DA-710 Series WinXP Embedded User's Manual

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DA-710 Series WinXP Embedded User's Manual

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1 Introduction

Thank you for purchasing the Moxa's DA-710 series of x86 ready-to-run embedded computers. This manual introduces the software configuration and management of DA-710 computers running the Windows Embedded Standard 2009 operating system. For hardware installation, connector interfaces, setup procedures, and upgrading the BIOS, please refer to the DA-710 Series Hardware User's Manual.

Microsoft Windows Embedded Standard 2009 is a specialized operating system consisting of componentized Windows XP Professional features that allows you to build a wide range of innovative, small footprint devices. Windows developers will find Moxa's DA-710 computer plus Windows Embedded Standard 2009 operating system to be the right solution for a wide range of applications.

In this chapter, we cover the following topics:

- □ Overview
- □ Software Specifications
 - Application Development Environment
 - Networking and Communication Capabilities
 - Supporting Services and Daemons
- □ How to Determine Firmware Build Versions
- □ Inserting a USB Mass Storage Device into the Computer
- □ Insert a Compact Flash Card Storage into a DA-710 Computer
- □ Inserting a SATA Hard Disk into a DA-710 Computer

Overview

Moxa's DA-710 x86-based rackmount embedded computers are designed for industrial data acquisition applications. The state-of-the-art four expansion module design gives users a versatile combination of up to 32 RS-232/422/485 serial ports, or up to an additional 16 Ethernet ports. This friendly design gives users the advantage of being able to swap out modules quickly and easily.

The DA-710 main system is based on the Intel Celeron M processor and GLE960 chipset, which supports standard X86 VGA, USB, PS/2 keyboard/mouse, 4 Gigabit LAN ports, and IDE/SATA disk interface. In addition, the DA-710 supports a CompactFlash socket and pre-installed embedded ready-to-run operating system. Programmers will find the full-function development kit a great benefit for developing software and building reliable communication applications. The housing is a standard 4U, 19-inch wide rack-mounted rugged enclosure. This robust, rack-mountable design provides the hardened protection needed for industrial environment applications.

Pre-installed with Linux, Windows Embedded Standard 2009 the DA-710 Series provides programmers with a friendly environment for developing sophisticated, bug-free application software at a lower cost.

Software Specifications

The software features of the DA-710-XPE embedded computers are listed below:

Application Development Environment

The DA-710-XPE is fully compatible with the XP Professional Development Environment.

The DA-710-XPE's use of Windows Embedded Standard 2009 with SP3 provides the following common, popular application development features that make programming convenient and easy.

Every application that runs in Windows XP can be executed in the DA-710-XPE, so there is no migration cost.

Windows Embedded Standard 2009 is based on the same binary files as Windows XP Professional; Windows Embedded Standard 2009 enables you to rapidly develop reliable and full-featured connected devices.

- **Microsoft .Net Framework 3.5**—This component includes the common language runtime (CLR) and the .NET Framework class library.
- Active Directory Service Interface (ADSI) Core—Provides the basic functionality for ADSI. This component routes any requests to the corresponding provider according to the path it is provided.
- Active Template Library (ATL) Supports ATL applications.
- Certificate Request Client & Certificate Auto enrollment—This component includes the common language runtime (CLR) and the .NET Framework class library.
- **COM Base**—Component Object Model (COM) includes a programming model and a set of application programming interfaces (APIs), and does not include a dedicated user interface.
- Common Control Libraries—(Side by Side) the component provides common user interface (UI) controls.
- Common File Dialogs—Support for common dialog boxes.
- Direct3D—The infrastructure for two-dimensional and three-dimensional graphics.
- **DirectPlay**—Provides a networking API that can enable any application to operate over both a peer-to-peer and client/server topology.

- **DirectShow**—Base filter graph and device enumeration support for all DirectShow applications. This component also provides most DirectShow filters.
- **Distributed Transaction Coordinator (MSDTC)** —A distributed transaction facility for Microsoft Windows systems, which uses transaction-processing technology. MSDTC exploits loosely coupled systems to provide scalable performance.
- Enhanced Write Filter—An upper filter in the storage device driver stack that redirects disk write operations to volatile (RAM) or non-volatile (disk) storage.
- **Event Log**—A dynamic-link library (DLL) that runs as part of Services.exe. This component stores and retrieves events that can be viewed in the event viewer.
- Internet Explorer 7—The Internet Explorer Web browser that allows customers to connect to the Internet or to an intranet (see properties via inetcpl.cpl).
- Mapi32 Libraries—The infrastructure for e-mail support.
- Message Queuing (MSMQ) Core—Message Queuing is a messaging infrastructure and a development tool for creating distributed messaging applications for Microsoft Windows operating systems; it provides guaranteed message delivery, efficient routing, increased security, support for sending messages within transactions, and priority-based messaging.
- Microsoft Visual C++ Run Time Libraries—The Microsoft C++ Runtime Library.
- NTFS—The NTFS File System driver (NT File System). Use NTFS instead of FAT for optimum file system security.
- **Power Management**—This component includes a dynamic-link library for power management features in the xpepm.dll file, and a command-line tool for using power management on a run-time image in the xpepm.exe file. **Note:** Instead of using this component, Shutdown.exe is the preferred method to shut down the system.
- **Registry Editor**—The Registry Editor (regedit.exe, regedt32.exe).
- RPC—Facilitates local remote procedure calls (RPCs) using the ncalrpc and ncacn_np
 protocol sequences, and provides support for dynamic endpoint resolution. The RPC name
 service provides remote procedure call (RPC) named services functionality, such as the RPC
 Locator. The RPC Named Service component exposes all RpcNs* RPC functions. The RPC
 server provides a variety of RPC and Component Object Model (COM) services, including
 RPC Endpoint Mapper, COM Service Control Manager (SCM) and COM Object Resolver.
- Smart Card Cryptographic Service Providers—Supports features such as smart card logon and improved e-mail security. Smart cards must be capable of certain RSA public key cryptographic operations. These functions are exposed by using CryptoAPI and, specifically, through a CSP. Typically, each type of smart card requires a CSP, which is provided by the card vendor.
- USB 2.0—The core drivers needed to communicate with an Enhanced Host Controller Interface (EHCI) that is compliant with USB .95 or 1.0.
- Windows API—User—Provides the user-mode component of the Windows operating system API.
- Windows Media Player 11—Playback functionality for digital media that includes videos, CDs, and DVDs for end users and developers.
- Windows Script Engines—A complete scripting environment for Windows, including command-line scripting, script languages, and the ability to host script engines within your applications.
- WMI—Bundles the features that combine to create the Windows Management Instrumentation (WMI) technologies.

