

TPC-1260H

**Crusoe™ 5800 Touch Panel
Computer with High-Luminance
12.1" SVGA TFT LCD Display**

User Manual

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This Manual Covers the Following Models

- TPC-1260H-A1
- TPC-1260H-A5
- TPC-1260H-D1
- TPC-1260H-D5
- TPC-1260HN-A1
- TPC-1260HN-A5
- TPC-1260HX-A1
- TPC-1260HX-A5

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Product Warranty (1 year)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for one year from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

- Step 1. Visit the Advantech web site at **www.advantech.com/support** where you can find the latest information about the product.
- Step 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- 1 x TPC-1260H-A1, or
TPC-1260H-A5, or
TPC-1260H-D1, or
TPC-1260H-D5, or
TPC-1260HN-A1, or
TPC-1260HN-A5, or
TPC-1260HX-A1, or
TPC-1260HX-A5
- 8 x Panel mounting clampers
- 8 x Panel mounting screws
- 1 x 3-Pin power connector
- 1 x TPC-1260H support CD
- 1 x CompactFlash to IDE adapter board

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User's Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.

10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW - 20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die Netzanschlusssteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlusswerte.
9. Verlegen Sie die Netzanschlusbleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich an den Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a - Netzkabel oder Netzstecker sind beschädigt.
 - b - Flüssigkeit ist in das Gerät eingedrungen.
 - c - Das Gerät war Feuchtigkeit ausgesetzt.

d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.

e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.

f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

15. **VORSICHT:** Explosionsgefahr bei unsachgemäßen Austausch der Batterie. Ersatz nur durch denselben oder einem vom Hersteller empfohlene-mähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

16. **ACHTUNG:** Es besteht die Explosionsgefahr, falls die Batterie auf nicht fach-männische Weise gewechselt wird. Verfangen Sie die Batterie nur gleicher oder entsprechender Type, wie vom Hersteller empfohlen. Entsorgen Sie Batterien nach Anweisung des Herstellers.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

Haftungsausschluss: Die Bedienungsanleitungen wurden entsprechend der IEC-704-1 erstellt. Advantech lehnt jegliche Verantwortung für die Richtigkeit der in diesem Zusammenhang getätigten Aussagen ab.

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General Information

This chapter gives background information on TPC-1260H..

Sections include:

- Introduction
- Specifications
- I/O Ports Arrangement
- Panel Mounting
- Exploded Diagrams
- Dimensions & Cutout

Chapter 1 General Information

1.1 Introduction

The TPC-1260H touch panel computer is a state-of-the-art HMI (Human Machine Interface). This operator interface with a 12.1” display is an x86-based platform with these key features:

- **Fanless**
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.
- **Bright Display**
The high-brightness TFT LCD display suits industrial demands for clear interfaces.
- **Powerful Communication Capability**
TPC-1260H provides a powerful I/O interface for easily communicating with other devices. The I/O interface includes serial ports, a parallel port, Ethernet and USB 2.0 support. TPC-1260H also supports the expansion slot PC/104-Plus. This makes it easy to expand with the required PC/104-Plus modules.
- **Windows CE Support**
In addition to the OS support of Windows 2000 and Windows XP, Advantech offers platform support for Windows CE. The optional Windows CE operating system specifically for the TPC-1260H is available for Windows CE application program builders.

1.2 Specifications

1.2.1 System Kernel

- **CPU:** Transmeta Crusoe TM5800 (clock rate 1 GHz)
- **BIOS:** Award 256 KB flash memory
- **South Bridge:** VIA 82C686B
- **VGA:** Silicon Motion SMI722 VGA/LCD controller; PCI 2.1 compliant; 8 MB embedded DRAM
- **Ethernet:** VIA VT6120 10/100/1000Base-T Ethernet controller; IEEE 802.3u protocol compatible
- **Watchdog Timer:** MAX706 watchdog timer; 1.6 second timeout period
- **IDE:** 1 EIDE channel supports one CompactFlash card

1.2.2 I/O Ports

- 1 parallel port: supports EPP/ ECP modes
- 4 serial ports: RS-232 (COM1, COM3, COM4) and RS-232/422/485 (COM5)
- 1 RJ-45 Ethernet port
- 1 PS/2 port: 6-pin mini-DIN ports for keyboard and mouse
- 2 USB 2.0 Ports: compliant with USB 1.0 and 1.1.
- 2 PCMCIA slot
- 3 Audio ports: 1 microphone; 1 Line In and 1 Line Out.
- 1 PC/104-Plus expansion slot

Note *COM2 is reserved for Touch Screen*

1.2.3 Safety and Environment

Safety

- FCC Class A
- CE certificated
- The front bezel is compliant with NEMA 4 and IP65

Environment

- **Operating Temperature:** 0 ~ 50° C (32 ~ 122° F)
- **Storage Temperature:** -20 ~ 60° C (-4 ~ 140° F)
- **Humidity:** 40° C @ 10~95% relative humidity (non-condensing)
- **Vibration:**
 - X-Axis: 0.25 grms (5~500Hz)
 - Y-Axis: 0.5 grms (5~500Hz)
 - Z-Axis: 1 grms (5~500Hz)

1.3 LCD Specifications

- **Display Type:** TFT color LCD
- **Size (diagonal):** 12.1”
- **Maximum Resolution:** 800 x 600 (SVGA)
- **Maximum Colors:** 256,000
- **Pixel Pitch (W x H, mm):** 0.3075 x 0.3075
- **Viewing Angle:** 120°
- **Luminance (cd/m²):** 350
- **Contrast Ratio:** 500
- **Operating Temperature:** 0 ~ 50° C (32 ~ 122° F) (Ambient)
- **VR Control:** Brightness Adjustable
- **Backlight:** 2 CCFL
- **Backlight Life Time:** 50,000 hours

Note *There might be several bright or dark pixels on the LCD. This phenomenon is normal in today's LCD manufacturing.*

1.4 Touchscreen Specifications

- **Touch Type:** Resistive
- **Base Glass Construction:** Tempered Glass
- **Resolution:** Continuous
- **Light Transmission:** 75% typical
- **Controller:** RS-232 Interface
- **Power Rating:** 3.3 to 5 V
- **Software Driver:** Windows CE (embedded)
- **Durability:** 100 million touches

1.5 Power

- **Input Voltage:** 24 V DC (the fuse will become an open circuit if the input level exceeds 33 V DC)
- **Maximum Current:** 2 A

1.6 I/O Ports Arrangement

The arrangement of the I/O ports is shown in Figure 1.1.

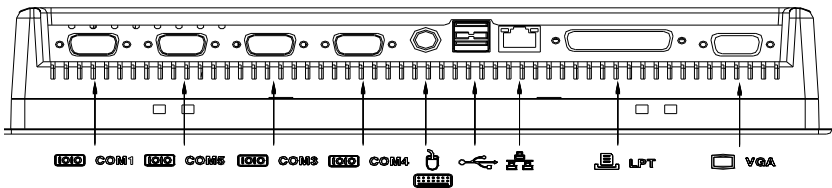


Figure 1.1: I/O Ports Arrangement

1.7 Panel Mounting

1. There is an adhesive waterproof gasket on the Mg-AL front bezel. Make sure the waterproof gasket is in position before installing TPC-1260H into the panel opening.
2. Install the TPC-1260H into the panel opening.
3. Find the eight clampers and eight long screws in the accessory pack. Hook the clampers to the holes around the four sides of the bezel. Insert the screws into every clammer and fasten them. These screws will push the mounting panel and fix the unit.
4. The suggested mounting panel thickness is less than 10 mm (0.236").

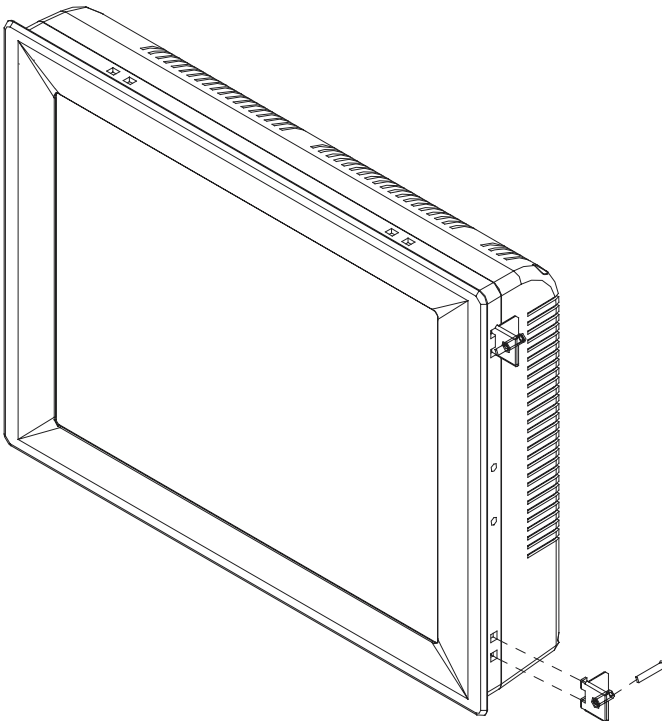


Figure 1.2: Panel Mounting

1.8 Dimensions and Cutout

- Weight: 4.1 kg (without HDD)
- Dimensions: 311 x 237 x 58 mm (W x H x D)
- Cutout: 302 x 228 mm (suggested)

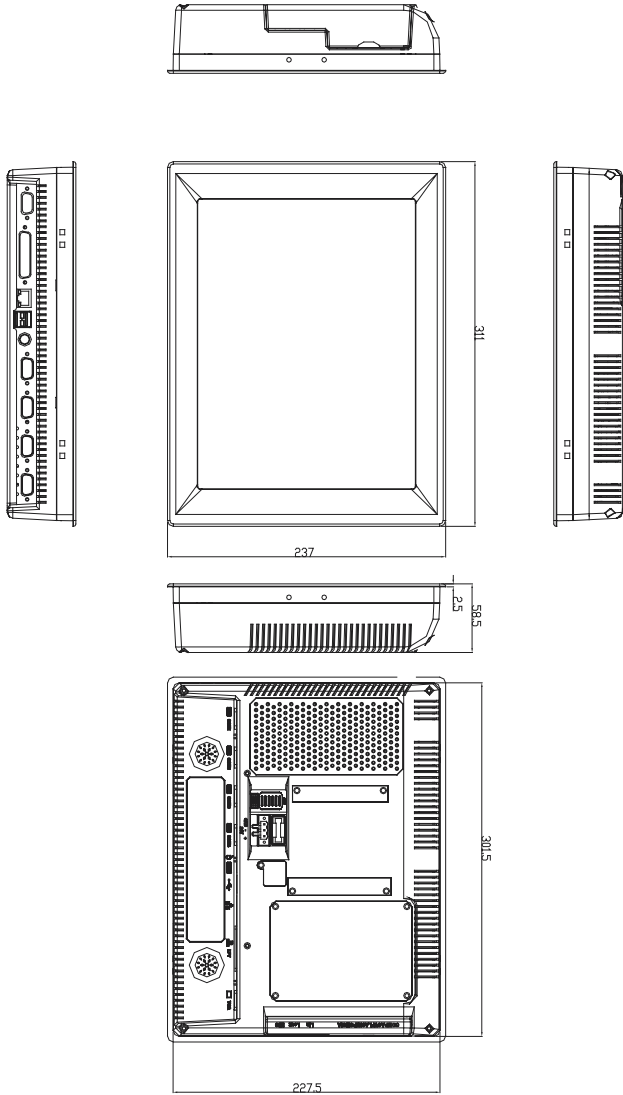


Figure 1.3: Dimensions

System Setup

This chapter provides a brief explanation for operating TPC-1260H.

Chapter 2 System Setup

You can easily get TPC-1260H started by following the below steps.

- Step 1: Unpack the TPC-1260H package. Check the packing list at the beginning of this manual to make sure all items have been included.



Figure 2.1: Unpack the Package

- Step 2: Install a CompactFlash card containing Windows CE, embedded Windows XP or another operating system.

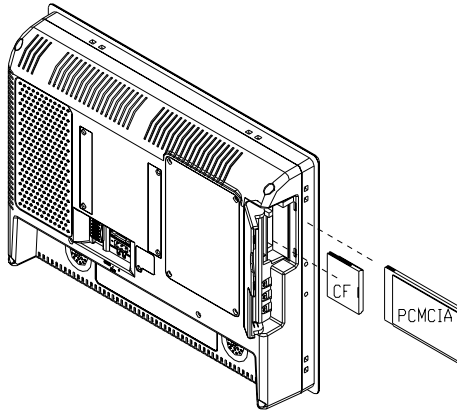


Figure 2.2: Install CompactFlash Memory Card

Warning *It is suggested to turn OFF system power as you plug in or pull out the memory card, even though the CompactFlash memory is hot swappable.*

- Step 3: Connect the power connector to the 24 V DC power lines. The power lines can either be of some power adapter or in-house power source.

