User Manual

Version 1.0.0 March 2017

GTP-500M

(2G/3G Intelligent Multi-Function Controller)

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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 encounter any problems while operating this device, feel free to contact us via mail at: service@icpdas.com . We guarantee to respond within 2 working days.

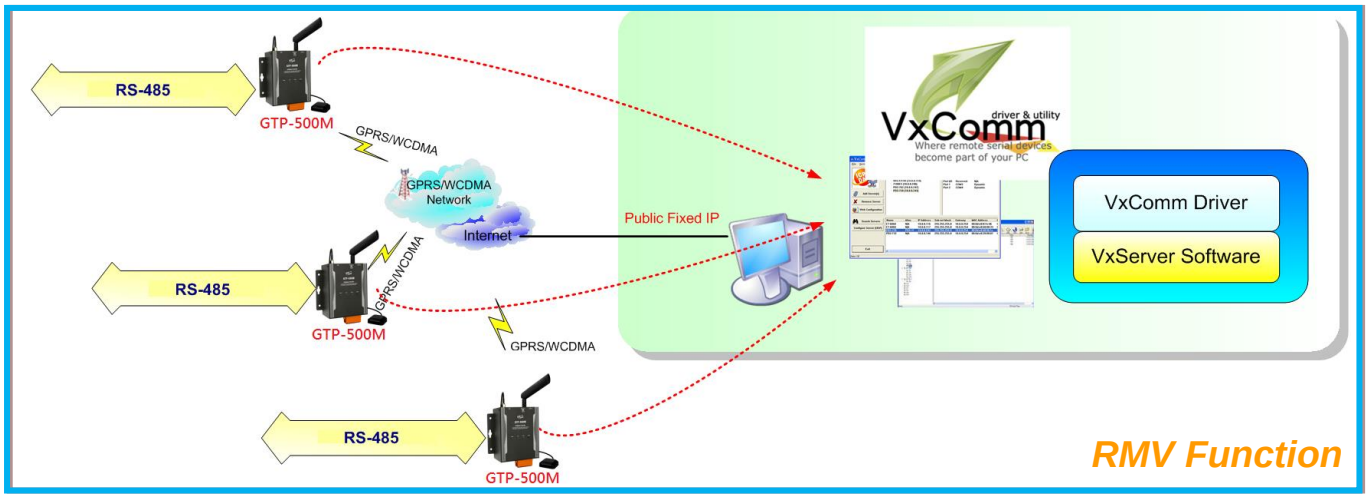
1. Introduction

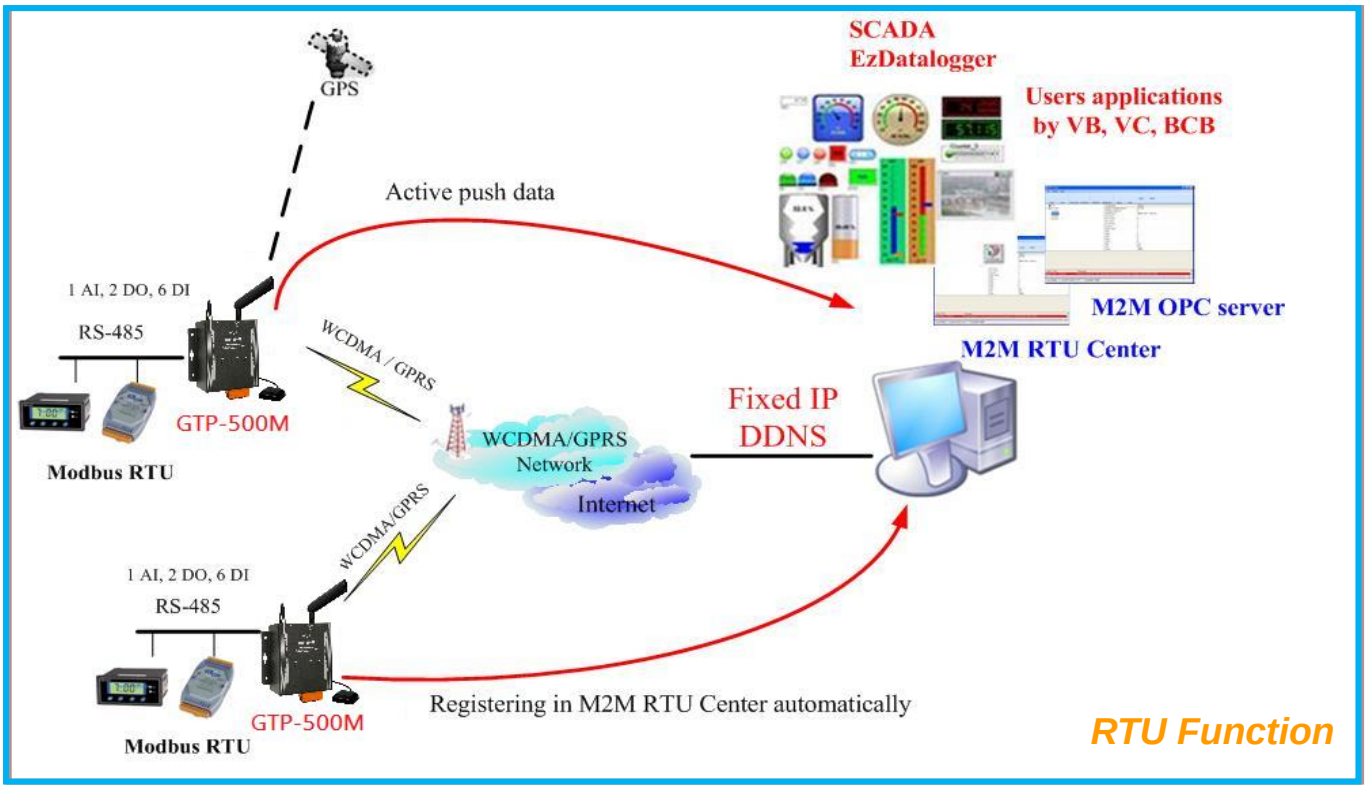
The GTP-500M is an intelligent multi-function Controller, with high cost-effective cost, for industry applications. You can choose different firmware and expansion I/O board for your demands.

2G/3G Gateway. It is designed for linking RS-232/485 devices to a GPRS/WCDMA network. The user-friendly Axiom Driver/Utility and VxServer allow users to easily turn the built-in COM ports of the GTP-500M into standard COM ports on a PC. By virtue of its protocol independence, a small-core OS and high flexibility, the GTP-500M is able to meet the demands of every network-enabled application.

2G/3G Remote Terminal Unit. It can be used in M2M application fields to transfer the local I/O and Modbus device's data via WCDMA/GPRS by the defined period or DI/AI triggers. Moreover, there are M2M API tool and OPC server for engineers to develop the WCDMA/GPRS applications by VB, VC or SCADA development tools conveniently without any IP address management effort.

2G/3G SMS and Voice function. It provides the sound alarm application with the pre-defined voice files. In addition, the DTMF function of the GTP-500M is for the applications with the keypad of phones to control the local I/O. It can be a remote control and alarm system allowing you to use your mobile phone to monitor and control your business from any location. Its alarm facilities provide a flexible way to distribute critical alarm information to any number of mobile phone users.





1.1 Features

- **Hardware**
  - Supports input voltage 10~30V_{DC}.
  - Power Reverse Polarity Protection
  - Support GPRS 850/900/1800/1900 MHz frequency
  - Support WCDMA 850/900/1900/2100 MHz frequency
  - Expansion board for different demands.

- **Software**
  - Built-in Watch-dog Function.
  - Support 3 different functional firmware.
  - Intelligent multiport serial to 2G/3G gateway(RMV).
    - Support remote maintenance PLC devices that used serial communication as Siemens S7-200 series, Siemens S7-300 series, WP-8000, LP-8000, iP-8000 and XP-8000.
    - Support GPRS/WCDMA network automatic re-connection function.
    - Virtual COM Extend Real COM Ports via GPRS/WCDMA.
    - 1 x RS-485 port for Virtual COM. 1 x Utility port for Configuration
  - Intelligent 3G Remote Terminal Unit (RTU).
    - Support Modbus RTU protocol to connect to Max 3 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.
    - Can be the 3G/GPRS I/O devices (Expansion board only).
    - Support data transferring by E-mail.
    - Local I/O linkage function to make the simple local control.
  - Intelligent 3G SMS/Voice alarm controller (SMS).

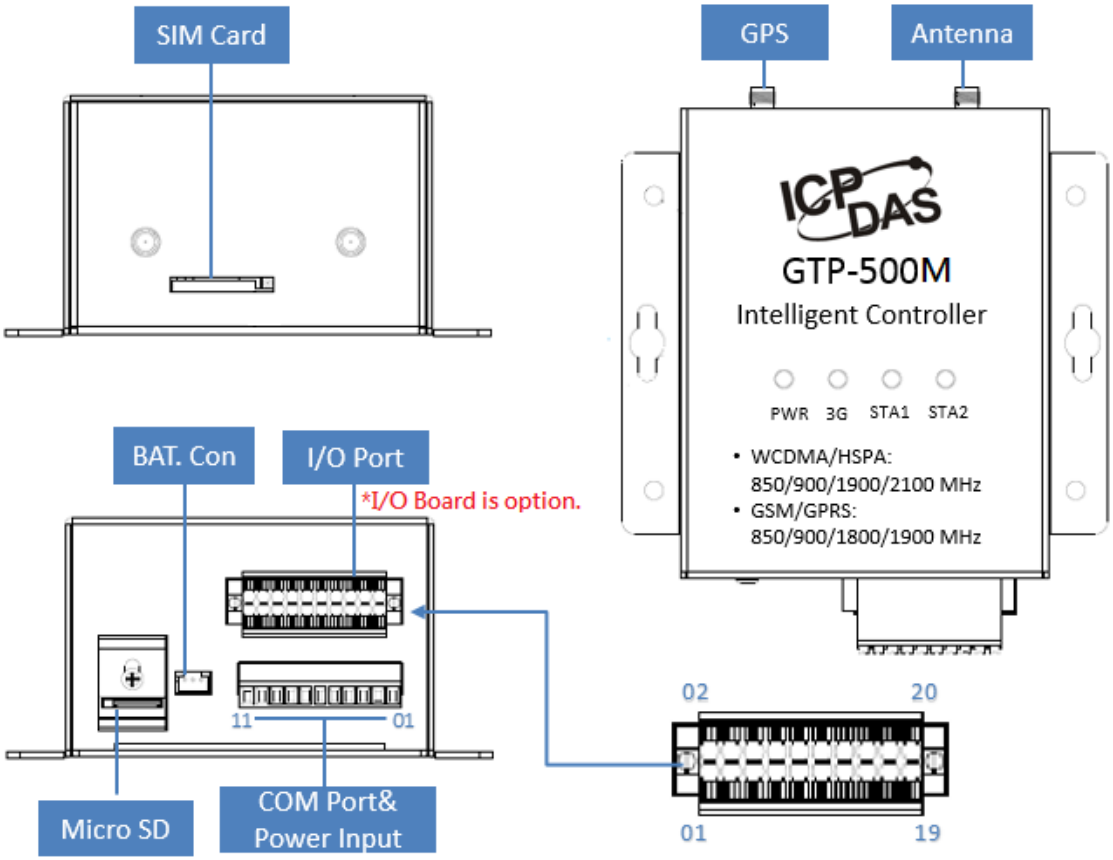
- Support SMS DBS software (http://m2m.icpdas.com/SMS_DBS.html).
- Identify ASCII or Unicode SMS Automatically.
- Support max. 140 ASCII Characters.
- Support max. 70 Unicode Characters.
- Built-in ASCII Commands and SMS tunnel Communication Modes.
- Max. 10 Default Phone Numbers.
- Support SMS setting and control.
- DO control by dual-tone multi-frequency (Expansion board only).
- Digital input support NC (normal close)/NO (normal open)/Counter modes (Expansion board only).
- Periodic SMS report.
- Voice Alarm and SMS triggered by DI trigger or exceed AI/Counter preset limits (Expansion board only).
- Support simple command to send SMS via RS232.

1.2 Specification

Module	GTP-500M
System	
CPU	ARM microprocessor
WDT(Watchdog)	Yes
2G System	
Frequency Band	850/900/1800/1900 MHz
Power Class	Class 4 (2 W @ 850/900 MHz)
	Class 1 (1 W @ 1800/1900 MHz)
3G System	
Frequency Band	850/900/1900/2100 MHz
Power Class	Class 3(250mW @ WCDMA/HSPA)
Serial Ports	
Utility Port(COM 1)	RS-232: TxD, RxD, GND
COM2	RS-485: D+, D- (use for communication with other devices)
Baud Rate	2400、4800、9600、19200、38400、57600 and 115200 bps
Power	
Protection	Power reverse polarity protection
Frame Ground Protection	ESD, Surge, EFT, Hi-Pot
Required Supply Voltage	+10V_{DC} ~ +30V_{DC}
Mechanical	
Casing	Metal
Dimensions(W x L x H)	117mm x 137mm x 58mm
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-30 to +80°C
Relative Humidity	5 to 95% RH, Non-condensing
Input/output	
Channel Number	Options

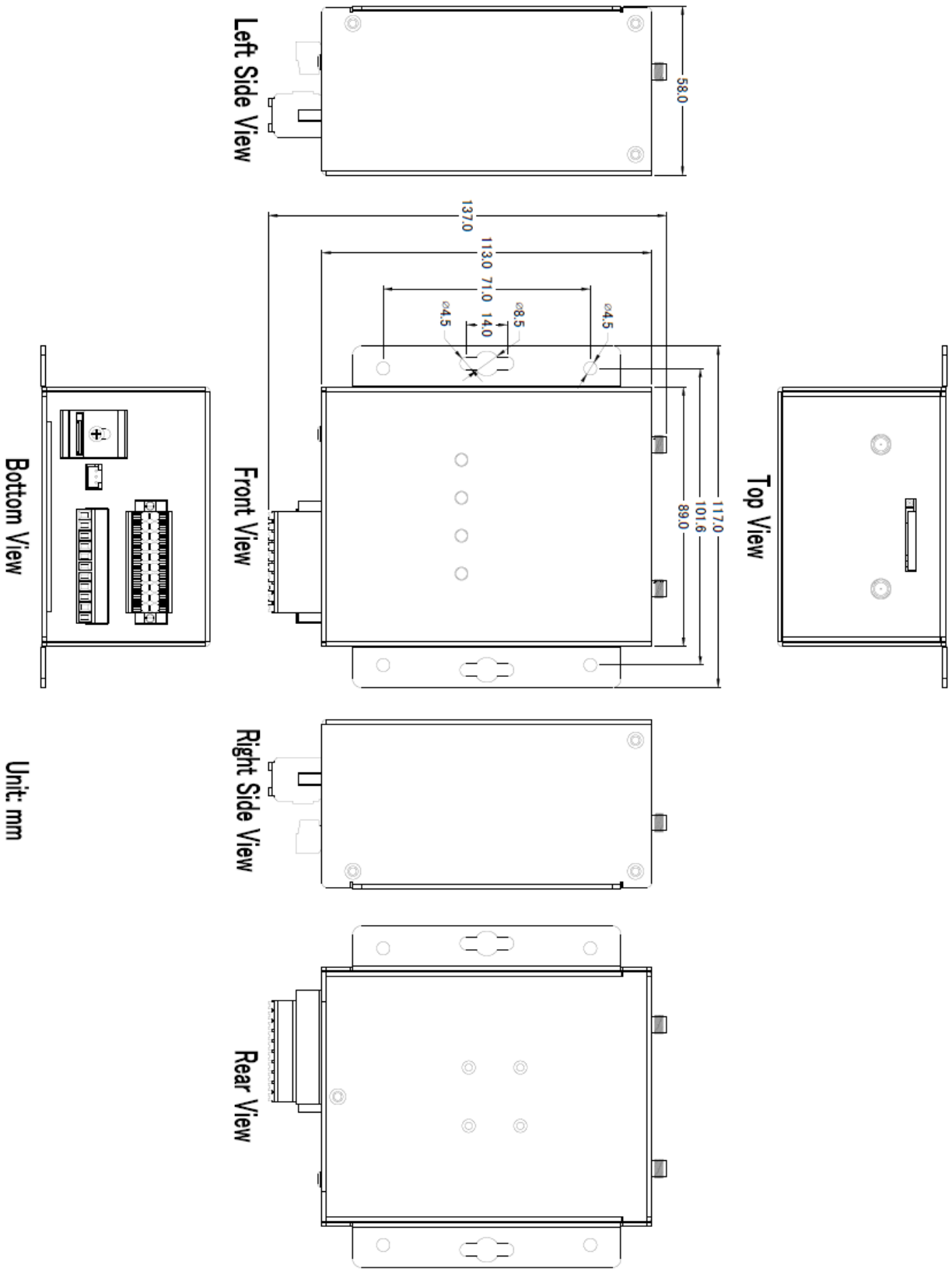
2. Getting Started

■ Appearance and Pin Assignments



COM Port and Power Input		
Pin		**Description**
Frame Ground	**1**	F.G
Power Input: +10VDC ~ +30VDC	**2**	DC.GND
	3	DC.+Vs
Reset	**4**	RST-
	5	RST+
COM 2 RS-485	**6**	D-
	7	D+
COM 1 Utility Port RS-232	**8**	TxD
	9	RxD
	10	GND
Initial	**11**	Init

■ Dimensions



2.1 LED Indicator

There are four LED indicators to help users to judge the various conditions in the GTP-500M. The description is as the following:

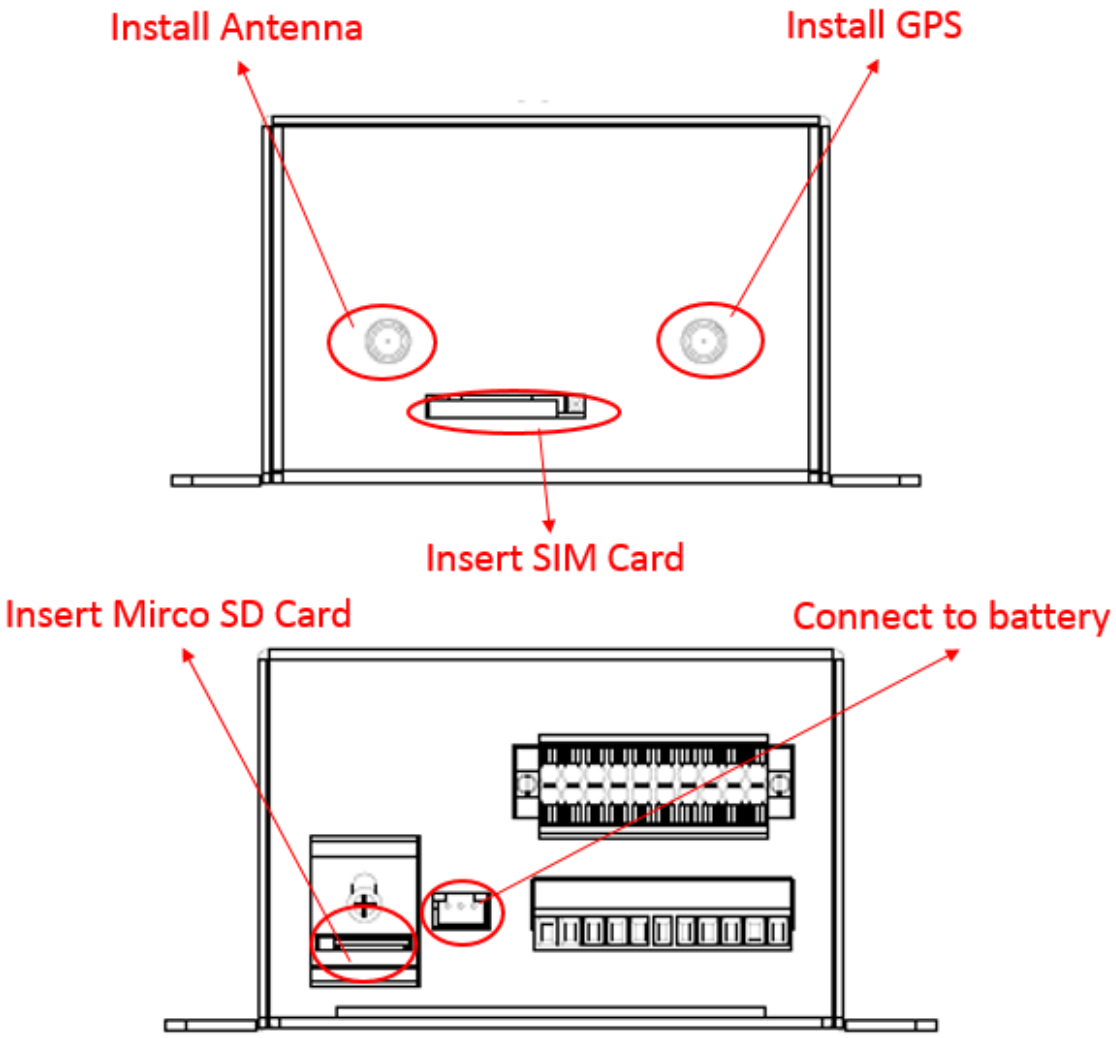
LED Name	LED Status	LED Description
PWR (Red)	ON	The power of the module is ON
	OFF	The power of the module is OFF
3G (Green)	Blinking pre 3 sec	3G modem normal(2G network)
	Twinkling twice per 3 sec	3G modem normal(3G network)
	OFF	3G modem fail
STA1 (Green)	Reserved	
STA2 (Orange)	Blinking (1 sec)	Connected
	Blinking (50 ms)	Wrong PIN/PUK code

2.2 Installation

(1) Install antenna.

(2) Plug in the normal SIM card (Before apply the SIM card, confirm it is OK by mobile phone.)

(3) Connect the DC.+VS and DC.GND to the power supply or battery.



Tips & Warnings

The product's enclosure may be with high temperature, do not touch before cooling or else will be burned.

3. Installing the Utility

User can set the parameters or see the debug information with the Utility. It needs the runtime environment with .NET Framework 2.0 or above to execute the in the PC. You can download the .NET Framework 2.0 and .NET Framework 3.5 on the Microsoft website. Please download and install it before you use the utility.

◆Microsoft .NET Framework 2.0

https://www.microsoft.com/en-us/download/details.aspx?id=1639

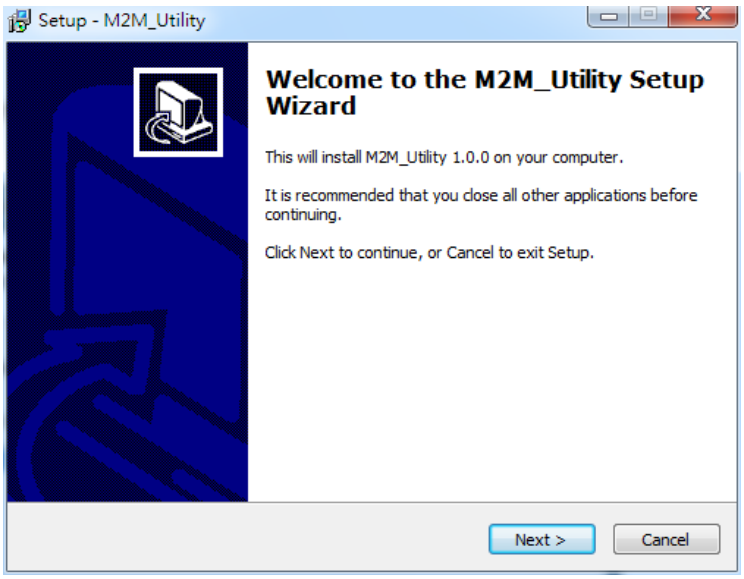
◆Microsoft .NET Framework 3.5

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

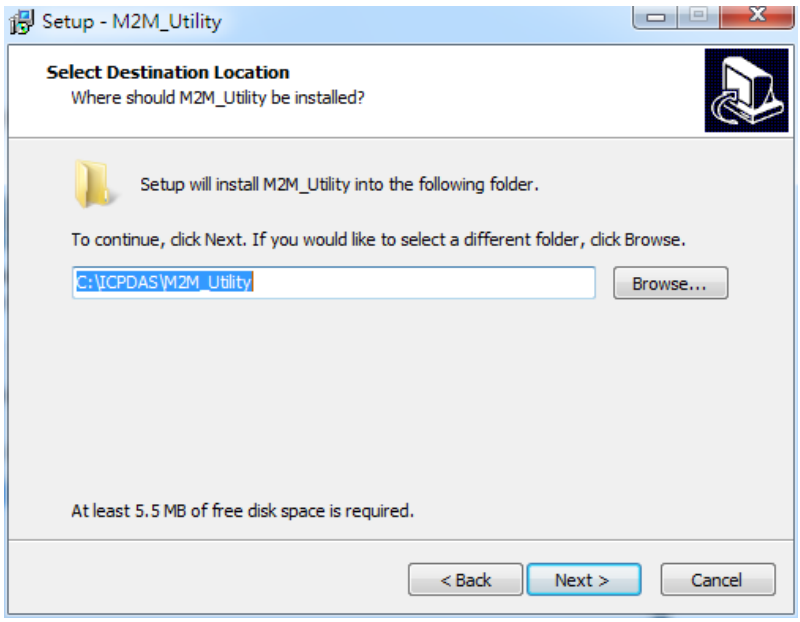
3.1 Installing the M2M Utility

Plug in the shipment CD into the PC, Execute M2M_Utility_Setup_Vx.xx.exe. The installation figure is as follows:

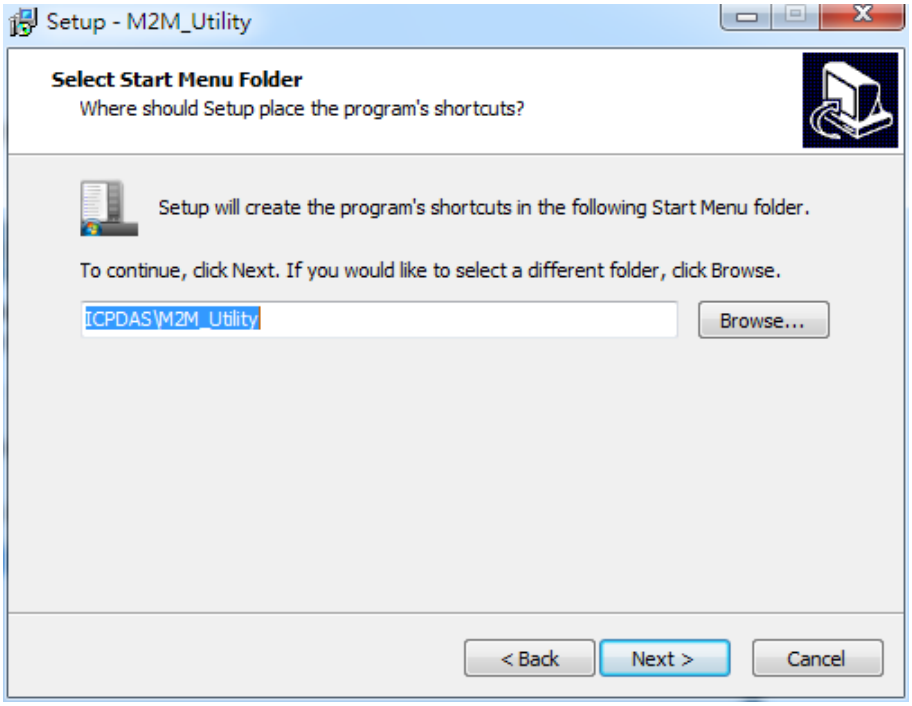
(1)Press “Next” to start the installation procedure.



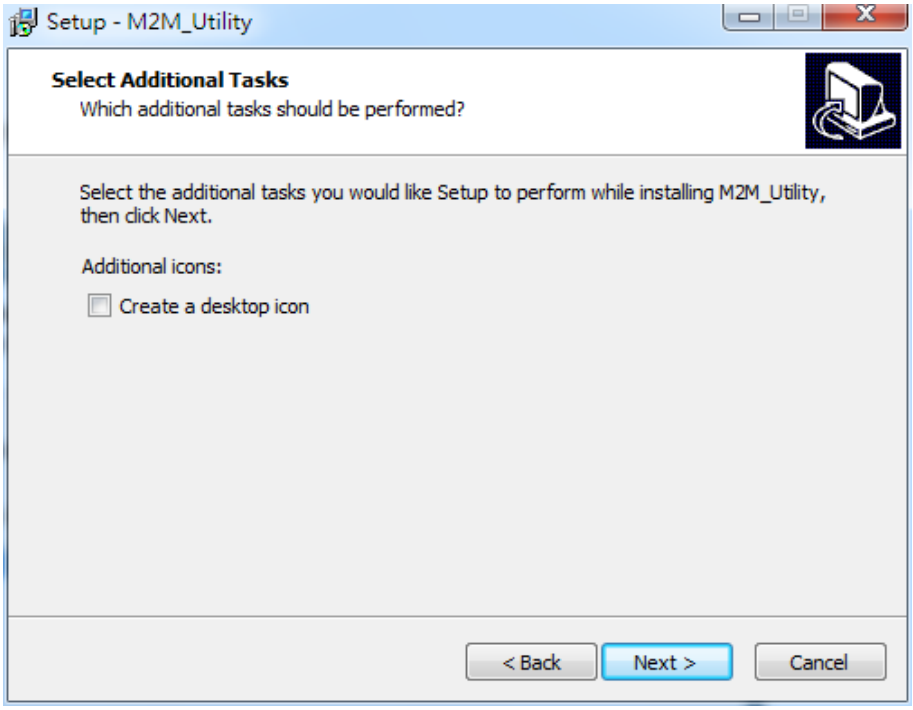
(2)Select the installation path. The default path is ” C:\ICPDAS\ M2M_Utility”. Press “Next” to the next step.