Networking and Communication Capabilities

The DA-710-XPE embedded computers provide powerful hardware communication interfaces for network-centric embedded applications, including Ethernet and serial ports, and also support the networking and communications capabilities that are built into Windows Embedded Standard 2009 with SP3 OS. The following features are supported:

- **DHCP Client Service**—Registers and updates Internet Protocol (IP) addresses and Domain Name System (DNS) records for your target system.
- IP Security Services—This component provides IP Security (IPsec) services for all IP traffic.
- **Dial-Up Networking**—Provides the infrastructure necessary to implement a Remote Access Service (RAS) client.
- **Microsoft-Windows-HTTP**—Services that implement the functionality of the HTTP protocol on a server.
- **TCP/IP Networking**—Implements the core TCP/IP protocol stack, which includes the IPv4 version for the following protocols: Transmission Control Protocol (TCP), User Datagram Protocol (UDP), raw, Internet Control Message Protocol (ICMP), Internet Group Membership Protocol (IGMP), and Address Resolution Protocol (ARP). The component also includes Wshtcpip.dll, which is the Winsock provider for TCP/IP to enable socket-level communication over TCP/IP.
- TAPI—A Telephony API (TAPI) Telephony Service Provider (TSP).
- Simple Network Management Protocol (SNMP)—SNMP is an agent service that provides management systems with information about activities that occur at the Internet Protocol (IP) network layer. The SNMP agent monitors network traffic, and retrieves and updates local management information based on the requests from the SNMP manager. The agent also notifies registered managers with traps when significant events occur.
- **Time Service Core**—Synchronizes a workstation's clock with other computers using the Network Time Protocol (NTP) version 3. For increased accuracy, this component also incorporates algorithmic enhancements from NTP 4.
- Windows Firewall/Internet Connection Sharing (ICS)—Windows Firewall provides a barrier between your device and network connections to help reduce attacks by hackers, viruses, and worms across networks. Strongly recommended..
- Wireless Zero Configuration—Support for the Windows implementation of the IEEE 802.11 standard. This component performs automatic configuration and authentication for IEEE 802.11 wireless network adaptors.
- Unimodem—Provides the infrastructure necessary for applications to communicate with a modem.

Supporting Services and Daemons

In addition to development and communication capability, the DA-710-XPE embeds the services and daemons shown below. These common and easy-to-use application servers help users migrate industrial communication applications to the DA-710-XPE embedded computer very easily and conveniently.

- **COM+ Services**—The next evolution of Microsoft Component Object Model (COM) and Microsoft Transaction Server (MTS).
- **Computer Browser Service**—Computer browsing functionality exposed by Windows through Microsoft Networking. It allows a client machine to browse its network neighborhood for available computers, exposing file and print sharing services.
- Disk Management Services—Support for disk and volume management operations. The component implements a Component Object Model (COM) interface that can be used to query and configure disks and volumes (both basic and dynamic). The component also monitors disk arrivals and removals and other changes in the storage subsystem.
- IIS Web Server—Allows you to create and manage Web sites.
- Terminal Server—Microsoft Terminal Server client application (mstsc.exe).
- Remote Registry Service—Enables remote users to modify registry settings on this computer.
- Telnet Server—Allows users to connect to Telnet servers from remote computers.

How to Determine Firmware Build Versions

Use the **mxver** command to obtain the firmware version of the DA-710-XPE embedded computer. This information is particularly important for identifying which features your embedded computer supports.

• Execute the **mxver.exe** command line utility.

C:\> mxver Model Name: DA-710-XPE Build Date: 09120909 Version: V1.0

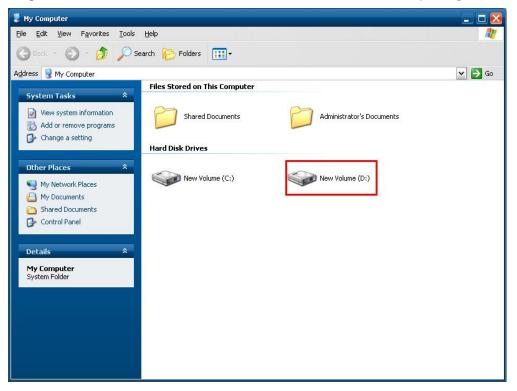
Inserting a USB Mass Storage Device into the Computer

Inserting a USB mass storage device will generate a new drive on the DA-710-XPE. The new drive should be visible in the File Explorer.

