T0660

5.7” Fanless Touch Panel PC

User’s Manual

Version 1.0

2008.07

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Copyright Notice

About User's Manual

This User's Manual is intended for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this User's Manual, please consult your vendor before further handling.

Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it :

1. Disconnect your Single Board Computer from the power source when you want to work on the inside.
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry.
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that came with the Single Board Computer, whenever components are separated from the system.

Replacing the lithium battery

Incorrect replacement of the lithium battery may lead to a risk of explosion. The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.
Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please consult the user's manual first at:

ftp://ftp.arbor.com.tw/pub/manual

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.

http://www.arbor.com.tw
E-mail:info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of two years from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantibility and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

Ordering Information

T0660-S	T0660 with Sunlight readable support (Within ALTT technology)
T0660-C	T0660 with CAN-BUS support
T0660-R	T0660 integrated RFID reader function
T0660-SC	T0660 with CAN-BUS support and Sunlight readable support (Within ALTT technology)
T0660-SR	T0660 with Sunlight readable support (Within ALTT technology) and integrate RFID reader function

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Chapter 1

General Information

1.1 Introduction

The T0660 touch panel computer is state-of-the-art HMI (Human Machine Interface). This 5.7” display operator interface is a x86-based platform with these key features:

- All-In-One Platform
  The CPU, DRAM and even software are integrated to provide a plug-and-play machine.
- Bright Display
  The high brightness TFT LCD display suits industrial demands for clear interfaces.
- Fanless and Modular CPU Board
  By using a low power processor, the system does not have to rely on fans, which often are unreliable, and causes dust to circulate inside the equipment. The modular design facilitates maintenance or possible upgrades on the CPU board.
- Powerful Communication Capability
  The T0660 provides serial ports, parallel port, Ethernet, USB and PC104 plus expansion slot.
- Windows OS Support:
  Arbor offers platform support for Windows CE 5.0, Windows CE 6.0, Windows XP, Windows XPe, Linux and DOS. The optional Windows CE operating system specifically for the T0660 is available for Windows CE application program builders

1.2 Specifications

System Kernel	TMB-a9000
Processor	AMD LX900 (clock rate 600 MHz)
VGA	AMD LX900 Integrated
BIOS	AMI 512KB Flash Memory
South Bridge	AMD CS5536
System Memory	Built-in 512MB DDRAM
Ethernet Controller	Realtek RTL8100B1 10/100 base-T
Watchdog Timer	Super IO watchdog timer; 2,5,10,15,30,40 second timeout period
IDE	1 x EIDE channel supports one 2.5” IDE HDD
Flash Disk	1 x CompactFlash socket
I/O Ports	
Serial Port	2 x RS-232 (COM1, COM2) 1 x RS-422/485 (COM3)
Ethernet Port	1 x RJ-45
USB Port	2 x USB 2.0 compliant
KBMS	2 x 6-pin Mini-DIN ports for standard PS/2 keyboard and mouse (with Y cable)
Expansion Bus	1 x 16-bit PC/104 slot
Safety	
FCC	Class A certificated
CE	Certificated
UL	Certificated
Others	The front bezel is compliant with NEMA 4
Environment	
Operating Temp.	0°C ~ 50°C
Storage Temp.	-20°C ~ 60°C
Humidity	10 ~ 95% @ 40°C relative humidity (non-condensing)
Vibration	5~500 Hz: 1Grms

1.3 LCD Specifications

Display Type	Color TFT LCD
Size (Diagonal)	5.7"
Maximum Resolution	640x480(262K color)
Pixel pitch (WxH, mm)	0.1815 x 0.1815
Viewing angle	Front-Rear 100/ Left-Right 140
Luminance (cd/m2)	220
Contrast ratio	300
Backlight	LED backlight
LCD MTBF	50,000 hours

1.4 Touchscreen Specifications

Type	Resistive
Base Glass Construction	Tempered Glass
Resolution	Continuous
Light Transmission	>80% typical
Controller	UART interface
Power Rating	3.3 to 5 V DC
Software Driver	Windows CE/ XPe (embedded)/ XP / Linux (embedded)
Durability	10 millions times (finger touch)

1.5 Power

Input Voltage	9 ~ 33 VDC (the fuse will be open circuit as input level exceeds 33VDC)
Maximum current	3A

1.6 I/O Ports Arrangement

The T0660 has 3 serial ports, 2 USB (Host) port, and 1 RJ-45 LAN port . The arrangement of these ports is shown in Figure 1.1.

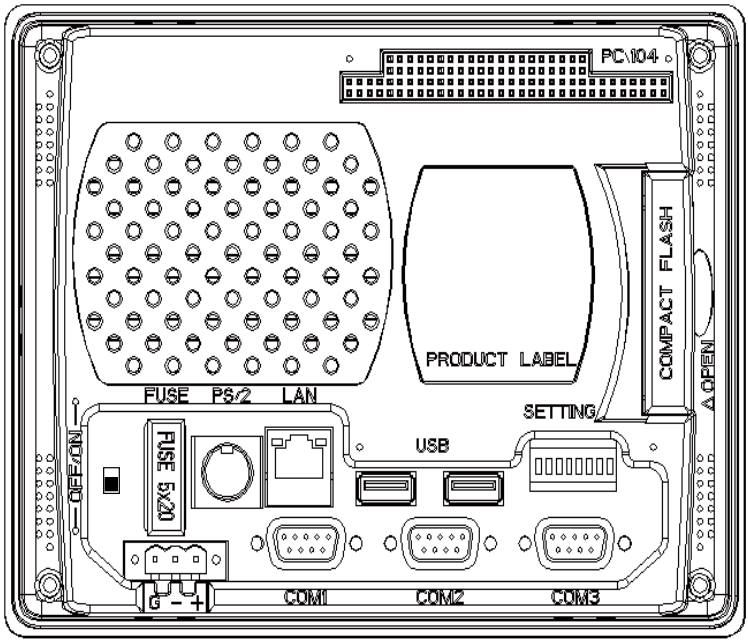
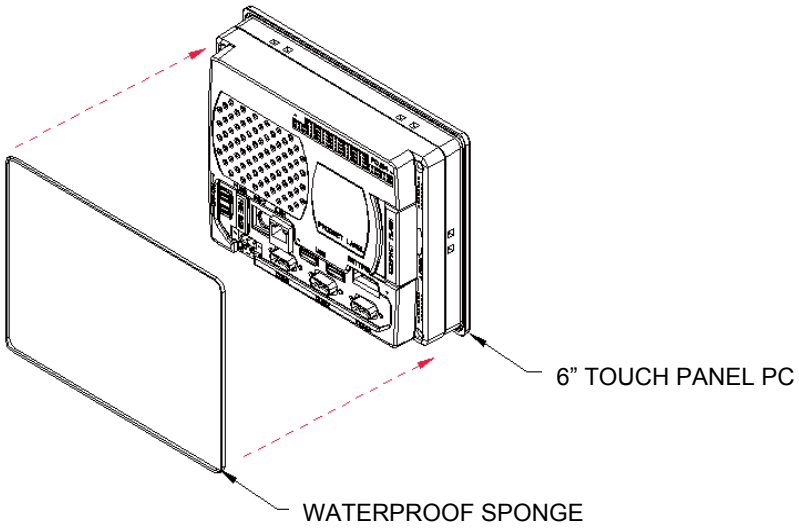


Figure 1.1: I/O Ports arrangement

1.7 Mounting

1.7.1 Panel Mounting

1. There is an adhesive waterproof gasket on the front bezel. Make sure the waterproof gasket is in position before installing the T0660 on the panel opening.
2. Install the T0660 on the panel opening.
3. Find the six clampers and six long screws in the accessory pack. Hook these clampers to the holes around the four sides of the bezel. Insert the screws into every clamper and fasten them. These screws will then push the mounting panel and fix the unit.
4. The panel opening thickness is suggested to be less than 5mm (0.236 inches).



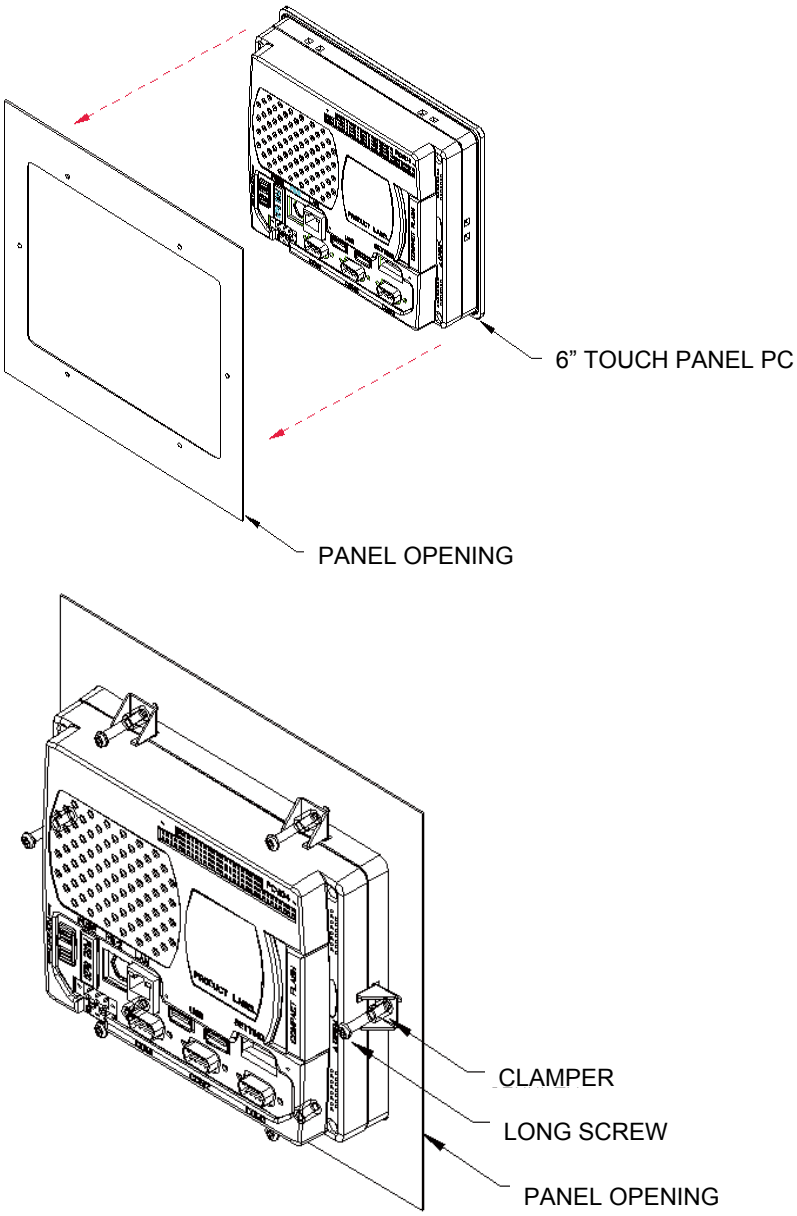


Figure 1.2: Panel Mounting

1.8 Dimensions and Cutout

- Weight: 880g (without HDD)
- Dimension: 186.0 x 140.0 x 47.5 mm (WxHxD)
- Cutout: 181.0 x 135.0 mm (suggested)

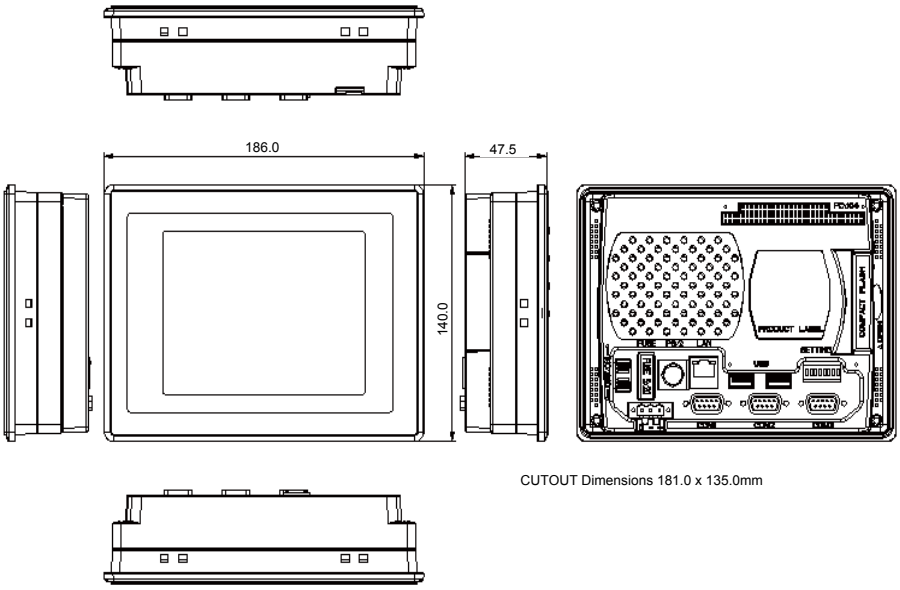


Figure 1.3: Dimensions and Cutout

Chapter 2

System Quick Start

2.1 Packing List

- 1 x T0660 Human Machine Interface Machine
- 2 x EPE FORM
- 1 x Accessory Bag (CD/ Manual/ Screw/ Fuse/ Cable)
- 1 x Gift Box

If any of the above items is damaged or missing, contact your vendor immediately.

1. This graph illustrates how to install a Compact-Flash card. Arbor provides optional Compact-Flash memory card with Windows OS. (512MB Industrial CF card for CE/ Linux; 4G Industrial CF card for XP/ XPe)

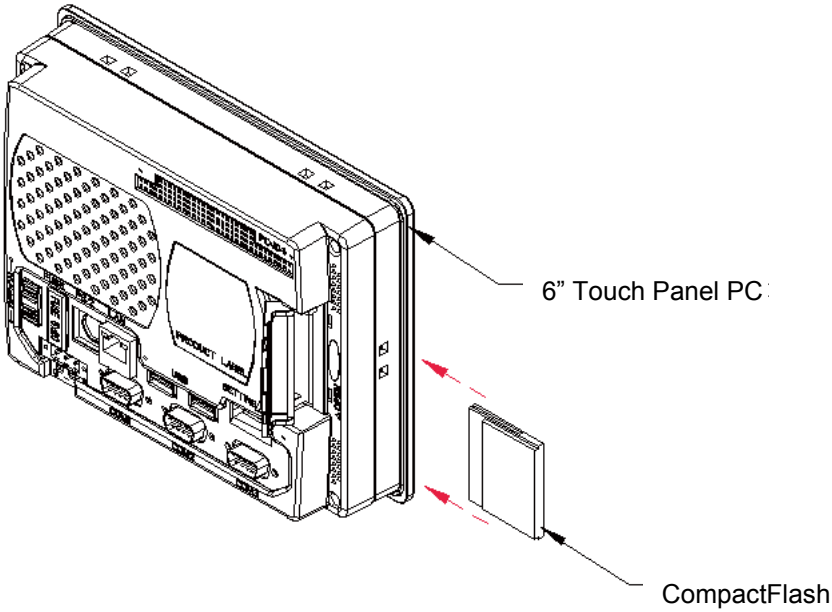


Figure 2.1: Installing a CompactFlash Memory Card

2. Connect the power connector to 24VDC power lines. The power lines can either be from a power adapter or an in-house power source.