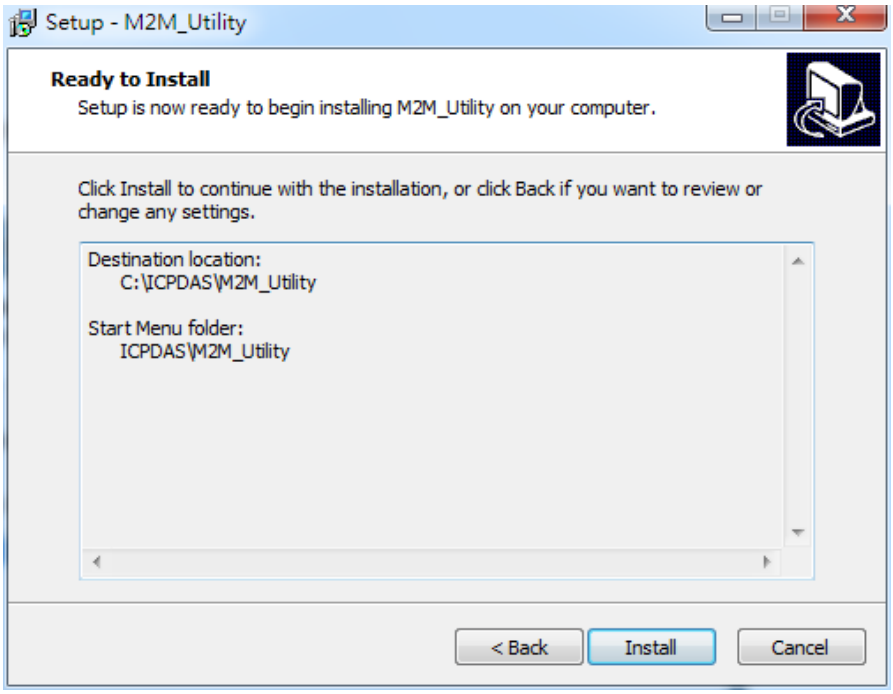
(3)Select the “Start Menu Folder”, Press “Next” to the next step.



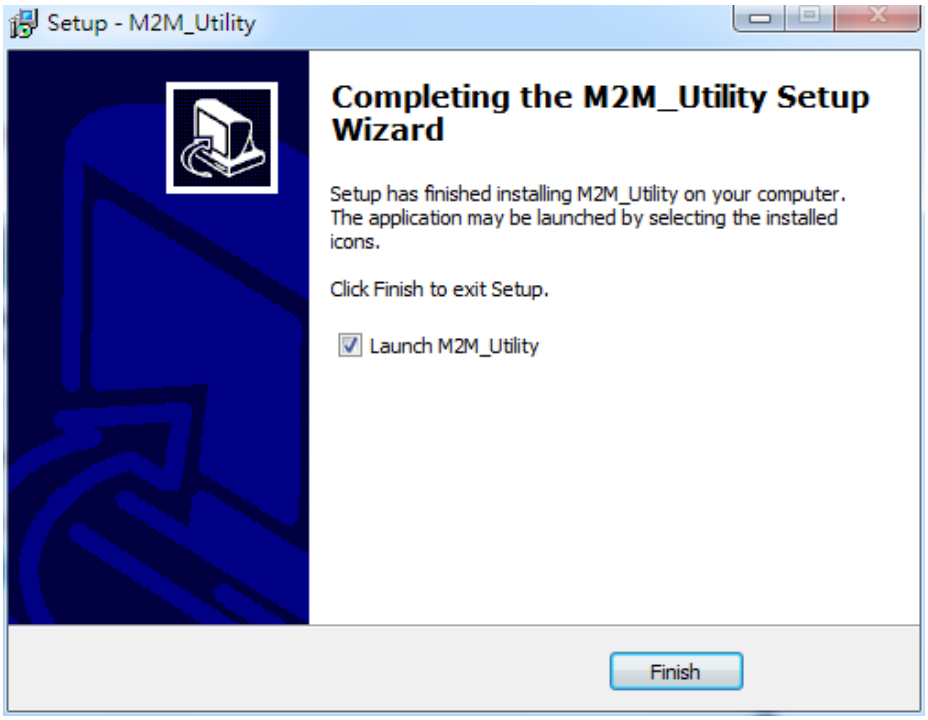
(4)Select additional tasks. Press “Next” to the next step.



(5)Click ”Install” to start to install the M2M Utility.

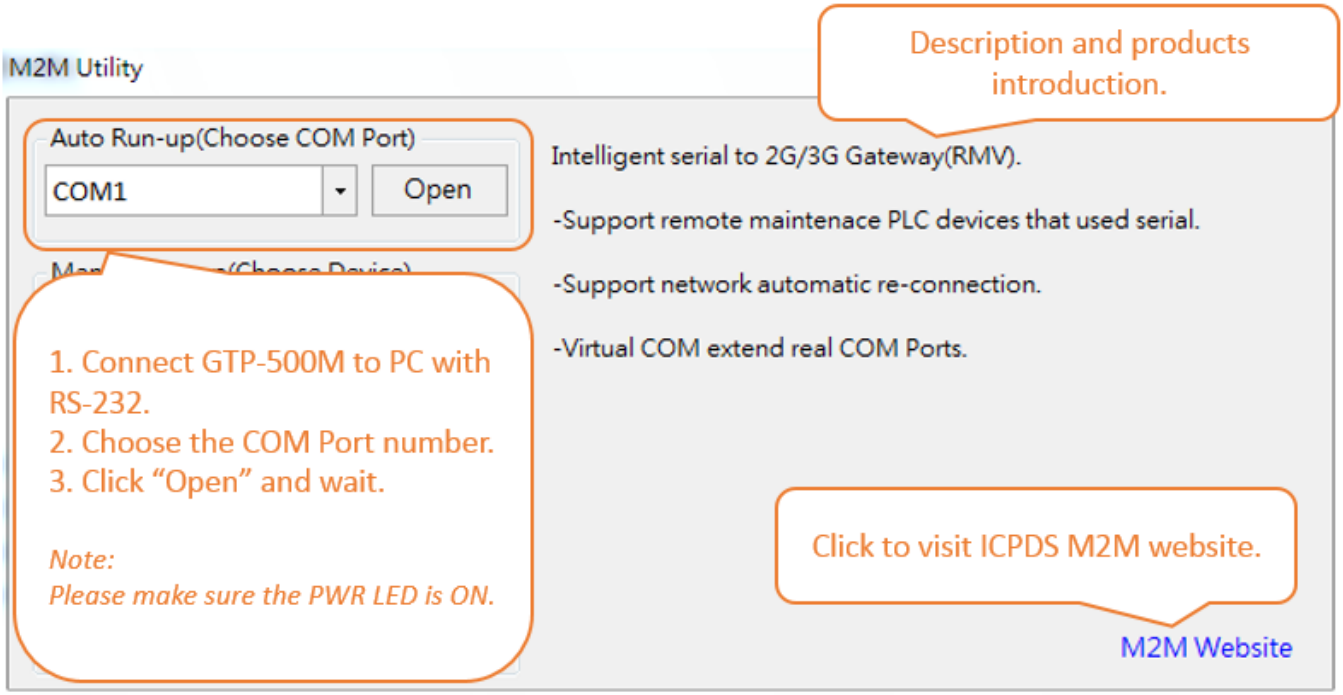


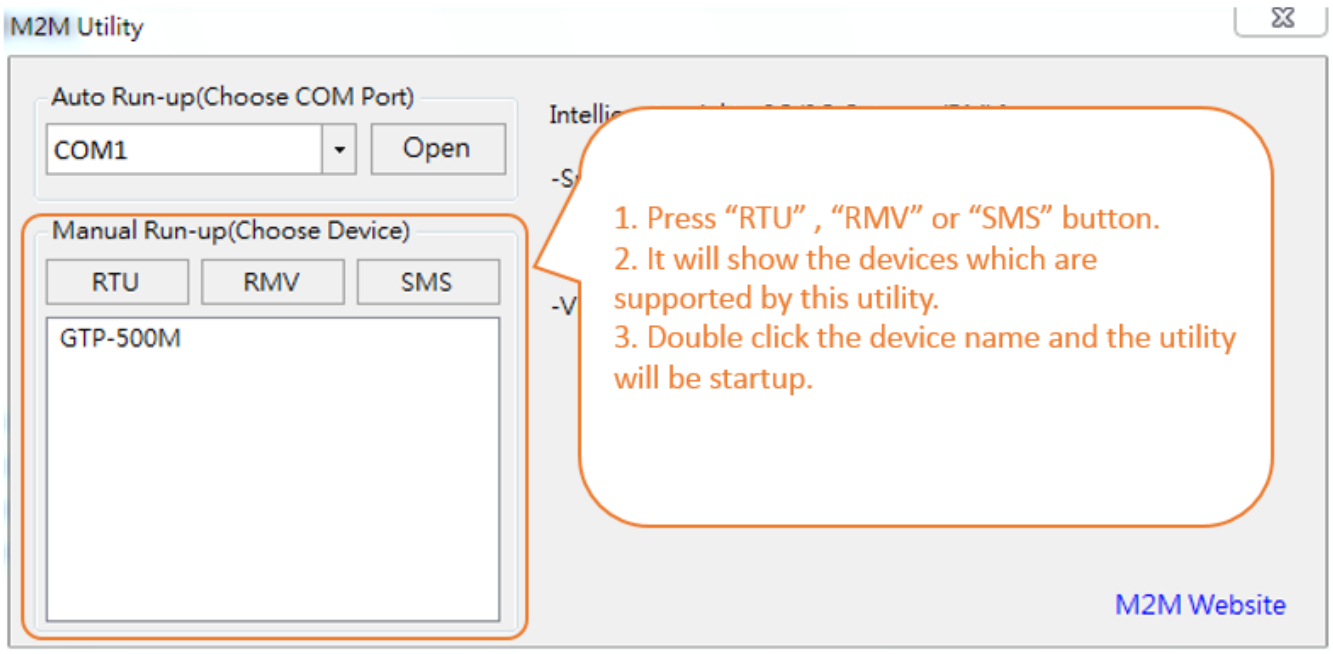
(6)Click “Finish” to finish installing M2M Utility.



4. RMV function operation description

There are two ways to open the Utility that the GTP-500M is operating. “Auto Run-up” and “Manual Run-up”, If you don’t know the function which GTP-500M is operating, you can use “Auto Run-up” to find the correct function utility. Or you can use “Manual Run-up” to choose the utility.

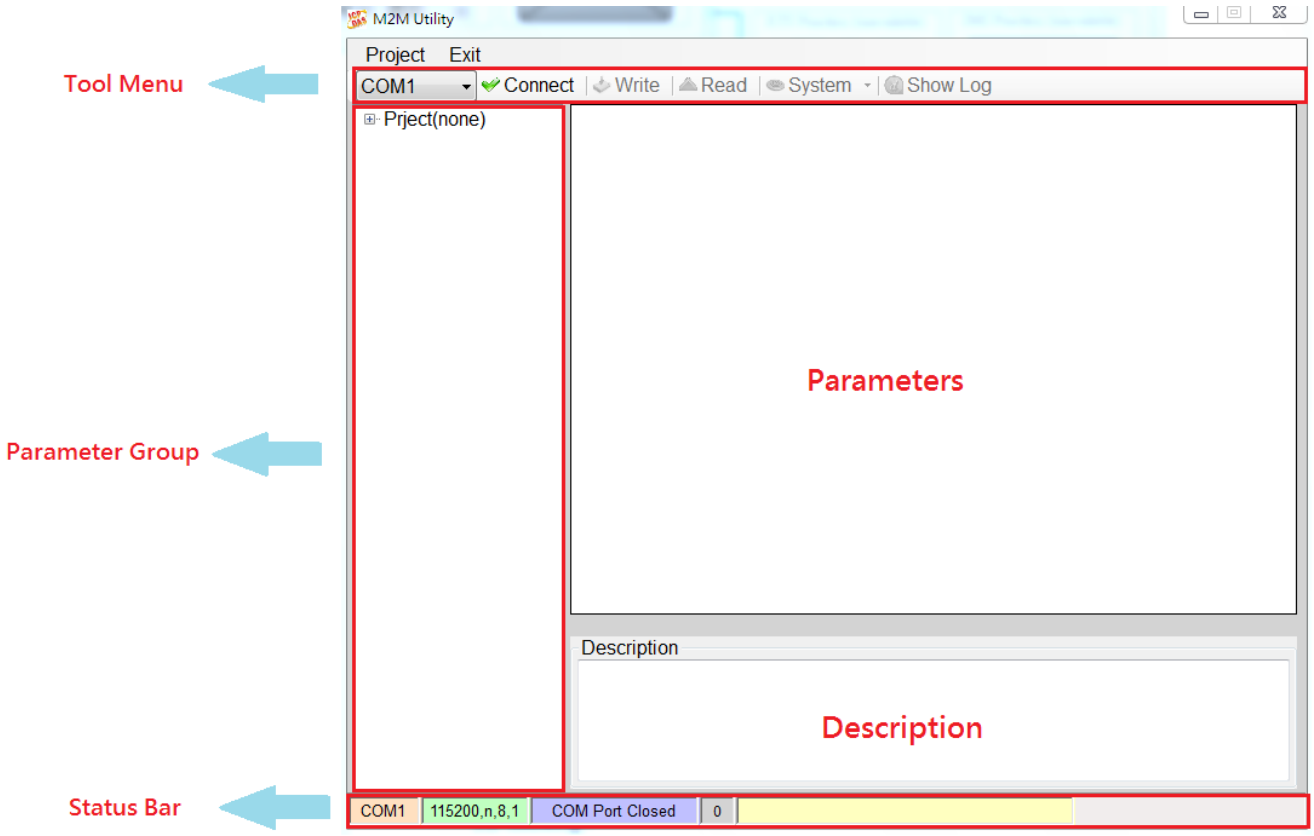




4.1 Gateway Function

4.1.1 The main menu

The main menu of Gateway Function includes the following sections:



(1)Tool Menu:

These tools include all the function operation of the M2M Utility. The description is as the following:

◆ Project:

The parameters of the GTP-500M can be saved as the project file. The operation functions include “New”, “Open”, “Save”, “Save as…”, and etc.

◆ Exit: Exit the M2M Utility.

◆ COM Port: The COM Port number of the host PC connecting to the GTP-500M.

◆ Connect: Connecting to the GTP-500M.

◆ Download: Downloading the settings to the GTP-500M device.

◆ Upload: Uploading the settings from the GTP-500M device to M2M Utility.

◆ System:

Providing some system operations including ”Signal Quality”、”Reboot GTP-500M”、

“Recover Default Settings”、”Firmware Version”、”Input PIN/PUK”

(2)Parameter groups:

There are four parameter groups in the Gateway Function including: ”System” and ”COM Port”.

(3)Parameters:

Show or set the parameters.

(4)Description:

A particular or minute account.

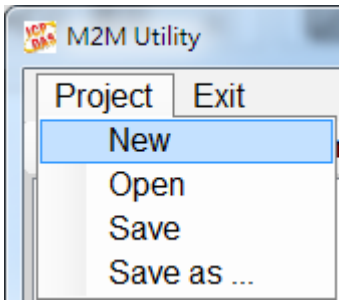
(5)Status Bar:

This bar can show the operation procedure of the M2M Utility. From left to right, they are:

- ◆ The used com port number.
- ◆ Communication configuration of the COM Port.
- ◆ The current status of the COM port.
- ◆ The address of the GTP-500M.
- ◆ The result for operating the functions

4.1.2 File Menu

This tool provides users to operate the project file. It can save the GTP-500M configuration as the file or upload the settings from the file. It is convenient to manage a lot of GTP-500Ms. The explanation is as the following:



New: Opening a new file.

Open: Opening an exited file.

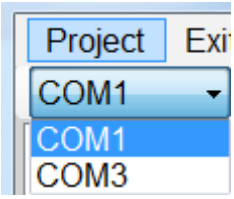
Save: Saving the file. If the parameters are changed or save the uploading parameters from the GTP-500M, you can use this function to save these configurations.

Save as: Saving the file as another name.

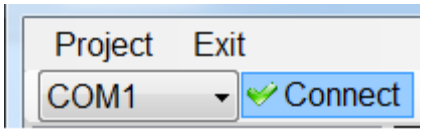
4.2 Connecting to the GTP-500M

For connecting to the GTP-500M, you can follow the steps below.

(1)Select the COM port of the host PC and connect to the Utility port of GTP-500M.

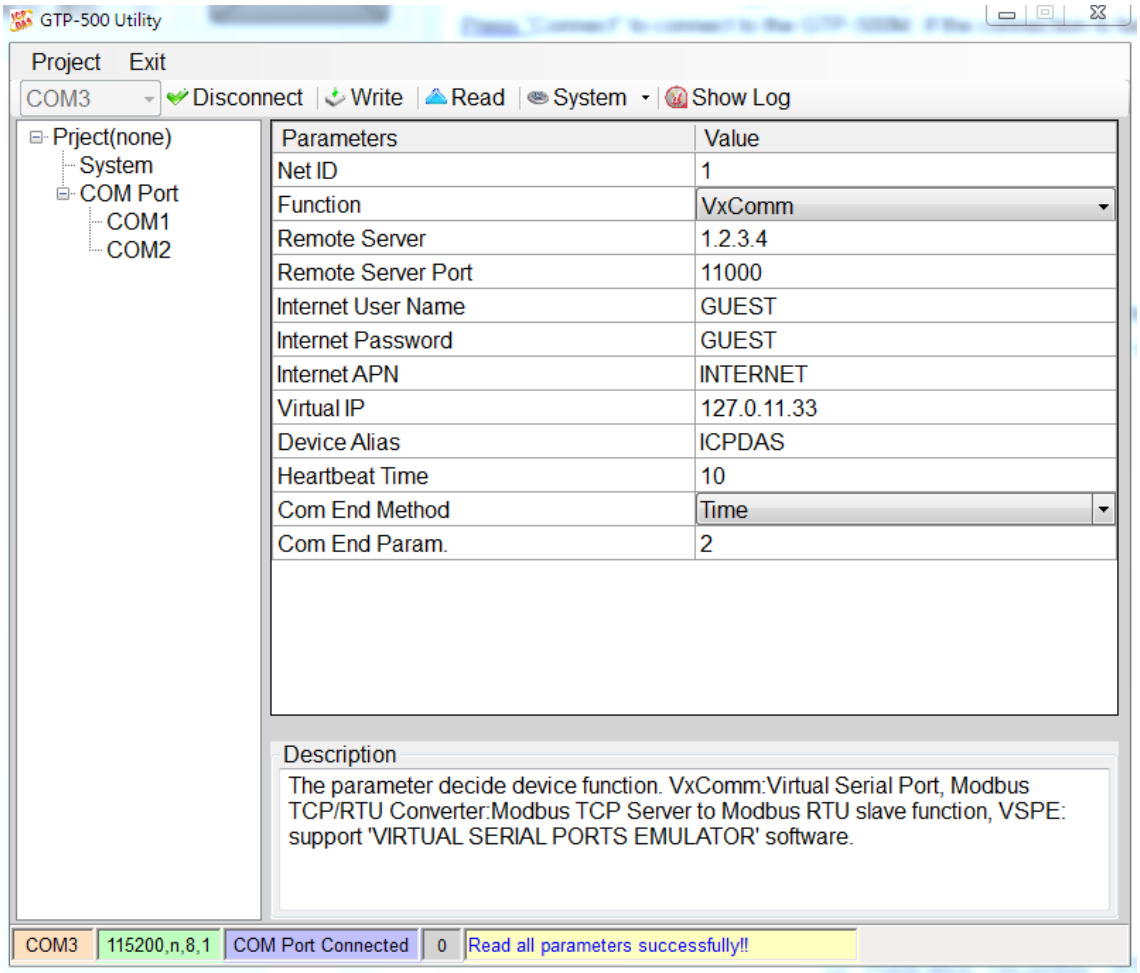


(2)Press ”Connect” to connect to the GTP-500M. If the connection is failed, check the COM port settings and wiring.



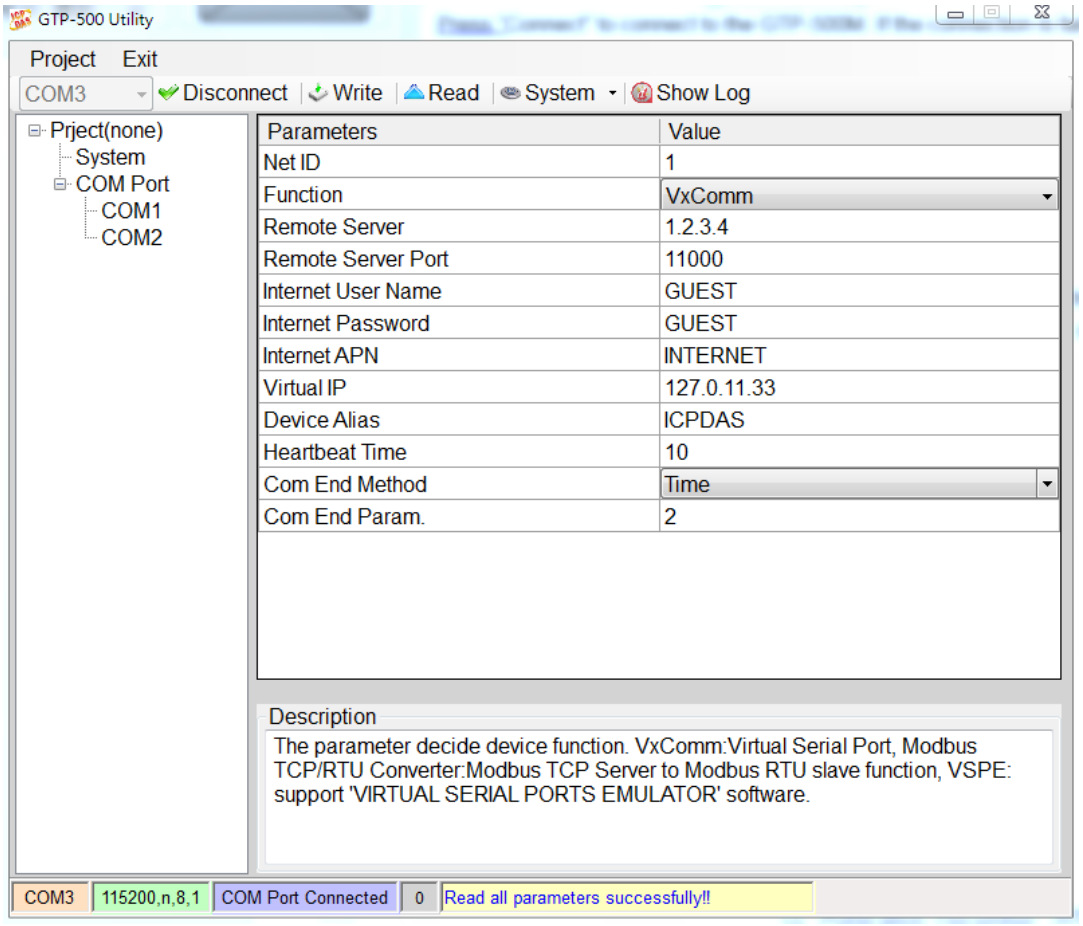
4.3 Parameters

The parameters would be shown in the right of the windows if click the tree field in the left side of the M2M Utility. Press the parameters' "Value" filed can change these parameters as the following figure.



4.3.1 System

There are 12 items in the system field below.

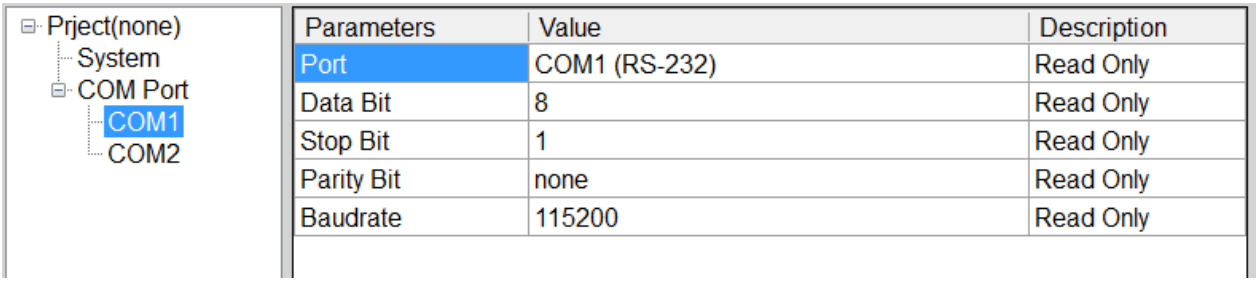


Parameters	Description
Net ID	GTP-500M ID. Read only
Function	VxComm
Remote Server	The remote VxServer server's IP or domain name
Remote Server Port	The remote VxServer server's Port
Internet User name	Internet user name
Internet password	Internet password
Internet APN	Internet APN (access point name)
Virtual IP	Virtual IP. Range: 127.0.0.1~127.255.255.254，This parameter can not be the same with other device.
Module Alias	Module Alias. (max. 7 character)
Heartbeat Time	Heartbeat time. Range: 10 sec. ~ 65535 sec.

<table>
<tr><td>Com End Method</td><td></td></tr>
<tr><td>Com End Param.</td><td>
<table>
<tr><th>Com End Method</th><th>Com End Param.</th><th>Remark</th></tr>
<tr><td>Time: Fixed Time. It is as complete a data when no data came at a fixed time</td><td>2 ms~ 65535 ms</td><td rowspan="3">The GTP-500M will transmit a data when there is a data more than 1000 bytes.</td></tr>
<tr><td>Length: Fixed Length，It is as complete a data when the length of a data more than fixed length</td><td>1 ~ 1000</td></tr>
<tr><td>2: Fixed end byte. It is as complete a data when receives the fixed end byte. Like “CR” (0x0d)</td><td>0 ~ 255</td></tr>
</table>
</td></tr>
</table>

4.3.2 COM Port

The parameters of COM Port (Read only).

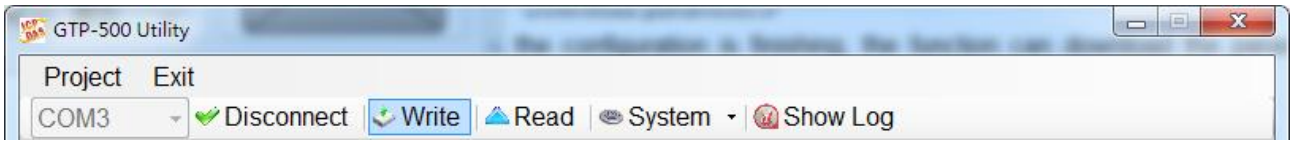


Parameters	Description
Port	COM Port name
Data Bit	7 or 8 bits
Stop Bit	1 or 2 bits
Parity Bit	None, Even, Odd
Baudrate	2400、4800、9600、19200、38400、57600 and 115200 bps

4.4 Download/Upload Parameters

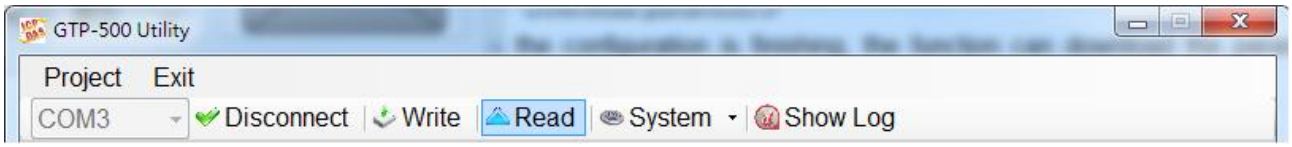
(1)Write parameters

As the configuration is finishing, the function can write the parameters to the GTP-500M by clicking “Write” as the following figure.



(2)Read parameters

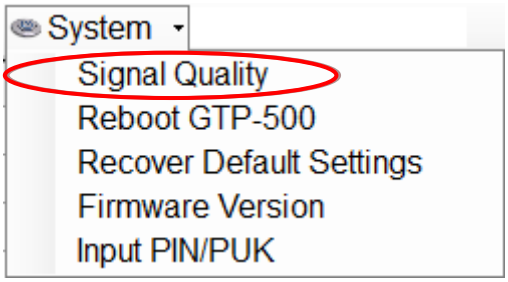
“Read” button can upload the parameters from the GTP-500M as the following figure.

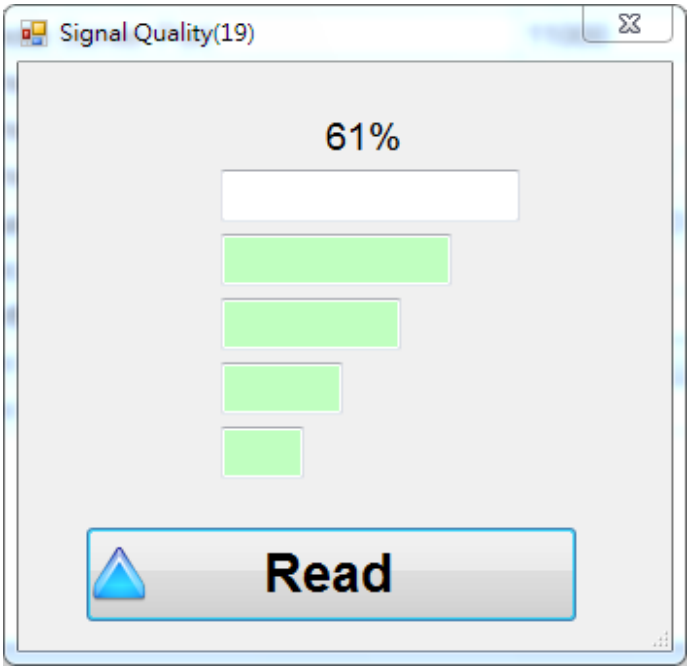


4.5 System

4.5.1 Signal Quality

Click “System->Signal Quality” can show the signal quality windows to know the GSM/WCDMA signal strength.





Field Description:

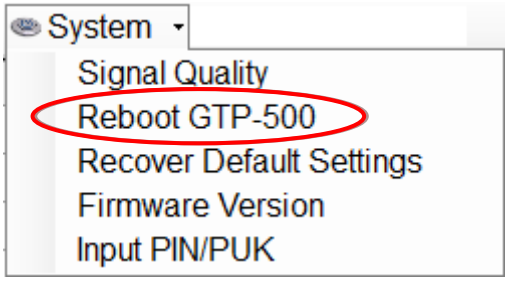
The strength is divided into 5 sections shown in percentage.

Operation:

◆Read: Read the GSM/WCDMA signal strength from the GTP-500M.

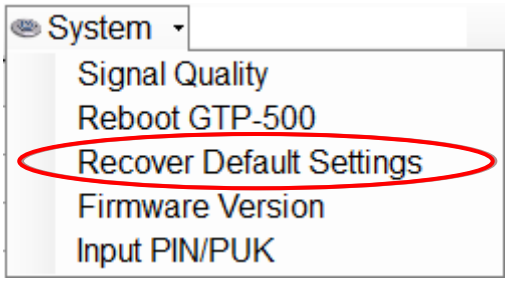
4.5.2 Reboot the GTP-500M

It can recover the GTP-500M to the default settings by clicking “System->Recover Default Settings”.