💈 My Computer			- 🗆 🔀
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools	Help		1
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Address 🚽 My Computer			🗙 芝 Co
System Tasks *	Files Stored on This Computer		
View system information Add or remove programs Change a setting	Shared Documents	Administrator's Documents	
	Hard Disk Drives		
Other Places *	New Volume (C:)		
🛅 Shared Documents	Devices with Removable Storage		
Shared Documents Control Panel Details	New Volume (D:)		
My Computer System Folder			
System Cost			

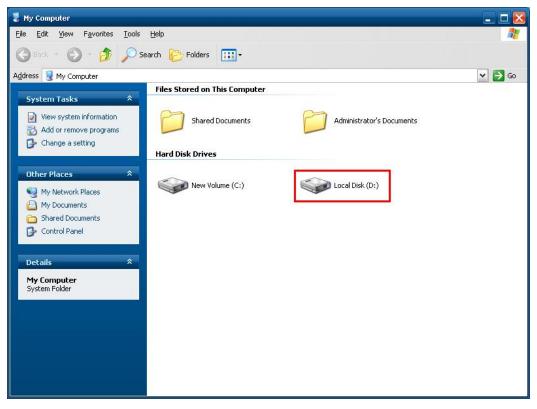
Insert a Compact Flash Card Storage into a DA-710 Computer

There is a Compact Flash slot in the side of DA-710 computer. The Compact Flash slot is designed for storage expansion. Please note that it does not support "Plug and Play" and "Hot swap". If you plug a CF card into the slot when entering the operating system, it may cause system damage. Make sure to turn off power before inserting the CompactFlash card. After CF card is inserted, you can power on the DA-710-XPE. A new drive icon will can be found in the **My Computer** screen.



Inserting a SATA Hard Disk into a DA-710 Computer

Inserting a SATA hard disk device will generate a new disk that should appear in the File Explorer.



NOTE: The DA-710 computer supports only 5 VDC power for a 2.5-inch SATA hard disk. If you would like to use a 3.5-inch hard disk, you will need to use external power supply for your SATA hard disk. Otherwise, it may not be detected by the DA-710 computer.

Software Configuration

In this chapter, we explain how to operate a DA-710-XPE computer directly or from a PC. Instructions are given on how to adjust the system time, troubleshoot network connectivity, and manage other functions. Some of these operations can be done with system commands after gaining access to the computer, and others can be done from the "Control Panel," which is described in a later chapter.

In this chapter, we cover the following topics:

- □ Starting Your DA-710-XPE Computer
- □ Resetting Your DA-710-XPE Computer
- **Changing the Network Settings**
- **Operating Your DA-710-XPE Computer with a Telnet Client**
- **Adjusting the System Time**
- □ Starting and Stopping Services
- □ Simple Network Management Protocol (SNMP)
- **Remote Desktop (RDP)**
- **Configuring Serial Ports**
- **Enhanced Write Filter**
- □ File Based Write Filter

Starting Your DA-710-XPE Computer

Connect the CRT monitor or LCD monitor to the target computer, and then power it up by connecting it to the power adaptor. It takes about 30 to 40 seconds for the system to boot up. Once the system is ready, the Desktop will appear on your monitor.



Resetting Your DA-710-XPE Computer

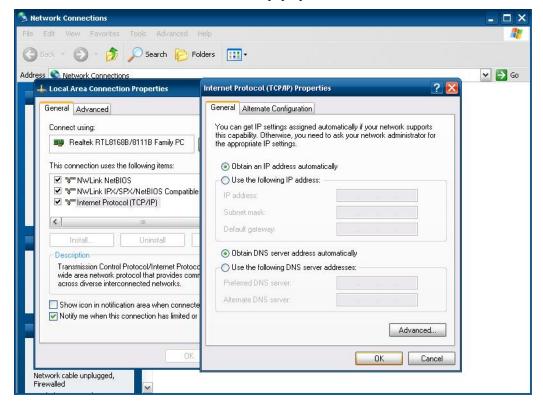
• Reset Button

A **Reset** button is located on the rear panel of DA-710-XPE. Press the reset button to shut down your computer, just as you would do with a standard PC.

• Software Shutdown / Reboot Click Start → Turn Off Computer to turn off or restart the DA-710-XPE computer.

Changing the Network Settings

The DA-710-XPE computer comes with four network interfaces. All of the default IP addresses are DHCP. Choose **Start** \rightarrow **Network Connections**, and then right-click the network interface icon, select **Properties**, and then click **Internet Protocol (TCP/IP)** and select **Properties** to enter the network settings page. Select the connection and choose **Properties** on the pop-up menu by right-clicking. You can specify the IP address manually or by DHCP. In addition, you can disable or enable either one or all connections with the pop-up menu.



Operating Your DA-710-XPE Computer with a Telnet Client

Use a crossover Ethernet cable to connect your development workstation directly to the target computer, or use a straight-through Ethernet cable to connect the computer to a LAN hub or switch. Next, use a telnet client on your development workstation to connect to the Telnet console utility of the target computer. After a connection has been established, type the login name and password as requested to log on to the computer.

