C5000 Series Mobile Data Terminal

User Manual

V3.0

C5000 Series Mobile Data Terminal
User Manual
P-C5000-20130419
Rev. C
19th April 2013

CE 2150

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 *Note: In this manual, we use WINCE6.0 professional for the reference.*

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Chapter 1 Overview

This chapter introduces the overview of the device including the technical parameters, structure, accessories which would assist users in making the most out of it.

1. Introduction

The C5000 series mobile computer is a smart, high industrial standard, expansibility &customization designed mobile computer, with 'All In One' design, built on the Microsoft window CE NET 6.0 operating system.

1.1 Features and Structure

Please refer to Table 1-1 about standard hardware configuration and specifications.

Table 1-1 Standard Configurations

Feature	Parameters
CPU	Samsung ARM920T@533MHz
Memory	128MB RAM/1GB Flash
OS	Windows Embedded CE 6.0
Wireless Communication	WIFI, supports IEEE 802.11b/g protocol
Display	TFT touch screen Resolution: 240 x 320 Color 3.2-inch QVGA, TFT-LCD, 65K colors Transflective screen (sun view) optional
Keypad	26 keys and 1 Standby/Wakeup button on the keyboard and 4 side keys; Side keys and F1/F2/F3/F4/F5 can be customized
Ports	Mini USB (5PIN, USB 2.0) IO port (14PIN, supports RS232)
Extension Slots	SIM, PSAM Micro SD (TF), supports maximum of 32G capacity
Speaker	0.5W output
Fingerprint	
Fingerprint	Optional
Model	Aratek ARA-EM02
Sensor Model	Capacitive
Image Dimension	256*288
Image Resolution	500DPI
Registration Time	Less than 3 seconds

Comparison Time(1:1)	Less than 0.1 second
Comparison Time(1:N)	Less than 0.5 second
RFID	
LF(low frequency)	Optional
Operating Frequency	125K, 134.2KHz
Read Distance	3 to 5 cm
HF(high frequency)	Optional
Operating Frequency	13.56MHz
Protocol	ISO14443A/B、ISO15693
Read Distance	5 to10 cm
UHF(Ultra High Frequency)	Optional
Operating Frequency	China: 840~845MHz, 920~925MHz Europe: 865~868MHz(ETSI EN302 208) Other: 840~960MHz(for customization)
Protocol	EPC, GEN/ISO1800-6C
Read Distance	150cm to 250cm
Antenna	3dBi
Power	+10dBm~+30dBm
Barcode	
1D Barcode	Optional
Scanner Engine Model	Symbol SE955
Scanning Principle	Laser
Symbologies	Code 128, Code 39,UPC-A/E, ect. please refer to Appendix A1.1
Operating Environment	Sunlight 10.000ft.candles(107.640Lux) Artificial Light 450ft.candles(4.844Lux)
Scanning Accuracy	4.0mil~~55mil
2D Barcode	Optional
Scanner Engine Model	Symbol SE4500
Scanning Principle	Camera
Symbologies	Code 128, Code 32,PDF417, QR code, ect. please refer to Appendix A1.1
Operating Environment	Whole Dark Environment 9,000ft.candles(96,900Lux)
Focal Distance	Low Coverage 5 inches; Far Coverage 9 inches
Scanning Accuracy	5.0mil~~20mil

Battery	
Standard Battery	3.7V 4000mAH Rechargeable polymer battery
Standby Current	Less than 5mA
Operating Current	According to the utilizing modules
Operating Environment	
Operating Temperature	-20° C to +50° C
Storage Temperature	-25° C to +70° C
Humidity	5% RH to 95% R(non-condensing)
Dropping Survive	With stands 1.5m drop to concrete (six sides)
Rolling Survive	1,000 times, 0.5 meter, rolling by six contact surfaces
Environmental Sealing	IP64
Physical	
Weight	Weight : <400g (including entire configuration modules and standard battery)
Dimension	186.5mm×75mm×38.9mm（standard battery）

Please refer to Figure1.1-1 (Front), Figure1.1-2 (Bottom) and Table1-2 for the detailed structure description.

Figure1.1-1 Front **Figure1.1-2 Bottom**

Table 1-2 Structure of Device

Front	
1	Receiver speaker
2	Left button
3	Keyboard
4	Restart hole

5	Microphone (Reserved)
6	Standby/Wakeup/Shutdown button
7	Right button
8	Touch screen
Bottom	
1	Mini USB port (5P)
2	IO extension port (14P)

The keypad consists of 26 buttons and 1 Standby/Wakeup button. 9 buttons, including 4 side buttons and F1/F2/F3/F4/F5 on keyboard can be customized.

Please refer to Figure1-1-4 and Table 1-3 for the detailed keyboard.

Figure1.1-3 Keyboard

Table1-3 Keyboard Description

Button	Description
	F6 and F7 buttons
	Move up, down, left and right
	Return key
	Numbers
	Backspace
	F8 button

	F1-F5 can be customized

1.2 Package and Accessories

Please refer to Table 1-4 for the detailed Accessories.

Table1-4 Accessories List

Name	Figure	Description	Quantity
AC Adapter		Battery recharging	1
USB Cable		Synchronizing with PC	1
Stylus		Touch screen operation	1
Battery		Li-ion polymer battery, with 4000mha capacity	1
Carrying Case		Outdoor using	1
Serial Cable		Communicating with PC by serial port	1
Docking Station(Cradle)		Battery recharging and data communication	Optional

Chapter 2 Getting Started

This chapter introduces basic operations on how to use the mobile data terminal including battery, SD, SIM Card and set Standby/Wakeup/Shutdown mode setting.

2.1 Battery Installation and Recharging

Battery installation steps (Figure2.1-1):

1) Unscrew to open the back cover;
2) Open the back cover;
3) Insert the battery; bottom first, into the battery compartment in the back;
4) Close the back cover;
5) Fasten the screws.

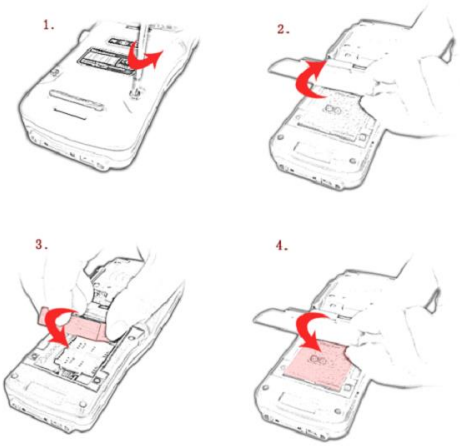


Figure2.1-1 Battery Installation Steps

Note: position the battery properly by connecting the four pins of the PCB motherboard tightly.

Battery charging (Figure2-1-2):

There are three methods to charge the battery:

1) Use AC Adapter to charge by 220V AC power sockets;
2) Use USB cable to charge by connecting with the PC;
3) Use the cradle to charge the battery;

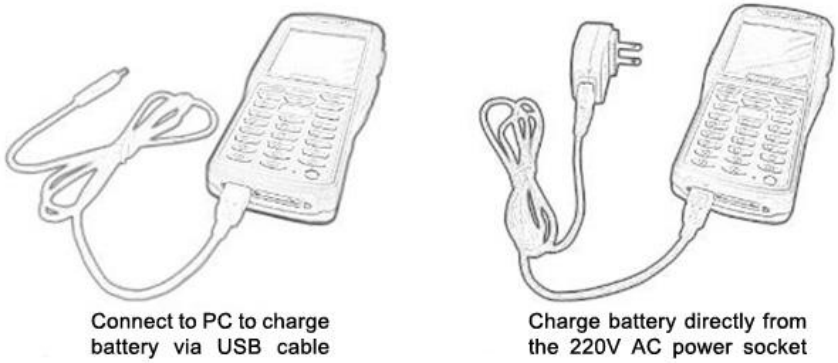


Figure2.1-2 Battery Charging

2.2 SD Card (TF Card)

SD card installation steps:

1) Ensure the device is powered off and in non-charging status;
2) Unscrew the battery cover;
3) Take out the battery;
4) Install the SD card properly, pay attention to the positions (Figure2.2-1, the slot at right);
5) Install the battery and close the battery cover;
6) Fasten the screws;

After the SD card is installed successfully, the icon named 'Storage Card' would be seen when opening 'My Device'.

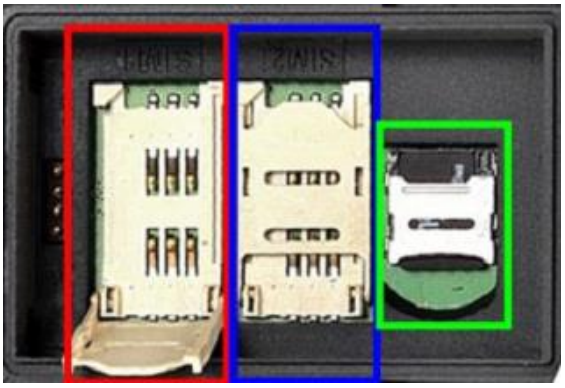


Figure2.2-1 SIM Card & SD Card Slot

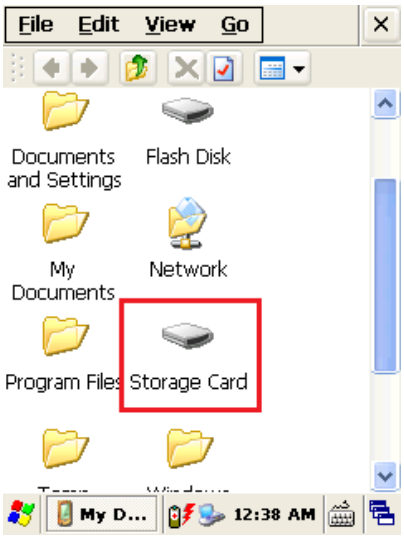


Figure2.2-2 Storage Card Icon

2.3 SIM Card

The SIM card installation steps are similar with SD card:

1) Ensure the device is powered off and in non-charging status;
2) Unscrew the battery cover;
3) Take out the battery;
4) Install the SIM card properly according to the version of motherboard;
5) Install the battery and close the battery cover;
6) Fasten the screws;

Please refer to chapter 4 "GPRS" for SIM card installation.

Note: For the new motherboard, the SIM card should be installed in SAM 1,and the PSAM card should be installed in SAM 2; For the old motherboard, the SIM card should be installed in SAM2,and PASM in SAM1. The version information can be checked by the slots color. Please refer to figure 2.3-1 and 2.3-2 for the differences between the old motherboard and new version.

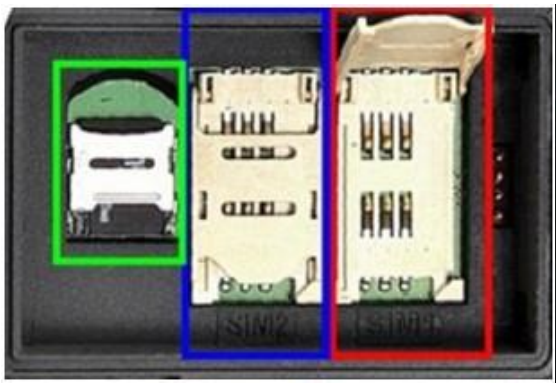


Figure 2.3-1 Old version of motherboard

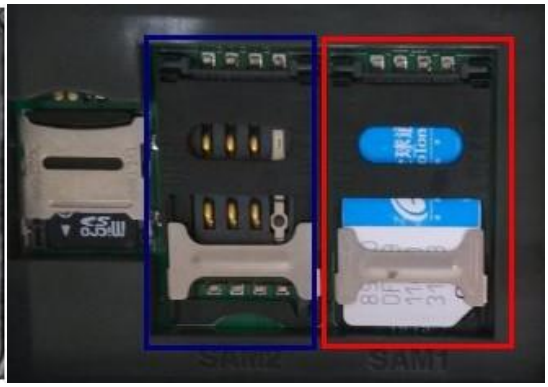


Figure 2.3-2 New version of motherboard

2.4 Standby/Wakeup/Shutdown

The button  can be pressed to switch the status including Suspend/Shutdown/Cancel. When suspend, the screen would be dark and all modules would stop working, and the working current would be less than 5mA.