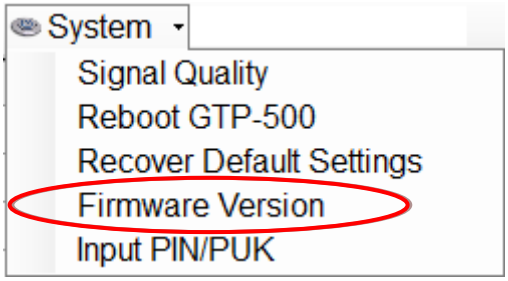
4.5.3 Recover to the Factory Settings

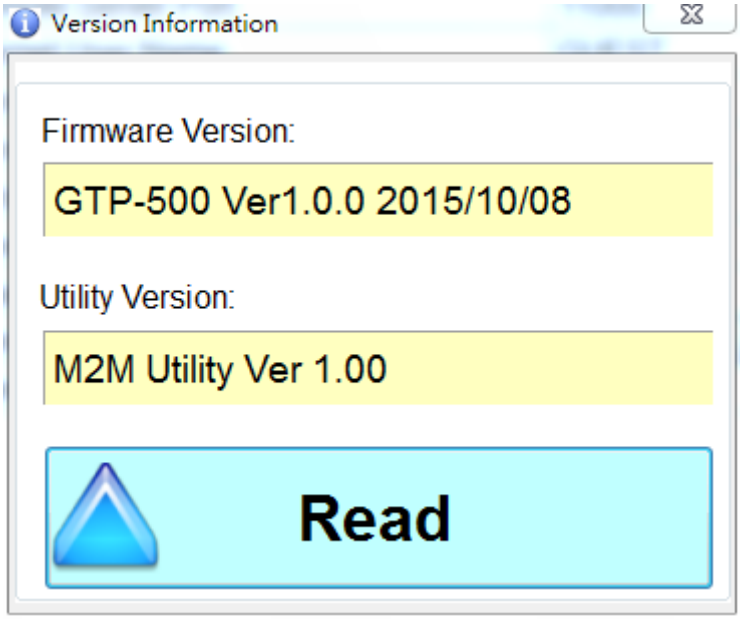
It can recover the GTP-500M to the default settings by clicking “System->Recover Default Settings”.



4.5.4 Inquiring Firmware Version

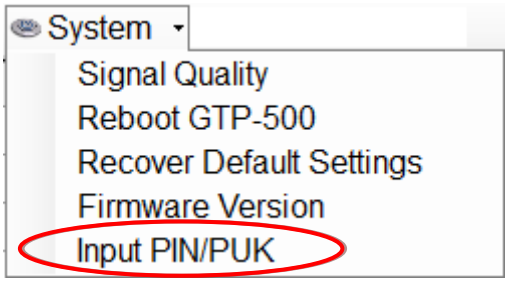
Press “System->Firmware Version” in tool menu, and the window would show the versions of the M2M Utility and firmware.





4.5.5 Inputting the PIN/PUK Code

When the GTP-500M starts and the STA2 LED is blanking per 50 ms, it is needed to input the PIN or PUK code in the GTP-500M. In this condition, click “System->Input PIN/PUK” button to set the PIN/PUK code.

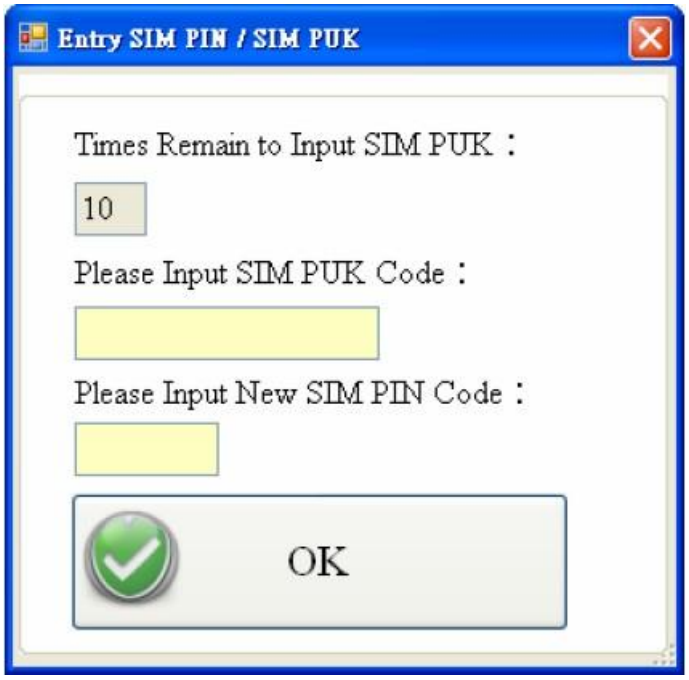


(1)Asking for inputting PIN code:

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.

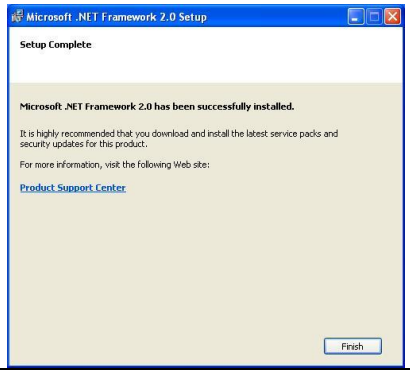
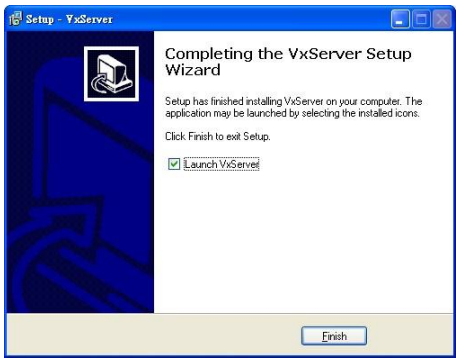
(2)Asking for inputting PUK code:

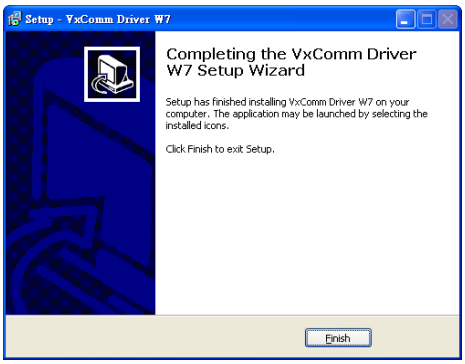
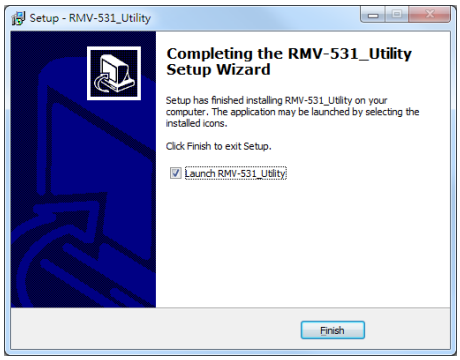
If the PIN code is ineffective, the “PUK code” window would pop-up as follows. As the number of times for inputting the wrong PUK code is more than allowed number, the SIM card would be ineffective forever. Therefore, it is important to input the correct PUK code.



4.6 Virtual com to access remote the parameters

4.6.1 The necessary software installed

Installing .NET Compact Framework	Installing VxServer
	

Installing VxComm Driver	Installing M2M Utility
	

◆Download Microsoft .Net Framework Version 2.0

http://www.microsoft.com/downloads/details.aspx?FamilyID=0856eacb-4362-4b0d-8edd-aab15c5e04f5&DisplayLang=en

◆Download VxServer software

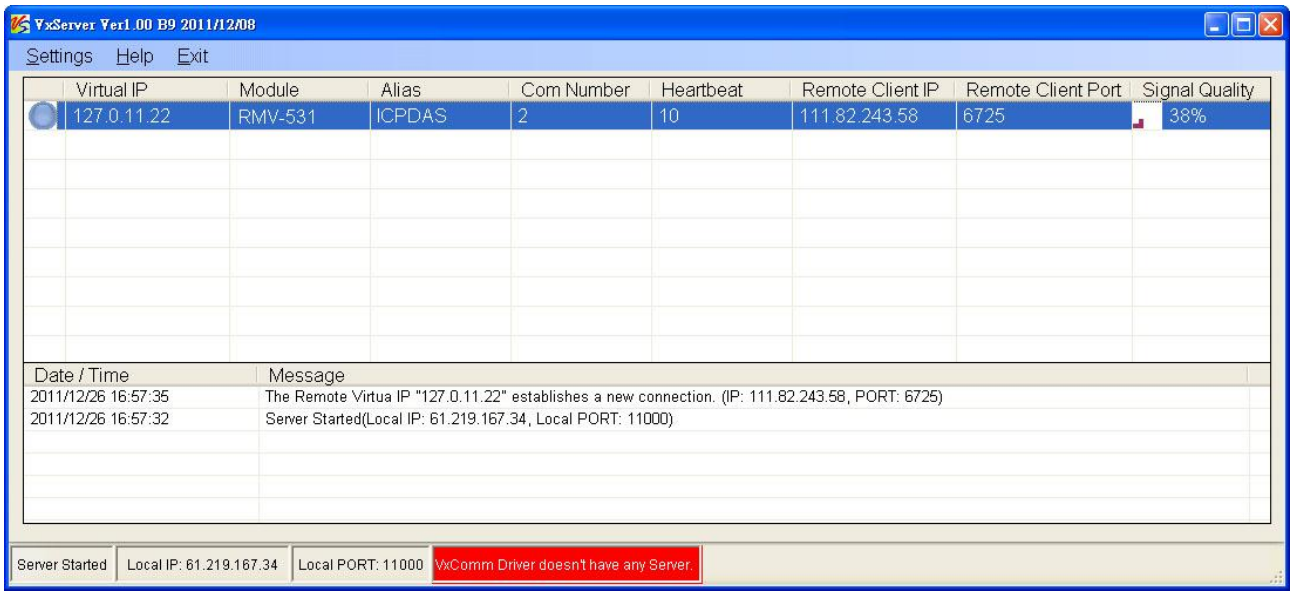
http://m2m.icpdas.com/VxServer.html

◆Download VxComm Driver software

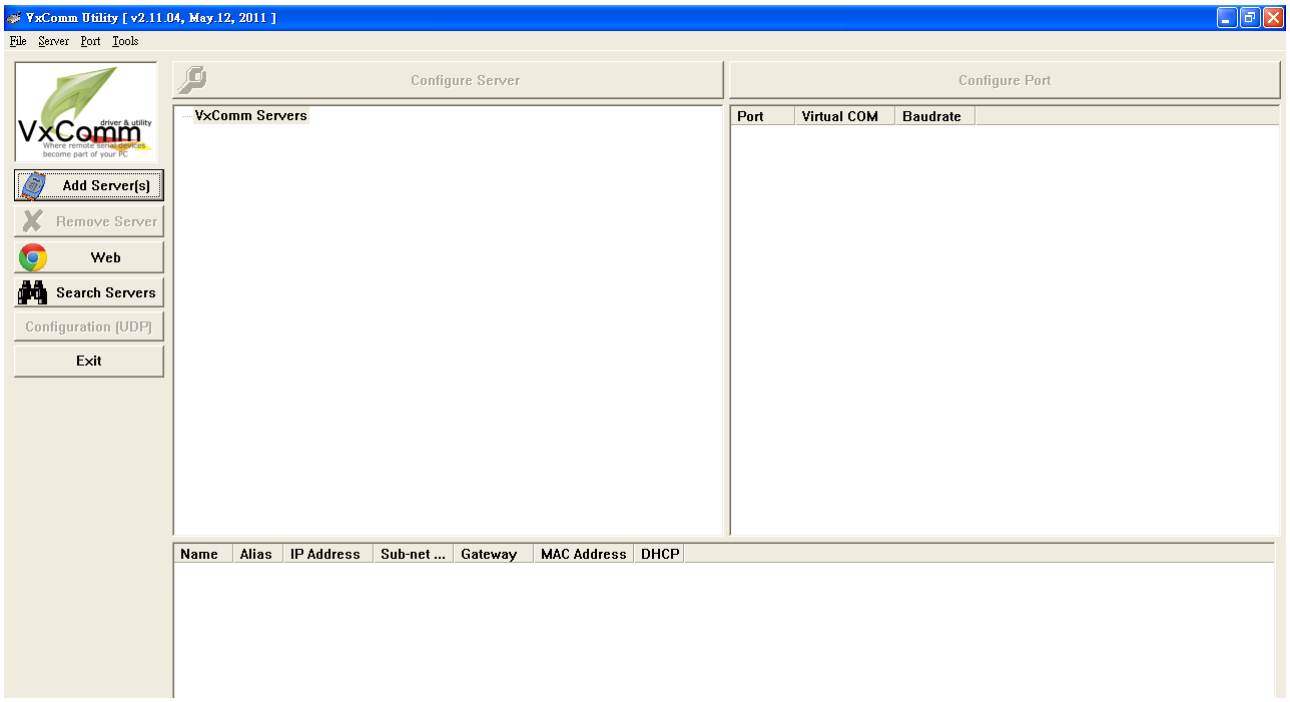
http://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/vxcomm_driver/2k/

4.6.2 Setting the VxServer and VxComm Driver

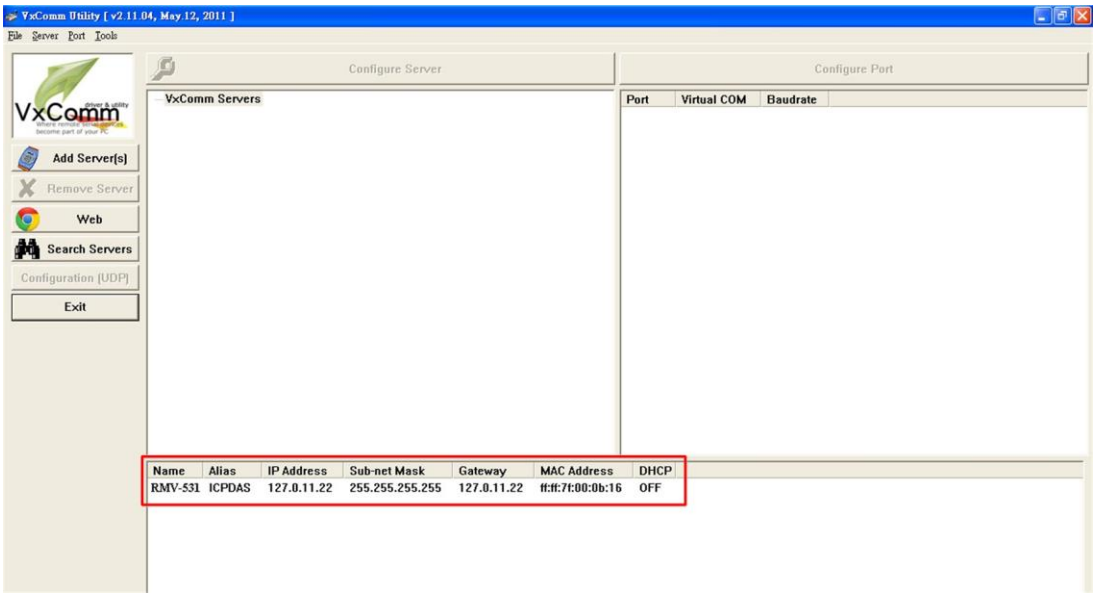
(1)Verify that the device has been connected up.



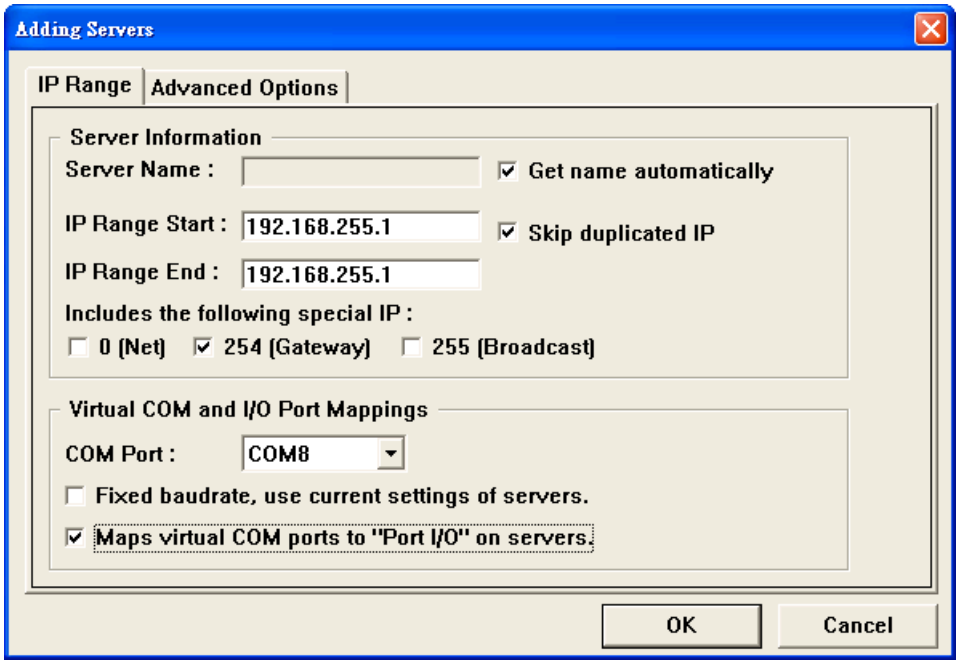
(2)Execute VxComm Utility, then click ”Search Servers”.



(3)Select your device, then click ”Add Server(s)”.

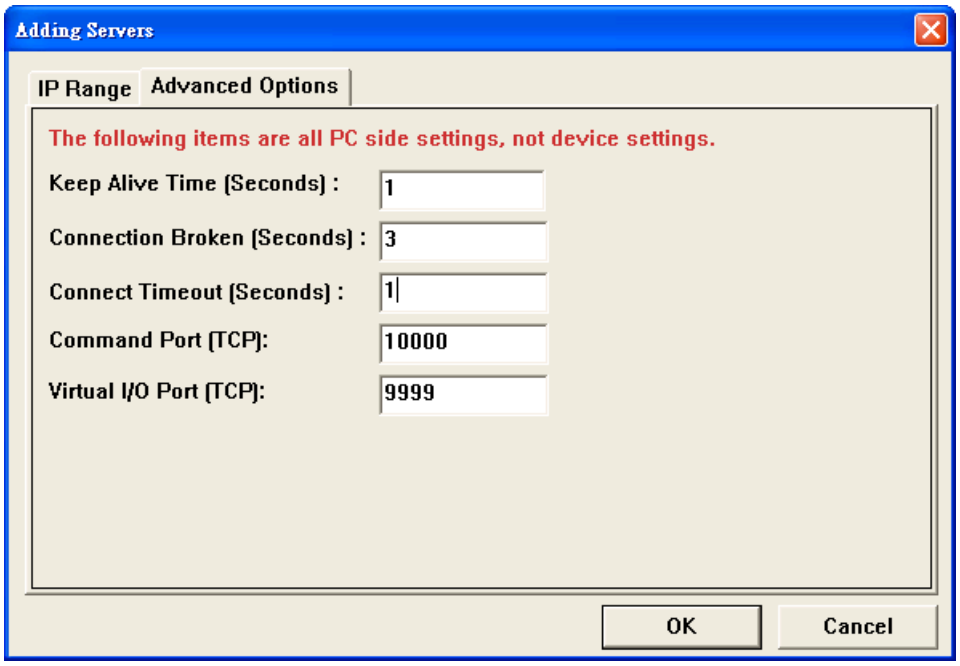


(4)IP Range → check “Maps virtual COM ports to “Port I/O” on servers”.

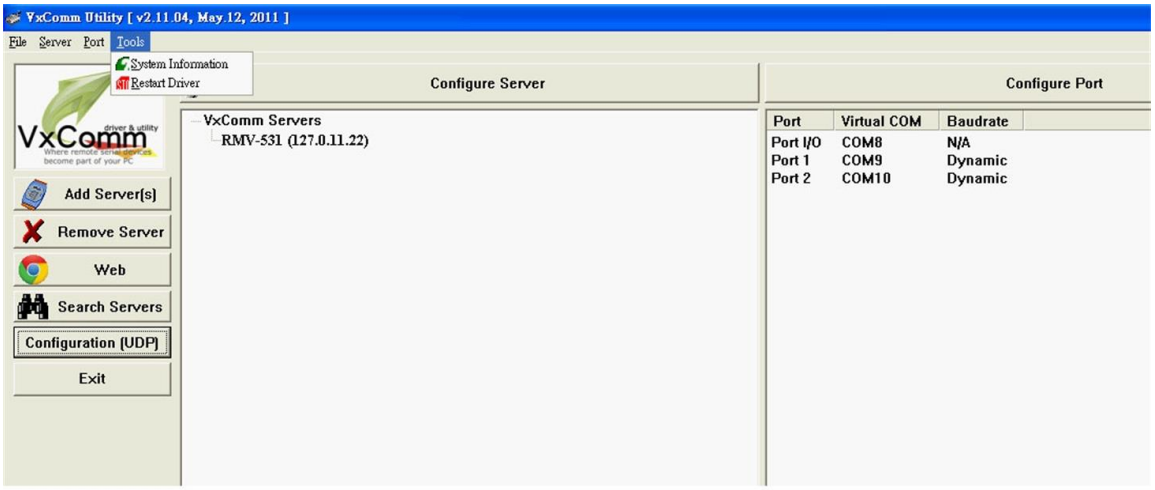


(5)Advanced Options, please follow the below parameter settings.

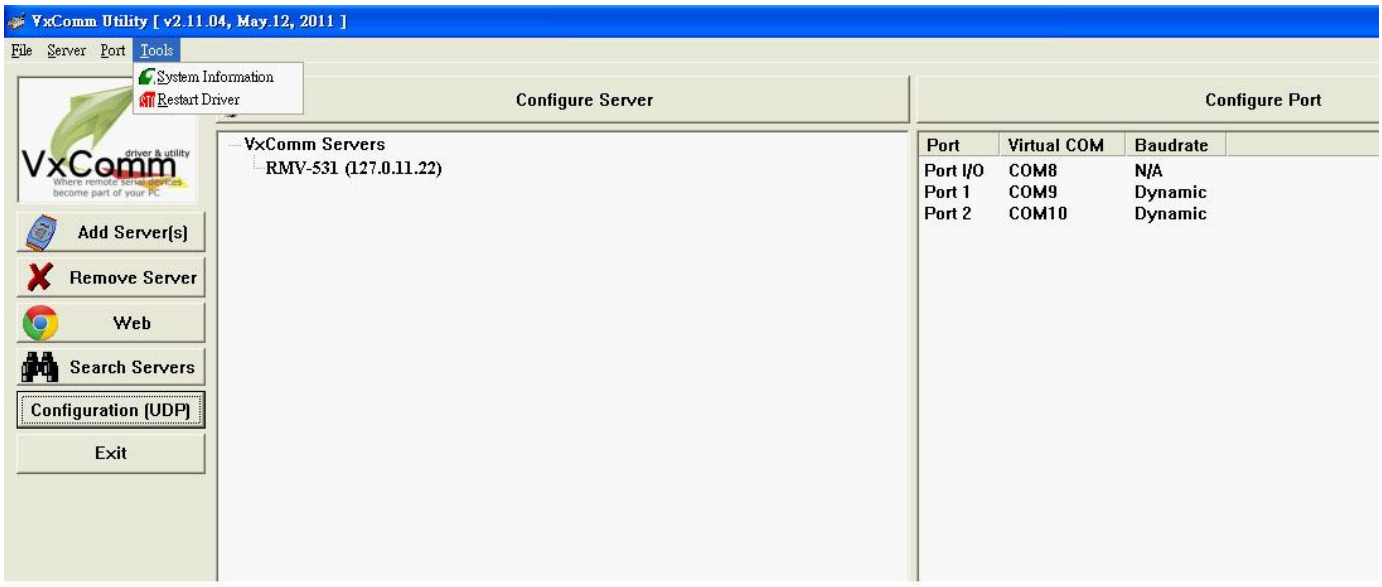
Parameters	Fixed value
Keep Alive Time	1
Connection Broken	3
Connect Timeout	1
Command Port	10000
Virtual I/O Port	9999



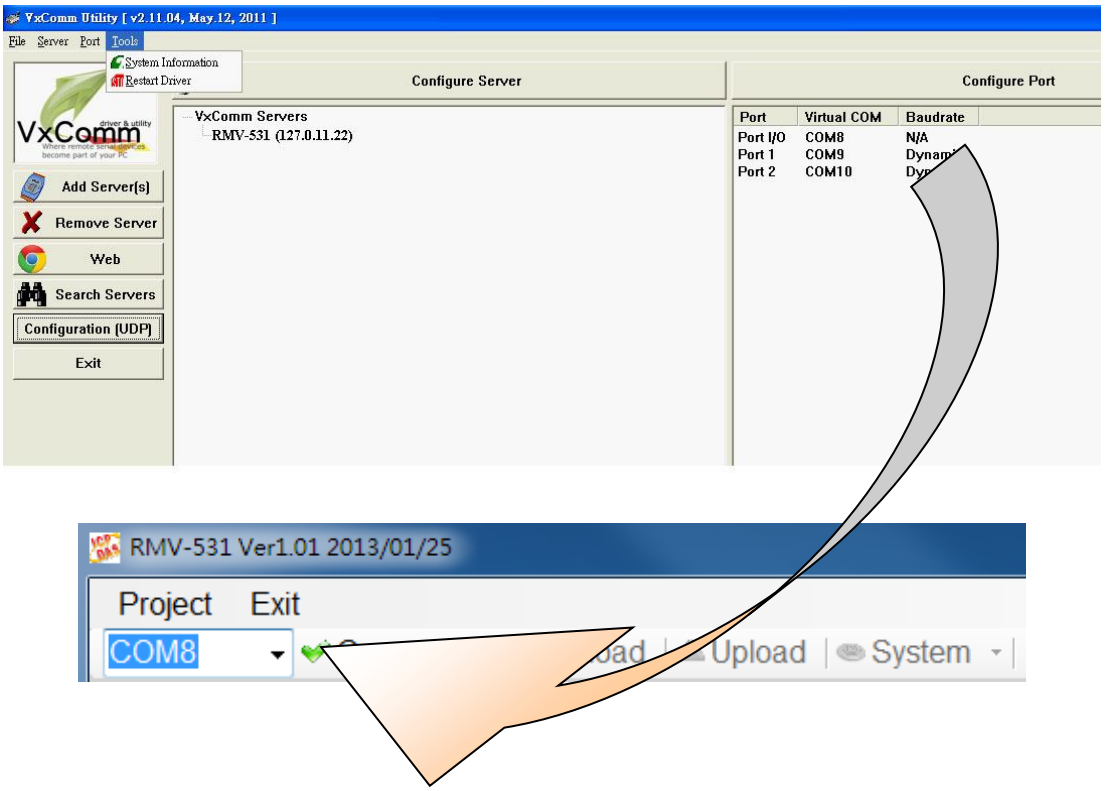
(6)Tools → Restart Driver.



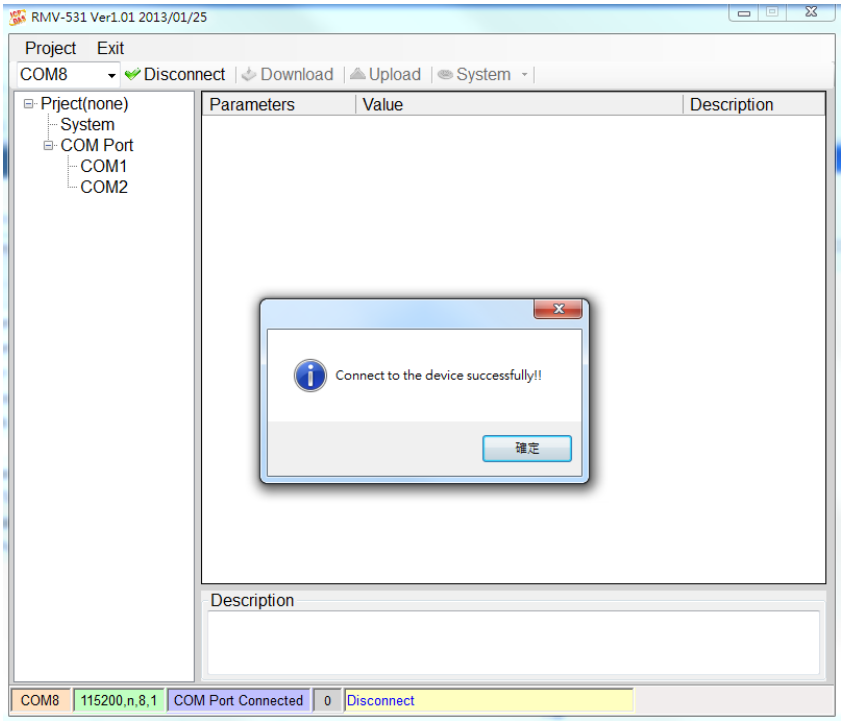
(7)Click “Restart Driver”.



(8)According the Port I / O of VxComm Utility to select the com port of M2M Utility, then click "M2M Utility => Connect"



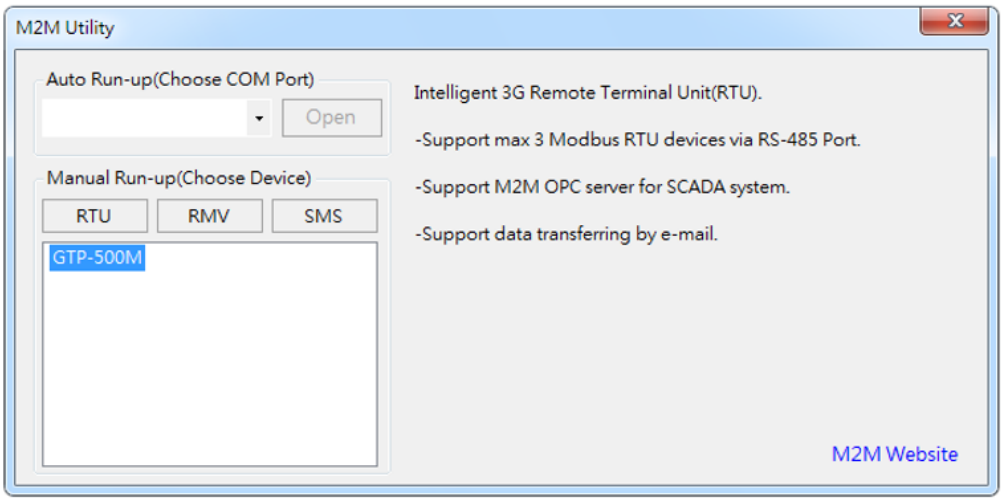
(9)The remaining steps, please refer to Chapter 4



5. RTU Function Utility operation description

Please refer to page.19 to start the RTU function utility.