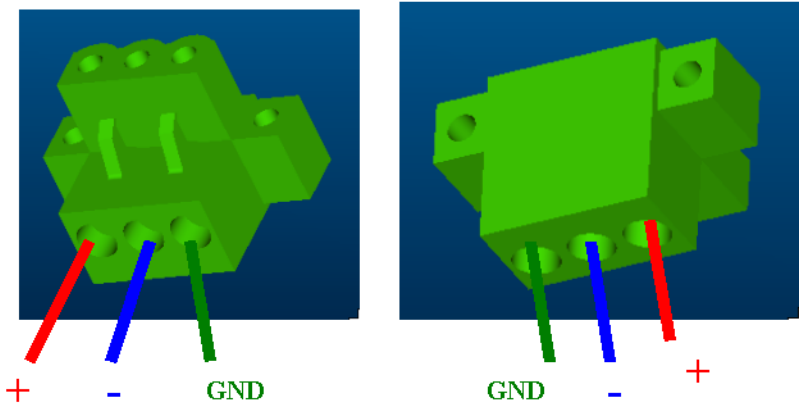


Figure 2.3: Power Connector and Power Lines

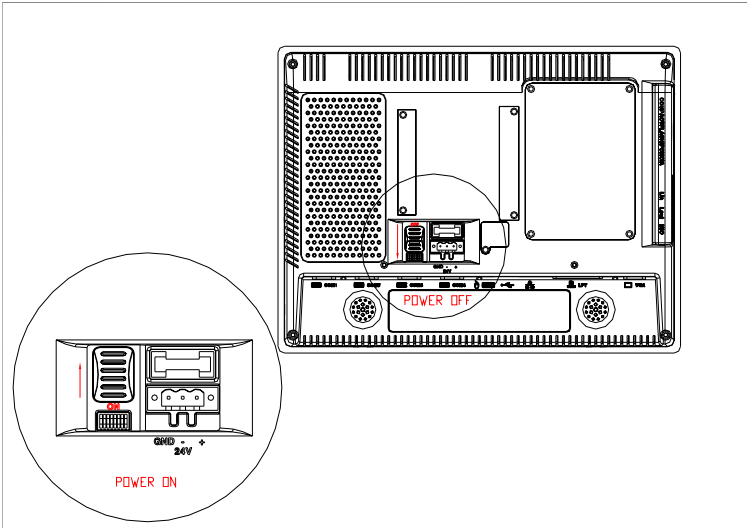


Figure 2.4: Pin Assignments on the Power Receptor and Power Button

- Step 4: Plug the power lines into the system power receptor.
- Step 5: Push the power button to power on the system as shown in figure 2.4.
- Step 6: Calibrate the touchscreen. Please go to “Start”, ”Programs”, †”PenMount DMC9000 Utilities”->”Control Panel” as shown in figure 2.5. Then, click the tab “Calibrate” to calibrate by selecting standard calibration or advanced calibration.

Note

This calibration is for Windows 2000. If your operating system is Windows CE .NET, the detailed procedure is described in section 4.1.4.

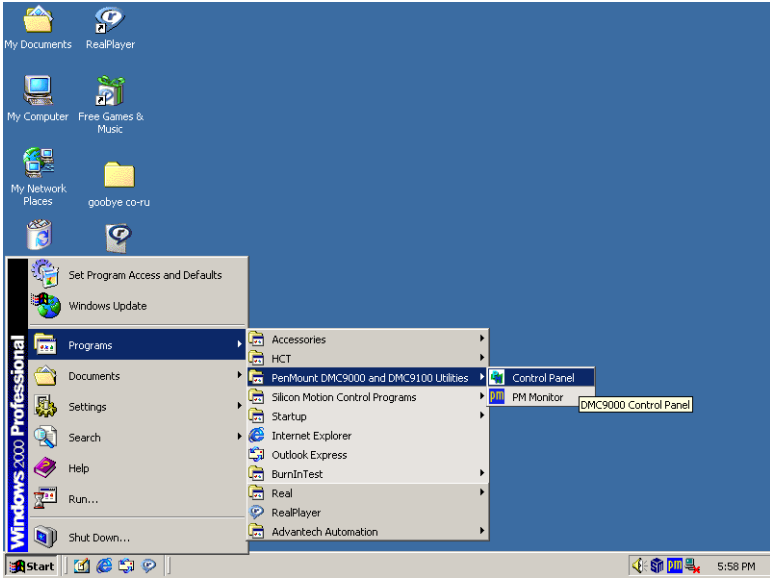


Figure 2.5: Touch Screen Calibration-1

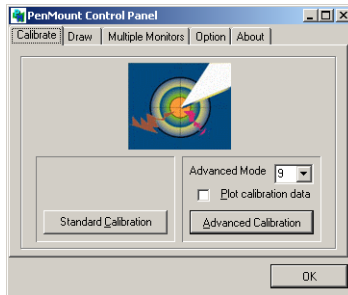


Figure 2.6: Touch Screen Calibration-2

CHAPTER
3

System Engine

Chapter 3 System Engine

Mainboard Connector and Jumper Setting List

Label	Function
CN1	COM3
CN2	COM4
CN3	POWER CONNECTOR
CN4	BATTERY CONNECTOR
CN5	COM5
CN6	AUDIO LINE IN
CN7	SPEAKER CONNECTOR
CN9	AUDIO MIC IN
CN10	AUDIO OUT
CN11	PC/104 CONNECTOR (2*32)
CN12	PC/104 CONNECTOR (2*20)
CN13	COM1
CN14	LAN CONNECTOR
CN15 (A,B)	CARDBUS SLOT
CN16	PC/104-PLUS CONNECTOR
CN19	PRIMARY IDE CONNECTOR
CN20	COMPACT FLASH CONNECTOR
CN21	LPT CONNECTOR
CN22	PS/2 CONNECTOR
CN23	TDM CONNECTOR
CN24	VGA CONNECTOR
CN25	FLAT PANEL DISPLAY CONNECTOR
CN27	INVERTER CONNECTOR
CN30	FLAT PANEL DISPLAY CONNECTOR (FOR 48 BITS PANEL)
UJ1	USB CONNECTOR
UJP1	INTERNAL USB 1.1(1*4)
J1	CLEAR CMOS JUMPER
J2	POWER BUTTON
JP3	DDR CONNECTOR
JP2	RESET
JP7	T/S CONNECTOR
JP8	INTERNAL RS-232
FS1	FUSE CONNECTOR

Windows CE

This chapter shows how to use Windows CE with TPC-1260H.

Sections include:

- TPC Utilities
- Networking
- Application Program Development

Chapter 4 Windows CE

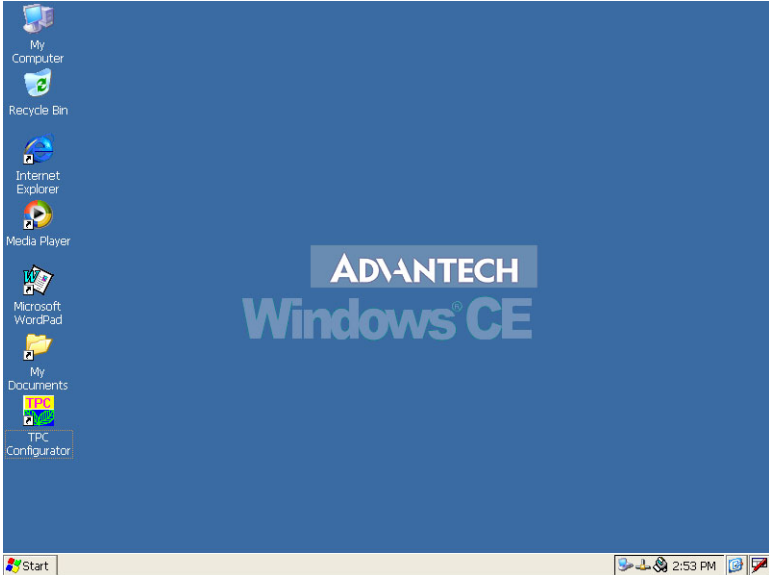


Figure 4.1: Windows CE for TPC-1260H

Note

The default Windows CE version for TPC-1260H is the English version. Please contact local Advantech representatives for local language support.

4.1 TPC Utilities

There are several utilities built into the Windows CE .NET of TPC series.

4.1.1 Soft-Keyboard

TPC-1260 provides a software keyboard built into the standard TPC-1260 Windows CE .NET OS. Upon boot-up, a small keyboard icon will appear on the status bar. Tap this icon with the stylus to activate/hide this Soft-Keyboard.

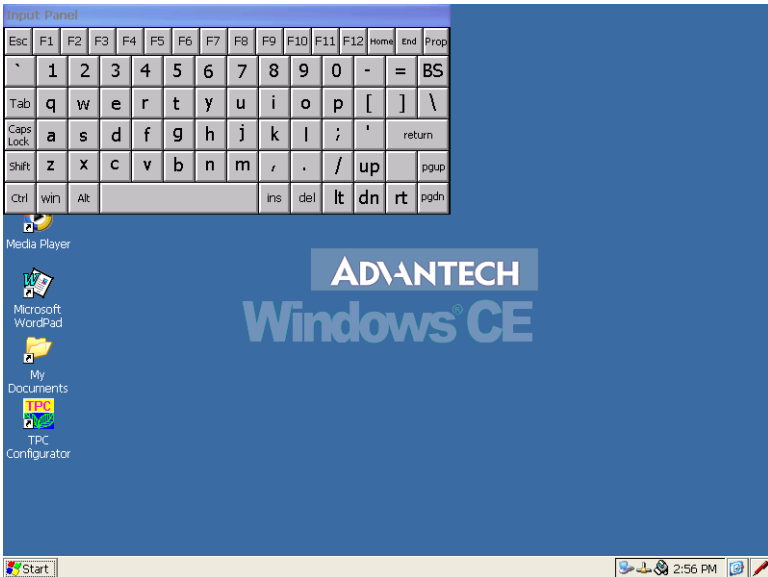


Figure 4.2: Soft-Keyboard

4.1.2 LCD Display Tuning

The display setting lets users control the backlight. Please go to “Start”, ”Setting”, ”Control Panel”, ”Display” as shown in Figure 4.3.

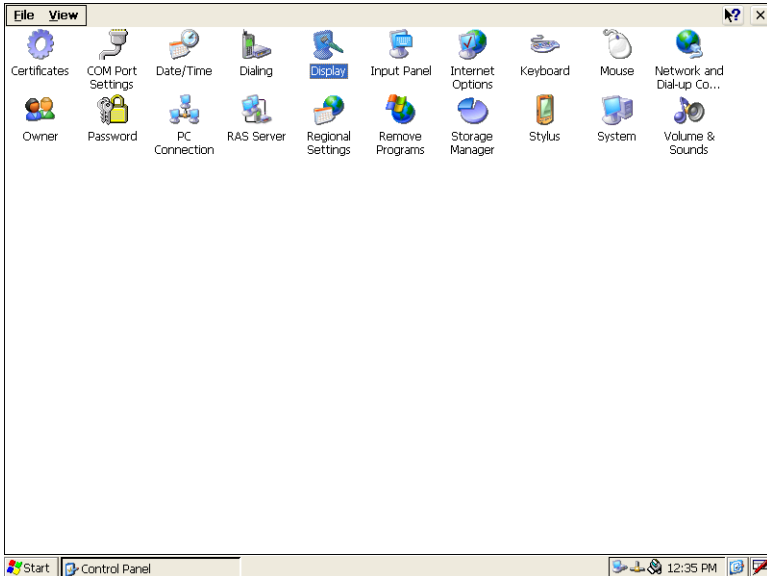


Figure 4.3: Display

After clicking the display icon, the display properties will appear as shown in Figure 4.4.

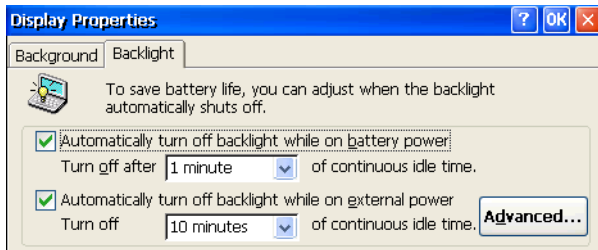


Figure 4.4: Display Properties

Note *TPC-1260H doesn't provide a screen saving function. It will not turn off backlight even though the user enables the above settings. This feature will be enabled in the coming version.*

Click the “Advanced” button to activate the advanced backlight utility as shown in Figure 4.5. Click the “+” button to increase the LCD brightness, or the “-“ button to decrease the LCD brightness. You can also click the slider, hold it, and move it to the designated value and then release the button.

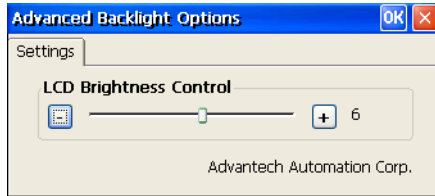


Figure 4.5: Advanced Backlight Utility

4.1.3 TPC Configurator

The TPC configurator is a tool for users to configure the setting in the Windows CE .NET platform of TPC-1260. It contains four tab pages including general, network, watchdog and misc. Execute it by clicking the TPC configurator icon on the desktop.

