
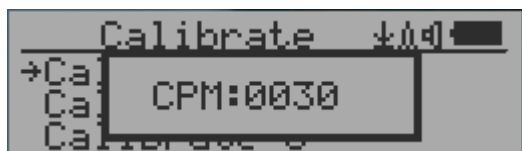
Select Calibrate from the Main Menu. There are three points provided for calibration.



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 six calibration points from large to high count rates.

### Procedure:

1. Place the testing radiation source ~30mm 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, 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:

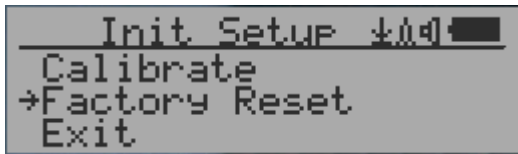
Key1: Back/Exit

Key2: Increase the value by 10 CPM or 0.1uSv/h respectively

Key3: Decrease the value by 1 CPM or 0.01uSv/h respectively

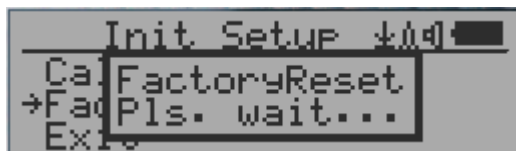
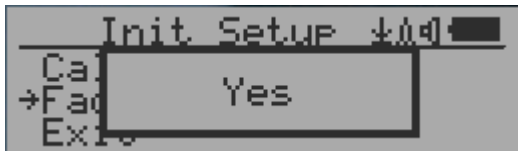
Key4: Toggle input data type between CPM and uSv/h

## Factory reset



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

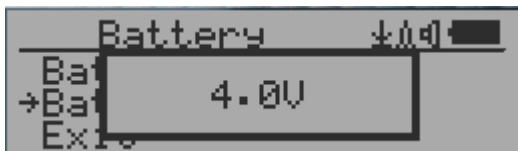
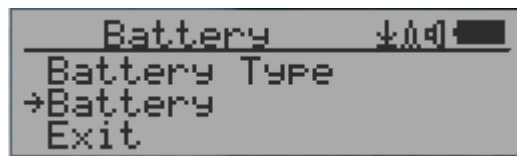
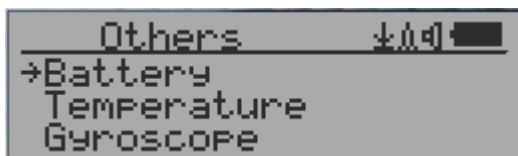
**Note:** The reset will erase all user settings and recorded history data.



Procedure:

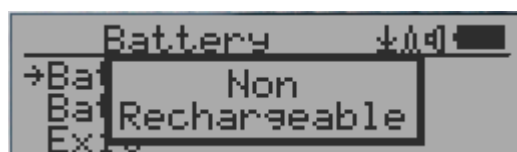
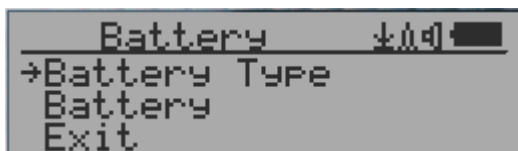
Select Factory Reset menu item and change the popup Windows message to Yes. Wait for popup message window's timeout to confirm the reset request. Any other key press will cancel the reset request. It may take up to 30 seconds to complete the reset.

## Battery Status



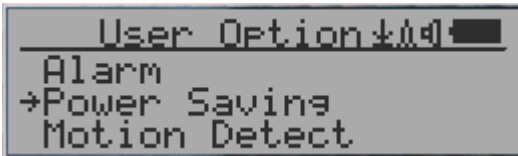
Select Battery submenu and Battery item for checking the current battery voltage.

## Battery Type



Select different battery type to match the installed battery type.