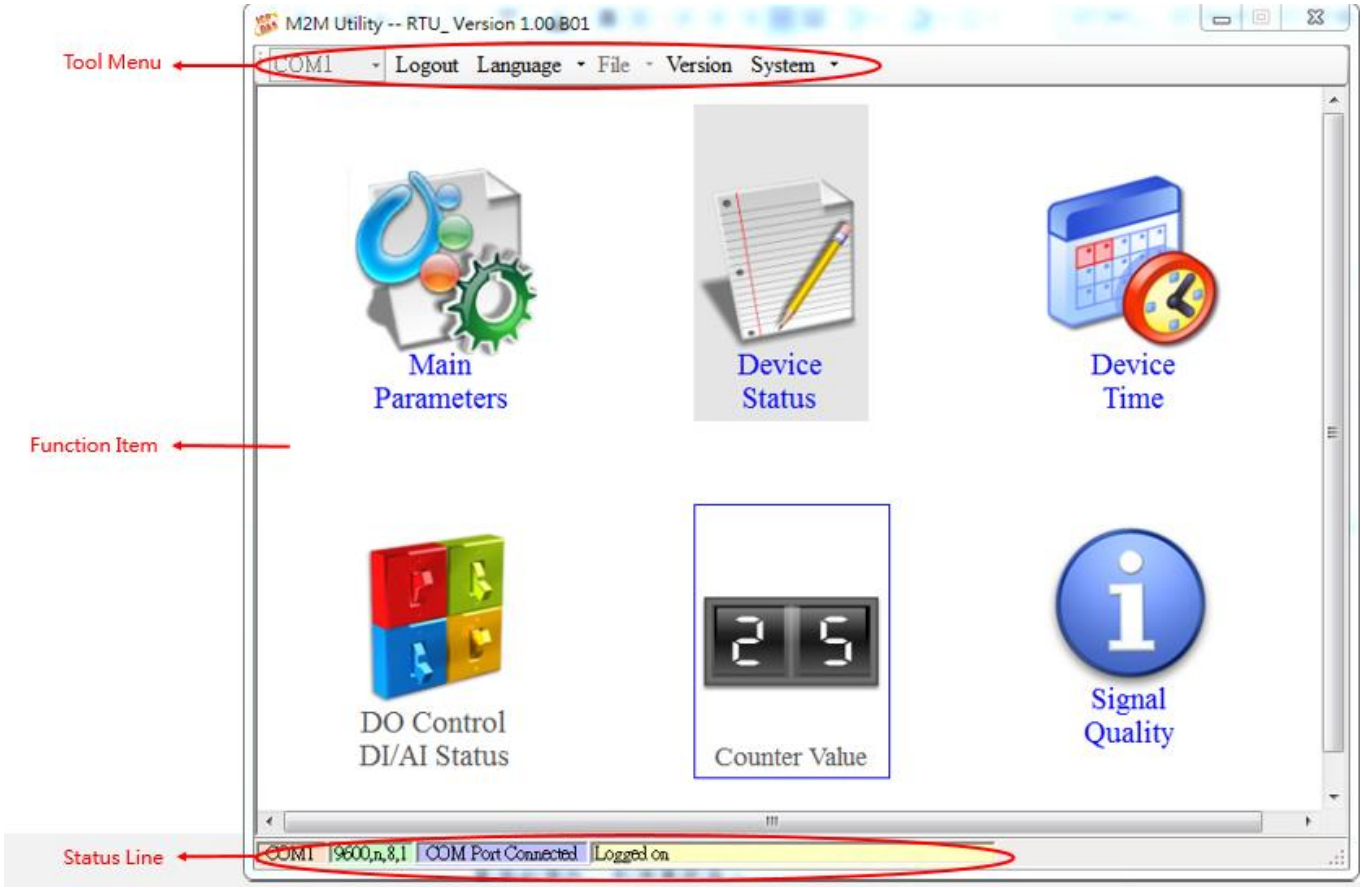
*RTU Function need to install the expansion I/O board to execute the full function. Users can view the I/O expansion board on website(http://m2m.icpdas.com/GTP-500M.html).



5.1 RTU Function

5.1.1 The main menu

The main menu of M2M Utility includes the following sections:



Tool Menu

◆"COM":

Set the COM port number in PC connecting to GTP-500M series.

◆Login/Logout:

Before operating GTP-500M, users need to login to M2M Utility. After login the system successfully, the menu item "login" would become "logout" and the M2M Utility would be operated normally. Once the power is reset, the login procedure needs to do again.

◆Language:

M2M Utility only supports English interface.

◆File:

There are import and export functions in "File" item. The functions would be enabled when "Main parameters" window is open.

◆Export:

The function can export the parameters to the defined .par file from the “Main parameters” windows.

◆Import:

The parameters would be shown in “Main parameters” window from the defined .par file.

◆Version:

Including the firmware and Utility version information.

◆System:

Provide users for recovering GTP-500M to factory, resetting GTP-500M and debug mode.

◆Exit:

To exit M2M utility

Function Item

◆Main Parameters:

The main parameter setting of GTP-500M includes ID, SIM number, operation mode, data logger period and GPS item.

◆Device Status:

Display these peripheral devices status including micro SD, 3G/GPRS, GPS and Modbus RTU.

◆Device Time:

Display or set the RTC time of GTP-500M in this item. It is also can get the information of the last and next time of the return report in E-mail mode.

◆DO Control/DI Status/AI Value(only support expansion I/O board):

Display the status of I/O and control the DO output.

◆Counter Value(only support expansion I/O board):

Inquire and set the counter value.

◆Signal Quality:

Inquire signal type and quality

Status Line

Show the related information during the operation procedure including:

◆The com port number of PC.

◆The communication setting of COM Port.

◆The status of COM Port.

◆The result of Utility operation.

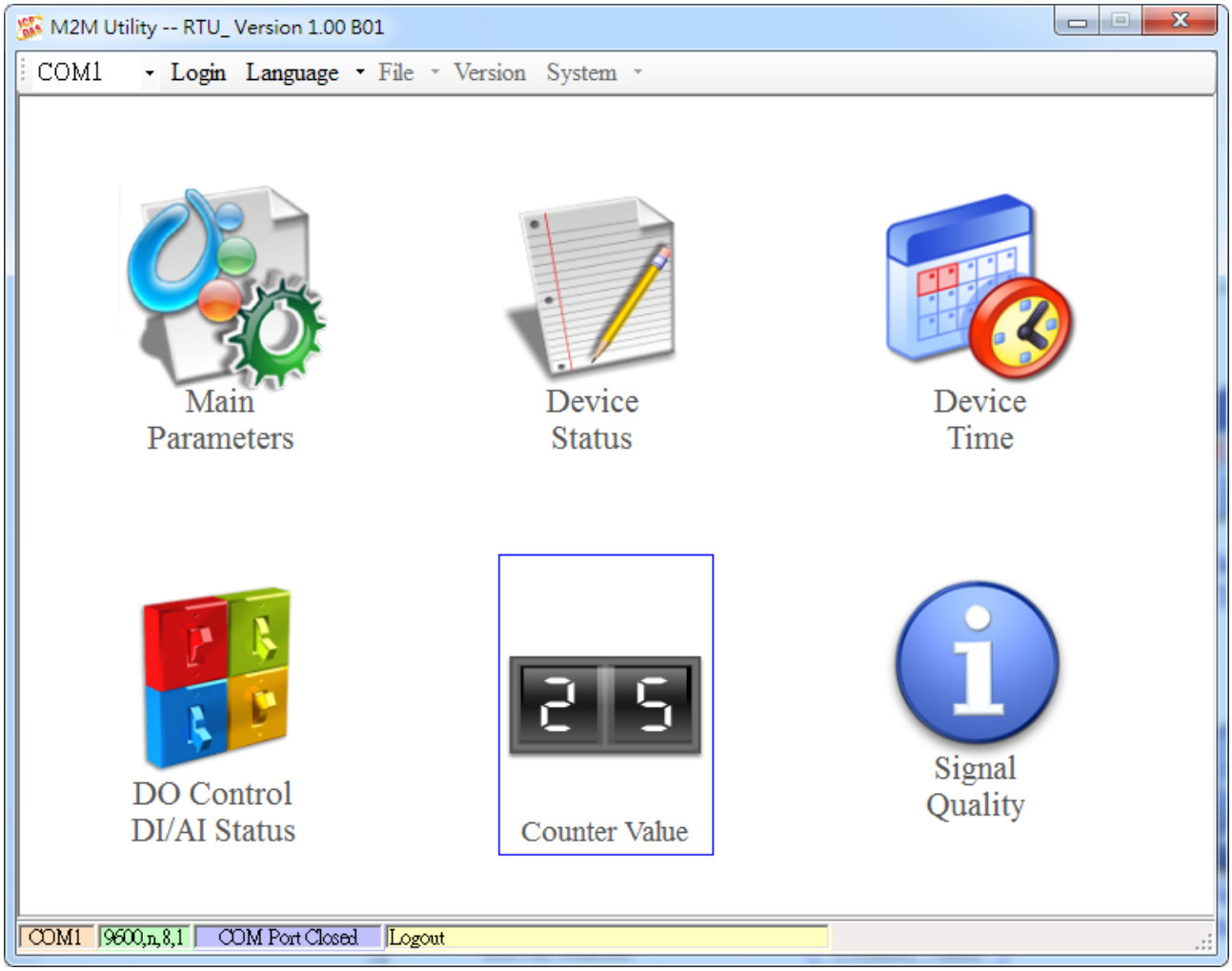
5.2 Login

It needs to login to GTP-500M to set its parameters. The description is below:

(1)Select the COM port number of PC.

(2)Press the “Login” button.

(3)If you are the first time to login, please set the system time of GTP-500M.



If the pin code in GTP-500M is not correct, the STA led would be blanking per 50 ms and M2M Utility would ask for users to input PIN or PUK code. If GTP-500M login without expansion board, ”DO Control AI/DI Status” and “Counter Value” will be unable.

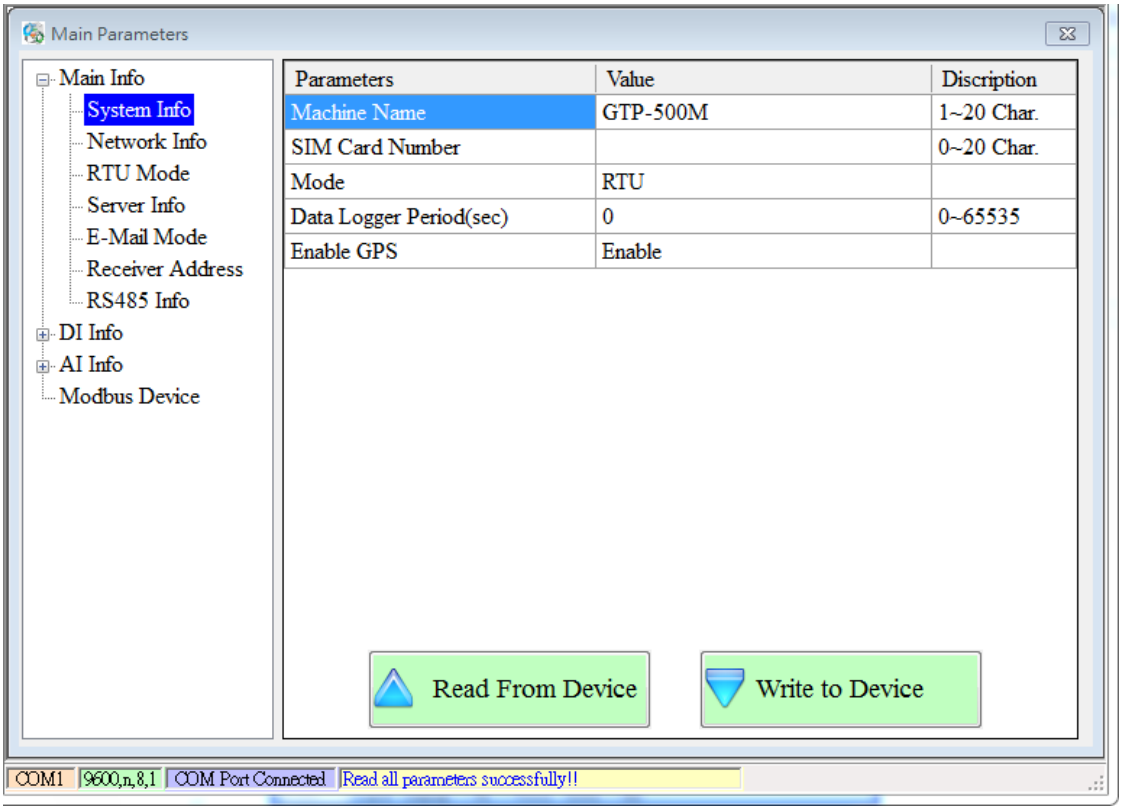
Note: Input PIN/PUK code step please refer to chapter 4.5.5

5.3 Main Parameters

There are four group in the left side of the ”Main Parameters” window. They are Main Info, DI Info, AI Info and Modbus Device groups. Users can inquire or set these parameters of these groups in the right side.

5.3.1 Main Info

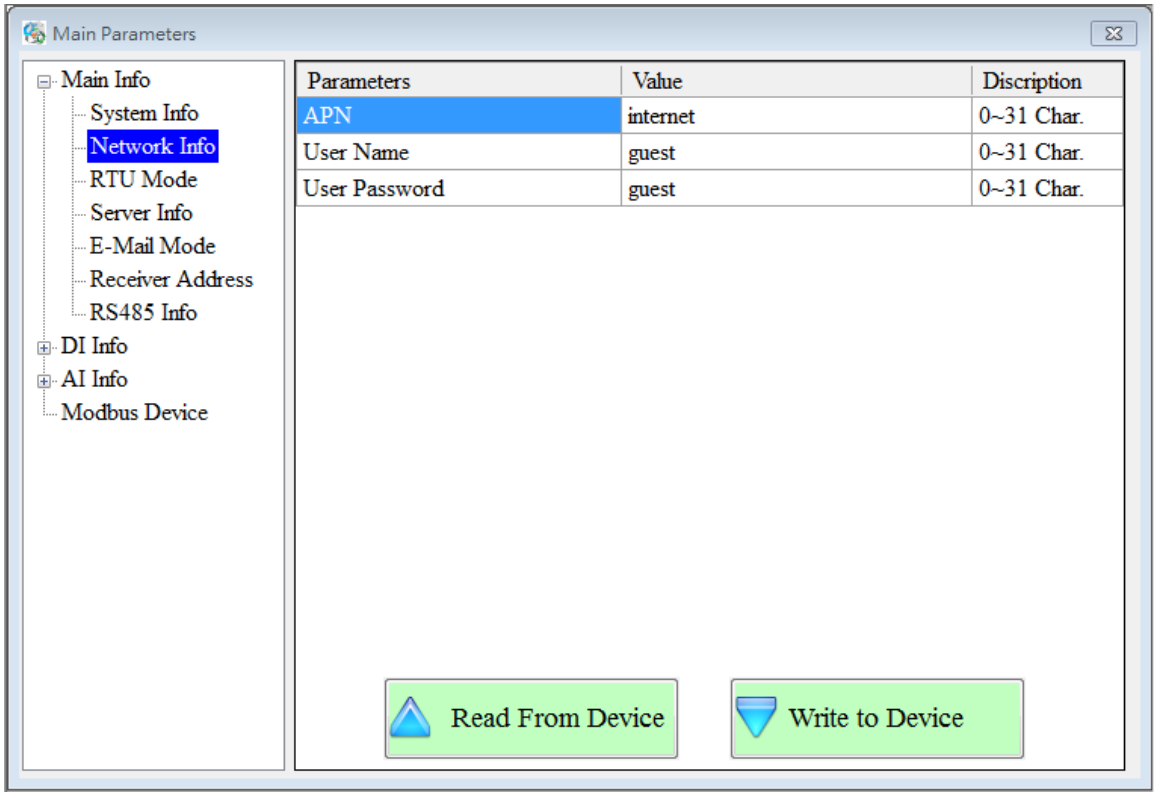
System Info



Item	Description
Machine Name	Device Name. This name would be shown in the E-Mail mode.(Range : 1~20 characters)
SIM Card Number	This text field can show or input the phone number of the plug-in SIM card. (Range : 0~20 characters)
Mode	Operation mode: 1. RTU mode- In this mode, GTP-500M would transfer I/O data (local I/O, Modbus device or GPS

	data) to the M2M RTU center by WCDMA/GPRS connection periodically. 2. E-Mail mode: Transfer I/O data by the e-mail attached file through WCDMA/GPRS connection periodically.
Data Logger Period(sec)	This time is used for recording I/O data to I/O logger files periodically by second unit. If the value is 0, this I/O data logger function is disabled. (Range : 0~65535 sec)
Enable GPS	Enable: Enable the GPS function. Disable: Disable the GPS function

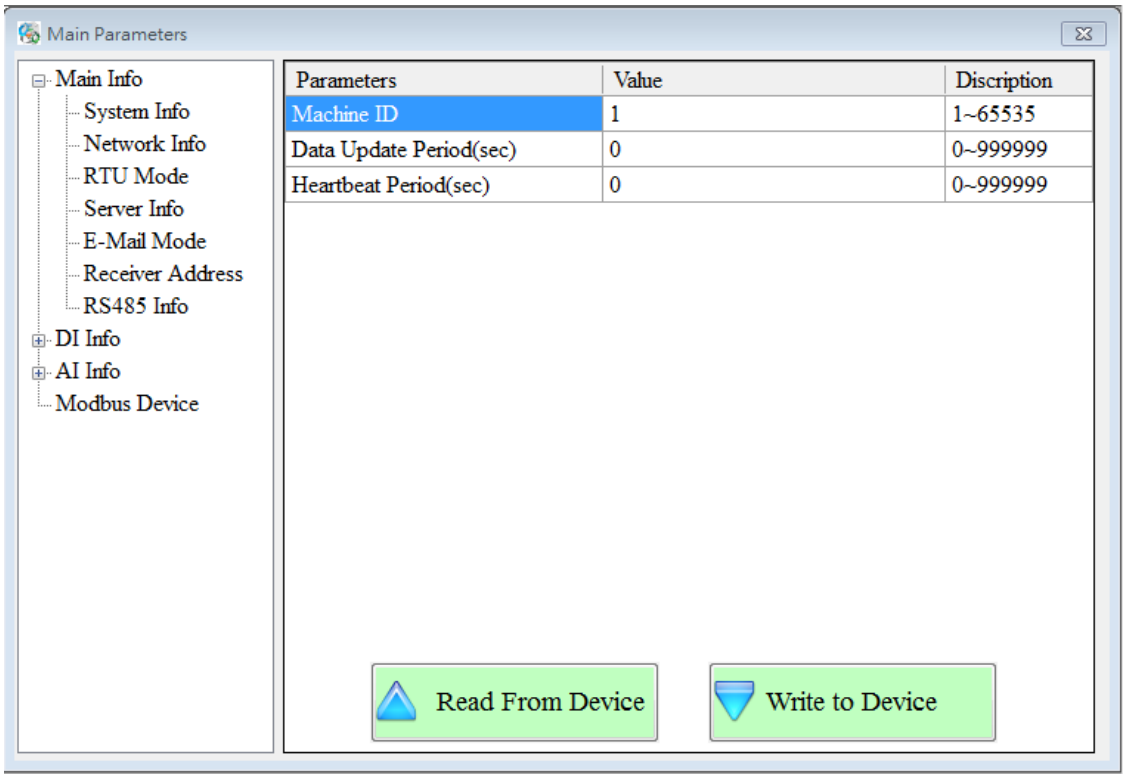
Network Info



Item	Description
GPRS APN	The setting is important factor when connecting to a WCDMA/GPRS network. Check with your WCDMA/GPRS service provider for details. Access point name (APN) is the name used to identify

	a general packet radio service (WCDMA/GPRS) bearer service in the 2G/3G mobile network. The APN defines the type of service that is provided in the packet data connection. You can get this APN by ISP. (Range : 0~31 Characters)
GPRS User Name	The setting is important factor when connecting to a WCDMA/GPRS network. Check with your WCDMA/GPRS service provider for details. (Range : 0~31 Characters)
GPRS User Password	The setting is important factor when connecting to a WCDMA/GPRS network. Check with your WCDMA/GPRS service provider for details. (Range : 0~31 Characters)

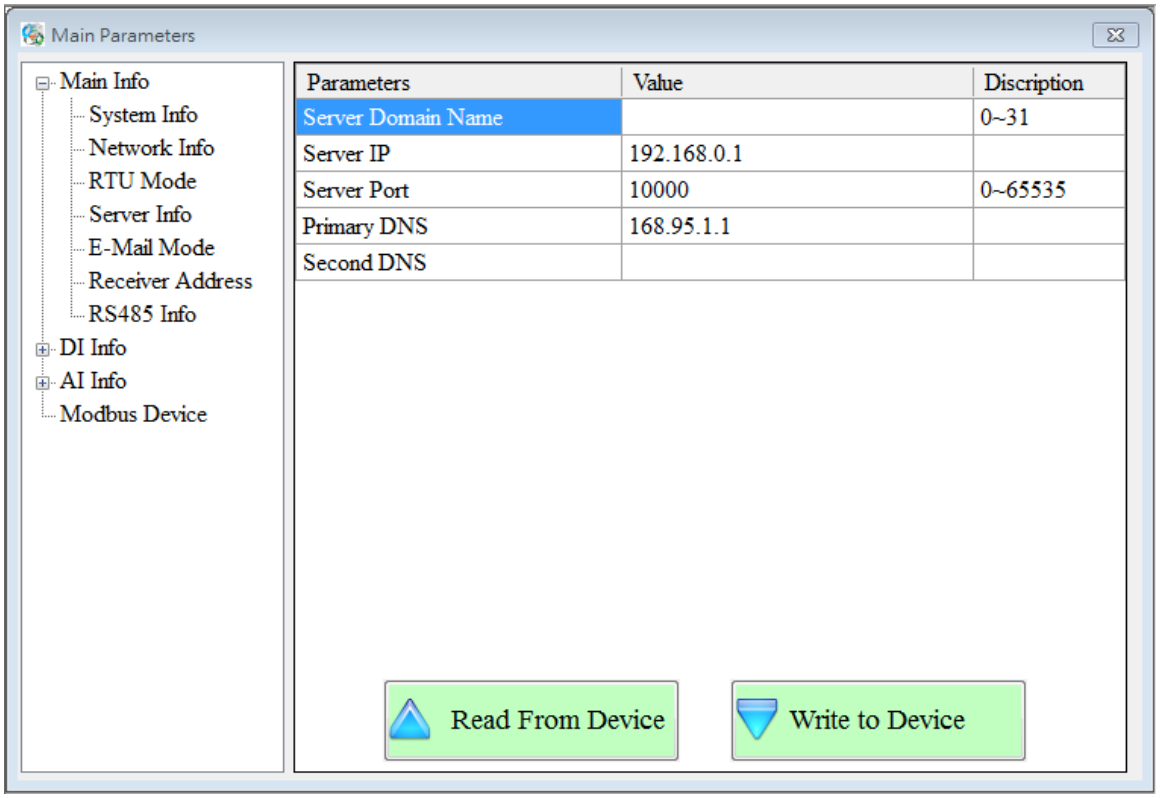
RTU Mode



Item	Description
Machine ID	The device Station ID would be shown in the RTU Center software. It can identify the different device in

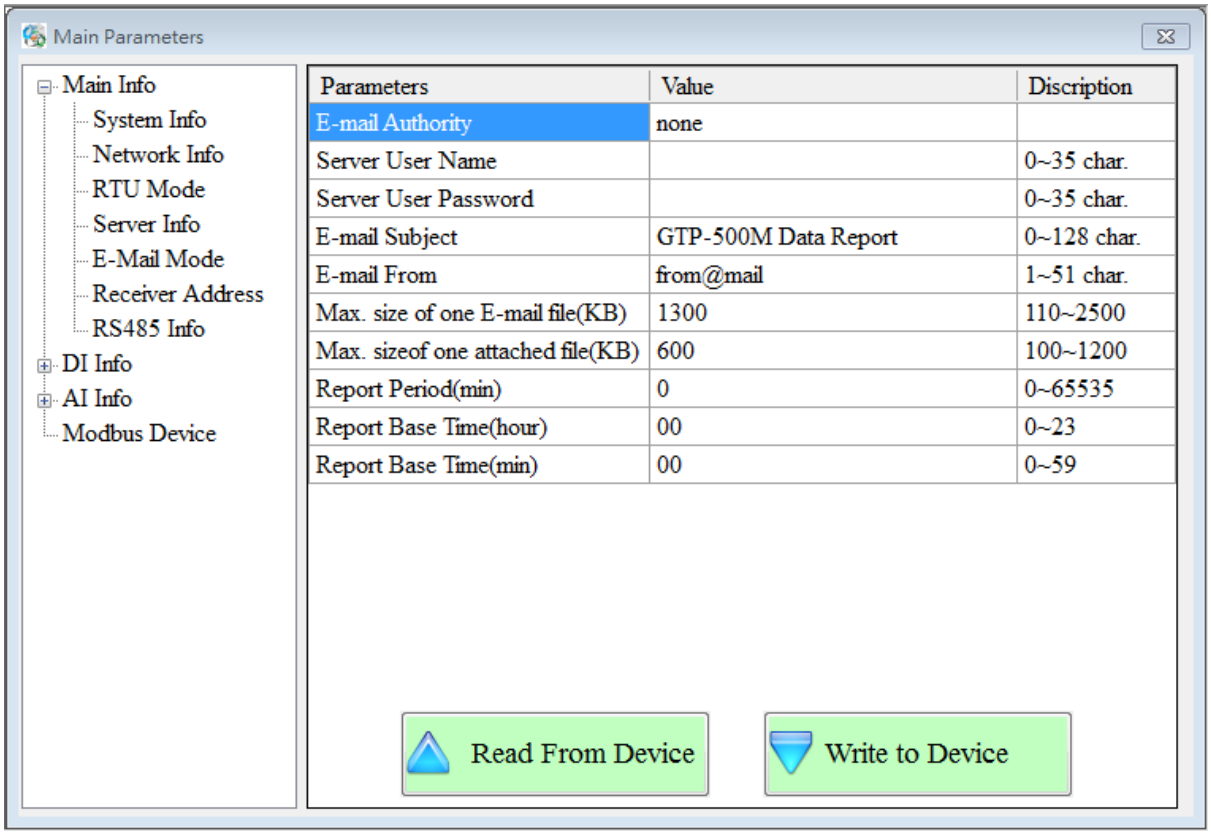
	the Remote OPC Server. (Range: 1 ~ 65535)
Data Update Period(sec)	Set the report time interval. The GTP-500M would send the data to M2M RTU Center periodically depending on this update time. The based unit is second. (Range: 0 ~ 999999 sec)
Heartbeat Period(sec)	Set the heartbeat time interval. When the GTP-500M update time is too long to terminate the WCDMA/GPRS connection by ISP, the heartbeat time will report smaller package to keep WCDMA/GPRS connection. (unit: sec) (Range: 0 ~ 999999 sec) Note: Some ISP companies would terminate the WCDMA/GPRS connection when the connection has not any data flow for some time.

