



User Manual

Version 1.0.0 May 2022

SMSIO for G-4510/4514 series



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Important Information

Warranty

All products manufactured by ICP DAS are under warranty regarding defective materials for a period of one year, beginning from the date of delivery to the original purchaser.

Warning

ICP DAS assumes no liability for any damage resulting from the use of this product. ICP DAS reserves the right to change this manual at any time without notice. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, not for any infringements of patents or other rights of third parties resulting from its use.

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Contact us

If you have any problem, please feel free to contact us. You can count on us for quick response.

Email: service@icpdas.com

1. Introduction

1.1 Overview

- G-4510/4514 series

The G-4510/4514 series are M2M Power Saving PAC with a cellular transceiver and Solar Charger. It can be used in hydrologic monitoring or mudslide monitoring system. With optional GPS model, the G-4510/4514 can also be a GPS tracking system for vehicle management system or maritime system.

The features of G-4510/4514 series: Solar Charger, Ethernet interface, optional GPS module, 3 digital inputs, 3 digital outputs, 8 analog inputs, 1 relay, 1 RS-232 and 1 RS-485 port. G-4510/4514 can be used in various application fields to transfer data over 4G, 3G, GPRS, SMS, Ethernet or serial bus through its optional 4G / NB communication module. The G-4510/4514 series built-in MiniOS7 provide the same development environment with I-7188/I-7186 series. It is easier for I-7188/I-7186 users to apply the G-4510/4514 series.

- G-451x SMSIO Firmware

The G-451x SMSIO Firmware saves users the development process. The main function is to send alarm messages through IO triggering, users only need to bring their own SIM card and equipped with EC2x series communication module, they can set the I/O triggering conditions through Utility, send SMS messages, and help users to do simple control in the local field, for example, DI/AI/Counter triggering can also drive DO channels in addition to sending alarm messages.

In addition, ICP DAS also provides SMS Database System software to support the collection of alarm SMS data, which is convenient for customers to maintain and centralize the management, so as to facilitate customers to quickly establish the monitoring end of the program, and also provides an external SD card slot to support SD card to record SMS messages.

- G-451x SMS IO Utility

With SMSIO Firmware and our Utility, you can set up the working logic on the controller, query the I/O status, and check the SMS transmission record with a click of a mouse.

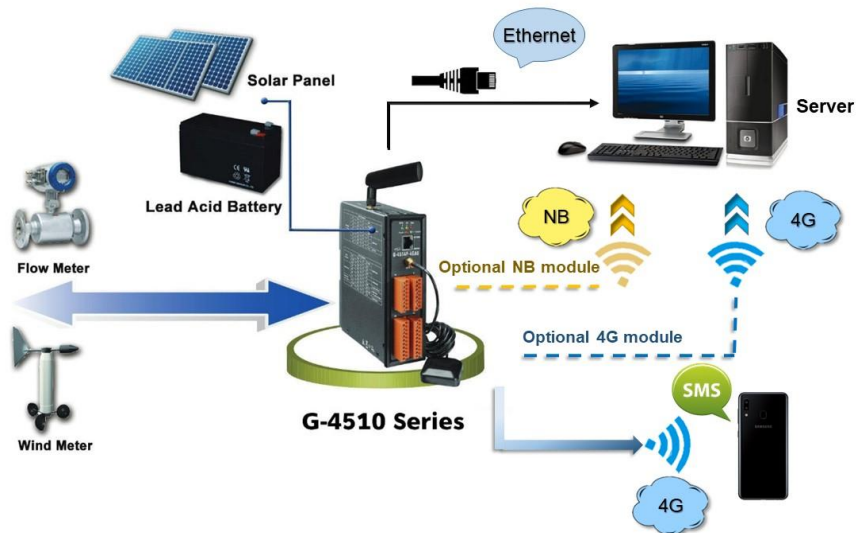
1.2 Features

- Report DI, AI and Counter values regularly.
- Send SMS through mobile phone to inquire about I/O status or set DO.
- Trigger conditions through the build-in DI can be set to Normal Close, Normal Open or Counter.
- Trigger conditions through the build-in AI can be set for range detection.
- Each trigger condition can set 10 phone numbers.
- SD Card support, with function setting to record SMS data in SD card

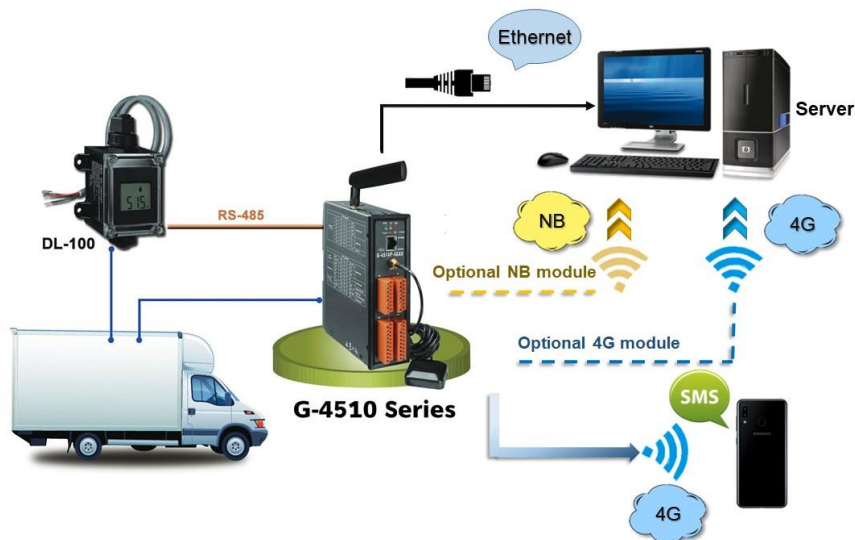


2. Applications

Hydrologic / Wind Monitoring Application



Car Monitor / Tracking System



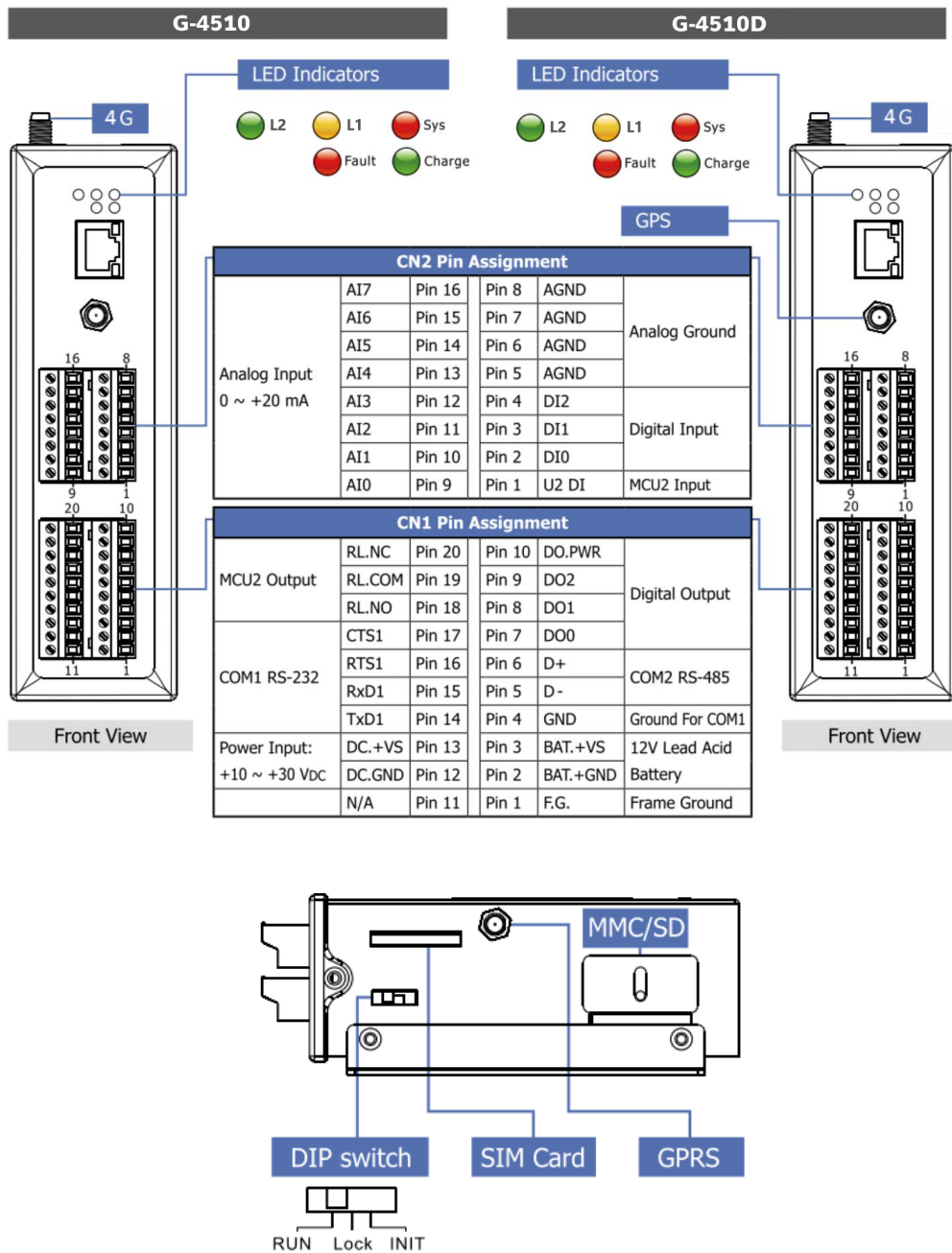
Tips & Warnings



Note: The SMSIO Firmware only supports EC2x series communication modules, others are not applicable.