Note: It is better to suspend it when charging, which would take less time. And for the new version motherboard, the shutdown function is supported.

***WARNING**: Do not press this button frequently within a short period of time, otherwise it may cause damages to the screen and data.*

2.5 Reboot

For the mobile data terminal rebooting, please press the small hole between F4 and F5 on the keyboard for seconds, then the device will reboot automatically.

Note: the above reboot method is cold start, the warm start method for this device is supported on the new motherboard.

Chapter 3 System Settings

This chapter introduces system settings and operations on Windows CE.

3.1 Desktop

Click the icons or shortcuts on desktop by the stylus and touch the screen for a while, it would be as right click as Figure3.1-2.

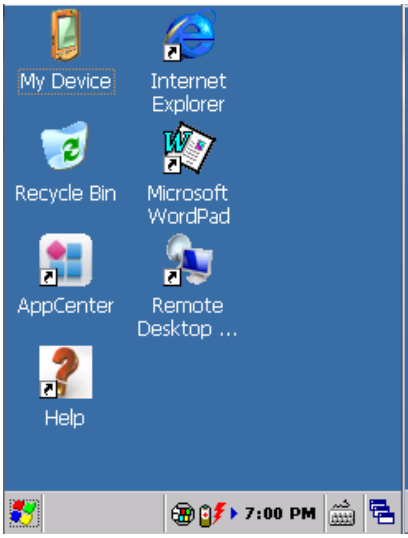


Figure3.1-1 Desktop

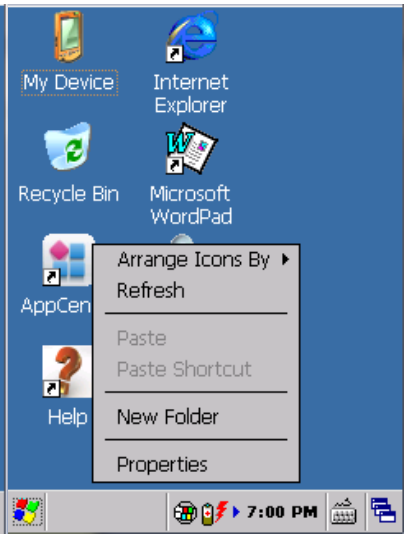


Figure3.1-2 Right-click Menu

3.2 Taskbar

The taskbar is at the bottom of screen which displays on-going tasks (Figure3.2-1).

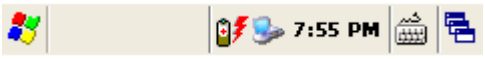


Figure3-2-1 Taskbar

➢ Start Menu: on the left bottom of task bar where the programs lists can be found. (Figure3.2-2).

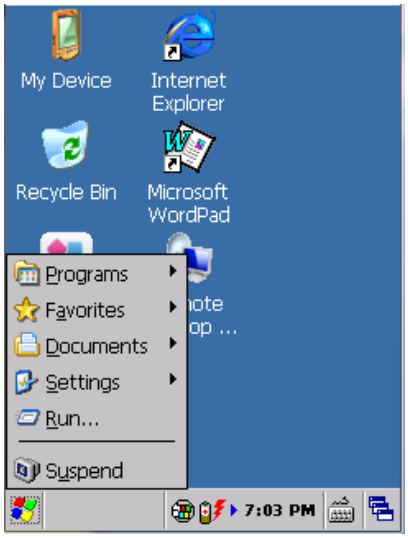


Figure3.2-2 Start Menu

- 3:55 PM Time: display current time; and enter the interface of calendar when double clicking where date, time and time zone can be changed.
- On-going Task Menu: on the right of task bar, displays all on-going tasks after clicking where you can switch tasks (Figure3.2-3).

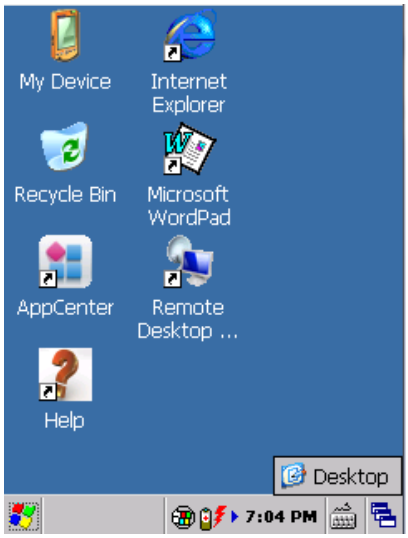


Figure3.2-3 On-going Task Menu

3.3 Input Method

1) Input from keyboard: input numbers only by default;

2) Input by soft keyboard: click the keyboard icon on task bar (Figure3.3-1), the soft keyboard will pop up (Figure3.3-2) where you can input letters or numbers.

Note: For the input method switch, we can also do that by using the C_Emulator within AppCenter.

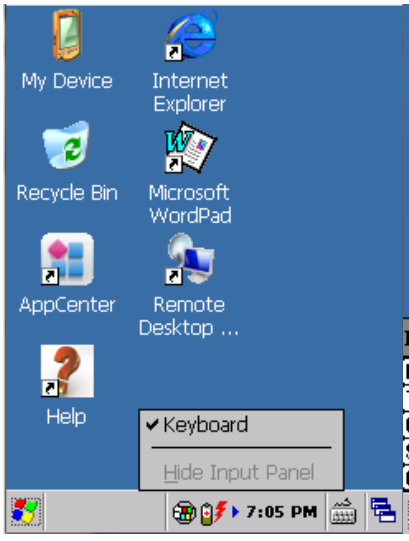


Figure3.3-1 Check Keyboard

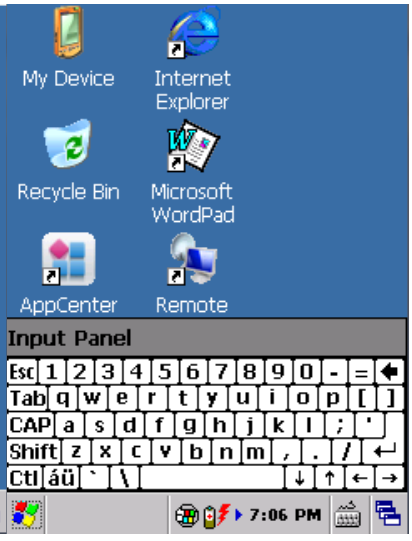


Figure3.3-2 Soft Keyboard

3.4 Control Panel

Open control panel from start menu (Figure3.4-1), you can see system settings in it (Figure3.4-2).

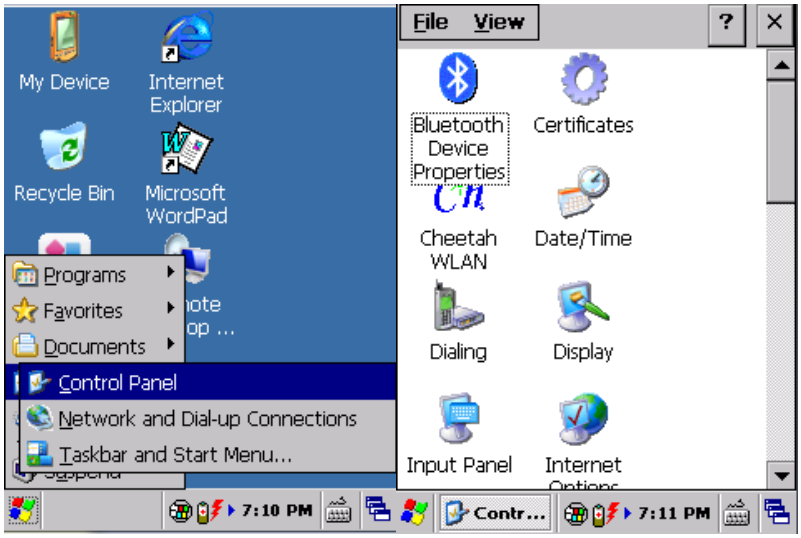


Figure3.4-1 Open Control Panel **Figure3.4-2 Control Panel**

The detailed setting applications are listed as Table3-1.

Table3-1 System Settings List

Application	Description
Internet Options	Set internet options such as homepage, privacy, security etc.
PC Connection	Specify the method connecting with PC.
Stylus	Recalibrate the screen
Storage Manager	Storage management, including HDD and TF cards.
Power	View battery power and manage power schemes.
Keyboard	Set keyboard properties.
Password	Set password for system

 Regional Settings	Regional settings, customized regions, user interface/input language.
 Date/Time	Adjust current time, current date, and change time zone.
 Remove Programs	Select and remove programs.
 Input Panel	Switch input method.
 Mouse	View properties of mouse.
 Owner	Change the owner information
 Network and Dial-up Co...	Network and dial-up connections. Used for WiFi or GPRS connecting configuration.
 Volume & Sounds	Adjust volume and sounds.
 System	Display system information, adjust memory and change device name.
 Display	Adjust background, appearance and backlight.
 Dialing	Adjust dialing properties.
 Cheetah WLAN	WLAN setting. Configure wireless network.

	Certificate information.
	Switch the three USB connection modes including Storage Card For U Disk, Flash Dish For U Disk and Activesync

Chapter 4 Function Modules

This chapter introduces different function modules of the device with WiFi as the default module, and others optional. When ordering, the different modules can be customized which is more convenient and lower cost for users.

4.1 Barcode Scanner

The barcode scan engine mounted on top of the device is manufactured by Motorola. (Figure4.1-1).

Figure4.1-1 Barcode Scanner

4.1.1 1D Barcode Scanner

The 1D barcode scan engine is Symbol SE955 with its parameters in Table4-1.

Table4-1 Symbol SE955 Parameters

Parameter	Value
Scan Engine	Symbol SE955
Scanning Principle	Laser
Codes Supported	Code 128, Code 39, UPC-A/E etc; refer to Appendix 1
Ambient	Sunlight 10.000ft. candles (107.640Lux) Artificial light 450ft. candles (4.844Lux)
Scanning Accuracy	4.0mil~~55mil

4.1.2 2D Imager

The 2D imager scan engine is Symbol SE4500 which can recognize both 1D barcodes and 2D images. The detailed parameters are in Table4-2.

Table4-2 Symbol SE4500 Parameters

Parameter	Value
Scan Engine	Symbol SE4500
Scanning Principle	CMOS image sensor
Codes Supported	Code 128, Code 32, PDF417, QR code etc; refer to Appendix 2
Ambient	Constant dark 9,000ft. candles (96,900Lux)
Focal Distance	Near: 5 inches; Far: 9 inches
Scanning Accuracy	5.0mil~~20mil

4.1.3 Scanning Direction

Please pay attention to the scanning direction as Figure4.1-2, Figure4.1-3, and Figure4.1-4.

Figure4.1-2 Scanning

Figure4.1-3 1D Barcode Scanning

Figure4.1-3 2D Image Scanning

4.2 RFID Reader

The RFID sensing area is on the back of the device (Figure4.1-2). For UHF reader, the sensing area is on the external shell.

The RFID reader supports LF, HF and UHF which is optional according to the requirements.

Figure4.2-1 RFID Card Reading Figure4.2-2 RFID LF/HF Reading Area

Figure4.2-3 RFID UHF Reading Area

4.2.1 LF (125 kHz~134.2 kHz)

The LF (low frequency) reader supports 125kHz ~ 134.2kHz;

Protocol: ISO11784 / 11785;

The reader supports ID card, Animal Tag, Hitag, etc.