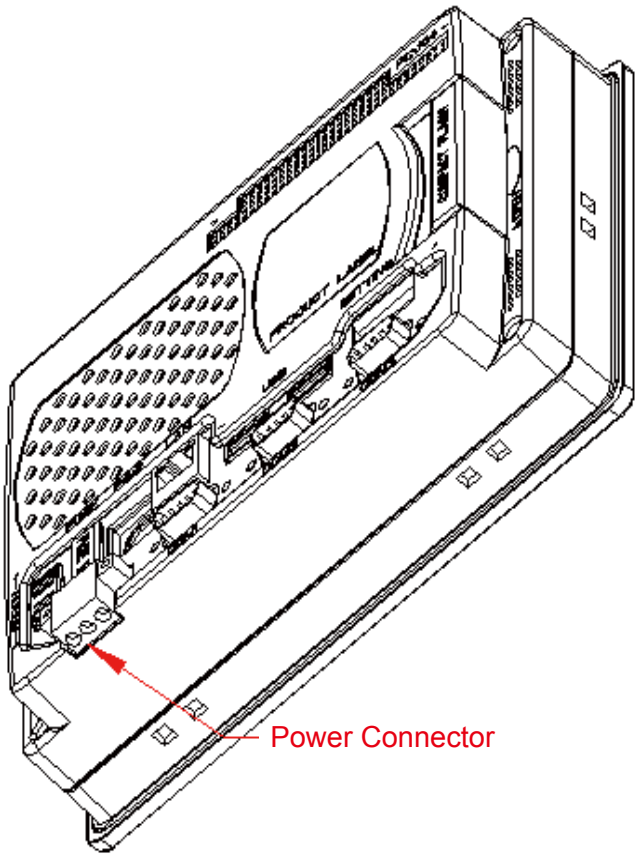


Figure 2.2: The Power Connector

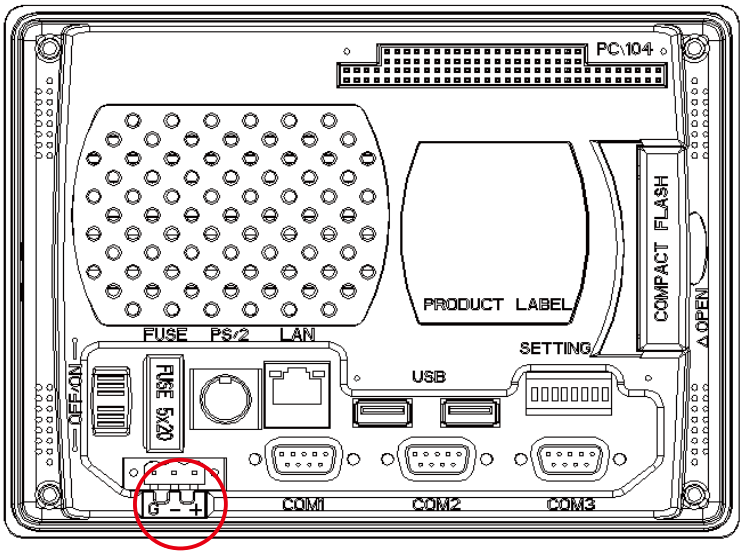
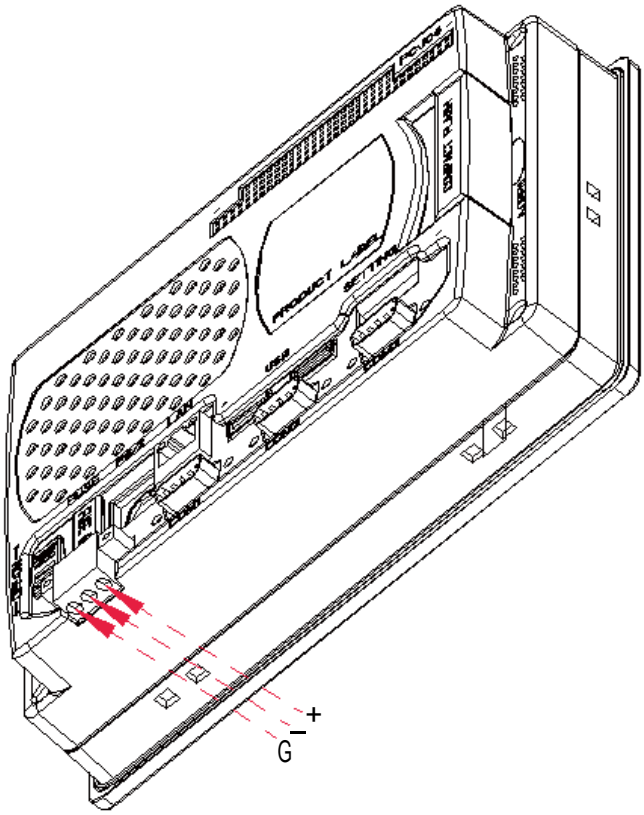


Figure 2.3: Power Connector Pin Assignment

4. Plug the power lines into the system power receptor.



Warning: If the power lines are not connected to the correct pins, the system may be damaged when power is turned on.

Figure 2.4: Connecting Power Lines

4. Turn on the system power switch.

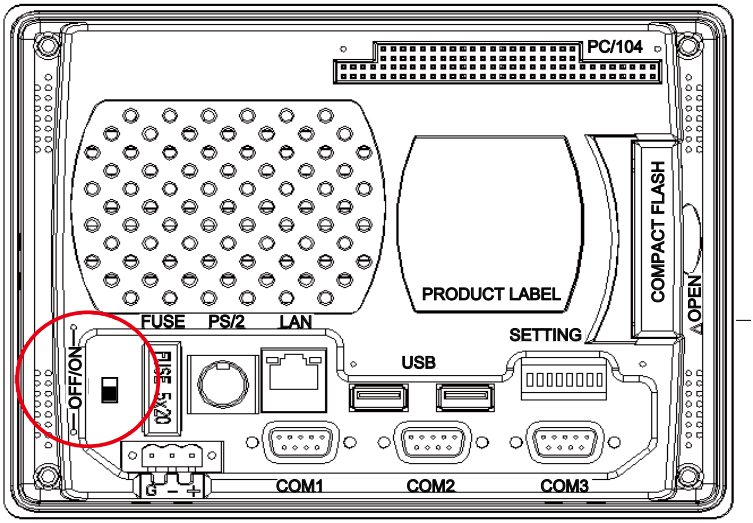


Figure 2.5: The Power Switch

5. Calibrate the touchscreen. Detailed calibration procedures are described in section 5.1.2.

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Chapter 3

The Engine of T0660

3.1 Introduction

The engine of T0660 is constructed by the combination of one PCBA board. Such a combination makes system customization feasible.

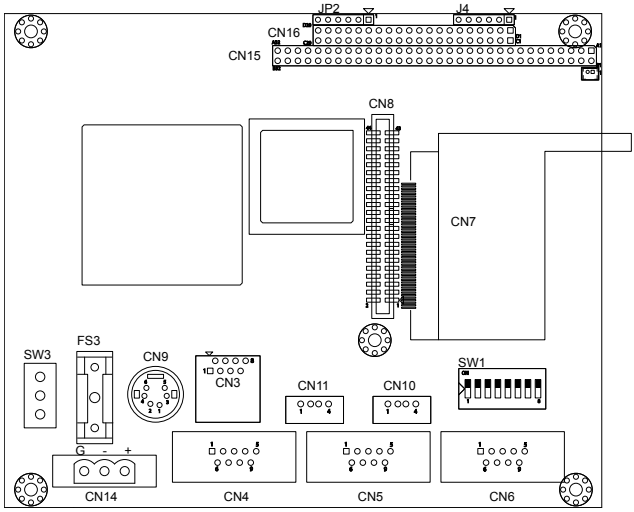


Figure 3.1: T0660 Main Board Top View

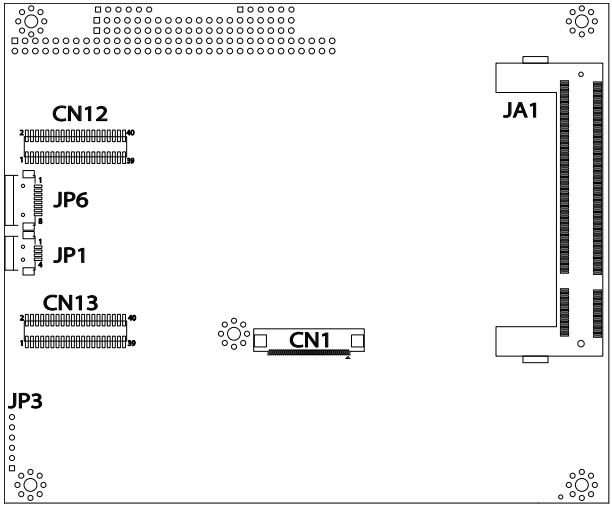


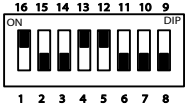
Figure 3.2: T0660 Main Board Bottom View

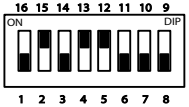
TPC-1260 I/O Board Connector/ Jumper List

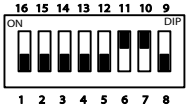
Label	Function
CN1	TFT PANEL Connector (40-Pin)
CN3	ETHERNET RJ-45 Connector (30x4 Pin)
CN4	COM1 (RS232)
CN5	COM2 (RS232)
CN6	COM3 (RS422/485/CAN)
CN7	CompactFlash socket
CN8	HDD IDE Connector
CN9	PS2 (Keyboard& mouse) Connector
CN10	USB1 Connector
CN11	USB2 Connector
CN12	IO board Connector
CN13	IO board Connector
CN14	NE050 Connector
CN15	PC/104 Connector
CN16	PC/104 Connector
JA1	DDR RAM Socket
JP1	Touchscreen Connector
J4, JP2, JP3	JTAG port
JP6	Membrane key Connector
FS3	Fuse Connector
SW1	RS-422/485/CAN Selection
SW3	Power Switch

3.2 SW1 RS-422/485/CAN Selection

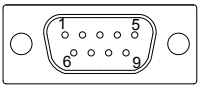
Jumper Setting	RS-485	RS-422	CAN
1-16	ON	OFF	OFF
2-15	OFF	ON	OFF
3-14	OFF	OFF	OFF
4-13	ON	ON	OFF
5-12	ON	ON	OFF
6-11	OFF	OFF	ON
7-10	OFF	OFF	ON
8-9	OFF	OFF	OFF







3.3 COM3 DB-9 Pin define



Pin #	RS-485	RS-422	CAN
1	485DATA-	422TX-	
2	485DATA+	422TX+	CAN-
3		422RX+	
4		422RX-	
7			CAN+

Chapter 4

Windows CE with T0660

4.1 Introduction

The T0660 operator interface terminal is designed to serve the Windows CE platform. Windows CE is a compact operating system that occupies less storage space and system resources compared with most operating systems. With its modular nature, it is possible to choose only those functions that are useful for specific applications. This not only reduces the system resources required, it also reduces start-up time. In the field of industrial automation and operator interface terminals, this is an appealing feature because the impact of downtime is minimized. Furthermore, the small storage space required makes it possible to store the operating system on a solid-state disk like CompactFlash.

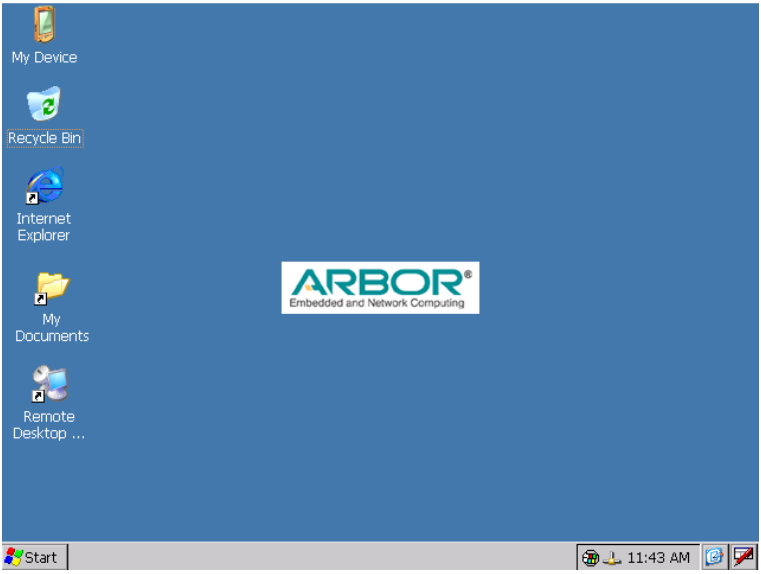


Figure 4.1: Windows CE on T0660

4.2 T0660 Utilities

There are several useful utilities built into the standard Windows CE OS of T0660:

4.2.1 Software Keyboard

The T0660 is dedicated to small-sized operator interfaces. For security reasons, the T0660 does not provide PS/2 ports that connect to external keyboards or mice. On the other hand, a software keyboard is available in Windows CE. Upon boot-up, a small keyboard icon will appear on the status bar. Tap this icon with the stylus to activate/hide this software keyboard.

The T0660 provides a software keyboard with the WinCE .NET operating system. Upon boot-up, a small keyboard icon will appear on the status bar. Tap this icon with the stylus to activate/hide this software keyboard.

Figure 4.2: Software Keyboard

4.2.2 Watchdog Timer

Reliability is crucial for industrial applications, and in the event of a system error, the system should be able to reset itself. This feature is provided by the watchdog timer.

T0660 clears the watchdog timer at a pre-set interval. If the timer is not cleared, the timer assumes the system is halted and generate a reset. The watchdog timer in T0660 has been set at a time interval of 0~255 seconds at the factory. As mentioned in the section 4.2.2, when the system boots, there is an icon “S” on the status bar. Tap this icon with a stylus to display the settings for the watchdog timer. Select the required time interval and tap one of the buttons: “OK”, “Cancel” or “Save”.

Warning: Please be careful before selecting “Save”. This command will overwrite all registry data, not only the watchdog timer settings.

4.3 Networking

4.3.1 Networking via Ethernet

This section states how to configure the Ethernet port of TPC series properly. The procedures are listed step by step below.

1. Press “Start” in the task bar of the system window and select “Setting” -> “Networking and Dial-up connections”.

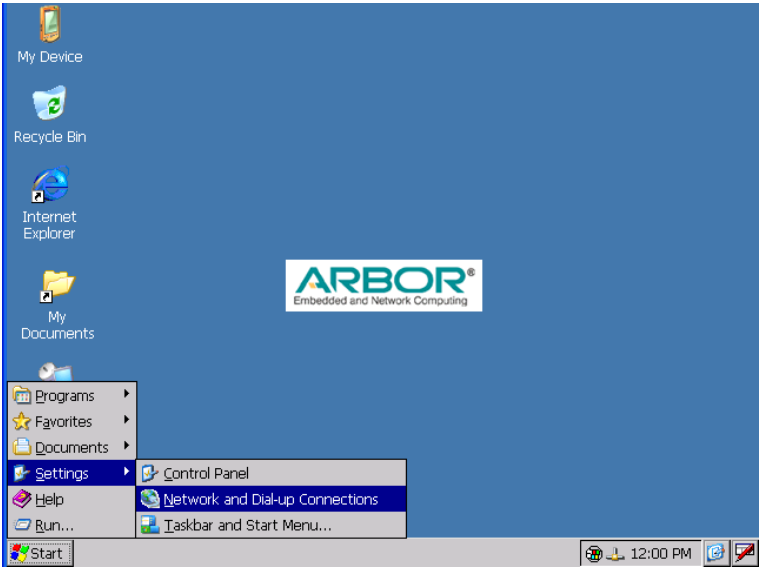


Figure 4.3: Network and Dial-up Connections

2. The window that shows all available connections will pop up. Double click the icon that you want to configure the settings for. For example, double click PCI\DP838151 icon to configure it.

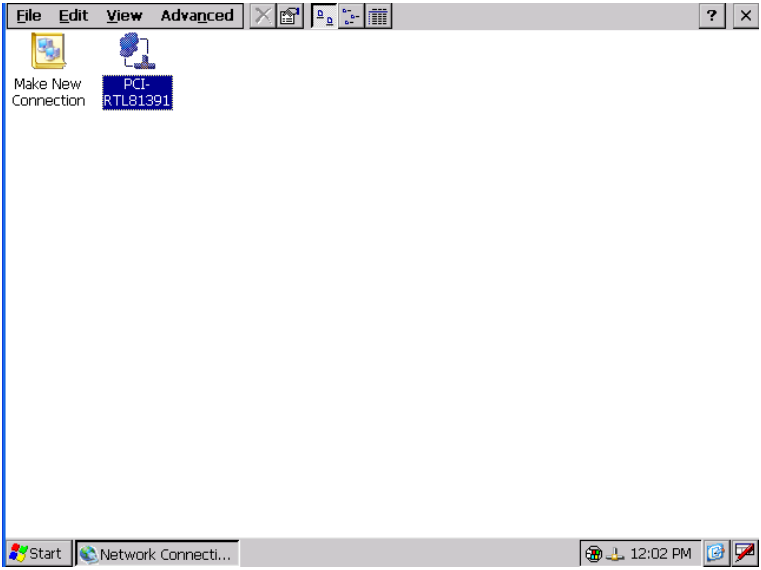


Figure 4.4: Selected Connection

3. Select the “IP Address“ tab.

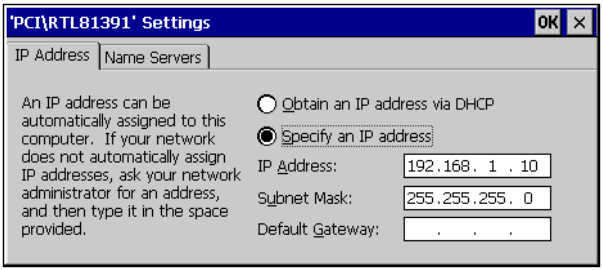


Figure 4.5: Setting IP Address

4. Select the “Name Servers“ tab.

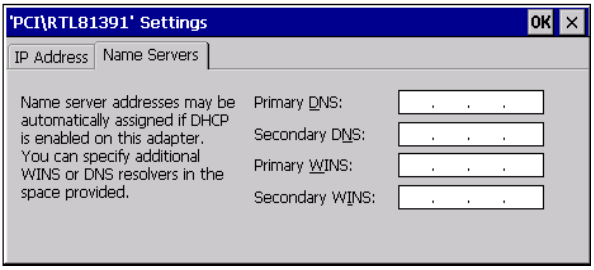


Figure 4.6: Setting Name Servers

5. Press “Start” in the task bar of the system window and select “Run”. Execute “regsave” to save the registry setting to the storage card.