## Power saving mode



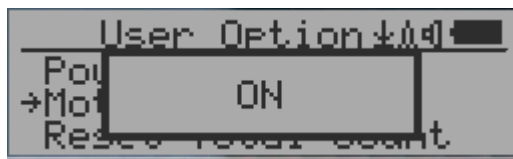
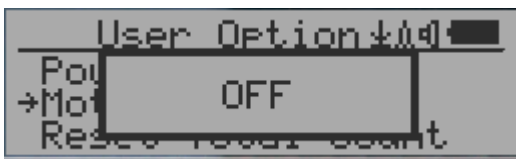
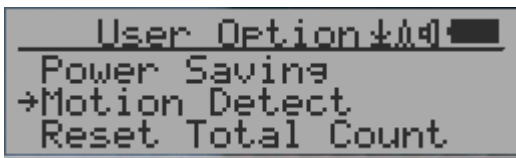
Pressing the Key4 key will toggle the Power Saving mode ON and OFF.

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.

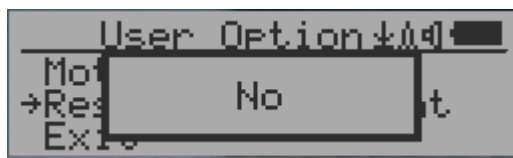
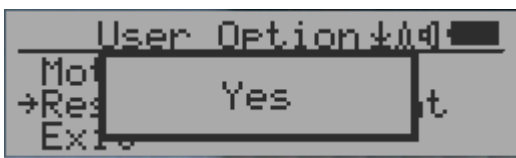
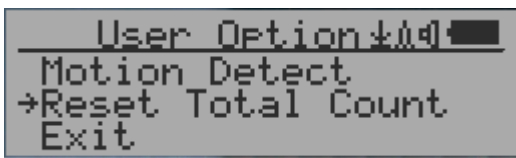
The unit movement does not wake up the unit if the motion detection is OFF.

## Motion Detection



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

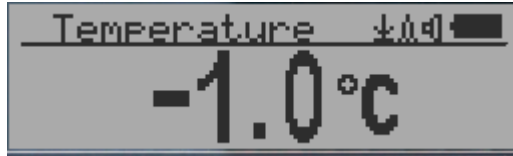
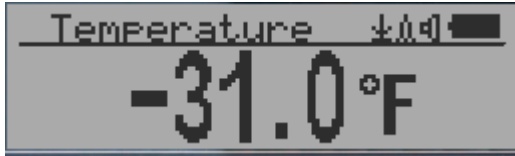
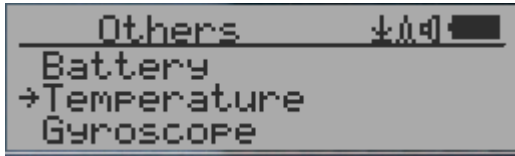
## Reset Total Count



The Reset Total Count menu item allows users to clear the total count on main text mode screen.

This may be used before a fixed time count measurement start.

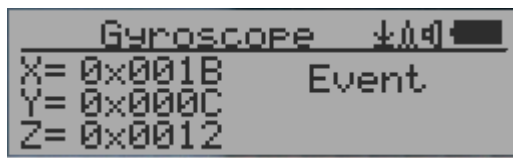
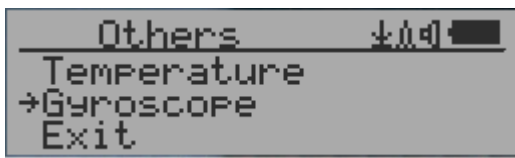
## Temperature Display



GMC-SE comes installed with an internal temperature sensor.

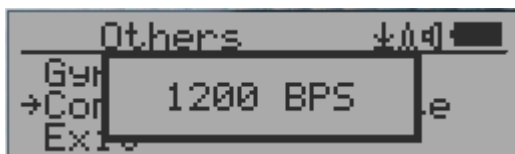
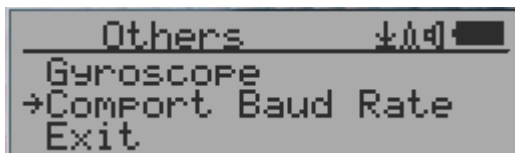
Press the Key2 to Key4 to toggle between Fahrenheit and Celsius. Use S1 to exit the temperature screen.