4.2.2 HF (13.56MHz)

The HF (high frequency) reader supports 13.56MHz;

Protocol: ISO14443A/B, ISO15693;

The reader supports HF cards, including S50, S70, TI, etc.

4.2.3 UHF

Protocol: EPC, GEN2/ISO 18000-6C

Frequency: 840~960MHz

The UHF module supports 4 frequency modes:

- Chinese 920-925MHz;
- Chinese 840-845MHz;
- ETSI 865-868MHz;
- Fixed Mode 915MHz;

Power: 10~30dBm;

Antenna Gain: 3dBi.

Reading/Writing Range:150-250 cm depending on the tags, the power and the frequency.

4.3 WiFi

Protocol: IEEE 802.11b/g

WiFi is the default module of the device normally used for wireless communication and real-time data transmission.

4.3.1 WiFi Configuration

1) Open ***AppCenter*** on desktop (Figure4.3-1), then run the application ***WIFI*** in ***AppCenter*** (Figure4.3-2);

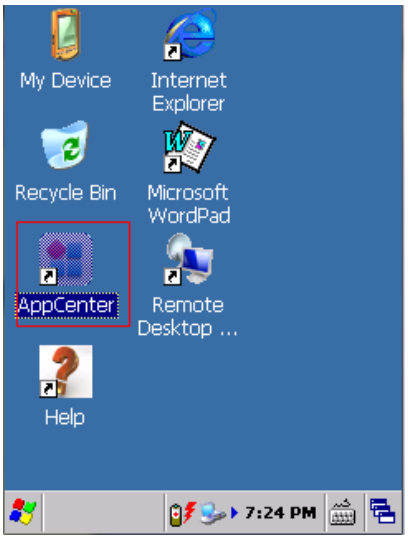


Figure4.3-1 AppCenter

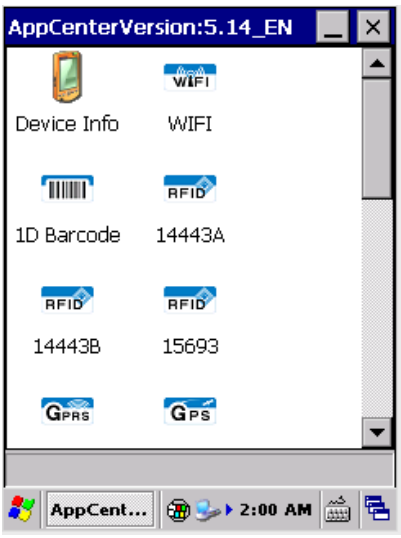


Figure4.3-2 WiFi Application

2) Click ***Enable WLAN*** (Figure4.3-3), then network icon will display on toolbar (Figure4.3-4);

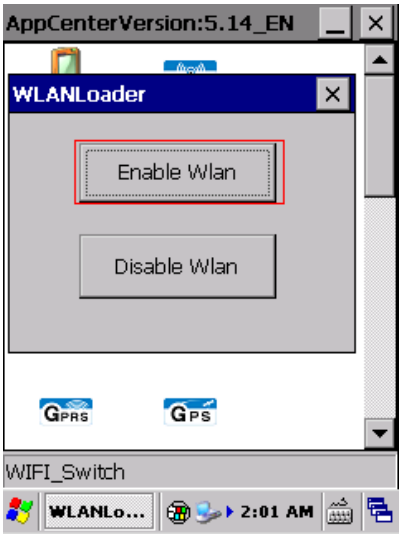


Figure4.3-3 WLAN Loader

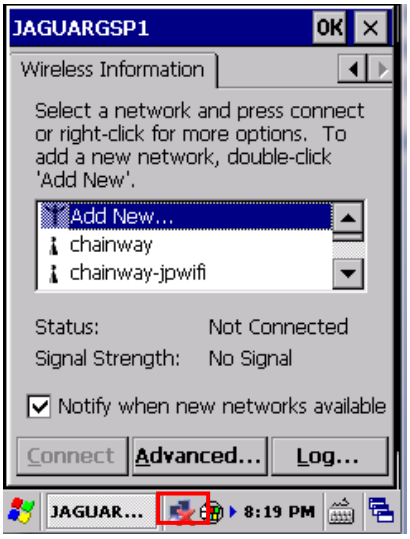


Figure4.3-4 Network Icon

3) Double click the network icon, choose the router/AP ***Wireless Information***, and then click ***Connect*** (Figure4.3-5); choose proper ***Encryption*** and ***Authentication*** (Figure4.3-6), and type password in ***Network Key***, and then click ***OK*** (Figure4.3-7);

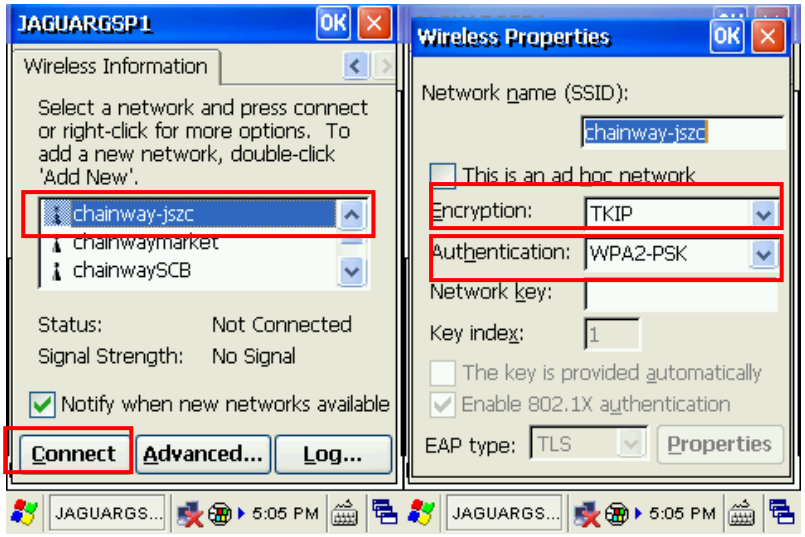


Figure4.3-5 Choose Router /AP **Figure4.3-6 Wireless Properties**

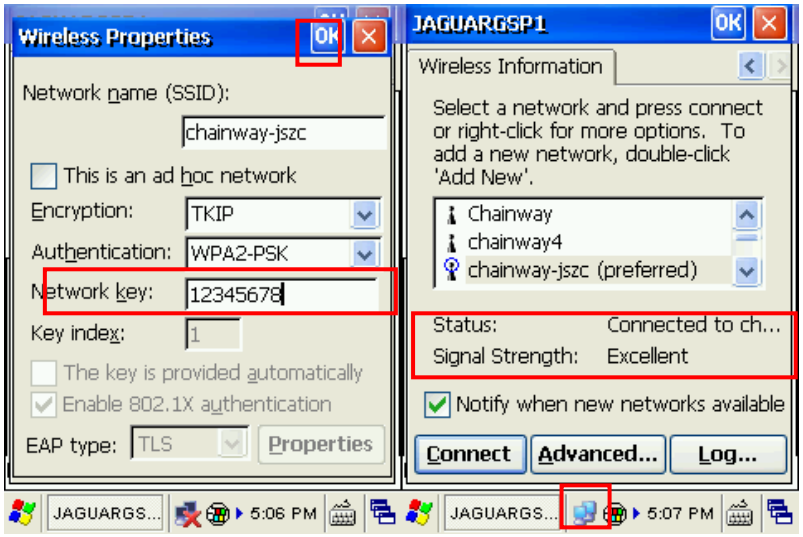


Figure4.3-7 Type in Password **Figure4.3-8 Connected**

4) If it is successful connected, the network icon will display as Figure4-3-8, then ***Status*** and ***Signal Strength*** can be checked.

4.3.2 IP Address Setting

After connecting, double click the network icon, then the detailed IP information can be checked (Figure4.3-9);

The default IP address is auto assigned by DHCP.

The static IP address can also be set with detailed steps are follows:

1) Click ***Start Menu***-> ***Settings***-> ***Network and Dial-up Connections*** (Figure4.3-10);

2) Double click ***JAGURGSP1*** in ***Connection*** window (Figure4.3-11);

3) Check ***Specify an IP address***, then type the ***IP Address*** you want, and also ***Subnet Mask*** and ***Default Gateway*** (Figure4.3-12), and then click ***OK***.

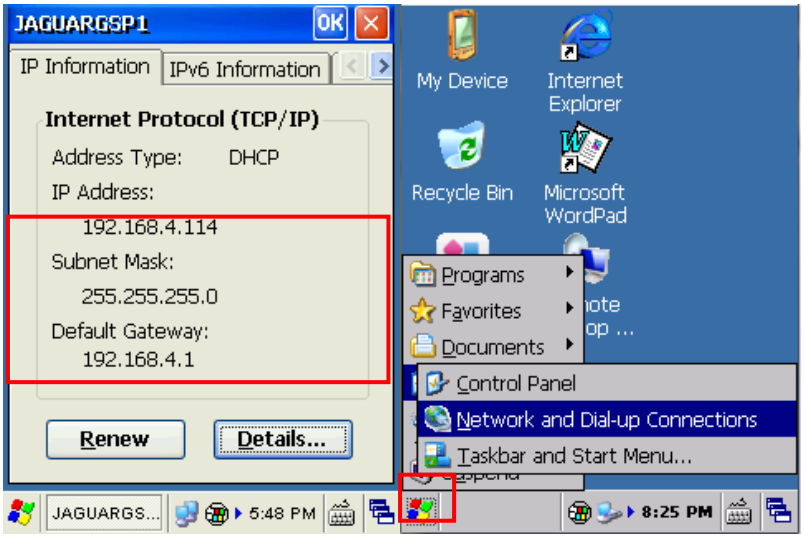


Figure4-3-9 IP Address **Figure4-3-10 Network Connections**

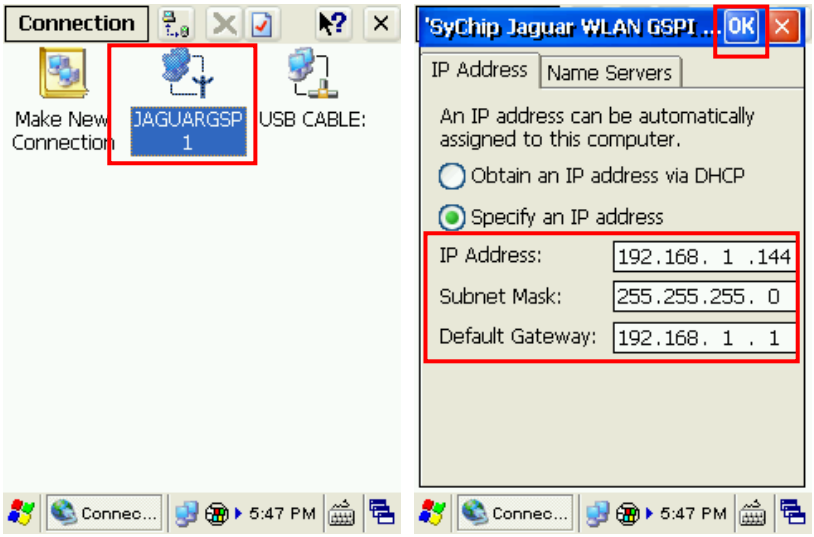


Figure4-3-11 Connection Icon **Figure4-3-12 Static IP Address**

4.3.3 WiFi Auto Connecting

The WIFI can be set auto boot once the device is rebooted, with detailed setting steps are follows:

Figure2.3-9 and Figure 2.3-10

1) Open '***My Device->Windows***' and find the shortcut of '***pmmon***';
2) Copy this shortcut to '***My Device->Windows->StartUp***', and paste the shortcut;

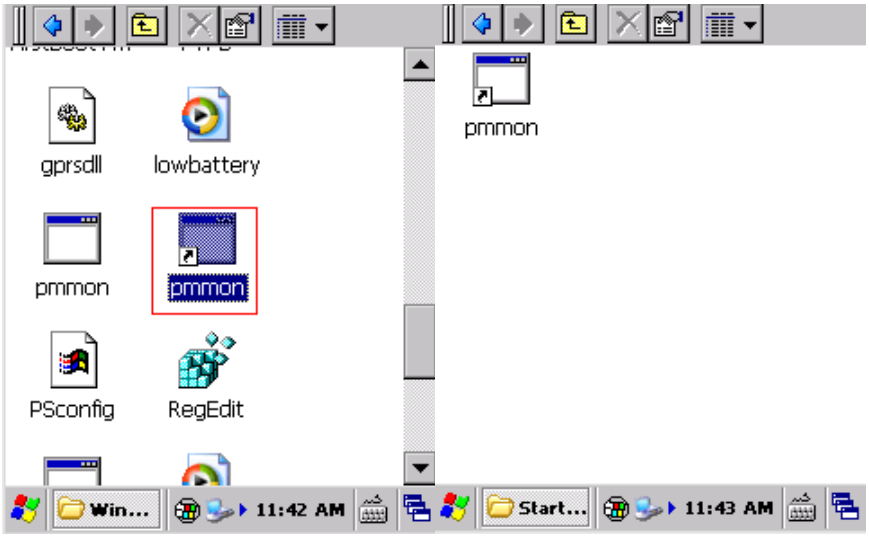


Figure 4.3.3-1 **Figure 4.3.3-2**

Note: there are two files named pmmon, please copy and paste the shortcut rather than the application.