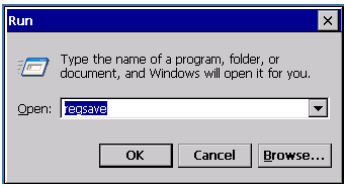


Figure 4.7: Save Registry

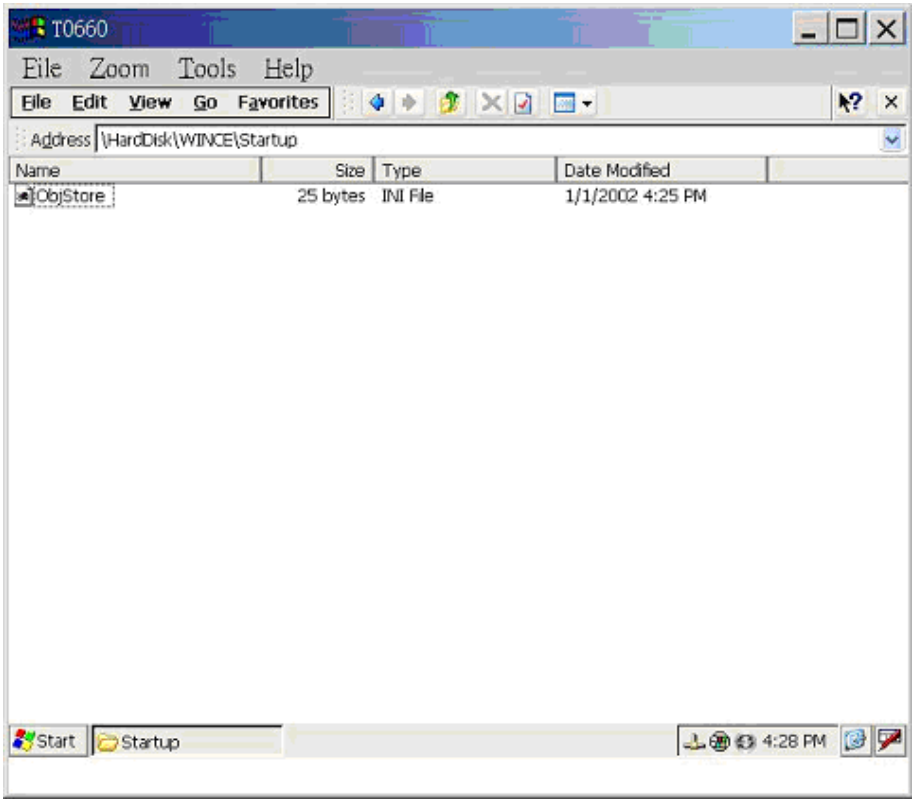
4.3.2 Web Browser

The T0660 built-in Windows CE OS includes Microsoft IE. It can be used to browse web pages on World Wide Web via LAN or dial-up connection.

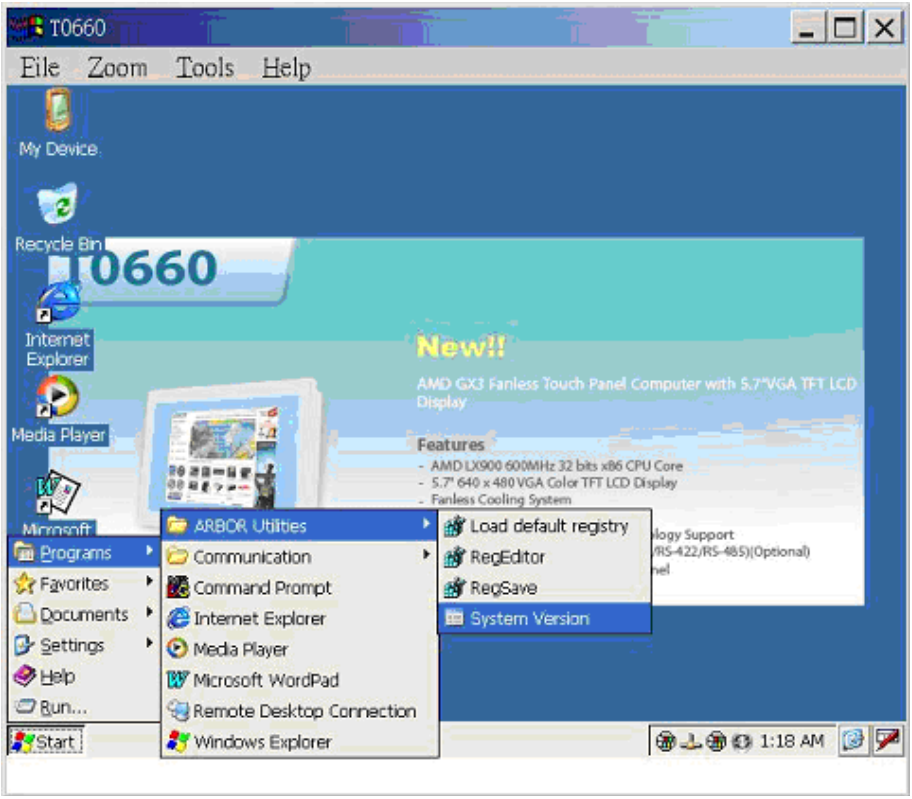
Figure 4.8: Web Browser

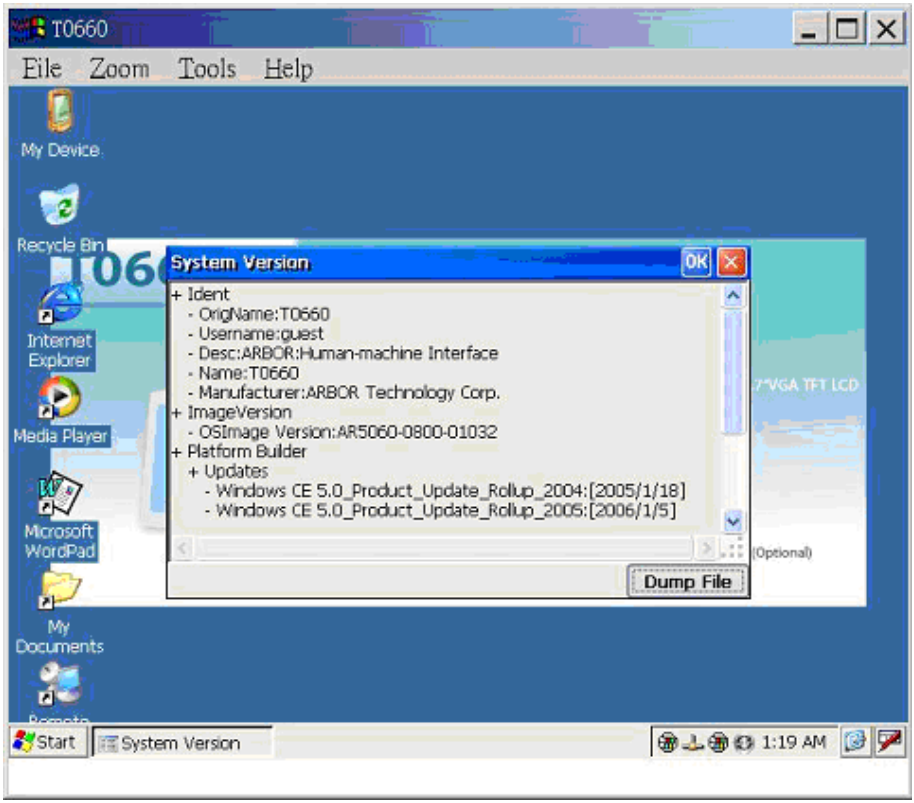
4.4 Auto-execute [.exe or .bat] file while Starting Up

Put the [.exe or .bat] files that you want to execute, in the directory of HardDisk\WINCE\Startup. When the system starting, it will automatically execute [.exe or. bat] file the directory.



4.5 System Image Version Check




T0660
File Zoom Tools Help
My Device
Recycle Bin
Internet Explorer
Media Player
Microsoft WordPad
My Documents
System Version
OK
+ Ident
- OrigName:T0660
- Username:guest
- Desc:ARBOR:Human-machine Interface
- Name:T0660
- Manufacturer:ARBOR Technology Corp.
+ ImageVersion
- OSImage Version:AR5060-0800-01032
+ Platform Builder
+ Updates
- Windows CE 5.0_Product_Update_Rollup_2004:[2005/1/18]
- Windows CE 5.0_Product_Update_Rollup_2005:[2006/1/5]
Dump File
7"VGA TFT LCD
(Optional)
Start
System Version
1:19 AM

Chapter 5

OPC Driver

5.1 OPC Development Kit Installation

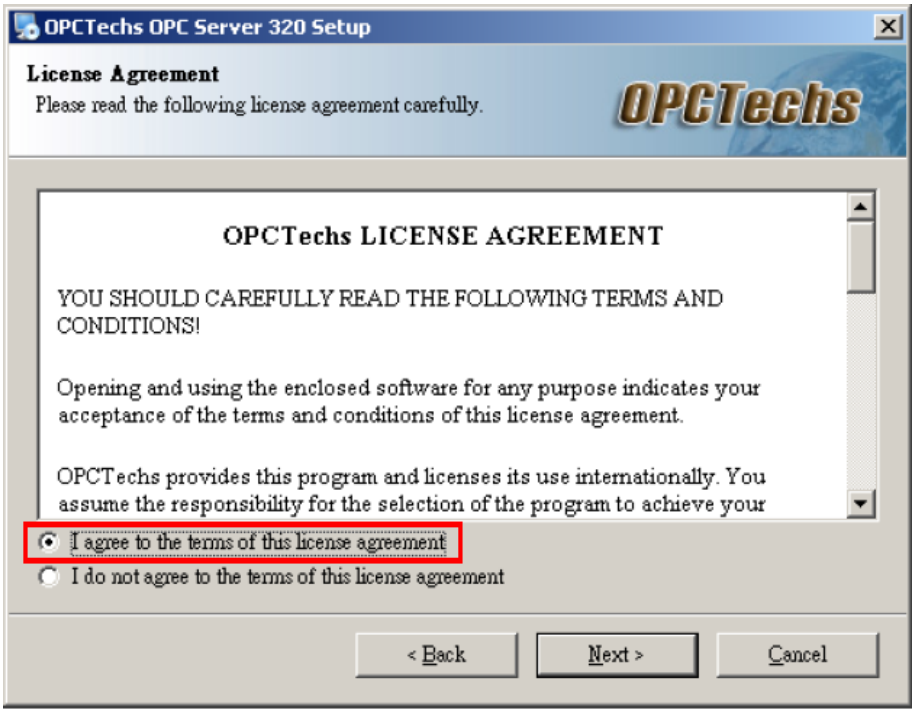
OPC Development Kit will help you to install and use OPC Driver in detail. Please refer to following setps to install it. Beside, if you use Windows CE version, OPC drivers should be treansferred to another Access database format further. All the installaiont steps for Windows CE OPC Driver communication will be introduced in section 5.2.

Insert the Arbor CD into the CD-ROM. Open [OPC] --> [OPC Development Kit] --> [Autorun] --> execute [Setup.exe]

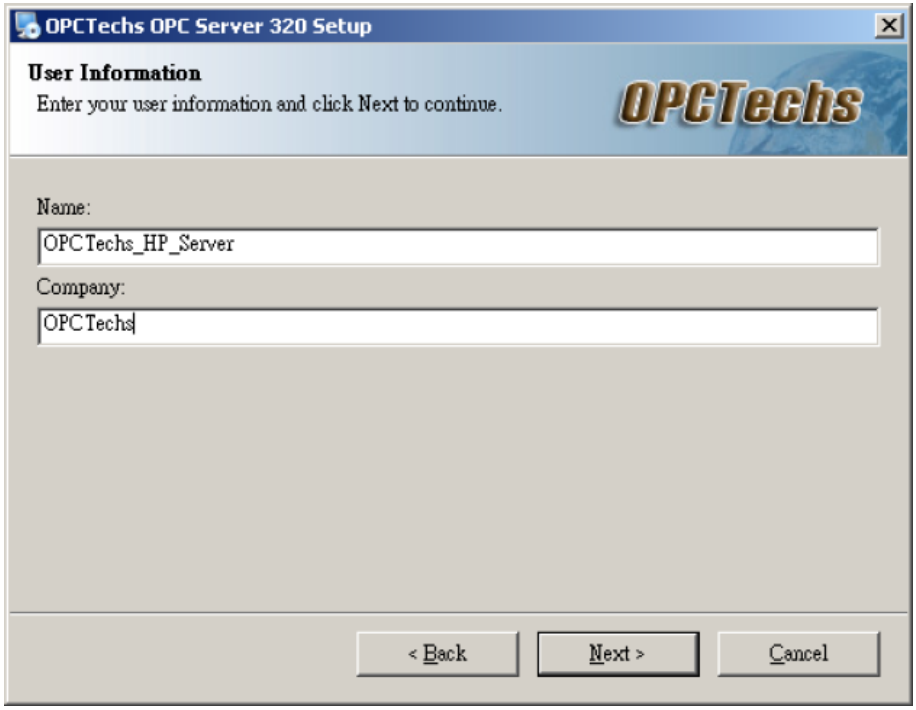
Click [Next]

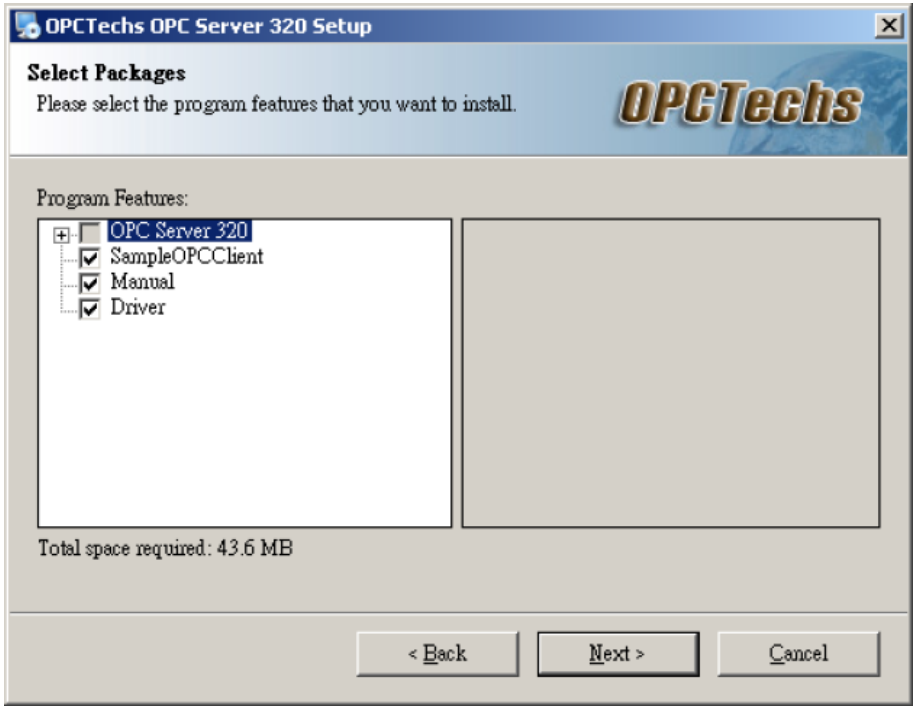

OPCTechs OPC Server 320 Setup
OPC Suite
OPCTechs
Welcome
Welcome to the installer for OPCTechs OPC Server 320 v1.00.04
It is strongly recommended that you exit all Windows programs before continuing with this installation.
If you have any other programs running, please click Cancel, close the programs, and run this setup again.
Otherwise, click Next to continue.
< Back
Next >
Cancel

License Agreement - please read the lisence agreement and then click "I agree to the terms of this agreement" or "I do not agree to the terms of this agreement". Then, click [Next] to continue installation.

