NP-880S

RISC-based operator interface terminal with 8” flat panel display

User’s Manual

Copyright

Safety Instructions

Overview

This section states the safety instructions, which must be followed when installing, operating and servicing the NP-880S. If neglected, physical injury and death may follow, or damage may occur to controller and related equipment. The material in this chapter must be studied before attempting any work on, or with, the unit.

Warnings and Notes

This manual distinguishes safety instructions. Warnings are used to inform of conditions, which can, if proper steps are not taken, lead to a serious fault condition, physical injury or death. Notes are used when the reader is required to pay special attention or when there is additional information available on the subject. Notes are less crucial than warnings, but should not be disregarded.

Warnings

Readers are informed of situations that can result in serious physical injury and/or serious damage to equipment with the symbol shown to the left. A Warning symbol indicates that the reader should pay special attention to the accompanying text. Precautionary steps should be taken to insure that the installation is in compliance with warnings. Warnings include hazardous conditions that could cause personal injury or equipment damage if care is not taken. The text next to this symbol describes ways to avoid the danger.

Warnings

Dangerous Voltage Warnings: Warns of situations in which high voltage can cause physical injury and or damage equipment.

General warning: Warns of situations, which can cause physical injury and or damage equipment by means other than electrical.

Electrostatic Discharge Warning: Warns of situations in which an electrostatic discharge can damage equipment.

Readers are notified of the need for special attention or additional in formation available on the subject with the following symbols:

CAUTION! Aims to draw special attention to it.

Note: **Note:** gives additional information or points out more information available on the subject.

Chapter 1 Introduction

1.1 Introduction

The MT608 is a miniature and compact platform that has no redundant functions. It is designed for small-sized operator interface market. Its RISC kernel, the CIRRUS LOGIC EP9135 200MHz processor design with a memory management unit (MMU), that supports Windows CE. The ARM920T's 32-bit microcontroller architecture, with a five-stage pipeline, delivers impressive performance at very low power.
The EP9315 includes a hardware graphics acceleration engine that improves graphic performance by handling block copy, block fill and hardware line draw operations. The graphics accelerator is used in the system to off load graphics operations from the processor.

Features

- Built-in flash memory and Windows CE OS inside
- All in one platform: the CPU, DRAM and Windows CE are integrated
- Low power consumption and Fan-less
- NEMA 4 / IP65 compliant front panel
- One CompactFlash™ slot
- Audio
- Ethernet port(10/100Base-T)
- 44-pin IDE Interface

1.2 Specifications

- Construction: plastic molding housing
- Display: 8" 640x480 65536 Color TFT LCD
- CPU and core logic: CIRRUS LOGIC EP9315 200MHz ARM920T core processor
- DRAM: 64 MB on board
- Storage: 32 MB flash memory on board
- 1 CompactFlash™ card slot
- 44-pin IDE Interface

- I/O: 3 serial ports
  - Com1: RS-232/RS-485 2w/4w
  - Com2: RS-232
  - Com3: RS-232/RS-485 2w
- 1 Ethernet port (10/100Base-T)
- 3 USB 2.0 full-speed host (12Mbps)
- Sound output: 20-bits Stereo output
- Microphone In
- RTC: Built-in
- Power input: 24 VDC, 440mA maximum
- Dimension (W x H x D): 240 x 179 x 50mm
- Weight: Approx. 1.3kg

FUSE

- BUSSMANN Fast Acting, Glass Tube
- Rating: 250VAC, 1A
- Size: 5x20mm

LCD Display

- Display type TFT color LCD
- Display size (diagonal) 8"
- Max colors 65536
- Resolution 640 x 480
- Pixel pitch (HxV, mm) 0.2535 x 0.2535
- Viewing angle (°) 56/65/65/65 (T/B/R/L)
- Luminance (cd/m2)400
- Storage temperature (℃) -25~70
- Operating temperature (℃) 0~45
- Backlight CCFLx1
- Contrast ratio 250:1

Touch screen

- Type: 4-wire, analog resistive
- Resolution: continuous
- Light transmission: above 80%
- Life: 1 million activation minimal

Environmental Specifications

- Operating temperature: 0° ~ 45°C (32° ~ 113°F)
- Relative humidity: 10% ~ 90% @ 40°C, non-condensing
- Shock (operation): 10 to 25Hz(X,Y,Z direction 2G 30minutes)
- EMI: Complies FCC class A
- CE: Complies with EN50081-2 and EN50082-2 standards
- Front panel meets NEMA4 / IP65

Chapter 2 Installation Instructions

2.1 Mounting Instructions

2.1.1 Location Considerations

Care should be taken when locating equipment behind the unit to ensure that AC power wiring, PLC output modules, contactors, starters and relays, and any other source of electrical interference are located away from the back of the unit.

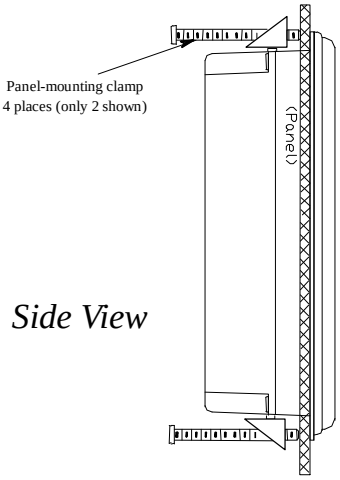
Particular note should be taken to the position of variable speed drives and switching power supplies. Their input and load cables should be screened to a central star earth point.

2.1.2 Making a NEMA-4 Mounting

Panel Details	The unit can be mounted into panels with a depth of 4”(105mm). It is recommended that the unit be mounted on the front panel of a steel enclosure, through an appropriate opening*. Allow a clearance of 1”(25mm) around the sides of the unit for mounting hardware. Allow clearance for cable connections to the back of the unit. Unit depth may vary according to cable type used. Typically, plan a depth to accommodate at least 4”(105mm) behind the panel.
NEMA-4 Mounting	Put the unit through the panel cut out. Slide the clamps into the 6 holes provided around the case. Tighten the clamping screws in an even pattern until the unit is secured in the panel.
Caution!	Do not over tighten mounting clamps!
Note:	Specifications Note: To seal to NEMA-4 specifications, all supplied mounting clamps must be used and panel cannot flex more than 0.010”.

2.1.3 Environmental Considerations

- The NP-880S are to be used indoors as built in displays. Make sure that the displays are installed correctly and that the operating limits are followed (See Specifications).
- Do not operate the unit in areas subject to explosion hazards due to flammable gases, vapors or dusts.
- The unit should not be installed where fast temperature variations and/or high humidity are present. This will cause condensation of water in the device.
- Do not install these terminals in environments where have inflammable gases.



Side View

2.2 Power Connections

Make sure that all local and national electrical standards are met when the installing the unit. Contact your local authorities to determine which codes apply.

