G-4513 RTU

User's Manual V1.0.0

High Quality, Industrial Data Acquisition, and Control Products

Warranty

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

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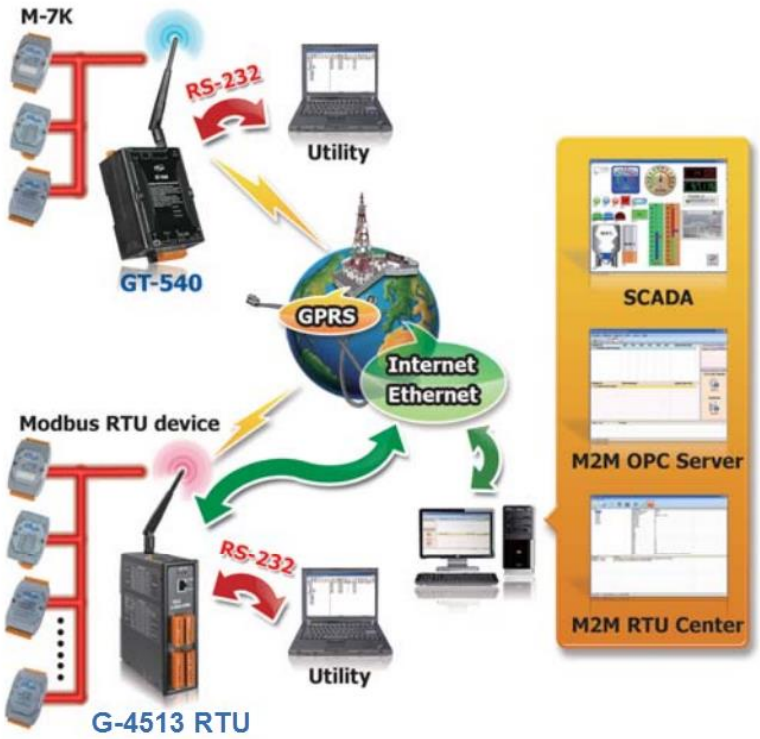
1. Introduction

1.1 Overview

The G-4513 RTU is an intelligent Active 2G/3G Remote Terminal Unit which is built-in the specified firmware in G-4513 series. Within the high performance CPU, the G-4513 RTU series can handle a large of data and are suit for the hard industrial environment. They feature 2G/3G module, Ethernet interface, optional GPS module, 3 digital inputs, 3 digital outputs, 8 analog inputs, 1 relay output, 2 RS-232 and 1 RS-485 ports. That can be used in various application fields to transfer data by 2G/3G or Ethernet. G-4513 RTU is suited for Remote data acquisition in various harsh environments. It is designed for communicating with Modbus RTU devices and provides active data transmission via 2G/3G connection. Except for the Modbus RTU's data, the built-in I/O and GPS data also can be transferred to RTU Center software by the defined period or DI/AI trigger. With the built-in redundancy communication paths of 2G/3G and Ethernet in G-4513 RTU, the data would be guaranteed to transfer to host. When 2G/3G or Ethernet connects failed, it will immediately switch to a different connection method in order to achieve data monitoring sustainability. Furthermore, G-4513 RTU provides simple I/O linkage control and the built-in I/O recorders in SD card.

We also provide M2M RTU center software with friendly graphic interface to manage the 2G/3G RTU products easily. Users can monitor the I/O data and status of 2G/3G RTU devise by the interface on PC. By using the M2M RTU API tool and M2M RTU center software, any remote monitoring system can be achieved easily and efficiently. For SCADA system, the M2M.OPC server is provided to connect to SCADA by OPC interface.



Easy to establish 2G/3G network applications

It is a big headache for engineers to establish the 2G/3G applications because the dynamic IP management is required. Applying G-4513 RTU and M2M RTU center software, the dynamic IP addresses can be managed between them. The remote 2G/3G RTU product would connect to M2M RTU Center automatically. Therefore, all remote 2G/3G RTU devices can be managed by s single centralized M2M RTU Center software with a fixed IP address. Moreover, there are M2M API tool and OPC server for engineers to develop the 2G/3G applications by VB, VC or SCADA development tools conveniently without any IP address management effort.

Active data transmission

G-4513 RTU devices with active I/O transmission mechanism can raise the communication. Unlike the traditional poll communication, G-4513 RTU would transfer the data by the defined time, DI trigger or AI hi/lo alarm. In addition to improve the way of communication, that can also reduce the AP effort.

Redundant communication paths in GPRS and Ethernet

There are 2G/3G and Ethernet communication interfaces in G-4513 RTU. Through the setting in G-4500 RTU Utility, you can set the primary and backup paths to communicate with M2M RTU Center. When the primary path is failed, G-4513 RTU can use the backup path to communicate to M2M RTU Center to ensure the data can transfer to PC. That can raise the reliability of communication effectively.

Modbus RTU device connectivity

The G-4513 RTU is built-in Modbus RTU protocol. That can make any Modbus RTU device connect to G-4513 RTU. By the way of G-4513 RTU, Modbus RTU devices can be used in 2G/3G remote system.

Simple Local I/O link Control

There are I/O built-in 2G/3G RTU devices of ICP DAS. Therefore, these products can be the 2G/3G I/O devices. Expect for these local I/O data can be sent to the host PC, the I/O link function of them help users to do the simple control in local field. For example: the DI trigger or high/low AI alarm can driver the DO channel.

Simple Local I/O link Control

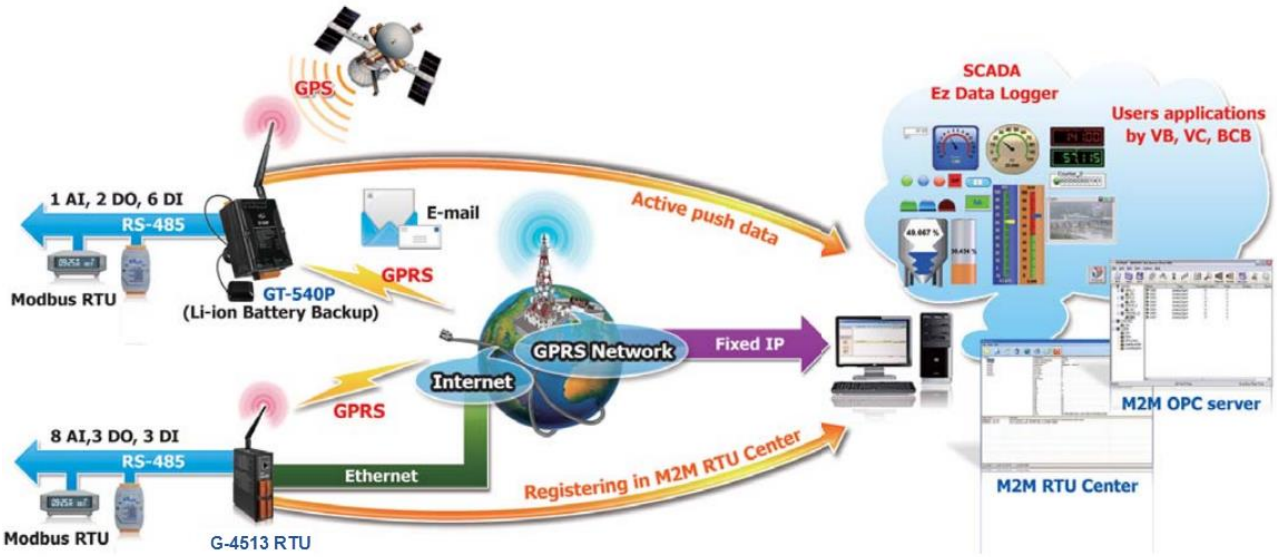
2G/3G RTU products provide an external SD interface. Users can set which built-in I/O need to record in SD memory card for one day in a single file.

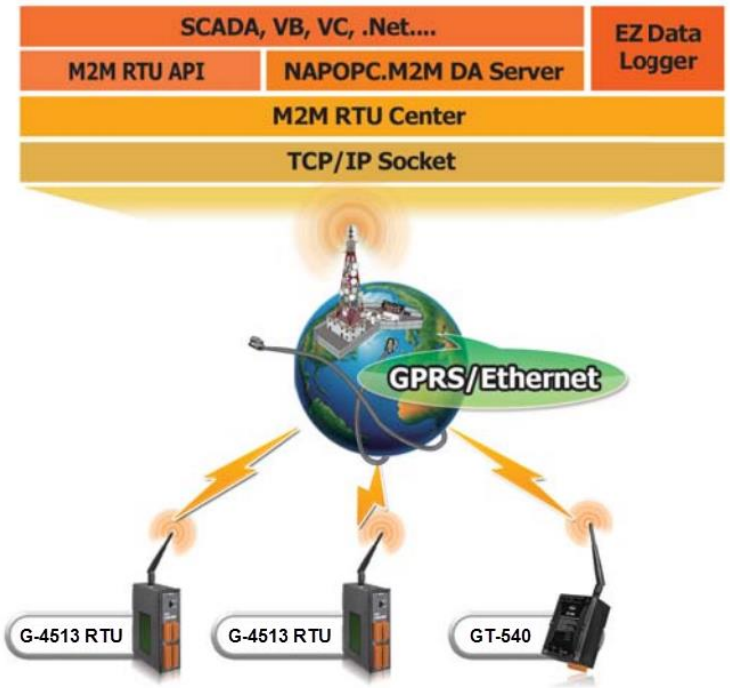
1.2 Features

- Automatic/continuous 2G/3G Link Management
- Support Modbus RTU protocol to connect to Max 10 Modbus RTU devices via RS-485 port
- Support M2M OPC server for SCADA system
- Easy-to-use API tool for users to develop their applications by various program development tools
- Built-in I/O make 2G/3G RTU be the 2G/3G I/O devices
- Support LCD display in G-4513(P)D-3GWA
- I/O data recorded in SD card
- Ethernet and 2G/3G redundant communication paths
- Local I/O linkage function to make the simple local control
- Power supply 10 ~ 30 VDC

1.3 Communication and Software Architecture

The cellular service provider often assigned dynamic IP with private IP address on 2G/3G network. That often causes the problem of communication with the host PC in most traditional solutions. To resolve this issue, they often use the high-cost public, static IP addresses for each device, DDNS solution, or buy VPN service. Instead of the above solutions, ICP DAS provides the active transmission method in G-4513 RTU devices. Each G-4513 RTU device would register and send data to M2M RTU Center automatically. That just needs a fixed IP in the Host PC for M2M RTU Center and M2M OPC server or other program can exchange data with M2M RTU Center. It is a good way to eliminate the IP management issue for users than the traditional solution.

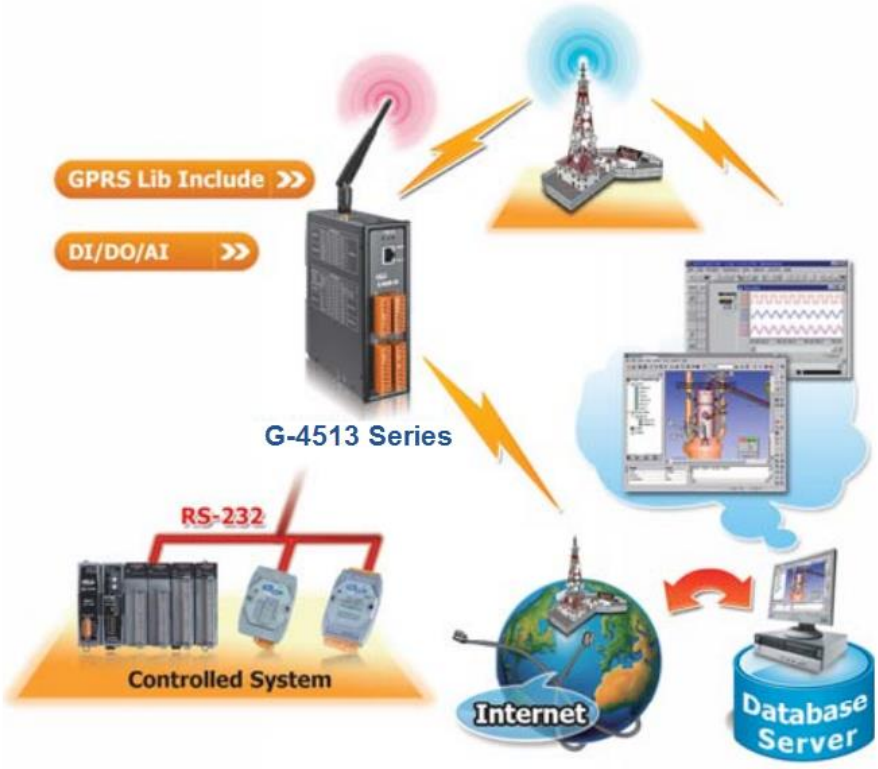




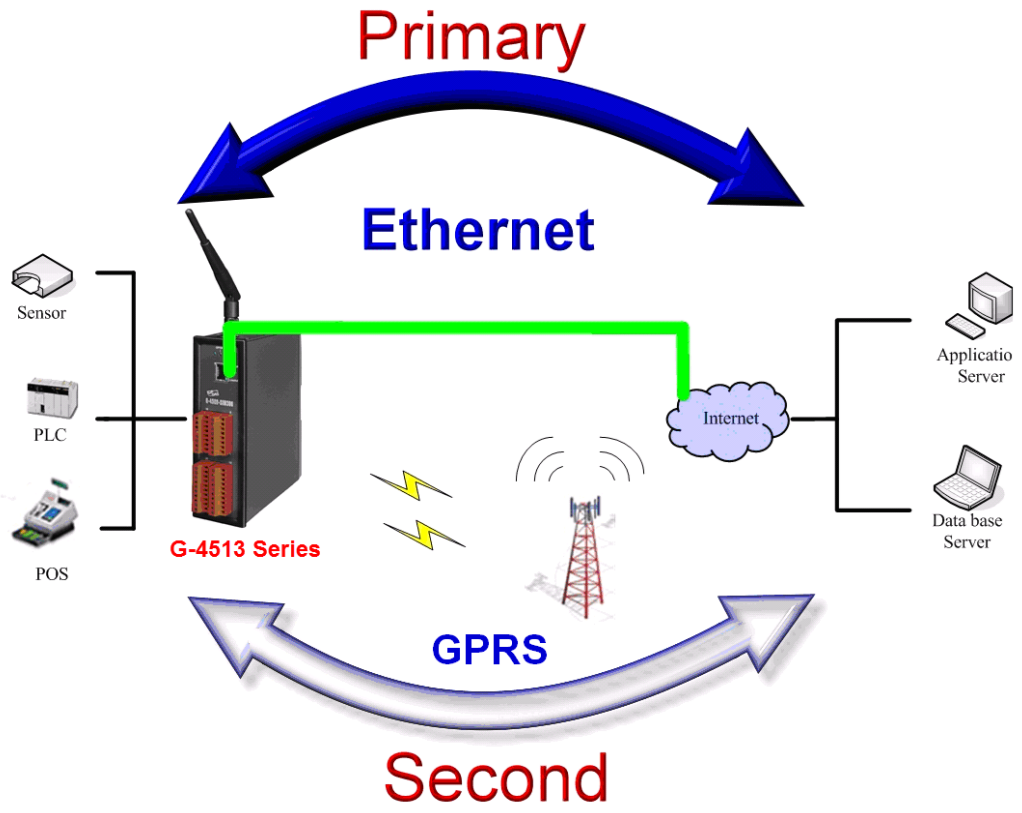
1.4 Applications

- Energy Management
- HVAC & Refrigeration
- Security & Access Control
- Vehicle tracking system