3. Hardware

3.1 Pin Assignments

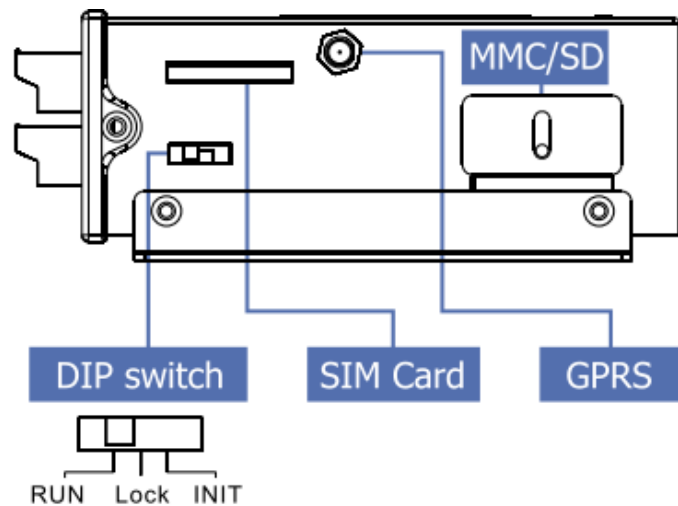


Tips & Warnings



Note: The hardware configuration of G-4510 and G-4514 is the same.

3.2 Operation Mode Switch

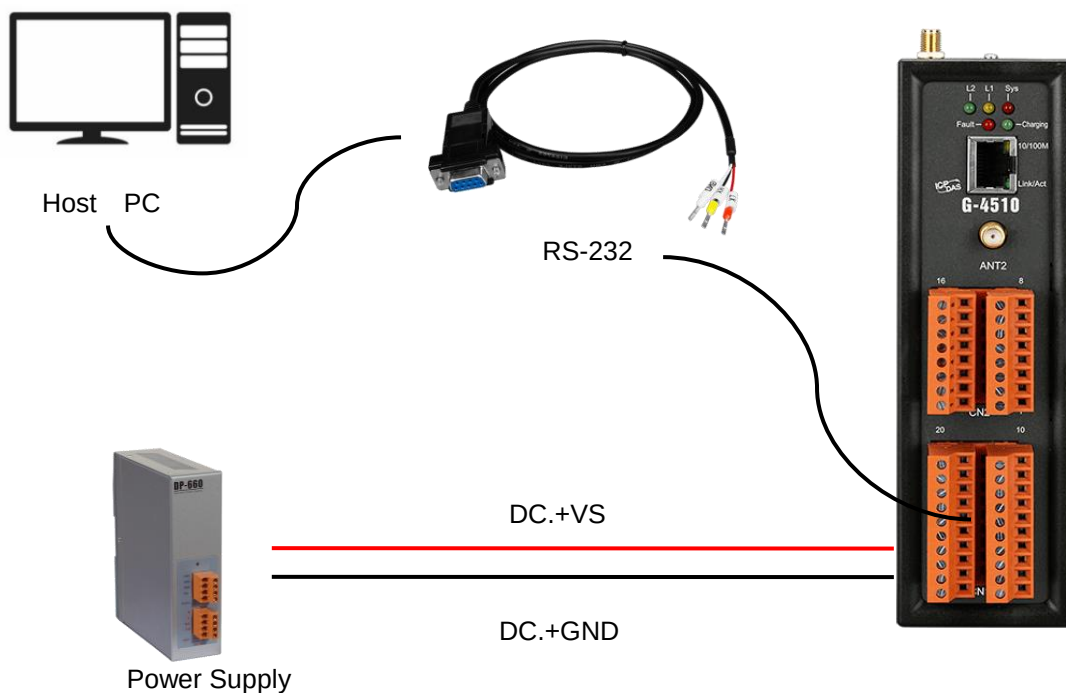


作業模式切換	
RUN	OS can execute autoexec.bat
	Flash can be read/write
Lock	OS can execute autoexec.bat
	Flash is read only (lock)
INIT	OS can not execute autoexec.bat
	Flash can be read/write

4. Upload SMSIO Firmware to G-4510/4514 Series

4.1 Hardware Connection

When users want to use SMSIO, they need to upload G-451x SMSIO firmware to G-4510/4514 series hardware. There are 2 kinds of interfaces which are RS-232 and Ethernet ports to download the firmware. Use the COM Port of Host PC connects to G-4510/4514 series. Please refer to the below picture



4.2 Upload Firmware

- Please download the firmware and burn-in software MiniOS7 Utility from the official website first.

- Download the MiniOS7 Utility software

<https://www.icpdas.com/en/download/show.php?num=1053&root=&model=&kw=MiniOS7%20Utility>

- Download the MiniOS7 Utility user's manual

<https://www.icpdas.com/en/download/show.php?num=1054&root=&model=&kw=MiniOS7%20Utility>

■ Download the SMS IO Firmware

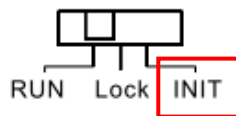
➤ G-4510 Series

<https://www.icpdas.com/en/download/show.php?num=7999&model=G-4510>

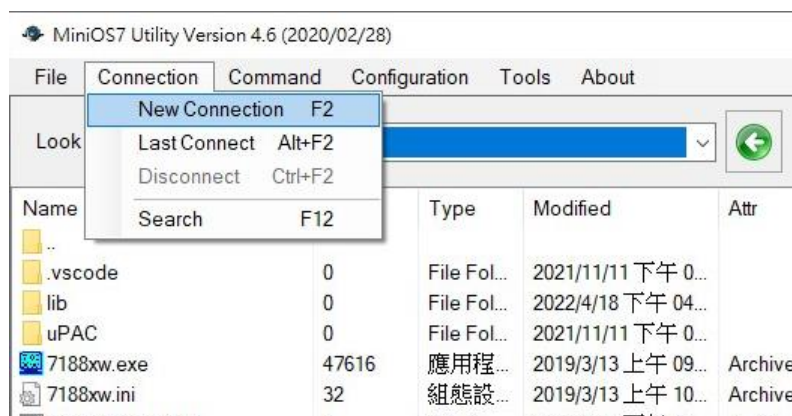
➤ G-4514 Series

<https://www.icpdas.com/en/download/show.php?num=2619&nation=US&kind1=&model=&kw=4514>

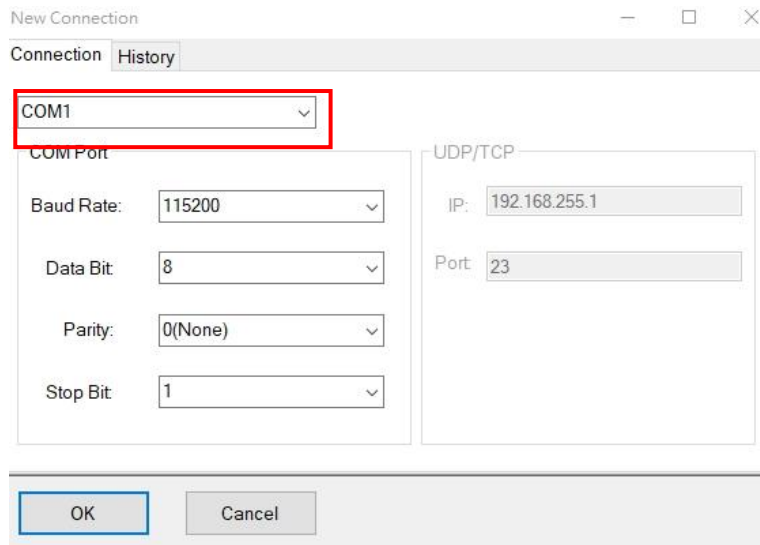
- First switch the device switch to INIT mode and restart the G-4510/4514 device.