Server Info



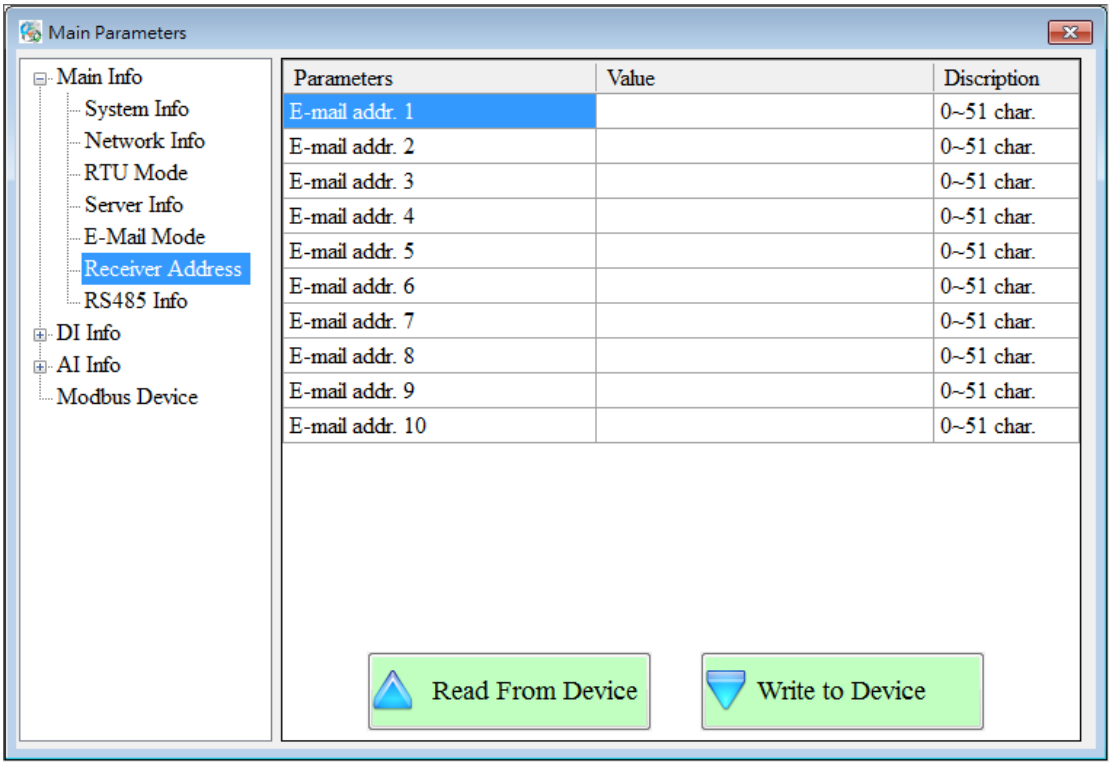
Item	Description
Server Domain Name	The server domain name. In RTU mode, it indicates the PC running M2M RTU Center. In E-mail mode, it indicates the E-mail server. (Range : 0 ~ 31 Characters)
Server IP	The IP address of the server In RTU mode, it indicates the PC running M2M RTU Center. In E-mail mode, it indicates the E-mail server.
Server Port	The port of the server is used to connect to a TCP Server. In RTU mode, the port is 10000. In E-mail mode, the port is 25. (Ranged : 0~65535)
Primary DNS	The primary Domain name server IP
Second DNS	The secondary Domain name server IP

E-mail Mode



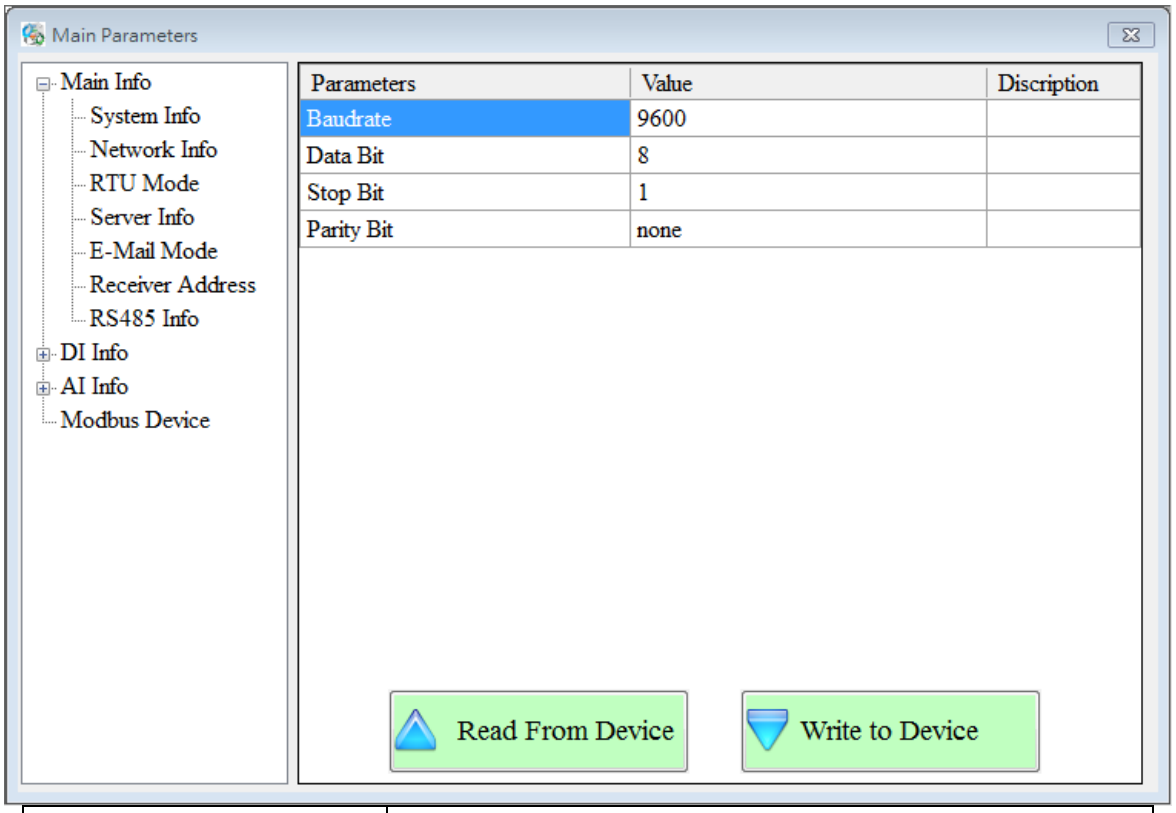
Item	Description
E-mail Authority	The GTP-500M only support two way of authority to login e-mail server 1.none: No authority 2.auth-long: AUTH-LONG
Server User Name	The user name to login to the e-mail server ◎Not support SSL (Range : 0 ~ 35 characters)
Server Password	The password to login to the e-mail server (Range : 0 ~ 35 characters)
E-mail Subject	The subject of the e-mail (Range : 0 ~ 128 characters)
E-mail From	The sender of the e-mail. This field dose not allow the empty string in E-mail mode (Range : 1 ~ 51 characters)
Max. size of one E-mail file(KB)	The maximum size of one E-mail file. The suggestion size is 1300 KBytes (Range : 110 ~ 2500 KB)
Max. size of one attached file (KB)	The maximum size of one attached file in a e-mail. The suggestion size is 600 KBytes (Range : 100 ~ 1200 KB)
Report Period(min)	The interval time to report the e-mail. (Range : 0~65535 min)
Report Base Time(hour)	The hour of first time to send the e-mail (Range : 0~23 hour)
Report Base Time(min)	The minute of first time to send the e-mail (Range : 0~59 minute)

Receiver Address



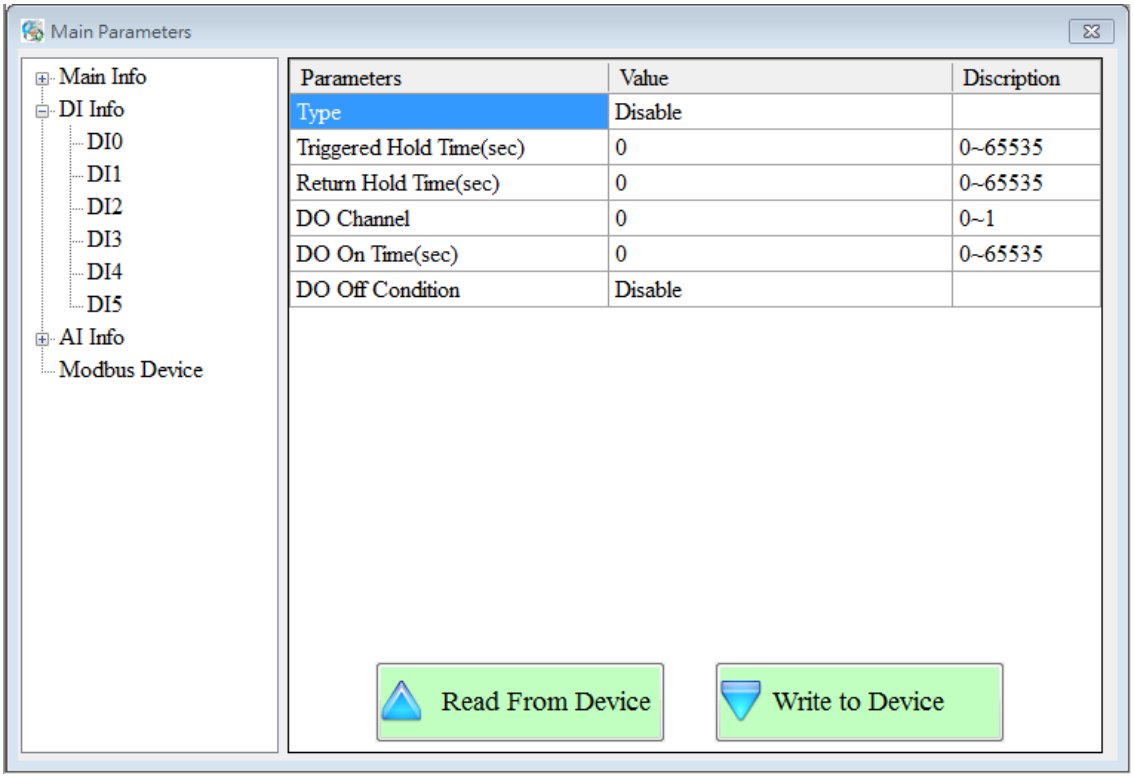
Item	Description
E-mail Addr. 1 ~ E-mail Addr. 10	In E-Mal mode, users can set the e-mail addresses of receivers in these fields. (Range : 0 ~ 51 Characters)

RS-485 Info



Item	Description
Baudrate	The baud rate of the COM2 (RS-485)
Data Bit	The data bit of the COM2
Stop Bit	The stop bit of the COM2
Parity Bit	The parity bit of the COM2 (none, odd, even)

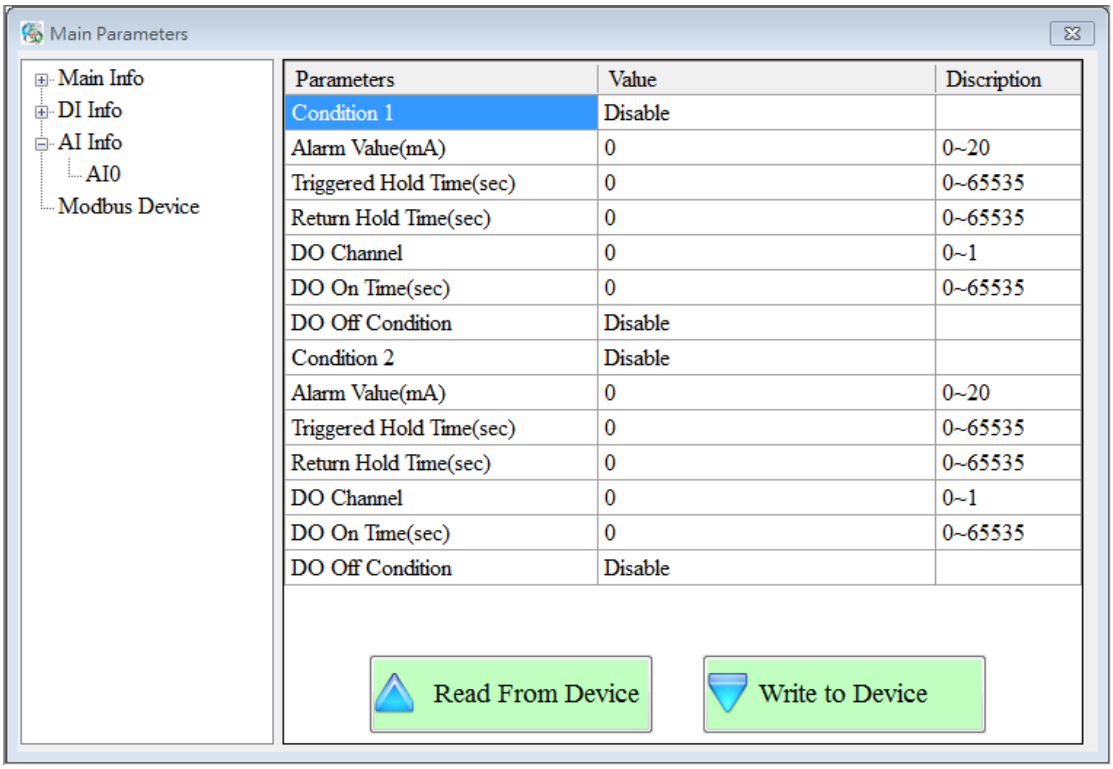
5.3.2 DI Info



Item	Description
Type	The function is used to set the type of DI channel: 1. Disable: Disable the linkage function between DI and DO channels. 2. DI NO: The DI channel is normal Open. When the DI channel is close (high), it is the trigger signal of GTP-500M. 3. DI NC: The DI channel is normal close. When the DI channel is open (low), it is the trigger signal in the system. 4. DI Counter: Set the DI channel as counter mode.
Triggered Hold Time(sec)	This value represents the holding time of the DI signal for triggering the event. The unit is second. (Range : 0 ~ 65535 sec)
Return Hold Time(sec)	When the trigger condition is activated, it

	needs to keep the non-trigger status to be triggered again according to the “Return Hold Time”. The unit is second. (Range : 0 ~ 65535 sec)
DO Channel	The text will define which DO channel will output according to the DI triggering. (Channel 0 ~ 1)
DO On Time(sec)	The DO channel would keep outputting according to this time, when DI channel is triggered and “DO Off Condition” is “time”. The unit is second. (Range : 0 ~ 65535 sec)
DO Off Condition	These conditions of the DO terminating outputting when DO is output by DI trigger. 1.Disable: Disable the DO linkage with DI channel. 2.Time: The DO output would keeping “ON” according to the “DO on Time” when DI is triggered. 3.Input Status: The DO channel output would be kept contiguously according to the time of the “Return Hold Time” when the DI returns to the non-trigger status

5.3.3 AI Info



Item	Description
Condition 1	There are three modes of the AI triggers in this condition. 1. Disable : Disable the DO linkage 2. High Alarm : The DO is activated when the AI exceeds the alarm value. 3. Low Alarm : The DO is activated when the AI is lower than the alarm value.
Alarm Value	The alarm value of AI channel (Range : 0 ~ 20 mA)
Triggered Hold Time(sec)	This value represents the holding time of the AI signal for triggering the event. The unit is second. (Range : 0 ~ 65535 sec)
Return Hold Time(sec)	When the trigger condition is activated, it needs to keep the non-trigger status to be triggered again according to the “Return Hold Time”. The unit is second.

	(Range : 0 ~ 65535 sec)
DO Channel	The DO channel will be activated according to the AI alarm. (Channel 0 ~ 1)
DO On Time(sec)	The DO channel would keep outputting by this time, when AI alarm is triggered and “DO Off Condition” is “time”. The unit is second. (Range : 0 ~ 65535 sec)
DO Off Condition	These conditions of the DO terminating outputting when DO is output by AI trigger. 1. Disable: Disable the DO linkage with AI channel. 2. Time: The DO output would keeping outputting according to the “DO on Time” when AI alarm is triggered. 3. Input Status: The DO channel output would be kept contiguously according to the time of the “Return Hold Time” when the AI returns to the non-trigger status
Condition 2	The second condition of AI trigger. The trigger modes are as condition 1.
Alarm Value	The alarm value of AI channel (Range : 0 ~ 20 mA)
Triggered Hold Time(sec)	This value represents the holding time of the AI signal for triggering the event. The unit is second. (Range : 0 ~ 65535 sec)
Return Hold Time(sec)	When the trigger condition is activated, it needs to keep the non-trigger status to be triggered again according to the “Return Hold Time”. The unit is second. (Range : 0 ~ 65535 sec)
DO Channel	The DO channel will be activated according to

	the AI alarm. (Channel 0 ~ 1)
DO On Time(sec)	The DO channel would keep outputting by this time, when AI alarm is triggered and “DO Off Condition” is “time”. The unit is second. (Range : 0 ~ 65535 sec)
DO Off Condition	These conditions of the DO terminating outputting when DO is output by AI trigger. 1. Disable: Disable the DO linkage with AI channel. 2. Time: The DO output would keeping outputting according to the “DO on Time” when AI alarm is triggered. 3. Input Status: The DO channel output would be kept according to the time of the “Return Hold Time” when the AI returns to the non-trigger status

5.3.4 Modbus Device

GTP-500M are allowed to connect to three Modbus RTU devices. Therefore, users can get these data of Modbus devices form the remote site by applying the GTP-500M. One Modbus RTU device support how much channels of I/O is as follows:

DI : 32 Channels

DO : 32 Channels

AI :16 Channels

AO :16 Channels

The section is shown how to set the settings to connect to the Modbus devices.

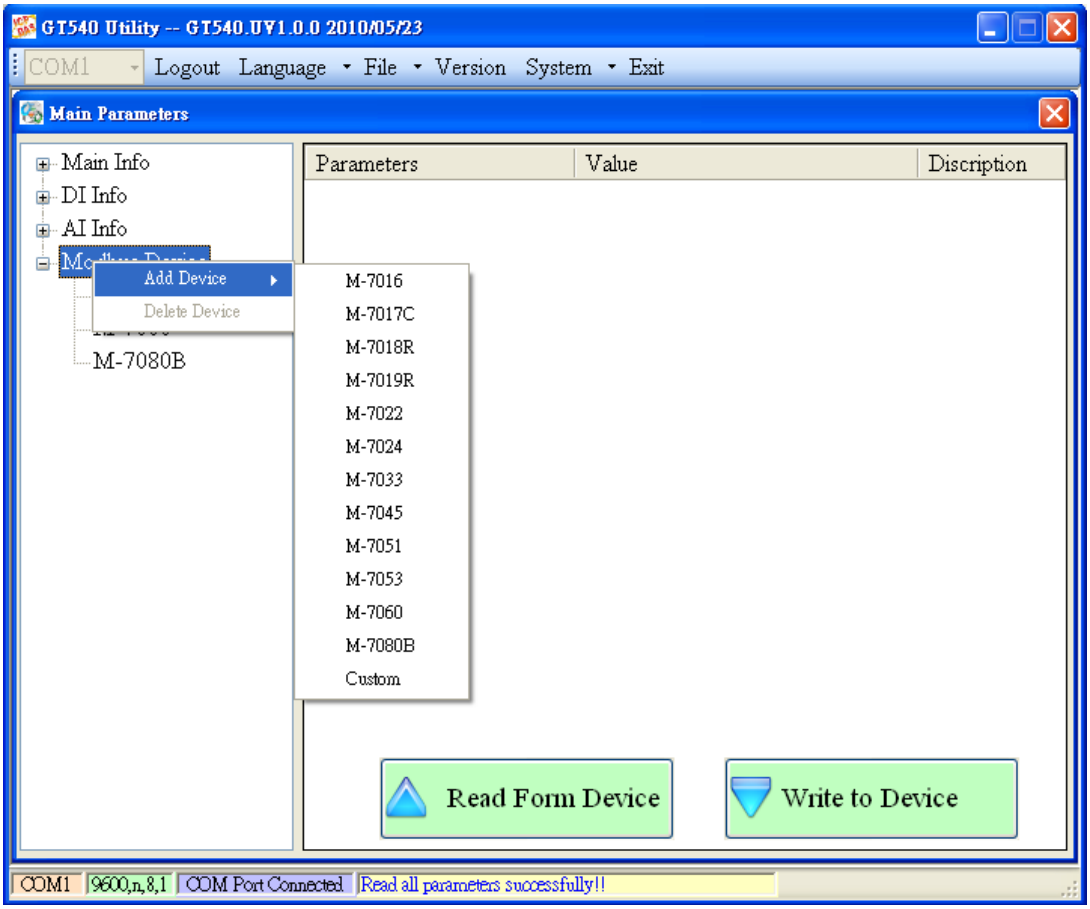
Adding a Modbus device by M2M Utility

Following these steps to add a Modbus device to the GTP-500M:

(1)Select ”Modbus Device” in the left window and press the right button of the mouse as the following figure.

(2)Select ”Add Device” to add a Modbus device.

(3)There are Modbus device of ICP DAS for users to select. If the Modbus device connected to GTP-500M is not in the list, please select “Customer” item to add this Modbus device.

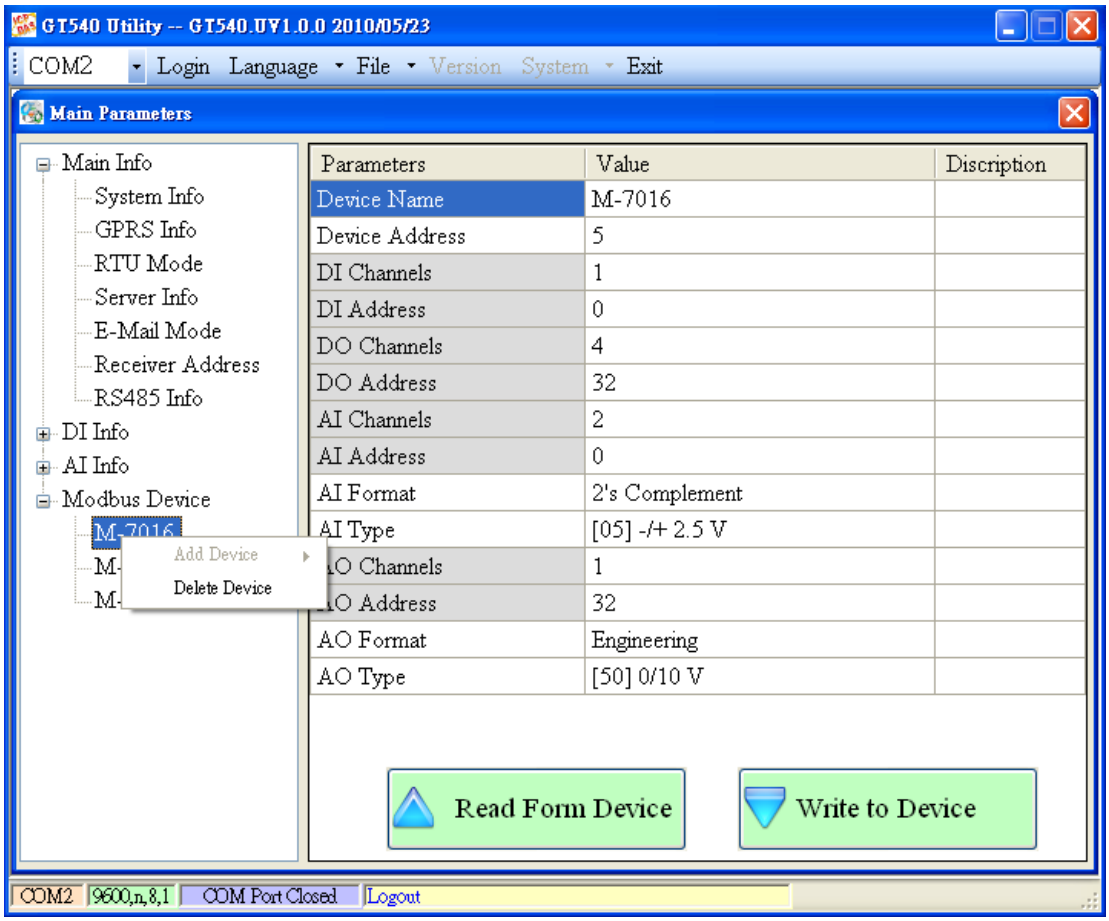


Remove a Modbus RTU device

Follow these steps to remove a Modbus device from GTP-500M.

(1)Select the Modbus device that you want to remove and click the right button of the mouse.

(2)Select ”Delete Device” to remove this Modbus device.



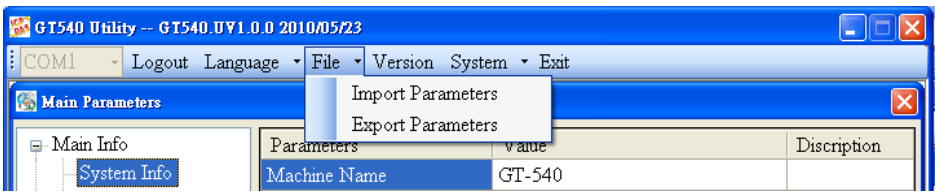
Description of parameters

Item	Description
Device name	The name of the Modbus RTU device
Device Address	The ID of the Modbus RTU device
DI Channels	The number of DI channel
DI Address	The start address of reading the DI value
DO Channels	The number of DO channels
DO Address	The start address of reading the DO value
AI Channels	The number of AI channel

AI Address	The start address of reading the AI value
AI Format	The format of AI value. Custom modbus device only support 16 bits value.
AI Type	AI type
AO Channels	The number of AO channels
AO Address	The start address of reading the AO value
AO Format	The format of AO value. Custom modbus device only support 16 bits value.
AO Type	AO type

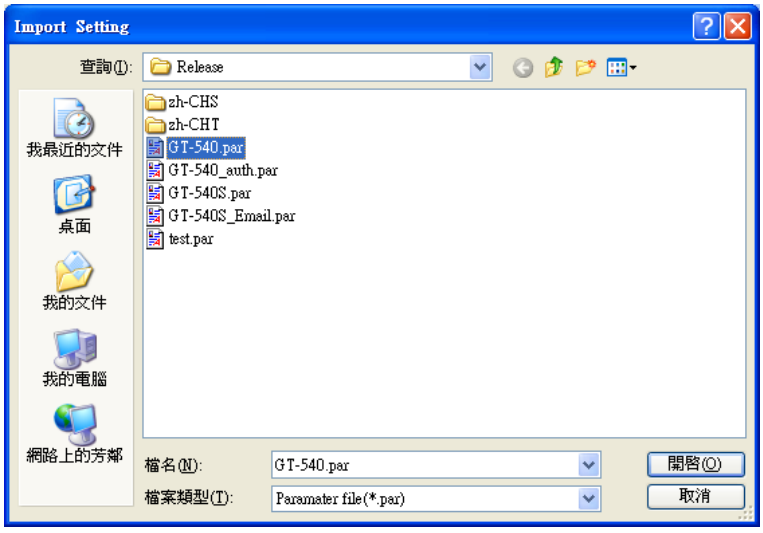
5.3.5 Import/Export Parameters

There are Import Parameters and Export Parameters in the list as the figure. These functions would be enabled as “Main Parameters” window is open.



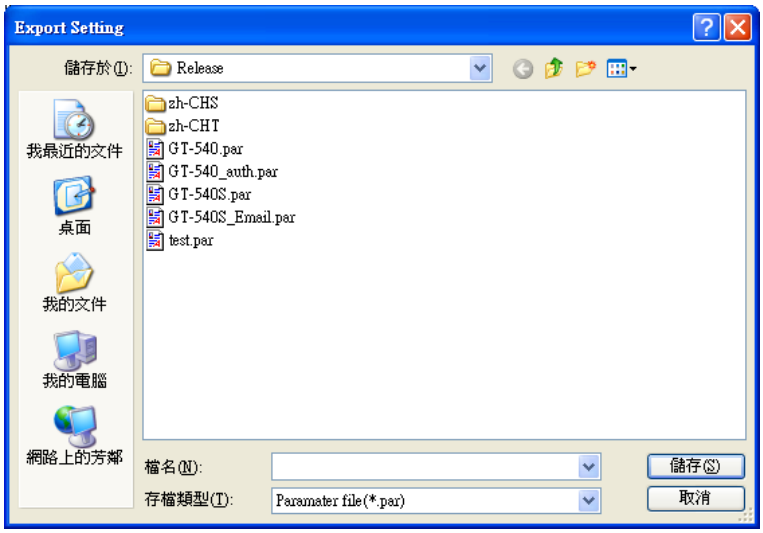
Import Parameters

This function would read these parameters from *.par and show in “Main Parameters” window. When pressing ”Import Parameters” button, the following window would pop-up. Select the path and the file to finish the importing process.



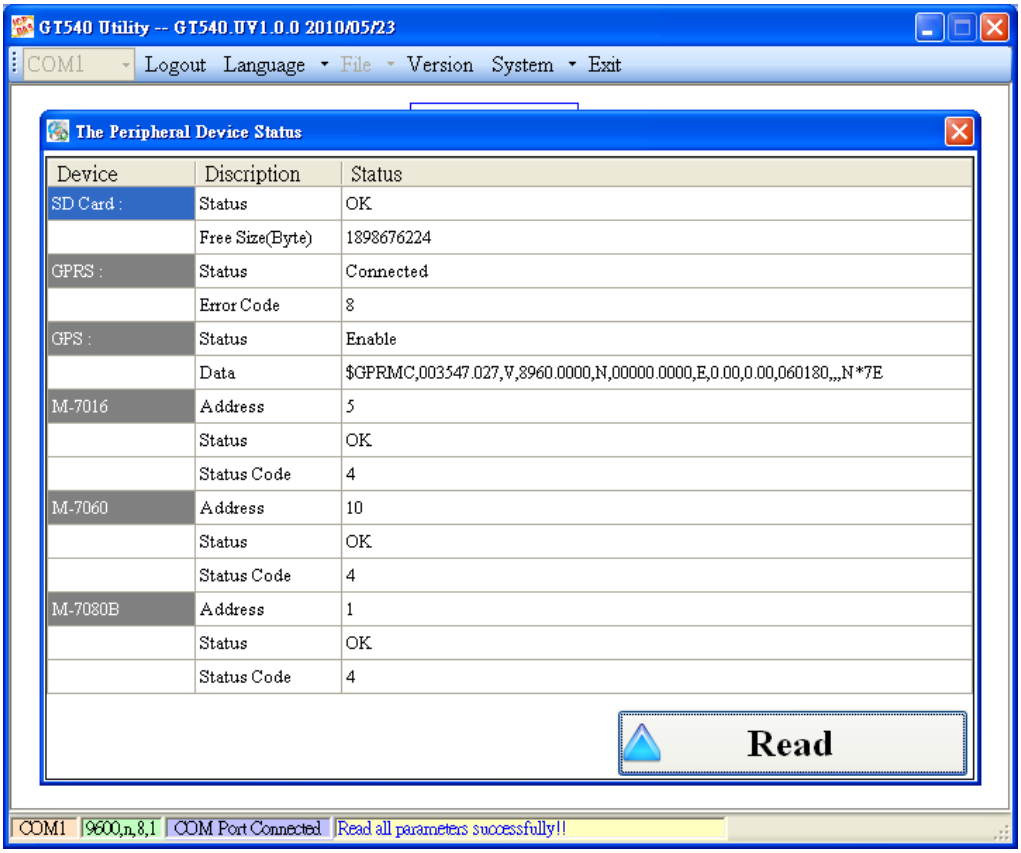
Export Parameters

This function would export these parameters to the *.par file. When pressing ”Export Parameters” button, the following window would pop-up. After selecting the path and set the file name, press “SAVE” button to finish the process.



5.3.6 Device Status

The window would show the status of micro SD card, WCDMA/GPRS connection, GPS and the Modbus devices connected to GTP-500M.



Operation description

◆Read:

Pressing this button would update the status of the GTP-500M.

Field instruction

◆SD Card

Status: Shows the status of micro SD card. (OK- normal, Error- abnormal).

Free Size(Byte): The remainder space of SD card.

◆Network

Status: Shows the status of WCDMA/GPRS connection.

Error Code: This code is for the connection status.

◆GPS

Status: Shows the GPS function is enable or disable.

Data: The current $GPRMC data of GPS.

◆M-7016/M-7060/M7080B

This field shows the status of Modbus device connected to the GTP-500M.