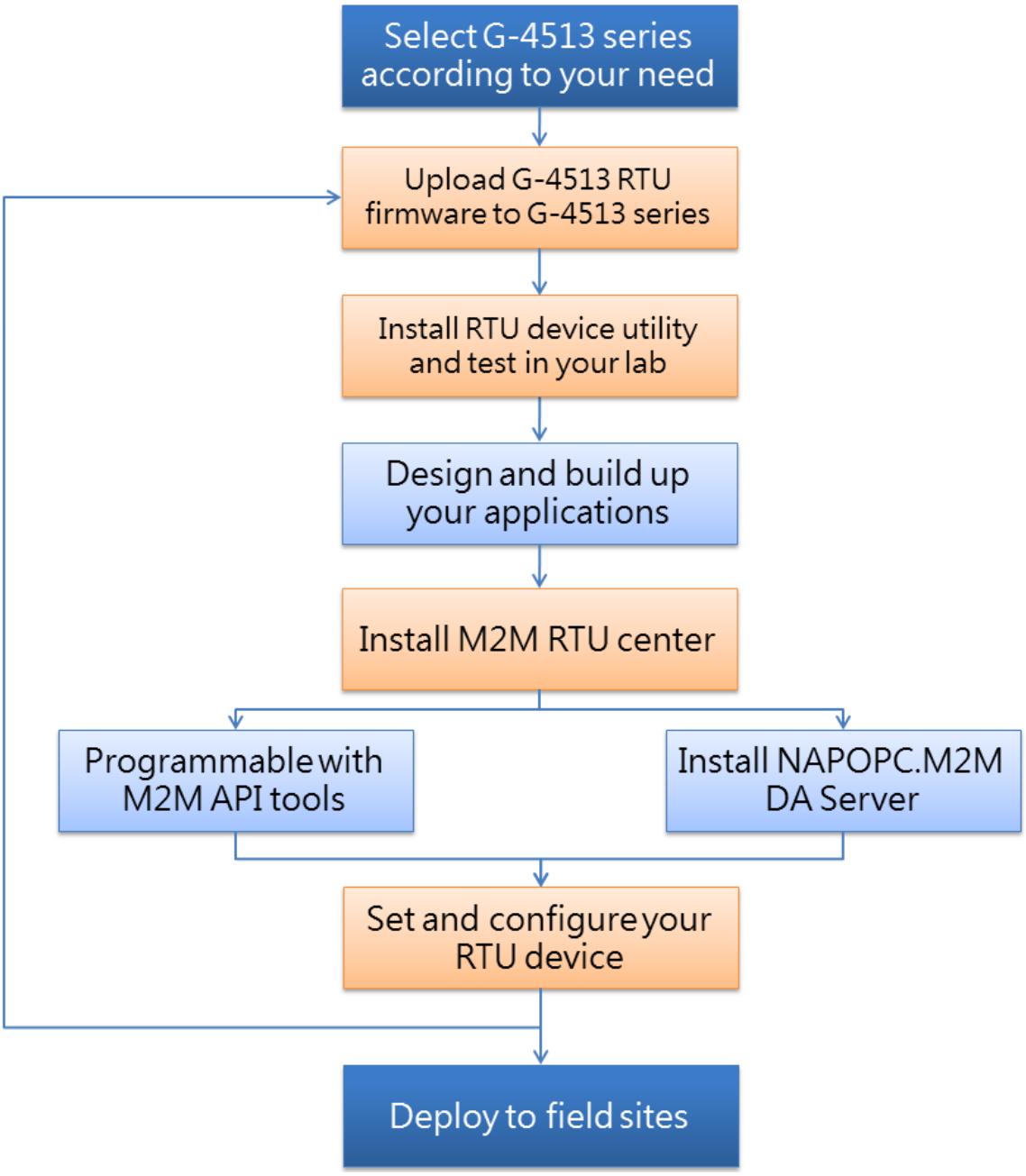
- Remote Control/Monitor System



- Redundant Communication System



1.5 How to use G-4513 RTU



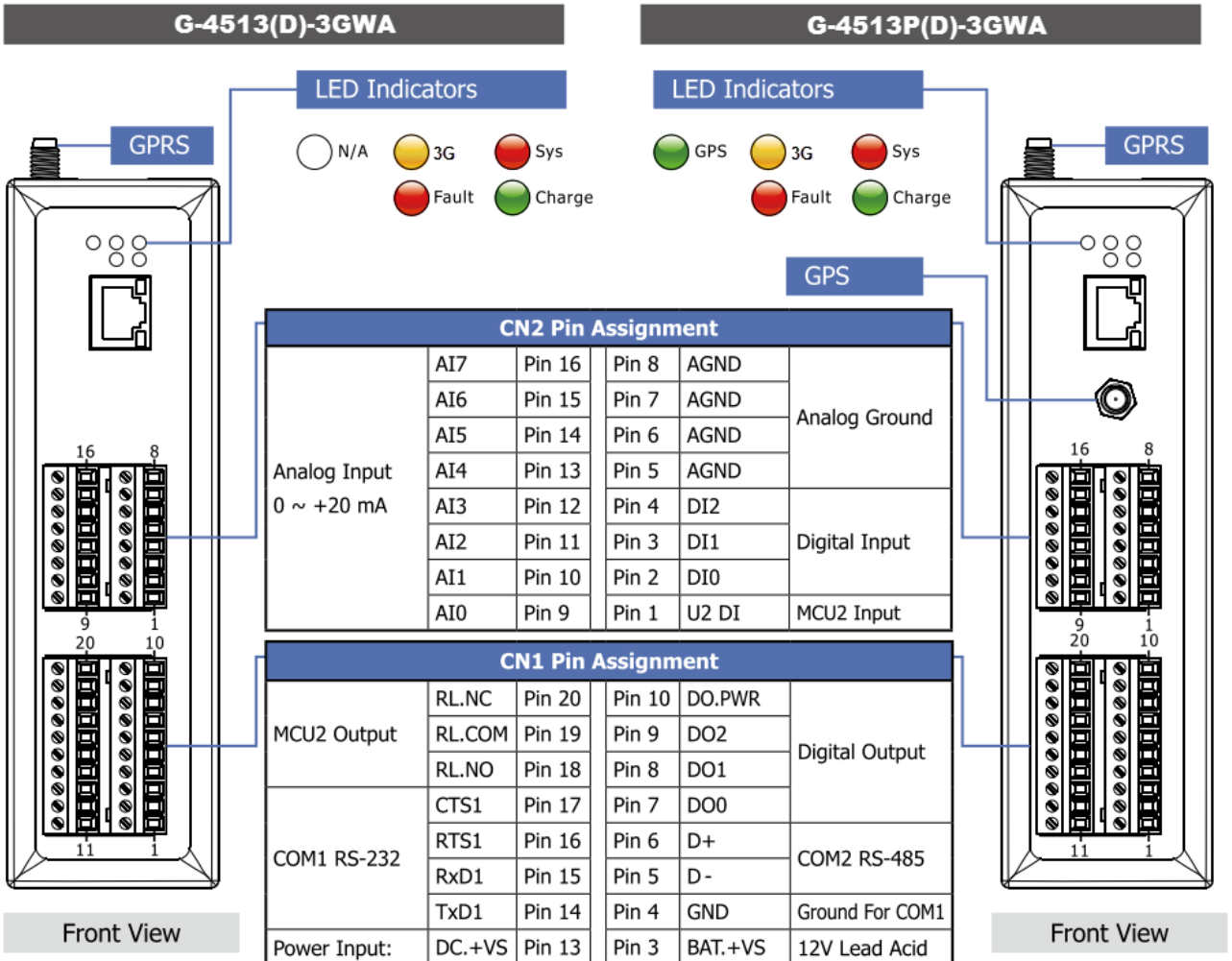
2. Hardware

2.1 Supported Product

The G-4513 RTU is an intelligent Active 2G/3G Remote Terminal Unit which is built-in the specified firmware in G-4513 series.

Product Type	Description
G-4513-3GWA CR	3G WCDMA Power Saving PAC with Solar charger (RoHS)
G-4513D-3GWA CR	3G WCDMA Power Saving PAC with Solar charger and LCD display (RoHS)
G-4513P-3GWA CR	3G WCDMA Power Saving PAC with Solar charger and GPS Function (RoHS)
G-4513PD-3GWA CR	3G WCDMA Power Saving PAC with Solar charger, LCD display and GPS Function (RoHS)

2.2 Pin Assignments



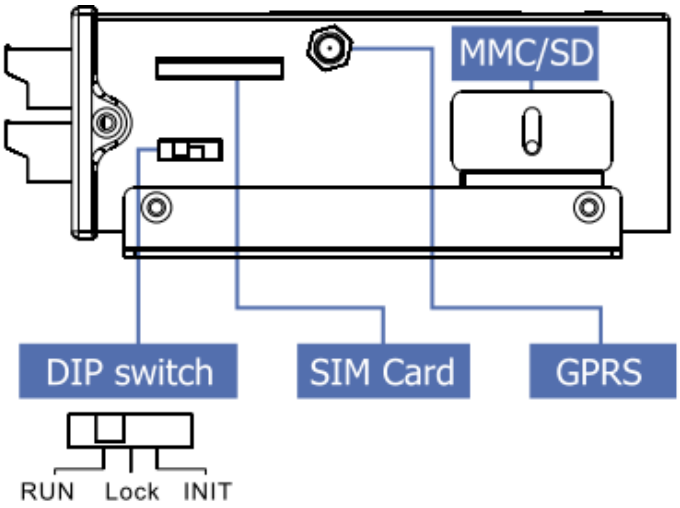
CN2 Pin Assignment

Analog Input 0 ~ +20 mA	AI7	Pin 16	Pin 8	AGND	Analog Ground
	AI6	Pin 15	Pin 7	AGND	
	AI5	Pin 14	Pin 6	AGND	
	AI4	Pin 13	Pin 5	AGND	
	AI3	Pin 12	Pin 4	DI2	Digital Input
	AI2	Pin 11	Pin 3	DI1	
	AI1	Pin 10	Pin 2	DI0	
	AI0	Pin 9	Pin 1	U2 DI	MCU2 Input

CN1 Pin Assignment

MCU2 Output	RL.NC	Pin 20	Pin 10	DO.PWR	Digital Output
	RL.COM	Pin 19	Pin 9	DO2	
	RL.NO	Pin 18	Pin 8	DO1	
COM1 RS-232	CTS1	Pin 17	Pin 7	DO0	
	RTS1	Pin 16	Pin 6	D+	COM2 RS-485
	RxD1	Pin 15	Pin 5	D-	
	TxD1	Pin 14	Pin 4	GND	Ground For COM1
Power Input: +10 ~ +30 VDC	DC.+VS	Pin 13	Pin 3	BAT.+VS	12V Lead Acid Battery
	DC.GND	Pin 12	Pin 2	BAT.+GND	
	N/A	Pin 11	Pin 1	F.G.	Frame Ground

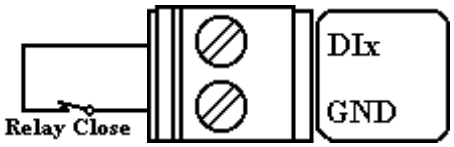
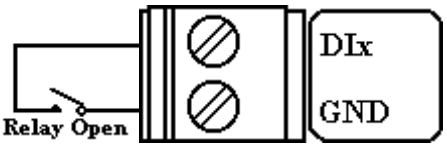
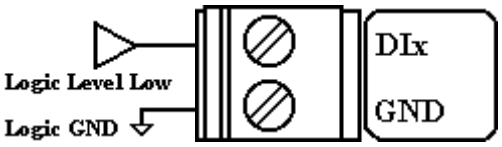
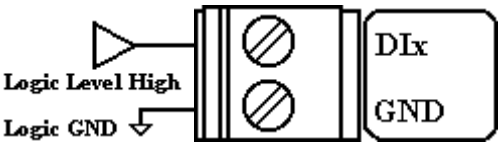
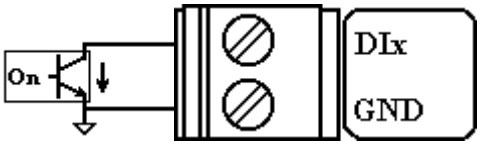
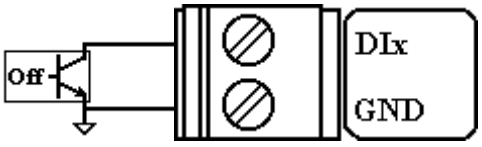
2.3 Operation Mode Switch



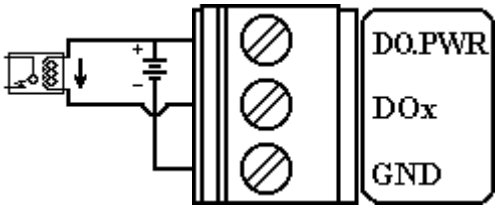
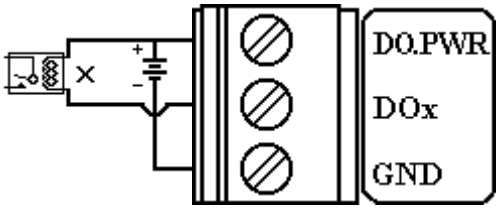
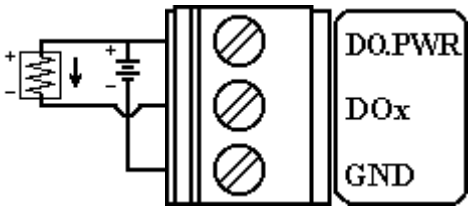
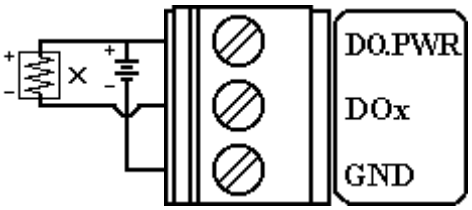
Operation Mode Switch	
RUN	OS can execute autoexec.bat
	Flash can be read/write.
LRun	OS can execute autoexec.bat
	Flash is read only (lock).
INIT	OS can not execute autoexec.bat
	Flash can be read/write.

2.4 Wire Connection

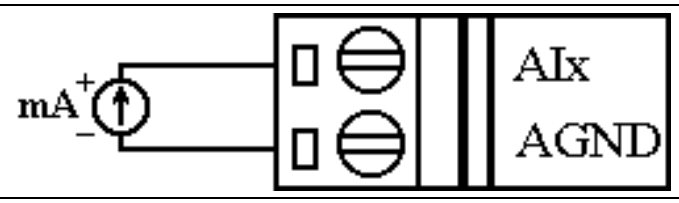
➢ Digital Input Wire Connection

Input Type	ON State DI value as 0	OFF State DI value as 1
Relay Contact		
TTL/CMOS Logic		
Open Collector		

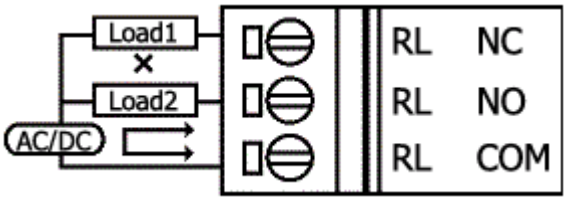
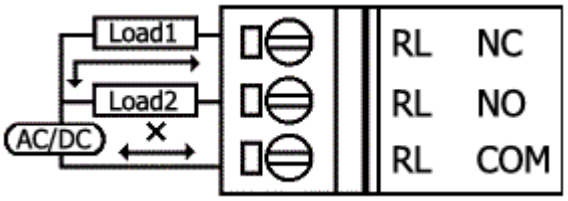
➢ Digital Output Wire Connection

Input Type	ON State DO value as 1	OFF State DO value as 0
Drive Relay		
Resistance Load		

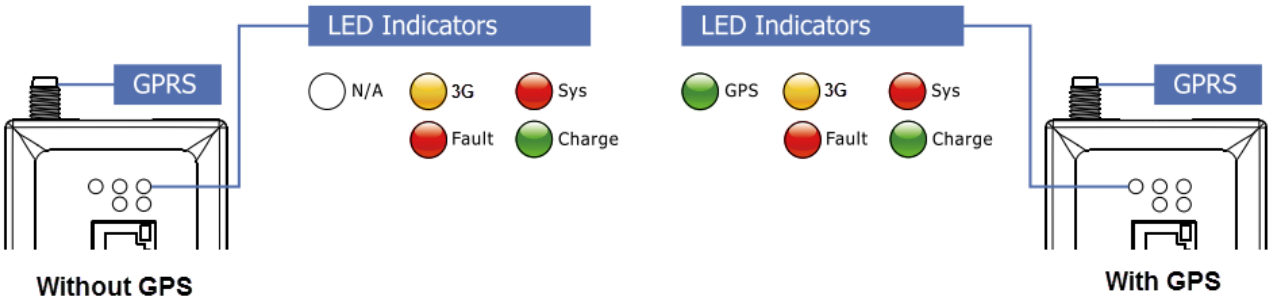
- Current Input Wire Connection

Input Type	

- Relay Wire connection

Relay Output ON	Relay Output OFF
	

2.5 LED Indicators



There are five LED indicators to help users to judge the various conditions of G-4513 Series. The description is as follows：

A. Sys (Red)：System LED is to indicate if the G-4513 RTU is normal or fail.

Connected	Linking	3G module fail or hardware initialization	PIN code error
Blinking per 1 sec	Blinking per 2 sec	Always ON	Blinking per 50 ms

B. 3G (Yellow)：The modem LED can indicate the status of 3G module.

	3G module normal	3G module fail
2G Mode	Blinking per 2 sec	OFF or Blinking (not 3 sec)
3G Mode	Blinking twice per 2 sec	

C. GPS (Green)(Option)：The GPS LED can indicate the status of GPS module.

GPS Fail	Search GPS	Receive GPS data
Always OFF	Always ON	Blinking (1 sec)

D. Charging (Green)：Charging status indicator.

Charging	Not Charging
Always ON	Always OFF

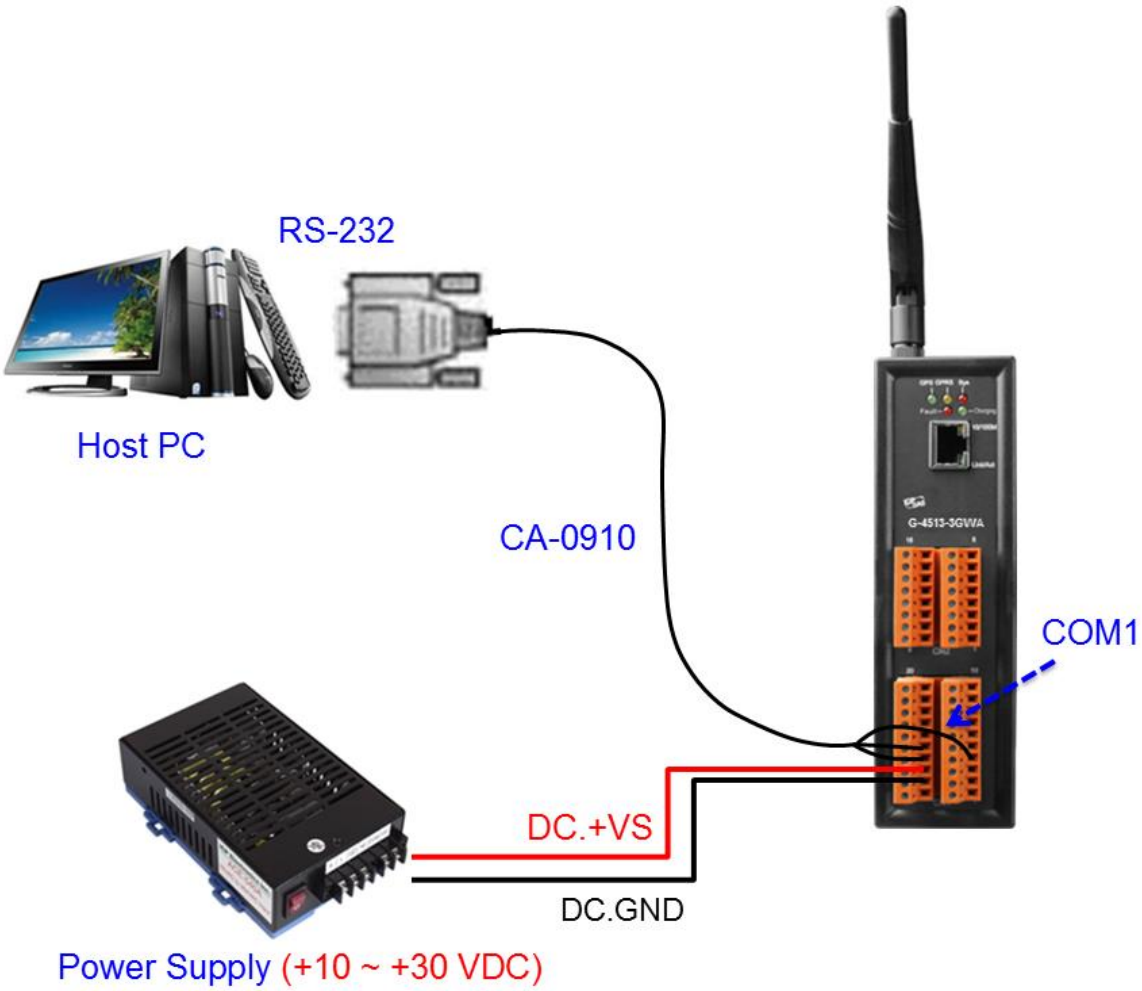
E. Fault (Red)：Charging Fault indicator.

Normal	Fault
Always OFF	Always ON

3. Upload RTU Firmware to G-4513 Series

3.1 Hardware Connection

When users want to use G-4513 RTU, they need to upload G-4513 RTU firmware to G-4513 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-4513 series with cable CA-0910. Please refer to the below picture.



- Turn the dip switch to INIT mode and restart the G-4513 series power.