4.4 GPRS

The GPRS module supports GSM/GPRS (900/1800 MHz). It can also support 850/1900MHz if necessary. Before using GPRS, ensure that the SIM card is available and has been mounted into the device correctly (refer to chapter 2.3).

4.4.1 Create and Configure Connection

1) Click ***Start Menu***-> ***Settings***-> ***Network and Dial-up Connections*** (Figure4.4-1), and then double click ***Make New Connection*** (Figure4.4-2);

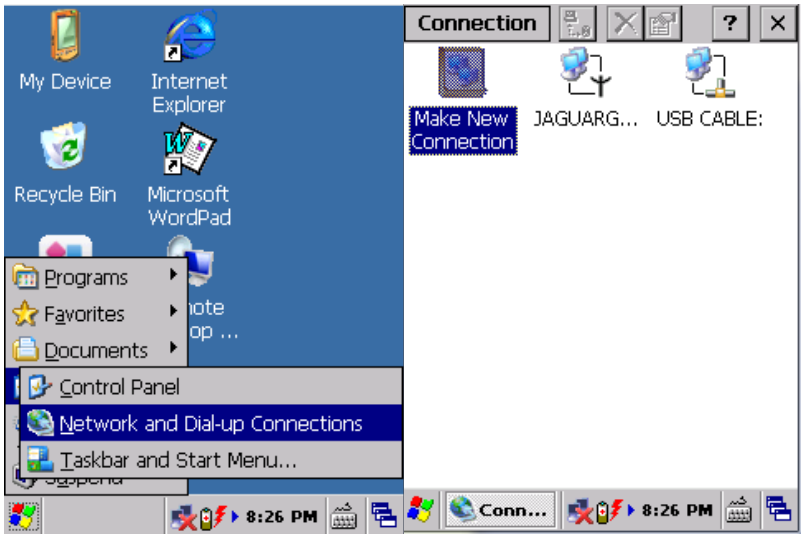


Figure4.4-1 Dial-up Connections **Figure4.4-2 Make New Connection**

2) Input connection name ***GPRS*** and then ***Next*** (Figure4.4-3); click ***Configure*** then ***Next*** (Figure4.4-4);

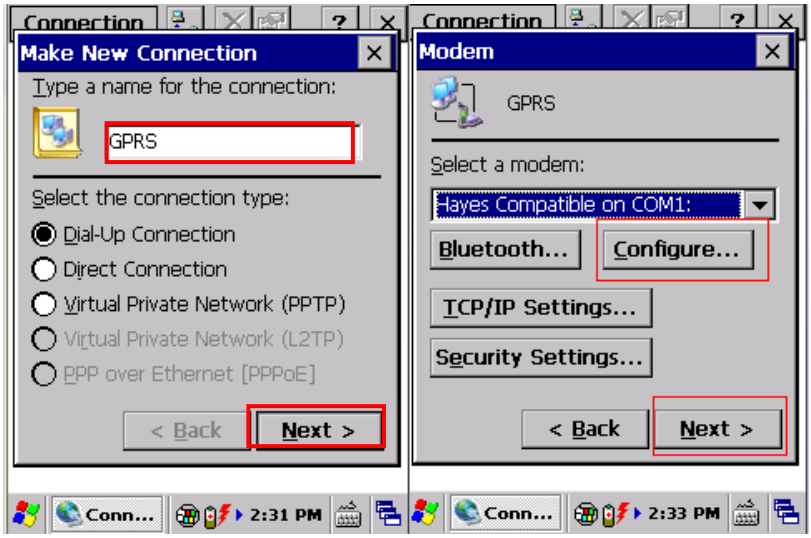


Figure4.4-3 Input Name **Figure4.4-4 Click Configure**

3) In ***Port Settings***, set ***Connection Preferences*** as below (Figure4.4-5):

Baud Rate: 115200; ***Data Bits***: 8; ***Parity***: None; ***Stop Bits***: 1; ***Flow Control***: None

Then click Call Options to turn to another tab page;

4) Input ***+CGDCONT=1,"IP","CMNET"*** (input all blue characters including the commas and quotation marks) into ***Extra Settings*** as Figure4.4-6, the ***CMNET*** (it is the APN of China Mobile) should be replaced by your local ***GPRS APN*** (Access Point Name); left others default, then click ***OK***;

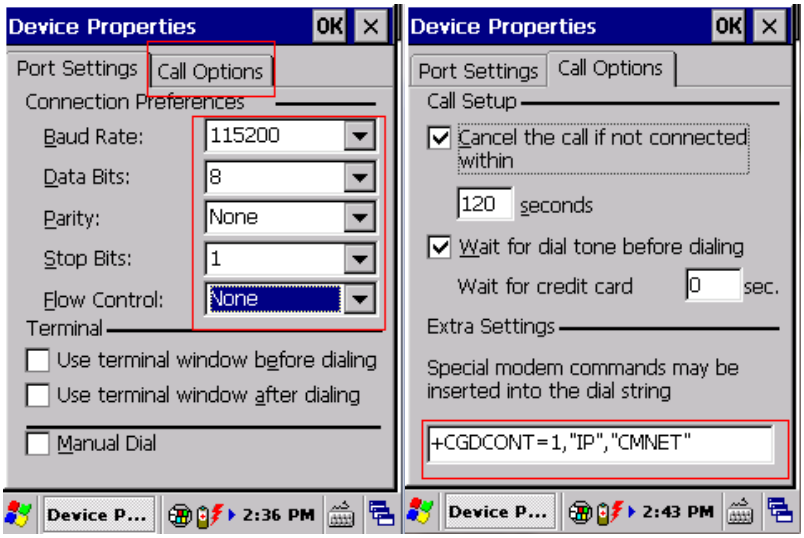
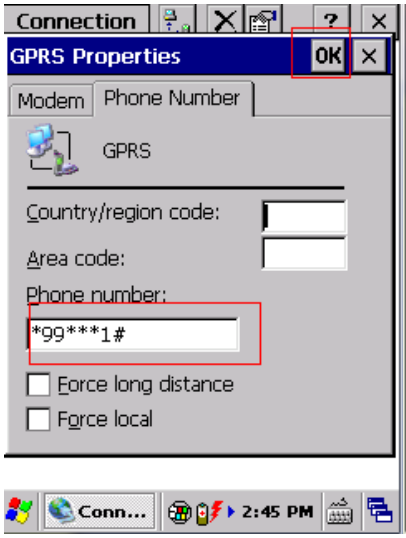


Figure4.4-5Port Settings **Figure4.4-6 Call Options**

5) Click Next to Phone Number page, input Phone number ****99***1#*** as Figure4.4-7, then click Finish; now you can see the GPRS connection icon as Figure4.7-8;



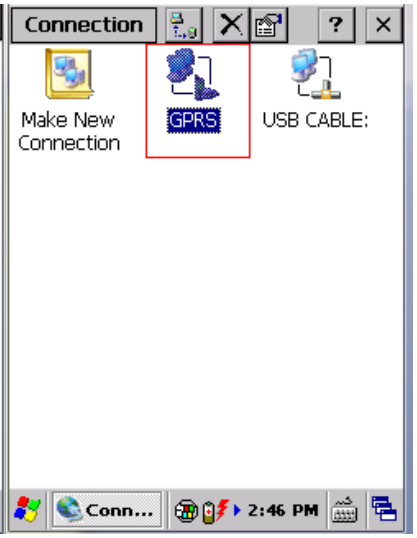


Figure4.4-7 Phone Number **Figure4.4-8 GPRS Connection Icon**

6) Double click the GPRS icon; in ***Dial-Up Connection*** page, keep ***User Name***, ***Password*** and ***Domain*** blank, and then click ***Dial Properties*** (Figure4.4-9); choose ***Location*** as ***Car*** and then click ***Edit*** (Figure4.4-10); Fill the 3 edit boxes all with letter ***G*** and then ***OK*** (Figure4.4-11). Click ***OK*** on ***Dialing Properties*** (Figure4.4-12), and then back to desktop.

Figure4.4-9 Dial-Up Connection **Figure4.4-10 Dialing Properties**

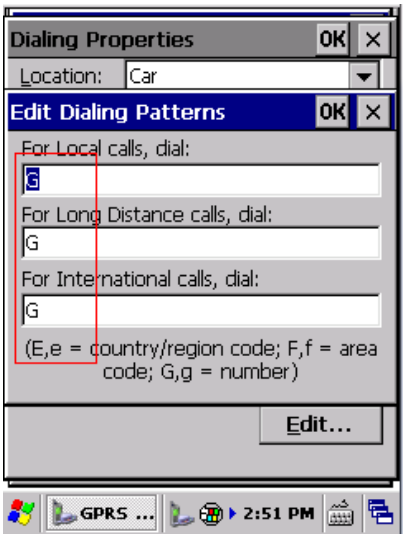


Figure4-4-11 Edit Dialing Patterns

Figure4-4-12 Dialing Properties

4.4.2 Connect and Disconnect with GPRS

Open ***AppCenter***, double click the application ***GPRS*** (Figure4-4-13), and then click ***Connect*** on popup window; if connecting succeed, it will show ***Connect successfully*** (Figure4-4-14).

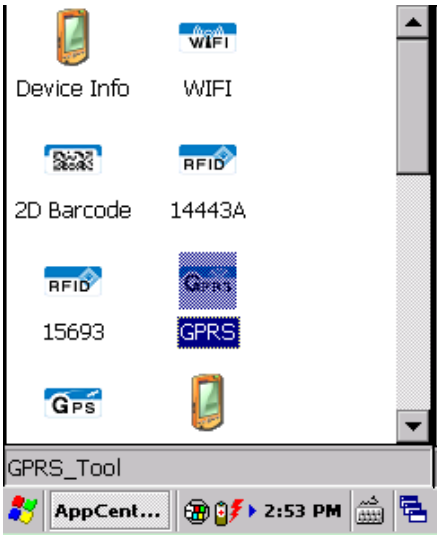


Figure4-4-13 Application GPRS

Figure4-4-14 Connect Succeed

4.4.3 GPRS Signal and SIM Card Detect

The SIM card installation and GPRS signal strength can be detected by clicking the  as Figure 4.4-15 and Figure 4.4-16 .