## 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.

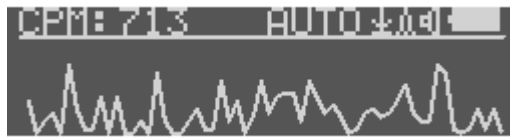
## Communication Baud Rate



This Geiger counter serial communication baud rate is selectable from following values: 1200,2400,4800,9600,14400,19200,28800, 38400,57600,115200. Pressing Key4 changes the baud rate.

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

## Reverse Display



### Contrast Adjustment



Use Key2 and Key3 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's 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's 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 minutes.

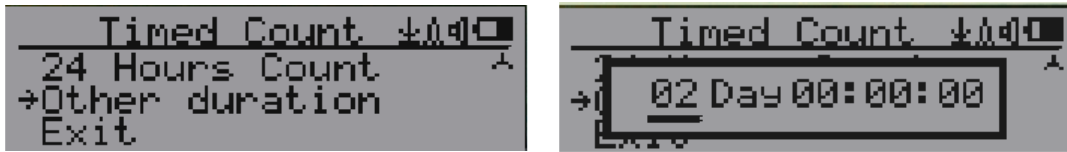
#### Navigation keys:

- Key1: Back/Exit
- Key2: Increase the cursor position value
- Key3: Decrease the position value.
- Key4: 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:

Key1: Back/Exit

Key2: Increase the cursor position value

Key3: Decrease the position value.

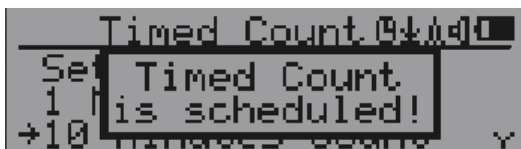
Key4: Move the cursor to input data type between Day, Hour, Minute and Second.

**Start a Timed Count**

If no schedule is set, then the Timed Count will start immediately after the duration set.

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

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



When the Timed Count has 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:



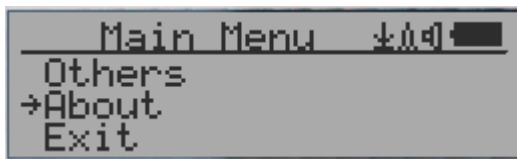


20:48:16 0±0.00  
Elp.: 00 Day 00:01:00<sup>h</sup>  
Count: 29  
Average CPM: 29.00  $\gamma$

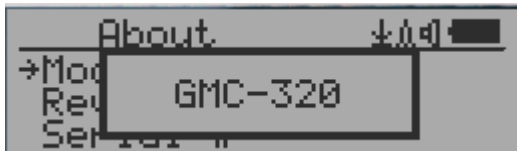
20:48:16 0±0.00  
Average CPM: 29.00  $\mu$   
Average: 0.14  $\mu$ Sv/h  
Average: 0.014 mR/h

## About

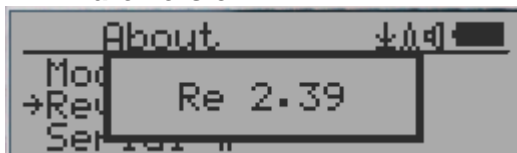
This menu item is used to gather information about the instruments model number, firmware revision and serial number.