2.2.1 Power Requirements

Power	The NP-880S can be powered by DC power only. The specified voltage range is 25 ±5% Volts DC. This insures compatibility with most controller DC systems. The power conditioning circuitry inside the unit is accomplished by a switching power supply. The peak starting current can be as high as 700mA.
Fusing Requirements	If the display does not come on within 2 seconds of power up, remove power. An internal fuse will prevent damage if the polarity of the DC power is incorrect. Check wiring to insure proper connections and try to power up again.
Caution High Voltage	An Internal fuse will prevent damage for over voltage condition however it isn't guaranteed. DC voltage sources should provide proper isolation from main AC power and similar hazards.
Caution Emergency Stop	A Hard-wired EMERGENCY STOP should be fitted in any system using an NP-880S to comply with ICS Safety Recommendations.
Caution Supply Voltage Condition	Do not power the NP-880S and inductive DC loads, or input circuitry to the controller, with the same power supply. Note: The 24 VDC output from some controllers may not have enough current to power the NP-880S.
Caution Wire Routing	Wire lengths should be minimized (Maximum 1600' (500 m) shielded, 1000' (300 m) unshielded). Wires should be run in pairs with a neutral or common paired with a hot or signal line. If wiring is to be exposed to lightning or surges, use appropriate surge suppression devices. Keep AC, high energy, and rapidly switching DC wiring separate from signal wires. Equip ungrounded DC supplies with a resistor and capacitor in parallel to earth ground. This provides a path for static and high frequency dissipation. Typical values to use are 1MOhm and 4700pF.
Connection	To make a connection, strip about 3/8" of insulation off the end of the wire, turn the connector screw counterclockwise until the gap is wide open, insert the wire all the way in, and turn the screw clockwise until it's tight. Connect positive DC line to the '+24V' terminal and the DC ground to the 'GND' terminal.

FUSE Replacement:
BUSSMANN
Fast Acting, Glass Tube
Rating: 250VAC, 1A
Size: 5x20mm

Warning:

1. Make sure the power off before replace the fuse.
2. Do not replace the fuse with a different rating fuse.

2.2.2 Grounding Requirements

Chassis ground must be used. DC ground is not directly coupled to Earth ground internally. It is preferable not to ground DC negative return to chassis ground as poor site earths can introduce noise into a system, but if necessary an earth connection should be made, from the power supply return point to the central star earth point. Ground conductors should be as short and as large in size as possible. The conductors must always be large enough to carry the maximum short circuit current of the path being considered. Ground conductors should be connected to a tree from a central star earth ground point. This ensures that no ground conductor carries current from any other branch.

2.2.3 CE Requirements

To make an NP-880S comply with EMC directives, and to reduce susceptibility to electrical interference, a separate #14 AWG ground wire should be taken to the chassis ground terminal of the power connector. This ground connection should be run directly to the central star earth connection point (as recommended in most Installation Instructions).

2.2.4 Safety Guidelines

This section presents recommended installation practices, and procedures. Since no two applications are identical, these recommendations should be considered as guidelines.

Hardware Considerations WARNING!
The system designer should be aware that devices in Controller systems could fail and thereby create an unsafe condition. Furthermore, electrical interference in an operator interface, such

as an NP-880S, can lead to equipment start-up, which could result in property damage and/or physical injury to the equipment operator.

If you, or your company, use any programmable control systems that require an operator or attendant, you should be aware that this potential safety hazard exists and take appropriate precautions. Although the specific design steps depend on your particular application, the following precautions generally apply to installation of solid-state programmable control devices. In addition, these precautions conform to the guidelines for installation of Controllers as recommended in the NEMA ICS 3-304 Control Standards.

Programming Considerations

To conform with ICS Safety Recommendations, checks should be placed in the controller to ensure that all writable registers that control critical parts of plant or machinery have limit checks built into the program, with an out-of-limit safe shut down procedure to ensure safety of personnel.

ICS 3-304.81 Safety Recommendations:

Consideration should be given to the use of an emergency stop function, which is independent of the programmable controller.

Where the operator is exposed to the machinery, such as in loading or unloading a machine tool, or where the machine cycles automatically, consideration should be given to the use of an electromechanical override or other redundant means, independent of the programmable controller, for starting and interrupting the cycle.

If provision is required for changing programs while the equipment is in operation, consideration should be given to the use of locks or other means of assuring that only authorized personnel can make such changes.

These recommendations are intended as safeguards against the failure of critical components and the effects of such failures or the inadvertent errors that might be introduced if programs are changed while the equipment is in operation. *

- The ICS 3-304.81 Safety Recommendations are reproduced by permission of the National Electrical Manufacturers Association from NEMA ICS 3-304

2.3 Communications Connections

The ports as you look at the back of the case, are the ports for connecting to a PLC or some external device (Controller Connectors).

Cable Requirements

Different cables are required for various devices.

Caution

Restrict cable length to less than 500' (150m) for RS485/422 devices and 50' (15m) for RS232 devices to avoid communications problems.

The COM light on the front of the NP-880S will turn on with each communication.

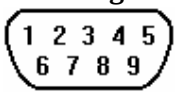
Shielded cable must be used for long lengths or cables run in an electrically noisy environment.

Do not run cables next to AC power lines or near sources of electrical noise.

Be sure that the cable ends have been inserted all of the way into mating connectors and are secure

2.3.1 Connector COM 1 [RS232]

Pin Designations



COM1[RS-232]

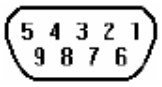
COM2[RS-232]

Pin assignment of the 9 Pin, Male,
SUB-D, COM1 [RS-232] and COM2 [RS-232] Port.

Pin#	Symbol	COM1 [RS232]	COM2 [RS232]
1	Not used		
2	RxD	Received Data	
3	TxD	Transmitted Data	
4	TxD		Transmitted Data
5	GND	Signal Ground	
6	RxD		Received Data
7	RTS	Ready to send output	
8	CTS	Clear to send input	
9	Not used		

2.3.2 Connector COM1 [RS485], COM3 [RS-485] and COM3 [RS-232]

Pin Designations



COM1 [RS-485]
COM3 [RS-485]
COM3 [RS-232]

Pin assignment of the 9 Pin, Male,
SUB-D COM1 [RS-485], COM3 [RS-485] and COM3 [RS-232] Port

Pin#	Symbol	Com1 [RS485]2w	Com1 [RS485]4w	Com3 [RS485]	Com3 [RS232]
1	Rx-	Data-	Rx-		
2	Rx+	Data+	Rx+		
3	Tx-		Tx-		
4	Tx+		Tx+		
5	GND	Signal Ground			
6	Data-			Data-	
7	TxD				Transmit
8	RxD				Receive
9	Data+			Data+	

COM1 [RS-485] connect RS-485 2 wire Device

NP-880S
COM1 [RS-485]
9P D-SUB Female

RS-485 2 wire Device

1	Data-		Data-
2	Data+		Data+
5	GND		

COM1 [RS-485] connect RS-485 4 wire Device

NP-880S
COM3 [RS-485]
9P D-SUB Female

RS-485 4 wire Device

1	Rx-	Tx-	RS485 Transmit
2	Rx+	Tx+	RS485 Transmit
3	Tx-	Rx-	RS485 Receive
4	Tx+	Rx+	RS485 Receive
5	GND		

2.3.3 USB Master ports

The USB Master ports can connect USB mouse and USB keyboard. The USB Master ports support USB 2.0 full-speed host (12Mbps). This ports support USB Mass storage device. But the USB hard disk must use external power.