3.2 Upload Firmware

- Download the MiniOS7 Utility software

http://ftp.icpdas.com/pub/cd/8000cd/napdos/minios7/utility/minios7_utility/

- MiniOS7 Utility user's manual

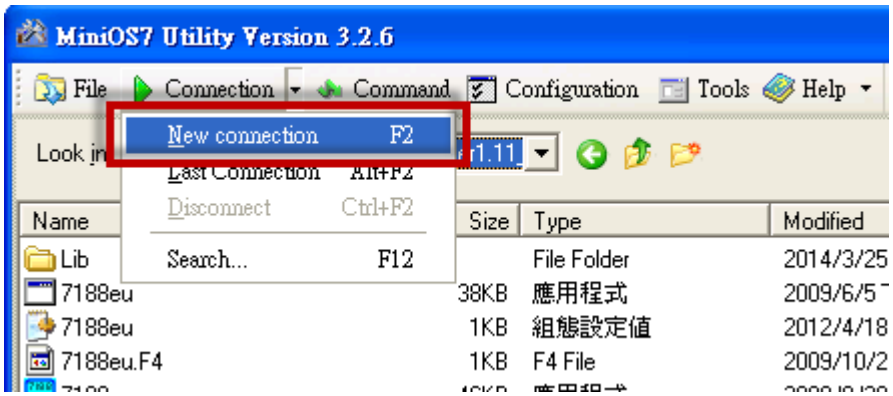
http://ftp.icpdas.com/pub/cd/8000cd/napdos/minios7/utility/minios7_utility/minios7_utility.pdf

- Download G-4513 RTU Firmware

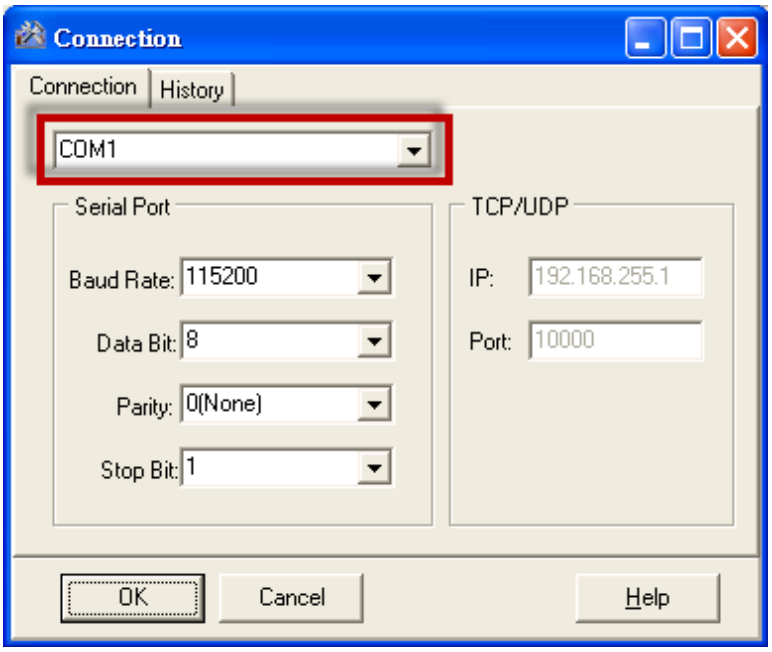
http://ftp.icpdas.com/pub/cd/usbcd/napdos/g-4513-3gwa/software/rtu/software/firmware/

3.2.1 Upload Firmware to G-4513 Series via COM Port

(1) Choose Menu Bar > Connection, and click new connection



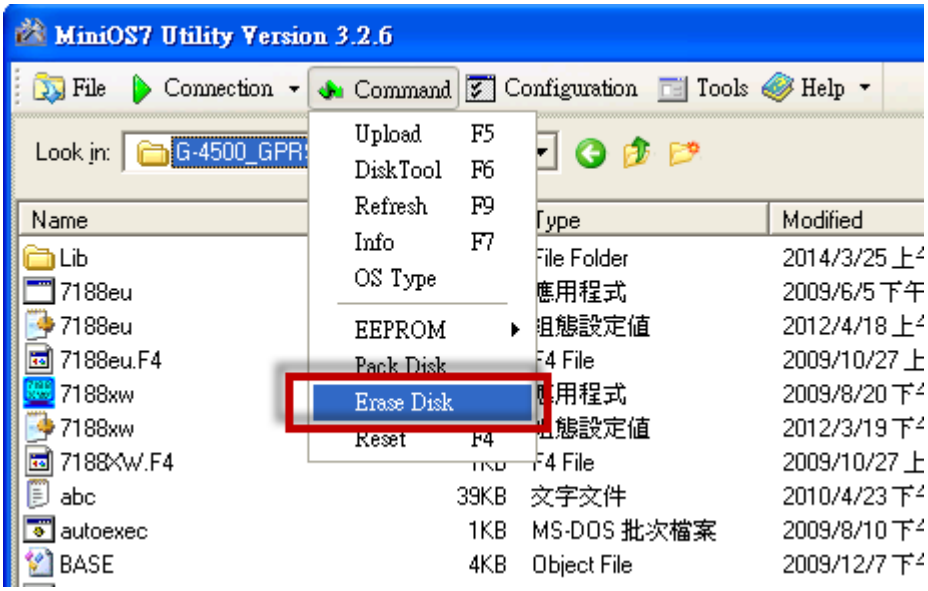
(2) Select your number of COM port

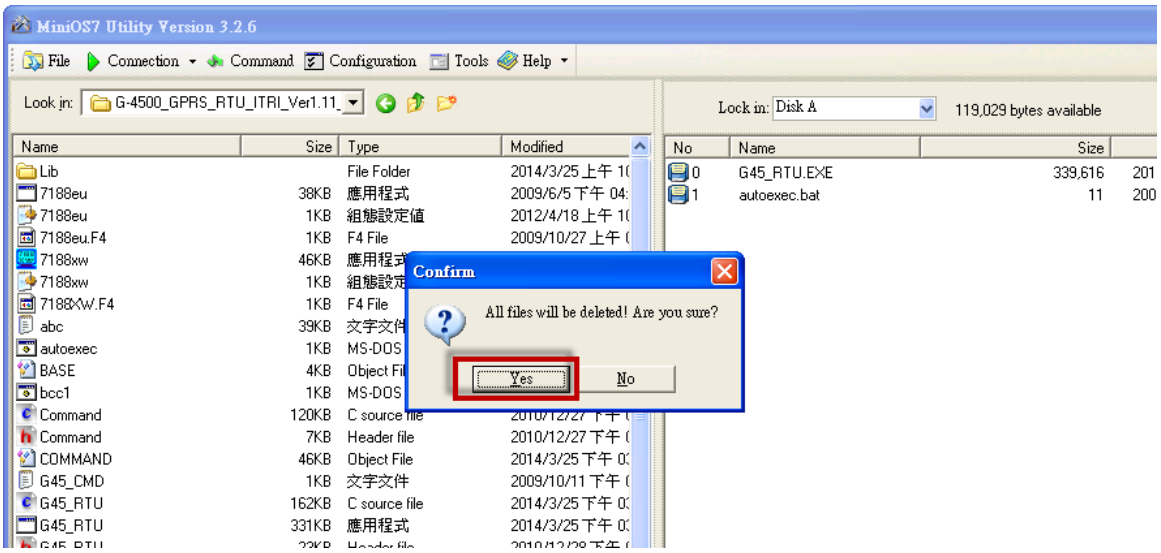


Com port parameters (Fixed)

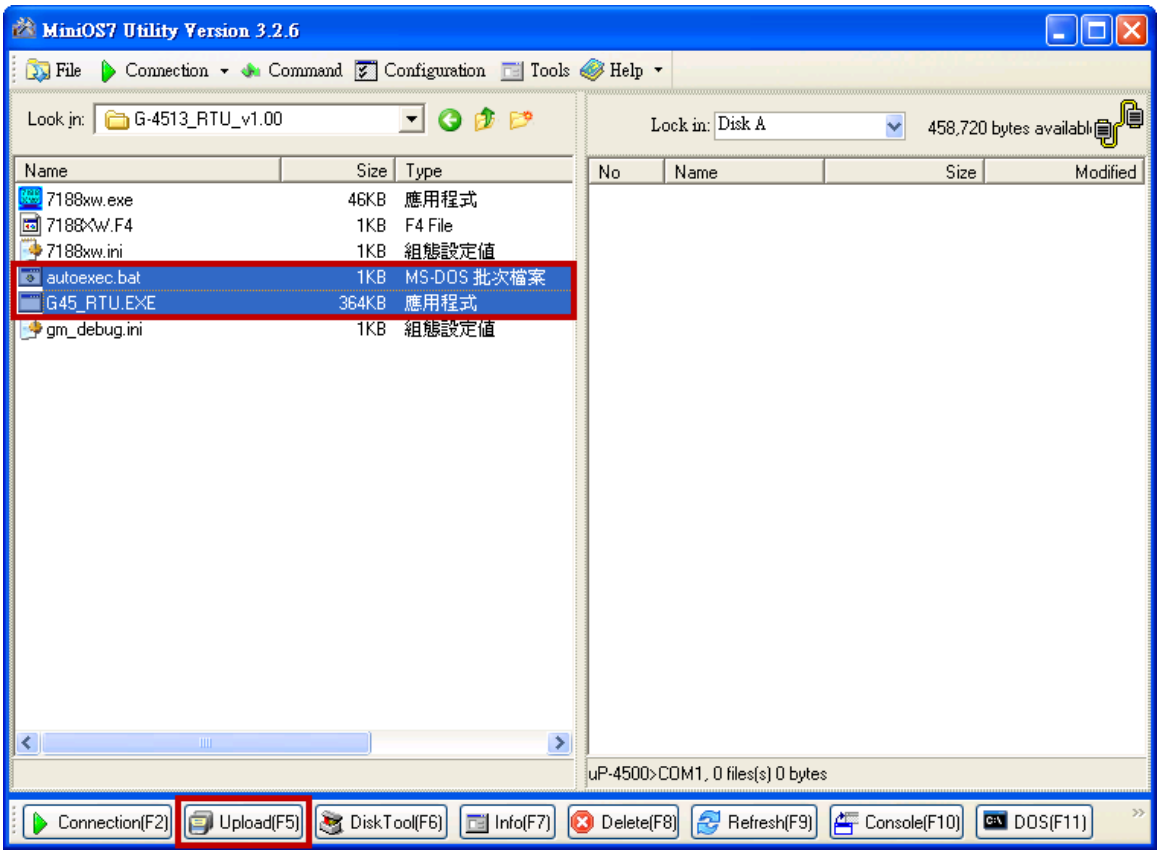
Baud Rate	115200
Data Bit	8
Parity	0 (None)
Stop Bit	1

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





(4) Select the G45_RTU.exe and autoexec.bat, click the "Upload" button to upload the firmware

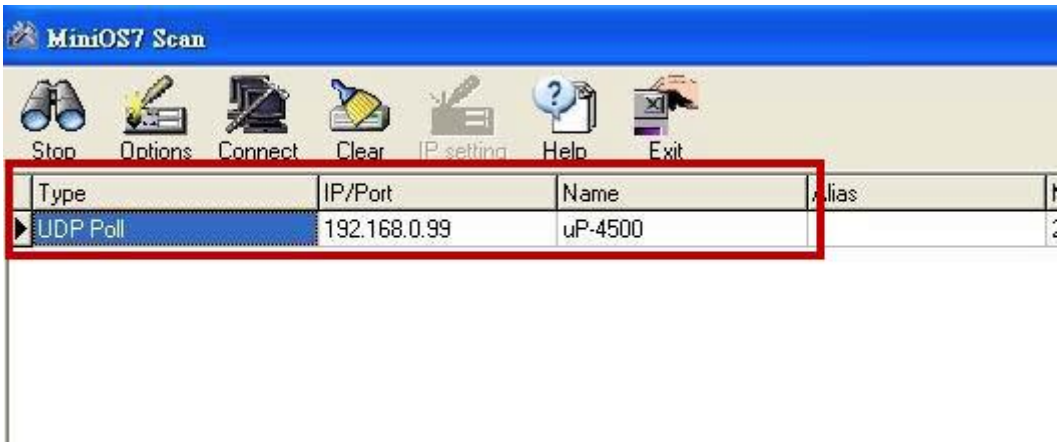


(5) Turn the dip switch to RUN mode and restart the G-4513 series power after upload the firmware successfully

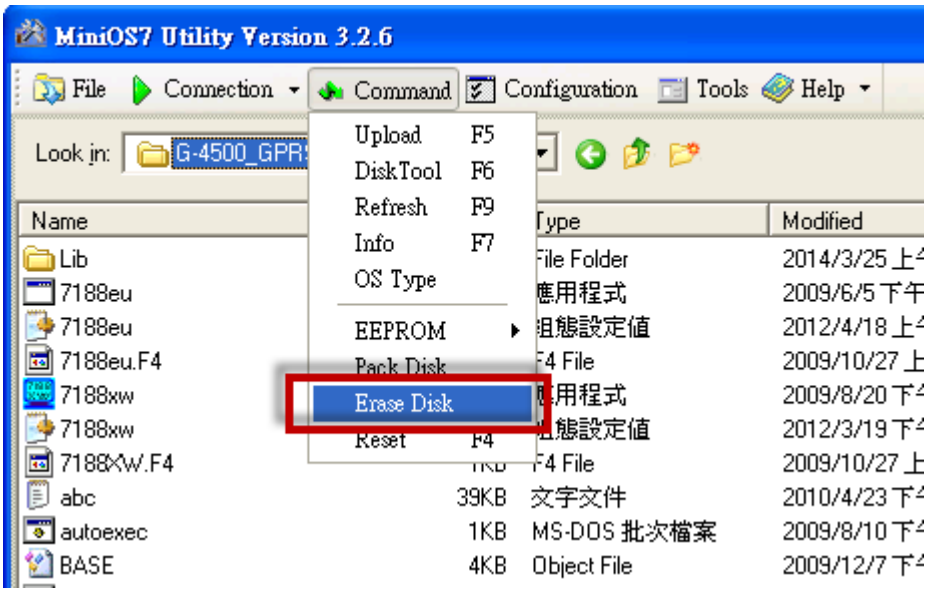
3.2.2 Upload Firmware to G-4513 Series via Ethernet

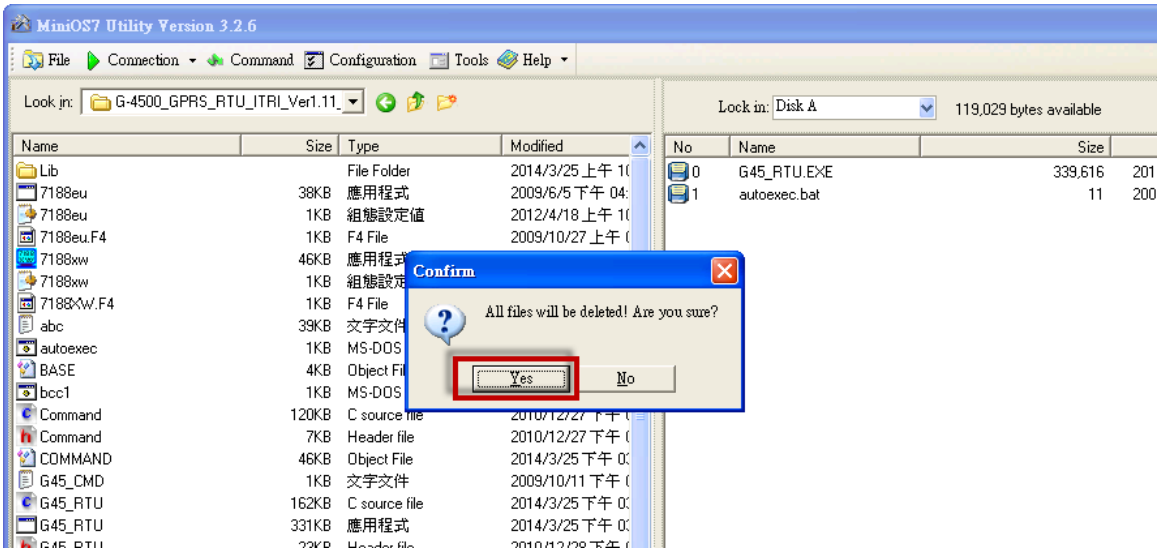
(1) Choose Menu Bar > Connection, and click search

(2) Double-click your G-4513 series.

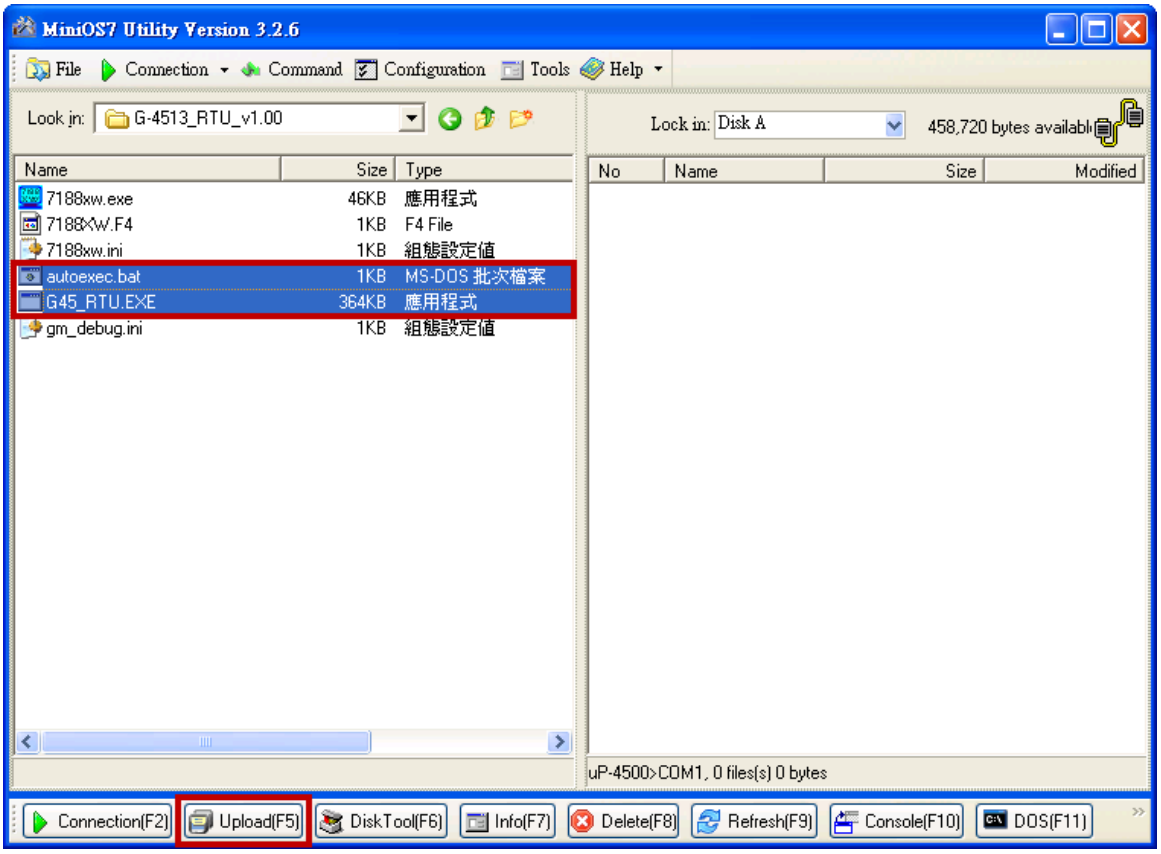


(3) Choose Menu Bar > Command, and click "Erase Disk"





(4) Select the G45_RTU.exe and autoexec.bat, click the "Upload" button to upload the firmware



(5) Turn the dip switch to RUN mode and restart the G-4513 series power after upload the firmware successfully

4. Installing G-4500 RTU Utility

Tips & Warnings

It needs the runtime environment with .NET Framework 2.0 or above to execute the G-4500 RTU Utility in the PC. If there has .NET Framework 2.0 or above in the PC, the section 4.1 can be omitted.