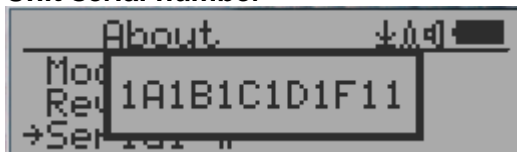
### Model information



### Firmware version

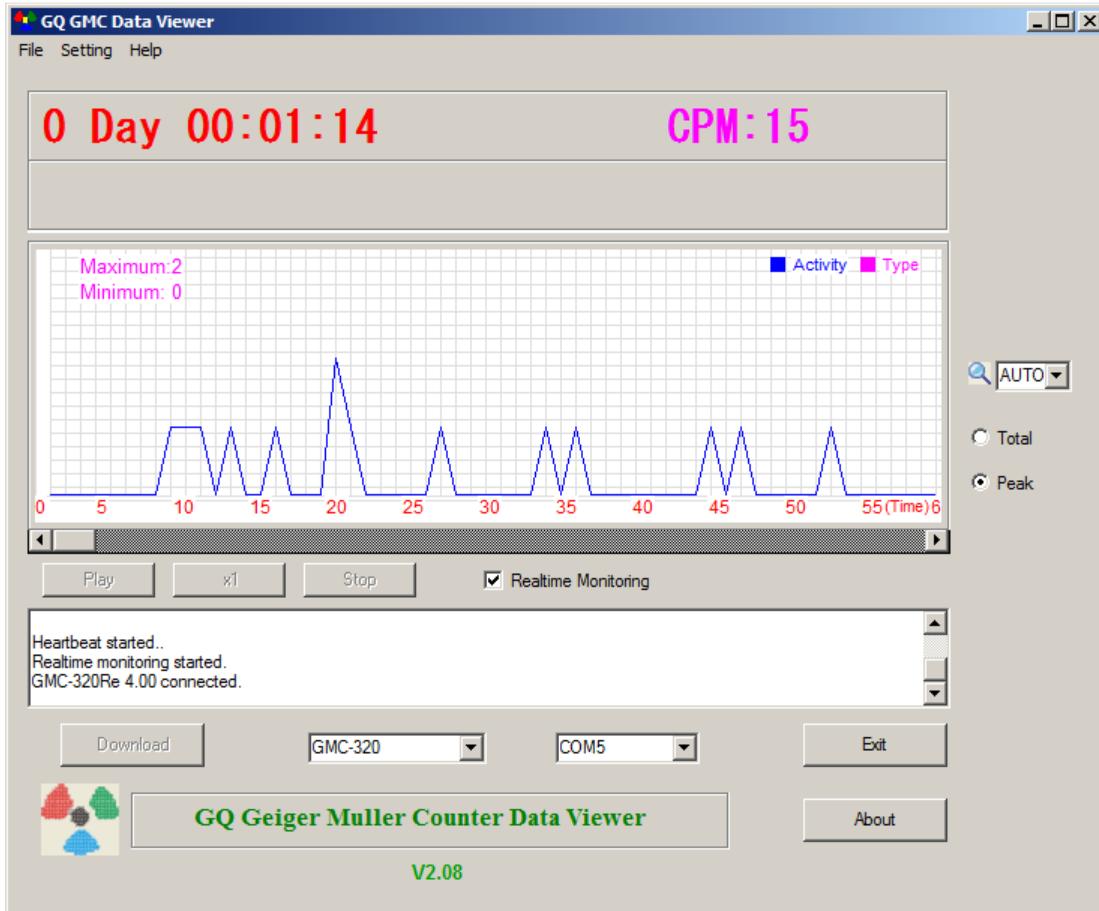


### Unit serial number



# GQ GMC Data Viewer Software

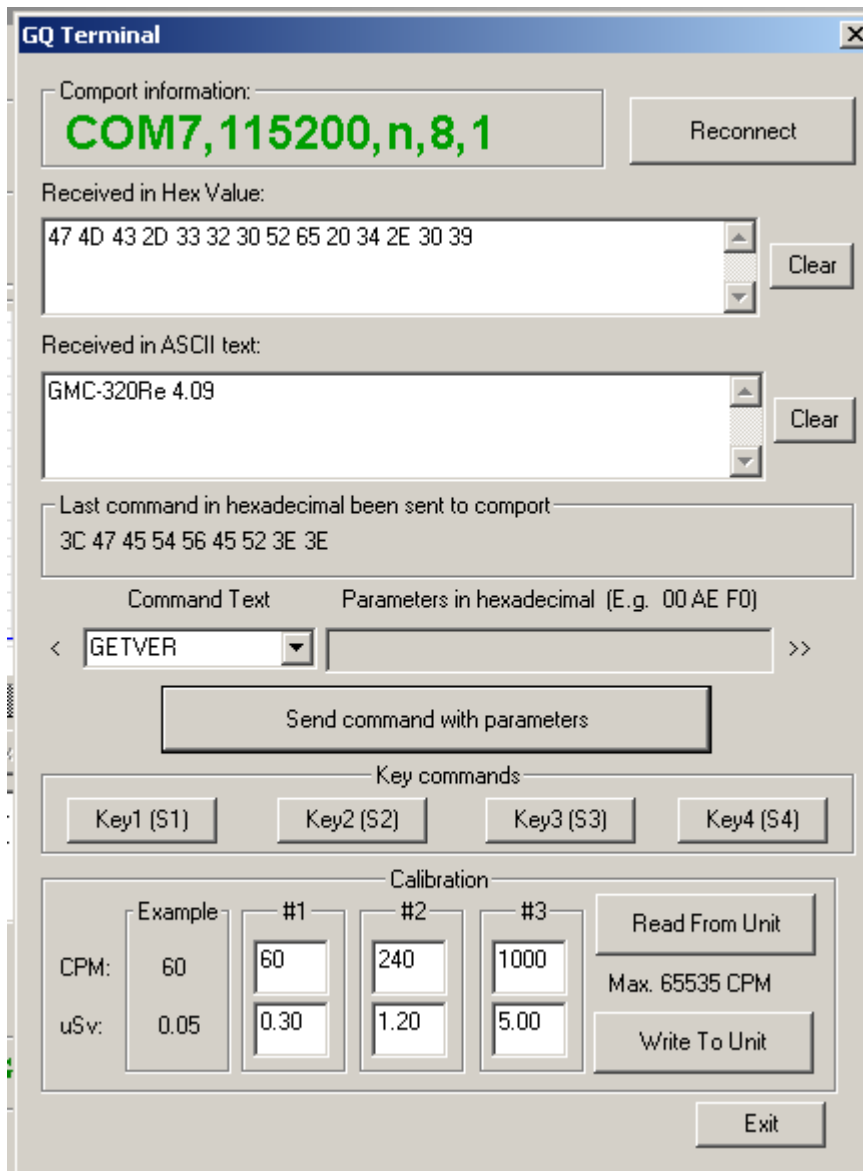
The GQ GMC Data Viewer is utility software that comes with the GMC-SE package.



Main features:

- Download the history data from GMC-SE
- Real time monitoring with graphic when it connected with GMC-SE
- Save the history data in .bin OR .csv MS Excel format.
- Synchronize the data and time to GMC-SE with computer's data and time
- User defined automatic date and time synchronization period.
- GQ Terminal feature provides a detailed communication protocol exercise interface.

## GQ Terminal



The GQ Terminal provides an immediate access interface to the GMC-SE communication protocol.

Followings are “click to send” commands in software, for unlisted 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