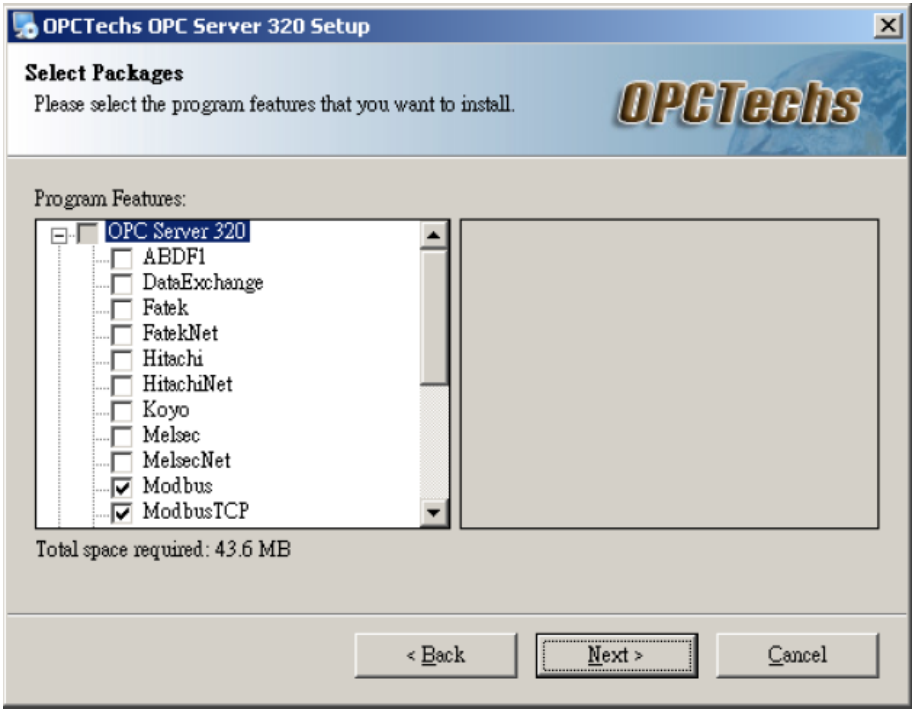


Type in the user name and company and click [Next].

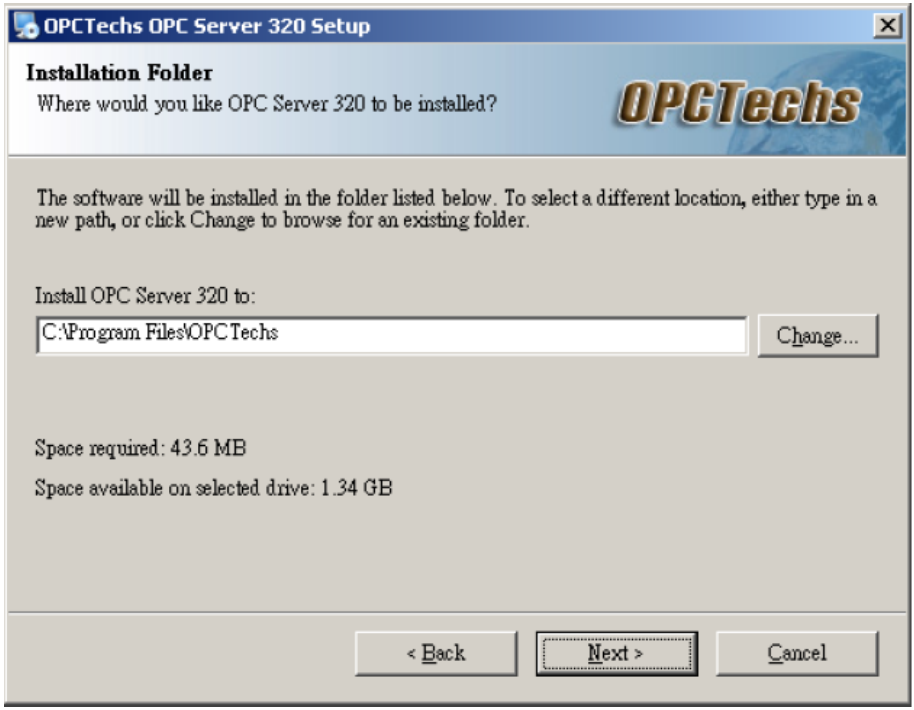



OPCTechs OPC Server 320 Setup
Select Packages
Please select the program features that you want to install.
OPCTechs
Program Features:
OPC Server 320
SampleOPCClient
Manual
Driver
Total space required: 43.6 MB
< Back
Next >
Cancel

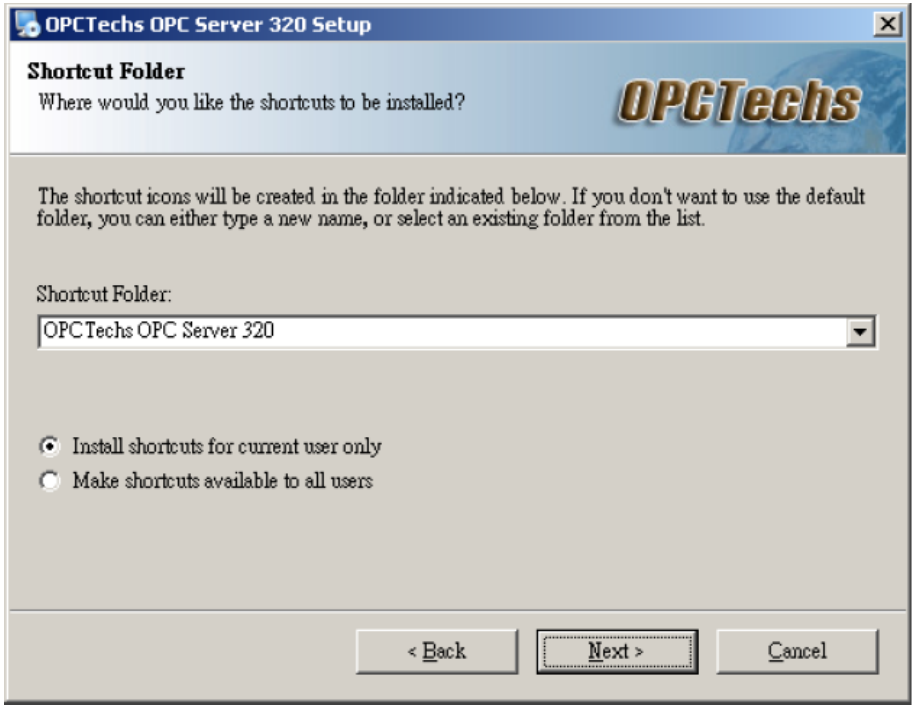
Please select the program, file, Simple Client and Configuration manual you want to installate. The default OPC Server we select are Modbus and ModbusTCP. You can choose the rest of the OPC Server.



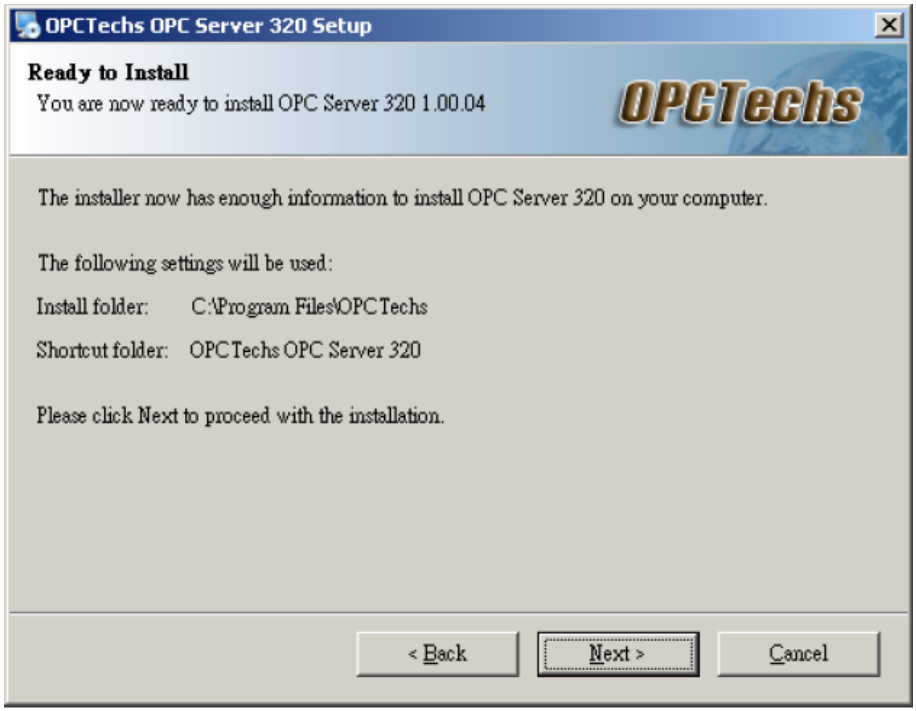
Select the proper directory where the program be installed. And then click [Next].



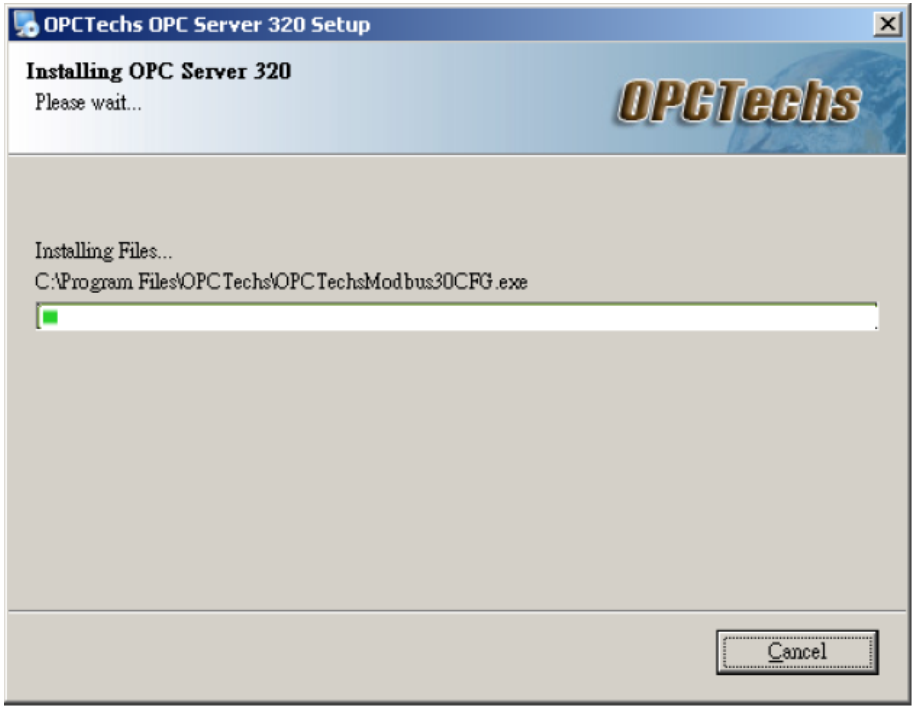
Select the directory where the program be installed. And then click [Next].



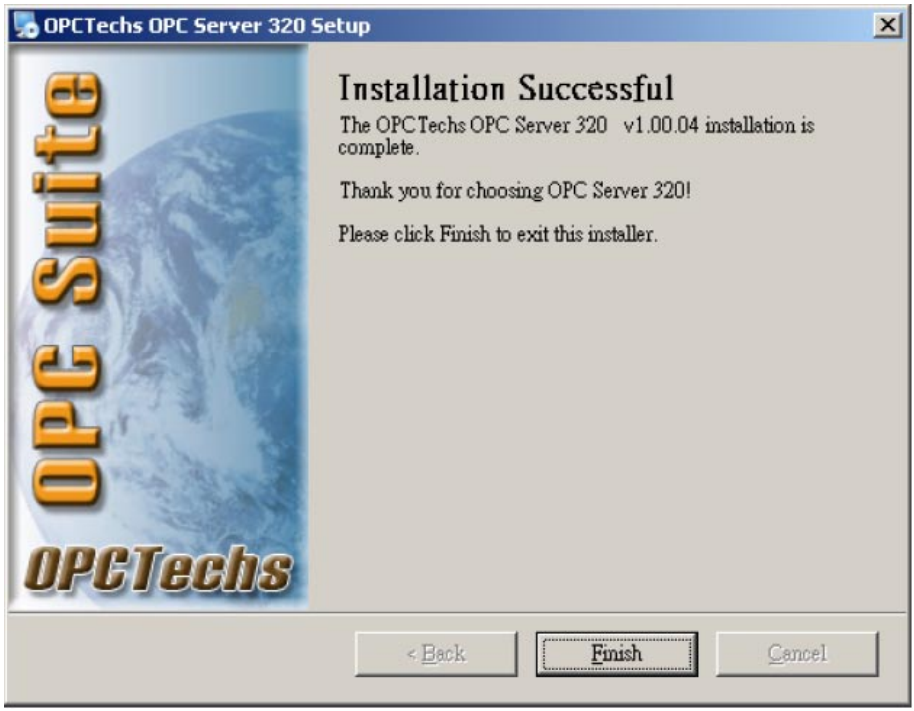
Are you ready to install the program? If yes, please click [Next].



The program is being installed.



Successful Installation.

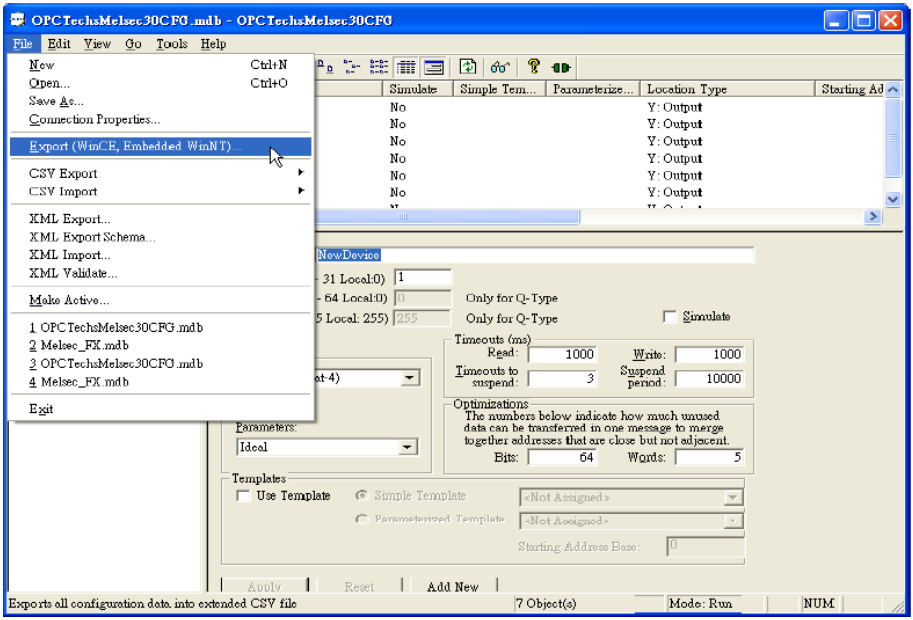


5.2 WINCE OPC Driver Communication Steps

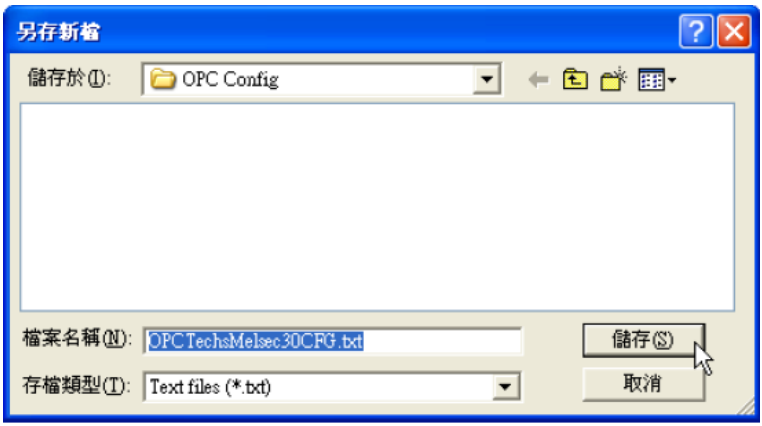
The Windows OPC Server use Microsoft Access Database to save the communication parameters and data items. But in WinCE environment, we can not use the same database format. This is why we have to convert the Access database data to the WinCE file format.

All of the files generated by OPCTechs Windows OPC Server Configurator transform to the WinCE OPC server files are using the same way. I will use Melsec FX2N Serial OPC Server for example, please read the Melsec Serial.pdf manual to make sure the Melsec FX2N OPC Server can connect to Mitsubishi FX2N PLC. Then we can export to WinCE file format.