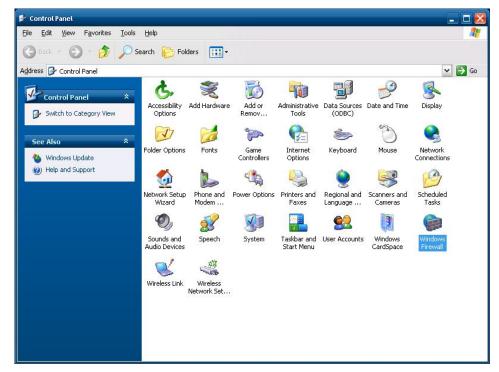
After logging in through the Telnet client, a list of commands will be available for operating the computer. Use *HELP* to display all of the commands, or type *HELP* [command name] to display extended help for the selected command. Some of these commands, such as *DATE* and *TIME*, are very useful for managing the computer's system time. Other commands, such as *DIR* and *MKDIR*, are good utilities for file management. For example, to inspect the file structure of the root directory, type *DIR*.

NOTE: The default user id is "administrator" and the default password is not set; you need to create a new password for this account to use this telnet client.

NOTE: There is a connection limitation on using Telnet clients. You are only allowed to create connections with two Telnet clients at the same time.

NOTE: Before using Telnet, do the following steps to verify that TCP Port 23 is open:

1. Click on Start → Control Panel. Double-click on Windows Firewall.



2. Click the **Exceptions** tab.



3. Click Add Port.

eneral	Exceptions	Advanced		
progran to work	ns and service	es selected below. A ght increase your se	etwork connections, e adding exceptions allo curity risk.	
Name		552.9		ĺ.
	e and Printer essage Queui etwork Diagno NRP emote Assista emote Deskto PnP Framewo	ng Istic nce P		
Add	P <u>r</u> ogram	Add Port	<u>E</u> dit	Delete
	98 (T	ion when Windows allowing exception:	Firewall blocks a prog	gram

4. Enter the name, for example, **TCP**, and Port number **23**. Click **OK** to continue.

Add a Port	
	to open a port through Windows Firewall. To find the port ol, consult the documentation for the program or service you
<u>N</u> ame:	Telnet
Port number:	23
What are the risks	of opening a port?
Change scope	OK Cancel

5. When finished, check if **TCP** is in the **Programs and Services** list.

Wind	ows Firewa	11			
General	Exceptions	Advanced			
progran to work	ns and service	locking incoming netw s selected below. Add ht increase your secur as:	ing exceptions		ms
Name					
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V tity V tity V tity U UF	od32	k			
Add	P <u>r</u> ogram	Add Port	<u>E</u> dit	<u>D</u> elete	
🗹 Disp	olay a <u>n</u> otificat	on when Windows Fire	ewall blocks a	program	
What a	re the risks of	allowing exceptions?			
				OK Can	cel

6. Now you can run Telnet to connect to the DA-710-XPE.



Favorites My Documents Start Menu C:\Documents and Settings\Administrator>cd \ C:\>dir /b Documents and Settings	Telnet 192.168.27.20	- 🗆 🗙
<pre>*=</pre>	· · · · · · · · · · · · · · · · · · ·	_
C:\Documents and Settings\Administrator>dir/b Desktop Favorites My Documents Start Menu C:\Documents and Settings\Administrator>cd \ C:\\dir /b Documents and Settings Inetpub mxver.exe NTDETECT.COM ntldr Program Files WERUNTIME.INI WINDOWS		
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	NTDETECT.COM ntldr Program Files WERUNTIME.INI WINDOWS	

Adjusting the System Time

- Setting the System Time Manually: Use the date/time command line utility to query the current system date/time or set a new system date/time.
- **Date/Time Control panel:** Go to the **Control Panel** and double click the **Date and Time** icon.

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• SNTP: In the Date and Time Properties window, you can see the NTP server setting.

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Starting and Stopping Services

Select Start \rightarrow Control Panel \rightarrow Administrative Tools and double click Services. Select and right-click on the service name, and then choose to stop or start.

Nervices						- 🔀
File Action View Help ← → 📧 🗊 🖗 😫 😫	▶ ■ ■►					
Services (Local)	ces (Local)					
Application	Layer Gateway Service	Name 🕖		Description	Status	1
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Description: Provides sup plug-ins for I	port for 3rd party protocol internet Connection Sharing dows Firewall	Applic Applic ASP.I Back(ClipBi COM- COM- COM- COM- COM- COM- COM- COM-	Rop Lever G Start Stop Pause Resume Restart All Tasks Refresh	 Provides s pvides s pvides s ps idle n pports C pports S nages t intains a pvides k pvides la 	Started Started Started	
			Properties Help	nages n ordinate	120111222	~
Extended >	<pre>{ Standard /</pre>				1	

Simple Network Management Protocol (SNMP)

To check SNMP agent capabilities on a target DA-710-XPE (e.g., suppose the network IP is 192.168.3.127) computer, log on to the workstation computer on which the SNMP manager resides and then type:

\> snmpwalk -v 2c -c public 192.168.3.127 system

You will see a series of messages from the SNMP agent on the DA-710-XPE computer that allow you to monitor and manage the computer.

Remote Desktop (RDP)

You can connect to the target V2100-XPE computer remotely by using **Remote Desktop**. Right-click **My Computer** on your desktop, and select **Properties**. Click the **Remote** tab for further configuration.

Remote
ed from another
from this computer
Ad <u>v</u> anced
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ne user account must
ote Desktop

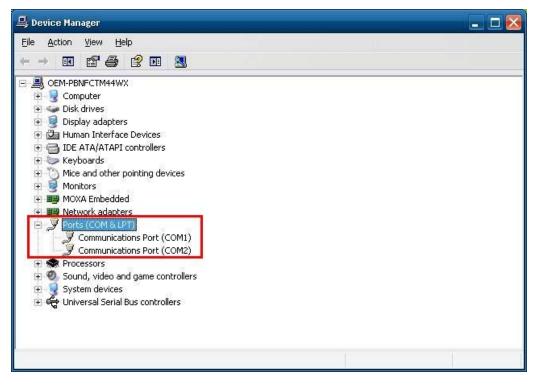
Make sure that the **Allow users to connect remotely to this computer** checkbox is selected. Next, click **Select Remote Users**, and add the users allowed to connect to your desktop. When finished, click **OK**.