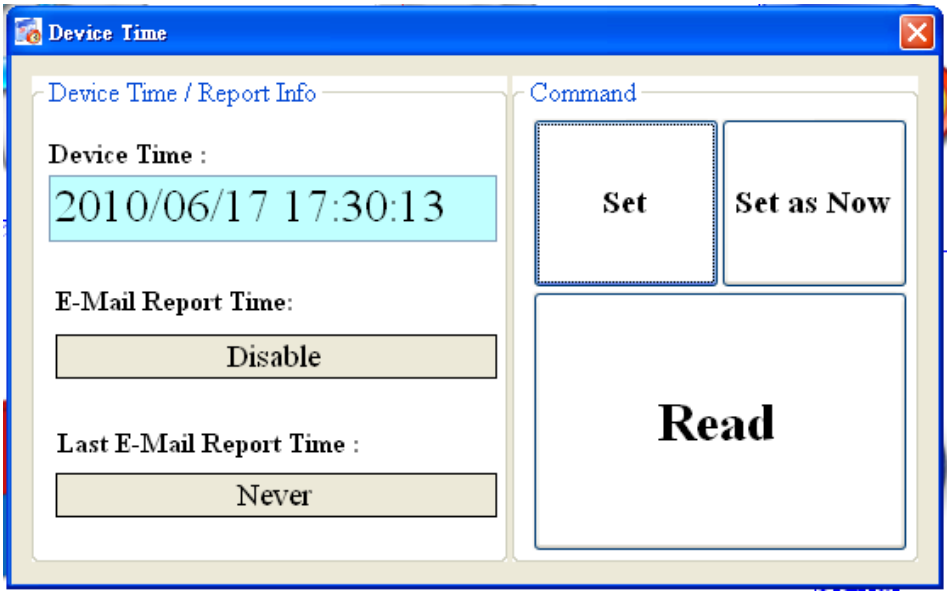
Address: Modbus RTU address

Status: The connection status between the GTP-500M and Modbus RTU device.

Status Code: The code is for the connection status.

5.3.7 Device Time

This window provides the function to inquire or modify the time of GTP-500M. Besides, in the E-Mail mode, the next and last report times are also shown in the window. The text field operation is below.



Field instruction

◆Device Time:

Show or set the time of GTP-500M.

◆E-Mail Report Time:

This field show the next time to send the mail when mail mode is enabled. If the time is changed, the information would be updated.

◆Last E-Mail Report Time:

This field show the last time to send the mail when the mail mode is enabled.

Operation description

◆Set as Now:

Set the time of GTP-500M according to the time of PC.

◆Set:

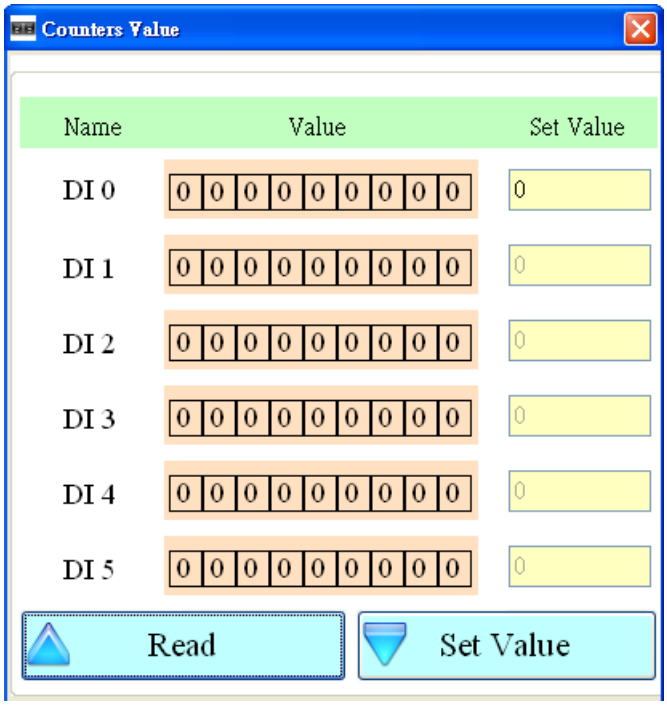
Set the time of GTP-500M according to the time of the field.

◆Read:

This button would read the time of GTP-500M, the next time to send the mail and the last time to send the mail.

5.3.8 Counter Value

If GTP-500M login without expansion board, this function will be unable. This window provides the function to inquire and modify the counter values of DI0 ~ DI5. The explanation of operation and text field is below:



Text field

◆Name:

The DI name of DI0 ~ DI5。

◆Value：

The current counter value (maximum: 999999999)

◆Set Value:

Input the defined counter value. The maximum is 999999999. This field is enabled when DI is set as counter mode. (If users want to clear these counter values, set 0 to these counter values.)

Operation

◆Read:

Read the current counter value and alarm settings from GTP-500M. If the DI channel is not set as counter, the counter value is 0.

◆Set Value :

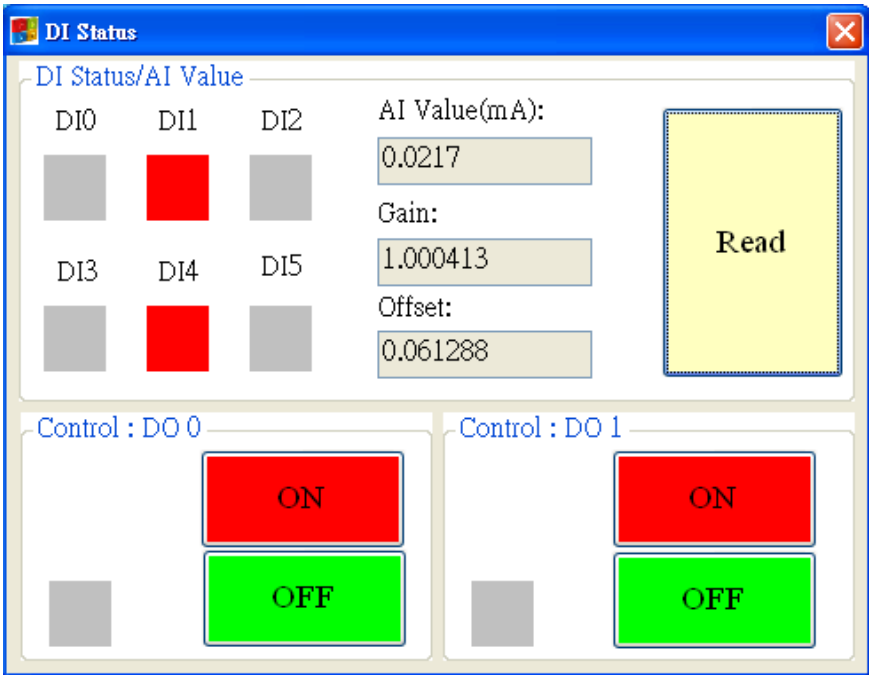
Change the counter value into GTP-500M according to the "Set Value" field

When the DI channels are set as counter and data logger is enabled, the CIx field would be added in csv files as the figure below. (x: the number of DI channel)

A	B	C	D	E	F	G	H	I	J
Date	CI0	CI1	DI2	DI3	DI4	DI5	DO0	DO1	AI0
20100223 175626	11111	22222	0	0	0	0	0	0	-0.494
20100223 175636	11111	22222	0	0	0	0	0	0	-0.497
20100223 175704	11111	22222	0	0	0	0	0	0	-0.494
20100223 175714	11111	22222	0	0	0	0	0	0	-0.494

5.3.9 DO control/DI status/AI Status

If GTP-500M login without expansion board, this function will be unable. This function is used to control DO0 and DO1 channels and show the status of DI channels and AI value.



Text field

◆DI0 ~ DI5, DO0 ~ DO1:

Gray: The voltage logic is high.

Red: The voltage logic is low.

◆AI Value:

The AI current value.

◆Gain:

Gain value. It can calibrate the AI value

◆Offset:

Offset value. It can calibrate the AI value

Operation

◆Read:

Read back the status of DI/DO and AI value from GTP-500M.

◆DO0 ~ DO1 ON:

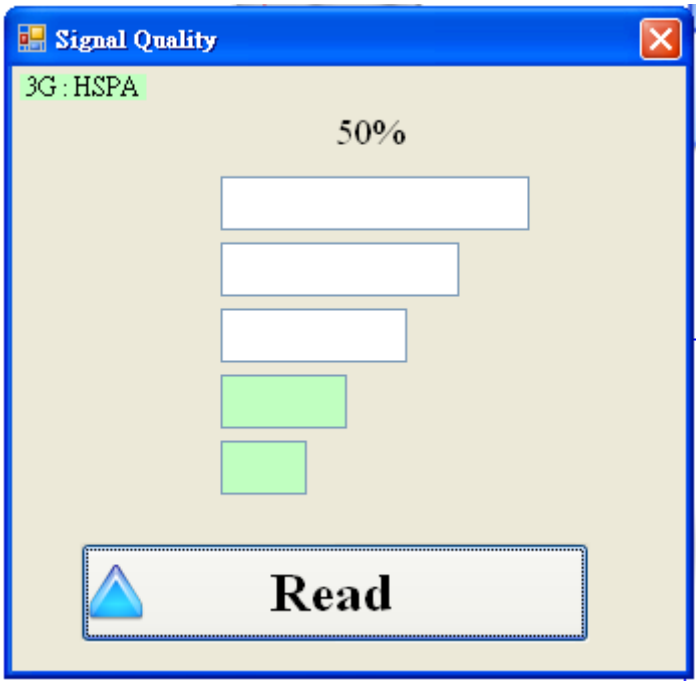
Set the DO output on

◆DO0 ~ DO1 OFF:

Set the DO output off

5.3.10 Signal Quality

This window can show WCDMA/GPRS signal strength.



Text field

The strength is divided into 5 sections shown in percentage. And the top-left corner of the window can show the signal type.

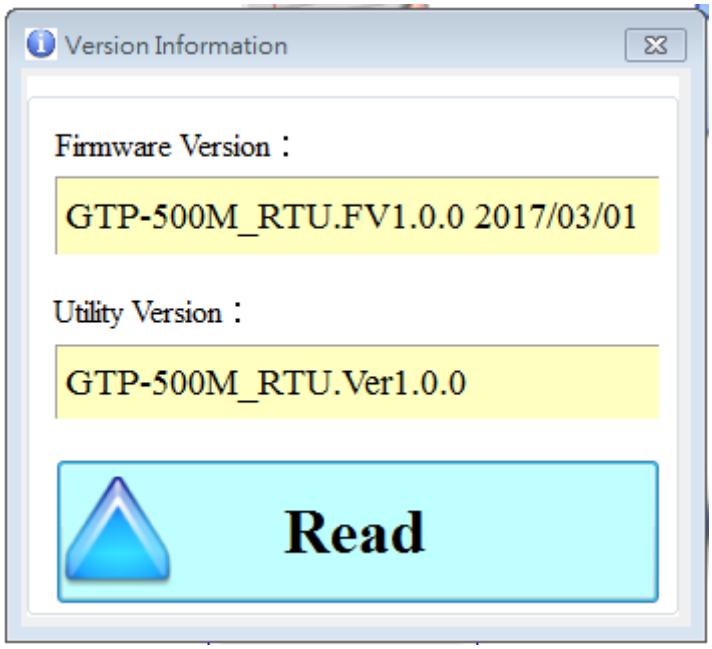
Operation

◆Read:

Read the WCDMA/GPRS signal strength.

5.3.11 Version

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



Text field

◆Firmware Version:

Show the firmware version of GTP-500M.

◆Utility Version:

Show the Utility version of GTP-500M.

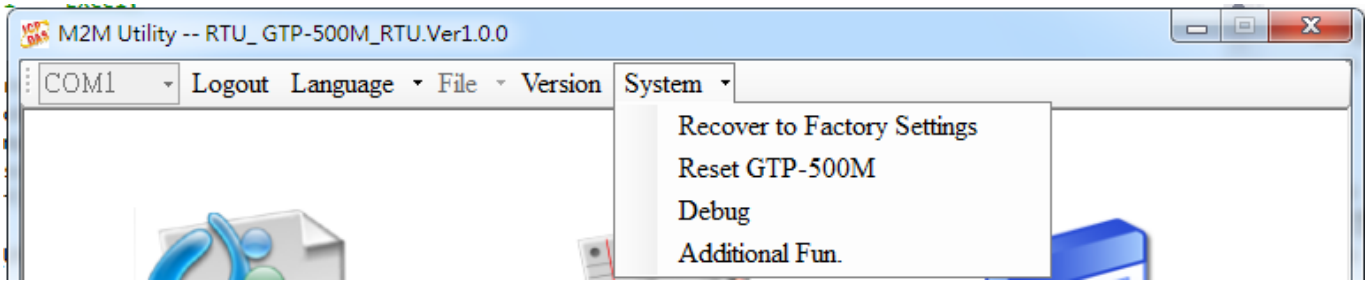
Operation

◆Read:

Read the version information from GTP-500M.

5.3.12 System

“System” menu item has 4 functions. They are “Recover to Factory Settings”, “Reset GTP-500M”, “Debug” and “Additional Fun.” as the figure below.



Recover to Factory Settings

The function is used to recover GTP-500M as factory settings including password.

◆Make sure the STA led is blanking per 1 sec.

◆Select the Recover to Factory Settings.

Reset GTP-500M

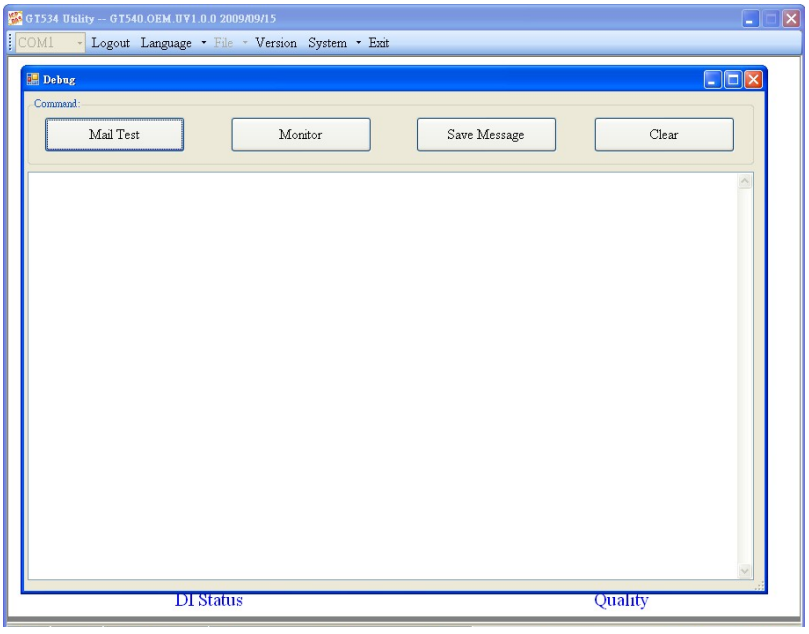
The function is used to reset GTP-500M by software.

◆Make sure STA led is blanking per 1 second

◆Select “Reset GTP-500M” button to reset GTP-500M.

Debug

In this Debug mode, users can test mail function and show debug messages. The test or debug messages could be saved as the file.



Operation

◆Mail Test:

In the E-mail mode, click the button to send the E-mail to the defined e-mail address.

◆Monitor:

This function can transfer the debug messages from GTP-500M and show in the Window.

◆Save message:

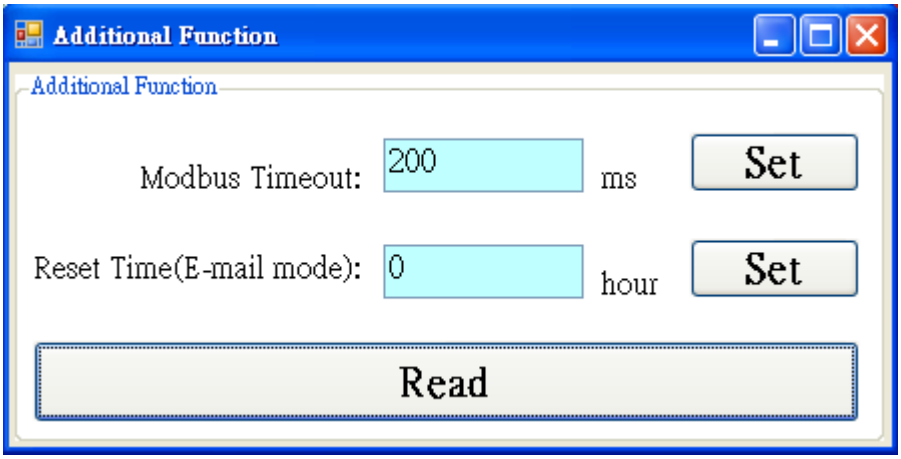
Save the debug messages as files.

◆Clear:

Clear the information in the debug filed.

5.3.13 Additional Function

This function can set the timeout of Modbus Command and Reset Interval time in E-mail mode.



Text field

◆Modbus Timeout:

The timeout of Modbus RTU command and the default value is 200ms.

◆Reset Time (E-mail mode):

In E-mail mode GTP-500M will reset itself per “Reset Time”. The default value is 0 and it mean that this function is disabled.

Operation

◆Read:

Read all two settings above from GTP-500M.

◆Set:

Write the two settings above to GTP-500M.

5.4 Data logger

The data logger would be enabled as the “Data Logger Period” is not 0. The logger files would be saved as .csv file in micro SD card. The different modes provide the different file path, but the same file name and data format.

RTU Mode

The current file is stored in the path of RUNTIME. The system would store the data to the new file at the time 00: 00 every day and copy the old file to the path of LOGFILE. In this mode, the timing of changing file name is as follows.

(1)At 24 o’clock every day

(2)Change Modbus RTU device connected to GTP-500M.

(3)Change the interval time of record.

(4)Change DI type as counter

(5)Disable/Enable GPS

E-Mail Mode

The current file of data logger is stored in the path of RUNTIME. As arriving the time to send e-mail, the system would move the file to the path of UPLOAD and package the file as e-mail file in the path of EMAIL. The logger file would be stored in the path of LOGFILE. When finishing sending E-mail, the E-mail file would be deleted. In this mode, the timing of changing file name is as follows.

(1)The logger file is over the setting of ”Max. size of one attached file”.

(2)The upload time is arrived.

(3)Change Modbus RTU device connected to GTP-500M.

(4)Change the interval time of record.

(5)Change DI type as counter

(6)Disable/Enable GPS

5.5 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.

◆yyyy: year

◆mm: month

◆dd: day

◆HH: hour(24h)

◆MM: minute

◆SS: second

◆Period: Data Logger Period

5.6 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, Modbus data and GPS data. The max number of Modbus device is three. Users can refer the following complete example to understand that.

Date	CI0	CI1	DI2	DI3	DI4	DI5	DO0	DO1	AI0	Module [M-7016] Addr.	DI0	DO0
20100520 175518	119	230	0	1	1	0	0	0	0.059	5	1	0
20100520 175519	119	230	0	1	1	0	0	0	0.058	5	1	0

DO1	DO2	DO3	AI0	AI1	AO0	Module [M-7060] Addr.	DI0	DI1	DI2	DI3	DO0
0	0	0	0.033	0.671	1.500	5	1	0	0	0	1
0	0	0	0.034	0.671	1.500	5	1	0	0	0	1

DO1	DO2	DO3	Module [M-7080B] Addr.	DO0	DO1	CI0	CI1
0	0	0	1	0	0	655361	5961
0	0	0	1	0	0	655361	5961

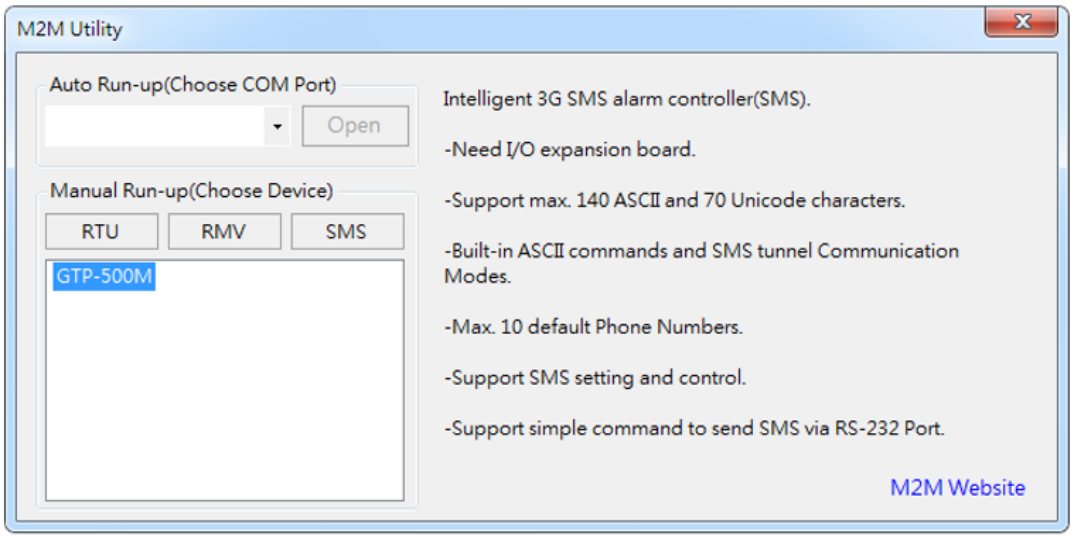
5.7 Delete Data Logger File Automatically

At 24 o’clock every day , the GTP-500M would check the free space of micro SD card, if the free space of the micro SD card has less than 50MB, it would delete the oldest data logger files in the path of LOGFILE automatically until the free space has larger than 50MB.

6. SMS Function Utility operation description

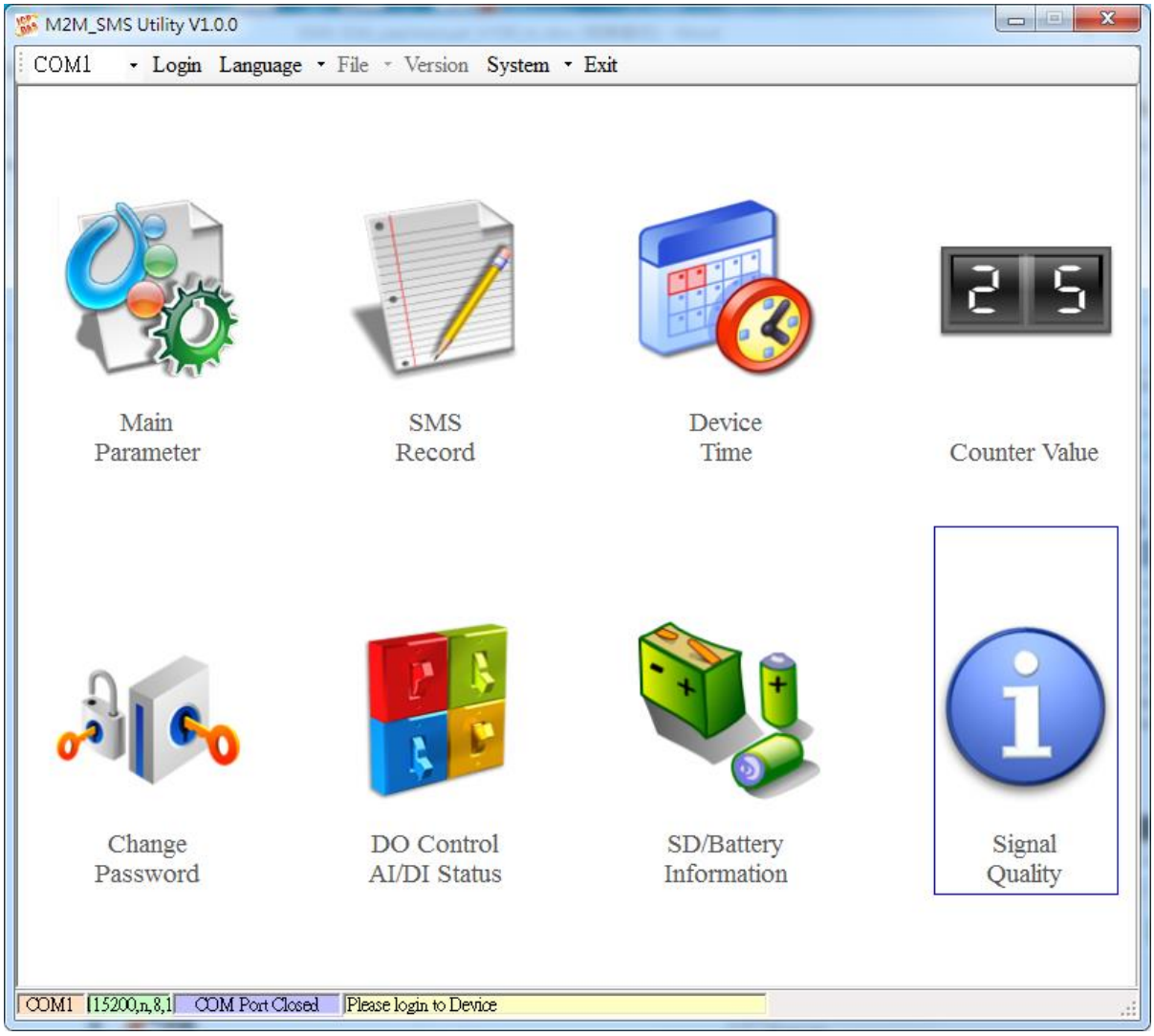
Please refer to page.19 to start the SMS function utility.

*SMS Function need to install the expansion I/O board to execute the full function. Users can view the I/O expansion board on website(http://m2m.icpdas.com/GTP-500M.html).



6.1 Main menu

The main menu of M2M Utility includes the following sections.



Tool Menu

◆ “COM”:

Set the COM port number in PC connecting to GTP-500M.

◆Login/Logout:

Before operating GTP-500M, users need to login to M2M Utility. After login the system successfully, the menu item “login” would become “logout” and the M2M Utility would be operated normally. Once the power is reset, the login procedure needs to do again.

◆Language:

M2M Utility supports English, Tradition and Simplified Chinese interface. Users can select which language interface they want from the “Language” item. The language setting would

be influencing on the encode of SMS.

◆File:

There are import and export functions in “File” item. The functions would be enabled when “Main parameters” window is open.

Export: The function can export the parameters as .par file from the “Main parameters” windows.

Import: The parameters would be shown in “Main parameters” window from the specific .par file.

◆Version:

GTP-500M Firmware and Utility version information.

◆System:

Provide users for recovering GTP-500M to factory and resetting GTP-500M.

◆Exit:

To exit the Utility.

Function items

◆Main parameters:

The main parameter setting of GTP-500M includes ID, SIM number, 10 phone number authority, counter return report, event, DI mode, AI alarm and SMS message.

◆SMS record:

Inquire the report recorder of event and counter. The maximum number of recorder in GTP-500M is 64.

◆Device time:

Display and set the RTC time of GTP-500M. It is also can get the information of the last and next time of the return report.

◆Counter Value:

Inquire and set the counter value.

◆Change Password:

Change the login password

◆DO Control/DI/AI Status:

Display the status of I/O, control the DO output and AI status.

◆SD/Battery information:

Show total size and free size of SD card, and show the voltage and volume of Li-Battery.

◆Signal Quality:

Show GSM/WCDMA signal strength in GTP-500M

Status Line

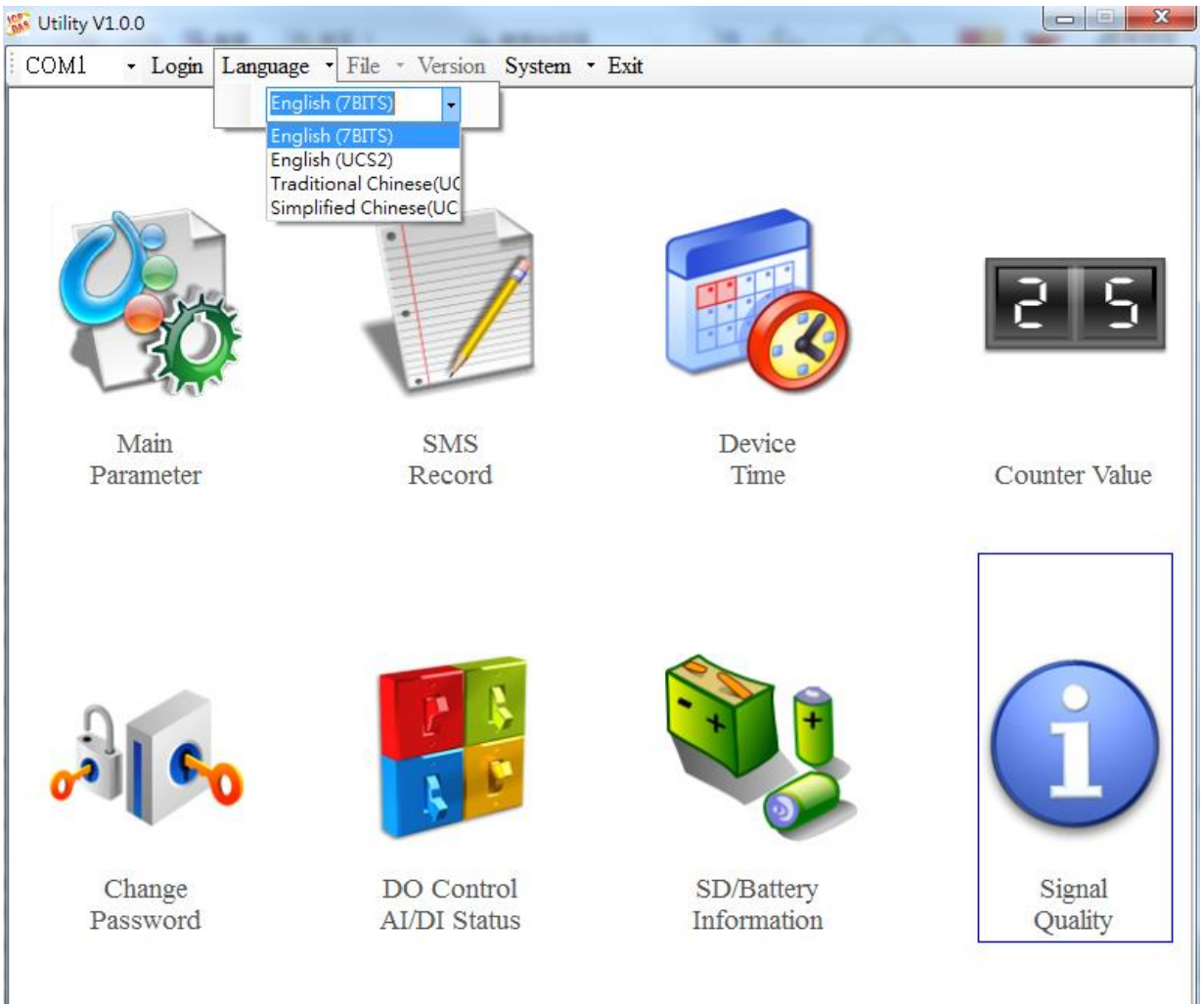
Show the related information during the operation procedure including.