2.3.4 44Pin IDE Interface

The 44 Pin IDE Interface support D.O.M (Disk On Module) and 2.5” hard disk.(The 2.5” hard disk need a female to female 44Pin cable.)

Please turn off the power, before plug or pull the D.O.M or 2.5” hard disk.

2.3.5 Ethernet port

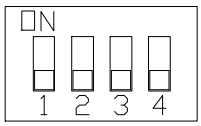
MT608T has open 10/100 Base-T Ethernet port.

There are two LED indicators on the Ethernet port.

Orange LED: LAN Link status.

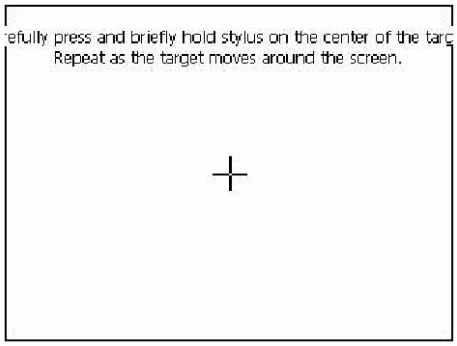
Green LED: Active status.

2.3.6 Dip Switch



SW1	SW2	SW3	SW4	Mode
ON	OFF	OFF	OFF	Touch Screen Calibrate mode
OFF	ON	OFF	OFF	Reserve
OFF	OFF	ON	OFF	Boot Loader mode
OFF	OFF	OFF	ON	Reserve
OFF	OFF	OFF	OFF	Normal

- Touch Screen Calibrate mode: In this mode when you power on the NP-880S, the screen will display a “+” sign at the center of the screen. Use a stylus or finger to push the center of the “+” until it moves. The “+” moves to upper-left, lower-left, lower-right and upper-right corners. When all five “+” are done the “+” will disappear. The Touch Screen parameter will store at Flash Rom.



- Boot Loader mode: Load new Windows CE image file.
  If the NP-880S already load the CE image with boot loader. Set the DIP SW3 ON then power ON into boot loader mode. Refer the load Win CE image document.

2.4 LED Indictors

COM	Communication(Red)	Ethernet communication active
CPU	CPU(Green)	When the unit power on the CPU LED will ON, after CPU boot-up it will turn OFF. Normal is OFF. If the CPU LED still ON that mean CPU boot-up fail. When download CE image, the CPU LED will slowly flash.
PWR	Power(Orange)	System power LED indicator

2.5 CE Requirements

EU directives that apply to the NP-880S Series:

- EMC Directive (89/336/EEC, 92/31/EEC, 93/68/EEC) electromagnetic emissions and immunity
- Machinery Directive (89/392/EEC, 91/368/EEC, 93/44/EEC, 93/ 68/EEC) machine safety
- NP-880S products will be CE-marked to indicate compliance with the EMC Directive.

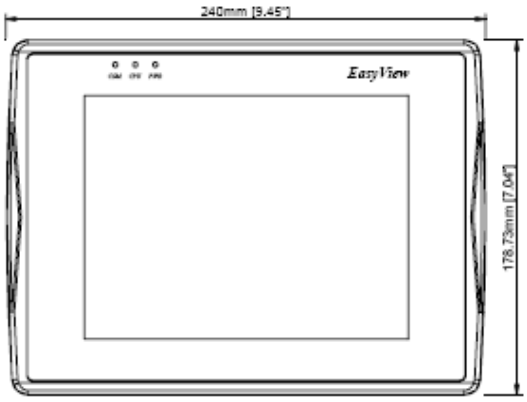
The NP-880S Series has been designed to operate satisfactorily in electromagnetic noise (immunity) and without emitting high levels of electrical noise into the environment (emission). The units are designed to meet European Community standards when installed per the wiring instructions in this manual.

Compatibility Standards	The NP-880S has been designed to meet electromagnetic compatibility for industrial environments. • CISPR (EN 55011) Group 1, Class A Radiated Emissions levels • EN50081-2 Generic emission standard, industrial environment (Also US FCC Class A) • EN50082-2 Generic immunity standard, industrial environment

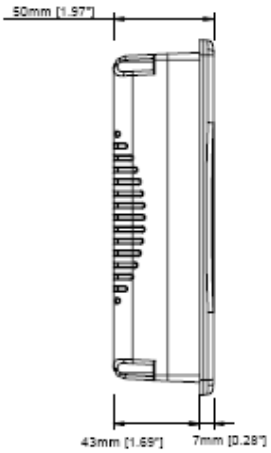
2.6 VESA Standard hole

The NP-880S VESA Standard hole for wall mounting or arm mounting.
The M4 screw length is 10 to 15mm. Don't over 15mm. The CPU board will damage.