Remote Desktop Users	? 🔀
The users listed below can connect to this computer, and any m the Administrators group can connect even if they are not listed.	
Administrator already has access. Add To create new user accounts or add users to other groups, go to Panel and open <u>User Accounts</u> .	o Control
	Cancel

Configuring Serial Ports

The DA-710-XPE has 2 RS-232 serial ports with DB9 connectors. The ports are located on the rear panel of the computer.

To configure the 2 RS-232 serial ports, first right-click the **My Computer** icon on the desktop and then select **Properties**. From the **System Properties** screen, select the **Hardware** tab, and then select **Device Manager**. Next, select **Ports (COM & LPT)** to see Communication Ports COM1 and COM2.



Right-click the COM port you wish to configure, and then select Properties.

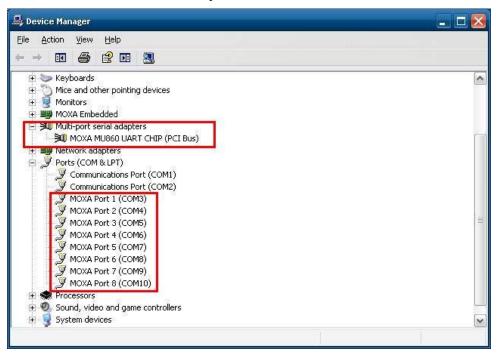
mmunic	ations Port (C	COM1) Pr	operties		?
General	Port Settings	Driver	Details	Resources	
		<u>B</u> its pe	er second:	115200	
			<u>D</u> ata bits:	8	~
			<u>P</u> arity:	None	~
			<u>S</u> top bits:	1	~
		<u>F</u> lo	w control:	None	~
			Ad	vanced <u>R</u> est	tore Defaults
				ОК	Cancel

You can configure the parameters of these serial ports. Note that they support the bit rates up to **115,200** bps. Click **OK** to finish.

The DA-710-XPE also has 4 expansion slots that can be used with Moxa's DA Series Expansion Modules, such as a serial port module, LAN module, switch module, or a PCI development kit.

If you have inserted a serial port module, such as the DA-SP08-DB, DA-SP08-I-DB, DA-SP08-I-TB, or DA-SP38-I-TB, you may use the following steps to configure these serial ports.

From the **Device Manager** you can view the new item **MOXA MU860 UART CHIP (PCI Bus)** under **Multi-port serial adapters**. Eight new COM ports will appear under the **Ports (COM & LPT)** section, which means that an 8-port serial module has been inserted.



Right-click the **MOXA MU860 UART CHIP (PCI Bus)** and select **Properties** to re-assign the port number for each COM port.

🗒 Device Manager	- D 🗵
<u> Eile Action View H</u> elp	
 OEM-AHO29CJN8FD Computer Disk drives Display adapters Muman Interface Devices IDE ATA/ATAPI controllers Keyboards Mice and other pointing devices Monitors MOXA Embedded Moxt Ambedded Multi-port serial adapters Network adap Ports (COM & Update Driver Network adap Ormunic Communic Scan for hardware changes MOXA Por Properties MOXA Port 3 (COM19) MOXA Port 5 (COM21) MOXA Port 5 (COM21) MOXA Port 6 (COM22) MOXA Port 7 (COM23) MOXA Port 8 (COM24) System devices System devices Vertices 	

Click the **Port Configuration** tab and select the COM port you would like to configure, and then click **Port Setting**.

MOXA M	10860 UAI	rt Chip (PC	I Bus) Propert	ies 🛛 ? 🔀
General	Ports Confi	iguration Drive	r Details Resou	irces
Port	COM No.	Rx FIFO Leve	I Tx FIFO Level	
1	COM 1	High	High	
2 3 4 5 6 7 8	COM 2 COM 3 COM 4 COM 5 COM 6 COM 7 COM 8	High High High High High High	High High High High High High High	Help
				Port Info Port Setting

Uncheck **Auto Enumerating COM Number** if you would like to select the COM number yourself.

Port Number	COM3 (current)	▼
🔽 Auto	Enumerating <u>C</u> OM N	umbe
<u>R</u> x FIFO Level	High	•
🔽 Set th	ne change to <u>a</u> ll ports	
<u>T</u> x FIFO Level	High	-
l ∑ et th	e change to all ports	

From the **Port Number** drop-down list, select the port number for a specific COM port. Click **OK** to finish.

Port Number	COM3 (current)	-
–	t COM3 (current) COM4 (current) COM5 (current)	
<u>R</u> x FIFO Level ▼ Set	COM6 (current) COM7 (current) COM8 (current) COM9 (current) COM9 (current)	
[x FIFO Level	COM11 COM12	~
▼ <u>S</u> et	the change to all ports	:

You may also configure **Rx FIFO Level** and **Tx FIFO Level** from the drop-down lists on the same screen, and then click **OK**.