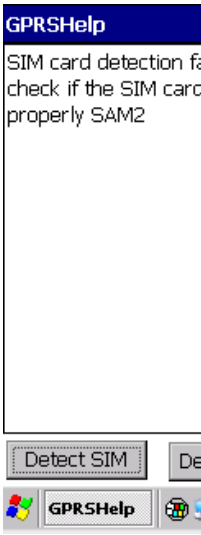


Figure 4.4-15

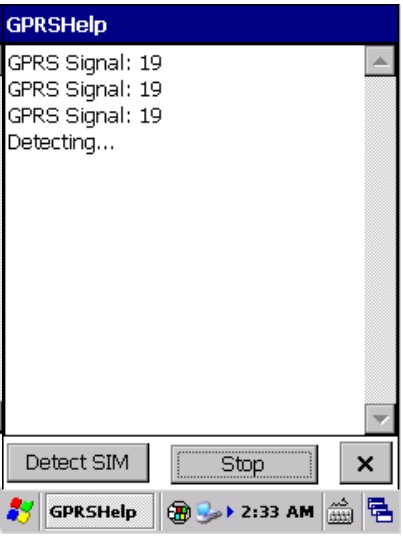


Figure 4.4-16

4.5 Bluetooth

Our device can communicate via Bluetooth 2.0;

Run ***Bluetooth*** and then click ***ScanDevices*** (Figure4.5-1). If succeed, the other options including ***BTPrint***, ***SendFile*** and ***Data Send*** can be activated for operations.

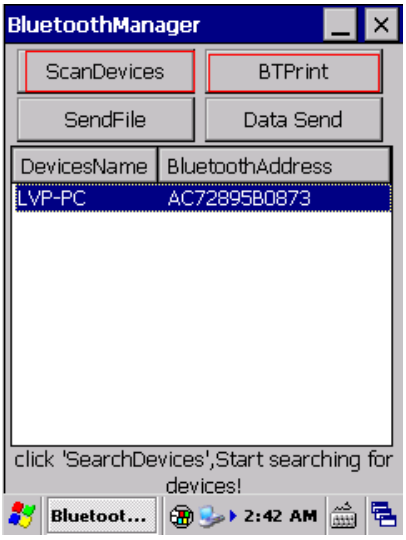


Figure4.5-1 BT Print

4.6 GPS

The GPS module allows to locate the dynamic position including longitude/latitude data of the device. It is recommended to use outdoor.

Run ***GPS*** from ***AppCenter***, click ***Get Data*** (Figure4.6-1), then wait until getting data succeed. You can see ***Date***, ***UTC Time***, ***Longitude***, ***Latitude***, ***Satellite Total***, ***Effective***, ***Begin Time***, ***Access Time*** and ***Spending Time*** from it. Click ***Stop*** to stop getting data.

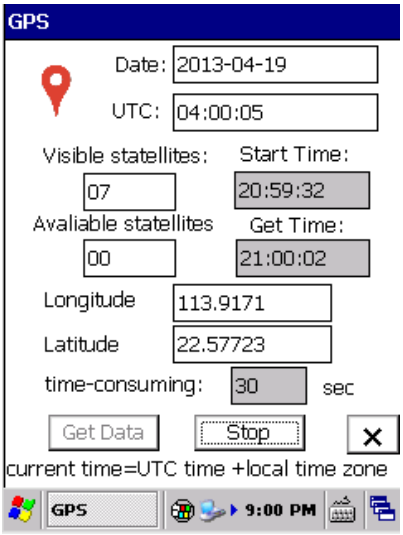


Figure4.6-1 GPS Data

4.7 Camera

The camera is 3.2 mega pixels and supports max resolution 2048*1536.

Run ***Camera*** 

from ***AppCenter***, check the resolution you want, default resolution is 320*240; then click ***Preview*** to preview (Figure4-7-1), and then click ***Photo*** or press the button ***F1*** to take photo (Figure4-7-2). The photos will be auto saved to My Device/Flash Disk/Photos automatically.

Figure4-7-1 Preview

Figure4-7-1 Take Photo

4.8 Fingerprint

1) Run ***Fingerprint*** from ***AppCenter,*** Figure 4.8-1

2) Choose the '***Collection***' option,put the finger to the fingerprint module properly and input the 'User Name' and 'ID'; then click 'Save Info' to save all the information. Figure 4.8-1 and Figure 4.8-2

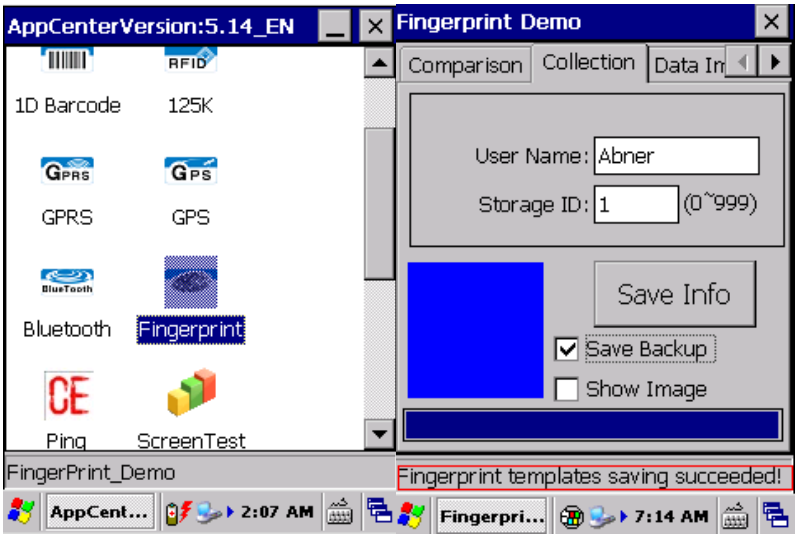


Figure 4.8-1 **Figure 4.8-2**

Note: *if the click 'Show Image', it would take a longer time to capture and show the fingerprint image. Figure4.8-3*

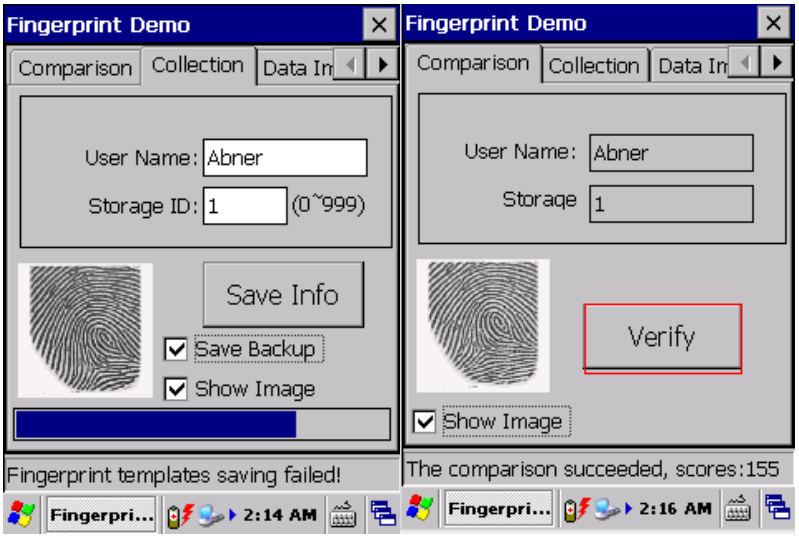


Figure 4.8-3 **Figure 4.8-4**

4) Click '***Comparision***' option, put the finger to the fingerprint module and then choose ' ***Verify***', then the terminal will recognize and obtain the ID and the name automatically; Figure 4.8-4
5) The existing samples can also be imported from the server or other devices;

Chapter 5 Synchronization and Update

This chapter introduces how to synchronize with PC, install or remove applications for the device, update the system and restore back to factory settings.

5.1 Synchronization with PC

5.1.1 Install Microsoft ActiveSync

We support 3 versions ActiveSync software for different OS (operation system):

- ***ActiveSync4.5_OfficialRelease.msi***

Supports OS：

Windows Server 2003；Windows Server 2003 Service Pack 1；Windows Server 2003 Service Pack 2；Windows XP；Windows XP 64-bit；Windows XP Embedded；Windows XP Embedded Service Pack 1；Windows XP Embedded Service Pack 2；Windows XP for Itanium-based Systems Version 2003；Windows XP Home Edition；Windows XP Media Center Edition；Windows XP Professional 64-Bit Edition (Itanium)；Windows XP Professional 64-Bit Edition (Itanium) 2003；Windows XP Professional Edition；Windows XP Professional x64 Edition；Windows XP Service Pack 1；Windows XP Service Pack 2；Windows XP Starter Edition；Windows XP Tablet PC Edition

- ***ActiveSync6.1_OfficialRelease-x64.exe***

Supports OS（64bit）：

Windows 7 Ultimate；Windows 7 Enterprise；Windows 7 Professional；Windows 7 Home Premium；Windows Vista Ultimate；Windows Vista Enterprise；Windows Vista Business；Windows Vista Home Premium；Windows Vista Home Basic；Windows Vista Server

- ***ActiveSync6.1_OfficialRelease-x86.exe***

Supports OS（32bit）：

Windows 7 Ultimate；Windows 7 Enterprise；Windows 7 Professional；Windows 7 Home Premium；Windows 7 Starter；Windows Vista Ultimate；Windows Vista Enterprise；Windows Vista Business；Windows Vista Home Premium；Windows Vista Home Basic；Windows Vista Server

Please choose the right ActiveSync for your PC. You can search and download other version ActiveSync from Microsoft website, according to you OS. After installing, you should restart your PC.

 *Note: when installing ActiveSync software, please ensure that the device is not connected with this PC.*

5.2 Install Applications

After synchronization, the device named WindowsCE can be found from the PC. Copy the CAB file to WindowsCE, and then double click it from the device to install. If the application is an exe file for Windows CE, run it directly by clicking in the device.

5.3 Update Operation System

Before updating, please backup your data: copy the data to PC or other disk like SD card. All data and applications will be erased after updating.

5.3.1 Copy System Files to SD Card

1) Format a SD card;

*Note: format the card. Do not choose **fast format**. Choose the **File System** as **FAT32** under the environment of Windows XP;*

2) Copy the system files into the SD card;

3) Install SD card to the device (refer to chapter 2.2).

5.3.2 Update OS for Windows CE

After finishing the above steps, press the small hole between F4 and F5 to reboot the device, then press ***F1*** as soon as possible; in the new interface as Figure5.3-1 and Figure 5.3-2; choose ***Update OS***, press ***Enter*** (the yellow button) to confirm ; then the device would update automatically.

*Note: Please pay attention to the type of flash, it can be check mainly in two methods including Figure 5-3-2 ,5-3-3 and by **AppCenter->Deviceinfo** as Figure 5.3-4.*

Figure5-3-1 Update OS

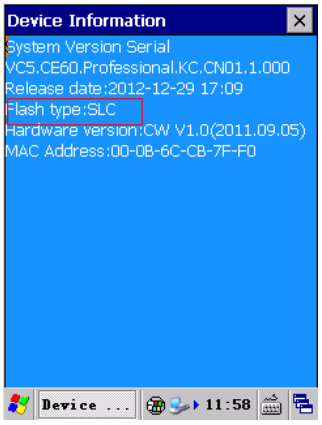


Figure5-3-3 DeviceInfo

5.4 Restore Factory Settings

Before updating, please backup the data: copy the data to PC or other disk like SD card. All data and applications will be cleared after updating.

After finishing steps above, restart the device, and then press ***F1*** as soon as possible; then you will see it as Figure5-3-1; choose ***Restore factory settings***, then press the yellow button on keyboard; then please wait the system restore and start automatically.

If you choose ***Start OS***, the system will start normally.

Chapter 6 Guide for Development

This chapter introduces how to start to develop for C5000.