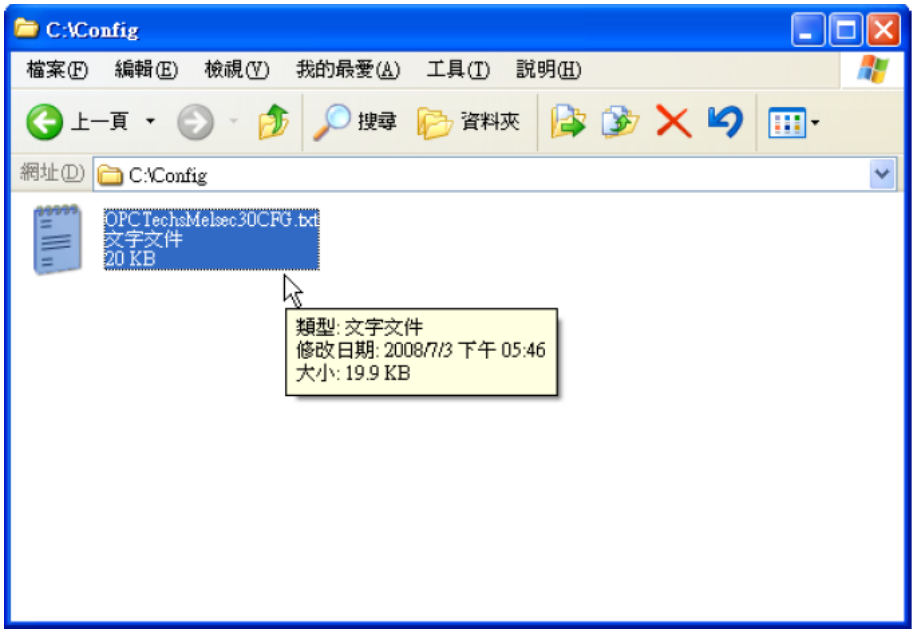
Look at the following figure and choose [File] --> [Export (WinCE,Embedded WinNT)] to convert the OPC Server database format to the WinCE file format.



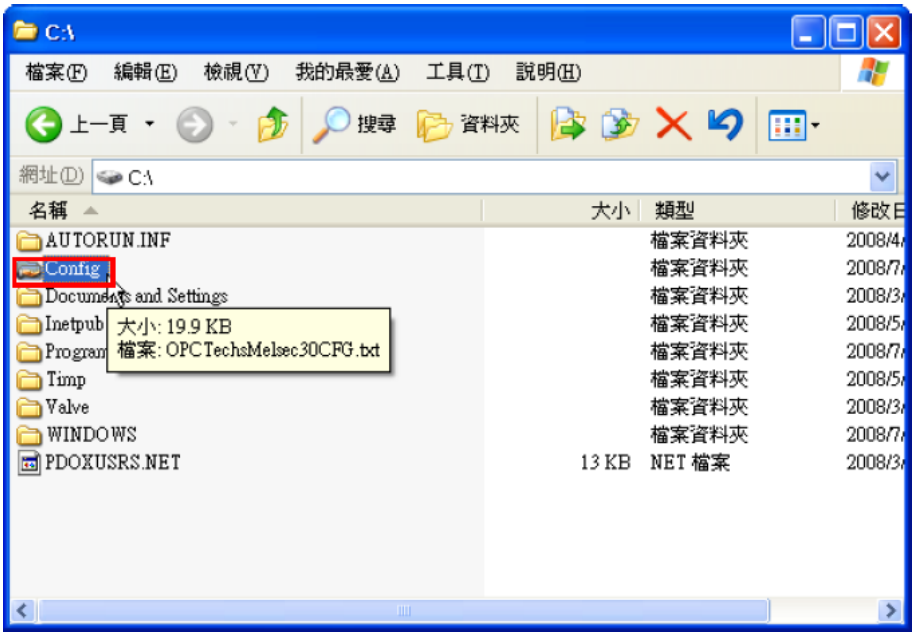
Choose the directory for the OPC configuretion exporting file.



We will transfer the OPCTechsMelsec30CFG.txt file to WinCE CF card.

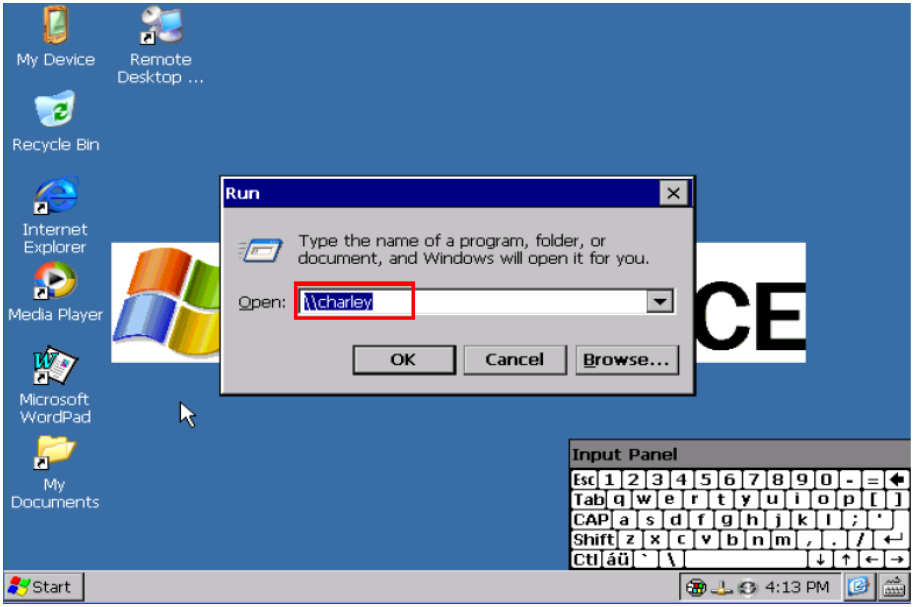


Because of the different kind of transferring methods for different kind of hardware. We suggest to use the [My network place] to transfer the WinCe OPC Server configuration file. Please assign a shared folder and put the OPCTechsMelsec30CFG.txt file into this folder.

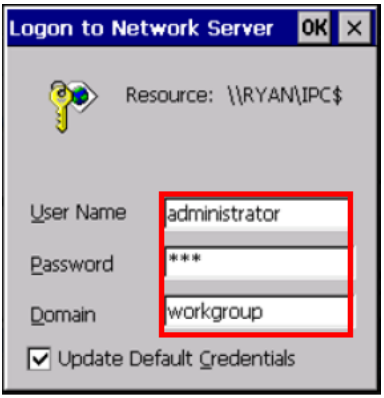


We will read the saved file from the [My netwark place] of WinCE hardware.

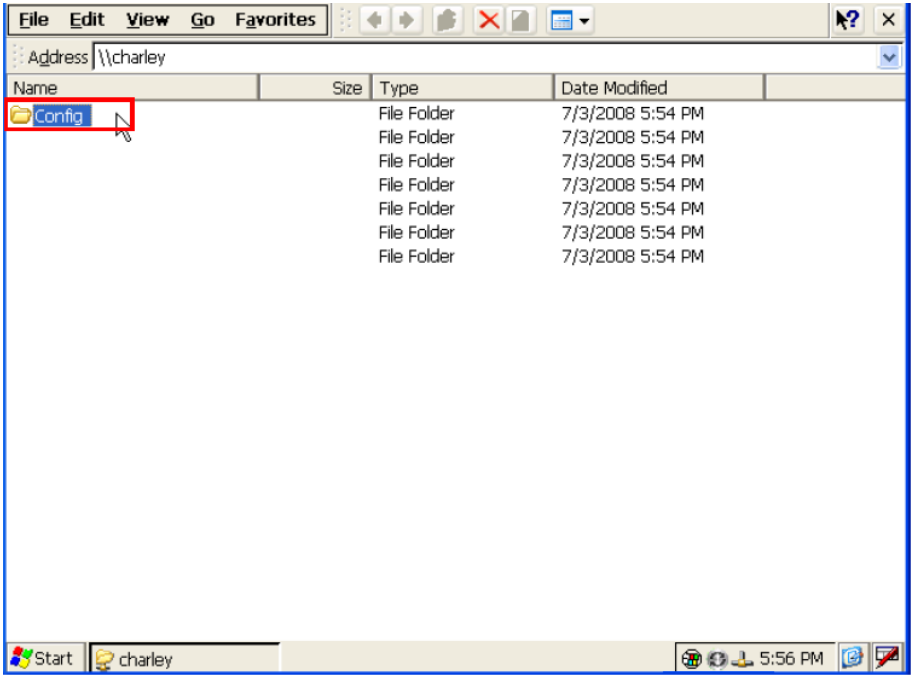
Input the PC name or IP Address.



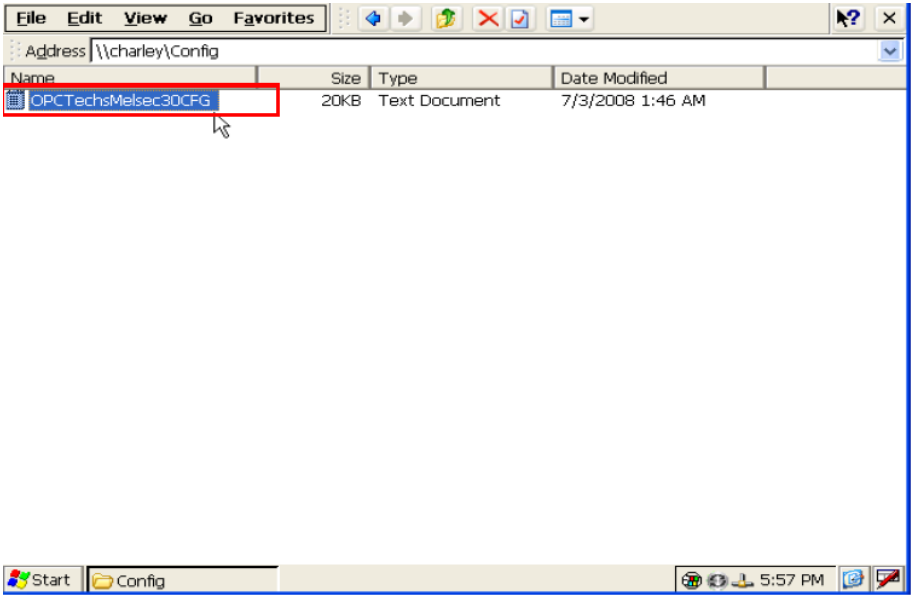
Input the user name, password and the domain name



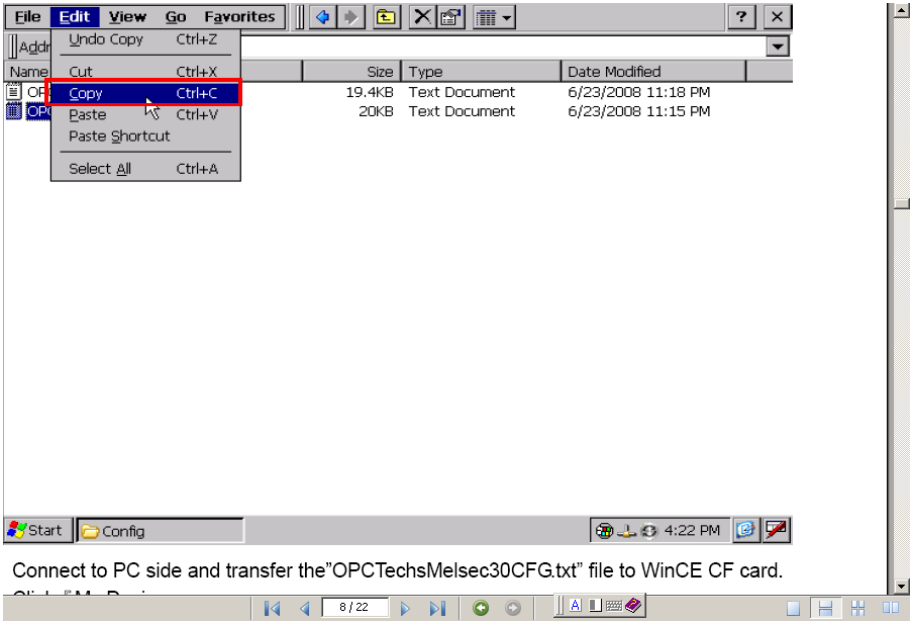
Choose the shared folder we created



Choose OPCTechsmelsec30CFG

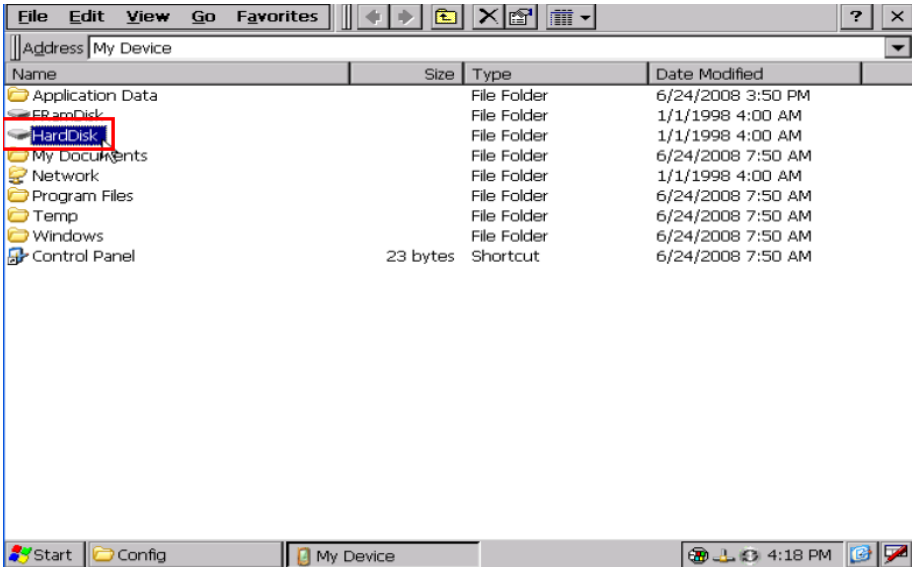


Click Edit --> Copy to copy the file (prepare to copy to the specific folder)

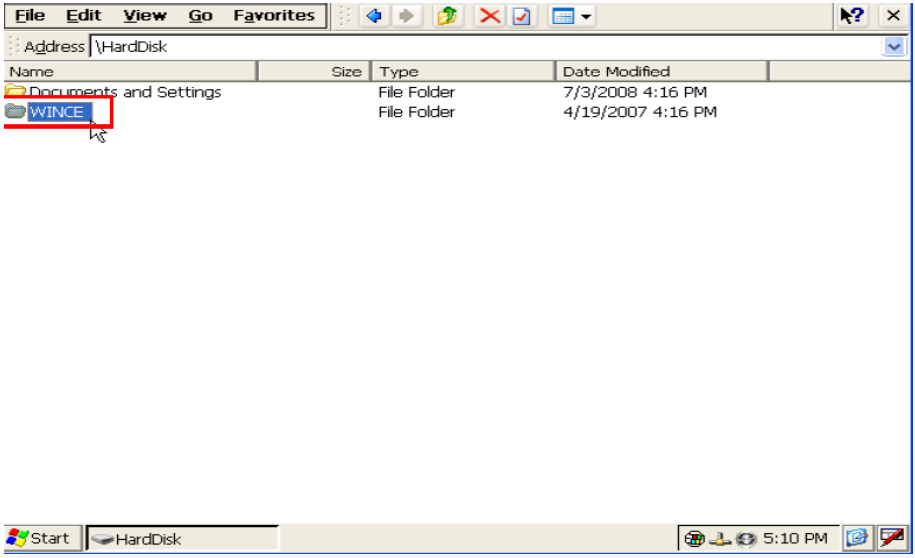


Connect to PC side and transfer the "OPCTechsMelsec30CFG.txt" file to WinCE CF card. Click [My Device]