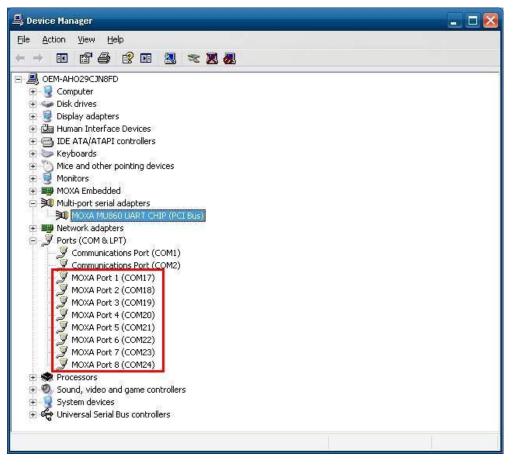
To avoid configuration errors, make sure each port name is unique and has not been used by another port. Click **No** to re-configure, or **Yes** to continue.

🚇 Device Mana	MOXA MU860 UART CHIP (PCI Bus) Properties	? 🗙	
File Action Vie	General Ports Configuration Driver Details Resources		
← → 🖪 🖆			
	Port COM No. Rx FIFO Level Tx FIFO Level		
🗄 🚽 Computi	1 COM 8 High High		
🕀 🥪 Disk driv	2 COM 9 High High		
🛨 😼 Display -	3 COM 10 High High 4 COM 11 High High		
🗄 🔂 IDE ATA	5 COM 12 High High		
🕀 🧽 Keyboar	6 COM 13 High High Help		
• Mice and	7 LUM 14 High High		
🕀 😼 Monitore			
	IXA Smartio/Industio Family Board Configuration Error		
E B Netv	This COM name is being used by another device (such as anothe	r com port or me	ndem).
🗄 📝 Port 🔍	Using duplicate names can lead to inaccessible devices and chan		
🕀 象 Proc	want to continue?		
🕀 🧶 Sour			
🕂 😡 Syst	Yes No		
🗄 🕰 Univ		1.9	
		Coursel	
		Cancel	

You may now check the configuration. In this case, we have re-assigned the port numbers from 17 to 24. Click **OK** to complete.

MOXA M	1U860 UA	RT CHI	P (PCI Bus) Propert	ies	? 🗙
General	Ports Conf	iguration	Driver Details Resou	urces	
Port 1 2 3 4 5 6 7 8	COM No. COM 17 COM 18 COM 20 COM 20 COM 21 COM 22 COM 23 COM 24	Rx FIF(High High High High High High High	D Level Tx FIFO Level High High High High High High High High	Help Port Info Port Setting	
				ок с	ancel

Return to Device Manager to view the COM ports have been re-named.



To configure these COM ports, right-click the COM port, and then select Properties.

🚇 Device Manager	- 🗆 🔀
File Action View Help	
	*
Ports (COM & LPT) Communications Port (COM1) Communications Port (COM2) MOXA Port 1 (COM17) MOXA Port 2 (C Update Driver MOXA Port 3 (C Disable MOXA Port 3 (C Uninstall MOXA Port 5 (C Scan for hardware changes MOXA Port 6 (C Properties MOXA Port 8 (COM2+7) MOXA Port 8 (COM2+7) Processors System devices System devices	
⊕ 🥰 Universal Serial Bus controllers Opens property sheet for the current selection.	×

	D. LC. W			
ieneral	Port Settings	Driver Details		
		Interface:	R5232	•
		Baud Rate:	9600	-
		<u>D</u> ata bits:	8	•
		<u>P</u> arity:	None	•
		<u>S</u> top bits:	1	•
		<u>F</u> low control:	None	•

You can configure this COM port from the drop-down lists, and then click **OK** to finish.

You can also use program code to set the operation mode. The example "UartMode" is under examplesC++ of Software DVD.

The code snippet is as follows:

*/

*

#include "stdafx.h"
#include <windows.h>
#include "..\release\devices.h"
char mode_array[][20]={"RS232", "RS485-2W", "RS422","RS485-4W"};

int _tmain(int argc, _TCHAR* argv[])

{

int port=0,mode=0; int n=0;

WCHAR sin;

WCHAR wcs_port[3],wcs_mode[3];

printf("UART Mode Test Program\n");

printf("\t (0) Exit Program\n");

printf("\t (1) Display UART Mode\n");
printf("\t (2) Set UART Mode\n");

sin=getwchar(); n=_wtoi(&sin);

do

{

switch (n)

{

// if char == '1', display the UART Mode

```
case 1:
```

printf("Input the Port Number (3,4...) = n");

wscanf(L"%s",wcs_port);

port=_wtoi(wcs_port);

mode=uart_getmode(port);

 $printf("COM\%d = \%s\n", port, mode_array[mode]);$

break;

// if char == '2', Set the UART Mode

case 2:

```
//Get Port Number
               printf("Input the Port Number (3,4...) = \langle n'' \rangle;
                wscanf(L"%s",wcs_port);
               port=_wtoi(wcs_port);
               //Get Mode Value
              printf("Input the Mode value (0 \sim 3) = ");
                wscanf(L"%s",wcs_mode);
               mode=_wtoi(wcs_mode);
               //Set UART Mode
               if(uart_setmode(port,mode)==-1)
                {
                     printf("Set UART Mode Fail!!\n");
                }
               else
                {
                     printf("COM%d=%s\n",port,mode_array[mode]);
                }
              break;
    }
    getwchar();
    sin = getwchar();
    n = wtoi(\&sin);
\} while (n != 0);
```

return 0;

}

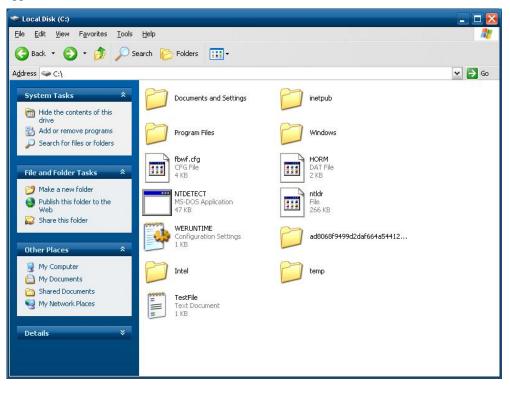
Enhanced Write Filter

The "Enhanced Write Filter" protects the contents of a volume on the target media volume by redirecting all writes to another storage location called on overlay. Use the following steps to enable the Enhanced Write Filter.