6.1 Development Environment Settings

Before setting development environment, make sure you can already synchronize with PC (refer to chapter 5.1).

6.1.1 Install C5000 SDK

1) Make sure ***VS2005 SP1*** or ***VS2008*** has been already installed; otherwise the SDK cannot be installed successfully;

2) SDK File can be seen on ***Development Environment Setting*** file in SDK, find ***C5000.msi*** and double click it (please turn off VS2005 when installing SDK), then it will enter interface as Figure6.1-1;

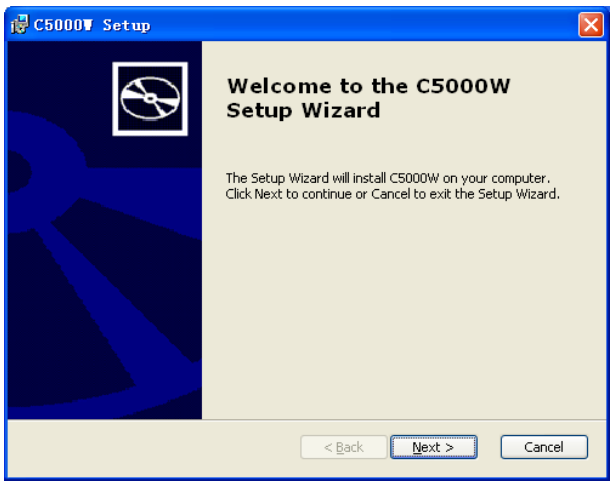


Figure6.1-1

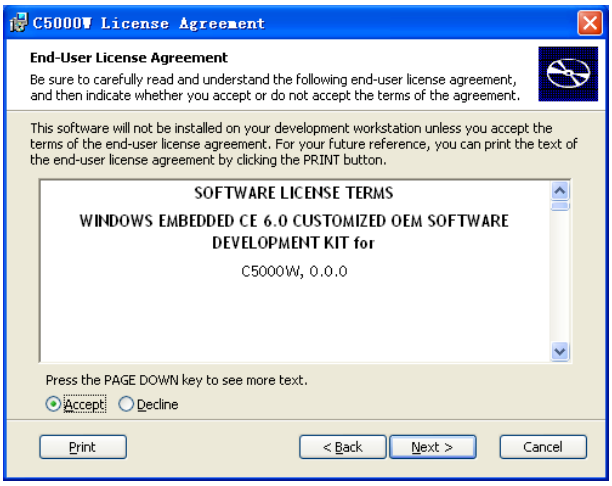


Figure6.1-2

3) Click ***Next*** to enter Figure6.1-2;

4) In Figure6.1-2, users can read the ***End-User License Agreement*** and choose ***Accept*** and click ***Next*** to enter Figure6.1-3 interface;

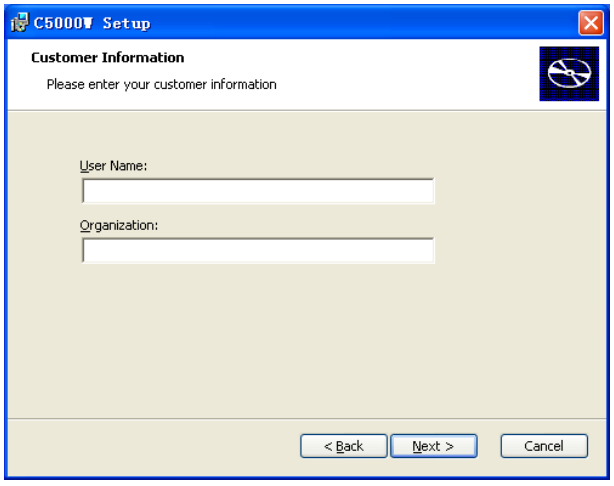


Figure6.1-3

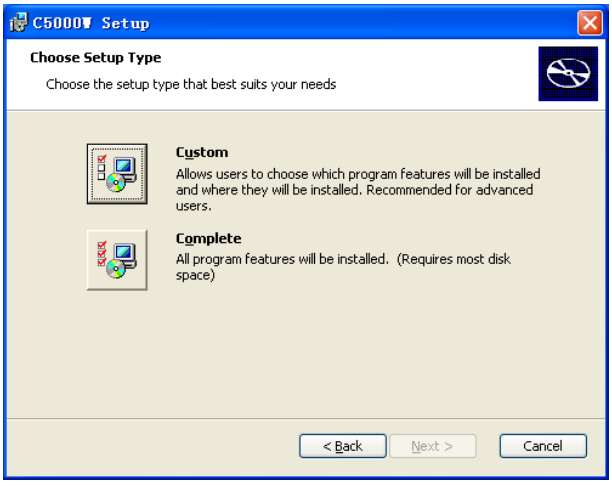


Figure6.1-4

5) In Figure6.1-3, you can fill in the blanks for ***User Name*** and ***Organization***, when the information is input click ***Next*** to enter Figure6.1-4;

6) In Figure6.1-4, please select ***Custom*** to enter Figure6.1-5;

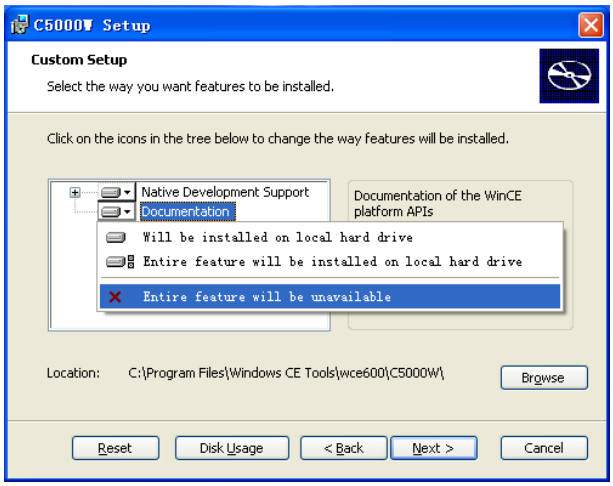


Figure6.1-5

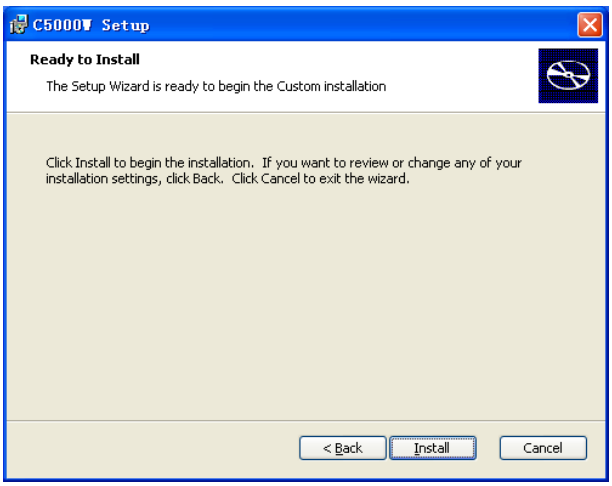


Figure6.1-6

7) In Figure6.1-5 select ***Documentation*** → ***Entire feature will be unavailable***. No need to install ***Documentation*** information because the system will be likely to go failure while installing if this section is selected，Then click ***Next*** to enter Figure6.1-6;

8) Click ***Install*** in Figure6.1-6 to start installing SDK and enter Figure6.1-7;

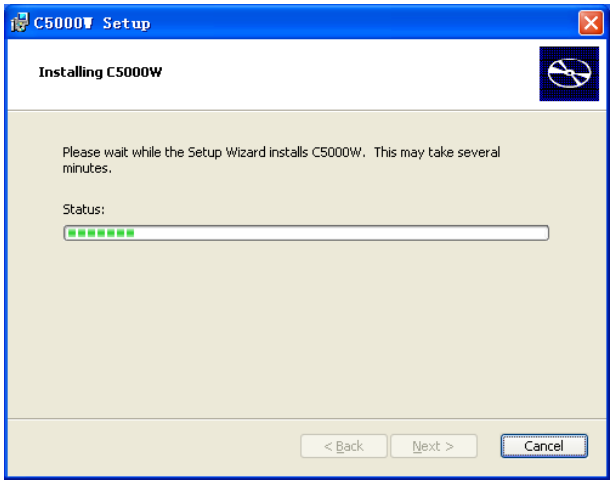


Figure6.1-7

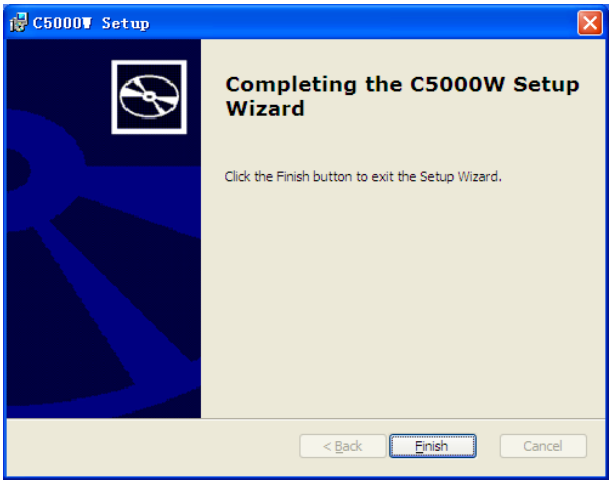


Figure6.1-8

9) Enter Figure6.1-8 interface when SDK installation is finished;

10) Click ***Finish*** in Figure6.1-8 to finish installing SDK. When installation is done, you can see ***C5000 ARMV4I Device*** on ***DEVICE*** section in Visual Studio as Figure6.1-9.

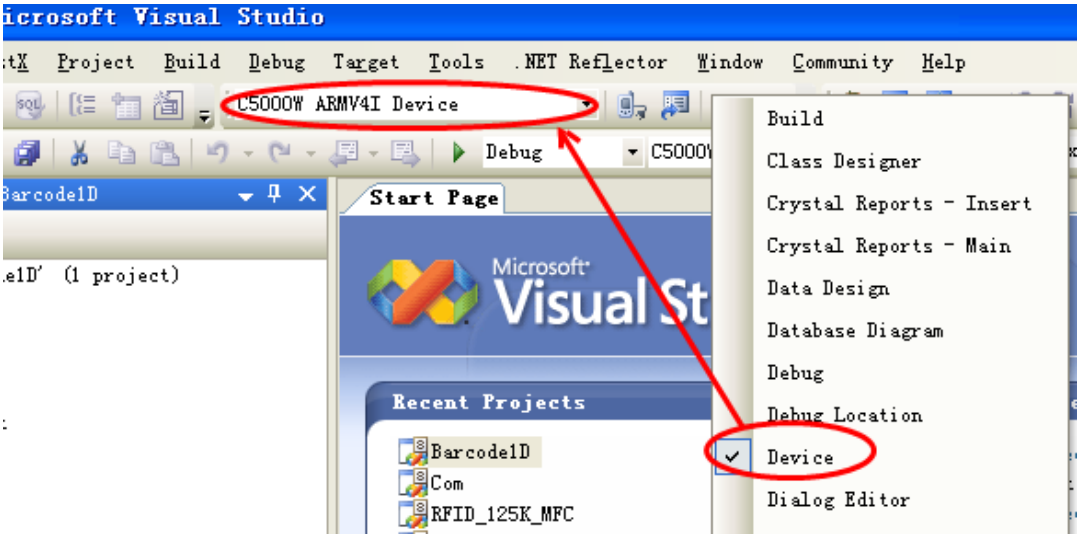


Figure6.1-9

6.1.2 Create C++ MFC Project (VS2005)

1) You need to select the programming platform for the first time to open VS2005, and to create a new project when using VS2005. Click ***File*** → ***New***→ ***Project***, as shown in Figure6.1-10:

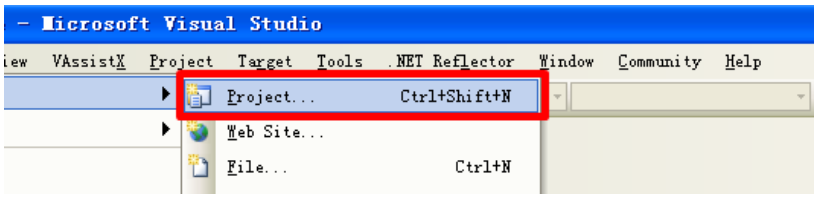


Figure6.1-10

2) Select it and you'll see the interface as Figure6.1-11.