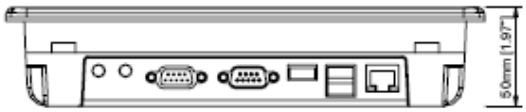
2.7 Dimensions of NP-880S



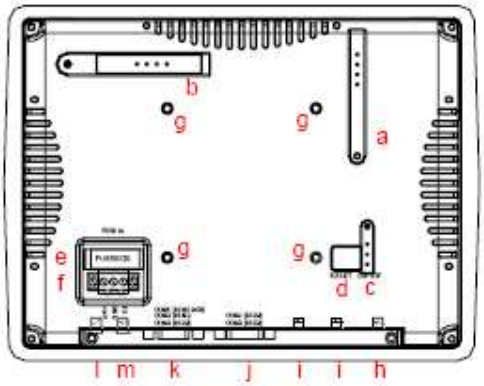
Front View



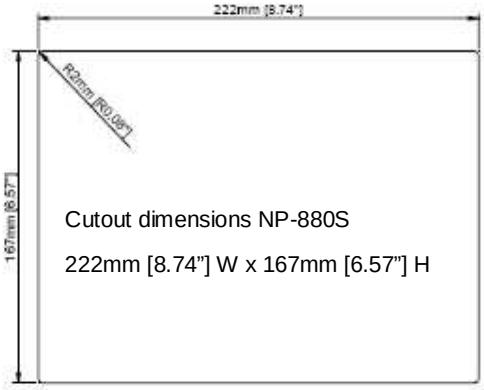
Side View



Bottom View



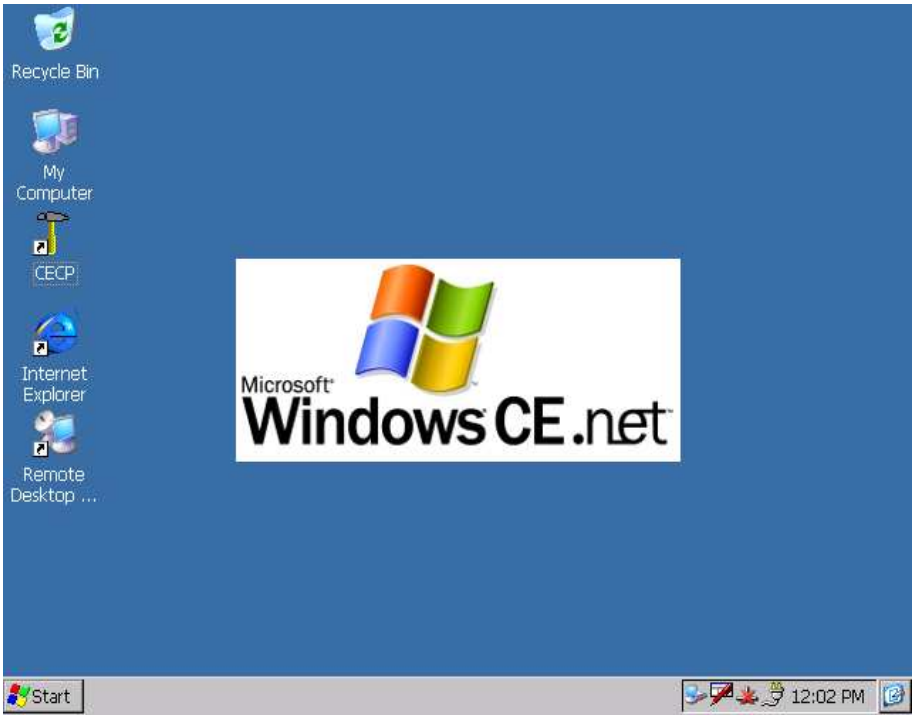
Rear View



Chapter 3 Windows CE.NET

3.1 Introduction

The NP-880S series operator interface terminal is designed to serve on the Windows CE platform. Windows CE .NET is the successor to Windows CE 3.0. Designed from the ground up for the embedded marketplace, Windows CE .NET delivers a robust real-time operating system for rapidly building the next generation of smart mobile and small footprint devices. With a complete operating system feature set and end-to-end development environment, Windows CE .NET contains everything you need to create a custom Windows CE–based device that requires rich networking, hard real-time, and a small footprint, as well as rich multimedia and Web browsing capabilities.



3.2 Utilities

There are several useful utilities built in the standard Windows CE OS of NP-880S:

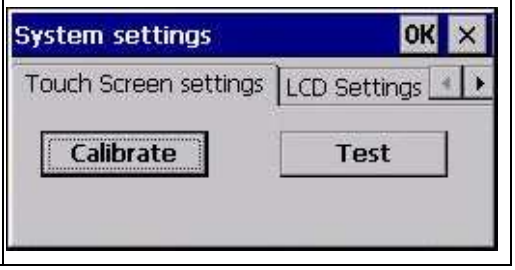
3.2.1 Soft-Keyboard

The NP-880S is dedicated to the small-sized operator interface. It is often inconvenient for users to attach a keyboard to such small machine. Thus, a software keyboard is

embedded in the standard Windows CE OS. Upon boot-up, a small keyboard icon will appear on the status bar. Tap this icon by the stylus to activate/hide this Soft-keyboard.

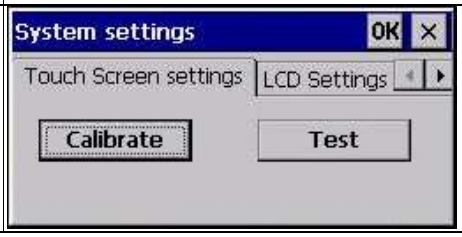
3.2.2 System Settings

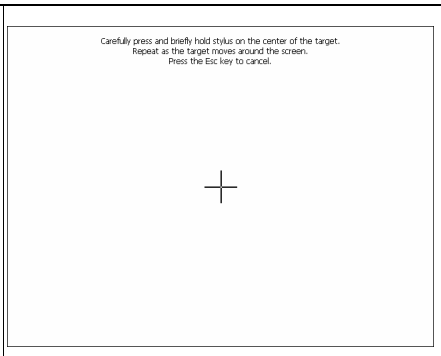
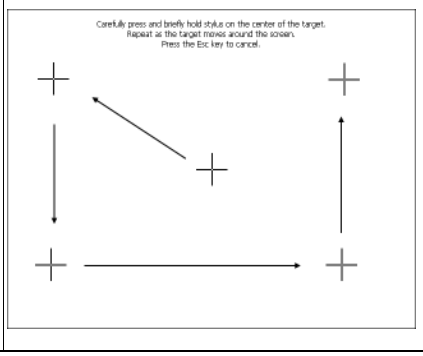
NP-880S provides an integrated utility for users to make basic setting of the machine.

Step		
1.	Tap the “cecp” icon from Desktop.	
2.	Launch the System Settings Control Panel.	

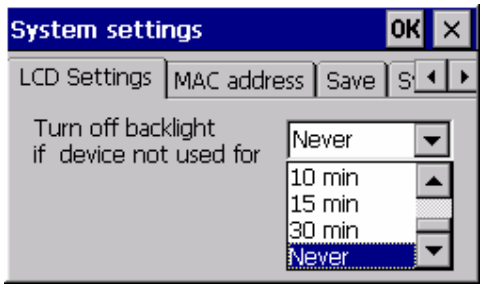
Touch Screen settings

The touch screen calibration can be executed from the Control Panel.

Step		
1.	Launch the System Settings Control Panel.	

	Tapping the “Calibrate” button. The screen will display a “+” sign at the center of the screen.	
	Use a stylus or finger to push the center of the “+” until it moves. The “+” moves to upper-left, lower-left, lower-right and upper-right corners. When all five “+” are done the “+” will disappear. The Touch Screen parameter will store at Flash Rom.	

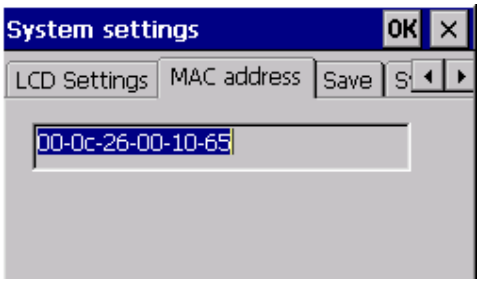
Backlight



“LCD Settings” page of the **cecp** provides the function to turn off the LCD backlight, and thus elongates the period of service. For example, if the user wants the backlight turned off automatically after 10 minutes when the device was no longer used. The user must select “10 minutes” in the put down box and then press “OK” button. Then the screen save function is enabled. Once the backlight was turned off, events or perturbations from the touch screen can turn it on.