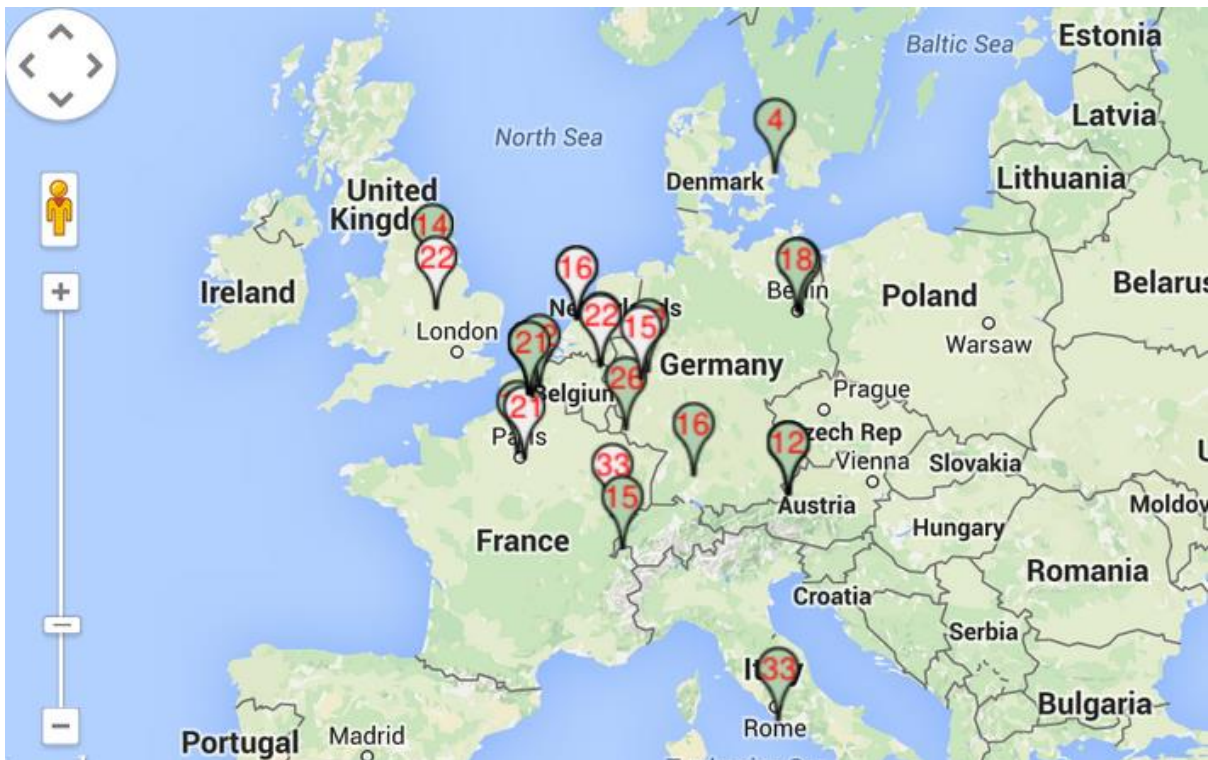
For detailed communication protocol commands, please see:

<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. Users can publish their history data to others by set the data properties.

## Software

The GMCmap accepts any software automatically submitted data.

The GQ Geiger Counter Data Viewer software is a tested free software for automatic submit data feature. It can be found and downloaded from GQ Electronics LLC download page

## Auto Submit Data Protocol

In order to use automatically submit data, user has to be registered on 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. <http://www.GMCmap.com/log.asp?id=0230111+0034021+15+13.2+0.075>
2. <http://www.GMCmap.com/log.asp?id=0230111+0034021+15+13.2+0>
3. <http://www.GMCmap.com/log.asp?id=0230111+0034021+15+0+0>
4. <http://www.GMCmap.com/log.asp?id=0230111+0034021+0+13.2+0>
5. <http://www.GMCmap.com/log.asp?id=0230111+0034021+0+0+0.075>

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 will 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 a 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 Important Technical Details**

### **Data Port**

This model has a 3.5mm analog data output port. It uses standard 3.5mm audio stereo plug, this port is not for the audio devices. 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-SE radiation data is collected continuously, and every second the measured data is being transmitted to the CPU for processing.

### **Tube recovery time**

After detecting high doses of radiation, each Geiger tube needs some time to recover (back to normal). This may take a couple of minutes. This recovery time is depending on the level of radiation just experienced and is also tube dependent. Turning the unit OFF and then turning ON again after a couple of minutes will reduce the tubes recovery time.

### **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 14500 (14 x 50.0 mm) 3.6V-3.7V Li battery OR 14500 (14 x 50.0 mm) 3.6V-3.7V rechargeable Li-ion battery.

The GMC-SE will operate normally when a non-rechargeable battery is installed. Select the battery type to non-rechargeable battery from the unit menu.

### **Third party software developers**

The GMC-SE is an open application protocol product. Users are encouraged 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>