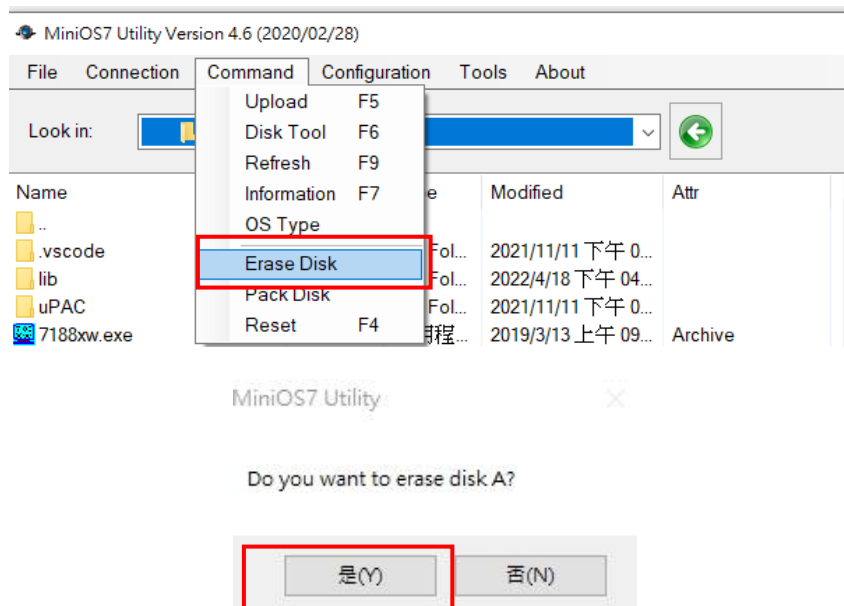
- Open MiniOS7 tool, currently there are two ways to upload firmware, RS-232 and Ethernet, please refer to the following steps for details
- Upload Firmware to G-4510/4514 Series via COM Port
 - (1) Choose Menu Bar > Connection, and click “**new connection**” or click “**F2**.”



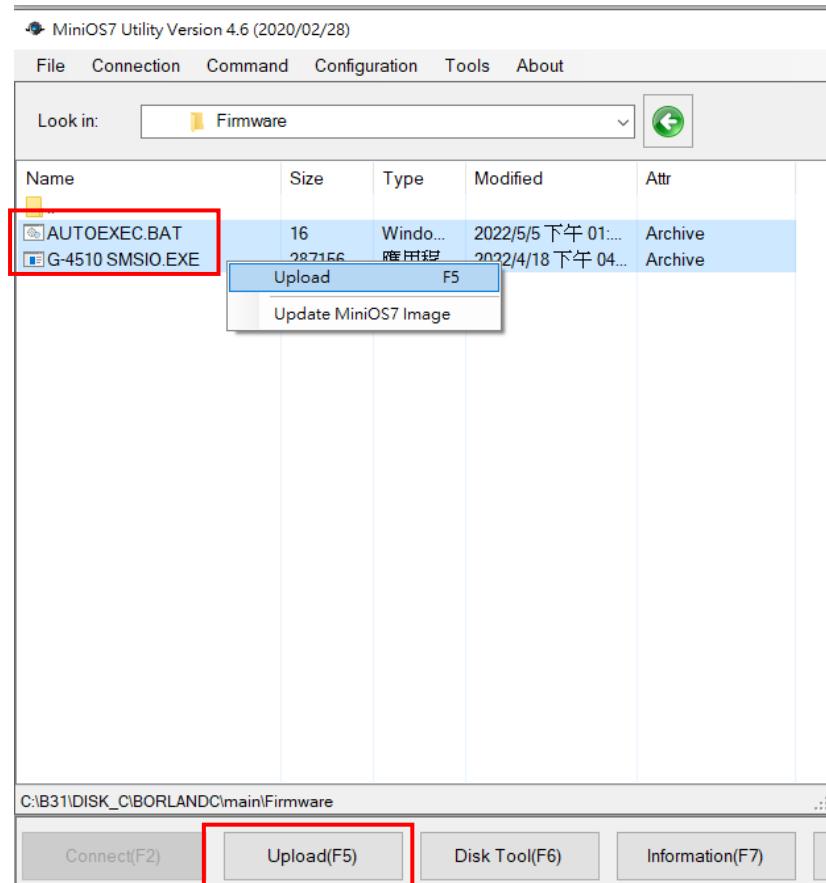
(2) Select the COM Port of RS-232



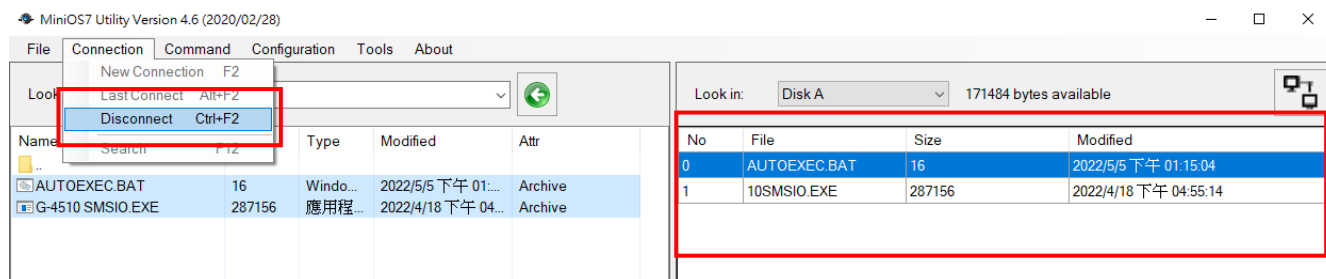
(3) Choose Menu Bar > Command, and click “Erase Disk”



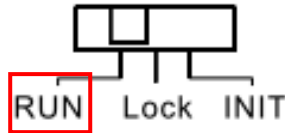
- (4) Select the files **G451x SMSIO.exe** and **autoexec.bat** to be uploaded in the left screen and click **“Upload”** or **“F5”** and wait for the upload to complete.



- (5) After the upload is complete, the file will appear in the right interface. After making sure it is correct, you can go to Menu Bar > Select Connection and click on **“Disconnect”** or **“Ctrl + F2”** to close the connection.

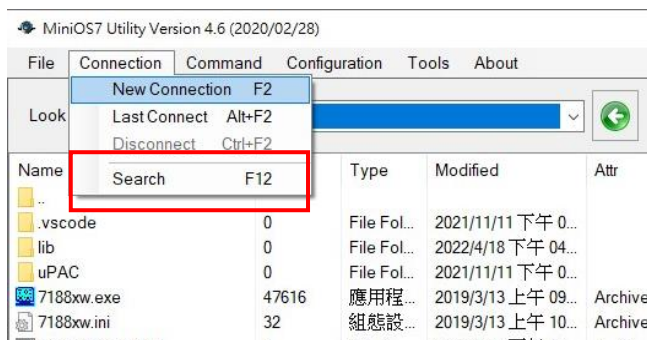


- (6) Turn off the G-4510/4514 device, switch the device to RUN mode, and restart the device, then you can login to Utility or enter the working mode directly.

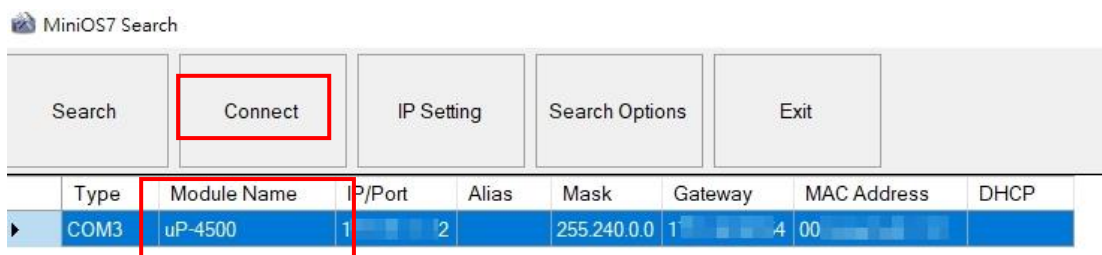


● Upload Firmware to G-4510/4514 Series via Ethernet

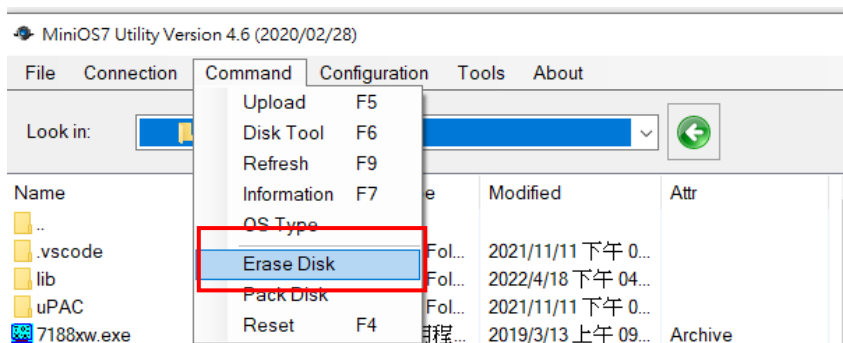
- (1) Choose Menu Bar > Connection , and click “**Search**” or “**F12**”



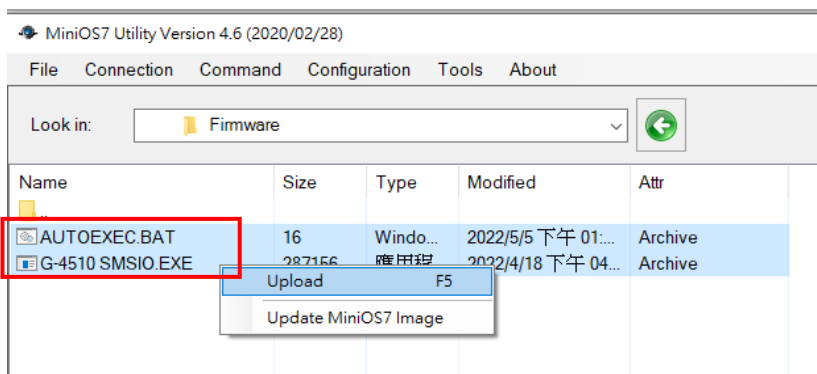
- (2) When the search is complete, find your device and “**double-click**” or click “**Connect**” to connect.