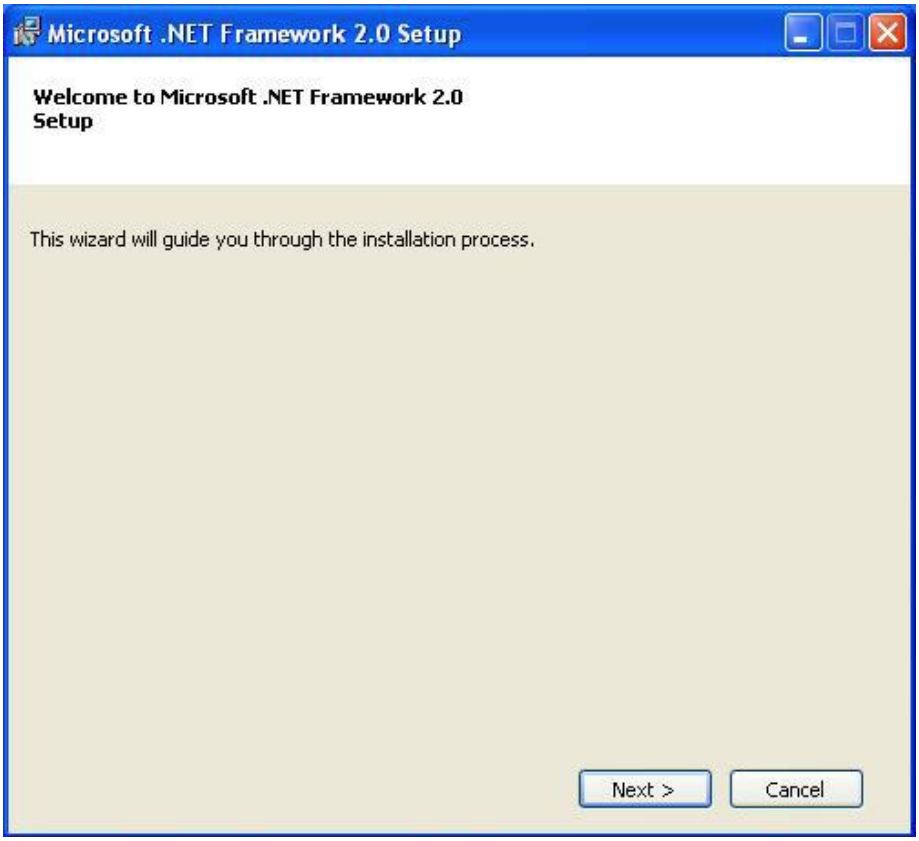
4.1 Installing .NET Compact Framework

- Download Microsoft .NET Framework Version 3.5

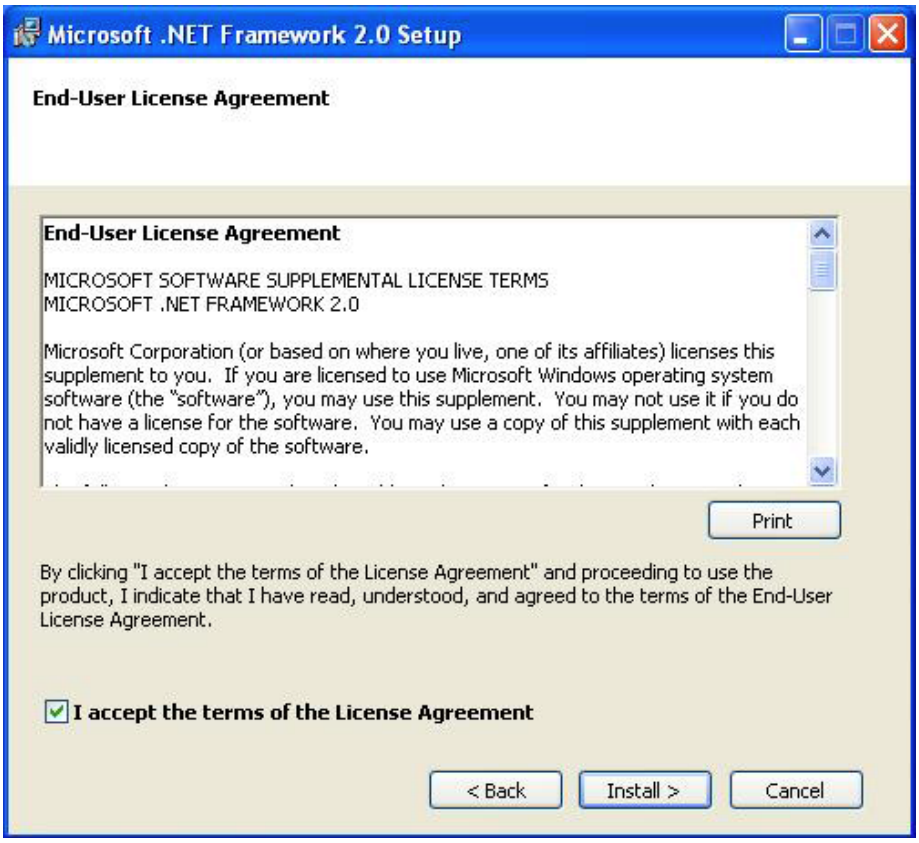
http://www.microsoft.com/en-us/download/details.aspx?id=21

- The install figure as follows

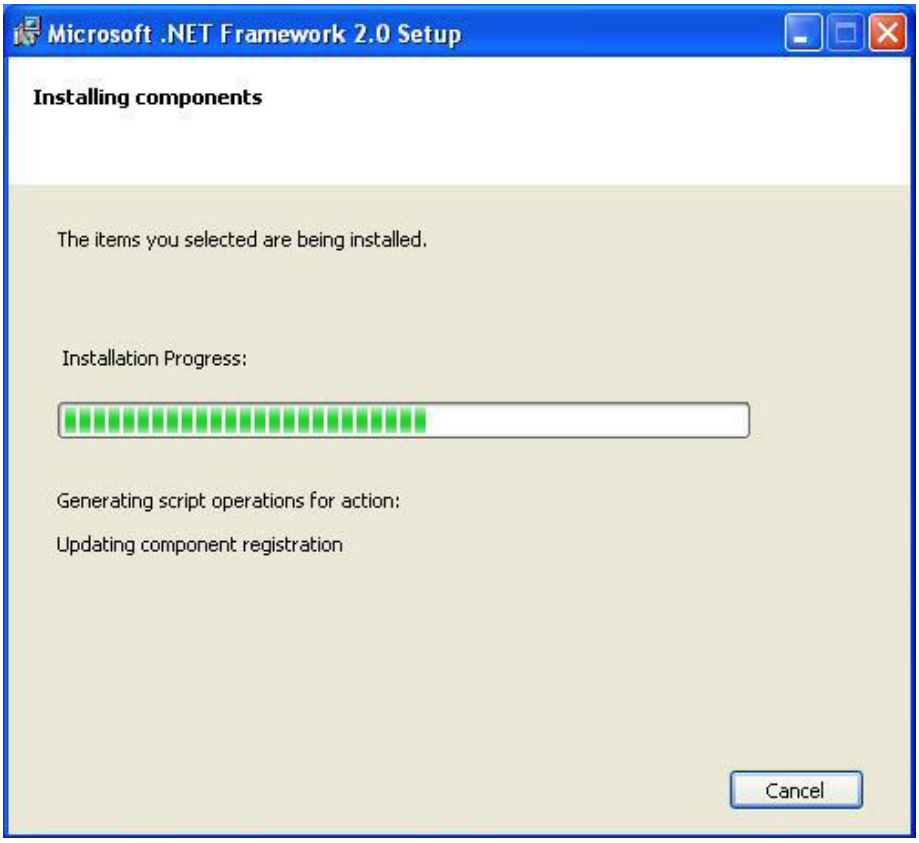
(1) Press "Next" to the next step



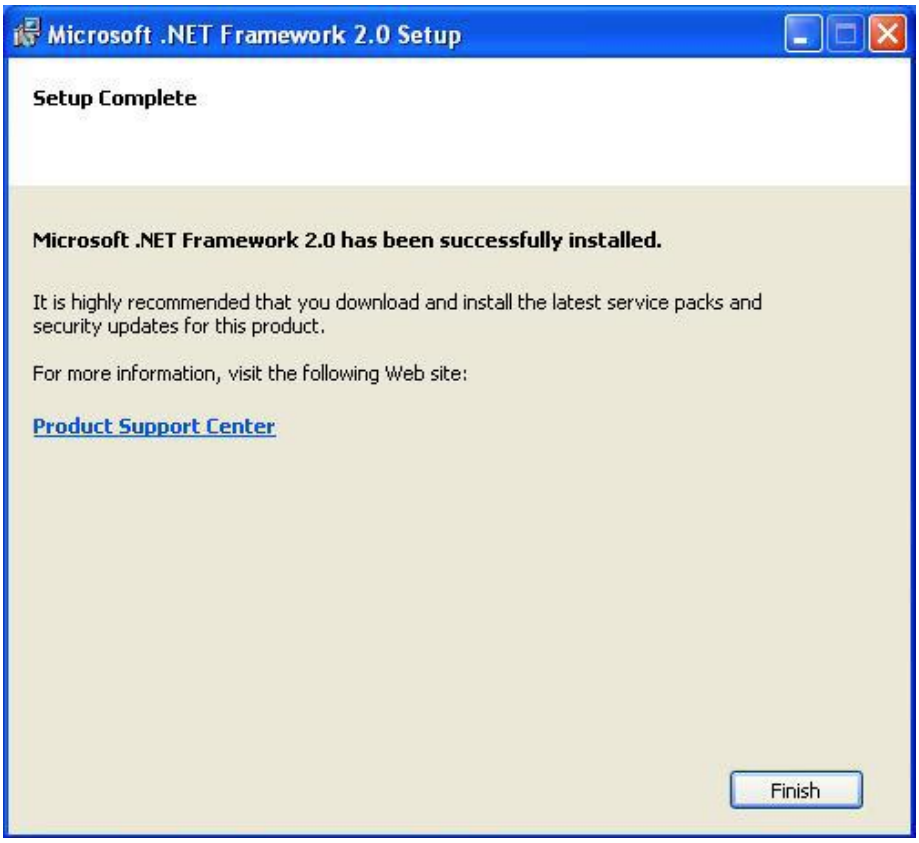
(2) Select the "I accept the terms of the License Agreement" and "Install" to the next step



(3) The installation process would be going



(4) After finishing the installation, press "Finish" to exit the program



4.2 Installing G-4500 RTU Utility

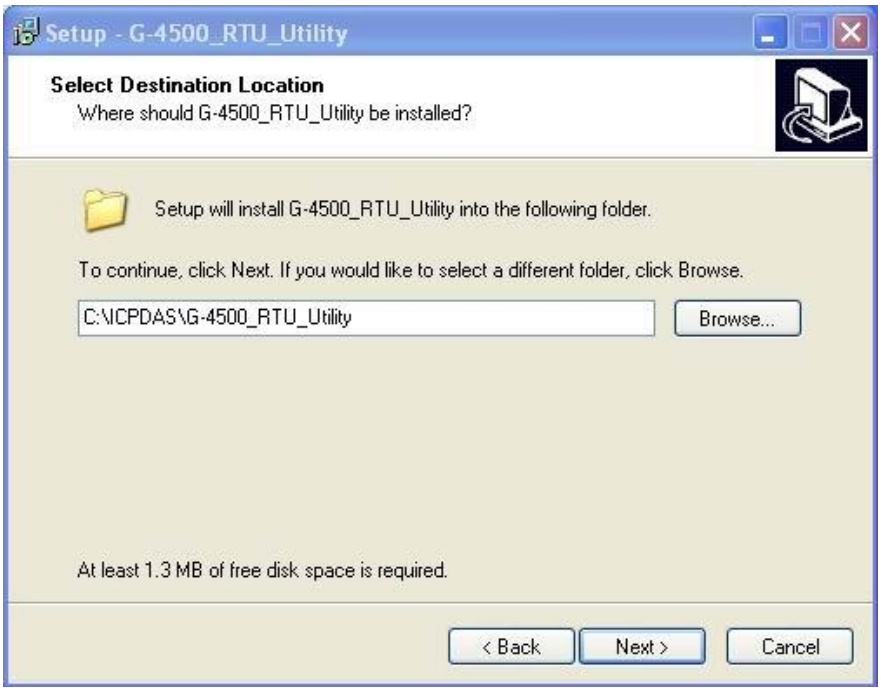
- Download G-4500 RTU Utility

http://ftp.icpdas.com/pub/cd/usbcd/napdos/g-4513-3gwa/software/rtu/software/utility/

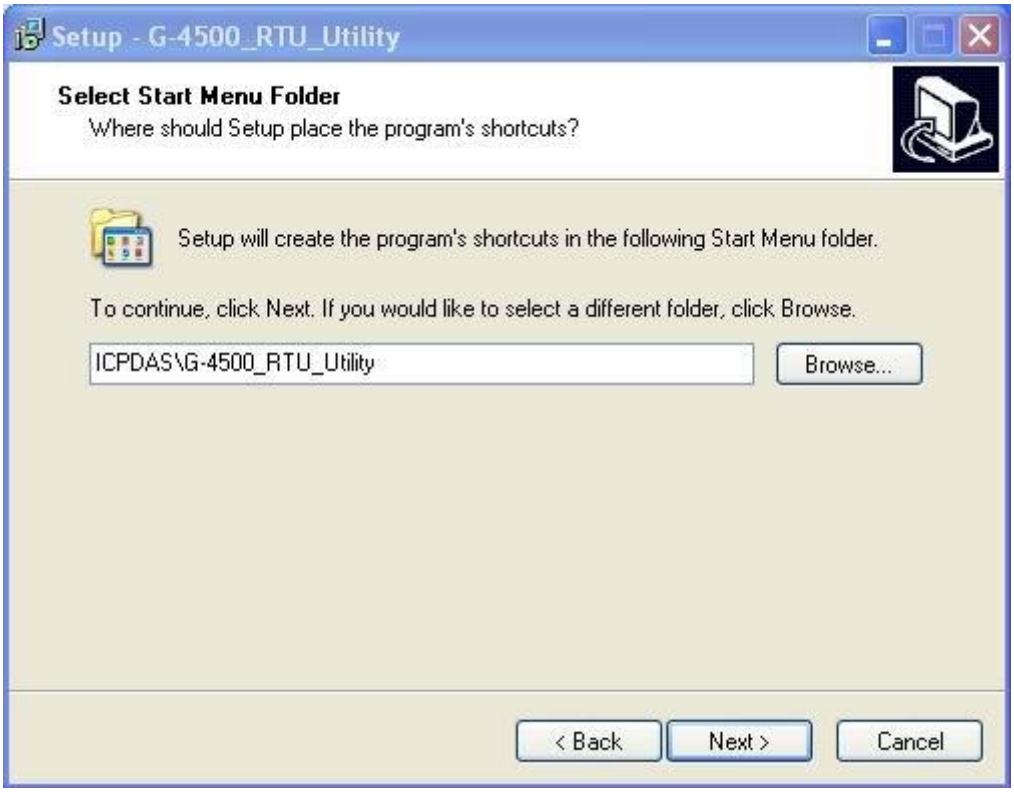
- The install figure as follows

(1) Press "Next" to start the installation procedure

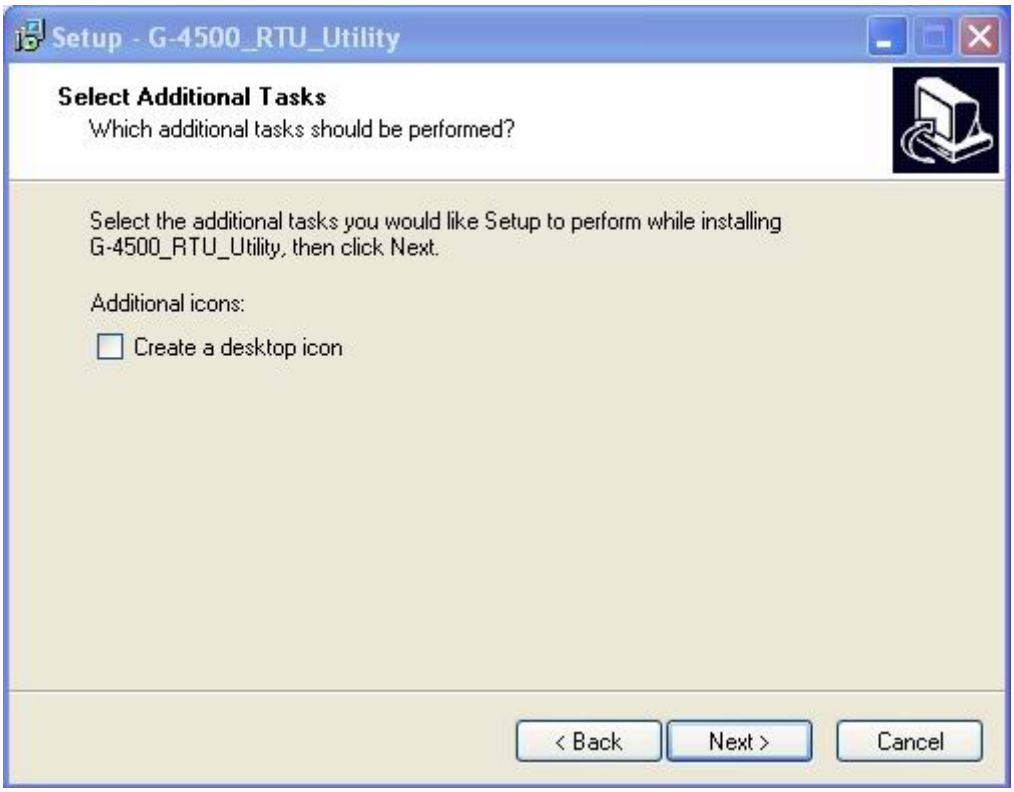
(2) Select the installation path. The default path is "C:\ICPDAS\G-4500_RTU_Utility".



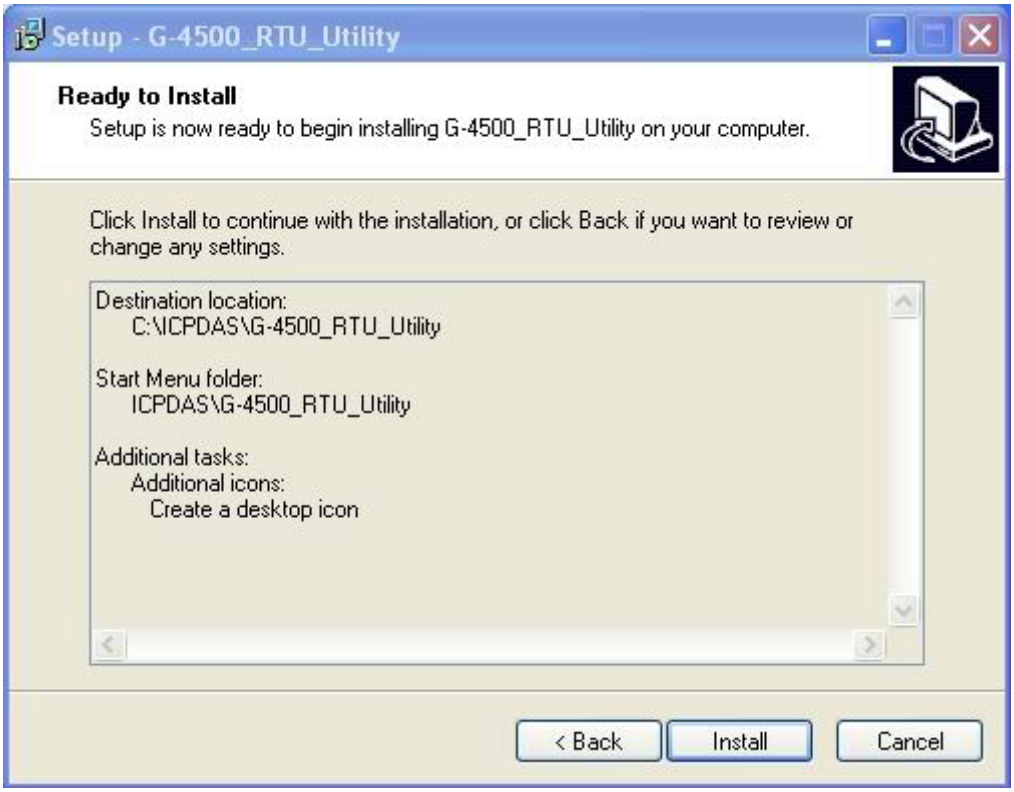
(3) Select the start menu folder path. The default path is "ICPDAS\G-4500_RTU_Utility".