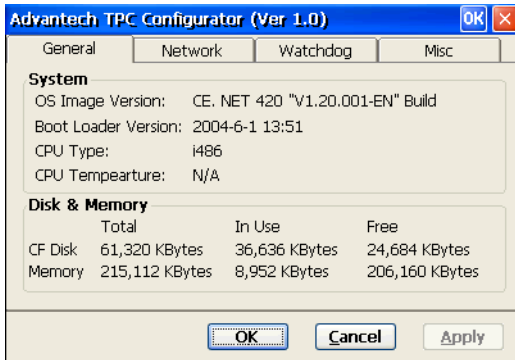


Figure 4.6: TPC Configurator

General Page

This page displays the basic system information. There are two main parts: system and memory. The system shows the version of the OS image and the CPU type. Memory includes the total capacity, the usage and the currently available capacity of the DRAM and the CompactFlash card.

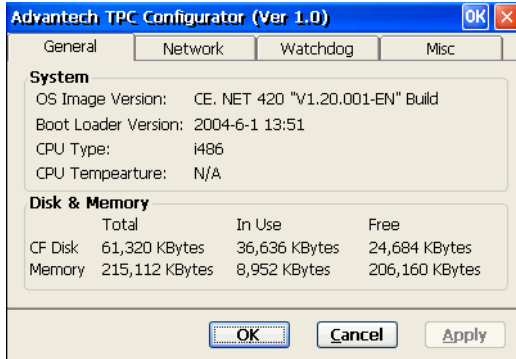


Figure 4.7: General

Network

This page shows information about the active network adapter. You can select the network adapter from the combo box as shown in Figure 4.7. Click the “Renew” button to release the current IP and retrieve the new IP. The “Ping” button is used to test the connection with the specified IP address.

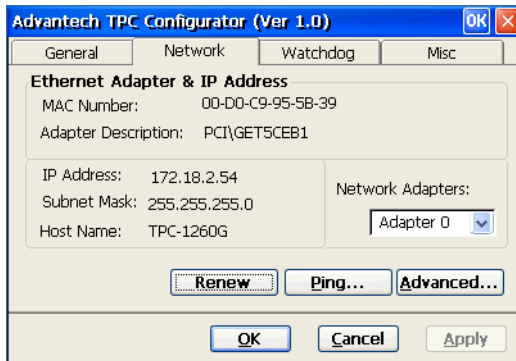


Figure 4.8: Network Utility

To get more detailed IP information click “Advanced...”. This will display the default gateway, DHCP server, WINS and DNS server addresses as shown in Figure 4.8 below.

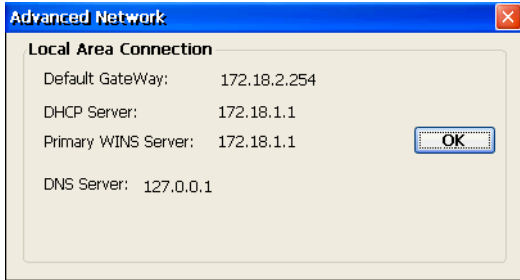


Figure 4.9: Advanced Network

Watchdog Timer

A watchdog timer automatically resets TPC-1260H if the system freezes. A program that does not respond in time will make the watchdog restart the machine automatically. This is useful for systems that are not frequently monitored, but need to be restarted quickly if anything is wrong.

The watchdog timer will only be active if a time span is selected and the watchdog timer is enabled. When the watchdog is enabled, there is a “NO” reset signal periodically sent to the watchdog hardware. If the system freezes, the “NO” reset signal will not reach the watchdog hardware and the system will reset. If the “Test” button is pressed, the watchdog will act as if the machine is frozen and reboot it after the watchdog response time. If the machine reboots as expected after the watchdog response time, the watchdog is proven to be working properly.

The response time can be set with a combo box as shown below.

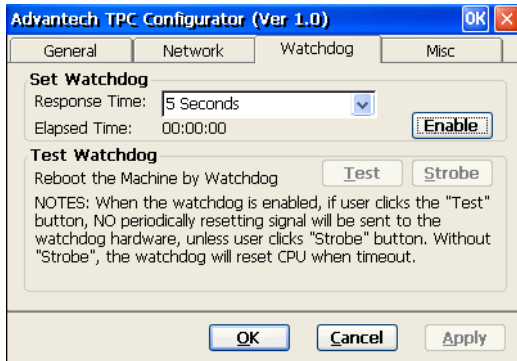


Figure 4.10: WatchDog Timer Setting

Note

When the watchdog is enabled, if the user clicks the "TEST" button, then NO resetting signal will be sent to the watchdog hardware on board periodically, and the watchdog will suppose the machine to be deadlocked and reboot it in the watchdog response time. If the machine reboots as expected in the watchdog response time, the watchdog is proved to be working properly.

Misc

There are several functions provided in the Misc page as shown in the figure below.

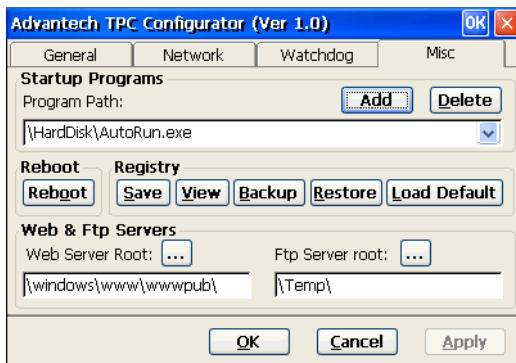


Figure 4.11: Misc Page

Startup Programs: You can easily setup startup programs. The programs listed in the combo box will be automatically executed after the system has successfully booted. Click the "Add" button to insert a file to the startup. If you would like to remove the file from the startup or the combo box, please click "Delete".

Note

Do NOT try to add a Non-Executable file into the startup program.

Reboot: Reboot TPC-1260H by clicking the “Reboot” button. Once this button is clicked, the dialog below will be displayed.

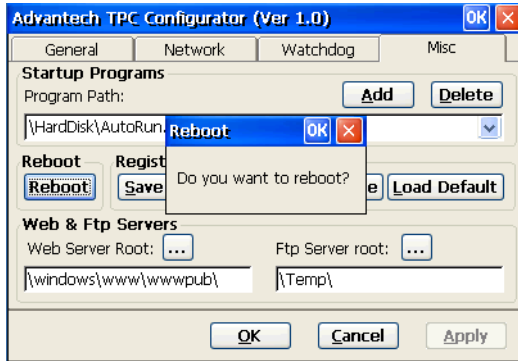


Figure 4.12: Reboot

There are two additional ways to reboot the system. One is to click the small machine icon on the status bar and the other is to execute a command, `reboot.exe`, through the command line program.

Registry: Click the “Save” button to save the registry to a flash card. Please see Figure 4.13. Also, click the “View” button to view, edit, create, or delete registry information as shown in figure 4.14.

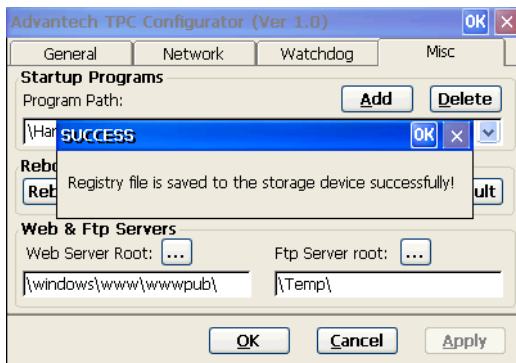


Figure 4.13: Successful Registry Saving

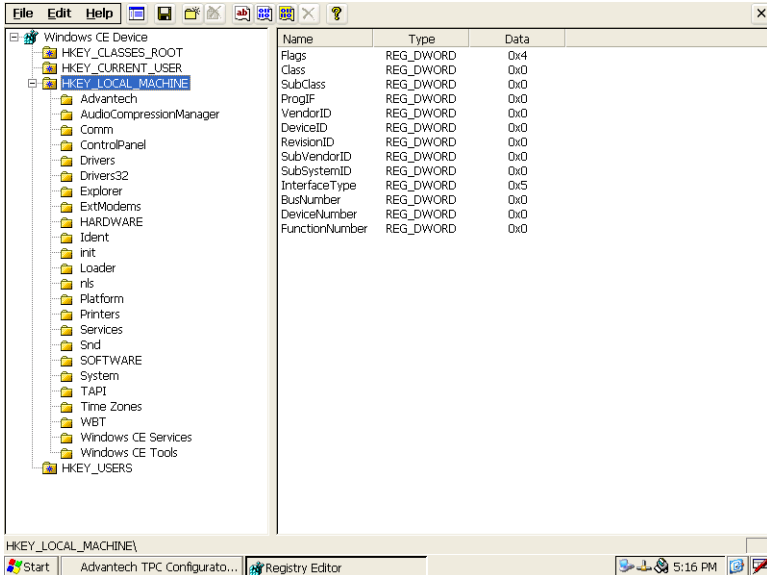


Figure 4.14: Registry Editor

The “Backup” button is for backup of registry data. It will save the registry data in the selected folder. The window, “Browse for Folder”, will display as Figure 4.15 after the “Backup” button is clicked. The default filenames are AdvSystem.hv and AdvUser.hv. If the two files already exist in the selected folder, the pop-up window will show and ask whether the user want to replace the file.

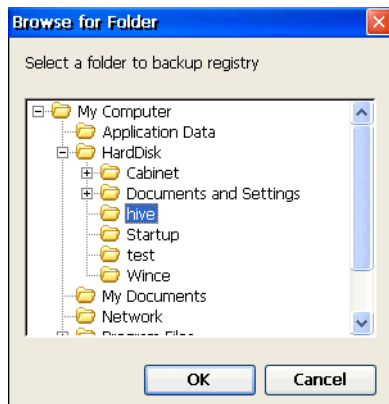


Figure 4.15: Registry Backup

If you want to restore the registry data, press the “Restore” button and then select the folder where the registry data was saved. A reboot is required after the registry data is restored.

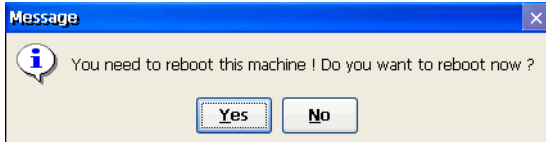


Figure 4.16: Registry Restore

If you want to have the default contents of the registry, please click the “Load Default” button. It will load the default registry into ROM. A reboot is required as well.

Web Server Root: You can input the root path of the web server here. The root path will only be effective if the machine has been rebooted after this operation.

FTP Server Root: Input the root path of the ftp server here. The root path will only be effective after the machine has been rebooted.

Warning *Do NOT try to key the folder name directly into the text box. If the CompactFlash card is renamed to some name that beyond the given list, there will be irreversible problems for users’ application program setting.*

4.1.4 Advantech Tools

There are several useful programs in the Advantech program. Please go to “Start”, “Programs”, “Advantech” to run the tools as shown in Figure 4.17. The tools include: “ActiveSync”, “Registry Editor”, “Registry Saver”, “Remote Display Application”, “Touch Screen Calibration”, “TPC CE Notepad”, “TPC Configurator” and “TPC Version Information”.

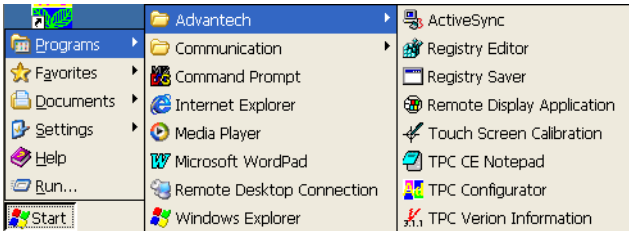


Figure 4.17: Advantech Tools

TouchScreen

The touch screen calibration can be executed by opening “Start”, “Programs”, “Advantech”, “Touch Screen Calibration” as shown in Figure 4.18.

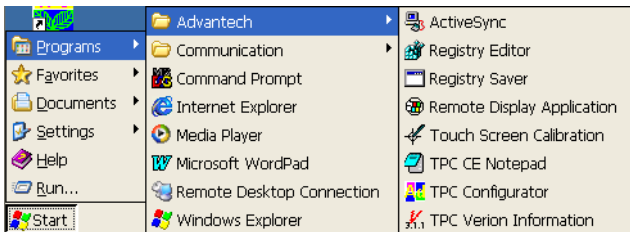


Figure 4.18: Touch Screen Calibration

Note *Do NOT try to calibrate with the stylus in the control panel.*

As shown in the Figure 4.19, the screen will turn to white. An arrow appears at the upper end of the screen. Use a stylus or finger to touch the end point. When the end point is touched, the arrow moves to different positions of the screen. Continue to touch the end point of the arrows to complete the calibration.

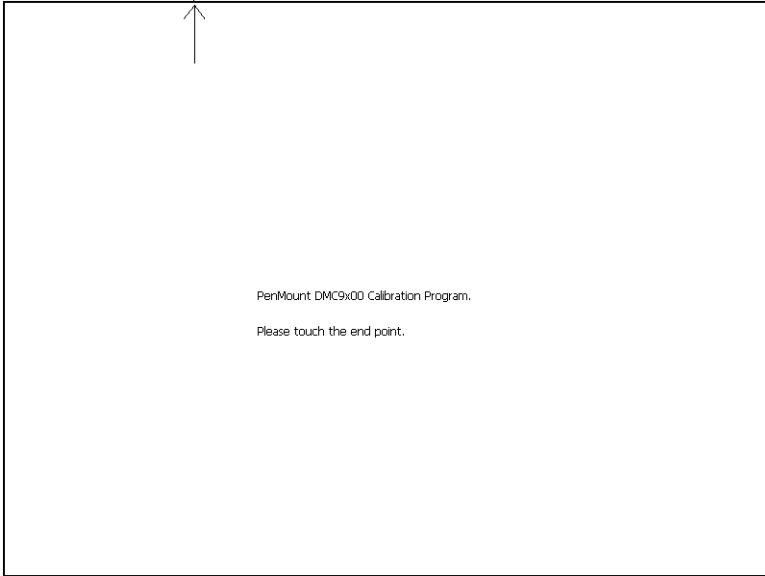


Figure 4.19: Touch Screen Calibration Utility

ActiveSync

This program synchronizes data and monitors the connection between TPC-1260 and a host computer. Click the “Active Sync” button to make an ActiveSync connection. For more information on how to make an ActiveSync connection, please refer to the “ActiveSync User Guide of TPC”.