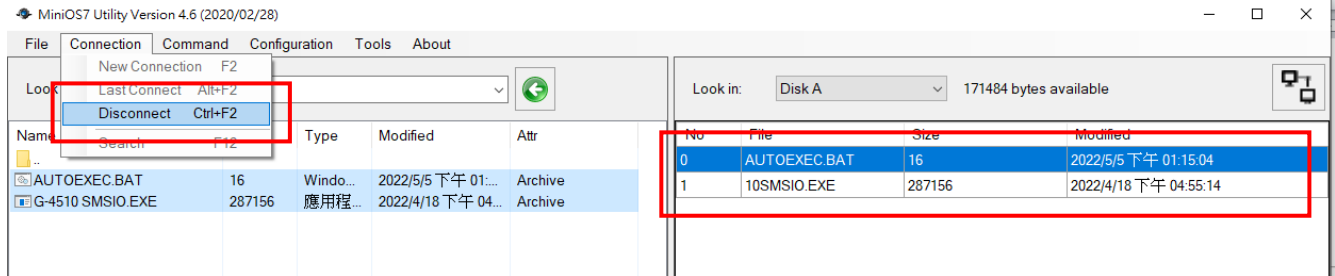
(3) Choose Menu Bar > Command, and click “**Erase Disk**”



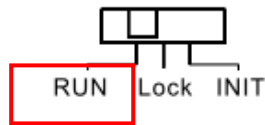
(4) Select the files **G451x SMSIO.exe** and **autoexec.bat** to be uploaded in the left screen and click “**Upload**” or “**F5**” and wait for the upload to complete.



- (5) After the upload is complete, the file will appear in the right interface. After making sure it is correct, you can go to Menu Bar > Select Connection and click on **“Disconnect”** or **“Ctrl + F2”** to close the connection.



- (6) Turn off the G-4510/4514 device, switch the device to RUN mode, and restart the G-4510/4514 device, then you can login to Utility or enter the working mode directly.



5. Installing SMSIO Utility

● Installing .NET Compact Framework

You can use Utility to set parameters or view debug messages. It requires a .NET Framework 2.0 or higher runtime environment to execute. .NET Framework 2.0 or later can be installed by downloading from the following URL or by directly searching for.

◆ Microsoft .NET Framework download

<https://dotnet.microsoft.com/en-us/download/dotnet-framework>

● Utility installation steps

Download and install the G-451x SMSIO Utility_setup.exe from the official website, and the installation interface is as follows.

◆ G-4510/4514 SMSIO Utility download

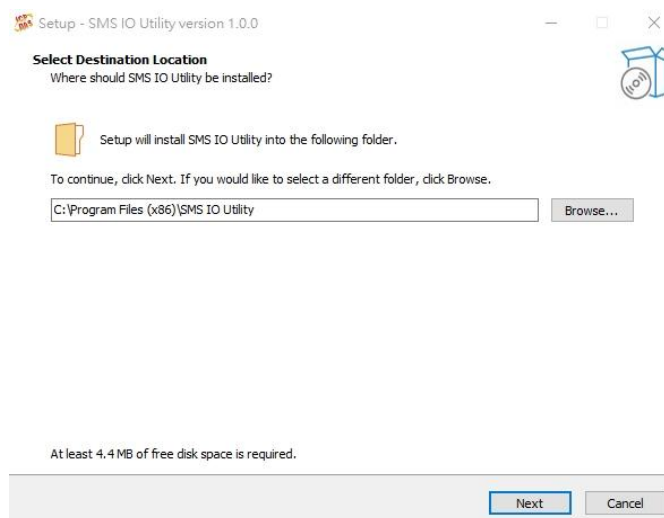
■ G-4510 series

<https://www.icpdas.com/en/download/show.php?num=7999&model=G-4510>

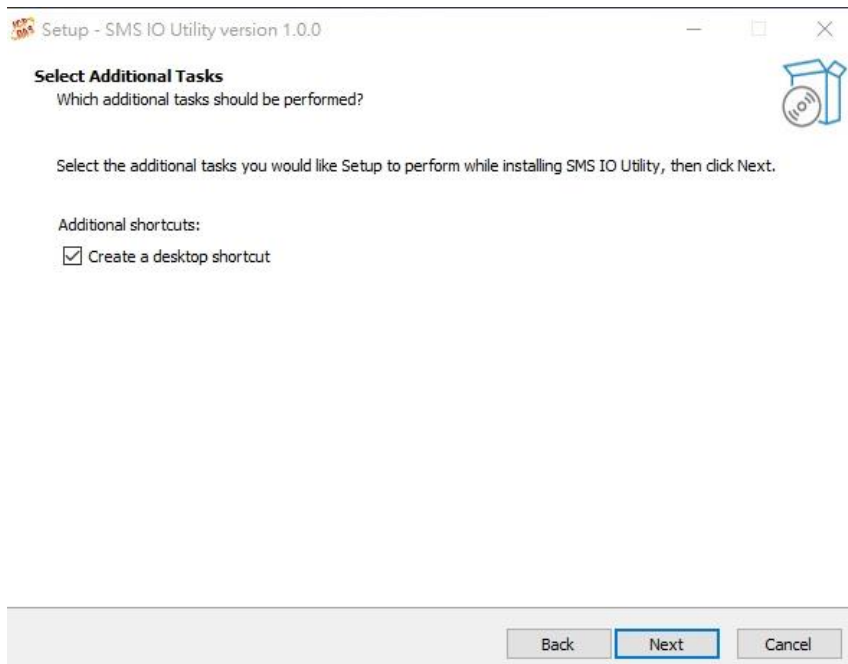
■ G-4514 series

<https://www.icpdas.com/en/download/show.php?num=2619&nation=US&kind1=&model=&kw=4514>

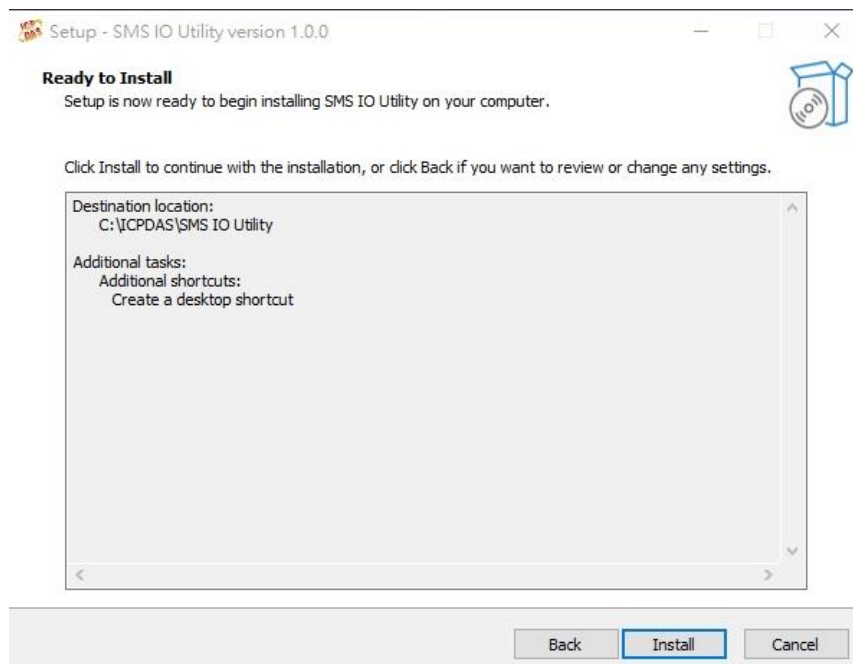
(1) Select the installation path. The default path is “**C:\Program Files(x86)\SMSIO Utility**”, and click “**Next**” to continue.



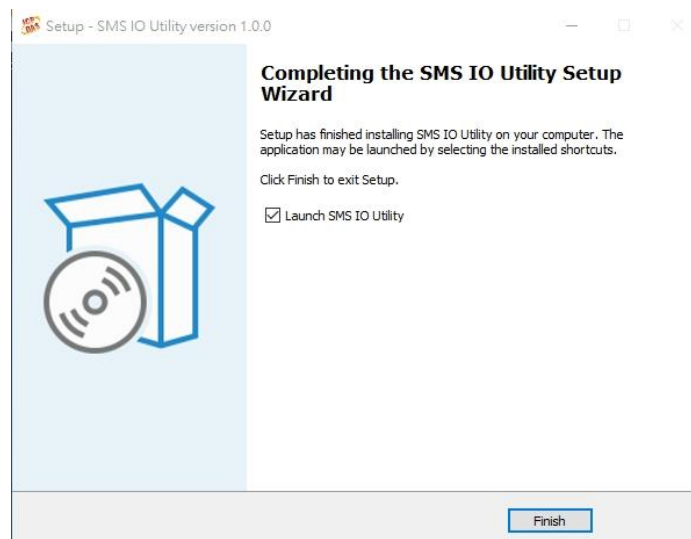
(2) Select whether to create a shortcut on the desktop, and then click “**Next**” to continue.