1. Type EWFMGR C: to check if the state of the Enhanced Write Filter is Disabled.

GN C:\WINDOWS\syst	em>2 venut.exe	
C:\Documents and	Settings\Administrator>EWFMGR c:	-
Protected Volume	Configuration	
Туре	RAM (REG)	
State	DISABLED	
Boot Command	NO_CMD	
Param1	Ø	
Param2	0	
Volume ID	87 34 0E 72 00 02 00 00 00 00 00 00 00 00 00 00	
Device Name	"\Device\Harddisk0\DP(1)0-0+1"	
Max Levels	1	
Clump Size	512	
Current Level	NZA	
Memory used for	r data Ø bytes	
Memory used for	r mapping 0 bytes	

- 2. To enable the filter, type EWFMGR C: -enable.
- 3. Reboot the system to activate the change.
- 4. Delete a file on your protected volume and reboot the system; the file you just deleted will appear.



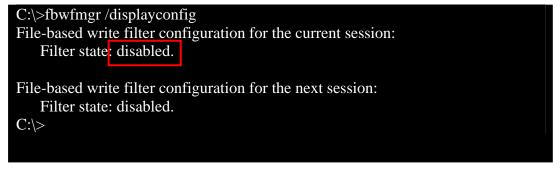
File Based Write Filter

File-Based Write Filter (FBWF) allows Windows Embedded Standard 2009 to maintain the appearance of read and write access to write sensitive or read only storage. FBWF makes read and write access transparent to applications.

Writing to storage media may be undesirable or impossible in embedded devices. FBWF redirects all writes targeted for protected volumes to a RAM cache called an overlay. In this context, an overlay can be likened to a transparency overlay on an overhead projector. Any change made to the overlay affects the picture as seen in the aggregate, but if the overlay is removed, the underlying picture remains unchanged.

Follow the steps below to enable FBWF:

1. In the command prompt, type **fbwfmgr**/**displayconfig** to check the current FBWF status. The status defaults to **disabled**.



2. Type **fbwfmgr** /enable to enable FBWF. Reboot the system for the changes to come into effect.

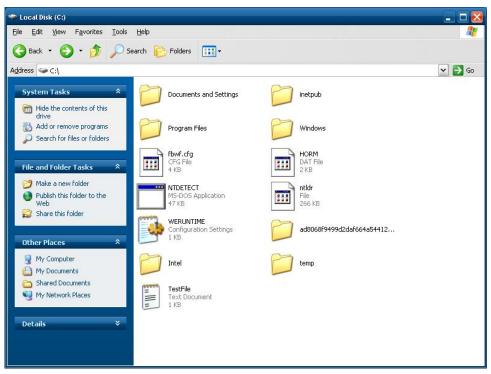
C:\>fbwfmgr /enable	
File-based write filter will be enabled on the next reboot.	

3. When the system has rebooted, type **fbwfmgr**/**displayconfig** in the command prompt again to confirm thatthe status has been changed to **enabled**. The default folder for FBWF will be **temp**. Type **fbwfmgr**/**help** for more detailed information.

C:\> fbwfmgr /displayconfig File-based write filter configuration for the current session: filter state: enabled. overlay cache data compression state: disabled. overlay cache threshold: 64 MB. overlay cache pre-allocation: disabled. size display: actual mode.
protected volume list:
\Device\HarddiskVolume3
write through list of each protected volume:
\Device\HarddiskVolume3:
\temp
File-based write filter configuration for the next session:
filter state: enabled.
overlay cache data compression state: disabled.
overlay cache threshold: 64 MB.
overlay cache pre-allocation: disabled.
size display: actual mode. protected volume list:
\Device\HarddiskVolume3
write through list of each protected volume:
\Device\HarddiskVolume3:
\temp

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4. You may copy a file (in this example, we will use TestFile.txt) to C:\temp and to C:\, and then reboot the system.



5. After rebooting the system, you should see that the file in C:\ has disappeared and that the file in C:\ temp remains.

Management Tools

The DA-710-XPE ready-to-run embedded computers are shipped with the Windows Embedded Standard 2009 operating system already installed. This network-centric platform is designed to serve as a front-end for data acquisition and industrial control applications. A set of Windows XP management tools are installed on the DA-710-XPE computer to resolve management issues.

In this chapter, we cover the following topics:

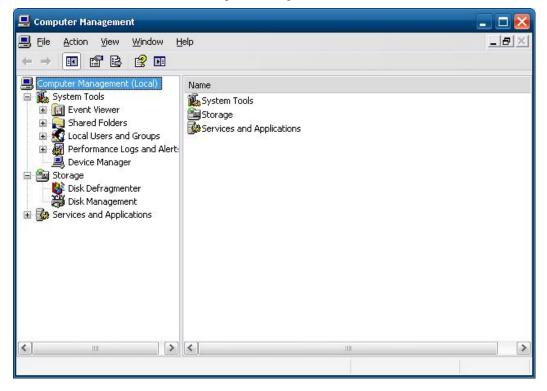
- **Computer Management**
- **Component Services**
- **D** Event Viewer
- □ Internet Information Services (Web/FTP)
- **ODBC Data Source Administrator**
- **D** Performance Monitor
- □ Services

Computer Management

[Control Panel] → [Administrative Tools] → Computer Management.