Registry Editor

When the Registry Editor is executed as shown in the Figure 4.14, the user can use this program to view, edit, create, delete or save registry data.

Registry Saver

This is to save the system registry settings. The registry can also be saved through the command-line environment. Type the command **regsave.exe**, or **regsave.exe -s** for the silence mode.

Remote Display Application

Remote Display Application is used to display a Windows CE device screen on a remote desktop. It works with the Windows CE Remote Display Host application. The connection is through the network, thus the network function of the host machine and TPC-1260H must work properly. Users can see the display of TPC-1260H and control TPC-1260H from a host machine via the remote display application.

Remote Display Host Application (cerhost.exe) must be executed on a remote host desktop as shown in the Figure 4.20.

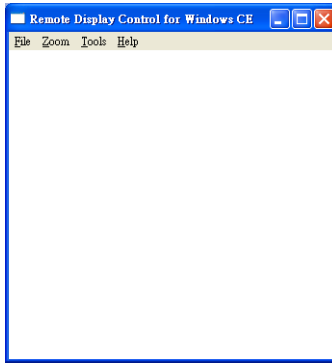


Figure 4.20: Remote Display Host Application

In addition, users must run Remote Display Application on TPC-1260H as shown in Figure 4.21. Click the “Connect” button and key in the host name or IP address as shown in Figure 4.22.

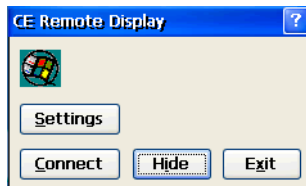


Figure 4.21: Remote Display Application

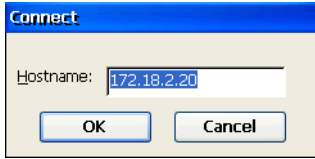


Figure 4.22: Connect

Once the connection is successfully established, you can see the display of TPC-1260H and control it from the host machine as shown in Figure 4.23.

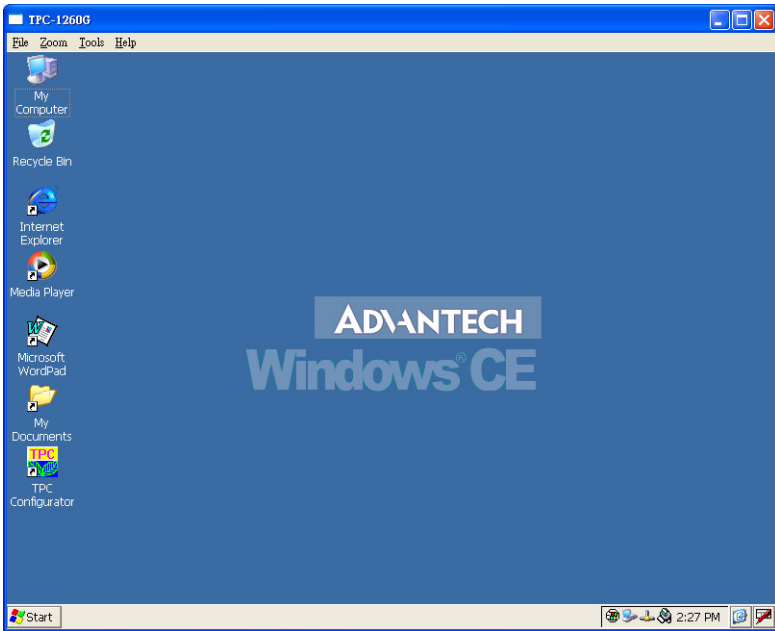


Figure 4.23: Remote Display Host Application with the display of TPC-1260H

TPC CE Notepad

TPC CE Notepad is a text editor as shown in the Figure 4.24.

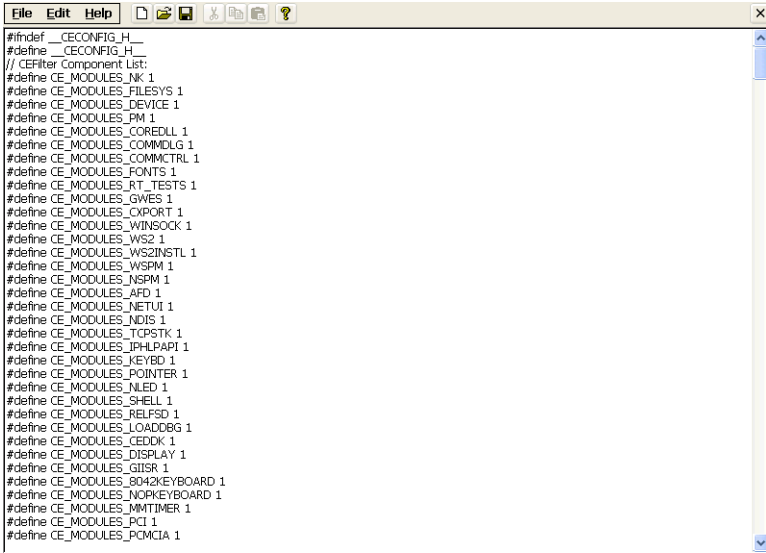


Figure 4.24: TPC CE Notepad

TPC Configurator

TPC Configurator is an integrated utility to configure the basic settings of TPC-1260H. Please refer to section 4.1.3.

TPC Version Information

TPC Version Information shows the version information of the operating system in TPC-1260H as shown in Figure 4.25.

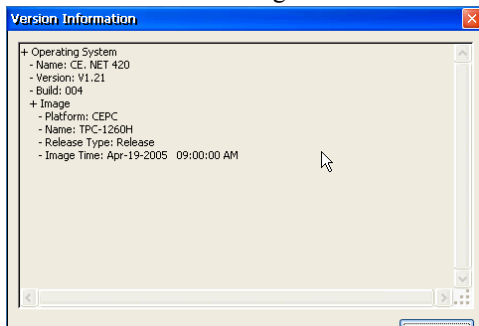


Figure 4.25: TPC Version Information

4.2 Networking

4.2.1 Network via Ethernet

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

1. Press 'Start' in the task bar of Windows and select "Setting" -> "Networking and Dial-up connections".

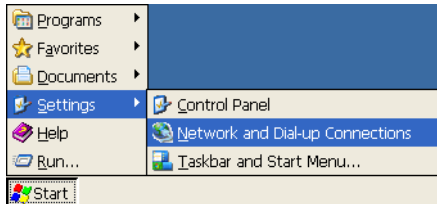


Figure 4.26: Network and Dial-up Connections

2. A 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 the PCI-GET5CEB1 icon to configure.

Note *PCI-GET5CEB1 is the device name of the network device on the TPC-1260H*

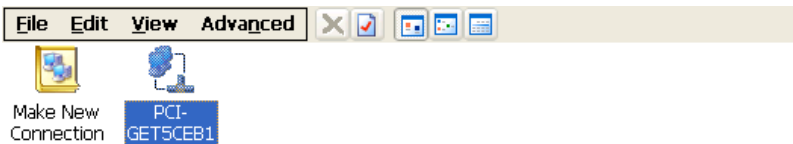


Figure 4.27: Selected Connection

3. Select the “IP Address” tab.

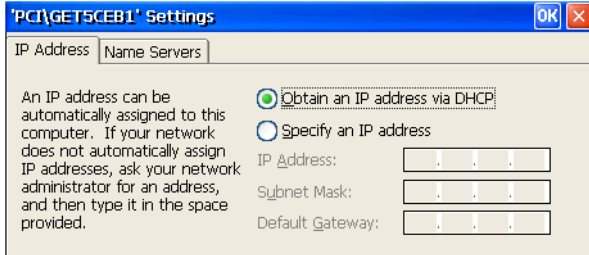


Figure 4.28: Setting IP Address

4. Select “Name Server” tab.

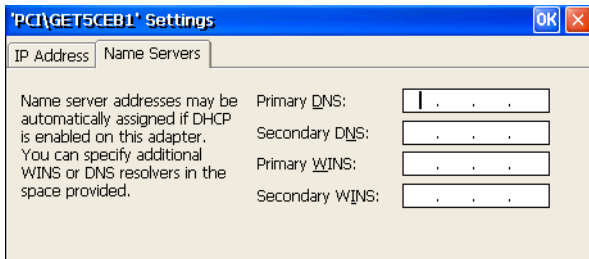


Figure 4.29: Setting Name Servers

5. Press ‘Start’ in the task bar of Windows and select “Run”. Execute “regsave” to save the registry settings to the storage card.

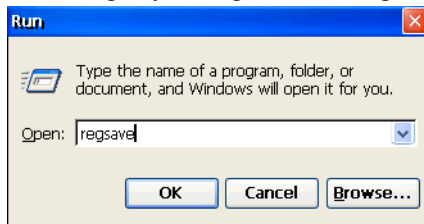


Figure 4.30: Save Registry

4.2.2 Network via Serial Port

This section introduces how to build the connection between a TPC product and a host PC via Microsoft ActiveSync.

ActiveSync Setting Procedure

1. Insert the TPC CD into the CD-ROM drive of the host PC.
2. Install the TPC software development kit for eVC++.
3. Install Microsoft ActiveSync.
4. Connect the host computer and TPC with a null modem cable (included in the package). Make sure the connection is solid on both RS-232 serial ports.
5. Setup the communication environment of the TPC and the host

Setup the Communication Environment of TPC

1. Press “Start”->”Setting”->”Control Panel” and “PC Connection”

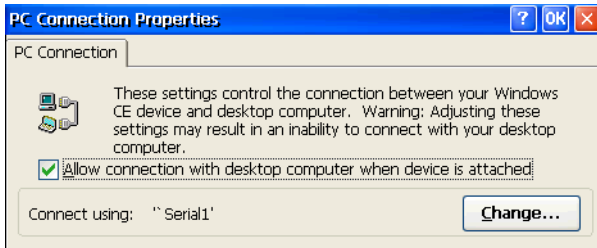


Figure 4.31: Set PC Connections

2. Select your network communication. For example, change the network communication to “Serial1”.

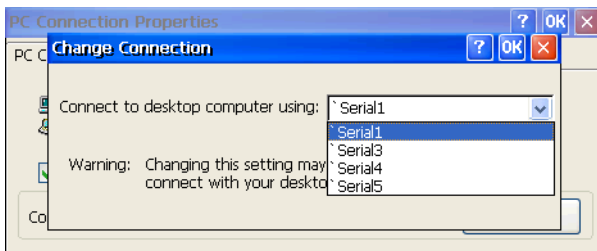


Figure 4.32: Change Connection

3. Please press ‘Start’ in the task bar of Windows and select “Run”. Execute “regsave” to save the registry settings to a storage card.