(3) Click “**Install**” to start the installation



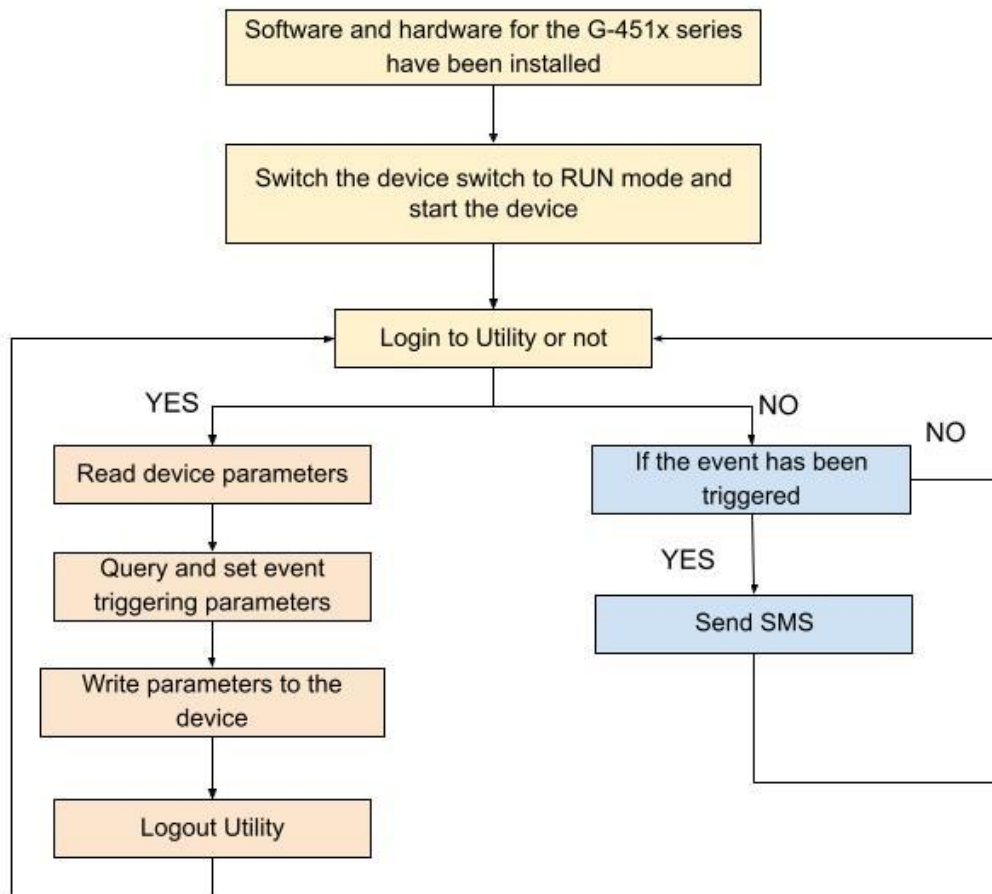
(4) The installation will be completed, as shown in the following figure.



(5) If you choose to create a desktop shortcut, as shown in the following figure.

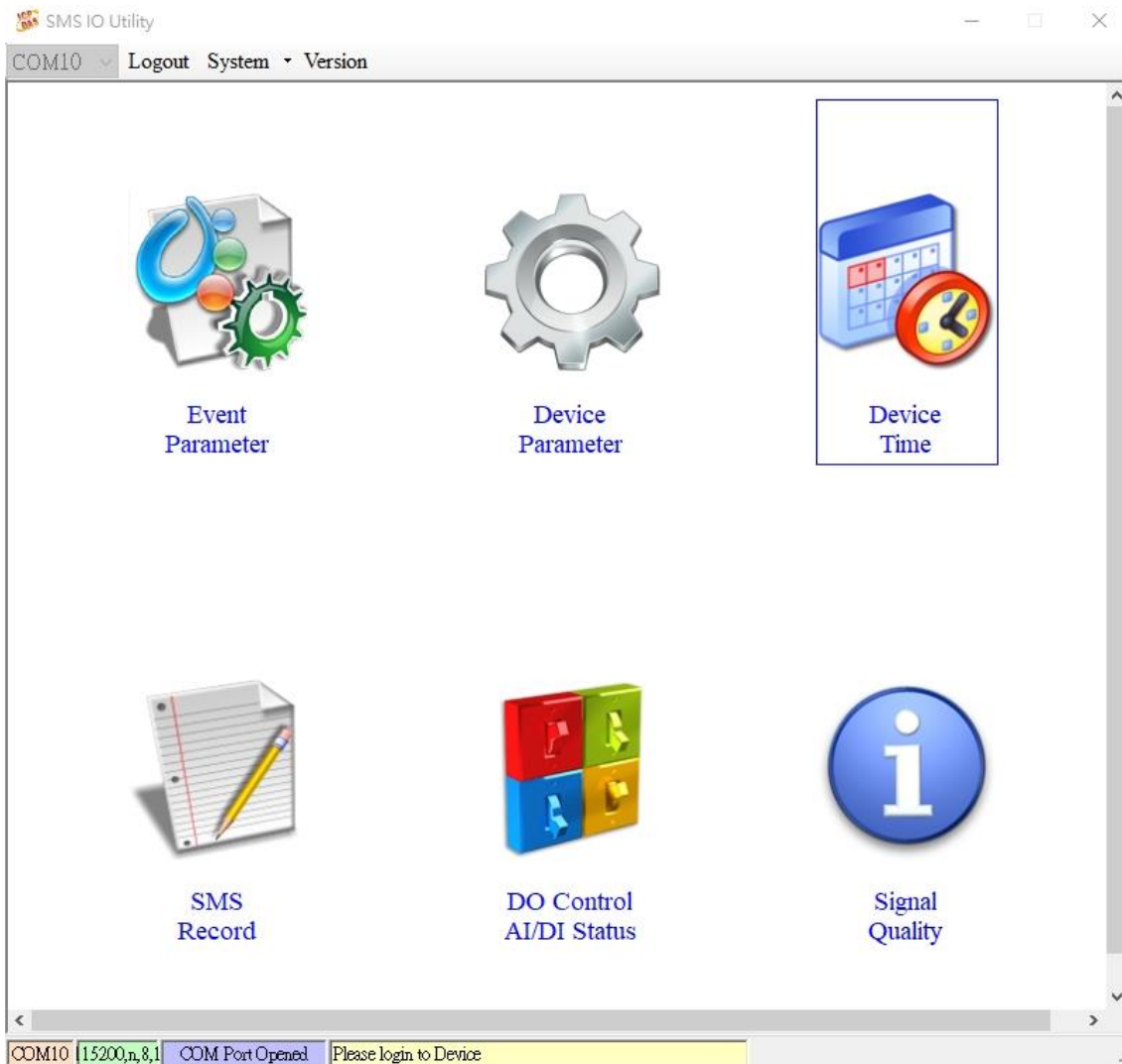


6. The SMSIO Utility process



7. SMSIO Utility

The SMSIO Utility layout mainly includes the following parts, which are described below :



1. System :

The system setup also include the functions of restore the original settings, reboot the device, set the PIN code and query the error log file.

2. Version :

Query G-451x SMSIO Firmware and Utility version information.

3. Event Parameter :

This function can set IO triggering SMS conditions, and can customize SMS content and other related parameter settings.

4. Device Parameter :

This function includes the function settings of the parameters related to the communication port, the white list phone...etc.

5. Device Time :

Read and set the RTC time of the G-4510/4514 device.

6. SMS Record :

This function needs to be equipped with an SD Card, which can record the event sending records, and can download or delete the records.

7. DO Control / AI / DI Status :

This function is to read the current I/O status and DO control.

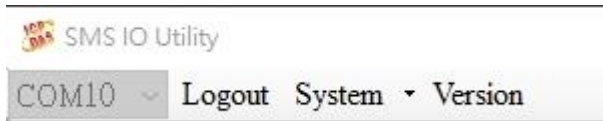
8. Signal Quality :

Query the signal strength of the current device.

9. Status column :

Display the currently connected com port, transmission parameters, connection status and operation results.

7.1 Toolbar



7.1.1 COM

Select PC-side COM PORT connected to device.