- ◆The com port number of PC
- ◆The communication setting of COM Port
- ◆The status of COM Port
- ◆The result of Utility operation

6.2 Operation Language

M2M Utility supports English, Traditional Chinese and Simplified Chinese from the “language” menu bar. The text display in M2M Utility and the encode of SMS are depended on the selected language interface.

The format of SMS accords to the selected language. If the 7 BITS format is set, the maximum characters can be sent in SMS is 140. If UCS2, the maximum number is 70 characters. Therefore, if users want to send the Chinese message, it need to select UCS2 encode. After setting the language, it needs to reset GTP-500M to enable the setting.



6.3 Login

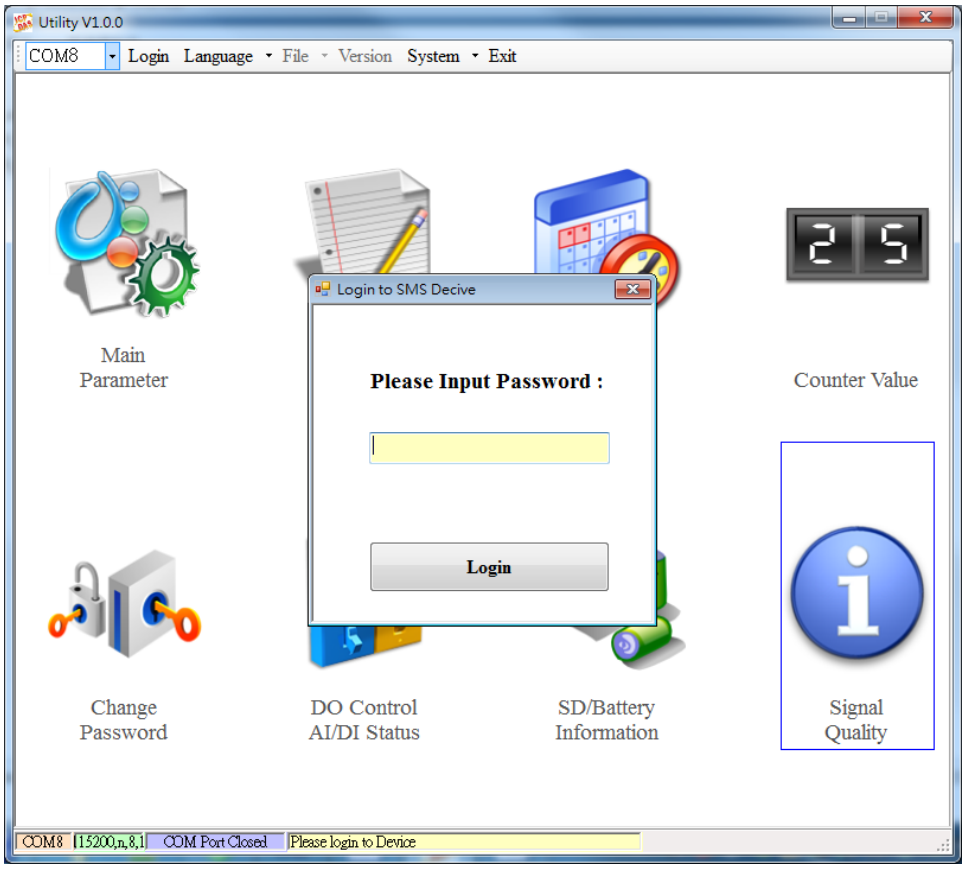
It needs to login into GTP-500M to set its parameters. The description is below.

(1)Select the COM port number of PC.

(2)Input the login password. The default is “111111”

(3)Press the “login” button

(4)If you are the first time to login, please set the time of GTP-500M.



If the pin code in GTP-500M is not correct, the STA led would be blanking per 50 ms and M2M utility would ask for users to input Pin or PUK code.

Note: Input PIN/PUK code step please refer to chapter 4.5.5

6.4 Device parameter

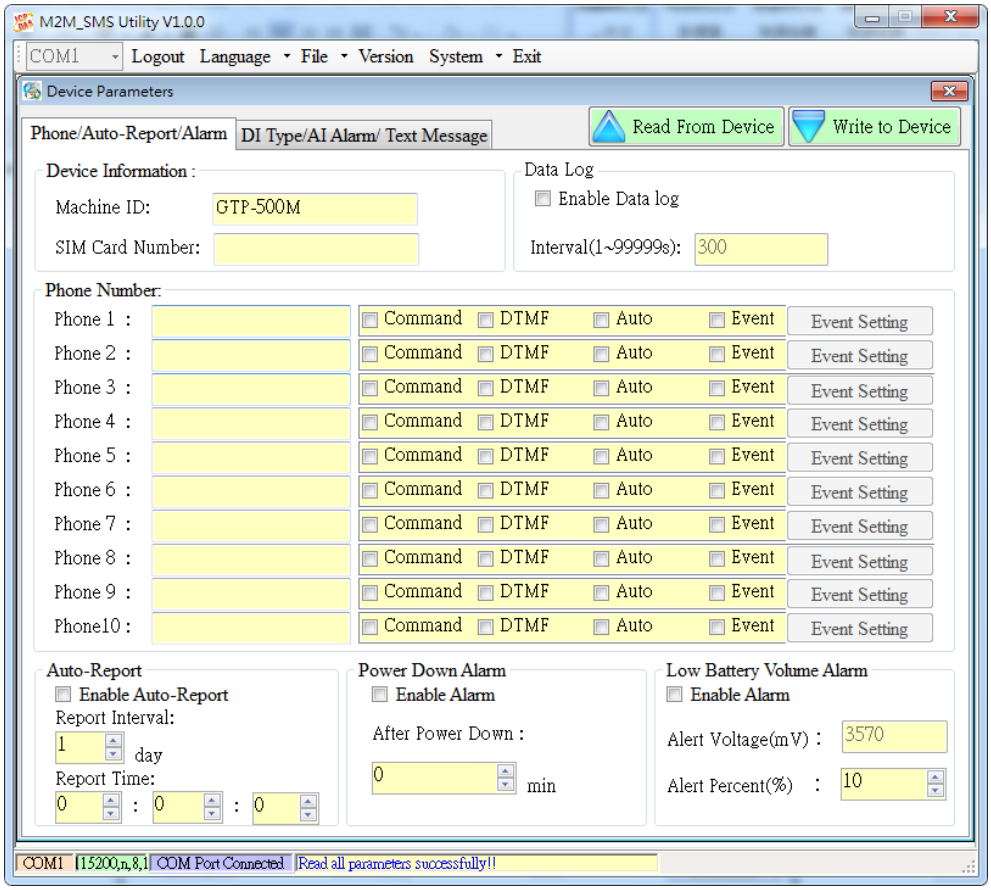
There are 2 pages in “Device parameter” window. They are “Phone/Time Report/Alarm” and “DI Type/Text Message” pages.

After configuring the 2 pages, press “Write to Device” button to save these settings to GTP-500M. Then, reset GTP-500M to enable these settings.

The “Read Form Device” button can help users to read back these settings from GTP-500M. In addition, these setting would be read from GTP-500M when the “Main Parameter” window pops up from the main menu.

6.4.1 Phone /Periodic report/Alarm

The following page is “Phone/Periodic Report/Alarm”. Users can refer the explanation below.



Machine ID

The device ID would be shown in the report and alarm SMS messages. It can be used for recognizing the GTP-500M. The length of characters is 20 without supporting Unicode and “;” characteristic.

SIM Card Number

This text field can show or input the phone number of the plug-in SIM card. Take Taiwan for example: 0928xxxxxx. If the phone number is international number, the “international prefix number” and “national number” must be added in the front of phone number. For example: 002-86-928xxxxxx.

Data log

The users can select to enable or disenable data log function, and set the time interval of data log which the minimum setting is 1 sec. The GTP-500M will delete older file when the free size of SD card is less than 50MB. The format of data log as below.

Data,Time,DI0, DI1, DI2, DI3, DI4, DI5, DO0, DO1,AI

Phone numbers (1 ~ 10)

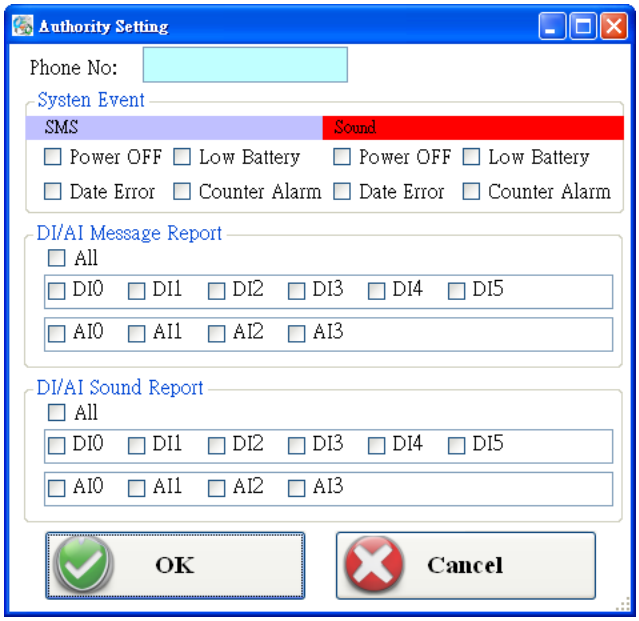
This field is used to set which phone numbers to receive SMS/voice message or send SMS command. Every phone number can be set the authority as follows.

◆Command: Authority to send the SMS commands to GTP-500M

◆DTMF: Dual-Tone Multi-Frequency, the user can control DO by DTMF.

◆Counter Report: Authority to receive the counter SMS report periodically.

◆Event: Authority to receive the event SMS report



◆System Event: SMS or Sound event of system

◆DI/AI Message Report: SMS message of DI or AI event

◆DI/AI Sound Report: Sound message of DI or AI event

Auto-Report

◆Enable Auto-Report: Enable the function in this item.

◆Report Interval: The time interval for counter report and it is set by day (1 ~ 31 days)

◆Report time: Hour/Minute/Second

The SMS format of counter report is fixed. It cannot be modified by users:

CRPT;Machine ID;Report Date;Report Time;DI0;DI1;DI2;DI3;DI4;DI5

CRPT: Counter report

Machine ID: Device ID

Report Date: Report date, format: YYYYMMDD (Y=year, M=month, D=day)

Report Time: Report time, format: HHmmSS (H=hour, m=minute, S=second)

DI0 ~ DI5: The counter values of DI0 ~ DI5.

Note:

If CRPT function is enabled and the return time is changed, the next time to send the SMS report is re-calculated according to the current time of GTP-500M and the CRPT time. There would 2 conditions on the day.

When the GTP-500M time is over the CRTP time, GTP-500M would send the CRTP SMS after 1 minute.

If the GTP-500M time does not reach the CRTP time, GTP-500M would not send the CRTP SMS until GTP-500M time reaches the CRTP time.

Power Down Alarm

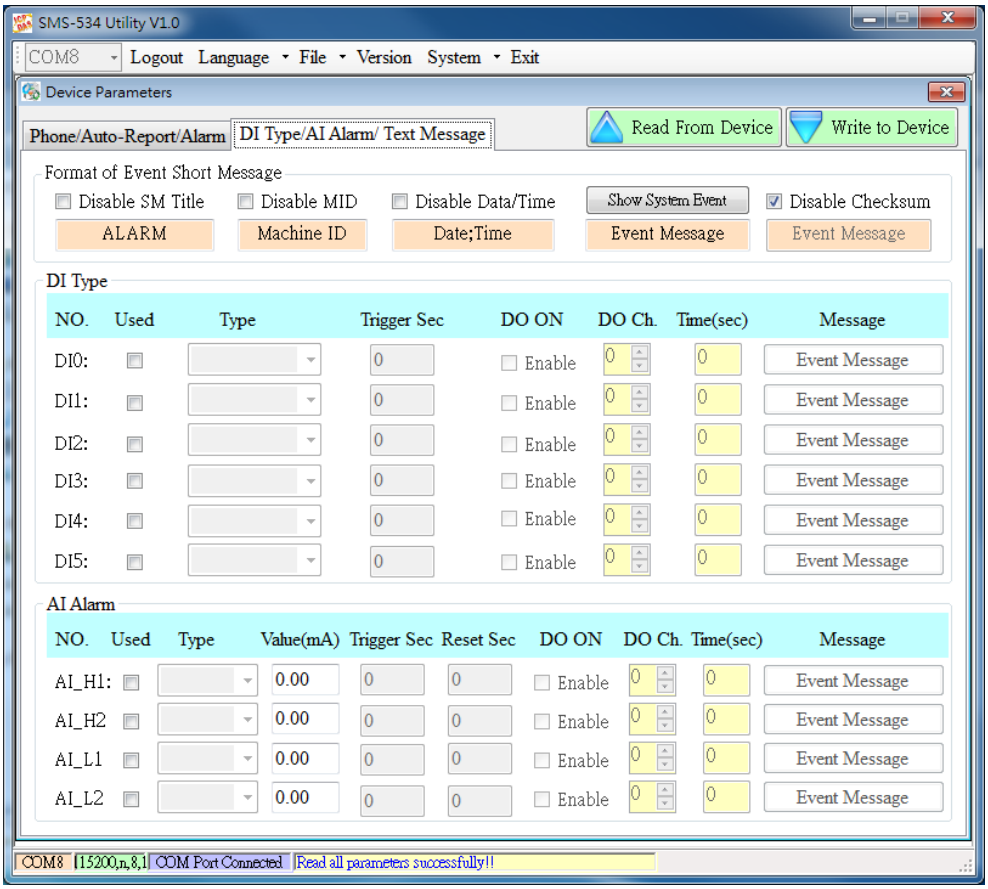
The function supports to send alert SMS when the external power is off. The alert time after the event happened can be set by minutes (0 ~ 60 minutes).

Low Battery Volume Alarm

The function supports to send alert SMS when the volume of battery is low. The low battery value can be set as 10%~ 50% less than total volume.

6.4.2 DI mode and SMS content

Another page in “Device parameter” is about DI and event setting. The explanation is below.



The format of event Shot Message

The format of event SMS can be modified by users by the check boxes. The complete format of even SMS is below.

ALARM;Machine ID;Report Date;Report Time;Event Message

ALARM: Indicate alarm report

Machine ID: Device ID

Report Date: Report date, format: YYYYMMDD (Y=year, M=month, D=day)

Report Time: Report time, format: HHmmSS (H=hour, m=minute, S=second)

Event Message: User-defined content

The three messages of event SMS can be set or canceled by users to match various applications. They include Utility.

◆Disable SM Title:

Enable the function. The title string “ALARM” would not be sent in SMS.

◆Disable MID:

Enable the function. The machine ID would not be sent in SMS.

◆Disable report Data/Time:

Enable the function. The data and time would not be sent in SMS.

◆Disable ID:

Disable this function. A check ID would be sent in SMS and custom can use ICPDAS's SMS management software (SMS-534 SMS Database System software).

Show System Event

The window shows the system event message according to the selected language. The content is fixed and cannot be changed. There are 4 system events in GTP-500M as follows.

◆Event 1：

The external power is off. (This function can be disabled)

◆Event 2：

The volume of battery is lower than the setting value. (This function can be disabled). n is the remaining percentage volume of battery.

◆Event 3：

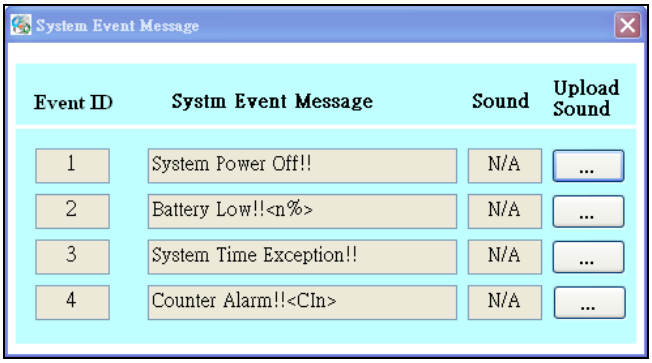
The time of GTP-500M is abnormal. This function can not be disabled. It could make the wrong timing for report and the cause is the silver battery of GTP-500M is abnormal. After changing the silver battery, the time of GTP-500M must be set.

◆Event 4:

The counter value is reaching the preset limits. This function can be disabled. n represents the number of DI channel. (n: 0 ~5)

◆Sound upload:

Users can upload sound file to SD card. If the file has existed, it shows "OK". If it doesn't exist , it shows "N/A"



DI type

There are 3 modes of DI type for users to select. It needs to reset GTP-500M to enable new setting after changing these parameters.

◆Use:

Enable DI function

◆Type:

DI0 ~ DI5 could be set as Counter function, NC or NO mode.

Counter: Counter function (frequency : 5 ~ 40Hz)

DI-NC: Normal Close mode. When the DI circuit is broken, the event is triggered. GTP-500M would send the alarm SMS. Refer to section 2.4.2 for the detail.

DI-NO: Normal Open mode. When the DI circuit is shorten, the event is triggered. GTP-500M would send the alarm SMS. Refer to section 2.4.3 for the detail.

◆Trigger Time(sec):

Set the hold time of the DI triggered signal (0~9999 seconds)

◆DO ON:

This function enable DO output when the DI event is triggered.

◆DO Ch.:

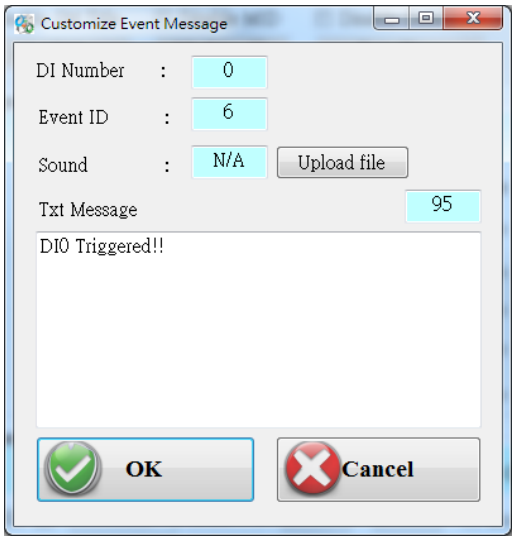
Set the DO channel.

◆Time(sec):

Set the output time of DO channel (0~999 seconds). If the power is just provided by Li-battery, GTP-500M would not be into sleep mode until the output time is reaching.

◆Event message:

Set the user-defined message content. These message would be included in event SMS.



AI type

There are 2 modes of AI type for users to select.

◆Use:

Enable AI alarm function

◆Type:

AI_H1, AI_H2, AI_L1, AI_L2 could be set as high alarm or Low alarm mode.

Upper Limit: Set AI as over alarm.

Lower Limit: Set AI as low alarm.

◆Value:

AI alarm value

◆Trigger Time(sec):

Set the hold time of the AI triggered signal (0~9999 seconds)

◆Reset time (sec):

Set the time when the AI needed to restore the number of seconds (0~999).

◆DO ON:

This function enable DO output when AI event is triggered.

◆DO Ch.:

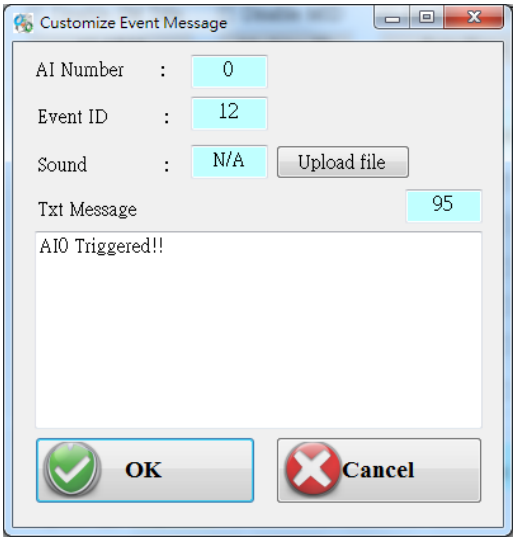
Set the DO channel.

◆Time (sec) :

Set the output time of DO channel (0~999 seconds). If the power is just provided by Li-battery, GTP-500M would not be into sleep mode until the output time is reaching.

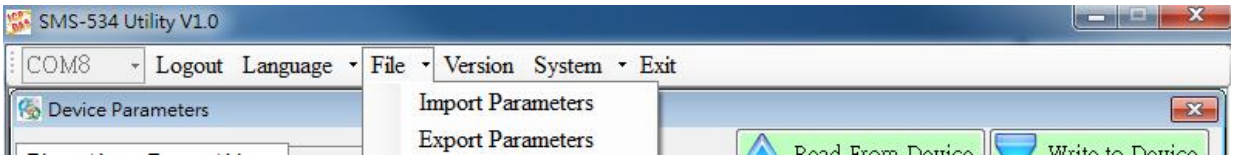
◆Event message:

Set the user-defined message content. These message would be included in event SMS.



6.4.3 Import/Export Parameters

Users can use the import and export functions from the menu bar. This function would be enabled when the “Device 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 “Device parameter” window. When press “import” button, a file selection window would pop up for users to choice the .par file.

Export Parameters

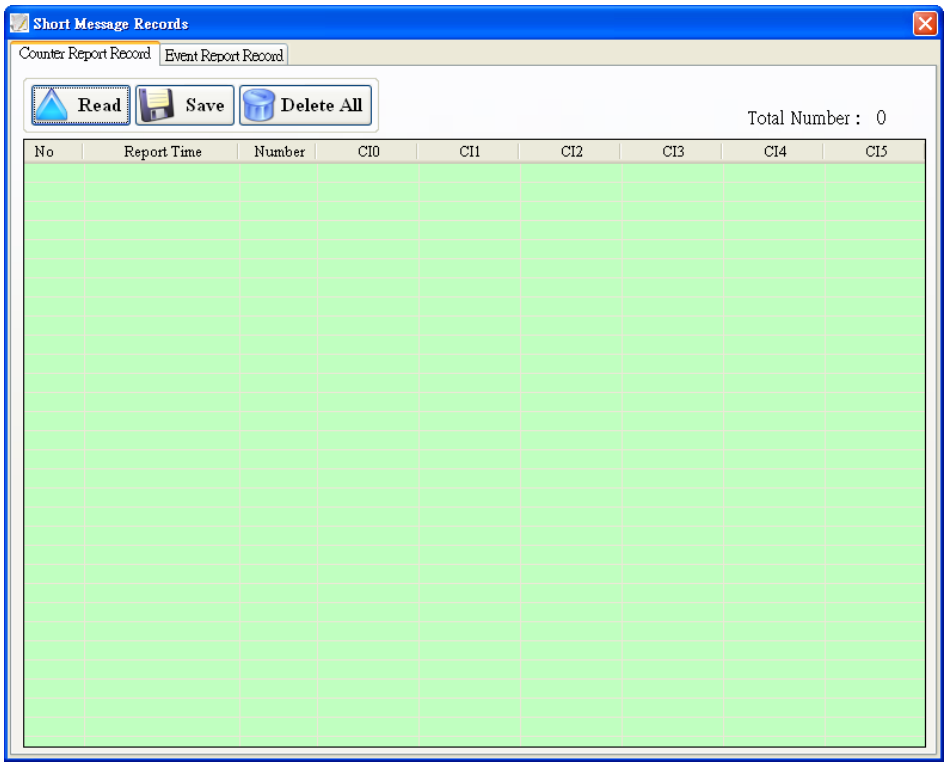
The function is used for saving the setting of “Device parameter” window as .par file. When press “Export” button, a file selection window would pop-up for users to save the setting as .par file in specific path.

6.5 SMS Recorder

This window provides the inquiring, saving and deleting counter value, and event SMS record function.

6.5.1 Counter Report record

In this page, users can inquire the record of CRPT reports.



Operation

◆Read:

Read all the CRPT report from GTP-500M. The maximum number of CRPT report record is 64.

◆Save:

Save these records to a file (*.csv).

◆Delete all:

Delete all CRPT report records from GTP-500M.

Text field

◆No:

The number of RTCP records.

◆Report time:

CRPT report time.

◆Number:

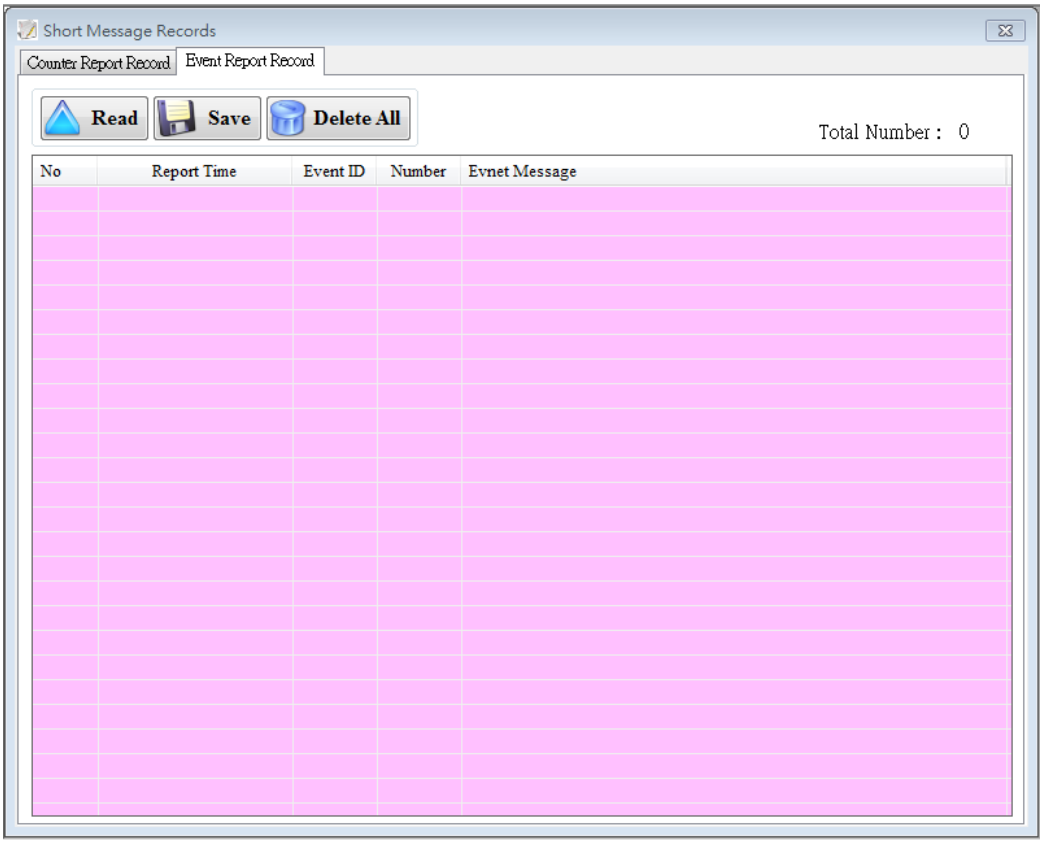
It represents the SMS sending to the quantity of phone numbers.

◆CI0(~5):

The DI0(~5) counter value. If the DI is not set as counter, the value is 0.

6.5.2 Event Report record

In this page, users can inquire all event report of GTP-500M. The explanation is below.



Operation

◆Read:

Read all the CRPT report from GTP-500M. The maximum number of CRPT report records is 64.

◆Save:

Save these records to a file.

◆Delete all:

Delete all event report records of GTP-500M.

Text field

◆No.:

Record number.

◆Report time:

Event report time of GTP-500M.

◆Event ID:

Event identification.

◆Number:

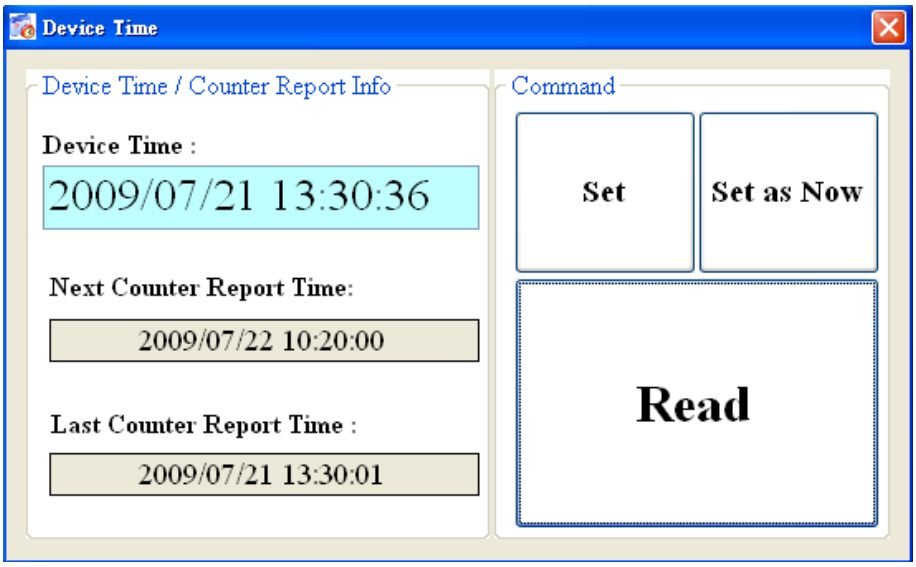
The SMS quantity sent to the defined phone numbers.

◆Event message:

The event content.

6.6 Device Time

This window provides the function to inquire and modify the time of GTP-500M. Besides, the next and last report times are also shown. The text field operation is below.



Text field

◆Device time:

Show the time of GTP-500M. Users also can change the time in this field to key in the specific time.

◆Next Counter Report Time:

Show the next CRPT time.

◆Last Counter report time:

Show the last CRPT time

Operation

◆ “Set as Now”:

Set the PC time to GTP-500M. After setting the time successfully, the information of GTP-500M time and CRPT report time would be updated.

◆Set:

Set the GTP-500M time according the “Device Time” field. After setting the time successfully, the information of GTP-500M time and CRPT report time would be updated.

◆Read:

Read back the time of GTP-500M, the next report time and the last report time.