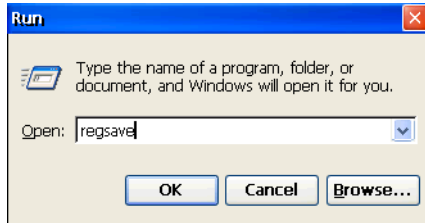


Figure 4.33: Save Registry

Setting the Communication Environment of the Host

1. Double click the icon for ActiveSync on your host computer.



Figure 4.34: Microsoft ActiveSync

2. Select “File”->”Connection Settings”

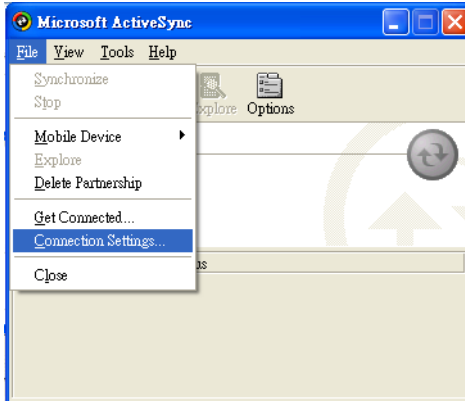


Figure 4.35: Select Connection Setting

3. Configure the connection setting.

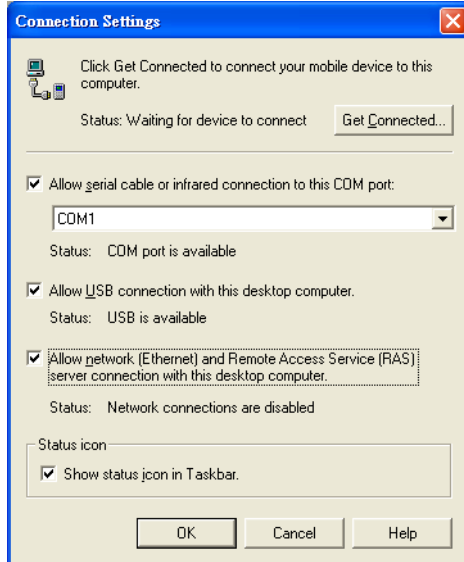


Figure 4.36: Configure Connection Setting

4. A window will pop up after you press “Get Connected”.

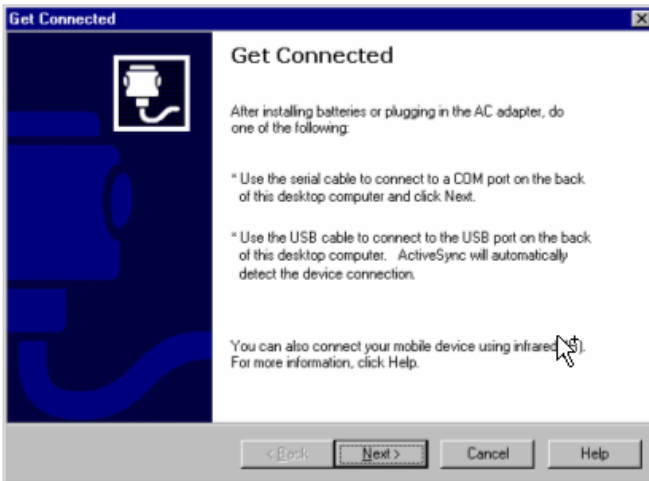


Figure 4.37: Get Connected

5. Please run “repllog.exe” on the TPC.

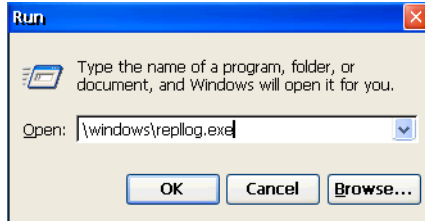


Figure 4.38: Run Repllog.exe on the TPC

6. Press the “Next” button on your host computer.

7. The message shown below will display on the TPC once the TPC and the host PC are connected.

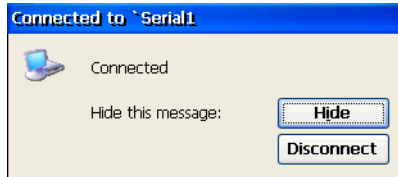


Figure 4.39: Connection on the TPC

8. Once the TPC and the host PC are connected, a window will pop up as shown below on the host computer. Select “No” and then press “Next”.

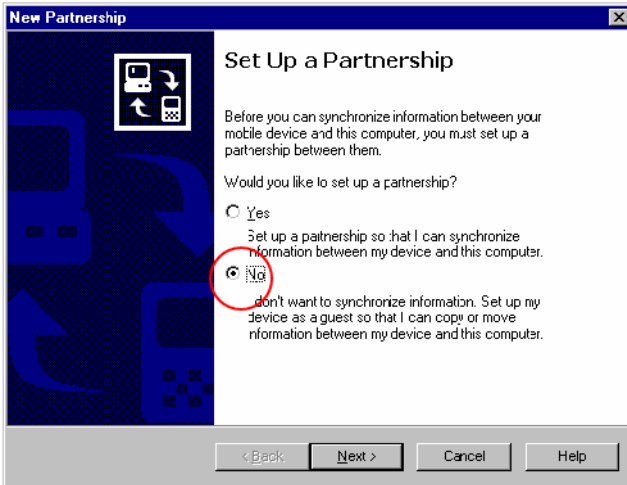


Figure 4.40: Connection on the Host PC

9. Select “Explore” in the Microsoft ActiveSync window, the window, Mobile Device, will pop up to display the file resources and information of TPC. For example, you could click the icon “My documents” to see the contents stored in TPC.

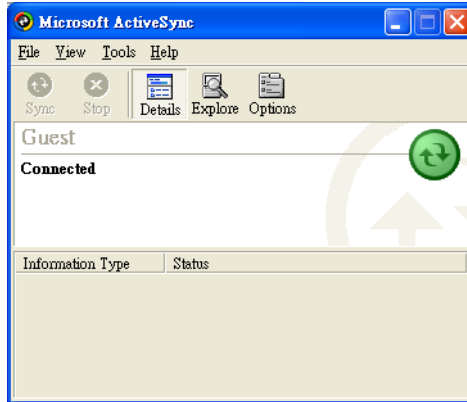


Figure 4.41: Exploring the TPC

4.3 Application Program Development

4.3.1 System Requirements for Developers

The list below are requirements to use Microsoft eMbedded Visual C++ 4.0.

- A desktop computer with a Pentium II-class processor, 450 MHz or faster.
- Microsoft Windows 2000 Professional SP2 or above, Microsoft Windows 2000 Server SP2 or above, or Microsoft Windows XP Professional.
- 96 MB (128 MB recommended) memory for Windows 2000 Professional or Windows XP Professional. 192 MB (256 MB recommended) memory for Windows 2000 Server.
- CD-ROM drive required.
- VGA or higher-resolution monitor. A Super VGA (800 x 600 or larger) monitor is recommended.
- Mouse or compatible pointing device.
- 200 MB hard disk space

Note *If you choose to install the Common files or Microsoft eMbedded Visual C++ 4.0 on a partition other than the system partition, the figure representing the amount of space required reflects only the amount of space for files being installed on that non-system partition. It does not reflect the total amount of space required to install the entire product. This is because some files must be installed on the system partition, regardless of where other files are installed.*

4.3.2 Building Windows CE .NET Runtime

Users can build the Windows CE.NET runtime by the eMbedded Visual tools. This section demonstrates step by step how to develop custom applications.

1. Install Microsoft eMbedded Visual C++: The Microsoft eMbedded Visual C++ tool is a desktop development environment for creating applications and system components for Windows CE .NET-powered devices. This version features new capabilities such as C++ exception handling, Run Time Type Information (RTTI), and a plethora of new debugger functionalities. Before you begin to develop your application, you must install Microsoft eMbedded Visual C++ first.
2. Insert the TPC CD into the CD-ROM of the host PC.
3. Install the TPC Software Development Kit for eMbedded Visual C++ from the support CD-ROM. (TPC-1260H\SDK)
4. Install Microsoft ActiveSync from the support CD-ROM.
5. Build the connection between the host and TPC via ActiveSync. For further information about ActiveSync, please refer to section 5.2.2.
6. Execute eMbedded Visual C++.

7. Select “File”->”New” to open a new project. Select your project type in the left side of the window and enter the new project name/location in the right side of the window.

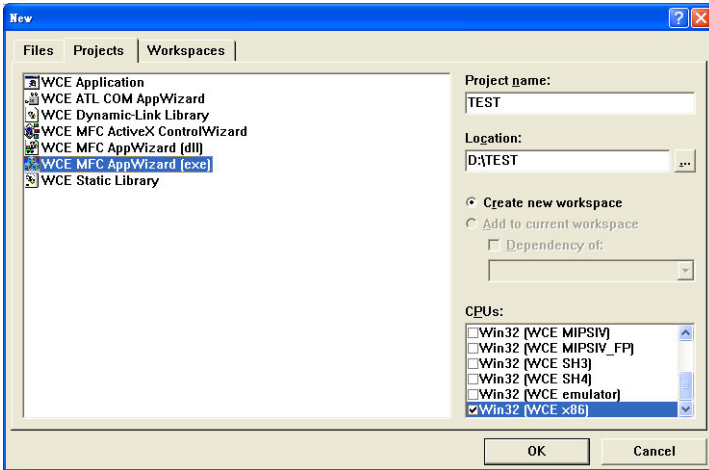


Figure 4.42: Starting a New Project

Note For the CPU type, Win32 (WCE X86) must be selected.

8. Select “TPC-1260H” in main window of embedded Visual C++.

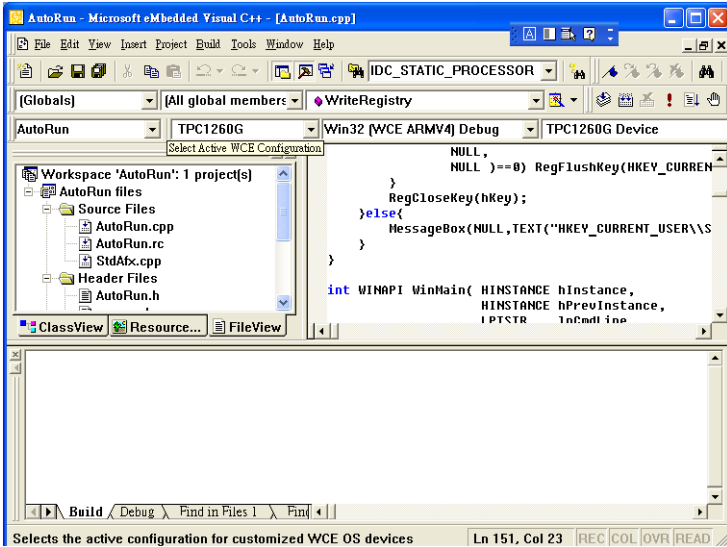


Figure 4.43: Selecting

9. After you complete the configuration procedure, you can start to develop your application. Press “Build” to compile your program to an .exe file and download it to TPC.

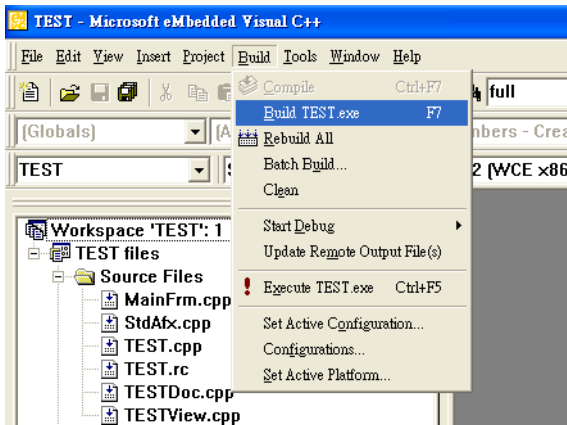


Figure 4.44: Compiling your Program

APPENDIX
A

Serial Port Settings

Appendix A Serial Port Settings

The serial port COM5 on TPC-1260H is adjustable. It can be set to RS-232, RS-422 or RS-485. This port is designed with auto data flow control capability. In other words, the TPC-1260H can automatically detect the data flow direction at this port when the two-wired RS-485 communication is activated.

A.1 Jumper Settings

Jumper settings are used to set the transmission protocol of the serial port. Please see the table for the correct settings.

S1	RS-232	RS-422	RS-485
1-20	ON	OFF	OFF
2-19	OFF	OFF	ON
3-18	OFF	ON	OFF
4-17	ON	OFF	OFF
5-16	OFF	ON	ON
6-15	ON	OFF	OFF
7-14	OFF	ON	ON
8-13	OFF	ON	ON
9-12	ON	OFF	OFF
10-11	x	x	x

Note: Please set the baud rate to at least 600 bps if COM5 is set as RS-485.

A.2 Software Setting

This section takes Windows XP as the example to demonstrate how to set the serial port via the software. Please open “My Computer”->”Control Panel”->”System”->”Device Manager”->”PCI Communication Port (COM5)”->”Settings” as the Figure A.2.

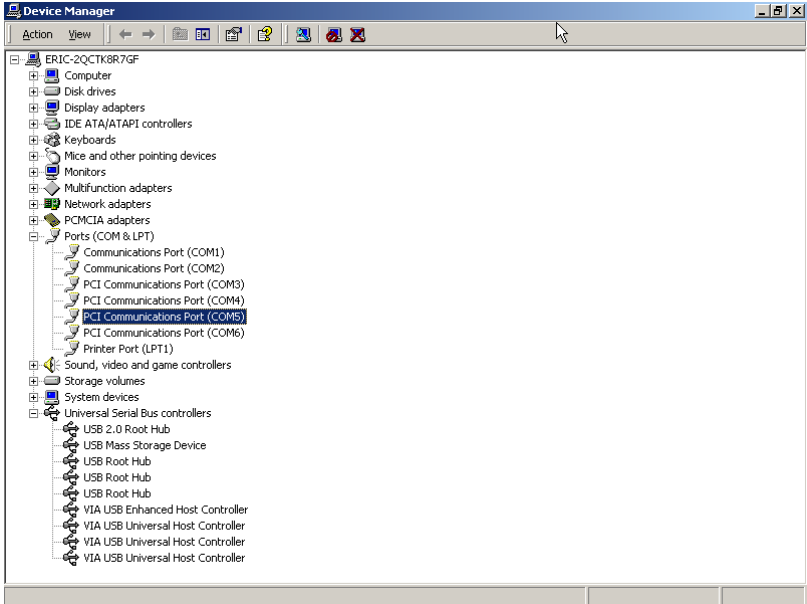


Figure A.1: Device Manager

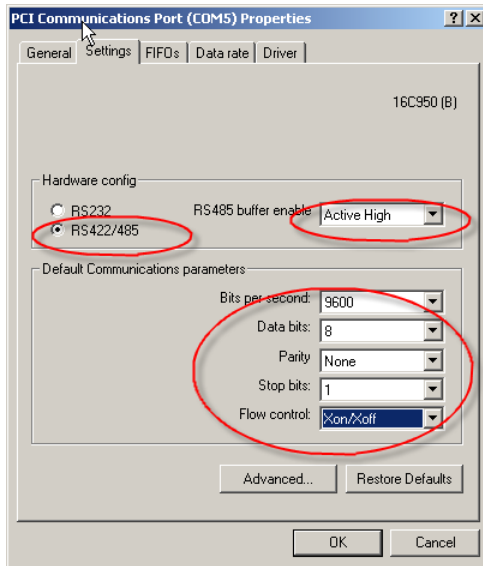


Figure A.2: COM5 Properties

APPENDIX **B**

Fuse Specifications

Appendix B Fuse Specifications

B.1 Fuse Specifications

Rating: 250 V AC, 5 A

Size: 5 x 20 mm

Note *For your protection, the fuse is set to break if the input voltage exceeds 33 V DC.*