7.1.2 Login/Logout

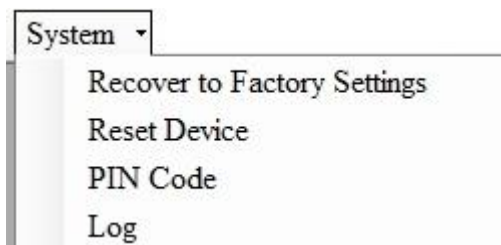
Before you can do anything with the G-4510/4514, you must login. After the login is successful, the option will be logged out, and the options in the Utility will allow the operation. If the SMS machine has been reopened or turned off, you must log in again.

7.1.3 Version

Query G-451x SMSIO Firmware and Utility version information.



7.2 System



7.2.1 Recover to Factory Setting

Write factory defaults to the device and automatically log out of the Utility.

7.2.2 Reset Device

After clicking this function, the device will restart directly and automatically log out of the Utility.

7.2.3 PIN Code

The function can set the password required to enter the SIM card to open. After the setting is completed, restart the device to apply. If the SIM card does not require a password, it will not be entered even if it is set.

7.2.4 Error Message Log

Record the failure to send SMS, fail to save data, etc...and save the errors to SD Card, and give users troubleshooting advice.



1. Select File :

The files under the Error Log folder in SD Card will be displayed. Users can check the data file to be read to view the error message record of the day.

2. Setting :

Check "Enable" and click "Save " to save the settings and enable the error message logging function.

3. Error :

Displays an error message such as "SMS Error : Send SMS Failed".

4. Register :

Displays the SIM card registration status at the time of the error.

5. Signal Quality :

Display the current signal status in case error.

6. Suggestion :

This is based in common problems, and suggestions are made to facilitate users to check and troubleshoot.

7. Delete :

A single date file or multiple date files can be deleted.

8. Export :

The data file selected by the user will be exported (Excel file).

Tips & Warnings



1. NOTE: Single or multiple data files can be deleted, but the entire year and month folders cannot be deleted.

7.3 Event Parameter



This is the page in the main parameter window. The parameters are as follows:

Device Parameters

Event Setting Read From Device Write to Device

Select Event
Event : Evt 1
Read Save

Event(1) Setting
Type : DI NC Trigger Time(ms) : 200
Channel No. : 0
Phone List :

PhoneNumber

MSG Mode : ☒ 7-Bit ☐ UCS2
MSG Content : DI_test

DO Triggered
Ch. : Not Trigger
Holding Time(ms) : 0

Event Information
[Event(1)] : Enable
Type : DI, NC
Channel No. : 0
Holding Time : 200 (ms)
DO Triggered : DO_ALL_OFF
DO Holding Time : 0 (ms)
Checksum : Disable
[Event(2)] : Enable
Type : AI, HIGH
Channel No. : 0
Holding Time : 200 (ms)
AI High Alarm : 20 (mA)
DO Triggered : DO_ALL_OFF
DO Holdtime : 0 (ms)
Checksum : Disable
[Event(3)] : Enable
Type : COUNTER, NO
Channel No. : 2
Counter Status : 0
Counter Alarm : 999999999
Holding Time : 200 (ms)
DO Triggered : DO_ALL_OFF
DO Holding Time : 0 (ms)
Checksum : Disable
[Event(4)] : Enable
Type : Auto-Report
Cycle Time : 1 (day)
Time : 01:01:00
Checksum : Disable
[Event(5)] : No Use
[Event(6)] : No Use
[Event(7)] : No Use

Enable Checksum : ☐

7.3.1 Select Event

There are 16 groups of events, users can select the event to be set, after the selection is completed, press "Read" to switch to the setting option of that event, after the setting is

completed, be sure to press "Save" and then write "Write Device", please refer to **7.3.3** for detailed setting steps.

7.3.2 Event Information

After the Event Setting is set, press the Select button of the Select Event, and the settings of each Event will be updated in the form. For detailed setting steps, please refer to **7.3.3**

7.3.3 Event(n) Setting

Event(n) Setting, the number in parentheses represent the event number, and type represents the type of the Event (DI/AI/Counter/Auto Report), different types need different interfaces. The detailed setting steps are as follows.

The screenshot displays the 'Device Parameters' window with the 'Event Setting' tab active. At the top right, there are 'Read From Device' and 'Write to Device' buttons. The 'Select Event' section on the left includes a dropdown for 'Event: Evt 1' and 'Read'/'Save' buttons. The 'Event(1) Setting' section on the right contains dropdowns for 'Type: DI' and 'NC', a 'Trigger Time(ms): 200' spinner, and a 'Channel No.: 0' spinner. Below this is a 'Phone List' section with a table for 'PhoneNumber'. Further down are 'MSG Mode' (radio buttons for 7-Bit and UCS2), 'MSG Content' (a large text area), 'Enable Checksum' (checkbox), and 'DO Triggered' settings (dropdown for 'Ch.: Not Trigger' and a 'Holding Time(ms): 0' spinner). The 'Event Information' section on the far left lists events 1 through 16 with their current settings.

Step1: Select Event

Select the event(n) to be set and press "Read ".

Step2:Event(n) Setting

Select the IO Type to be triggered, you can refer to the following setting examples according to the selection.

(1) DI Type

Event(1) Setting

Type : Trigger Time(ms) :

Channel No. :

- DI trigger condition setting
 - **NO (Normal Open):** The event is triggered after the circuit is closed.
 - **NC (Normal Close):** The event is triggered after the circuit is disconnected.
- Trigger Time (Unit ms)
 - Setting the DI trigger signal needs to remain unchanged until the set time (in ms).
 - Trigger time input value shall not be less than 200 (ms)
- Channel No:
 - Set one of the DI (0~2) as the monitoring point. When this point meets the set condition, an alarm will be triggered.

Tips & Warnings



1. **NOTE:** Because Counter and DI share the same channel, the DI points set by Counter type cannot be selected repeatedly.

(2) AI Type

Event(2) Setting

Type : Trigger Time(ms) :

Channel No. : AI High : AI Low :

- AI trigger condition setting (input value in mA)
 - **HIGH:** When the AI input value is higher than the AI high value and the alarm will be triggered.
 - **LOW:** When the AI input value is less than the AI low value and the alarm will be triggered
 - **HL:** When the AI input value is higher than AI High or lower than AI Low and the alarm will be triggered.
 - **AI High 、 AI Low (mA):** The input value range is 0~20(mA).
- Trigger Time(Unit ms)
 - The alarm will be triggered When the AI trigger value needs to be continuously higher or lower than the set value until the set time (in ms) is exceeded.
 - Trigger time input value shall not be less than 200 (ms)
- Channel No:
 - Set one of the AI (0~7) as the monitoring point, which will trigger the alarm when it meets the set condition .

Tips & Warnings



1. **NOTE:** AI High and AI Low values cannot be set repeatedly.
2. **NOTE:** The maximum input value of the G-4510/4514 AI channel is 20 mA. If the input value is greater than 20 mA, the channel or device may be damaged.

(3) Counter Type

Event(3) Setting

Type : Trigger Time(ms) :

Channel No. :

- Counter trigger condition setting
 - **NO (Normal Open):** The count value increases by one after the circuit is closed.
 - **NC (Normal Close):** The count value is increased by one after the circuit is disconnected.
- Trigger Time(Unit ms)
 - Setting the DI trigger signal needs to remain unchanged until the set time (in ms).
 - Trigger time input value shall not be less than 200 (ms)
- Channel No:
 - Set one of the DI (0~2) as a monitoring point, when this point meets the set conditions, the count value will increase.
 - If DI Type is set, the DI monitoring point cannot be repeated.
- Set Counter Alarm

Counters Value

Name	Value	Set Value	Event	Alarm Value
DI 0	0 0 0 0 0 0 0 0 0 0	0	No Event Use	99999999
DI 1	0 0 0 0 0 0 0 0 0 0	0	No Event Use	99999999
DI 2	0 0 0 0 0 0 0 0 0 0	0	No Event Use	99999999

- **Name:** The name of the counter, DI0~DI2 correspond to Counter0~ Counter2.
- **Value:** Displays the current count value of the counter.

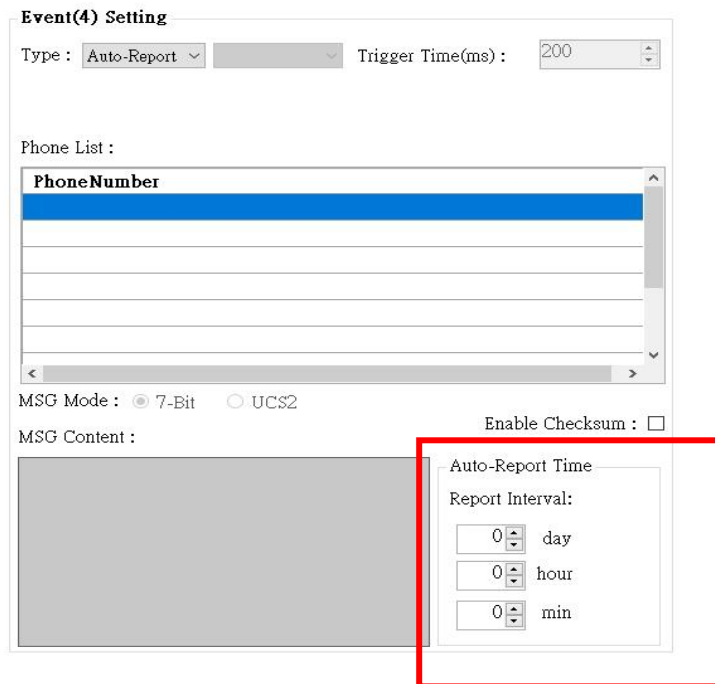
- **Set Value:** Set the current value of the counter.
- **Event:** Display the Counter usage status.
- **Alarm Value:** The set trigger alarm value must be more than 10 larger than the value of "Set value".
- **Read:** Read the current status of Device Counters..
- **Set Value:** Write Counters to Device.