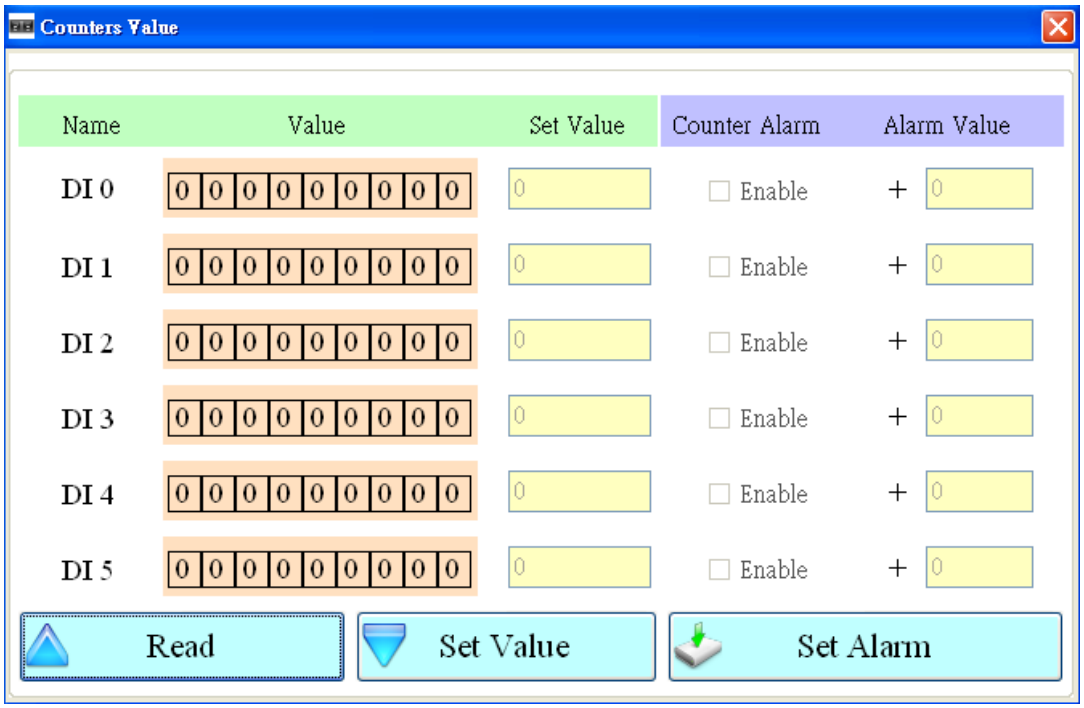
Note

If the counter report function is enable and reset the time of GTP-500M, the next time to send the SMS report is re-calculated according to the current time of GTP-500M and the CRPT time. There would 2 conditions on the day:

- ◆When the GTP-500M time is over the CRPT time, GTP-500M would send the CRPT SMS after 30 seconds.
- ◆If the GTP-500M time does not reach the CRPT time, GTP-500M would not send the CRTP SMS until GTP-500M time reaches the CRPT time.

6.7 Counter Value

The window provides the function to inquire and modify the counter values of DI0 ~ DI5. The explanation of operation and text field is below.



Text field

◆Name:

The DI name of DI0 ~ DI5.

◆Value:

The current counter value (maximum: 999999999).

◆Set Value:

Input the defined counter value. The maximum is 999999999. This field is enabled when DI is set as counter mode.

◆Counter Alarm:

Enable the counter alarm.

◆Alarm Value:

Counter alarm value = current value + alarm value. This field cannot be 0.

Operation

◆Read:

Read the current counter value and alarm settings from GTP-500M. If the counter is not set

as counter, the counter value is 0.

◆Set Value:

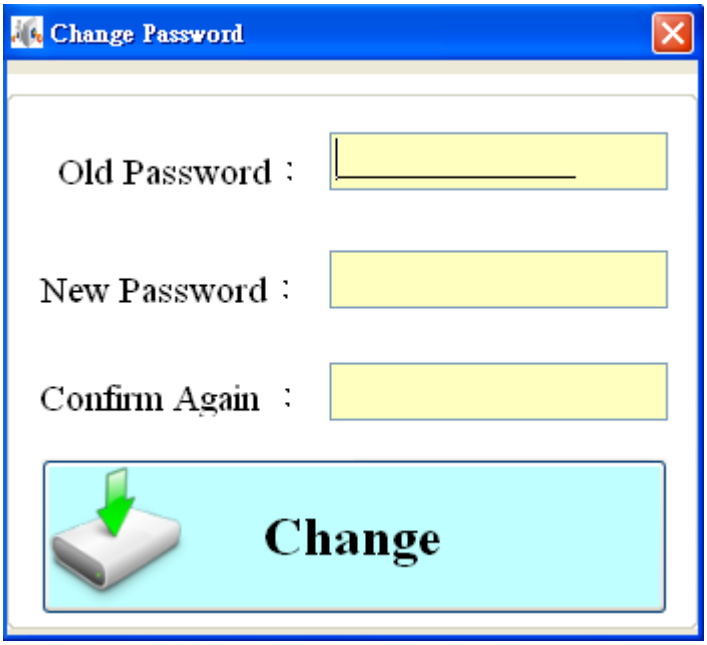
Change the counter value into GTP-500M according to the "Set Value" field.

◆Set Alarm:

Set the counter alarm into GTP-500M.

6.8 Change Password

This window provides the function of changing login password. The default password is “111111”. This password is also applied in SMS command to GTP-500M. These SMS commands are described in chapter 6.14.



Text field

◆Old password:

Input the current password.

◆New password:

Input the new password (maximum : 12 characters)

◆Confirm Again:

Input new password again.

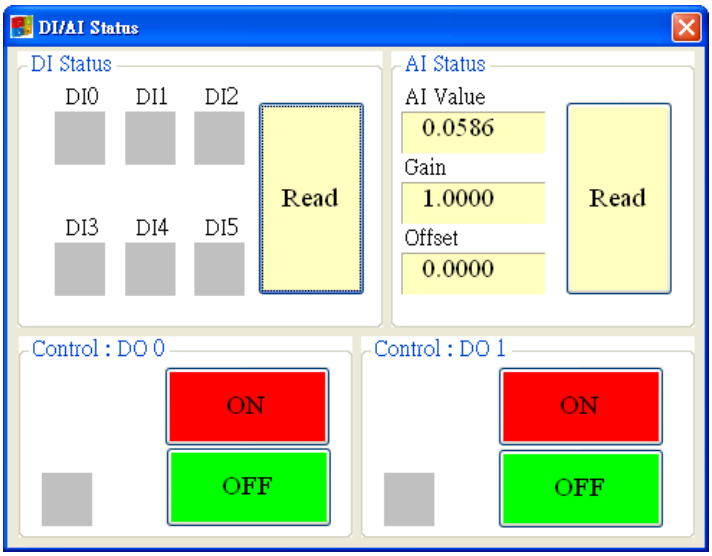
Operation

◆Change:

Updated the password.

6.9 DI/DO/AI Status

The function is used for controlling DO and reading the status of DIs and AI (Expansion board only).



DI Status

◆Red:

The voltage logic is high.

◆Grey:

The voltage logic is low.

AI Status

◆AI Value:

AI value of the current.

◆Gain:

User cannot change this value.

◆Offset:

User cannot change this value.

Control DO

◆DO0, Do1 ON:

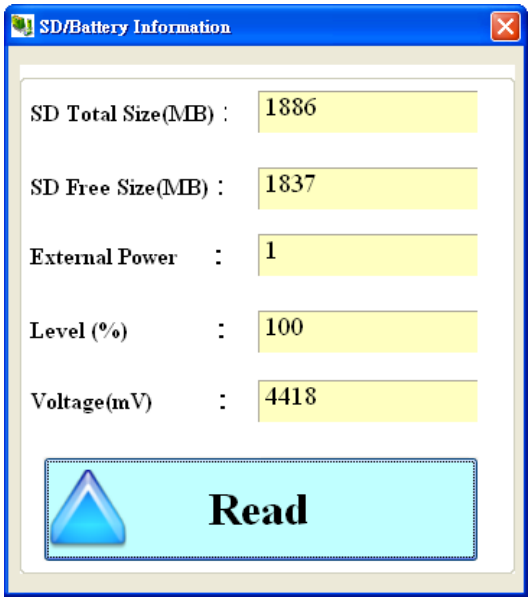
Set the DO output on.

◆DO0, DO1 OFF:

Set the DO output off.

6.10 SD/Battery information

This function provides users to check free size of SD card and the remaining volume of battery.



Text field

◆SD Total Size:

Shows the current device's SD Card GTP-500M the total capacity, the size of the total capacity will be displayed with the PC side or the SD will be slightly different specifications, such as display 0 so that SD is not installed or not initialized.

◆SD Free Size:

Shows the current SD card free space, such as display 0 so that SD is not installed or not initialized.

◆External Power:

The external power is on or off. (1- on, 0-off). It needs to open the external power when using utility to configure GTP-500M.

◆Level:

Show the percentage of battery volume.

◆Voltage:

The voltage value of battery.

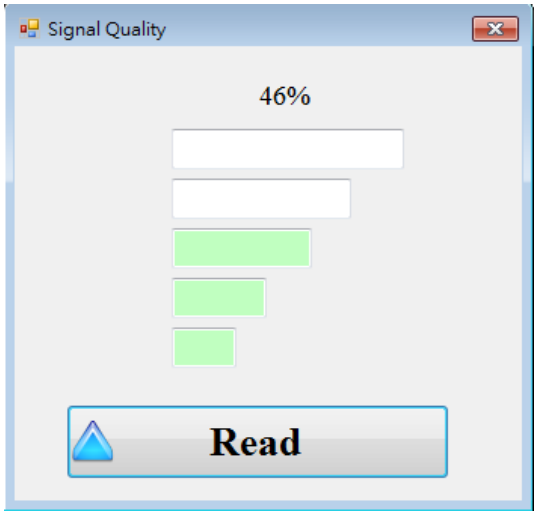
Operation

◆Read:

Read the above information from GTP-500M.

6.11 Signal Quality

This window can show signal strength.



Signal Quality field

The strength is divided into 5 sections shown in percentage.

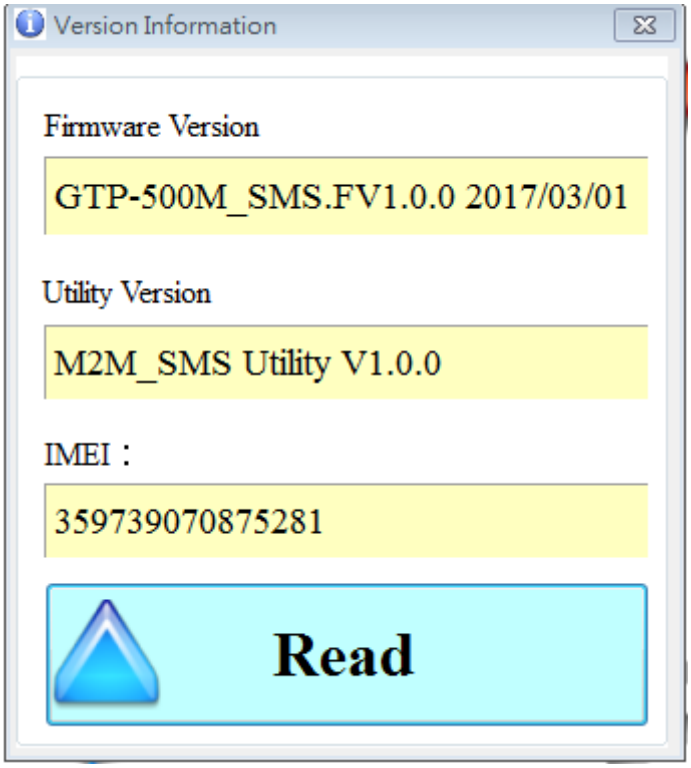
Operation

◆Read:

Read the signal strength.

6.12 Version

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



Text field

◆Firmware version:

Show the version information of GTP-500M's firmware.

◆Utility version:

Show the version information of GTP-500M's utility.

◆IMEI:

Show the IMEI of 3G module.

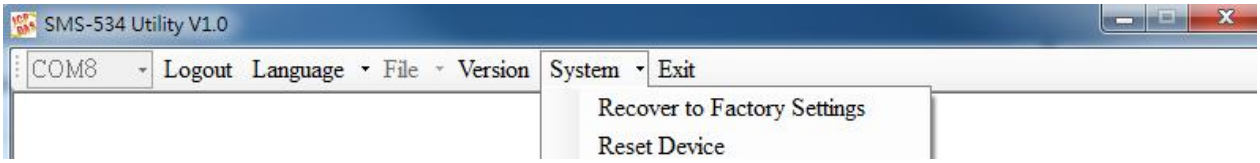
Operation

◆Read:

Read this information from GTP-500M.

6.13 System

“System” menu item has 2 functions of recovering factory setting and resetting GTP-500M.



6.13.1 Recover to Factory Settings

The function is used to recover GTP-500M as factory settings including password. The steps are below:

(1)Select the Recover to Factory Settings.

6.13.2 Reset GTP-500M

The function is used to reset GTP-500M by software.

(1)Select “Rest GTP-500M” button to reset GTP-500M.

6.14 SMS Command

These SMS commands help users to control or get the information of GTP-500M. GTP-500M can only receive these commands according to the phone numbers set in GTP-500M. These phone numbers must be set to have “Allowed” authority. If the phone number is not in the list, GTP-500M would not reply to any command.

Command Table

SMS command	Description
@TIME	Time set and inquiry
@DOCn	DO control
@ACTV	Counter value inquiry
@DIV	DI/DO inquiry
@AIV	AI inquiry
@BAT	Battery inquiry
@SD	The free size of SD card inquiry
@PASS	Password inquiry

6.14.1 @TIME(Time set and inquiry)

(1)Description

This command is used to set or inquire the time of GTP-500M.

(2)Request

Set

@TIME; YYYYMMDD; HHmmSS

Inquiry

@TIME

Description

YYYYMMDD: Y=year, M=month, D=day

HHmmSS: H=hour, m=minute, S=second

Example:

Set the time as 2010/06/10 10:03:00:

@TIME;20090410;100300

Inquiry the time:

@TIME

(3)Response

Format

!MID;TIME;Result;YYYYMMDD;HHmmSS

Description

MID: Machine ID

TIME: Command type name

Result: Command result

OK → Command is successfully.

ER → The format is wrong or authority is not allowed.

Others: The same as the above description.

Example:

!GTP-500M;TIME;OK;20090410;100300

6.14.2 II. @DOCn(DO Control)

(1)Description

Set DO0 and DO1 output. The number of DO is decided by expansion board.

(2)Request

Set

@DOCn;CMD;Second

Description

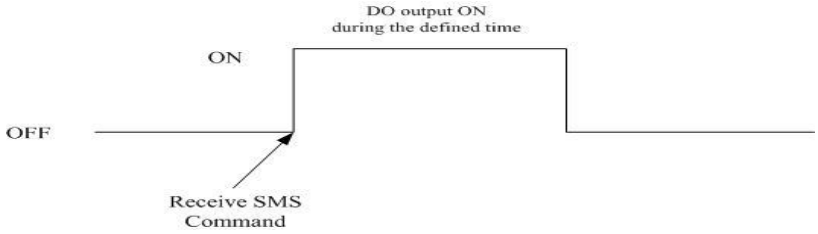
n: 0 ~ n(0 is DO0,1 is DO1)

CMD:

ON → Set DO ON

OFF → Set DO OFF

PLUS → The DO channel is set to on during the defined time.



Second: The command is used for PLUS mode. (0~999 seconds)

Example:

Set DO1 output to on::

@DOC1;ON

Set DO1 output to on during 20 seconds:

@DOC1;PLUS;20

(3)Response

Format

!MID;DOCn; Result; CMD;Second

Description

MID: Machine ID

DOC: Command type name

Result: Command result

OK → Command is successfully.

ER → The format is wrong or authority is not allowed.

CMD, Second: The same as the above description.

Example:

!GTP-500M;DOC1;OK;ON

!GTP-500M;DOC1;OK;PLUS;20

6.14.3 @ACTV(Counter value inquiry)

(1)Description

Inquire the counter values of DI. The number of DI is decided by expansion board.

(2)Request

Inquiry

@ACTV

Example:

@ACTV

(3)Response

Format

!MID;ACTV;Result;DI0;DI1;DI2;DI3;DI4;DI5

Description

MID: Machine ID

ACTV: Command type name

Result: Command result

OK → Command is successfully.

ER → The format is wrong or authority is not allowed.

DI0 ~ 5: The DI0 ~ 5 counter value. If the DI is not set as counter, the value is 0.

Example:

!GTP-500M;ACTV;OK;3;3;3;3;3;3

6.14.4 @DIV(DI/DO status inquiry)

(1)Description

Inquire the status values of DI/DO. The number of DI/DO is decided by expansion board.

(2)Request

Inquiry

@DIV

Example:

@DIV

(3)Response

Format

!MID;DIV; Result;DI0;DI1;DI2;DI3;DI4;DI5;DI6;DI7;DI8;DI9;DO0;DO1

Description

MID: Machine ID

DIV: Command type name

Result: Command result

OK → Command is successfully.

ER → The format is wrong or authority is not allowed.

DI0 ~ DIn: The status of DI0(~n) channels.

0 → Low Voltage

1 → High Voltage

DO0 ~ DO1: The status of DO channel.

0 → Low Voltage

1 → High Voltage

Example:

!GTP-500M;DIV;OK;0;0;0;0;0;0;0;0;0;0;1;0

6.14.5 @AIV (AI status inquiry)

(1)Description

Inquiry the Value of AI. The number of AI is decided by expansion board.

(2)Request

Inquiry

@AIV

Example:

@AIV

(3)Response

Format

!MID;AIVn; Result;AI value; AI value(calibration);Gain;Offset

Description

MID: Machine ID

AIV: Command type name

Result: Command result

OK → Command is successfully.

ER → The format is wrong or authority is not allowed.

AI value: Real value of AI

AI value(calibration): Calibration value of AI

Gain: Gain

Offset: Offset

Example:

!GTP-500M;AIV;OK;0.053;0.002;1.0000;0.000

6.14.6 @SD(information of SD card)

(1)Description

This command is to inquire the information of SD card.

(2)Request

Inquiry

@SD

Example:

@SD

(3)Response

Format

!MID;SD;Result;SDisOK;SDTotalSize;SDFreeSize

Description

MID: Machine ID

SD: Command type name

Result: Command result

OK → Command is successfully.

ER → The format is wrong or authority is not allowed.

SdisOK: The status of the SD Card

SDTotalSize: The total size of SD card(MB)

SDFreeSize: The free size of SD card(MB)

Example:

!GTP-500M;SD;OK;1988;1952

6.14.7 @BAT (Battery inquiry)

(1)Description

This command is to inquire the information of battery.

(2)Request

Inquiry

@BAT

Example:

@BAT

(3)Response

Format

!MID;BAT;Result;Pext;Percent;Voltage

Description

MID: Machine ID

BAT: Command type name

Result: Command result

OK → Command is successfully.

ER → The format is wrong or authority is not allowed.

Pext: External Power status.

0 → OFF

1 → ON

Percent: The percentage of battery volume (%)

Voltage: The voltage value of battery (mV)

Example:

!GTP-500M;BAT;OK;1;57;3899

6.14.8 @PASS(Password inquiry)

(1)Description

If you forget the password, you can use this command to inquire password. The phone number must be set the authority of “SMS Command”.

(2)Request

Inquiry

@PASS

Example:

@PASS

(3)Response

Format

!MID;PASS;Result;Password;Password

Description

MID: Machine ID

PASS: Command type name

Result: Command result

OK → Command is successfully.

ER → The format is wrong or authority is not allowed.

Password: the current password

Example:

!GTP-500M;PASS;OK;111111;111111

6.15 Send/Receive SMS and Call out by COM

GTP-500M provides sending/receiving SMS function from COM 1. This function can provide PLC or PAC to send or receive SMS through GTP-500M. That can extend GTP-500M to various applications.

COM port setting:

◆Baud rate: 115200 bps
◆Data bit: 8
◆Parity check: none
◆Stop bit: 1
◆Flow control: none

6.15.1 Send data to COM port of GTP-500M by SMS command

It is possible to use SMS to send data to com port of GTP-500M. The command header is"+++". The first setting phone number just has the authority to use this function with the "Allowed" enabling. The command support 7 Bits format. Both of RS-232 and RS-485 will receive data.

Command

+++Message(0x0D)

Description

Message: The message is sent to com1 of GTP-500M (Maximum 130 char).

Example

SMS content: +++Hello(0x0D)

To COM Port: Hello

6.15.2 Sending SMS by COM(RS-232/RS-485)

This function is used to send SMS to the first setting phone number by this command"+++". This command supports ASCII code, not Unicode.

Request

+++Message

Description

Message: The user-defined SMS content and the end of the message have to add ASCII code 0x0d.

Example

Command from COM1: +++Hello(0x0D)

Received SMS content: Hello

6.15.3 Sending Sound by COM (RS-232/RS-485)

The GTP-500M can call out through the command, this mode must be specified telephone voice file to play, and voice files must be placed in the root directory of SD card.

Format

@CALL;Phone Number;Wav file name(0x0d)

Description

@CALL: Command type name

Phone Number: The receiver's phone number.

If you want to make international calls, need to add "+" and country code

Wav file name: When it is necessary to play the audio file, file name cannot exceed 6 characters.

The file name, extension and the case must be the same with the SD card.

Example

@CALL;0912XXXXXX;CALL01.WAV(0x0d)

6.16 Data Records and Audio file format

The GTP-500M have data log and play audio file with SD card, this chapter will present information on record formats and audio file format acceptable.

6.16.1 Data Records Format

When DI is HIGH, the record value of 1, when the DI is LOW, the record is 0; the following are examples of Data log format.

Date	Time	DI0	DI1	DI2	DI3	DI4	DI5	DO0	DO1	AI
20100525	151520	0	0	0	0	0	0	0	0	0.044
20100525	151521	0	0	0	0	0	0	0	0	0.044

Data log file will be placed in the SD of the Data log folder, placed according to years, when the SD card capacity of less than 50MB, it will delete the older data, have ensured that new information may continue to record.

6.16.2 Audio File Format

GTP-500M voice telephony functions, through the play SD card Audio files to voice alarm, the user can upload Audio files by Utility, or the voice file is too large, users are recommended to choose copy audio files into the SD card by the card reader, the following is the voice file name corresponding to the event.

RDI0.WAV~RDI5.WAV	DI0~DI5
RAI0.WAV~RAI3	AI_H1: RAI0.WAV AI_H2: RAI1.WAV AI_L1: RAI2.WAV AI_L2: RAI3.WAV
ANSWER.WAV	When call is connected,it will play this file
OK.WAV	When DTMF is success,it will play this

	file
ERROR.WAV	When DTMF is Failure,it will play this file

The following WAV file format needed

File type	*.Wav
Audio type	PCM
Data bit	16 bits
Channel	Single track
Sample rate	8 kHz,11 kHz

6.17 DO output by DTMF

Dual-Tone Multi-Frequency(DTMF), this technology is through the local telephone or cell phone to make and receive voice calls at the time, from the keyboard, press the 0 to 9, *, # these keys, it will transmit through the encoding to the GTP-500M. Command length is 3 or 5 characters, the command divided into three mode: output DO, DO turn off, and the DO output with the PLUS, the following description of the command.

Key	Function
1	DO's Channel
2	Control mode: 0:off 1:on 2:PLUS mode
3 and 4	The command is used for PLUS mode (0~99 sec),the DO will open, and than Do close after this time.
5	End char

If the input format is correct, it will return the voice which is same as OK.WAV, and If the input format is error, it will return the voice which is same as ERROR.WAV.

Example

DO0 output → Keyin 0 1 #

DO1 close → Keyin 1 0 #

DO0 output 10 sec → Keyin 0 2 1 0 #

Appendix A. Firmware Update

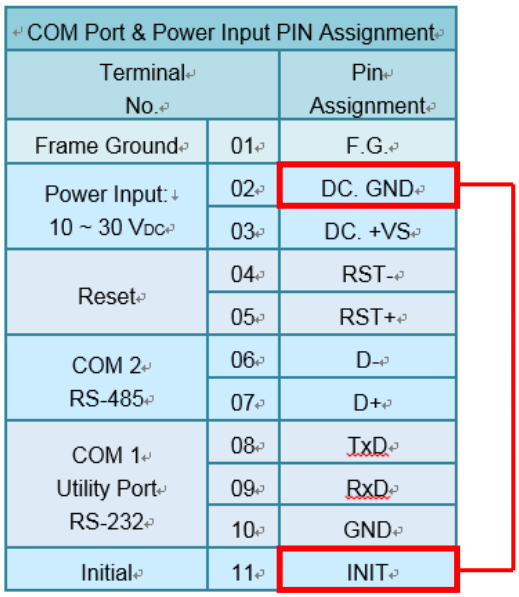
The firmware on the GTP-500M can be change or updated via RS-232. The latest firmware file (“*.fw”) and the latest version of the Firmware Update utility, Firmware_Update_Tool.exe are available from the FTP link below. A notification will not be sent when a new version is released.

ftp://ftp.icpdas.com.tw/pub/cd/usbcd/napdos/gtp-500m/firmware

ftp://ftp.icpdas.com.tw/pub/cd/usbcd/napdos/gtp-500m/software/update_tool

Follow the process described below to update the firmware for the GTP-500M using the ICP DAS Firmware Update tool.

Step 1: Power off GTP-500M. Pin11 connect to “DC.GND”, and connect COM1 to PC.



COM Port & Power Input PIN Assignment		
Terminal No.		Pin Assignment
Frame Ground	01	F.G.
Power Input: 10 ~ 30 VDC	02	DC. GND
	03	DC. +VS
Reset	04	RST-
	05	RST+
COM 2 RS-485	06	D-
	07	D+
COM 1 Utility Port RS-232	08	TxD
	09	RxD
	10	GND
Initial	11	INIT

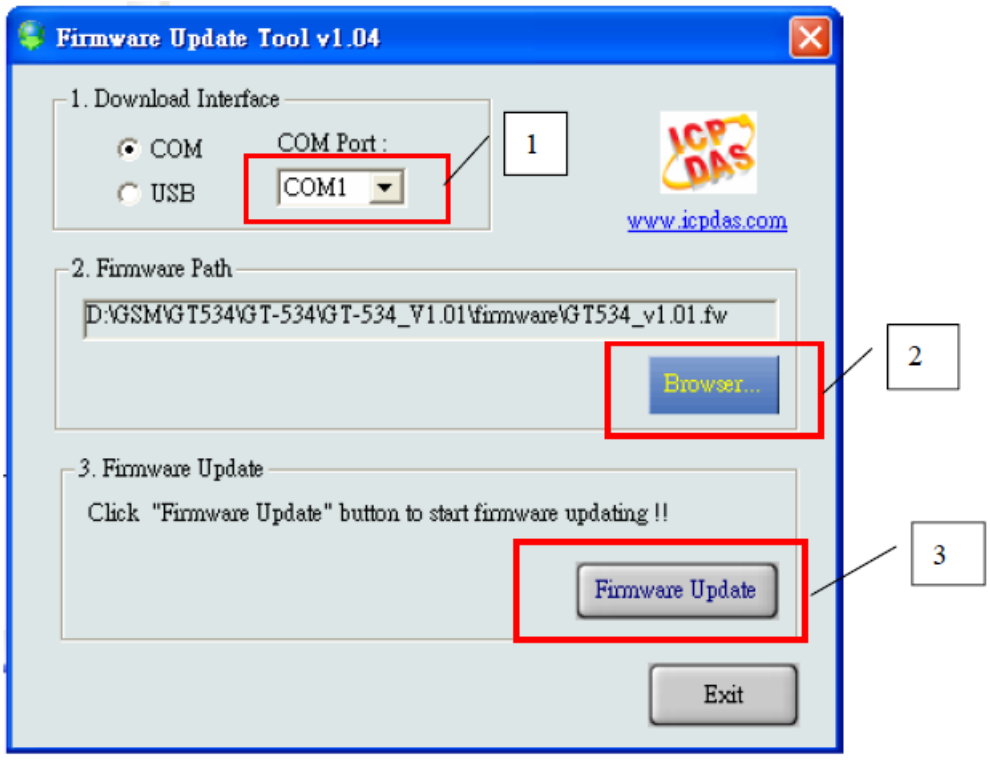
Step 2: Reboot GTP-500M，GTP-500M will enter “Firmware update mode” (PWR, STA1, STA2 Led will turn ON).

Step 3: Execute Firmware Update tool(Firmware_Update_Tool.exe).

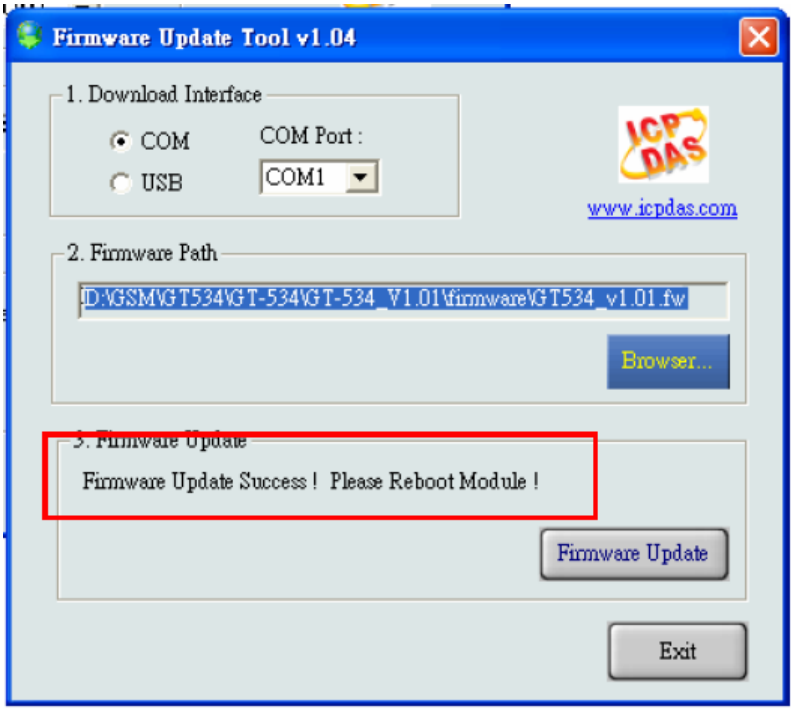
a. Select COM port.

b. Select the firmware you want to update/change.

c. Click “Firmware Update” button.



d. If update success, it will show “Update Success!!”



e. Disconnect Pin11(Init), and reboot GTP-500M.

Appendix B. Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Revision	Date	Description
1.0.0	March 2017	First release.