(4) Press "Next" to the next step

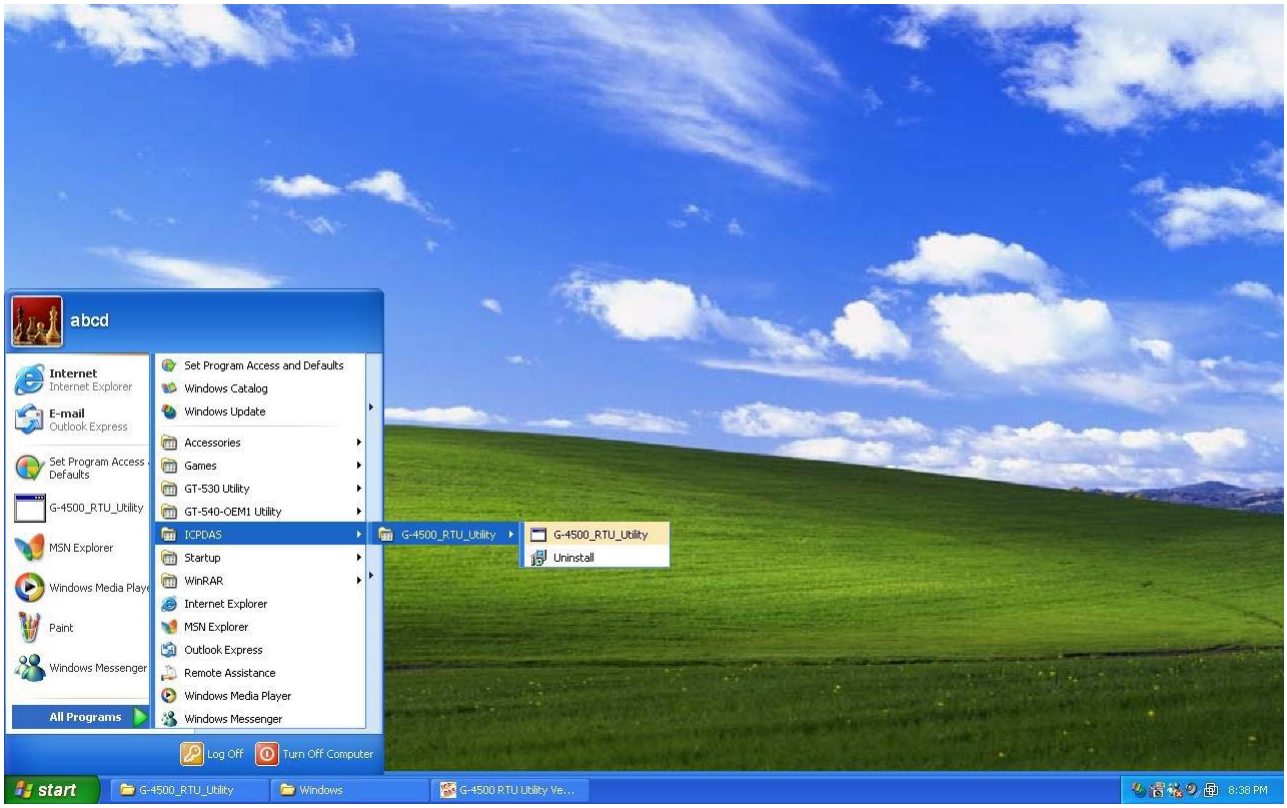


(5) Press "Next" to the next step



(6) Press "Finish" to finish the installation procedure

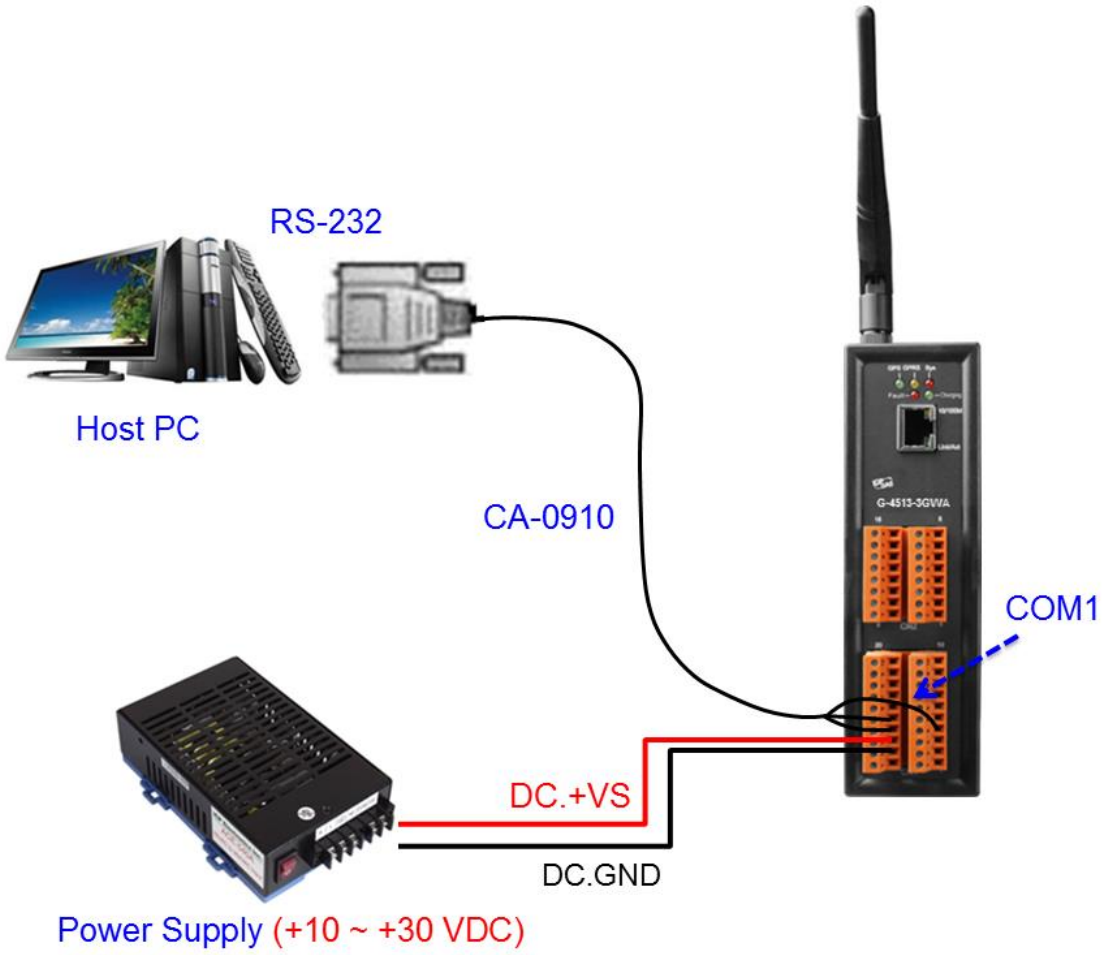
(7) Execute G-4500 RTU Utility from the start menu "Start > All Programs > ICPDAS > G-4500_RTU_Utility > G-4500_RTU_Utility"



5. G-4500 RTU Utility Operation

5.1 Hardware Connection

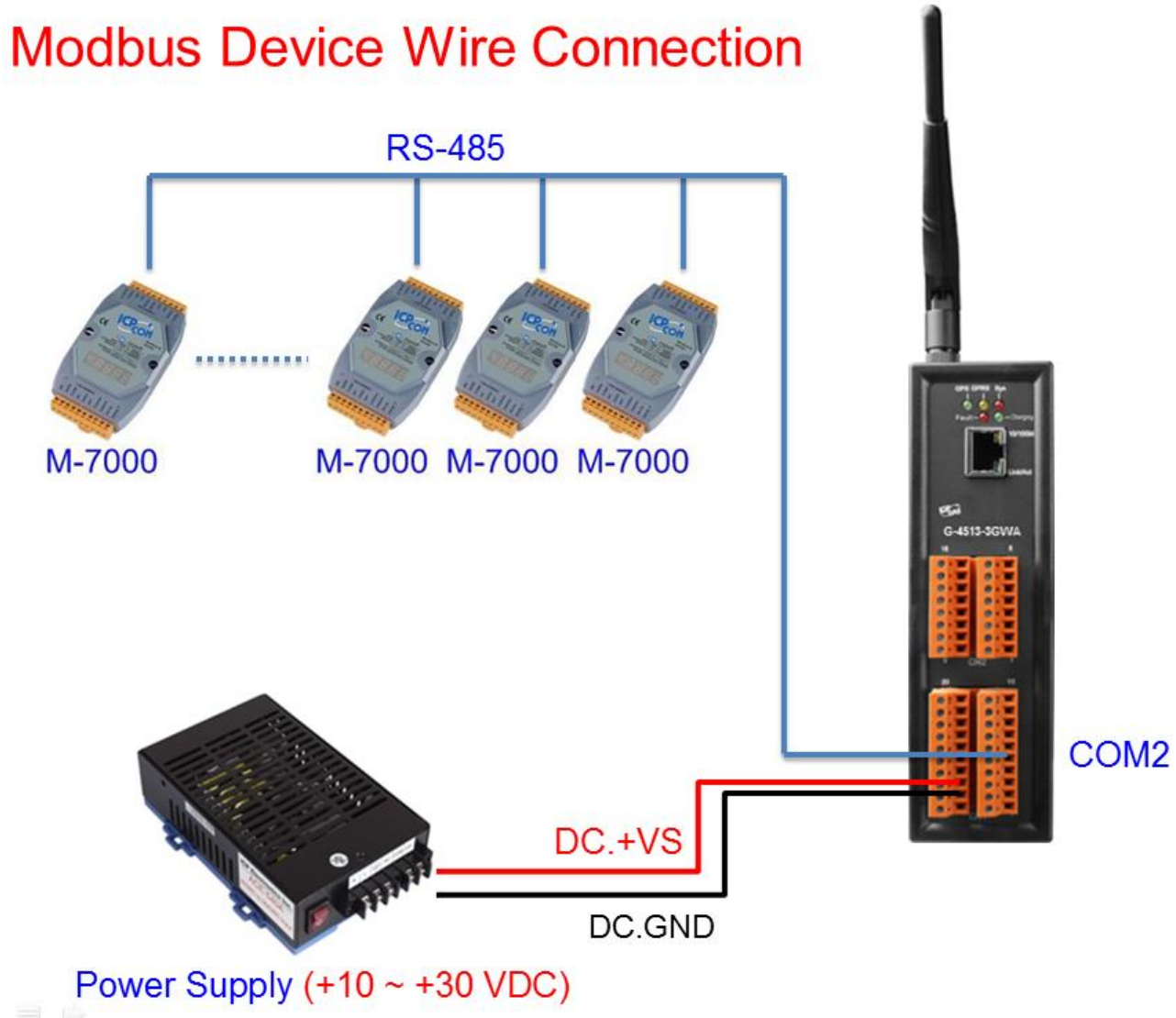
When you want to configure G-4513 RTU with G-4500 Utility, using the COM Port of Host PC connects to G-4513 series with cable CA-0910. Please refer to the picture below.



- Turn the dip switch to RUN mode and restart the G-4513 series power

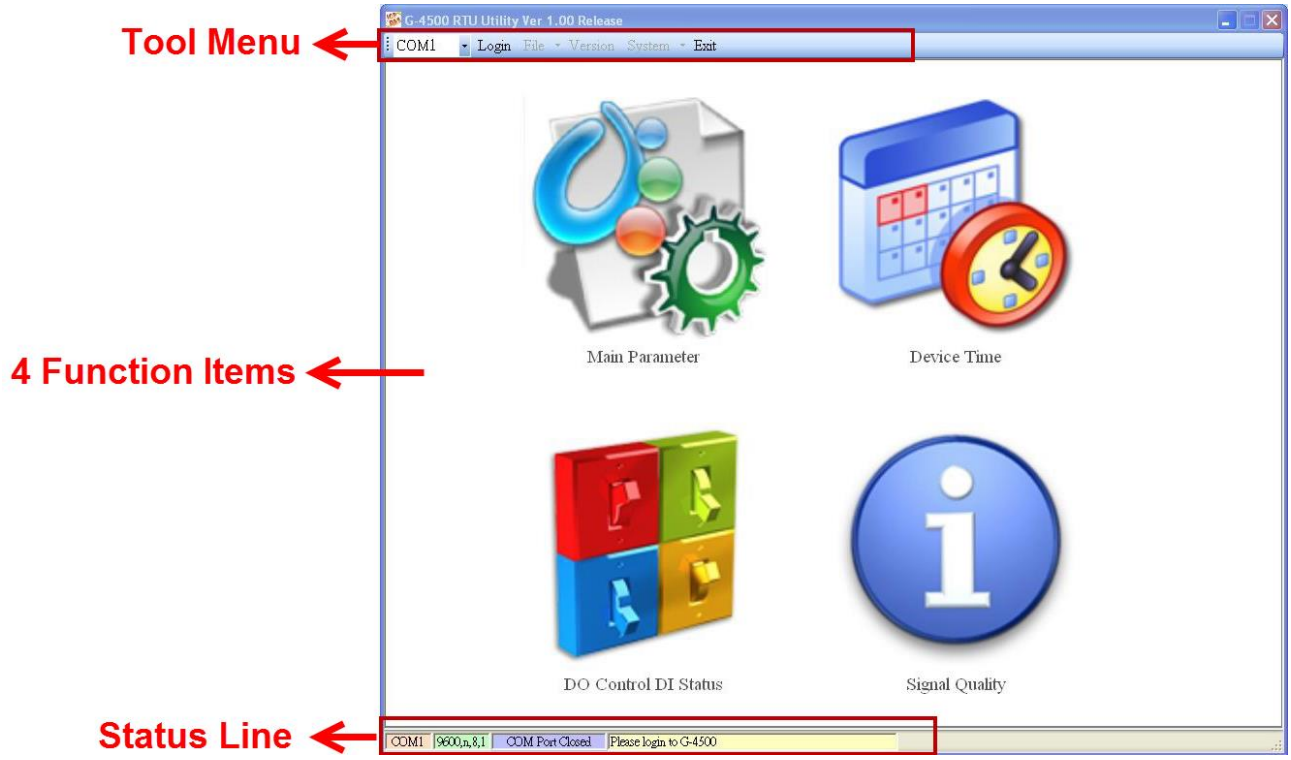
5.2 Modbus Device Wire Connection

G-4513 RTU provides Modbus RTU Master Protocol to connect to Modbus RTU Devices by RS-485 port (COM2) of G-4513 series.



5.3 Main Menu

The main menu of G-4500 RTU Utility includes the following sections



A. Tool Menu
   1. COM: Set the COM port number in PC connecting to G-4513 series
   2. Login/Logout: Login G-4513 series
   3. File: There are import and export functions in "File" item. The functions would be enabled when "Main parameters" window is open
      (1) Import: The parameters would be shown in "Main parameters" window from the specific .par file
      (2) Export: The function can export the parameters as .par file from the "Main parameters" windows
   4. Version: Including the firmware and Utility version information
   5. System: Provide users for recovering G-4513 RTU to factory and resetting
   6. Exit: To exit G-4500 RTU utility

B. 4 function items
   1. Main Parameter: The main parameter setting of G-4513 RTU includes Station ID, GPRS Username, GPRS Password, GPRS APN, Remoter server IP, Remote server Port, Local Ethernet IP, Local Ethernet Mask, Local Gateway, 10 Modbus device…etc.
   2. Device Time: Display and set the RTC time of G-4513 RTU.
   3. DO Control/DI Status: Display the status of I/O and control the DO output
   4. Signal Quality: Show the 2G/3G signal strength

C. Status Line

Show the related information during the operation procedure including

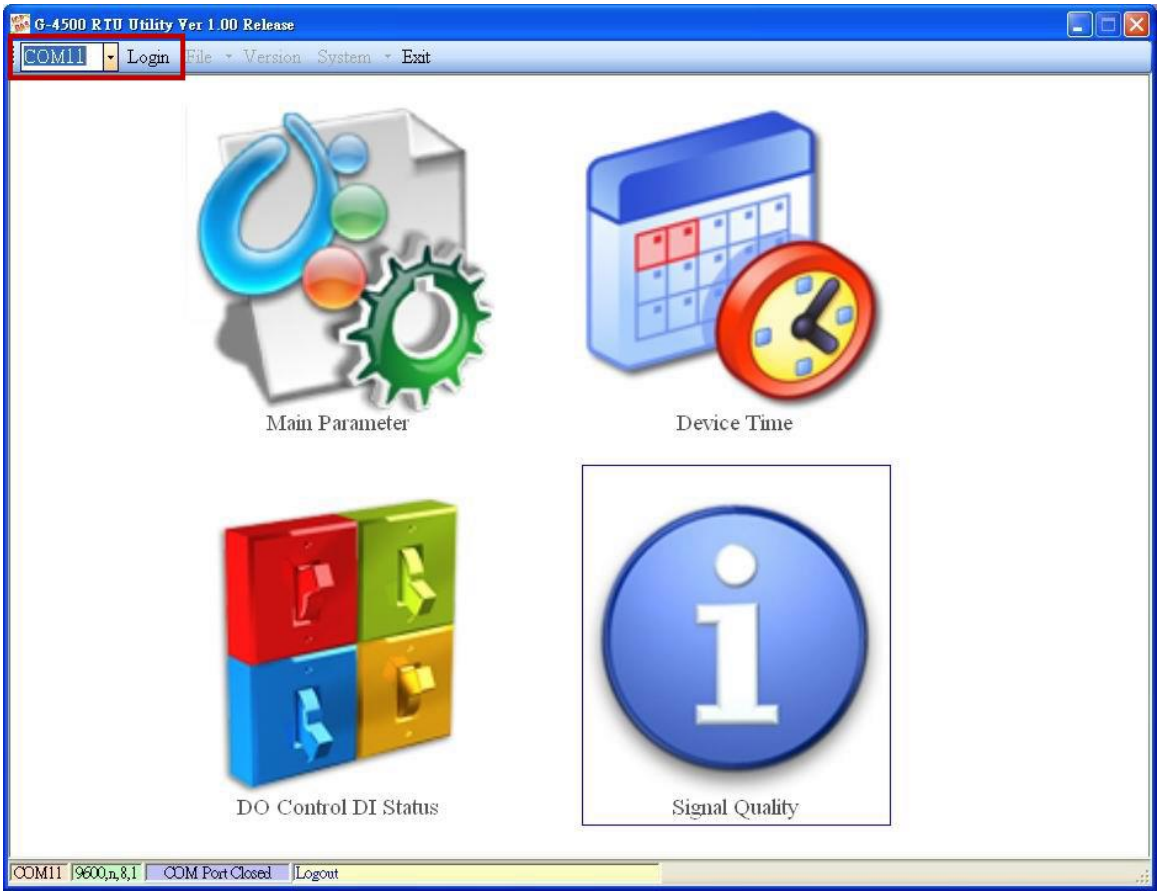
1. The com port number of PC
2. The communication setting of COM Port
3. The status of COM Port
4. The result of Utility operation

5.4 Login

It needs to login into G-4513 RTU to set its parameters. The description is below:

(1) Select the COM port number of PC.

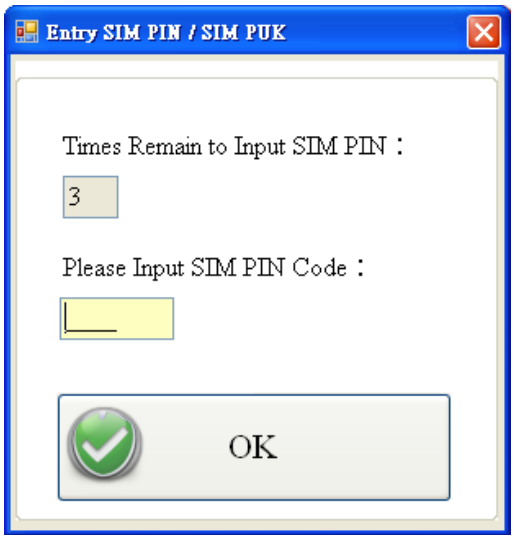
(2) Press the "login" button



If the pin code in G-4513 RTU is not correct, the SYS led would be blanking per 50 ms and G-4500 utility would ask for users to input PIN or PUK code.

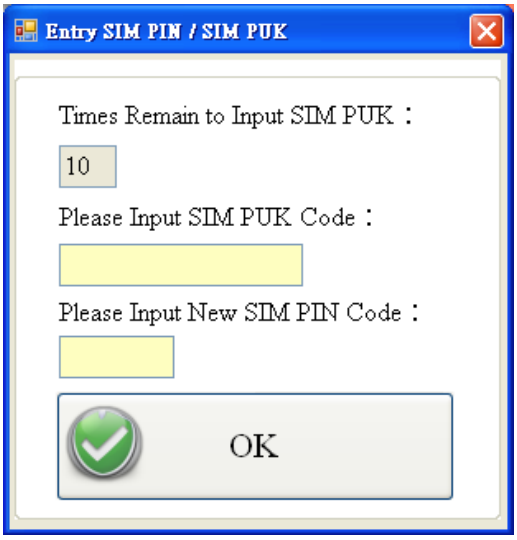
(1) Asking for inputting PIN code

If the PIN code is effective, the "Enter SIM PIN/SIM PUK" window would pop-up as follows. If the number of times for inputting the wrong PIN code is more than the allowed number, the PIN code would be ineffective. And the "PUK code" window would pop up.



(2) Asking for inputting PUK code

If the PIN code is ineffective, the "PUK code" window would pop-up as follows. As the number of times for inputting the wrong PUK code is more than allowed number, the SIM card would be ineffective forever. Therefore, it is important to input the correct PUK code.