B.2 Fuse Replacement

Step 1: Remove the fuse cover

Step 2: Replace the damaged fuse with a new one

Step 3: Replace the fuse cover

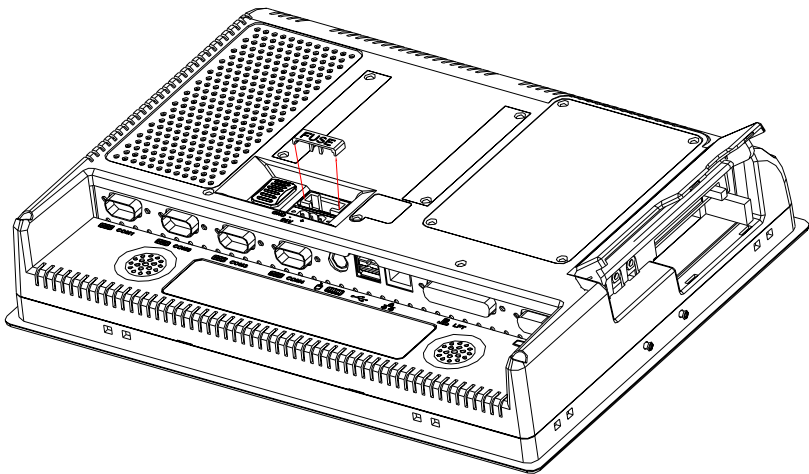


Figure B.1: Fuse Replacement

Warning *Do NOT replace the fuse unless it is damaged.
Do NOT replace the fuse with a different rated fuse.*

APPENDIX

C

Watchdog Timer Programming

Appendix C Watchdog Timer Programming

There is a built-in watchdog timer in Windows CE 4.2 for TPC-1260H. You can access it through the WIN32 API. TPC-1260H provides a WDT driver to allow users to enable/disable the watchdog timer. The driver name is "WDT1:". Programmers must open this driver before using the resources. Then programmers can use DeviceIOControl functions to enable/disable the watchdog timer. The introduction below includes DeviceIOControl, the definition of the parameter and an example.

C.1 DeviceIOControl

This function sends a control code directly to a specified device driver, causing the corresponding device to perform the specified operation.

```
BOOL DeviceIoControl(  
HANDLE hDevice,  
DWORD dwIoControlCode,  
LPVOID lpInBuffer,  
DWORD nInBufferSize,  
LPVOID lpOutBuffer,  
DWORD nOutBufferSize,  
LPDWORD lpBytesReturned,  
LPOVERLAPPED lpOverlapped );
```

C.1.1 Parameters

- **hDevice**
[in] Handle to the device that is to perform the operation. Call the `CreateFile` function to obtain a device handle.
- **dwIoControlCode**
[in] Specifies the control code for the operation. This value identifies the specific operation to be performed and the type of device on which the operation is to be performed. No specific values are defined for the `dwIoControlCode` parameter. However, the writer of a custom device driver can define `IOCTL_XXXX` control codes, per the `CTL_CODE` macro. These control codes can then be advertised, and an application can use these control codes with `DeviceIoControl` to perform driver-specific functions.
- **lpInBuffer**
[in] Long pointer to a buffer that contains the data required to perform the operation. This parameter can be `NULL` if the `dwIoControlCode` parameter specifies an operation that does not require input data.
- **nInBufferSize**
[in] Size, in bytes, of the buffer pointed to by `lpInBuffer`.
- **lpOutBuffer**
[out] Long pointer to a buffer that receives the operation's output data. This parameter can be `NULL` if the `dwIoControlCode` parameter specifies an operation that does not produce output data.
- **nOutBufferSize**
[in] Size, in bytes, of the buffer pointed to by `lpOutBuffer`.
- **lpBytesReturned**
[out] Long pointer to a variable that receives the size, in bytes, of the data stored into the buffer pointed to by `lpOutBuffer`. The `lpBytesReturned` parameter cannot be `NULL`. Even when an operation produces no output data, and `lpOutBuffer` can be `NULL`, the `DeviceIoControl` function makes use of the variable pointed to by `lpBytesReturned`. After such an operation, the value of the variable is without meaning.
- **lpOverlapped**
[in] Ignored; set to `NULL`.
- **Return Values**
Nonzero indicates success. Zero indicates failure. To get extended error information, call `GetLastError`.

C.2 How to Use the Control Code

There are 6 control codes for the operation codes in the WDT driver.

C.2.1 IOCTL_WDT_ENABLE:

Enables the watchdog timer of your application. By default, if the watchdog timer is enabled, the WDT driver will automatically trigger itself after the specified period and your application does not need to trigger the watchdog timer.

lpInBuffer: unused.

nInBufferSize: unused.

lpOutBuffer: unused.

nOutBufferSize: unused.

C.2.2 IOCTL_WDT_DISABLE:

Disables the watchdog time of your application.

lpInBuffer : unused.

nInBufferSize: unused.

lpOutBuffer: unused.

nOutBufferSize: unused.

C.2.3 IOCTL_WDT_STROBE:

Triggers the watchdog. If your application uses IOCTL_WDT_ENABLE to enable the watchdog first and then sends IOCTL_WDT_REBOOT to the WDT driver, your application must trigger the watchdog once during the watchdog timer period. If your application has not triggered at the specified period, the device will reboot automatically.

lpInBuffer: unused.

nInBufferSize: unused.

lpOutBuffer: unused.

nOutBufferSize: unused.

C.2.4 IOCTL_WDT_GETTIMEOUT:

Gets the Watchdog time setting.

lpInBuffer: unused.

nInBufferSize: unused.

lpOutBuffer: The DWORD points to your watchdog time setting. The Watchdog time setting is just a number. 0 means 2 seconds, 1 means 5 seconds, 2 means 10 seconds, 3 means 15 seconds, 4 means 30 seconds, 5 means 45 seconds and 6 means 60 seconds. The default setting is 5 seconds.

nOutBufferSize: unused.

C.2.5 IOCTL_WDT_SETTIMEOUT:

Sets the watchdog time setting.

lpInBuffer : The DWORD points to your watchdog time setting. The watchdog time setting is just a number. 0 means 2 seconds, 1 means 5 seconds, 2 means 10 seconds, 3 means 15 seconds, 4 means 30 seconds, 5 means 45 seconds and 6 means 60 seconds. The default setting is 5 seconds.

nInBufferSize: unused.

lpOutBuffer: unused.

nOutBufferSize: unused.

C.2.6 IOCTL_WDT_REBOOT:

If you want your application to trigger the watchdog by itself, please use IOCTL_WDT_REBOOT to notify the watchdog driver timer (WDT). Otherwise, the WDT will trigger itself automatically.

lpInBuffer : unused.

nInBufferSize: unused.

lpOutBuffer: unused.

nOutBufferSize: unused.

C.3 Examples

```
#define WDT_CODE(ID)
CTL_CODE(FILE_DEVICE_UNKNOWN, ID,
METHOD_BUFFERED, FILE_ANY_ACCESS)

#define IOCTL_WDT_ENABLE WDT_CODE(0x900)
#define IOCTL_WDT_DISABLE WDT_CODE(0x901)
#define IOCTL_WDT_STROBE WDT_CODE(0x902)
#define IOCTL_WDT_GET_TIMEOUT WDT_CODE(0x903)
#define IOCTL_WDT_SET_TIMEOUT WDT_CODE(0x904)
#define IOCTL_WDT_REBOOT WDT_CODE(0x905)

// for compatibility reasons, you can define IOCTL as below:
// #define IOCTL_WDT_ENABLE 0x1001
// #define IOCTL_WDT_DISABLE 0x1002
// #define IOCTL_WDT_STROBE 0x1003
// #define IOCTL_WDT_GETTIMEOUT 0x1004
// #define IOCTL_WDT_SETTIMEOUT 0x1005
// #define IOCTL_WDT_REBOOT 0x1006

HANDLE m_hWDT=NULL;
TCHAR szClassName[60];
// assign the WDT driver name
wsprintf(szClassName, TEXT("WDT1:"));
// Open the WDT driver
m_hWDT = CreateFile(szClassName, GENERIC_READ
GENERIC_WRITE, 0, NULL, OPEN_EXISTING,
FILE_ATTRIBUTE_NORMAL, NULL);
if ( m_hWDT == INVALID_HANDLE_VALUE ) {
DebugMsg(CString("WDT driver fail"));
return;
}
DWORD dwTemp;
DWORD nIndex=2;
```

```

// Set the Watchdog Timer as 10 seconds. Number 2 means 10 seconds.
DeviceIoControl(m_hWDT, IOCTL_WDT_SET_TIMEOUT, &nIndex,
sizeof(nIndex), NULL, 0, &dwTemp, NULL);
// Enable the Watchdog timer
DeviceIoControl(m_hWDT, IOCTL_WDT_ENABLE, NULL, 0, NULL,
0, &dwTemp, NULL);
While (1) {
// do your job here.
Sleep(8000);
DeviceIoControl(m_hWDT, IOCTL_WDT_STROBE, NULL,0,
NULL, 0, &dwTemp, NULL);
}
DeviceIoControl(m_hWDT, IOCTL_WDT_DISABLE, NULL, , NULL,
0, &dwTemp, NULL);
CloseHandle(m_hWDT);

```


APPENDIX **D**

Accessory Kit Assembly Procedure

This appendix shows how to connect to a CD-ROM via the CompactFlash slot.:

Appendix D Accessory Kit Assembly Procedure

D.1 CompactFlash to IDE Transfer Kit

Please follow this assembly procedure to use the CompactFlash slot to connect with a CD-ROM drive.

1. Connect the IDE cable to the adapter board.

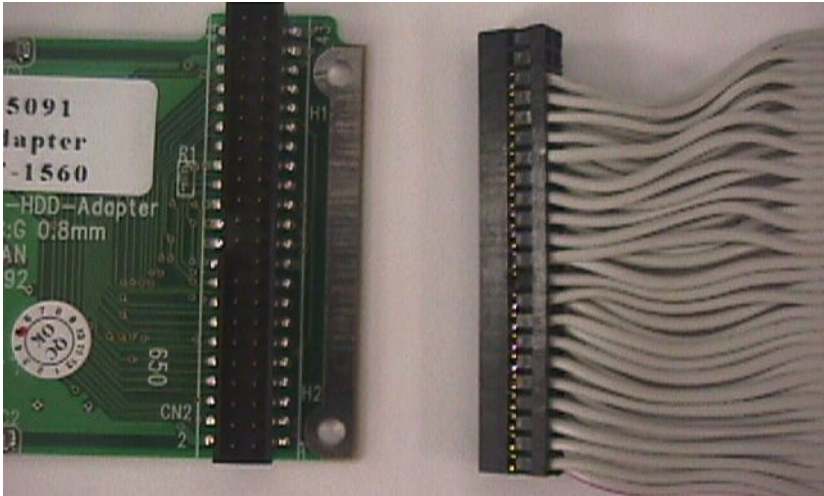


Figure D.1: Adapter Board and IDE Cable

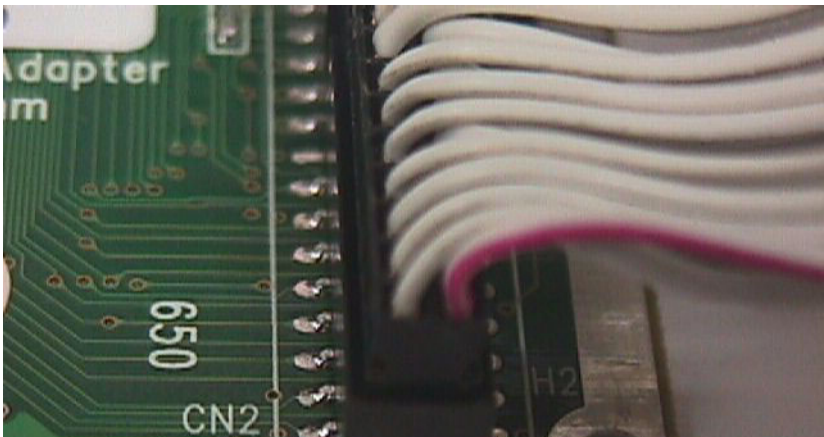


Figure D.2: Connect the Adapter Board with the IDE Cable

Note *Pin 1 is marked red*

2. Insert the adapter board into the CompactFlash slot.



Figure D.3: CompactFlash Slot

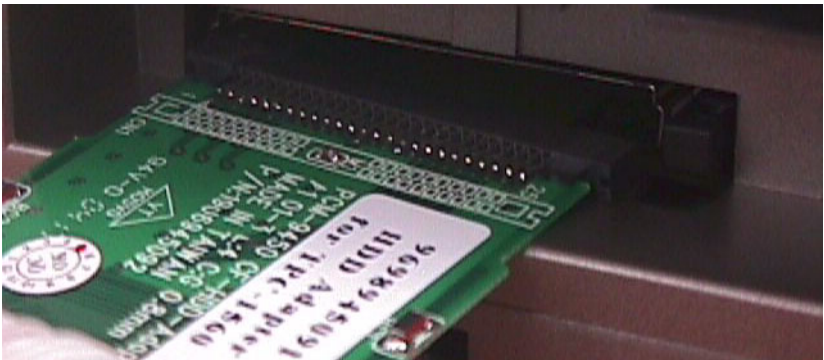


Figure D.4: Insert the Adapter Board into the CF slot



Figure D.5: Inserted Adapter Board

Connect the CD-ROM to the adapter board via the IDE cable and then connect the external power line to the CD-ROM.