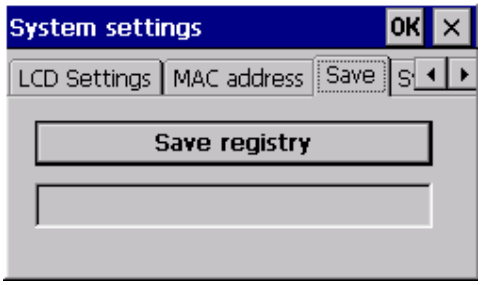
On the other hand, if users want to disable the screen save function, select “Never” and press “OK” button.

MAC address



The MAC address page the block shows the network MAC address.

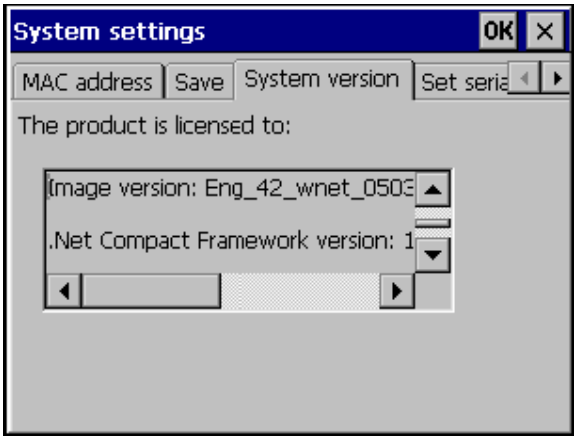
Save



Tap the Save registry button, will save the registry data to the **NORFlash** folder. The next time the NP-880S reboots, the Windows CE system will use the stored registry data.

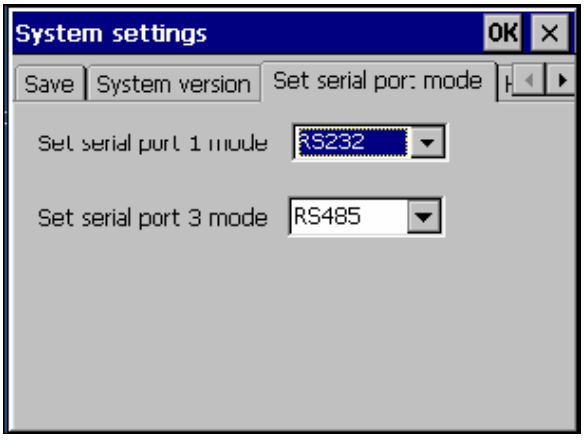
System version

Show current CE image version.



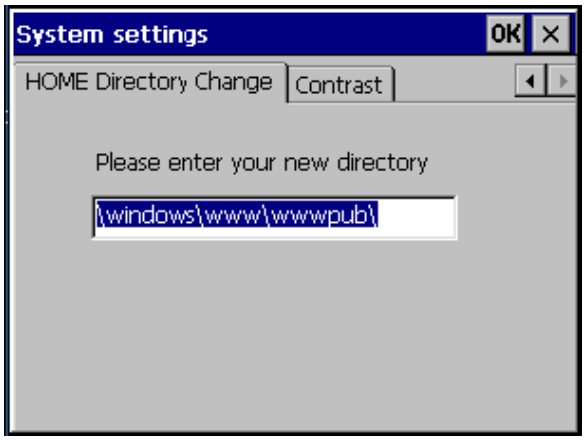
Set serial port mode

Set Com1 mode. Select RS232/RS485 2wire or 4wire mode.
Set Com3 RS232/RS485 mode.
The serial port mode can be saved by “Save registry”.



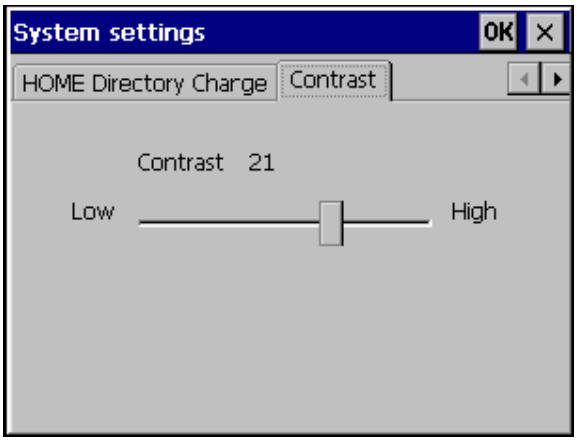
HOME Directory Change

This can set the Web Server directory. (Must reboot HMI)



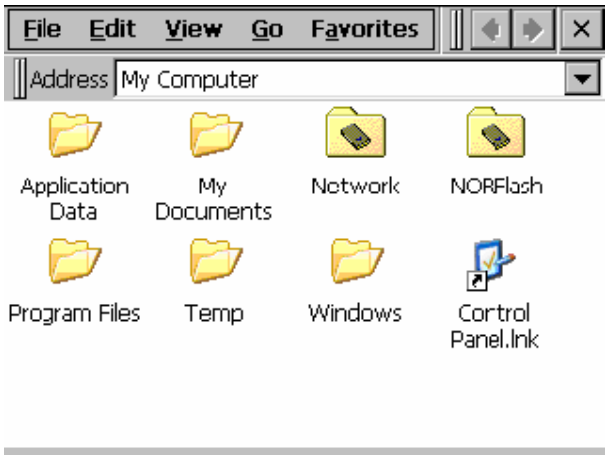
Contrast

Adjust the LCD backlight brightness.



3.2.3 NOR Flash

The NORFlash serves as a small capacity hard disk. You can store your data and application in the Flash ROM via NORFlash function to prevent unexpected loss of data as power failure. When power is shutdown and cold boot, the data in the Flash ROM area would be saved.



3.2.4 Startup

After the system boot up, the startup execution function would automatically perform. This function is useful for control system to do the initialization processes or some other programs.

Step1: Create "startup" directory in the "\NORFlash\" folder.

Step2: Copy executable files or Shortcut to "StartUp" directory which is created in Step 1.

An alternative way to setup startup files is to make a shortcut and copy it to "NORFlash\StartUp". A shortcut can execute a program with Parameters.
Follow the following procedure to create the shortcut (.lnk) file.

A .lnk file is a text file that contains the command line for the linked target, which may be enclosed in double quotation marks, along with the length of that command line. Optionally, you can also pass parameters into the linked target. By default, a .lnk file uses the following format.

[number of ASCII characters after pound sign]#[command line] [optional parameters]

For example, to start MyApp.exe and pass two optional parameters into the application, a sample MyApp.lnk file contains the following.