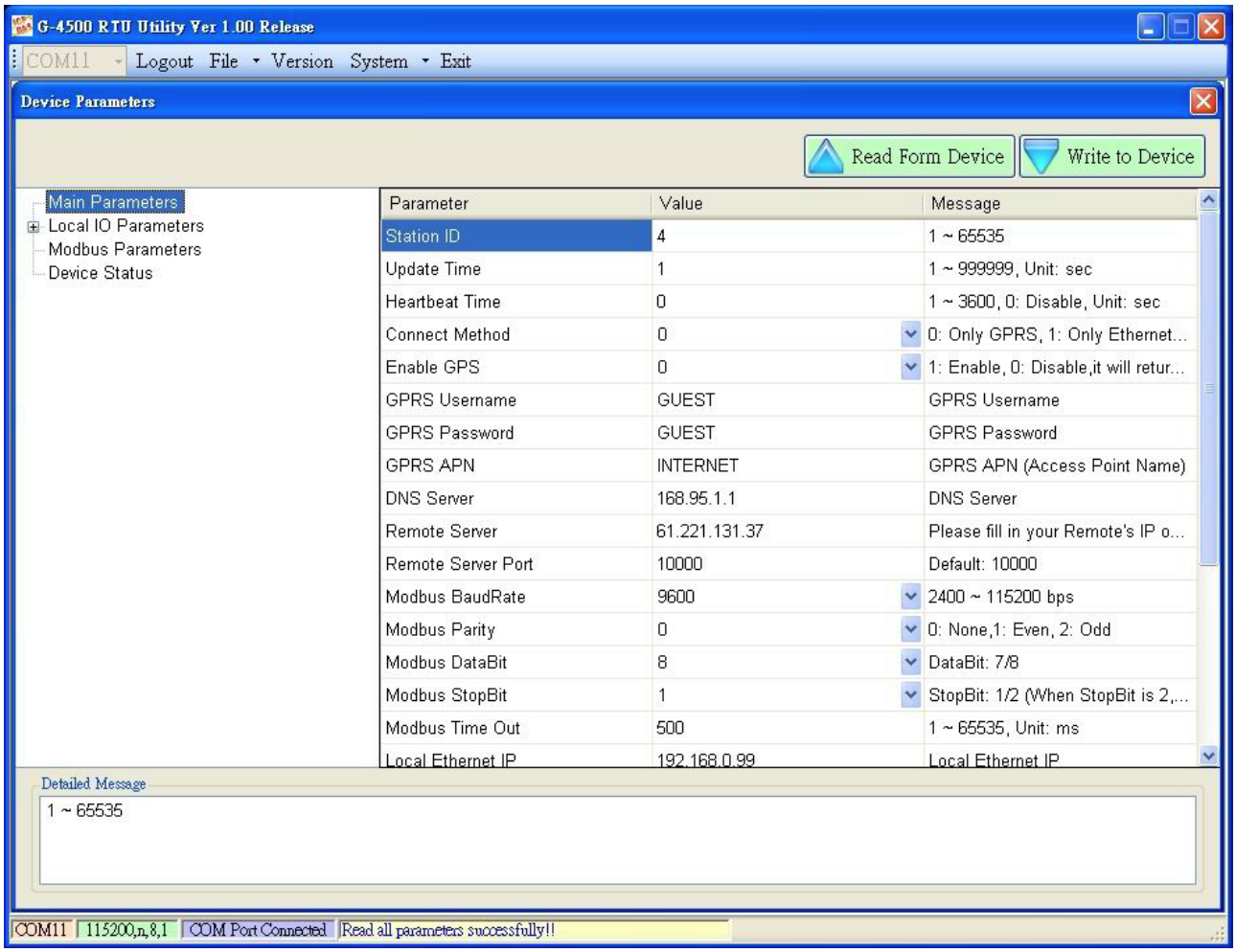
If the PIN or PUK code is correct, the STA led would blank per second. Users can operate other function of G-4500 in this utility.

5.5 Main Parameter

After configuring those pages, press "Write to Device" button to save these settings to G-4513 RTU. Then, reset G-4513 series to enable these settings.

The "Read Form Device" button can help users to read back these settings from G-4513 RTU. In addition, these setting would be read from G-4513 RTU when the "Main Parameter" window pops up from the main menu.

5.5.1 Main Parameters



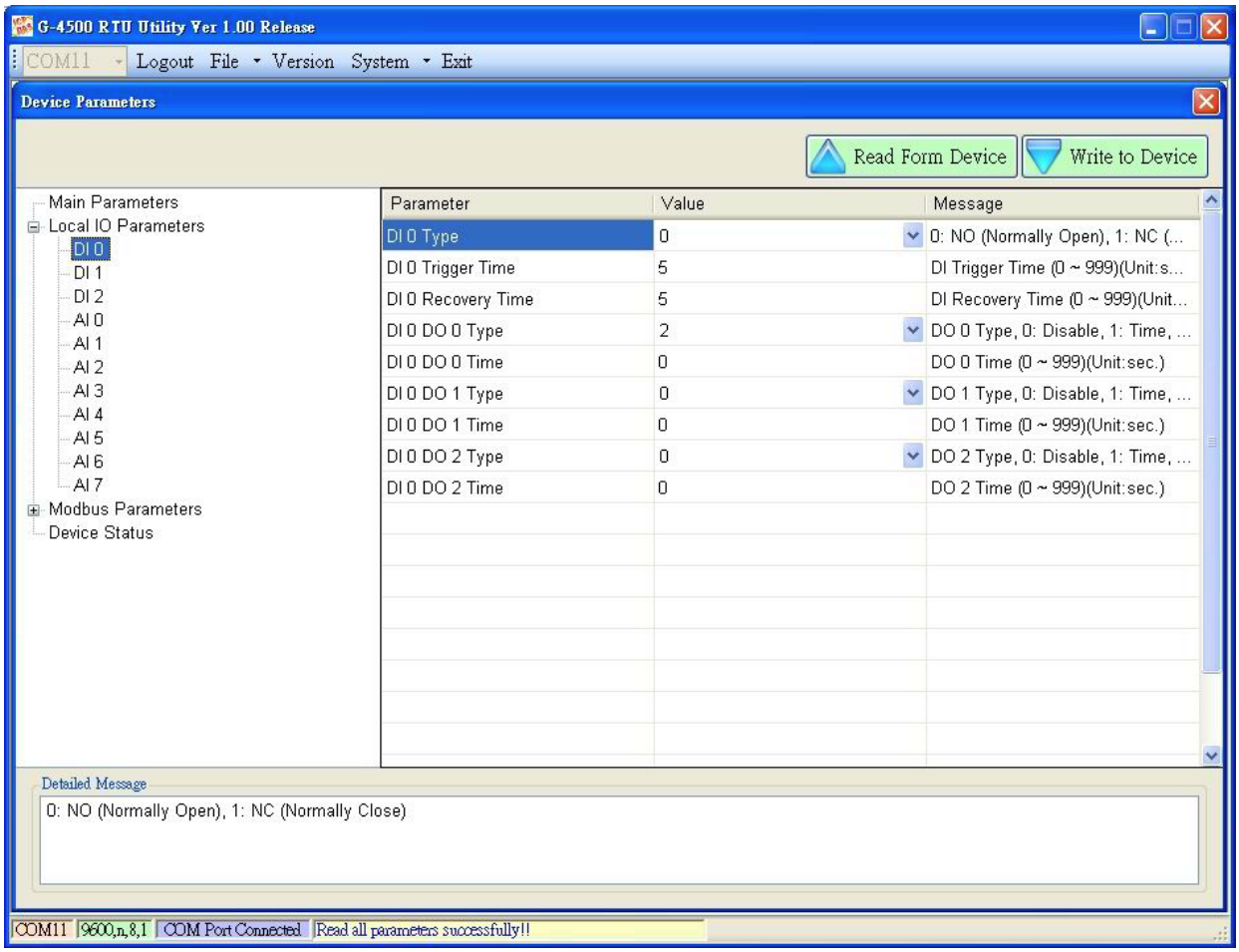
Parameter	Description
Station ID	The device Station ID would be shown in the RTU Center software. It can identify the different G-4513 device in the Remote OPC Server. (Range: 1 ~ 65535)
Update Time	Set report time interval. The G-4513 RTU will send the data to M2M RTU Center by the update time. (Range: 1 ~ 999999, unit: sec)
Heartbeat Time	Set heartbeat time interval. When the G-4513 update

	time is too long to terminate the GPRS connection by ISP, the heartbeat time will report smaller package to keep GPRS connection. (Range: 1 ~ 3600, unit: sec) Note: Some ISP companies would terminate the GPRS connection when the GPRS connection has any data flow for some time.
Connect Method	Four methods are supported for G-4513 RTU to connect to Remote server. 1) Only GPRS 2) Only Ethernet 3) GPRS Master, Ethernet Slave (Redundancy system) 4) Ethernet Master, GPRS Slave (Redundancy system)
Enable GPS	Enable: Enable the GPS function Disable: Disable the GPS function That would report $GPRMC format.
GPRS Username	The setting is important factor when connecting to a GPRS network. Check with your GPRS service provider for details.
GPRS Password	The setting is important factor when connecting to a GPRS network. Check with your GPRS service provider for details.
GPRS APN	The setting is important factor when connecting to a GPRS network. Check with your GPRS service provider for details. Access point name (APN) is the name used to identify a general packet radio service (GPRS) bearer service in the GSM mobile network. The APN defines the type of service that is provided in the packet data connection. You can get this APN by ISP.
DNS Server	The Domain Name System (DNS) is a hierarchical naming system for computers, services, or any resource connected to the Internet or a private network. You must give this value which is DNS server IP if you want to connect remote server by domain name.
Remote Server	Connect to assignable remote server. It can be remote server's IP or remote server's Domain name.
Remote Server Port	Connect to assignable remote server port.
Modbus BaudRate	COM 2 of G-4513 baud rate.

	(Range: 2400 ~ 115200 bps)
Modbus Parity	COM 2 of G-4513 parity. (0: None,1: Even, 2: Odd)
Modbus DataBit	COM 2 of G-4513 data bit. (Data Bit: 7/8)
Modbus StopBit	COM 2 of G-4513 stop bit. (Stop Bit: 1/2) Note: When Stop Bit is 2, the data bit must be 7 bit
Modbus Time Out	Set the timeout of connecting to Modbus Device. (Range: 1 ~ 65535, unit: sec)
Local Ethernet IP	Local Ethernet IP of the G-4513
Local Ethernet Mask	Local Ethernet Mask of the G-4513
Local Ethernet Gateway	Local Ethernet Gateway of the G-4513
Enable LCD	The setting can enable or disable LCD function of G-4513 RTU. If enable, the LCD show information about G-4500 status.
Enable SD	The setting can enable or disable SD function of G-4513 RTU. If enable, the G-4513 record the data into SD card. (*.csv data format)
Interval Time of Modbus command	Users can control interval time of Modbus command by themselves. (0 ~ 1000, unit: ms) 0: Use system default value Other: User define

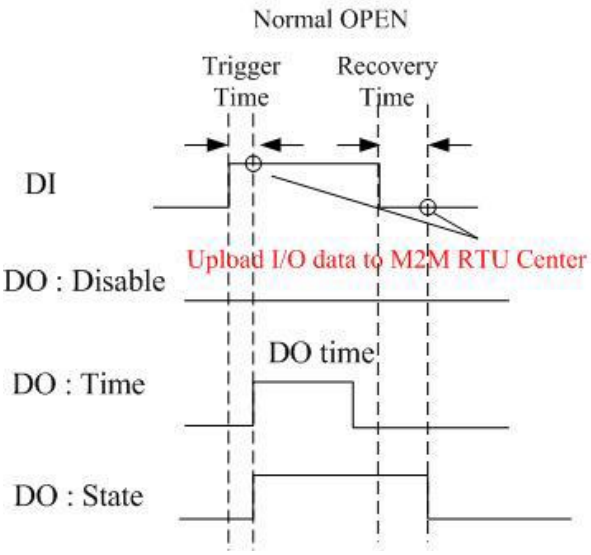
5.5.2 Local I/O Parameters (I/O Linkage)

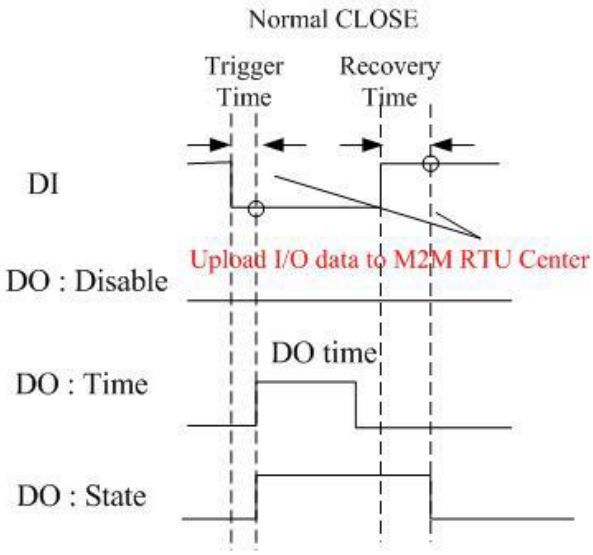
- DI linkage



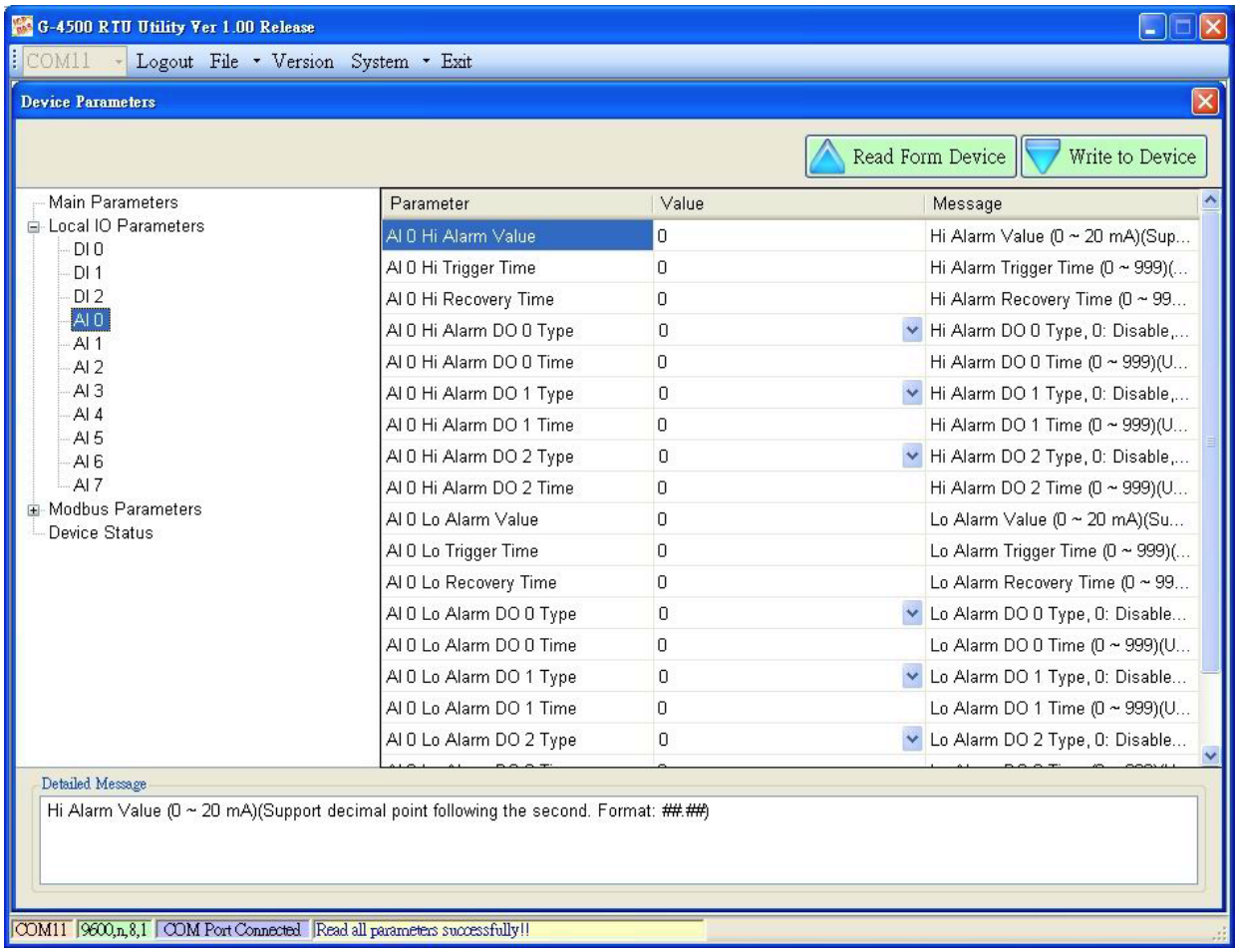
Parameter	Description
DI Type	0: NO (Normally Open), 1: NC (Normally Close)
DI Trigger Time	Range: 0 ~ 999, unit: sec
DI Recovery Time	Range: 0 ~ 999, unit: sec
DO 0 Type	There are 3 types to set: 0: Disable, Disable the DO 0 function. 1: Time, when the DIn has different status, the DO 0 would output during DO 0 Time. 2: State, changes with the DI state
DO 0 Time	DO 0 outputting time (Range: 0 ~ 999, unit: sec)
DO 1 Type	There are 3 types to set: 0: Disable, Disable the DO 1 function. 1: Time, when the DIn has different status, the DO 1 would output during DO 1 Time. 2: State, changes with the DI state

DO 1 Time	DO 1 outputting time (Range: 0 ~ 999, unit: sec)
DO 2 Type	There are 3 types to set: 0: Disable, Disable the DO 2 function. 1: Time, when the DIn has different status, the DO 2 would output during DO 2 Time. 2: State, changes with the DI state
DO 2 Time	DO 2 outputting time (Range: 0 ~ 999, unit: sec)



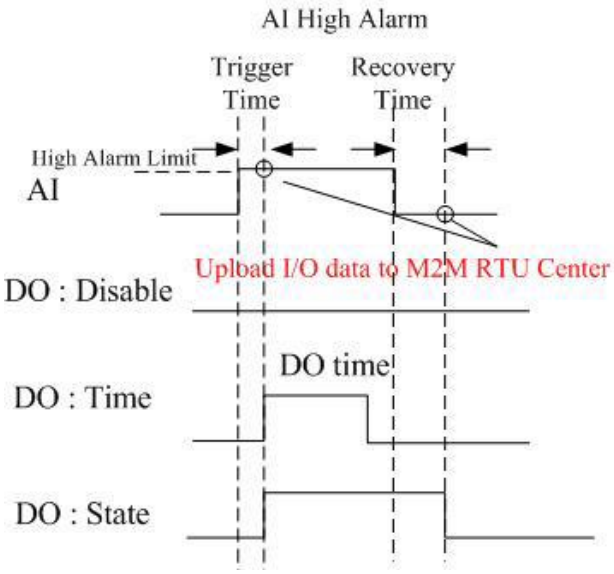


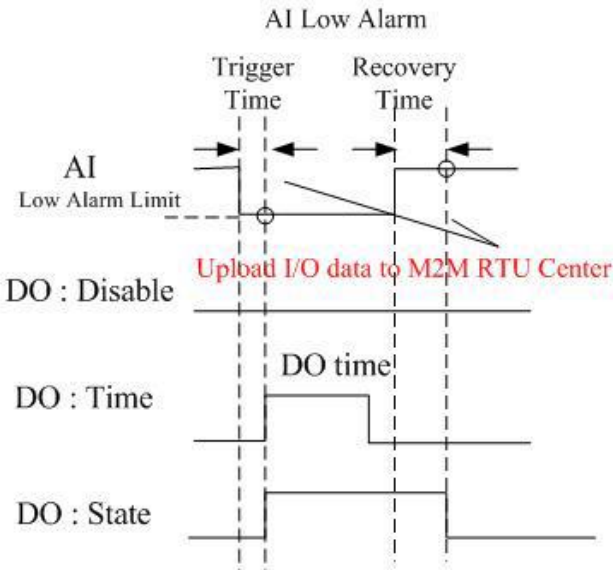
- AI linkage



Parameter	Description
AI n Hi Alarm Value	0 ~ 20 mA
AI n Hi Trigger Time	Range: 0 ~ 999, unit: sec
AI n Hi Recovery Time	Range: 0 ~ 999, unit: sec
AI n Hi Alarm DO 0 Type	There are 3 types to set: 0: Disable, Disable the DO 0 function. 1: Time, when the DIn has different status, the DO 0 would output during DO 0 Time. 2: State, changes with the DI state
AI n Hi Alarm DO 0 Time	DO 0 outputting time (Range: 0 ~ 999, unit: sec)
AI n Hi Alarm DO 1 Type	There are 3 types to set: 0: Disable, Disable the DO 1 function. 1: Time, when the DIn has different status, the DO 1 would output during DO 1 Time. 2: State, changes with the DI state
AI n Hi Alarm DO 1 Time	DO 1 outputting time (Range: 0 ~ 999, unit: sec)
AI n Hi Alarm DO 2 Type	There are 3 types to set:

	0: Disable, Disable the DO 2 function. 1: Time, when the DIn has different status, the DO 2 would output during DO 2 Time. 2: State, changes with the DI state
AI n Hi Alarm DO 2 Time	DO 2 outputting time (Range: 0 ~ 999, unit: sec)
AI n Lo Alarm Value	0 ~ 20 mA
AI n Lo Trigger Time	Range: 0 ~ 999, unit: sec
AI n Lo Recovery Time	Range: 0 ~ 999, unit: sec
AI n Lo Alarm DO 0 Type	There are 3 types to set: 0: Disable, Disable the DO 0 function. 1: Time, when the DIn has different status, the DO 0 would output during DO 0 Time. 2: State, changes with the DI state
AI n Lo Alarm DO 0 Time	DO 0 outputting time (Range: 0 ~ 999, unit: sec)
AI n Lo Alarm DO 1 Type	There are 3 types to set: 0: Disable, Disable the DO 1 function. 1: Time, when the DIn has different status, the DO 1 would output during DO 1 Time. 2: State, changes with the DI state
AI n Lo Alarm DO 1 Time	DO 1 outputting time (Range: 0 ~ 999, unit: sec)
AI n Lo Alarm DO 2 Type	There are 3 types to set: 0: Disable, Disable the DO 2 function. 1: Time, when the DIn has different status, the DO 2 would output during DO 2 Time. 2: State, changes with the DI state
AI n Lo Alarm DO 2 Time	DO 2 outputting time (Range: 0 ~ 999, unit: sec)

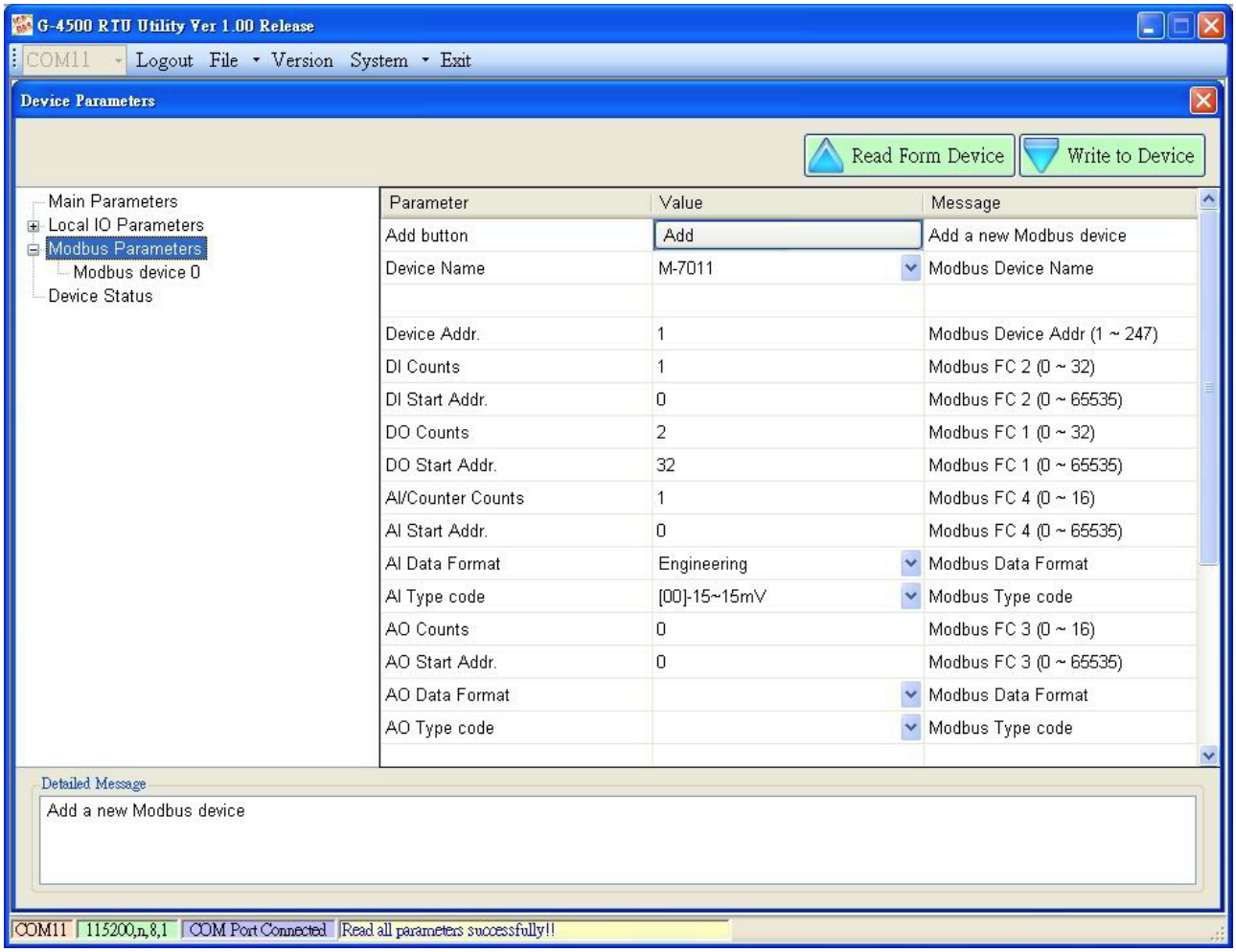




5.5.3 Modbus Parameters

This page can help users to configure the parameters of Modbus devices connected to G-4513 RTU. The maximum number of Modbus devices connected to G-4513 RTU is 10.

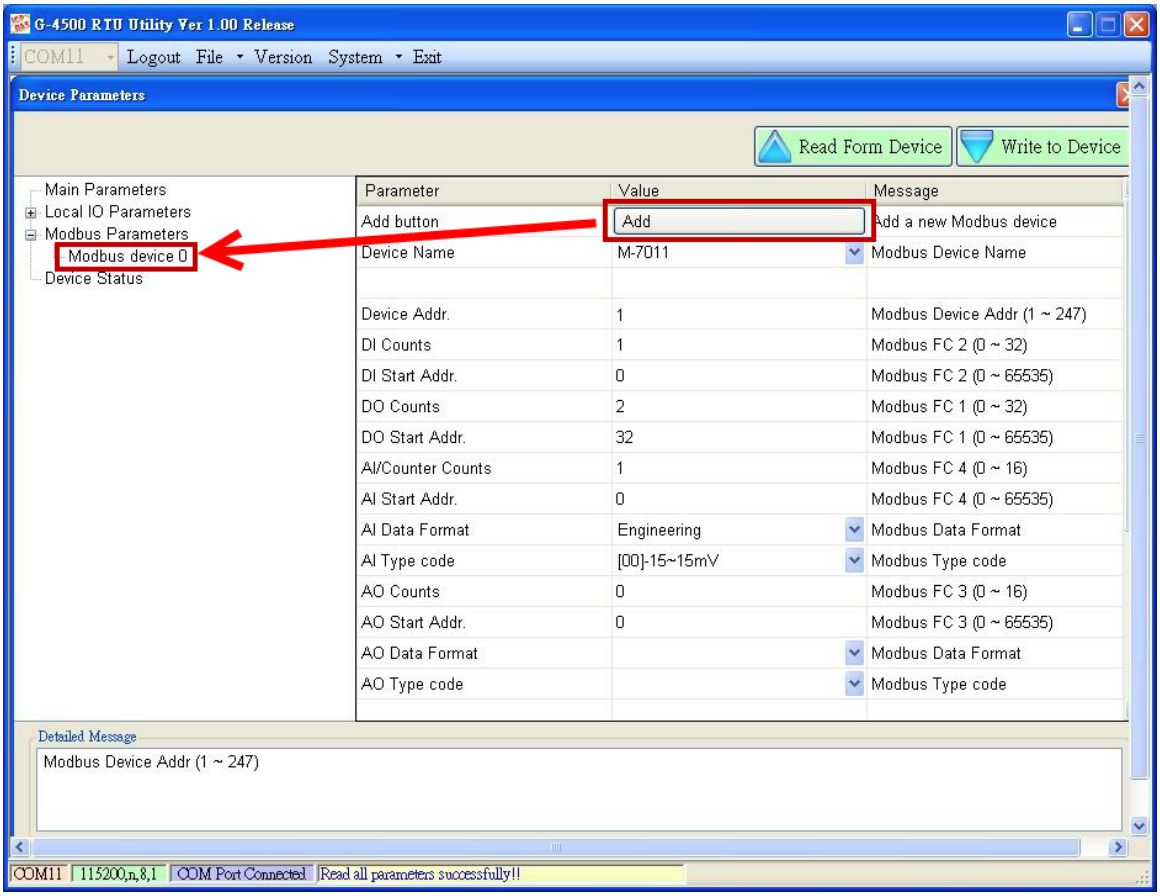
- Add a new ICP DAS's Modbus device



Parameter	Description
Add button	Add a new Modbus device
Device Name	Select Modbus device
Device Addr.	Modbus device address (Range: 1 ~ 247)
DI Counts	Range: 0 ~ 32
DI Start Addr.	Range: 0 ~ 65535
DO Counts	Range: 0 ~ 32
DO Start Addr.	Range: 0 ~ 65535
AI Counts	Range: 0 ~ 16
AI Start Addr.	Range: 0 ~ 65535
AI Data Format	AI Data Format

	Note: If not ICP DAS Modbus product, the value is 255
AI Type code	AI Type code
AO Counts	Range: 0 ~ 16
AO Start Addr.	Range: 0 ~ 65535
AO Data Format	AO Data Format Note: If not ICP DAS Modbus product, the value is 255
AO Type code	AO Type code

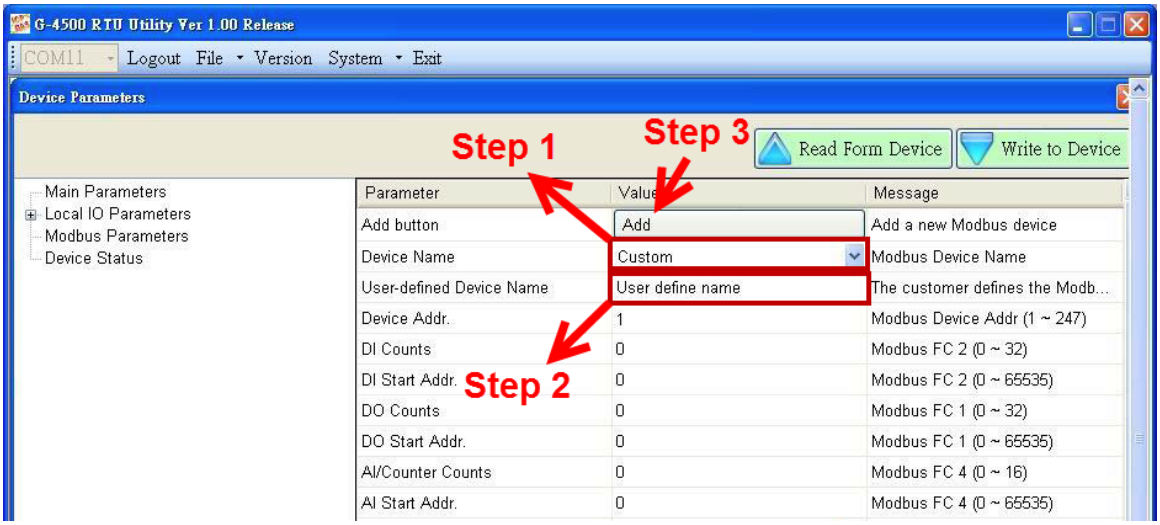
After finishing setting a Modbus Device, press "Add" button to add the Modbus device to G-4513 RTU



- Add other company's Modbus device

Except for Modbus products of ICP DAS, G-4513 RTU can connect to any Modbus RTU devices. Users can follow the steps to do that.

Step 1: Select "Custom" in Device Name item
Step 2: Input your device name in User-defined Device Name item (Max. 20 character)
Step 3: Press "Add" button

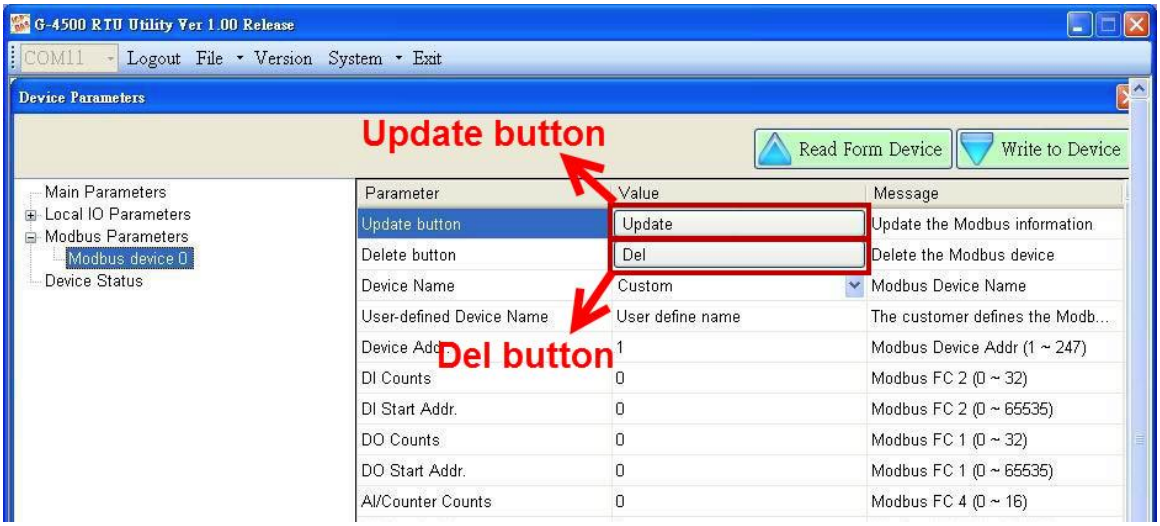


- Modify a Modbus device

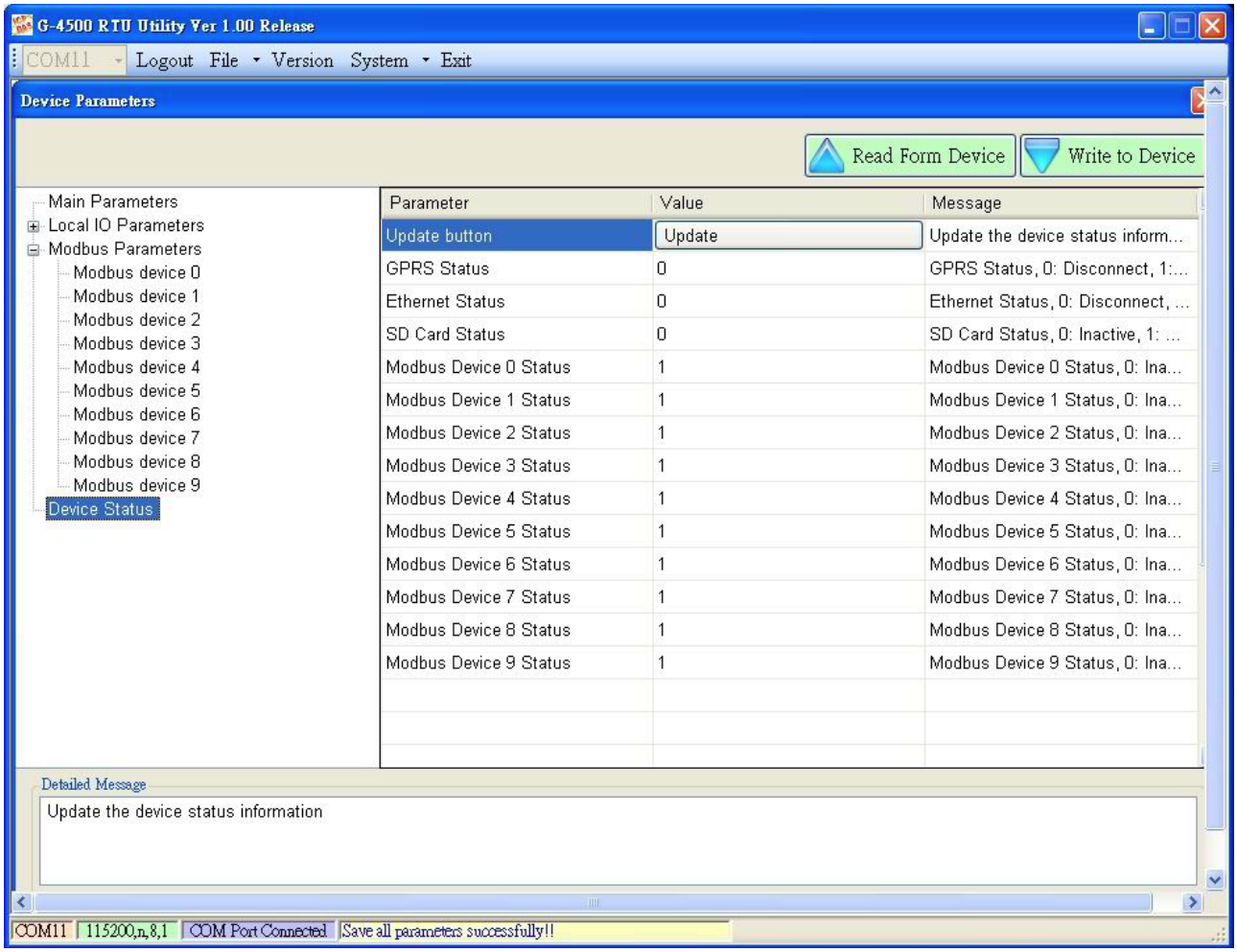
Step 1: Select the Modbus device you want to modify in the left tree windows.
Step 2: Select the Update button after modifying your parameters

- Delete a Modbus device

Step 1: Select the Modbus device you want to delete
Step 2: Select the Del button.