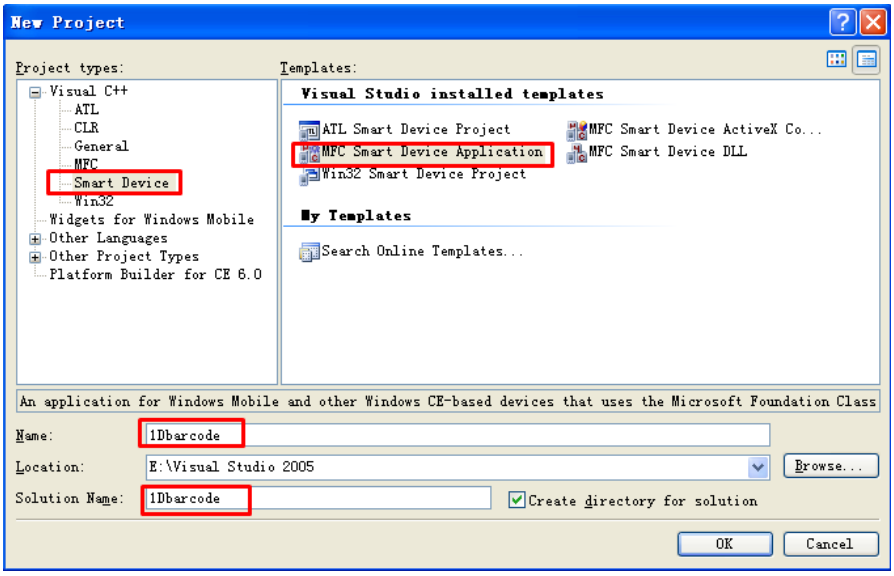


Figure6.1-11

3) Select ***Smart Device*** under ***New Project*** window, then select ***MFC Smart Device Application*** in ***Templates*** and input ***project name*** (such as 1Dbarcode), as shown in red sections in Figure6.1-10.

4) Click ***OK*** to enter ***Win32 Application Wizard*** as Figure6.1-12.

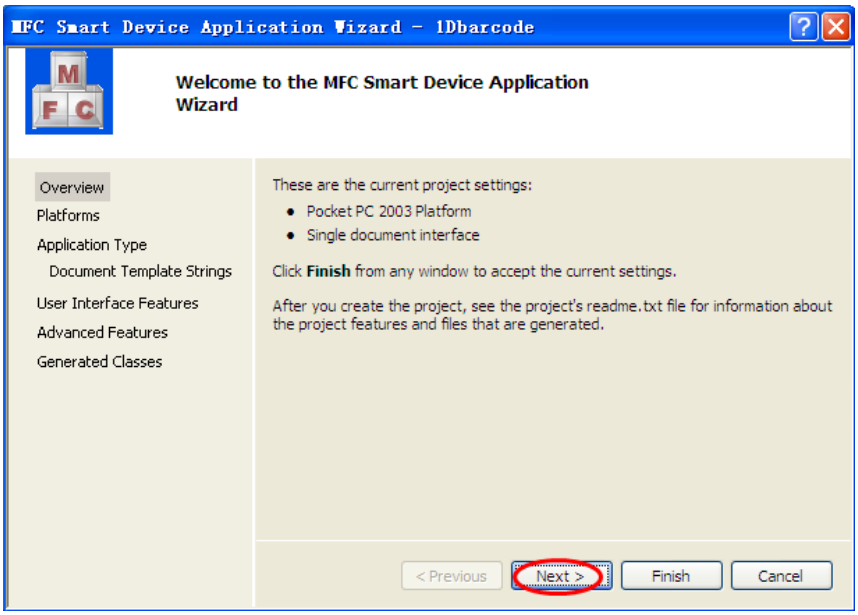


Figure6.1-12

5) Click ***Next*** to enter SDK to select platforms (Figure6.1-13), here you can move the platform named ***C5000*** to the right section and the ones to the left section.

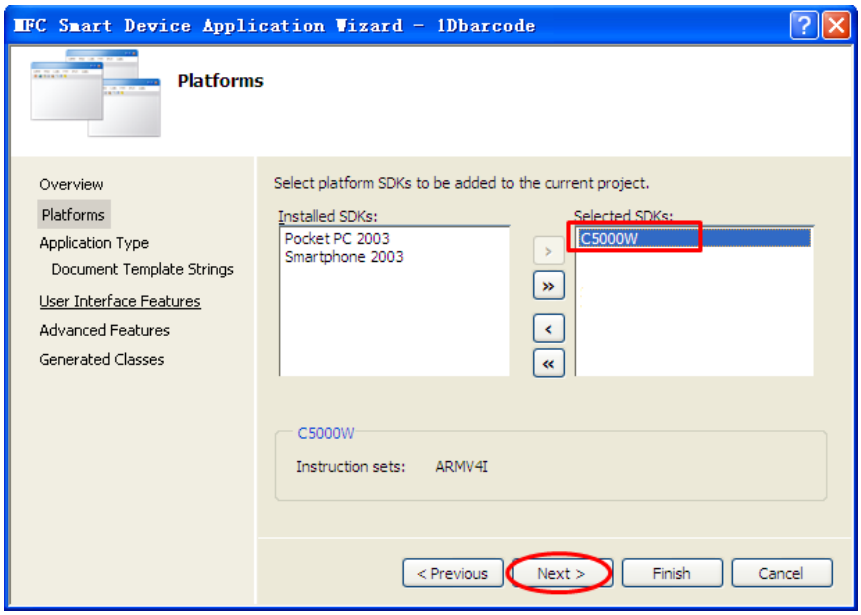


Figure6.1-13

6) Click ***Next*** to enter ***Application Type*** selection, select ***Dialog based***, ***Use MFC in a static library***; ***Resource language English (US)***.

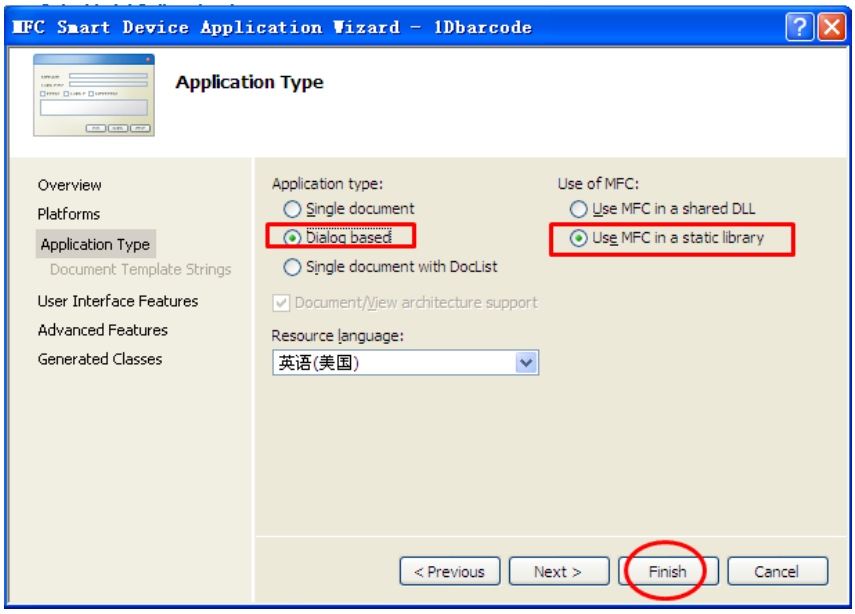


Figure6.1-14

7) No need to adjust the 3 sections below, click ***Finish*** to finish creating project.

8) Choose targeted device. Right click in Visual Studio tool and select ***Device***.

9) Select ***C5000 ARMV4I Device***.

10) Please confirm the handheld device is synchronized with PC. Click or ***F5*** to start programing.

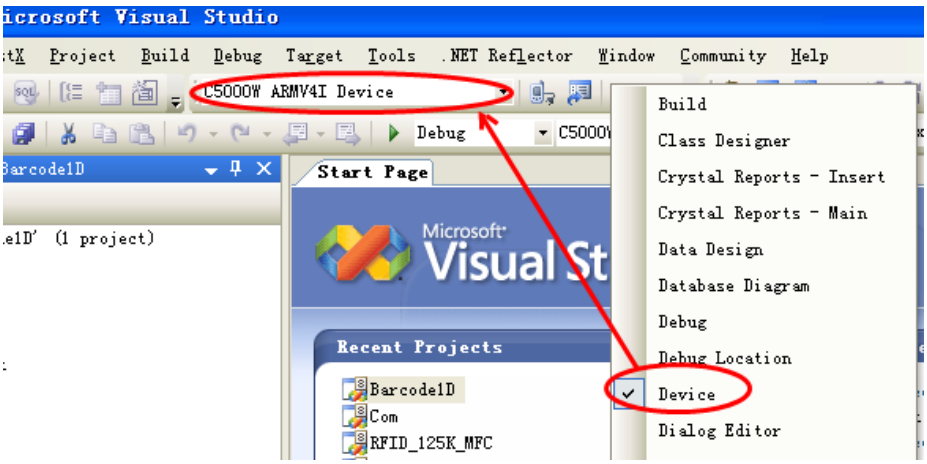


Figure6.1-15

6.2 Extended Serial Port Instructions

The main PCB is as Figure6-2-1.

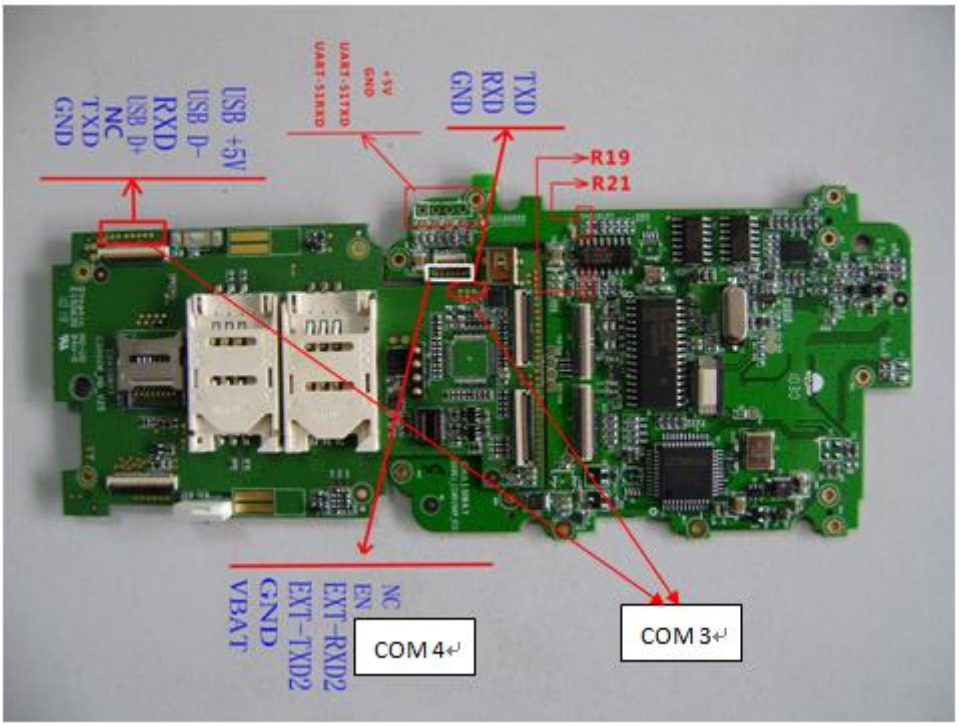


Figure6-2-1 Main PCB

The device has 2 COM ports for users:

COM 3: at the bottom of the device. This port can be always used by expansion module

COM 4: at the middle of the device. This port should be share with GPRS/RFID/Barcode modules. When one module using it, others should release it.