Tips & Warnings



1. **NOTE:** Because Counter and DI share the same channel, the DI points set by Counter type cannot be selected repeatedly.
-

(4) Auto Report



Event(4) Setting

Type : Auto-Report Trigger Time(ms) : 200

Phone List :

PhoneNumber

MSG Mode : ☒ 7-Bit ☐ UCS2

Enable Checksum : ☐

MSG Content :

Auto-Report Time

Report Interval:

0 day

0 hour

0 min

- Auto Report: The trigger condition of Auto Report is the time interval set by the user.
 - **Day:** The range that can be set is 0~31(day)
 - **Hour:** The range that can be set is 0~23(hour)
 - **Min:** The range that can be set is 0~59(min)
- This function is that when the interval time arrives, it will return all the IO status of the device to the set phone number.
- The SMS content of Auto Report is in a fixed format, and users cannot set and change it by themselves.

■ **Format:**

CRPT(n);DI0;DI1;DI2;AI0;AI1;AI2;AI3;AI4;AI5;AI6;AI7;Counter0;Counter1;Counter2;DO0;DO1;DO2

Example diagram:

簡訊內容 :	CRPT0;0;0;0;0.0791;0.1280;0.1231;0.1231; 0.1231;0.1231;0.1231;0.1524;0;0;0;0;
--------	--

Tips & Warnings



1. NOTE: The time interval cannot be set to 0.

The screenshot shows the 'Device Parameters' dialog box with the 'Event Setting' tab selected. The 'Event(1) Setting' section includes a 'Type' dropdown set to 'DI', an 'NC' dropdown, and a 'Trigger Time(ms)' spinner set to '200'. The 'Channel No.' is set to '0'. The 'Phone List' section is highlighted with a red box and contains a table with a header 'PhoneNumber' and several empty rows. The 'MSG Mode' section is highlighted with a red box and shows '7-Bit' selected. The 'MSG Content' section is highlighted with a red box and contains a large text area. The 'DO Triggered' section is highlighted with a red box and shows 'Ch.: Not Trigger' and 'Holding Time(ms)' set to '0'. The 'Event Information' section on the left lists various events and their settings.

Step3: Phone List

The target mobile phone number sent by the triggered alert message, up to 10 groups.

- If you want to send an international SMS, please enter the phone number starting with " + " international code.

Step4: MSG Content

The content of SMS of DI/AI/Counter type can be customized, and the encoding is divided into two types.

- **7-Bit:** Only supports English and numbers, and only supports up to 160 characters.

- **UCS2:** Supports multiple languages, only supports up to 70 characters.

Tips & Warnings



1. **NOTE:** There are limited characters in the message content, please avoid the following characters "!", "@", ">" , ";" to avoid parsing errors, please do not use.
 2. **NOTE:** UCS2 encoding does not support the "Enable Checksum" function.
 3. **NOTE:** If the "Enable Checksum" function is checked, the maximum number of characters for one SMS is only 135 characters due to the SMS format of this feature.
 4. **NOTE:** No space between "+ international code".
-

Step5: Enable Checksum

The "Enable Checksum" function needs to be equipped with SMS DBS software, and when this function is activated, there will be a fixed SMS format, and a check code will be automatically added at the end of the SMS.

Step6: DO Trigger

- CH: Select the DO that is turned on when the alarm is triggered:
 - **Not Trigger** : Trigger not enabled
 - **DO0 ON**: Open DO0
 - **DO1 ON**: Open DO1.
 - **DO2 ON**: Open DO2.
 - **All ON**: DO is fully open.
- Holding Time: (Unit ms)
 - Select how long the DO will be on when the alarm is triggered.

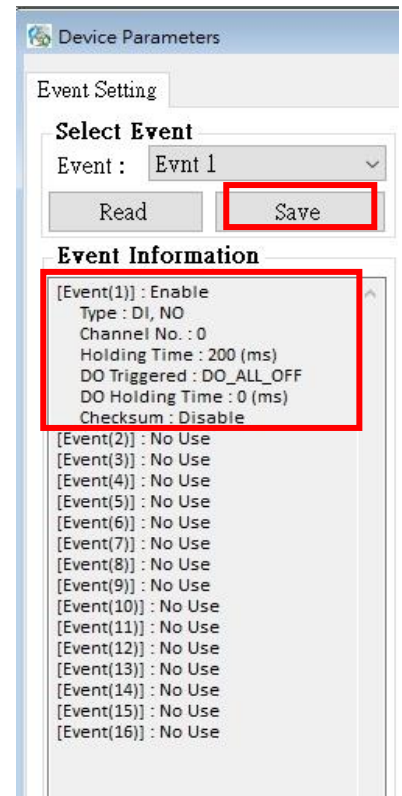
Step7: Save & Write to Device



- After setting the Event parameters, be sure to press **"Save"** and confirm that the "Event Information" information is correct.
- **Write to Device:** Write the setting data of all parameters to the device.
- **Read From Device:** Read the parameter data previously written to the device.

Step8: Logout Utility

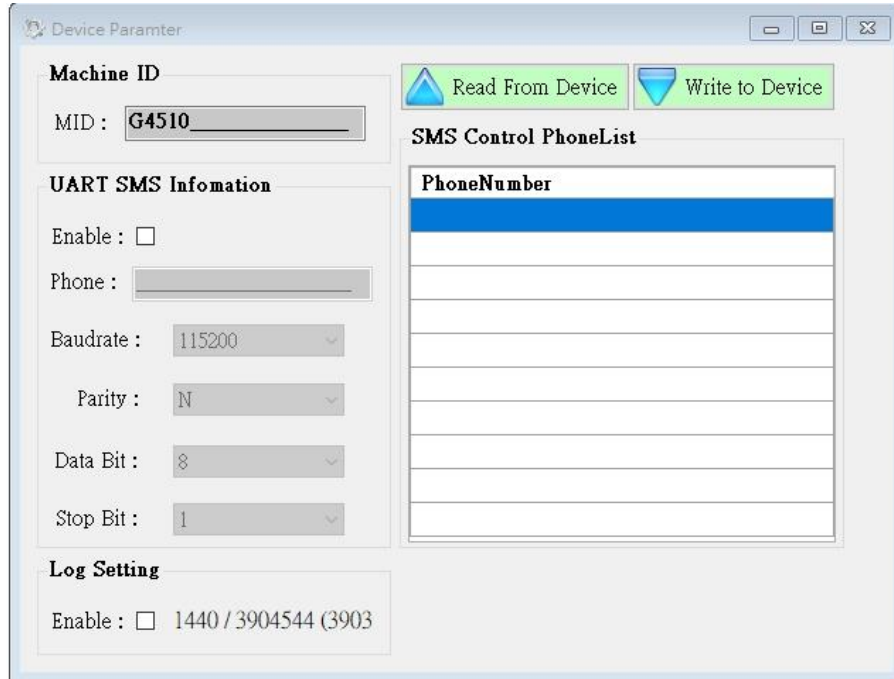
- **Logout Utility:** All event trigger judgments will start after logout of the Utility



7.4 Device Parameter



This window provides functions for setting the device name and communication, communication parameters, etc. The operation options and fields are as follows:



7.4.1 Machine ID

- Users can customize the device name from this.

7.4.2 UART SMS Information

- **Enable:** User can choose whether to enable or not to send SMS via UART (RS-232 or RS-485)
- **Phone:** To set SMS recipient phone number.
- The following is to set the port baud rate, parity, data bits, and stop bits of RS-485
 - **Bardrate:** 2400 、 4800 、 9600 、 19200 、 38400 、 57600 、 115200 、 230400 、 460800
 - **Parity:** N (None) 、 O (Odd) 、 E (Even)
 - **Data Bit:** Can be set to 7 or 8 bits.

■ **Stop Bit:** Can be set to 1 or 2 bits.

Tips & Warnings



1. NOTE: RS-232 is a fixed value of 115200/8/N/1, the setting cannot be changed.

(1)UART SMS Function usage example

Step1: After setting the parameters, press "Write to Device" to write the parameter setting device.

Step2: This feature is only available after logout of the Utility.

Step3: You can use RS-232 or RS-485 to send commands. Pay special attention to the RS-485 communication parameters set in Utility to avoid failure to connect .