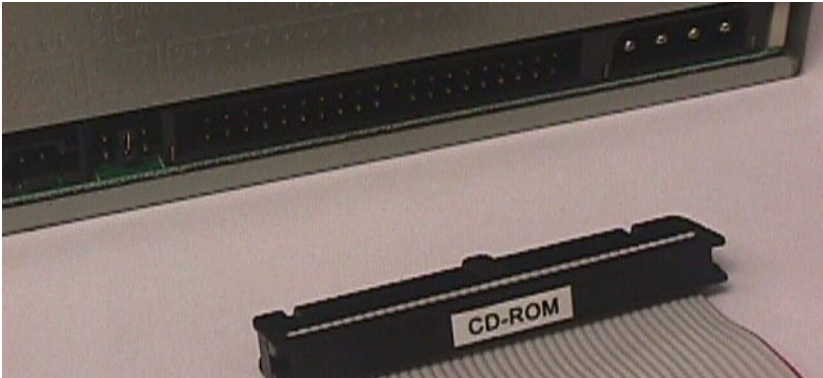


Figure D.6: Connect the CD-ROM via the IDE Cable



Figure D.7: Plug the Power Line into the CD-ROM Drive

D.2 USB Driver Installation Notice

It is required to install the service pack if you want to install the USB 2.0 driver on Windows 2000/XP

Note *Please make sure Windows 2000 Service Pack 4 is installed before you install the USB 2.0 driver on Windows 2000. Service Pack 1 must be installed on Windows XP before you install the USB 2.0 driver.*

APPENDIX

E

HDD Kit Assembly

Appendix E HDD Kit Assembly

Please follow the assembly procedure to install the HDD into the system.

1. Remove the default HDD kit from the system.



Figure E.1: Remove the HDD kit

2. Remove the six screws from the four sides and then separate the HDD holder and HDD cover.



Figure E.2: Open the Top

3. Carefully pull the flat ribbon cable out and insert it into the hole of the HDD holder.

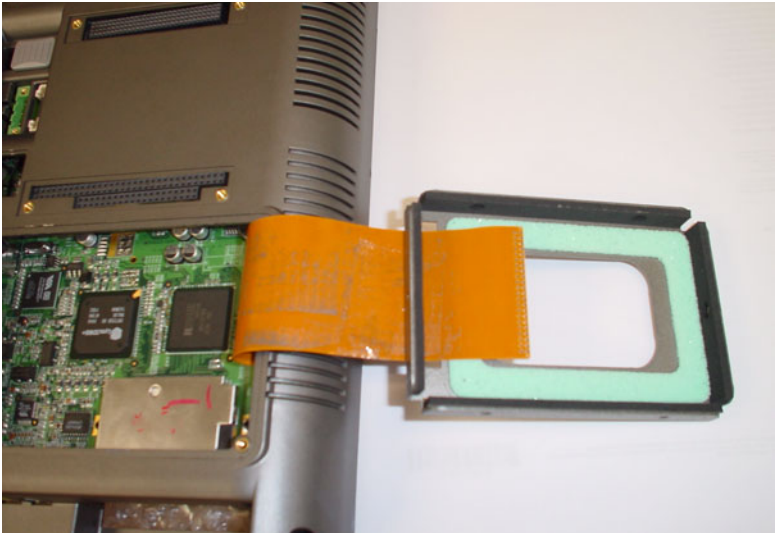


Figure E.3: Pull the cable through the hole of the HDD holder

4. Carefully connect the cable with the HDD and then put the HDD module into the HDD holder.

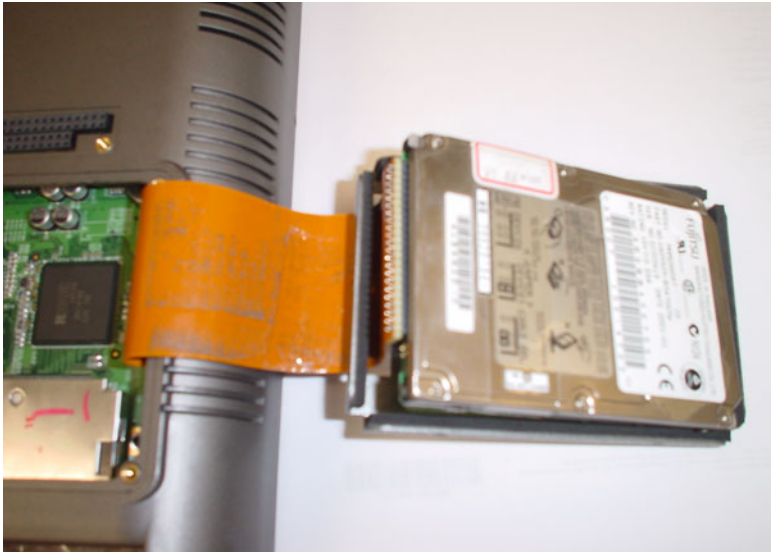


Figure E.4: Connect the FPC with the HDD module



Figure E.5: Place the HDD module into the HDD holder

5. Put the HDD cover on the HDD holder

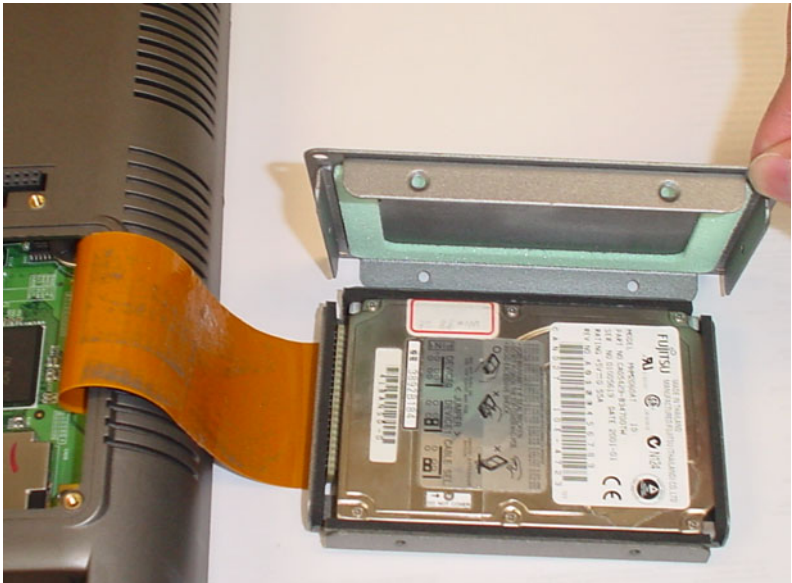


Figure E.6: Put the HDD cover on the HDD holder

6. Fasten the HDD cover with screws

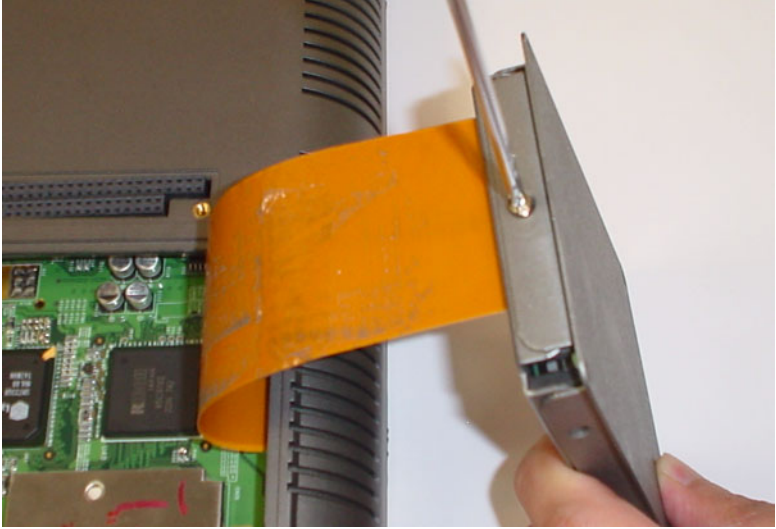


Figure E.7: Fasten the HDD cover

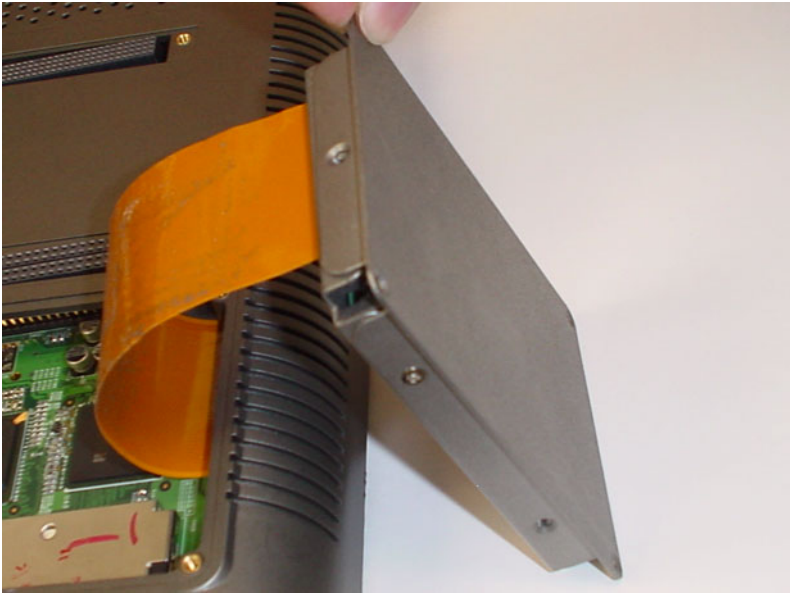


Figure E.8: A complete HDD kit

7. Place the HDD kit into the system

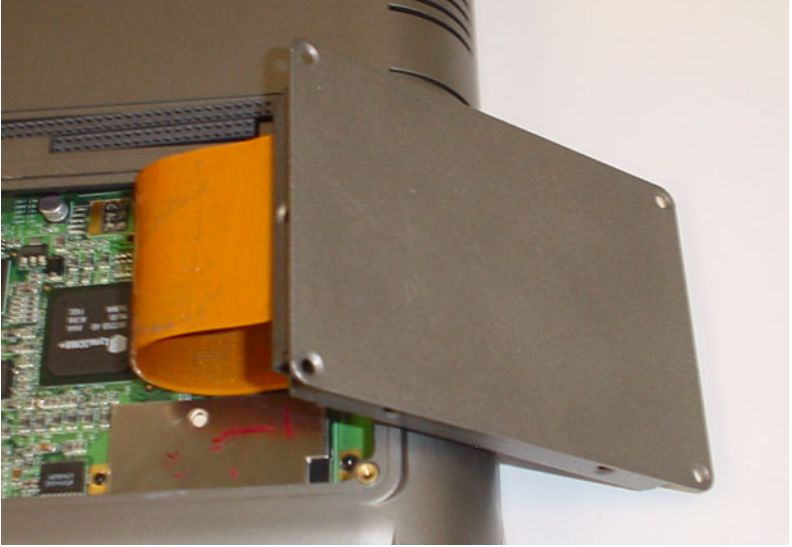


Figure E.9: Place the HDD kit into the system

8. Fasten the HDD kit with the system

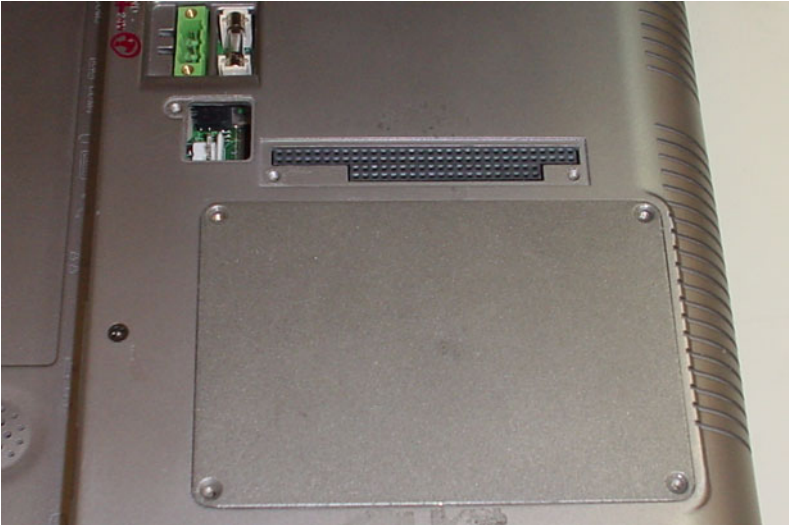


Figure E.10: Fasten the HDD kit with the system

Touch Screen Installation & Configuration on Windows 2000/XP

This appendix demonstrates how to install the PenMount 9000 touch screen and set the configuration on TPC-1260H. This section uses Windows XP as an example.