40#\Windows\MyApp.exe parameter1 parameter2

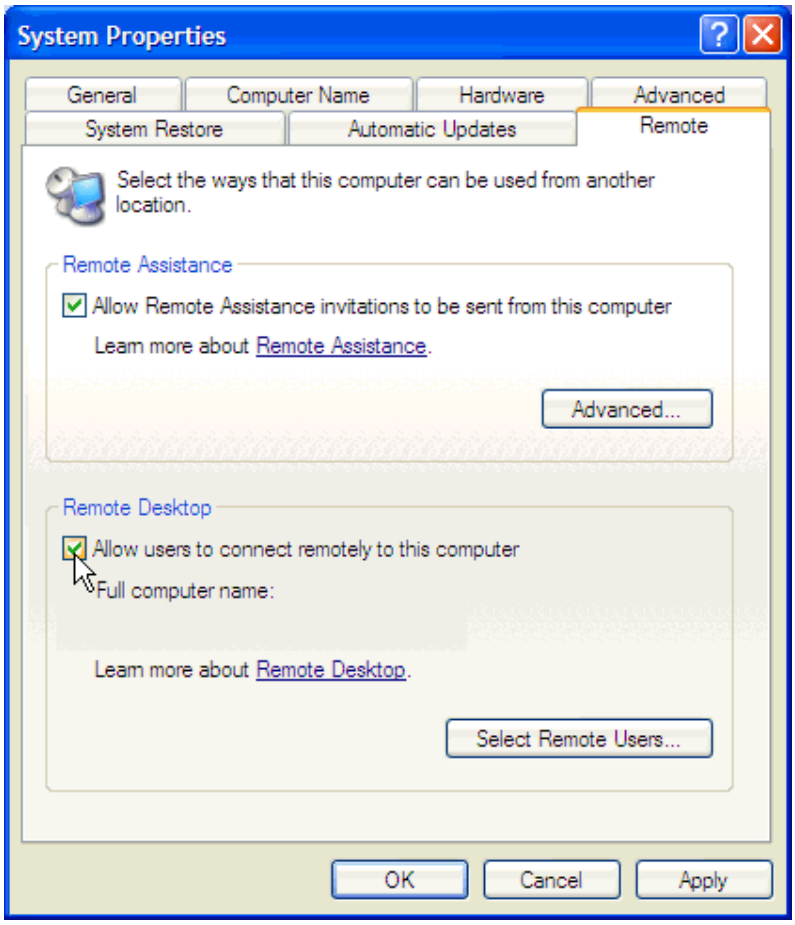
3.2.5 Remote Desktop Connection

Use Remote Desktop Connection you can remotely control your computer.

To use Remote Desktop, you need the following:

Windows XP Professional installed on your office computer, or whichever computer you plan to operate remotely. This computer is known as the host.

You must first enable the Remote Desktop feature on your office computer so that you can control it remotely from another computer. You must be logged on as an administrator or a member of the Administrators group to enable Remote Desktop on your Windows XP Professional-based computer.



To create a new Remote Desktop Connection

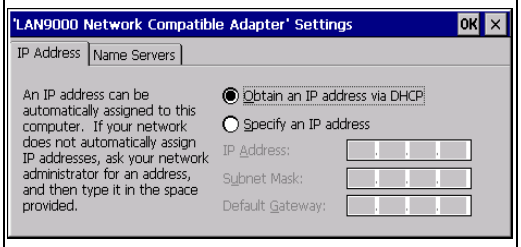
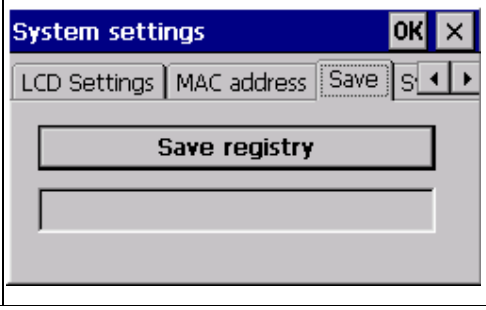
1. Open Remote Desktop Connection.
2. In Computer, type the computer name for your computer running Windows XP Professional that has Remote Desktop enabled and for which you have Remote Desktop permissions.
3. Click **Connect**. The **Log On to Windows** dialog box appears.
4. In the **Log On to Windows** dialog box, type your user name, password, and domain (if required), and then click **OK**. The Remote Desktop window will open and you will see the desktop settings, files, and programs that are on your office computer. Your office computer will remain locked. Nobody will be able to work at your office computer without a password, nor will anyone see the work you are doing on your office computer remotely.

Note: To change your connection settings, (such as screen size, automatic logon information, and performance options), click Options before you connect.

3.3 NP-880S Networking

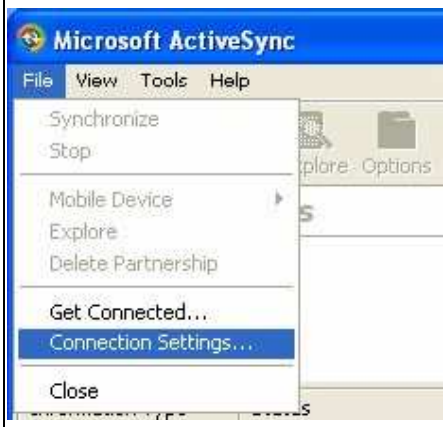
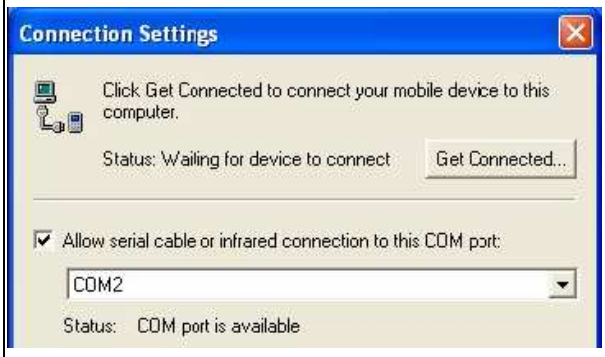
3.3.1 Networking via Ethernet

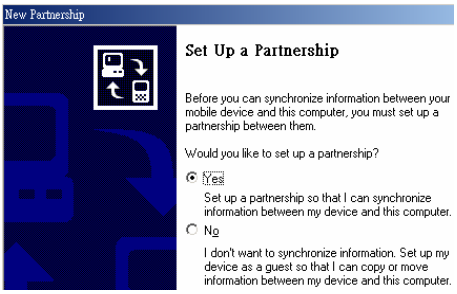
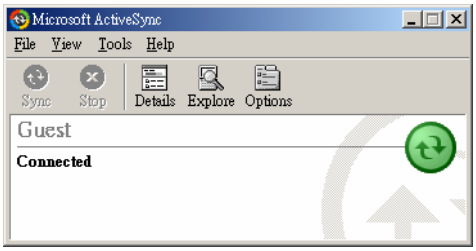
The NP-880S is equipped with a 10/100Base-T Ethernet controller. To utilize it, change the device name when the NP-880S is first turned on.