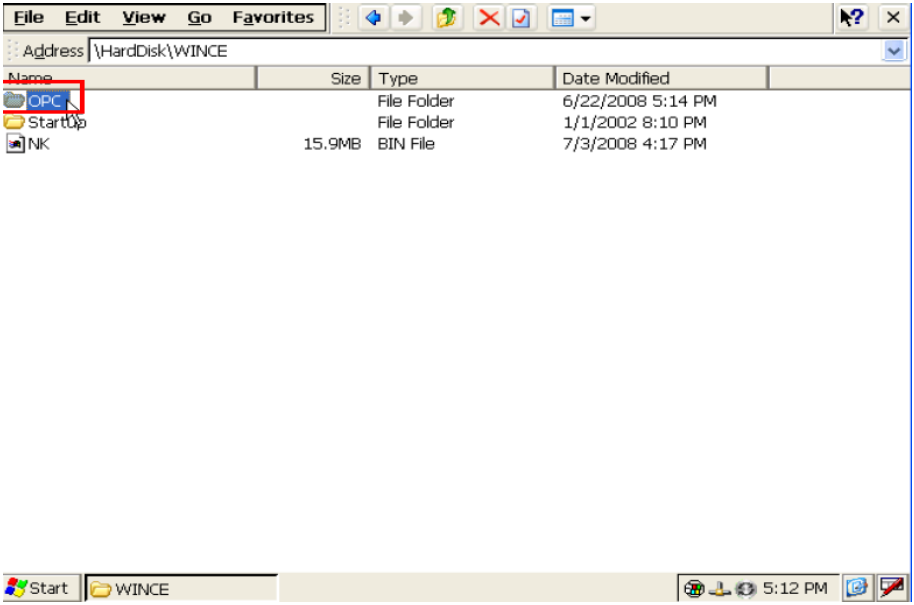
Click the hardDisk folder



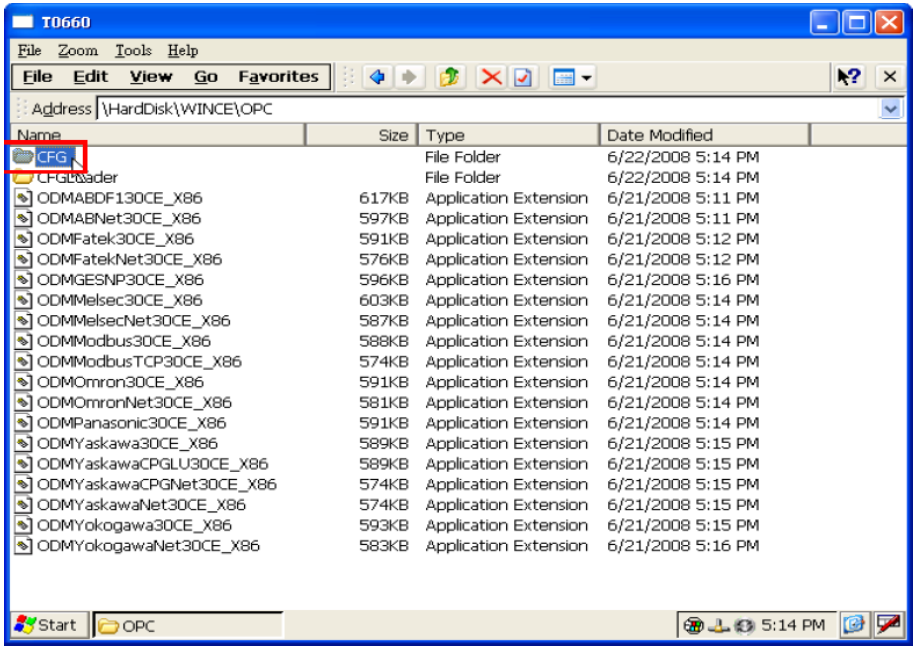
Click the [WinCE] folder



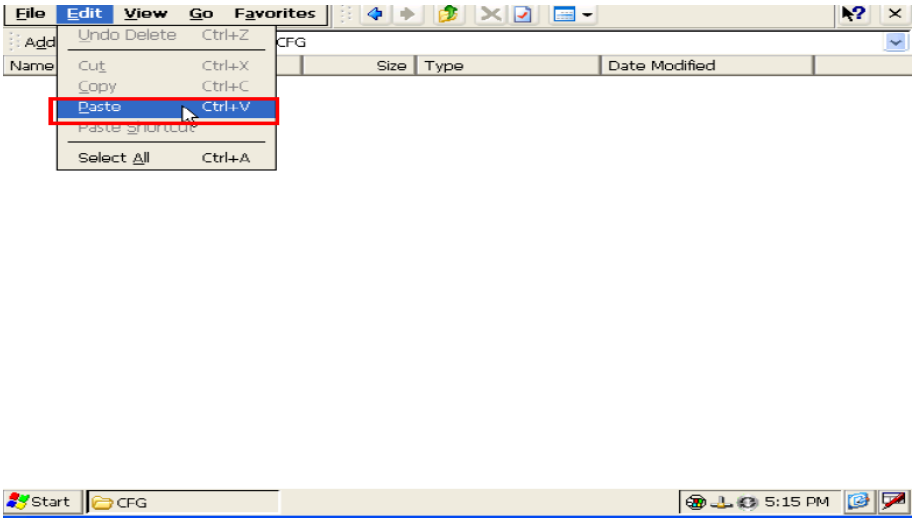
Click the [OPC] folder



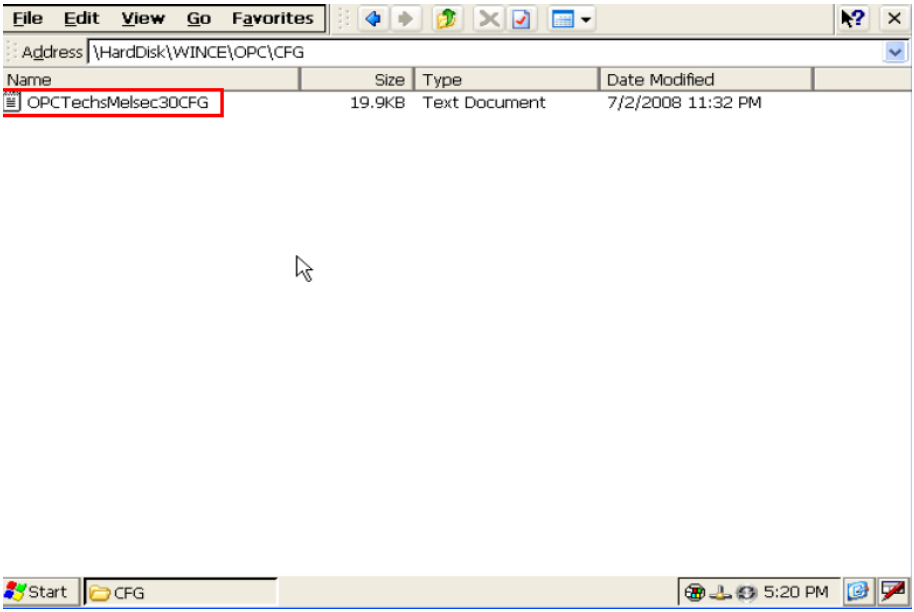
Click the [CFG] folder



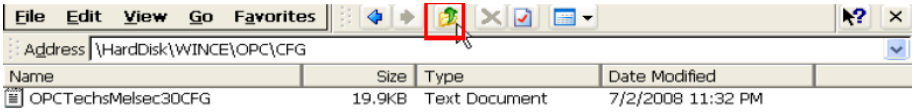
Click Edit --> Paste to past the copied files

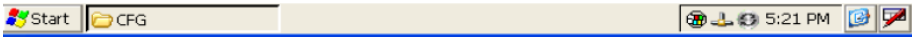


Copy and pasted the files

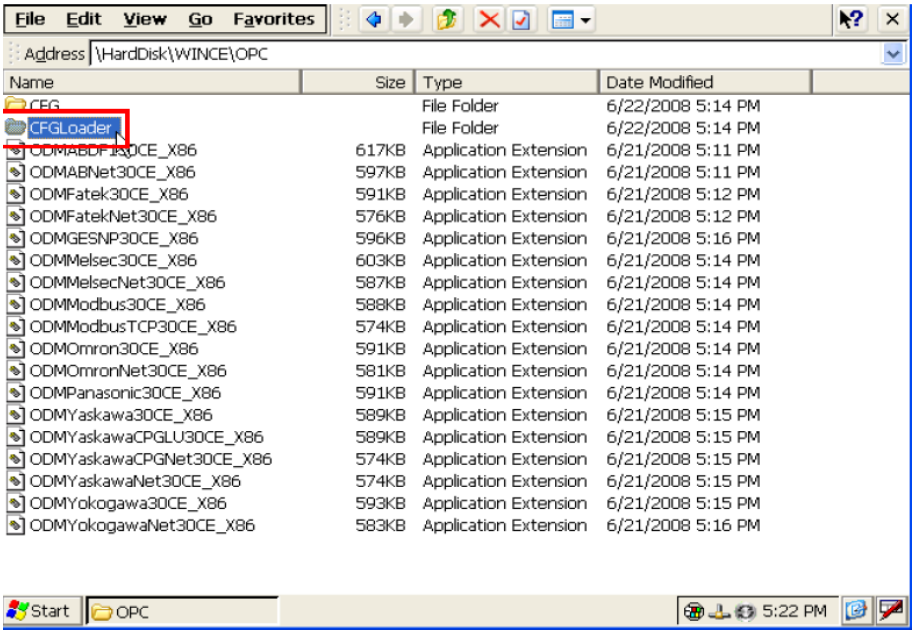


Prepare to import the OPC Server configuration file. Click to go back to the upper figure.

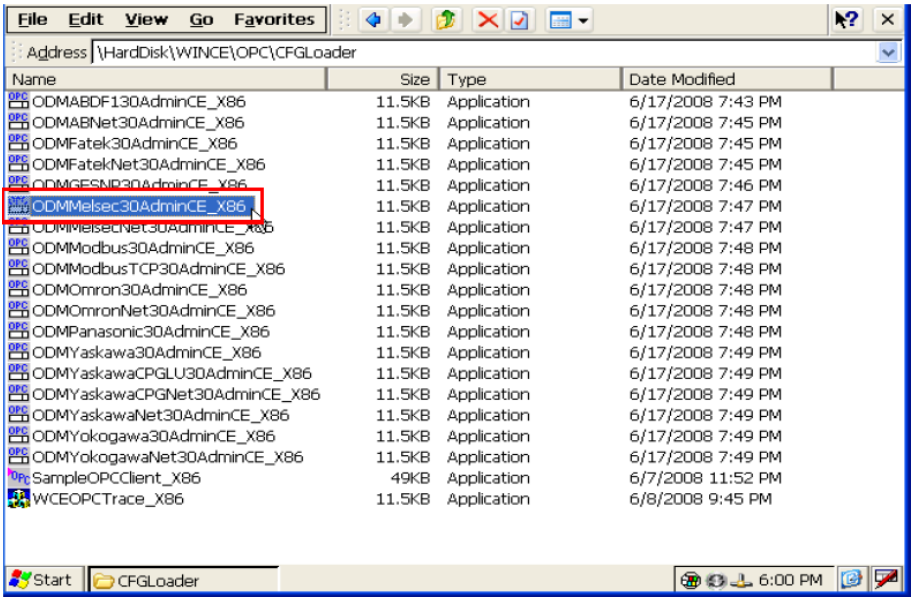




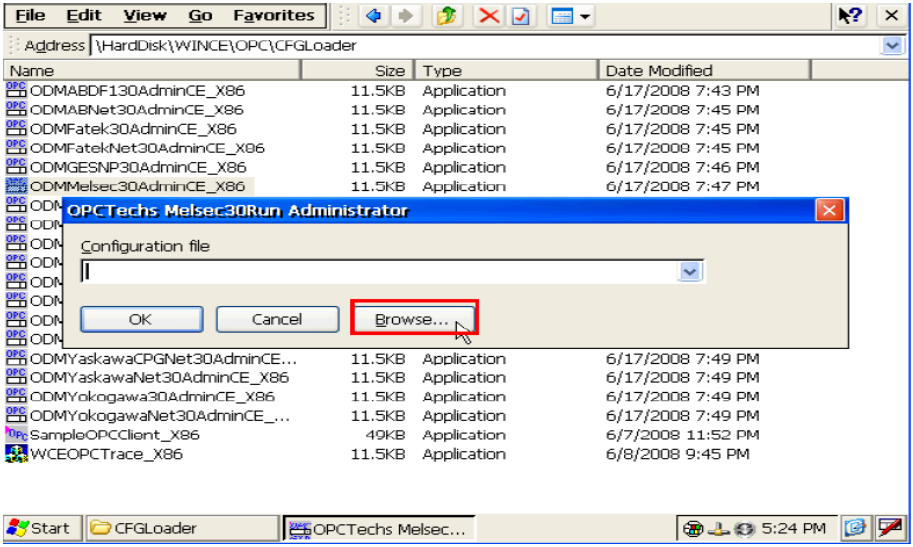
Click [CFGLoader] folder



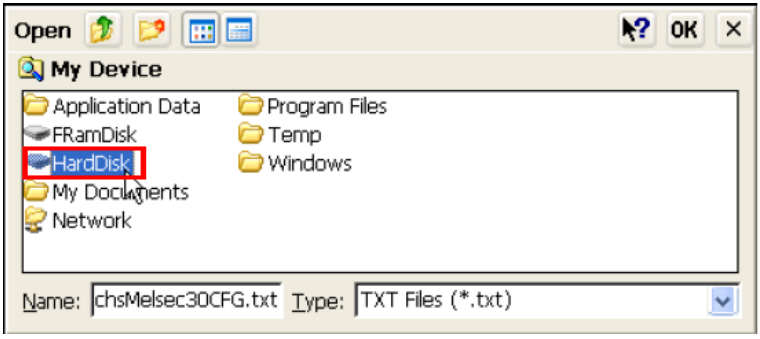
Choose [ODMMelsec30AdmicCE_X86] and click the left button of the mouse.



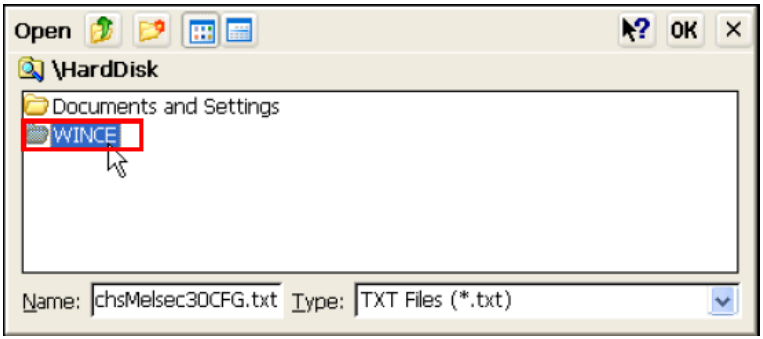
Click [Browse] to choose [OPCTechsMelsec30CFG.txt] file.



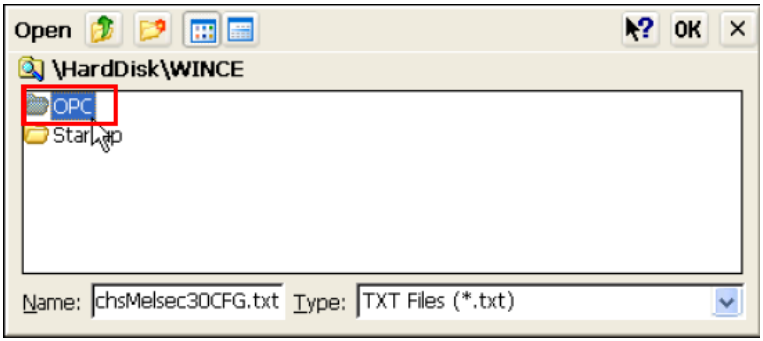
Choose the HardDisk folder of CF card.