Please check R19 & R21 when using EXT-TXD2 & EXT-RXD2, if there is empty, pls add 22Ω 0603 resistance.

The pins in Figure6.1-2 and Figure6.1-3 are feed through.

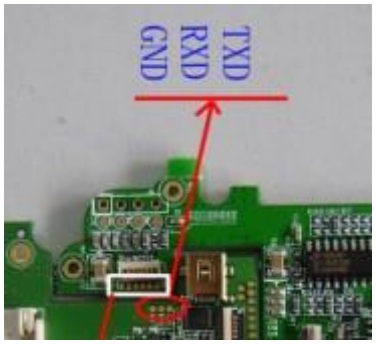


Figure6-1-2 COM Port 3

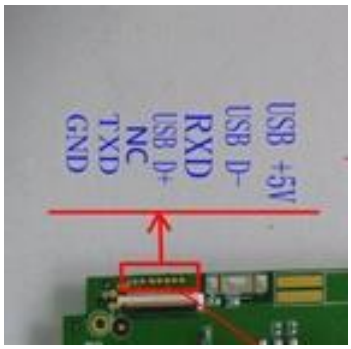


Figure6-1-2 COM Port 3

Chapter 7 Maintenance

This chapter introduces some probable problems and solutions of C5000.

7.1 Equipment and System Issues

Table7-1 Equipment and System Issues

Issues	Solutions
Device can't start	● Ensure the battery is correctly placed (see 2.1). ● Change another piece of fully-charged battery. ● Take off the battery and place again.
Touch-screen doesn't work	● Clean the touch screen. ● Recalibrate by the calibration procedure. ● Restart the device
Screen fails to display	● Check if the device is in standby mode. ● Restart the device. ● Replace with a fully-charged battery.
Keyboard doesn't work	● Check if the device is in standby status. ● Restart the device. ● Replace with a fully-charged battery.
Battery can't be recharged	● Check if the adapter is damaged. ● Check if the USB cable is damaged. ● Check if the adapter is plugged into the socket (220V). ● Check if the adapter is plugged firmly.

7.2 Scanning Issues

Table7-2 Scanning Issues

Issues	Solutions
Press "scan" button but no action	● Check if the scanner head is damaged. ● Check if the program is correct (please refer to DEMO for specific codes). ● Replace with fully-charged battery.
No data collected after scanning	● Check if the scanner head is damaged. ● Check if the program is correct (please refer to DEMO for specific codes). ● Check if the barcode is damaged.

	• Make sure it's in effective operating/scanning distance/range. • Make sure the barcode to be scanned is identifiable by the device. • Check if the scanning window is covered with dusts. • Replace with fully-charged battery.

7.3 RFID Issues

Table 7-3 RFID Issues

Issues	Solutions
RFID tag can't be identified	• Ensure the RFID module in the handheld terminal is compatible with the tags. • Ensure the program is correct (please refer to DEMO) • Ensure the tag being scanned is within the RFID sensing area (please see 3.2)

7.4 Network and Communication Issues

Table 7-4 Network and Communication Issues

Issues	Solutions
Can't be recognized after USB is connected	• Ensure USB cable is plugged. • Ensure USB cable is not damaged. • Restart the device. • Pull out and reconnect the USB cable. • Check if Microsoft ActiveSync has been installed properly (please refer the Chapter 7) • Ensure connection to PC is correct (please refer to 3.2 节)
WIFI communication error	• Ensure the program is correct (Please refer to DEMO). • Ensure the setting is correct (please refer to 5.1) • Ensure the accessories come with WIFI connection joint, which is in effective transmission distance.

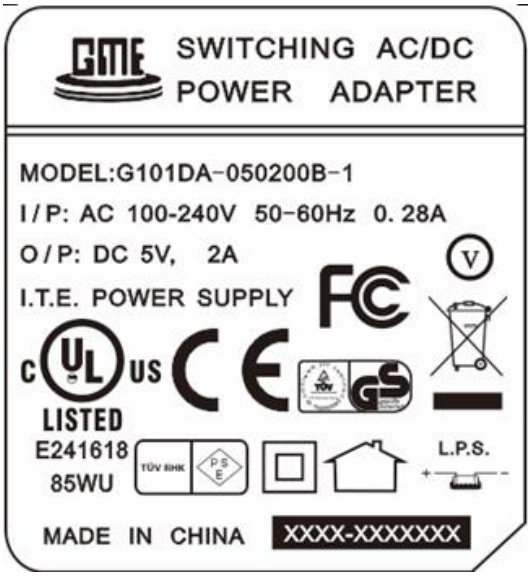
Chapter 8 AC Adapter & Battery Safety

8.1 Switching AC/DC Power Adapter Specification

Input: AC 100~240V, 50~60Hz, 0.28A

Output: DC 5V, 2A

Label: refer to the Figur8-1.



Figur8-1 AC Adapter Label

8.2 Battery Safety Guidelines

- The area in which the units are charged should be clear of debris and combustible materials or chemicals. Particular care should be taken where the device is charged in a non-commercial environment.
- Follow battery usage, storage, and charging guidelines found in the user's guide.
- Improper battery use may result in a fire, explosion, or other hazard.
- To charge the mobile device battery, the battery and charger temperatures must be between +32 F and +113 F (0 and +45 C).
- Do not use incompatible batteries and chargers. Use of an incompatible battery or charger may present a risk of fire, explosion, leakage, or other hazard. If you have any questions about the compatibility of a battery or a charger, contact Chainway technical support.
- For devices that utilize a USB port as a charging source, the device shall only be connected to products that bear the USB-IF logo or have completed the USB-IF compliance program.
- To enable authentication of an approved battery, as required by IEEE1725 clause 10.2.1, all batteries will carry a Chainway hologram. Do not fit any battery without checking it has the

- Chainway authentication hologram.
- Do not disassemble or open, crush, bend or deform, puncture, or shred.
- Severe impact from dropping any battery-operated device on a hard surface could cause the battery to overheat.
- Do not short circuit a battery or allow metallic or conductive objects to contact the battery terminals.
- Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, or expose to fire, explosion, or other hazard.
- Do not leave or store the equipment in or near areas that might get very hot, such as in a parked vehicle or near a radiator or other heat source. Do not place battery into a microwave oven or dryer.
- Battery usage by children should be supervised.
- Please follow local regulations to promptly dispose of used re-chargeable batteries.
- Do not dispose of batteries in fire.
- Seek medical advice immediately if a battery has been swallowed.
- In the event of a battery leak, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with large amounts of water and seek medical advice.
- If you suspect damage to your equipment or battery, contact Chainway to arrange for inspection.

Appendix 1 Code Types of 1D Barcode Scanner

The 1D barcode scanner can set parameters by scanning specific ***Function Barcodes***.

Operation Steps: aim the scanner at a function barcode; scan it; the laser will quickly disappear if succeed, which shows that setting is successful.

A1.1 Supported Code Types

Appendix Table 1

Enable	Disable	
Code 39	Codabar	IATA 2 of 5
Code 128	Discrete 2 of 5	UPC A with 2 Supps.
Interleaved 2 of 5	Code 93	UPC A with 5 Supps.
UPC A	MSI	UPC E0
EAN 8	Trioptic Code 39	UPC E0 with 2 Supps.
EAN 13	Bookland EAN	UPC E0 with 5 Supps.
EAN 128	Code 11	EAC 13 with 2 Supps.
UPC E	Chinese 2 of 5	EAN 13 with 5 Supps.
ISBT 128	UPC E1	UPC E1 with 2 Supps.
	RSS-Limited	UPC E1 with 5 Supps.
	RSS-14	Coupon Code
	RSS-Expanded	

*Note: the types enable / disable by default can be switched by scanning corresponding function barcodes in **Appendix Table 2**.*

A1.2 Transmit Code Type Character

Symbol Code ID Character
(0x02)

Enable

***None**
(0x00)

Disable

If this function is enabled, scanner will recognize code type when scanning a barcode.

A1.3 Enable / Disable Barcodes

Appendix Table 2

Type		Function Barcodes	Sample Barcodes
UPC-A	Enable	*Enable UPC-A	
	Disable	Disable UPC-A	
UPC-E	Enable	*Enable UPC-E	
	Disable	Disable UPC-E	
UPC-E1	Enable	Enable UPC-E1	
	Disable	*Disable UPC-E1	
EAN-8	Enable	*Enable EAN-8	
	Disable	Disable EAN-8	

EAN-13	Enable	*Enable EAN-13	
	Disable	Disable EAN-13	
Bookland EAN	Enable	Enable Bookland EAN	
	Disable	*Disable Bookland EAN	
Code 128	Enable	*Enable Code 128	
	Disable	Disable Code 128	
UCC/EAN 128	Enable	*Enable UCC/EAN-128	
	Disable	Disable UCC/EAN-128	

ISBT 128	Enable	 *Enable ISBT 128	
	Disable	 Disable ISBT 128	
Code 39	Enable	 *Enable Code 39	 AB$+%-12
	Disable	 Disable Code 39	
	Scanning this barcode to enable for any length Code 39  Code 39 - Any Length		
Trioptic Code 39	Enable	 Enable Trioptic Code 39	
	Disable	 *Disable Trioptic Code 39	

Code 39 Full ASCII

Enable

Enable Code 39 Full ASCII

Disable

*Disable Code 39 Full ASCII

AaB-12

Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously. If an error beep sounds when enabling Trioptic Code 39, disable Code 39 Full ASCII and try again.

Code 93

Enable

Enable Code 93

Disable

*Disable Code 93

AB- /$+2%3

Scanning this barcode to enable for any length Code 93

Code 93 - Any Length

Code 11

Enable

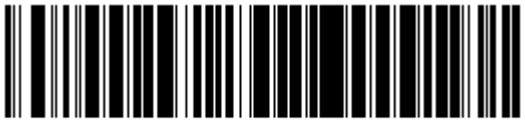
Enable Code 11

Disable

*Disable Code 11

0123-456789

Scanning this barcode to enable for any length Code 11



Code 11 - Any Length

Interleaved 2 of 5	Enable	*Enable Interleaved 2 of 5	1234567890
	Disable	Disable Interleaved 2 of 5	
	Scanning this barcode to enable for any length I 2 of 5 I 2 of 5 - Any Length		
Discrete 2 of 5	Enable	Enable Discrete 2 of 5	
	Disable	*Disable Discrete 2 of 5	
	Scanning this barcode to enable for any length D 2 of 5 D 2 of 5 - Any Length		
Chinese 2 of 5	Enable	Enable Chinese 2 of 5	
	Disable	*Disable Chinese 2 of 5	

Codabar	Enable	 Enable Codabar	 A4D156B
	Disable	 *Disable Codabar	
	Scanning this barcode to enable for any length Codabar  Codabar - Any Length		
MSI	Enable	 Enable MSI	 0123456782
	Disable	 *Disable MSI	
	Scanning this barcode to enable for any length MSI  MSI - Any Length		
RSS-14	Enable	 Enable RSS-14	
	Disable	 *Disable RSS-14	

RSS-Limited	Enable	 Enable RSS-Limited	
	Disable	 *Disable RSS-Limited	
RSS-Expanded	Enable	 Enable RSS-Expanded	
	Disable	 *Disable RSS-Expanded	