Step		
1	Click “Start/Settings/Control Panel”	
2	Double click “Network and Dial-up Connections”	
3	Find the default device name. Change it to a unique one depending on the plan of individual LANs.	
4	If the NP-880S is a node of a LAN with DHCP servers, it is now available.	
5	If the NP-880S is a node of a LAN with fixed IP server, please consult with MIS to get specific IP address. Click “Start/Settings/Control Panel”. Double click “Network and Dial-up Connections” and update the IP address.	
6	Use the **cecp** utility “Save registry” to save this changed.	

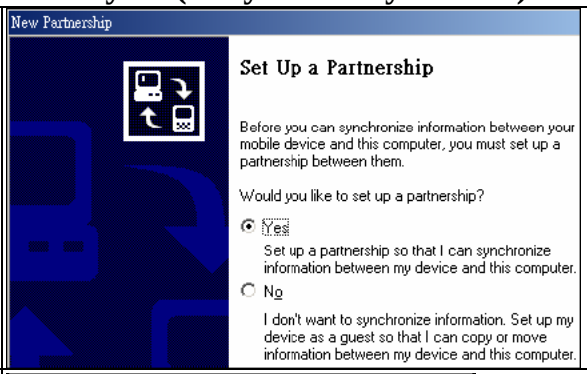
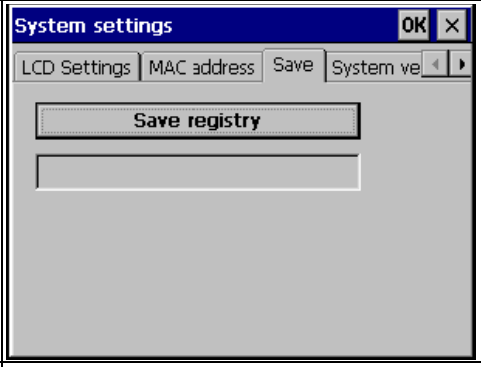
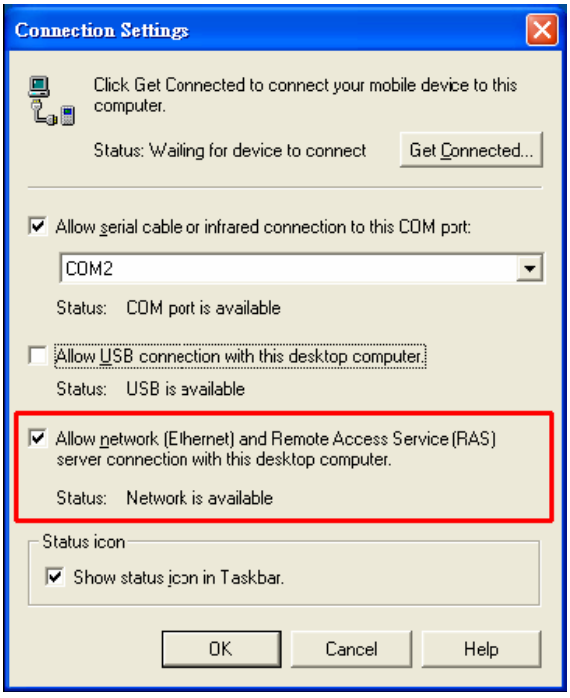
3.3.2 ActivSync

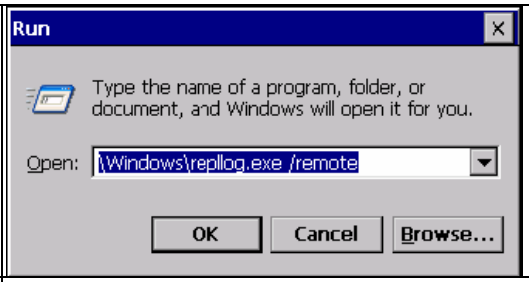
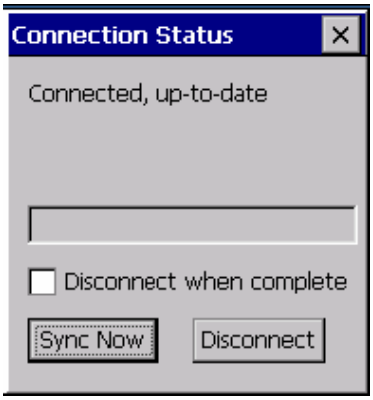
The NP-880S uses the COM1 RS232 connect the PC.
Windows CE .NET 4.2 please use ActiveSync version 3.8.0.
Windows CE .NET 5.0 please use ActiveSync version 4.1.0.

Step		
1	Make sure the Microsoft ActiveSync service is properly installed on the host PC.	 Microsoft ActiveSync
2	Click the “Connection Settings…”	
3	Allow serial cable or infrared connection to this COM port	
4	Connect the NP-880S Com1 RS232 and PC RS232 by the RS232 ActiveSync cable.	

<table>
<tr><td></td><td colspan="2">ActiveSync cable
PC COM1
9P D-SUB Female
CN5 COM1 [RS232]
9P D-SUB Female
<table><tr><td>1,4,6 short</td><td></td></tr><tr><td>2 RD</td><td>3 TD</td></tr><tr><td>3 TD</td><td>2 RD</td></tr><tr><td>5 GND</td><td>5 GND</td></tr><tr><td>7 RTS</td><td>8 CTS</td></tr><tr><td>8 CTS</td><td>7 RTS</td></tr></table></td></tr>
<tr><td>5</td><td>Run NP-880S
\Windows\repllog.exe</td><td>  </td></tr>
<tr><td>6</td><td>Follow the onscreen instructions to establish a partnership and synchronize your NP-880S with your desktop computer.</td><td>  </td></tr>
<tr><td>7</td><td>Now you can synchronize the information between the NP-880S and host computer with ActiveSync.</td><td>  </td></tr>
</table>

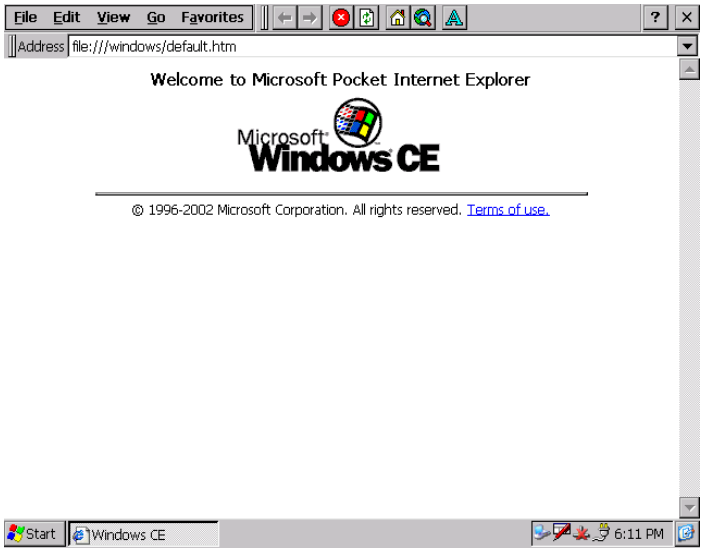
Use Ethernet connect to PC ActiveSync. (Only ActiveSync 3.8.1)

1	Before you begin Set up a partnership, between your device and desktop computer using RS232 connection.	
2	Follow the onscreen instructions to establish a partnership and synchronize your NP-880S with your desktop computer.	
	Enable a network (Ethernet) connection in ActiveSync. 1 On the File menu, click Connection Settings. 2 Select Allow network (Ethernet) and Remote Access Service (RAS) server connection with this desktop computer.	