Appendix F Touch Screen Installation & Configuration on Windows 2000/XP

F.1 Driver Installation

Please insert the x86 TPC series support CD and go to the Windows 2000-XP driver folder (TPC-1260H\Driver\Touch Screen\Driver\Windows 2000-XP Driver V4.01). Click setup.exe

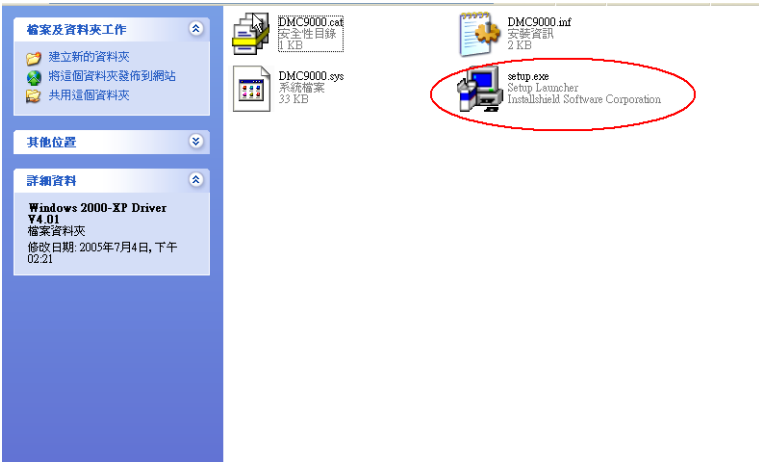


Figure F.1: Setup.exe

The screen displays the installation wizard for the PenMount software. Click “Next”. Follow the installation wizard step by step.

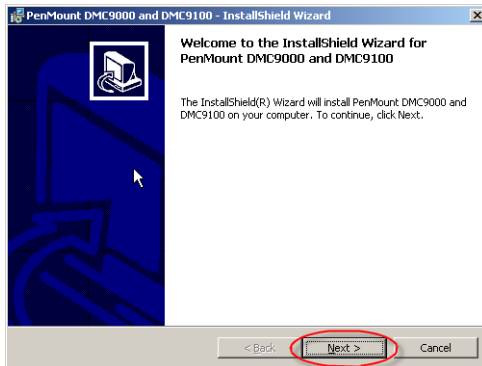


Figure F.2: Install - wizard

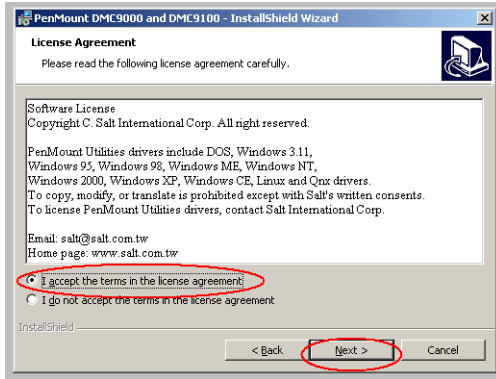


Figure F.3: Install – License Agreement

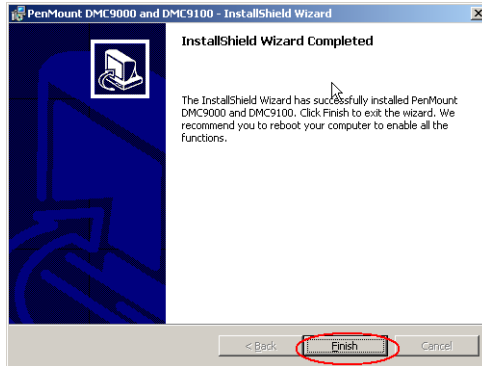


Figure F.4: Install – Completed

F.2 Uninstall the Driver

Please go to Settings and then select Control Panel. Please click Add/Remove Programs.

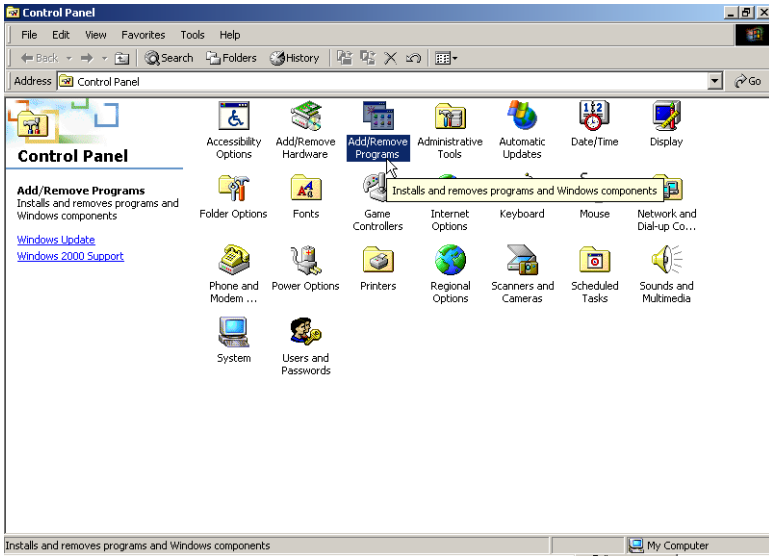


Figure F.5: Uninstall -1

Select PenMount DMC9000 and DMC9100. Click Remove button.

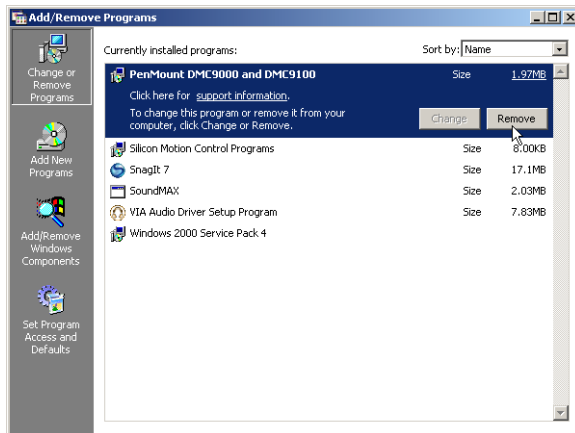


Figure F.6: Uninstall -2

Select “Yes” to remove the PenMount Windows 2000/SP driver and reboot the system.

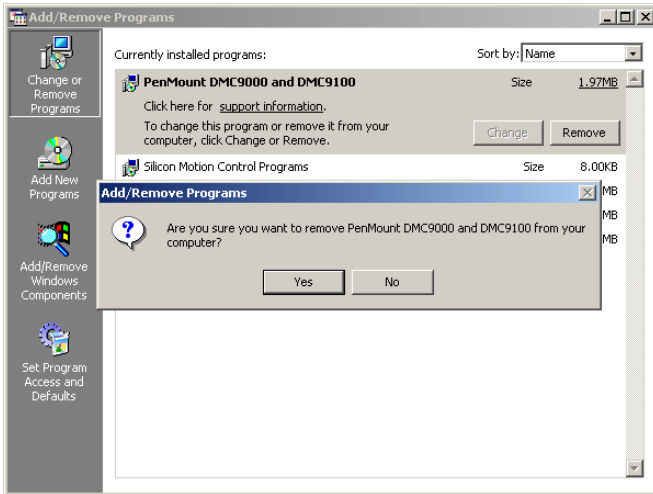


Figure F.7: Uninstall -3

F.3 Touch Screen Calibration

The “PM”, the icon of the PenMount Control Panel, is in the menu bar after the touch screen installation. Please click the icon “PM” to call PenMount Control Panel. It contains six functions: Calibrate, Draw, Multiple Monitors, Option, and About. Multiple Monitors is for multiple displays only; however TPC-1260H only provides one touch screen display. This function is not workable on TPC-1260H. About is to show the driver version.

Calibrate

Two ways to calibrate the touch screen include “Standard Calibration” and “Advanced Calibration”. Standard Calibration is to adjust most touch screens.



Figure F.8: Standard Calibration -1

Touch the red square.



Figure F.9: Standard Calibration -2

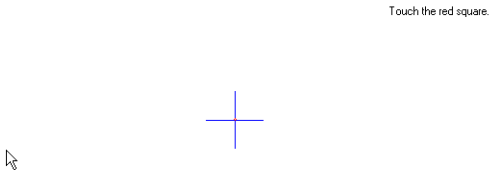


Figure F.10: Standard Calibration -3

Note *Touch the red squares in sequence. The calibration is completed after the fifth touch red point is calibrated. Press “ESC” to skip.*

Advanced Calibration is for the aged touch screens by using 4, 9, 16 or 25 points to calibrate touch panel.



Figure F.11: Advanced Calibration -1

Touch the red square.



Figure F.12: Advanced Calibration -2

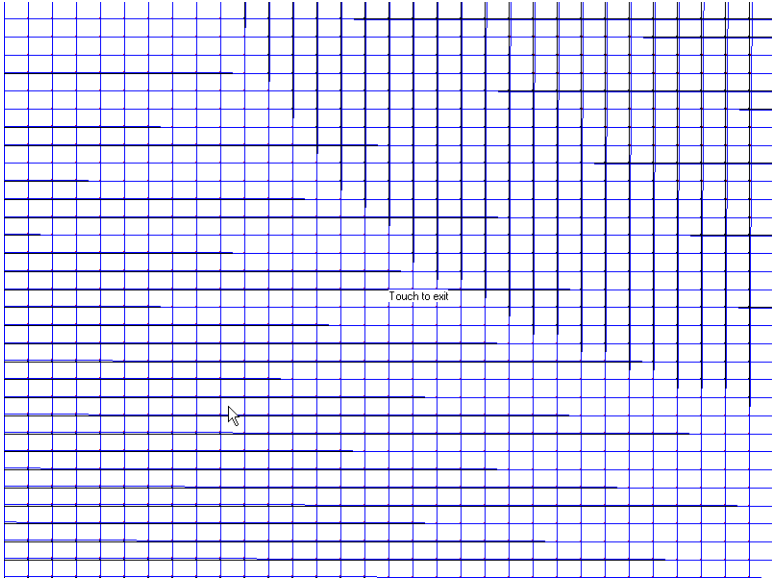


Figure F.13: Plot Calibration Data

Note *Plot Calibration Data enabled provides the blue lines to show linearity before calibration and black lines to show linearity after calibration when you finished the advanced calibration.*

Draw

This is to test the touch screen operation. Its display shows touch location.

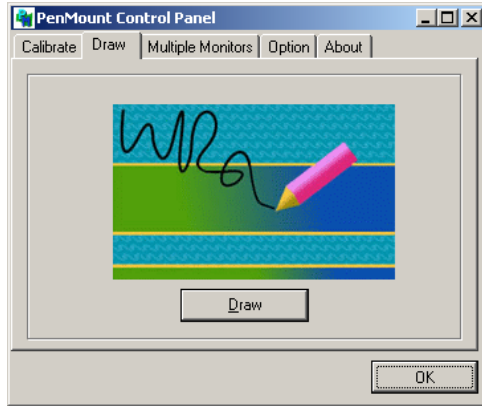
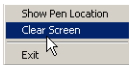


Figure F.14: Draw

Click “menu” and then click “clear screen” to clear the drawing.



(5.17)
 (6.17)
 (6.18)
 (6.17)
 (23.32)
 (24.32)
 (24.33)
 (25.33)
 (25.34)
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 (26.33)
 (27.33)
 (27.32)
 (28.32)
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 (0.1)
 (0.0)
 (1.0)
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 (4.15)
 (5.16)
 (4.16)
 (4.17)
 (5.17)
 (4.17)

Figure F.15: Clear Screen

Option

This option is to set the operation mode and beep sounds if the beep sound is enabled. The operation mode, stream mode and point mode, is to enable/ disable the mouse's ability to drag on-screen icons. Stream mode let the mouse functions as normal and dragging on-screen. Point mode is only let the mouse a click function. The dragging on-screen is disabled. Users can turn on / off the beep sound by clicking the “enable beep sound”.

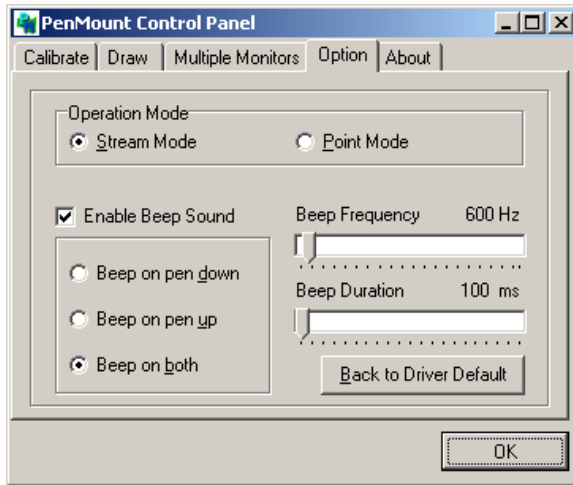


Figure F.16: Option