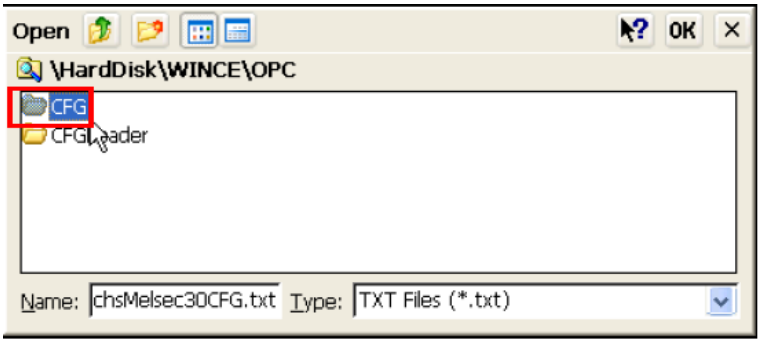
Click [WINCE] folder



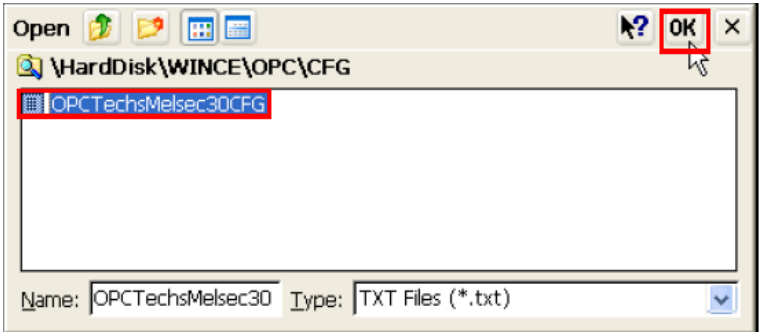
Click [OPC] folder



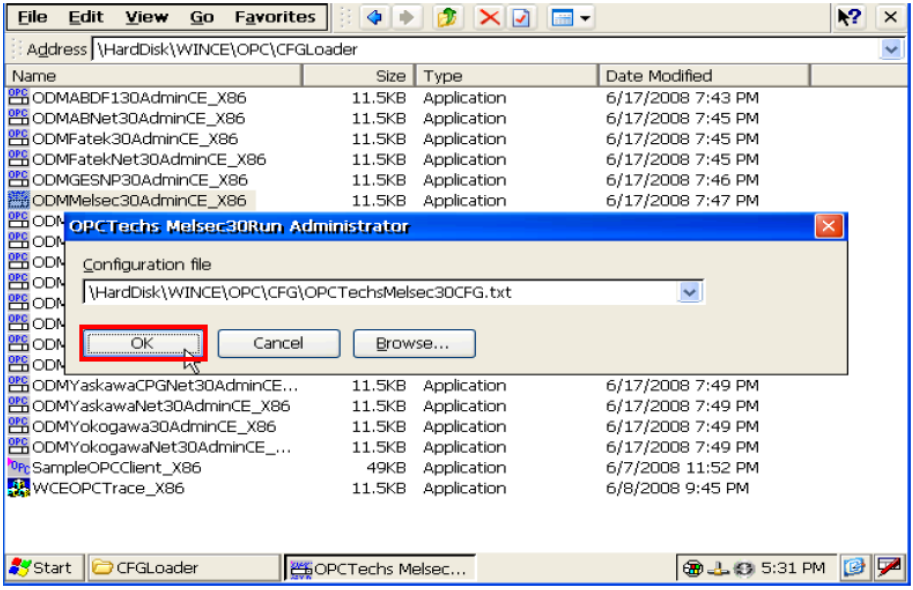
Click [CFG] folder



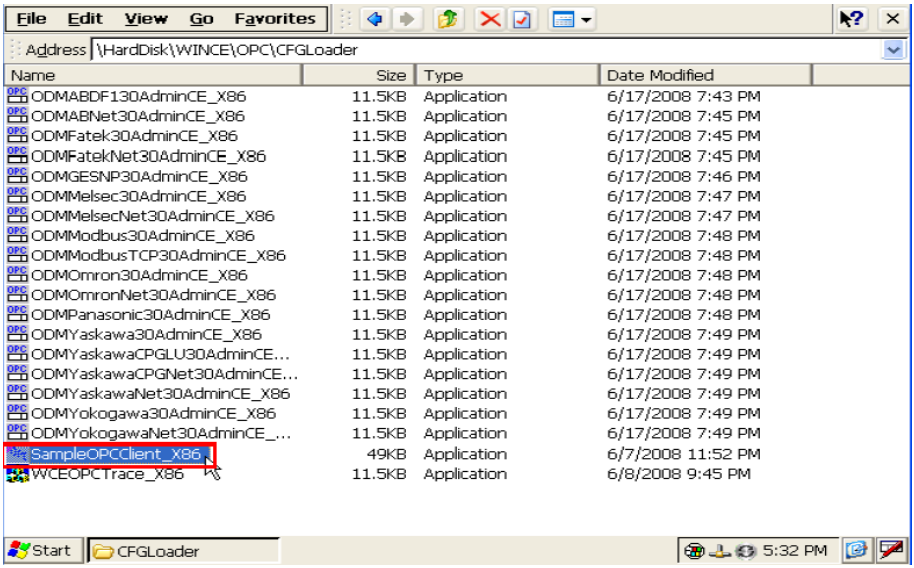
Choose [OPCTechsMelsec30CFG and pointed the path to the folder we saved the data. Make sure and press [OK]



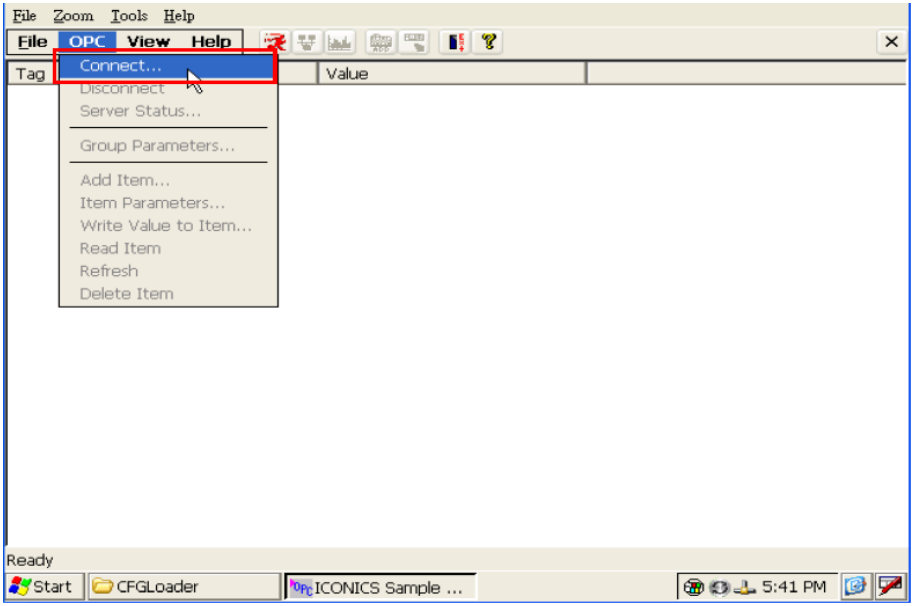
Press [OK] to register the WinCE OPC Server configuration file to WinCE operating system.



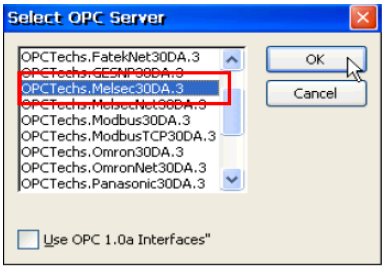
The WinCE OPC Server is DLL files. It must be started by OPC Client program. Please click [SampleOPCClient_X86] to start the OPC Client program for simple communication test.



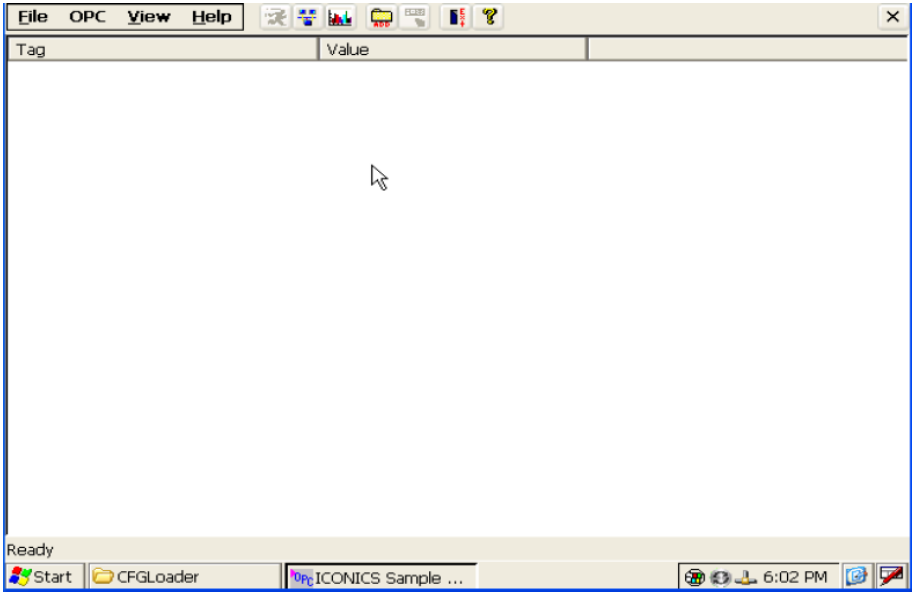
Click [OPC] --> [Connect] to choose the OPC Server we want to connect.



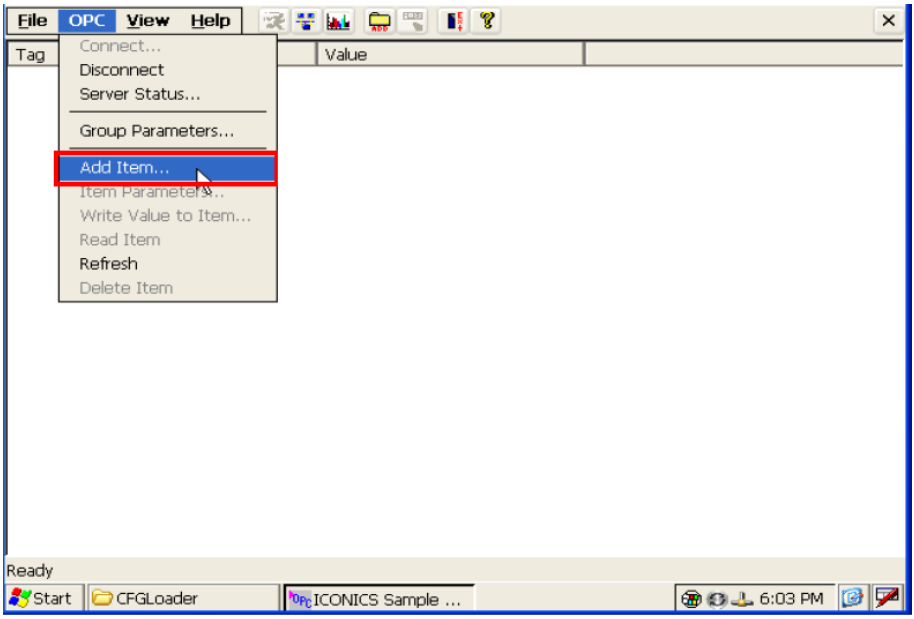
Choose [OPCTechs.Melsec30DA.3]



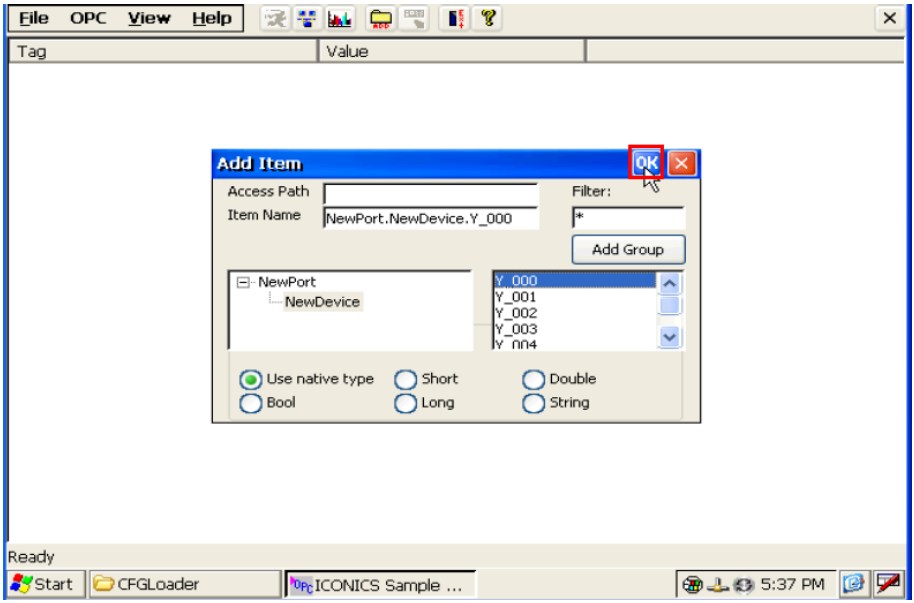
Communication succeed.



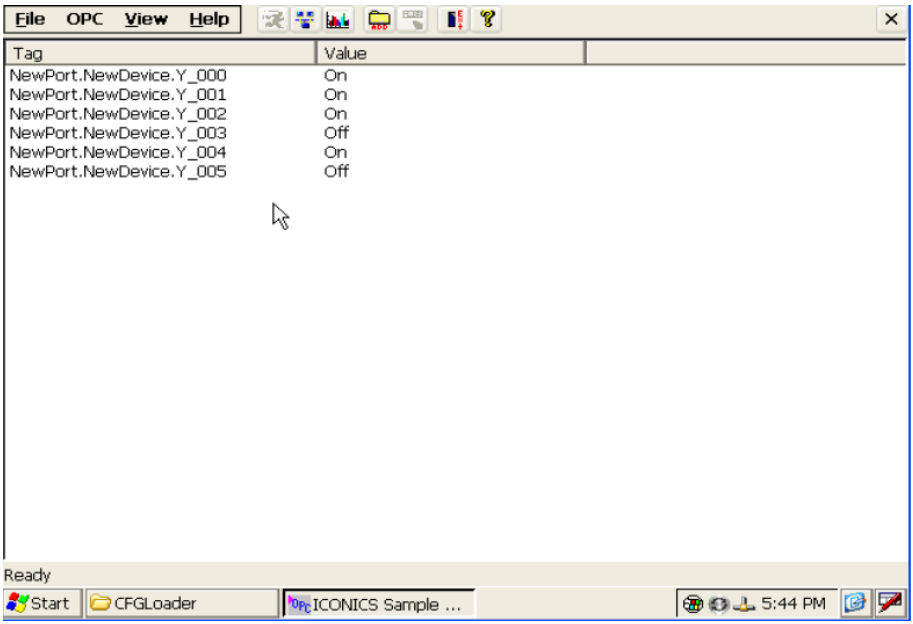
Click [OPC] --> [Add Item] to add the data items.



Choose the data items and press [OK]



The following figure means successful add the data items and work fine.



5.3 Update OPC Drivers - Add WINCE OPC Drivers Into Machine

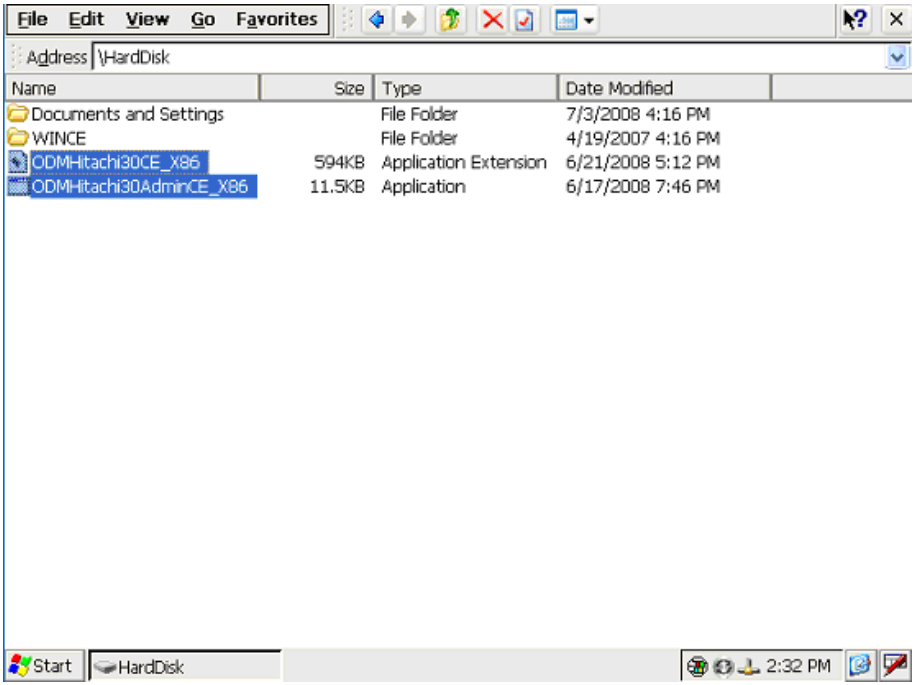
Since new drivers are developing fast, users may want to add more new OPC drivers into the machines. Please refer to following introduction. Hitachi Serial is used as an example for you.

An OPC Driver has two files to be installed, including a DDL file and an execution file. For example:

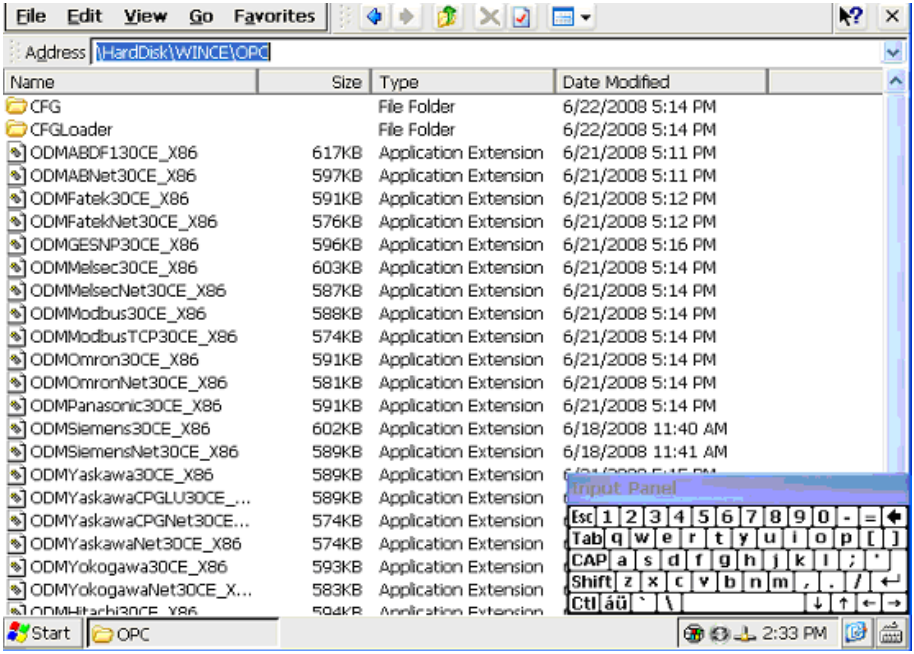
ODMHitachi30CE_X86.dll

ODMHitachi30AdminCE_X86.exe.