	NP-880S Run \Windows\repllog.exe /remote	
	Choose “Network Connection” And choose PC’s name. Click “Connect…” button	
	The NP-880S connect to PC via Ethernet.	

3.3.3 Web browser

The NP-880S built-in Windows CE OS includes Microsoft Pocket Internet Explorer. It can be used to browse web pages on World Wide Web via LAN or dial-up connection.



3.4 Application program development

The NP-880S is bundled with built-in Windows CE operating system. In real applications users need to execute various applications programs on it. However, unlike its other family the Windows CE is a hardware-dependent operating system. That is to say, Windows CE application programs are only portable in the source code level. Users must rebuild the runtime file for a different Windows CE platform even though the source code may not be changed at all.

The following development tools must be installed on the PC:

- Microsoft eMbedded Visual C++ 4.0
- Microsoft eMbedded Visual C++ 4.0 Service Pack 1
- EP931X SDK

3.4.1 Microsoft eMbedded Visual C++ 4.0

System Requirements

To use Microsoft eMbedded Visual C++ 4.0 you need the following:

A desktop computer with a Pentium-II class processor, 450 MHz or faster

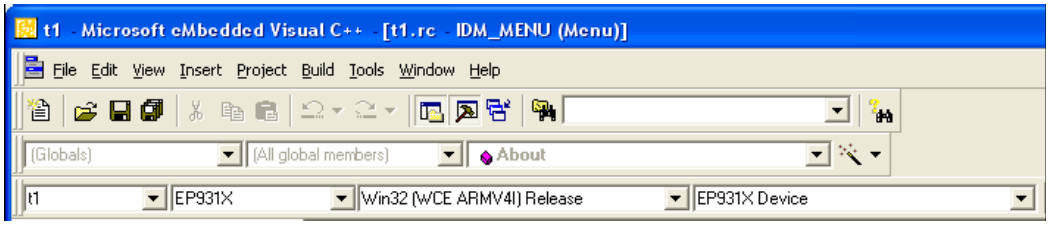
- Microsoft Windows® 2000 Professional SP2, Microsoft Window 2000 Server SP2, or Microsoft Windows XP Professional.
- 96 MB (128 MB recommended) memory for Windows 2000 Professional or Windows XP Professional. 192 MB (256 MB recommended) memory for Windows 2000 Server.
- CD-ROM drive required
- VGA or higher-resolution monitor. A Super VGA (800 x 600 or larger) monitor is recommended.
- Mouse or compatible pointing device.
- 200 MB hard disk space.

3.4.2 EP3915 SDK

The EP3915 SDK provides developers with access to an extensive set of functions that are specific to the NP-880S hardware.

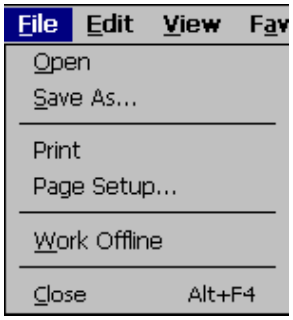
Step	Installing the **EP391X_SDK**	
1.	Download the **EP391X_SDK.msi** file. Double click the file's name to start the Setup Wizard.	
2.	The installer will be prompted for acceptance of a license agreement. Following that, the SDK should install itself automatically on the host machine without further operator intervention.	
3.	When installation is complete the following message should appear: "**Completing the EP931X Setup Wizard**". The installer must press the "**Finish**" button in the install window to exit.	

Open the eVC++, in WCE Configuration toolbars select EP931X.



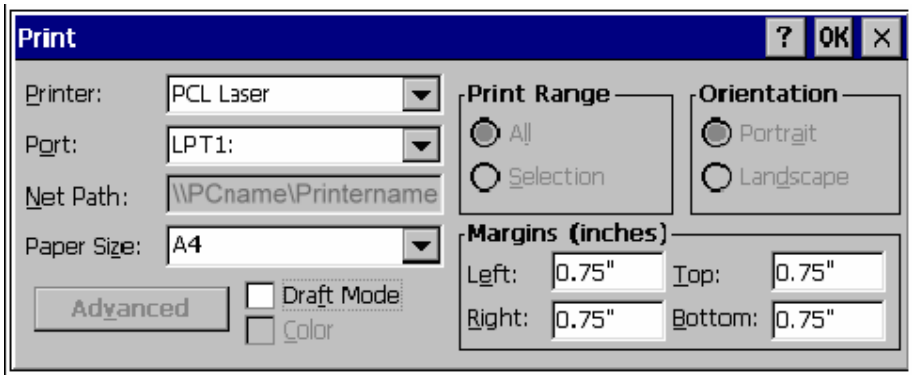
3.5 Print

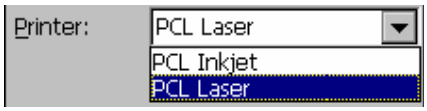
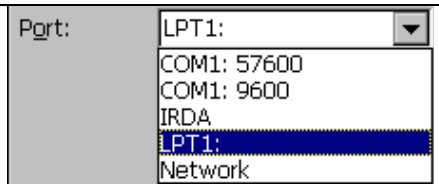
NP-880S support PCL language printer. You can connect a PCL printer at USB Host port or via Network connect to a shared printer.

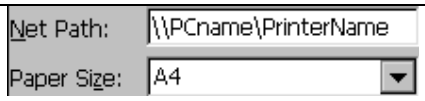


From Internet Explorer or user's application menu click "**File**" / "**Page Setup…**" will appear print setup dialog.

After the "**Page Setup…**", click "**File**" / "**Print**", printer will print out the data.



Printer: **PCL Inkjet**: HP DeskJet series inkjet printer. Support color printer. **PCL Laser**: HP LaserJet printer.	
Port: **COM1: 57600 / COM1: 9600**: via COM1 RS232 connect to printer **IRDA**: NP-880S doesn't support IRDA connect. **LPT1**: When connect a USB printer to NP-880S's USB Host port will appear this item. **Network**: via network connect to a shared printer.	

Net Path: When select **"Network"** will enable the Net Path field. Key-in the computer name and shared printer name.	
Paper Size:	
Draft Mode:	

Desktop PC shares the printer.