5.5.4 Device Status



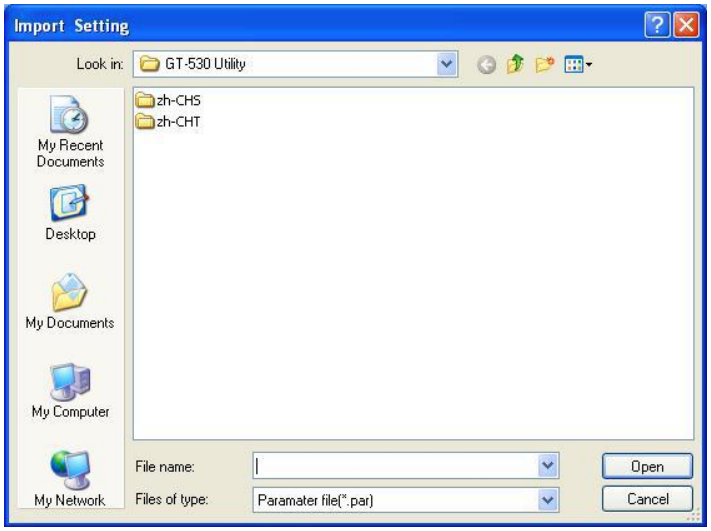
Parameter	Description
Update button	Update the device status information
GPRS Status	0: Disconnect 1: Connect
Ethernet Status	0: Disconnect 1: Connect
SD Card Status	0: Inactive 1: Active
Modbus Device n Status	n: 0 ~ 9 0: Inactive 1: Active

5.6 Import/Export Parameters

Users can use the import and export functions from the menu bar. This function would be enabled when the "Main Parameter" window is open. The explanation is below:

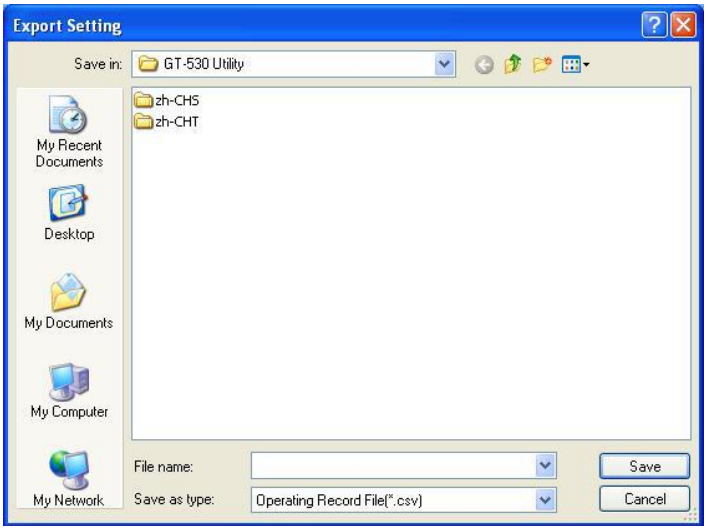
- Import Parameters

This function is used for reading back the setting of device parameters from .par file and displaying in "Main parameter" window. When pressing "import" button, a file selection window would pop up for users to choice the .par file.



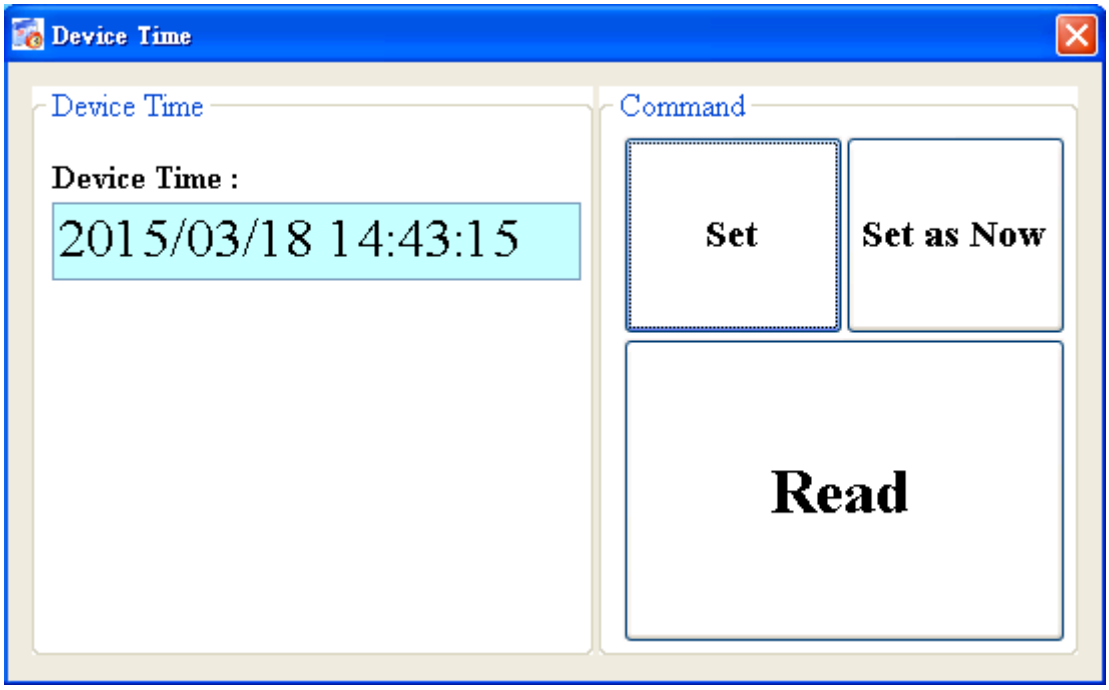
- Export Parameters

The function is used for saving the setting of "Main parameter" window as .par file. When pressing "Export" button, a file selection window would pop-up for users to save the setting as .par file in specific path.



5.7 Device Time

This window provides the function to inquire and modify the time of G-4513 RTU. Besides, the next and last report times are also shown. The text field operation is below.



A. Text field

(1) Device time: show the time of G-4513 RTU. Users also can change the time in this field to key in the specific time.

B. Operation

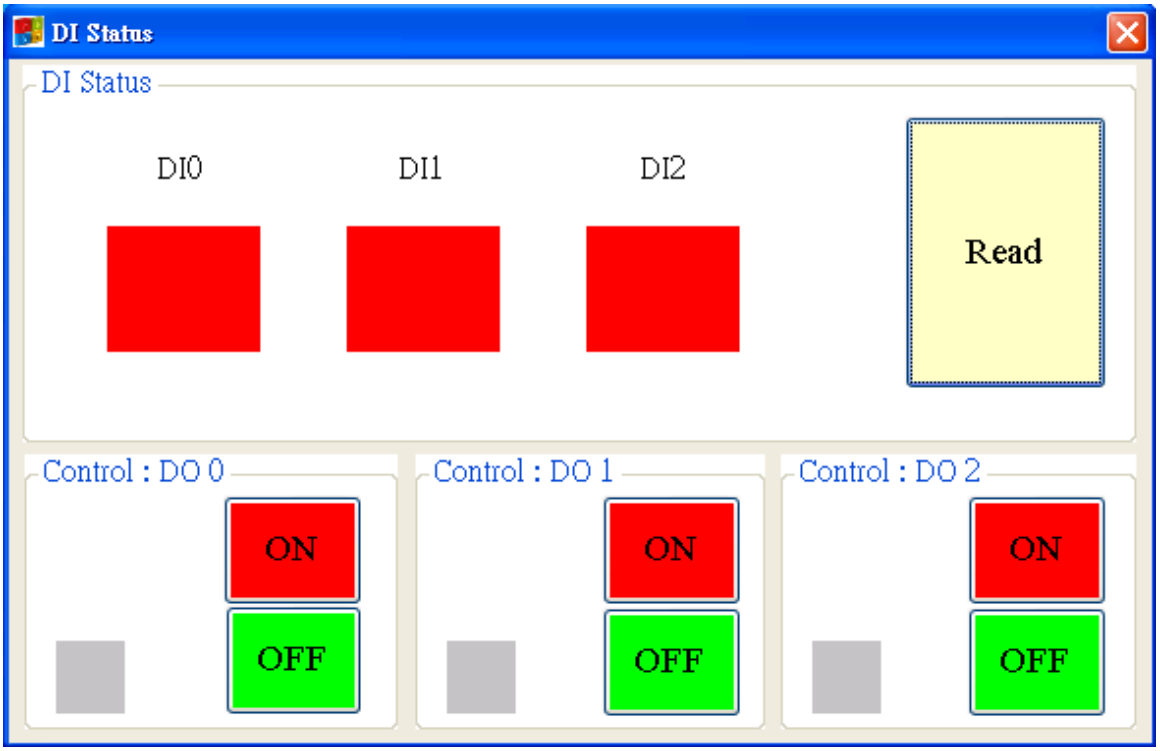
(1) Set as Now: Set the PC time to G-4513 RTU. After setting the time successfully, the information of G-4513 RTU time.

(2) Set: Set the G-4513 RTU time according the "Device Time" field. After setting the time successfully, the information of G-4513 RTU time would be updated.

(3) Read: Read back the time of G-4513 RTU, the next report time.

5.8 DO Control/DI Status

This page provides the function for controlling DO and reading the status of DIs in the Labs.



A. Text field

(1) DI0 ~ DI2、DO0~DO2：

- ✧ Grey: the voltage logic is high
- ✧ Red: the voltage logic is low

B. Operation

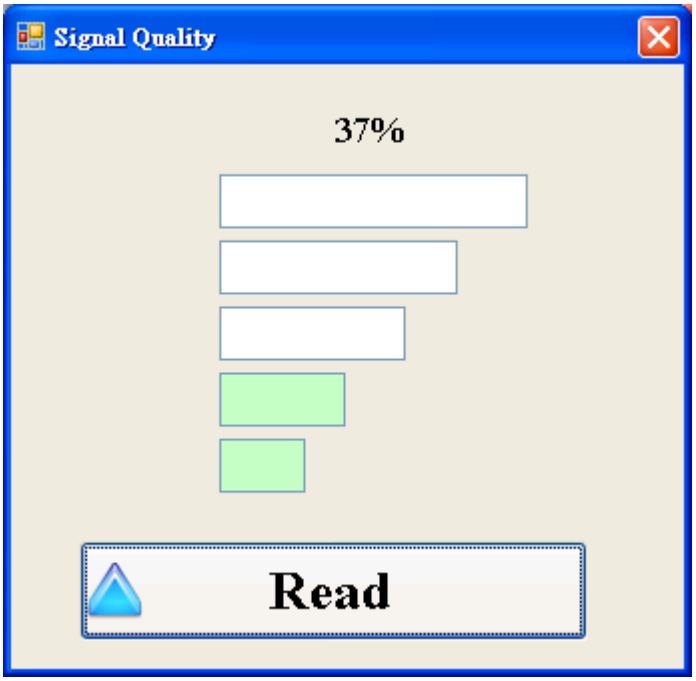
(1) Read: Read back the status of DI0 ~ DI2 and DO0 ~ DO2 from G-4513.

(2) DO0 ~ DO2 ON: Set the DO output on

(3) DO0 ~ DO2 OFF: Set the DO output off

5.9 Signal Quality

This window can show 2G/3G signal strength. It is used for users to know the 2G/3G signal in Local site.



A. Text field

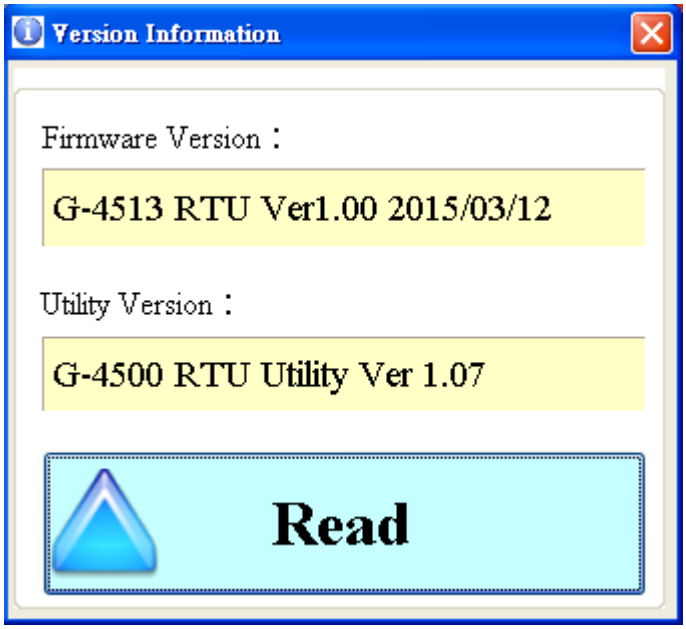
(1) The strength is divided into 5 sections shown in percentage.

B. Operation

(1) Read: Read the 2G/3G signal strength.

5.10 Version

Press "Version" in tool menu, and the window would show the version of Utility and firmware.



A. Text field
   (1) Firmware version: Show the version information of G-4513 RTU firmware
   (2) Utility version: Show the version information of G-4500 RTU Utility

B. Operation
   (1) Read: Read these information from G-4513 RTU

5.11 System

"System" menu item provide recovering factory setting and resetting G-4513 RTU functions.

- Recover to Factory Settings

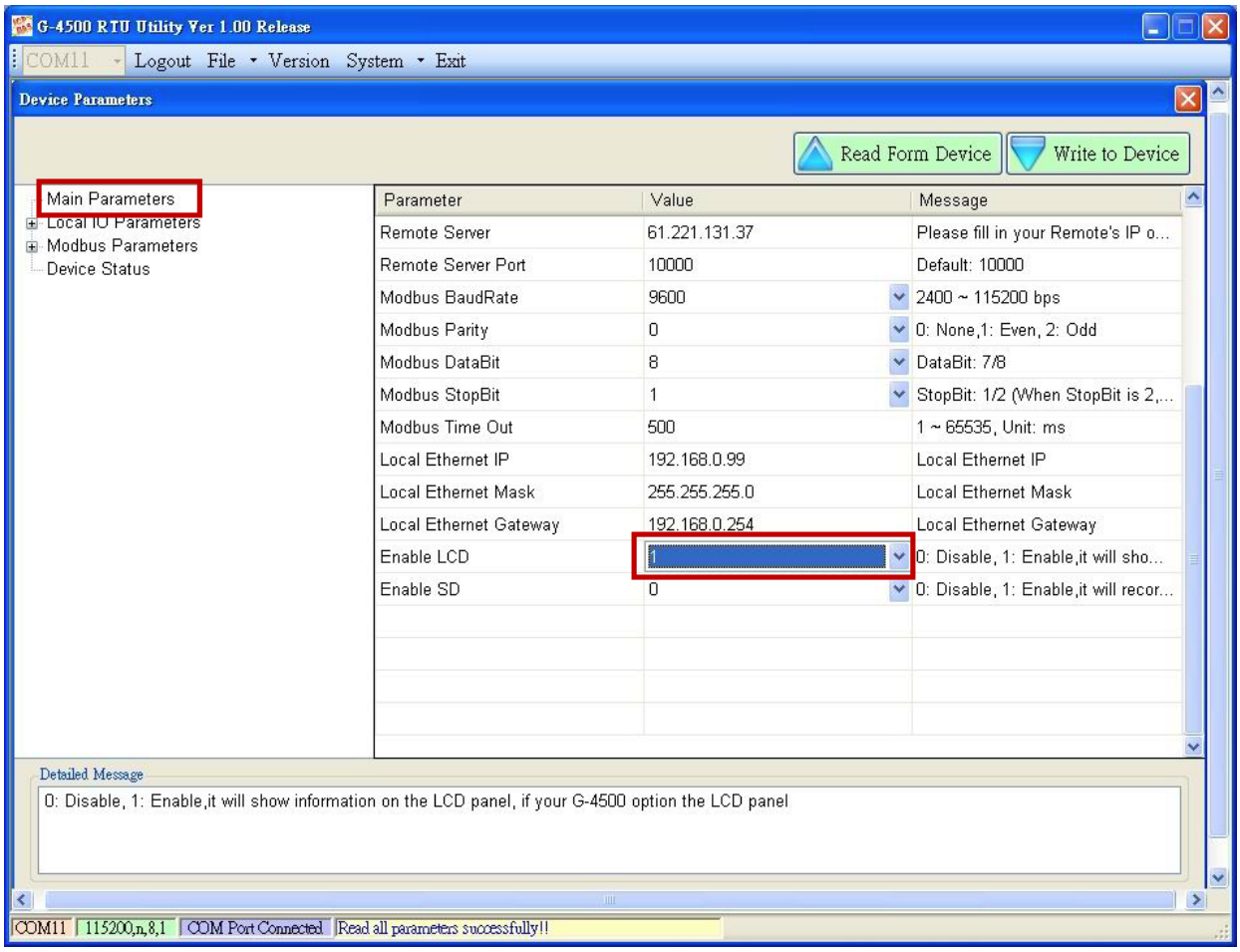
The function is used to recover G-4513 RTU as factory settings including password. Select the Recover to Factory Settings. About the factory settings, please refer Appendix A.

- Reset G-4500

The function is used to reset G-4513 by software. Select "Rest G-4500" button to reset G-4513.

5.12 LCD Information

If users choice the G-4513series with LCD display, they can select the LCD enable in the G-4500 RTU utility. There is system information of G-4513 RTU will be shown in the LCD panel.



- The LCD panel of G-4513 series

- Display information

Parameter	Description	
Station ID:	The device Station ID would be shown in the RTU Center software. It can identify the different G-4500 device in the Remote OPC Server. (Range: 1 ~ 65535)	
Utime:	Report time interval. The G-4513 RTU will send the data to M2M RTU Center by the update time. (Range: 1 ~ 999999, unit: sec)	
Only GPRS / Only Ethernet / GPRS(M), Eth(S) / Eth(M), GPRS(S)	Four methods are supported for G-4513 RTU to connect to remote server. 1) Only GPRS 2) Only Ethernet 3) GPRS Master, Ethernet Slave (Redundancy system) 4) Ethernet Master, GPRS Slave (Redundancy system)	
GIP / EIP	The G-4513 GPRS or Ethernet IP	
GSM ¥	**Status**	**Description**
	¥	2G/3G signal quality: 20%
	¥	2G/3G signal quality: 40%
	¥	2G/3G signal quality: 60%
	¥	2G/3G signal quality: 80%
	¥	2G/3G signal quality: 100%
SIM Card:	**Status**	**Description**
	OK	SIM card is OK
	SIM Card: Err 1	SIM PIN. Module is waiting for SIM PIN
	SIM Card: Err 2	SIM PUK. Module is waiting for SIM PUK
	SIM Card: Err 3	PH_SIM PIN.
	SIM Card: Err 4	PH_SIM PUK.
	SIM Card: Err 5	SIM PIN2.
	SIM Card: Err 6	SIM PUK2.
	SIM Card: Err 7	SIM Card Error.
	SIM Card: Err 8	SIM Card not inserted.
	SIM Card: Err -5	Timeout
Date:	YYYY/MM/DD	
Time:	HH:MM:SS	

6. Data Logger

G-4513 RTU provides an external SD interface. These local I/O and Modbus data are recorded in SD memory card for one day in a single file.

- The naming rule of logger file name

The file of I/O data logger is csv type. The naming rule is according to the time of creating file. The description is as follows.

The format of file name: YYMMDDXX.csv

1. YY: Year (2000 ~ 2099)
2. MM: Month (01 ~ 12)
3. DD: Day (01 ~ 31)
4. XX: Serial number (00 ~ 99)

- The data format of the data logger file

The content of the file apply comma char to separate the different field. The first row data is the name of the fields. After the first row data, it is I/O data. The format of I/O data is date, time, local I/O, station ID, update time, Modbus data and GPS data. Users can refer the following complete example to understand that.

Date	StationID	UpdateTime	GPS	DI0	DI1	DI2
20150101 120000	1	5	$GPRMC,160004,…	1	1	1
20150101 120005	1	5	$GPRMC,160009,…	1	1	1

DO0	DO1	DO2	AI0	AI1	AI2	AI3	AI4	AI5	AI6	AI7	AI Type	AI DataFormat
0	0	0	6	6	6	6	6	6	6	6	26	1
0	0	0	6	6	6	6	6	6	6	6	26	1

Module [M-7060] Addr.	DI0	DI1	DI2	DI3	DO0	DO1	DO2	DO3
1	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0

Tips & Warnings

If the SD free space is less than 100 MB, the early files would be deleted by system until the free space is more than 100MB.

7. Revision History

Revision	Date	Author	Description
1.0.0	2015/03/19	William	Release version

Appendix A. G-4513 RTU Factory Settings

The following table lists is the default value of system parameters.

Parameter	Default value
Station ID	1
Update Time	5
Heartbeat Time	0
Connect Method	1
Enable GPS	0
GPRS Username	GUEST
GPRS Password	GUEST
GPRS APN	INTERNET
DNS Server	168.95.1.1
Remote Server	1.2.3.4
Remote Server Port	10000
Modbus BaudRate	9600
Modbus Parity	0
Modbus DataBit	8
Modbus StopBit	1
Modbus Time Out	500
Local Ethernet IP	192.168.255.1
Local Ethernet Mask	255.255.0.0
Local Ethernet Gateway	192.168.0.254
Enable LCD	0
Enable SD	0
Interval Time of Modbus command	0