Step4: The user can set the UART parameters by this function. The function is to send the beginning of the "+++" through the Uart and the "message content" to trigger the GTP-541M to send the SMS. The content of the message is "+++".

Tips & Warnings



1. NOTE: that the content of the text message only supports 7-bit encoding of alphanumeric characters and cannot exceed 160 characters.

UART command	Description
+++ content	Send SMS to the specified mobile phone, the content of the SMS is the content string after +++
@RESET	Reboot the device

7.4.3 Log Setting

- When this function is turned on, it can store error records and give suggestions for users to troubleshoot easily.
- You can check to enable the LOG setting, and the right side shows the usage of SD Card, which are (used capacity, total capacity, remaining capacity).

7.4.4 SMS Control Phone List

Through the SMS command, you can use the phone to send commands to the G-4510/4514 to complete pre-defined actions, such as controlling the DO output to be ON. To achieve this function, the phone number of the next command must be set in the SMS Phone List of Device Parameter.

(1)SMS Command Description

SMS command	Description
@TIME	Time setting / query
@DIOV	DI/DO status query
@AIV	AI status query
@DOC	DO control
@ACTV	counter value setting / query

● @TIME

Description	Query the current time of the device
Send SMS	@TIME
Response	! MachineID;TIME;OK; YYYYMMDD;HHmmSS
Example	Send SMS: @TIME Receive SMS: !G-4510;TIME;OK;20090410;100300
Description	Set the time of the device
Send SMS	@TIME;YYYYMMDD;HHmmSS
Response	Correct: ! MachineID;TIME;OK; YYYYMMDD;HHmmSS Error: ! MachineID;TIME;ER

Example	Send SMS: @TIME;20180830;120530 Receive SMS: !G-4510;TIME;OK;20180830;120530
Field description	Machine ID : Device code. TIME : This command name. Correct : Set or query success. Error : The format entered is incorrect or does not have this permission. YYYYMMDD : The date to be set, 8 characters long, respectively, the year, month, and day of the year. HHmmss : The time to be set, the length of 6 characters, respectively (24-hour clock), minutes, seconds.

● @DIOV

Description	Query the current actual status value (0 or 1) of the DI point and the DO point
Send	@DIOV
Response	! Machine ID;DIOV;OK;DI0; DI1; DI2;DO0;DO1;DO2
Example	Send SMS: @DIOV Receive SMS: !G-4510;DIOV;OK;0;0;0;0;0;0
Field description	Machine ID : Device code. DIOV : This command name. DI0 ~ DI2 : DI current actual status value DO0 ~ DO2 : DO current actual status value. 0 : Low Voltage. 1 : High Voltage.

● @AIV

Description	Query the current status value of the AI point.
Send	@AIV
Response	! Machine ID;AIV;OK;AI0; AI1; AI2;AI3;AI4;AI5;AI6;AI7
Example	Send SMS: @AIV Receive SMS: !G-4510;AIV;OK;4.999;4.999;0.005;0.003; 4.999;4.999;0.005;0.003
Field description	Machine ID : Device code. AIV : This command name. AI0 ~ AI7 : AI current actual status value

● @DOC

Description	Control DO output.(ON)
Send	@DOCn;ON
Response	Correct: ! Machine ID; DOCn;OK;ON Error: ! Machine ID; DOCn;ER
Example	Send SMS: @DOC0;ON Receive SMS: !G-4510; DOC0;OK;ON
Description	Control DO output.(OFF)
Send	@DOCn;OFF
Response	Correct: ! Machine ID; DOCn;OK;OFF Error: ! Machine ID; DOCn;ER
Example	Send SMS: @DOC1;OFF Receive SMS: !G-4510; DOC1;OK; OFF
Description	Keep the DO output ON for the set number of seconds. After the time has elapsed, the DO output is OFF
Send	@DOCn;PLUSE; millisecond
Response	Correct: ! Machine ID; DOCn;OK;PLUSE; millisecond Error: ! Machine ID; DOCn;ER
Example	Send SMS: @DOC2;PLUSE; 3000 Receive SMS: ! Machine ID; DOCn;OK;PLUSE; 3000
Field	Machine ID : Device code.

description	DOCn : This command name. n : DO channel (0~2). Correct : Set or query success. Error : The format entered is incorrect or does not have this permission.
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● **@ACTV**

Description	Query counter current count value
Send	@ACTV
Response	! MachineID; ACTV;OK;Counter(0); Counter(1); Counter(2)
Example	Send SMS: @ACTV Receive SMS: !G-4510; ACTV;OK;99999;10;0
Description	Set counter(n) current count value and alarm value. If you have to set the counter type event to the utility.
Send	@ACTVn;Counter(n)_value;Counter(n)_alarm_value
Response	Correct: ! MachineID; ACTVn;OK; Counter(n)_value; Counter(n)_alarm_value Error: ! MachineID; ACTVn;ER
Example	Send SMS: @ACTV0;0;20 Receive SMS: !G-4510; ACTV0;OK; 0;20
Field description	Machine ID : Device code. ACTVn : This command name. n : Counter channel (0~2). Counter(n)_value : Set the current value of the counter Counter(n)_alarm_value : The set trigger alarm value must be more than 10 larger than the value of "Set value" Correct : Set or query success. Error : The format entered is incorrect or does not have this permission.

7.5 Device Time



You can change and query the time of the device through this window. The following are the operation options and field descriptions :



- **Device Time:** Display device time.
- **Set:** The user can enter the date and time into the Device Time field, and Set will set the time in the Device Time field to the device.
- **Set as Now:** Read the current date and time of the PC and set it to the device.
- **Read:** Display device(G-4510/4514) current time.

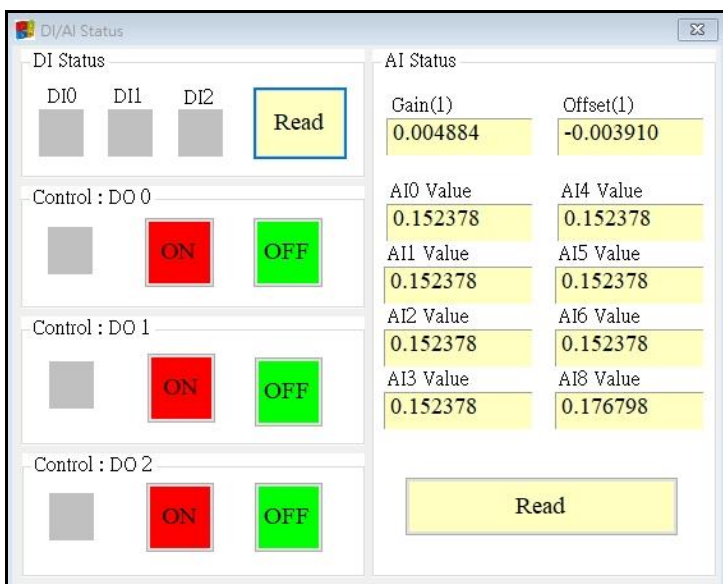
- **Read:** Read the sending records and data of Auto Report of the device, and display more than 1000 records.
- **Save:** Records are saved as .csv files
- **Delete All:** Delete all records of the device (including IO-triggered SMS and received SMS)

- **Field description:**
 - **NO:** Event record number
 - **Report Time:** The event triggered the time of sending the SMS.
 - **Message Type:** SMS encoding type.
 - **Number:** Send a text message and receive the destination phone number of the newsletter.
 - **Event Message:** Newsletter content of the event.

7.7 DO Control AI/DI Status



The user can read the current I/O status on the device and manually control the DO status. The operation options and fields are described as follows.



- DI Status:

- **Red:** When DI is ON.
- **Gray:** When DI is OFF.
- **Read:** Read the status of DI/DO.

- Control:DO0 、 DO1 、 DO2

- **Red:** When DO is ON.
- **Gray:** When DI is OFF.
- **ON:** Open DO0 、 DO1
- **OFF:** Close DO0 、 DO1

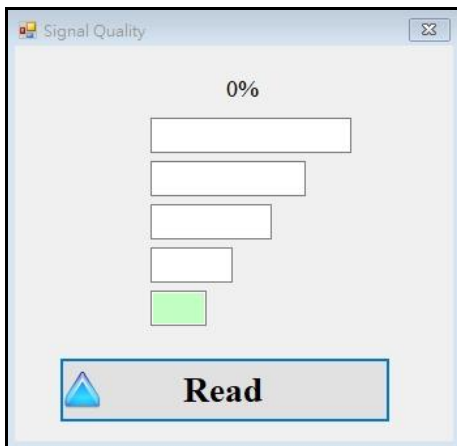
- AI Status

- **AI(0~7) Value:** Read the current AI value, the unit is (mA)

7.8 Signal Quality



This window can be used to query the received signal strength on the device.



- Signal Quality :
 - Read the current signal strength from the device, express the signal strength in 5 segments, and display the current signal strength percentage .

Tips & Warnings



If the signal value is 0%, the user needs to re-insert or remove the SIM card, or set to a field with a good signal. °

Appendix A. Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Version	Date	Author	Description of changes
1.0.0	2022-05-11	Patty	The First Release Revision