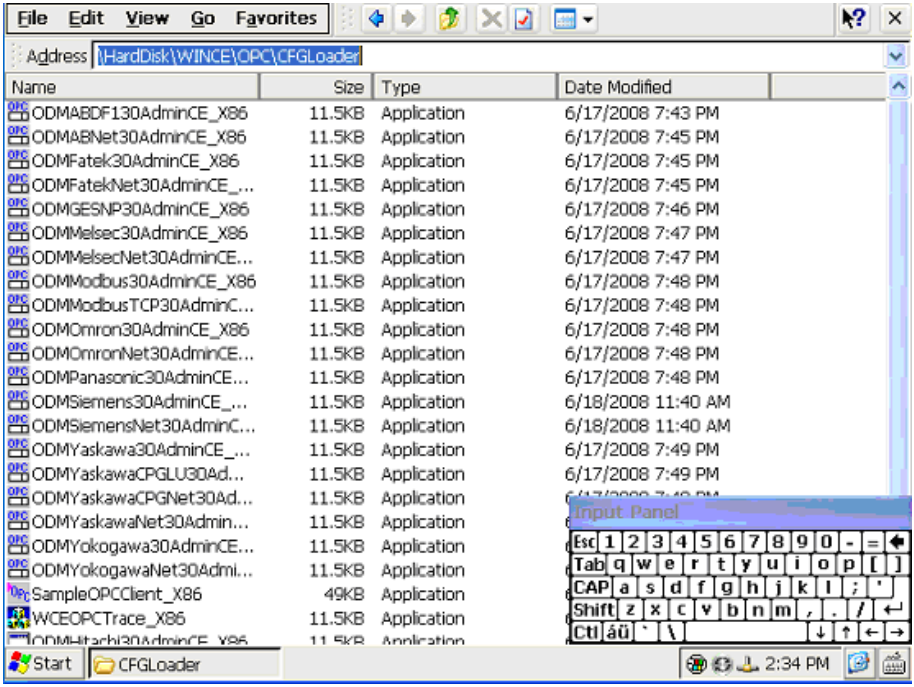
Copy these files into WinCE.



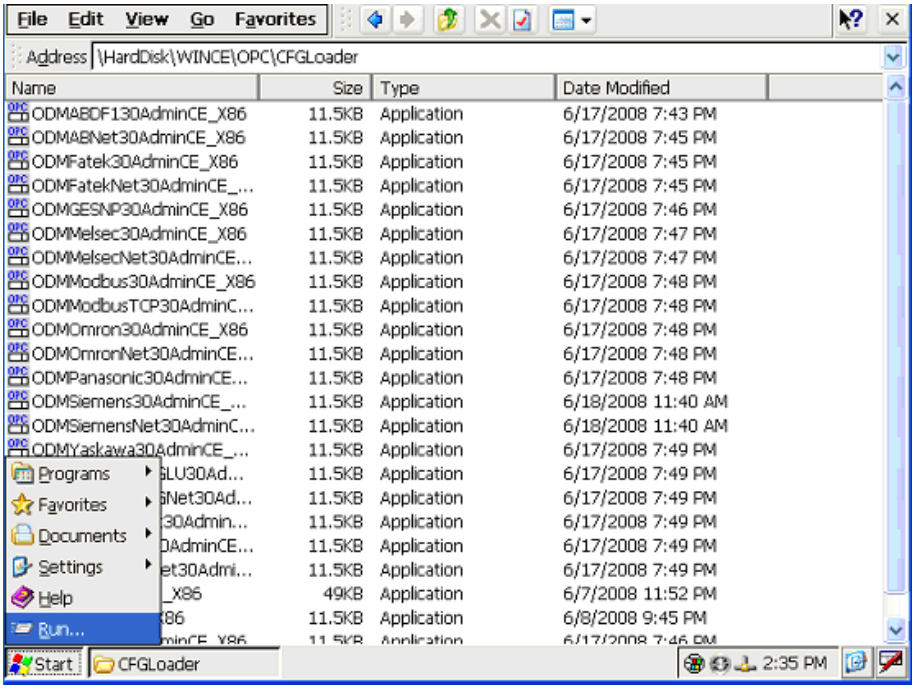
Copy the ODMHitachi30CE_X86.dll file to the HardDisk\WINCE\OPC folder.



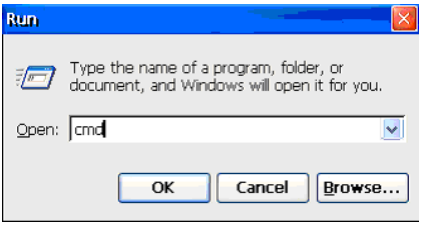
Copy the ODMHitachi30AdminCE_X86.exe file to the HardDisk\WINCE\OPC\CFGLoader folder.



Click Start --> Run



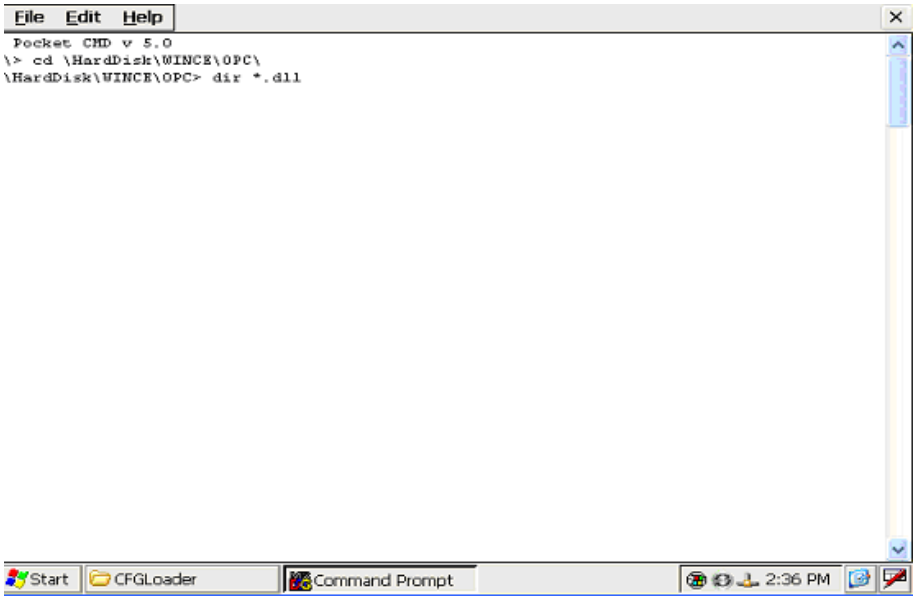
Type [CMD] and then click [OK].



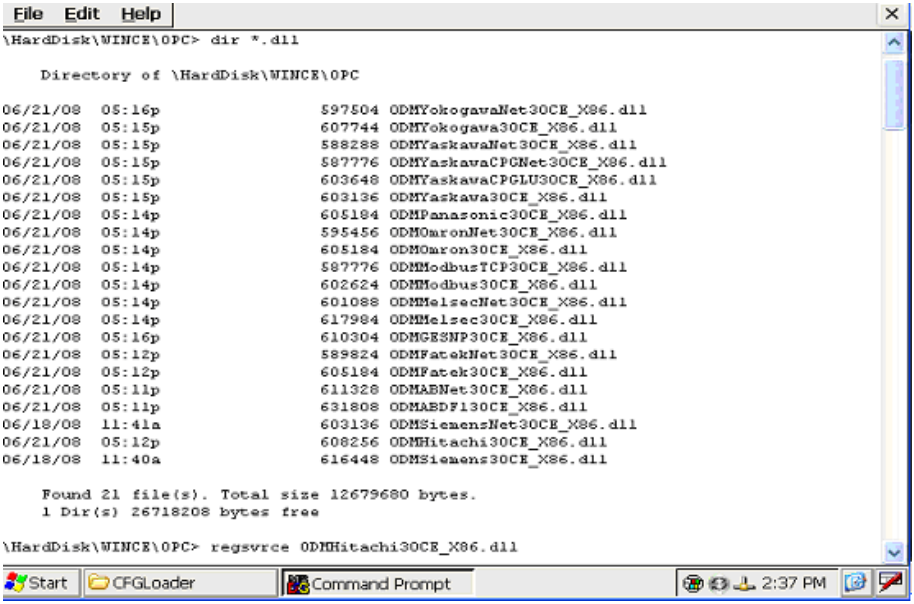
At DOS prompt text mode, change the directory to HardDisk\WINCE\OPC.

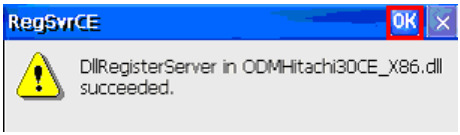
\> cd \HardDisk\WINCE\OPC\ <Enter>

\HardDisk\WINCE\OPC> dir *.dll <Enter>



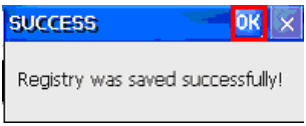
All of DLL files of OPC Server will show on the sreen. Type [regsvrce ODMHitachi30CE_X86.dll] to registry the new OPC Server program.





Click Start --> Programs --> ARBOR Utilities --> RegSave to save the registry file.

Click [OK] to finish the record. The Installation finished.



Chapter 6

System Tuning

6.1 Touchscreen Calibration

6.1.1 DOS/Windows Family

Please find the DOS and Windows 95/98 touchscreen drivers in the support CD.
The T0660 touchscreen drivers support DOS/Windows 9x/Windows NT/ Windows 2000/Windows Me.

6.1.2 Windows CE

1. From the Windows CE status bar, click “Start/Programs”.
2. Double-click “Windows Explore".

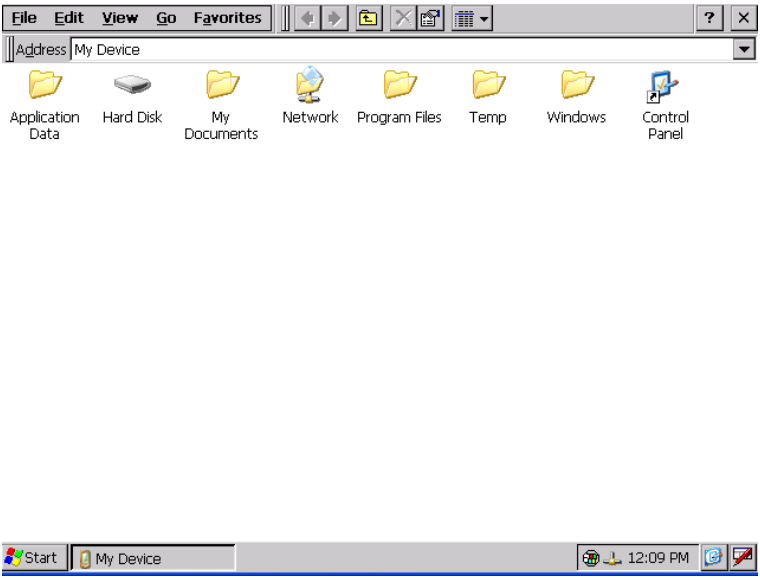


Figure 6.1: Windows Explorer

3. Double-click “Control Panel".

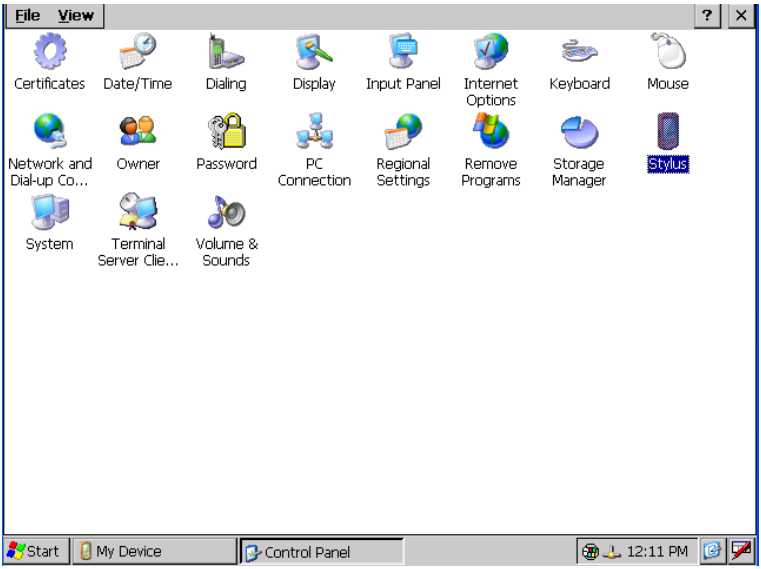


Figure 6.2: Control Panel

4. In the Control Panel window find the "Stylus" icon and double-click it.
5. The calibration window will appear with two tabs—Double Tap and Calibration.

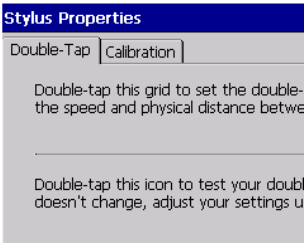


Figure 6.3: Calibration

6. The Double Tap page is used to set the time period between the two taps when double-tapping in Windows CE.

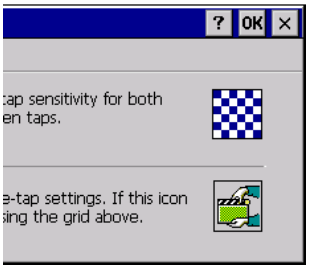


Figure 6.4: Double Tap Calibration

7. The Calibration page is used to calibrate the touchscreen so that it detects the location of a tap. This is necessary for Windows CE to correctly respond to your click or double-click events.

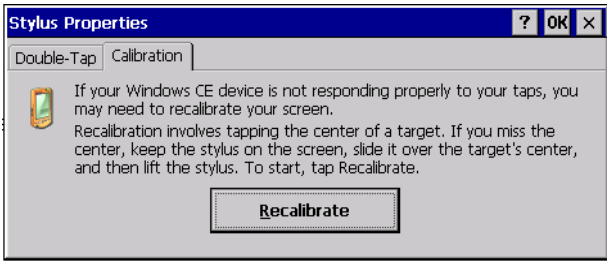


Figure 6.5: Stylus Pointing Calibration

8. Click the “Recalibrate” button. A cross will appear on the screen in the order: center point, upper-left, lower-left, lower right and upper-right corners. Use the stylus to tap the center of the cross until the cross moves to next location.

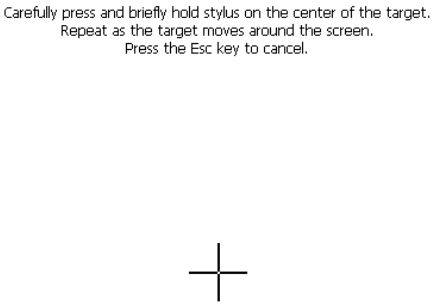


Figure 6.6: Calibration Screen

9. When calibration is done the utility will save the settings.

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Chapter 7

Maintenance

The T0660 is designed to be modular, slim and lightweight for easier maintenance. The following section describes how a qualified technician can replace the fuse.

7.1 Fuse Replacement

1. Remove the fuse cover.
2. Replace the damaged fuse with a new one.
3. Replace the fuse cover.

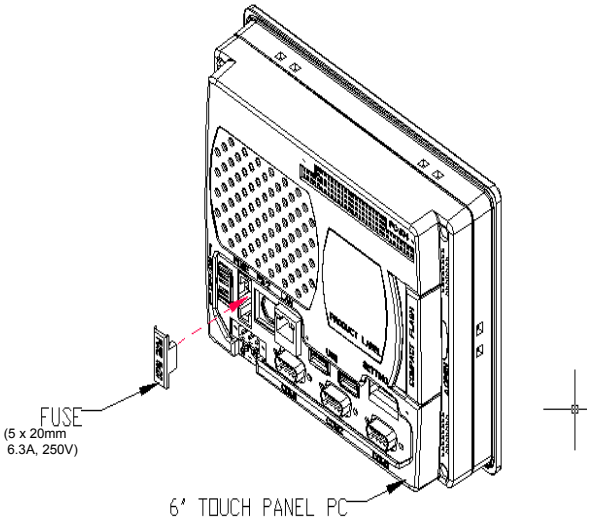

Figure 7.1: Replacing the fuse

Warning:
1. Please be careful before selecting “Save”. This command will overwrite all registry data, not only the watchdog timer settings.
2. Do not replace the fuse with a one rated differently.