You can use the tools for a variety of tasks, such as disk partition, disk mount/dismount, and create/remove users.

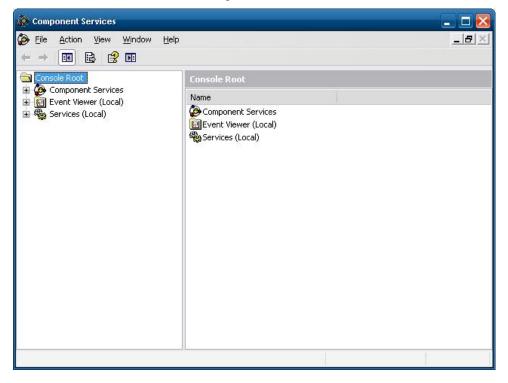
You can also check services in the Computer Management window.



Component Services

[Control Panel] → [Administrative Tools] → Component Services.

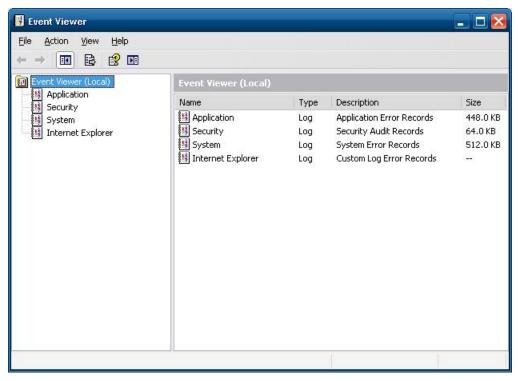
You can install/view/remove COM components with this tool.



Event Viewer

[Control Panel] → [Administrative Tools] → Event Viewer.

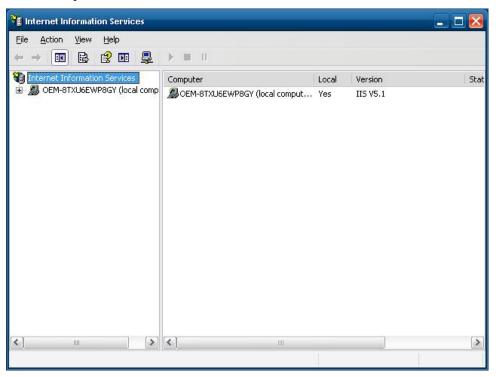
Every DA-710-XPE event, including system, applications, and security events are logged in this event database.



Internet Information Services (Web/FTP)

[Control Panel] \rightarrow [Administrative Tools] \rightarrow Internet Information Services.

If you need to set up Web or FTP, you must use this tool for configuration purposes, and you can also start/stop HTTP/FTP services.



A default web page is located in the directory **c:\Inetpub**. Use this default page to test your web server.

Follow the steps shown below to create the virtual directory.

1. Create a virtual directory by selecting **Default Web Site** \rightarrow **New** \rightarrow **Virtual Directory.**

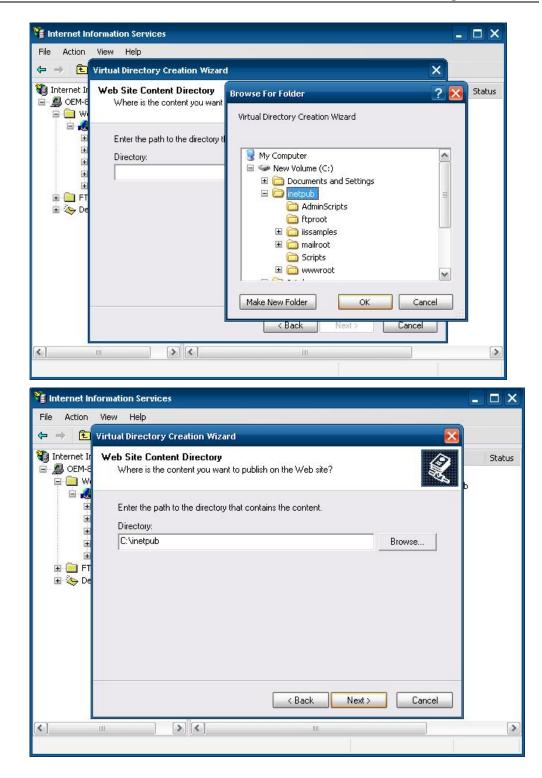
🍓 Internet Informatio	n Services		-	. 🗆 🔀
File Action View	Help P 🖸 🗟 😭			
 Internet Information OEM-8TXU6EWP Web Sites Web Sites Perfault Scr Prin asp FTP Sites Default SM 	8GY (local comp	Name IISHelp MSMQ Scripts Printers aspnet_client help.gif iisstart.asp localstart.asp mmc.gif	Path c:\windows\help\iishelp C:\WINDOW5\system32\msmq\web C:\Inetpub\Scripts C:\Windows\web\printers	Status
-	New All Tasks View Rename Refresh Export List Properties Help	 Virtual Directory print.gri warning.gif web.gif winxp.gif 		
<	>	ব	Ш.	>
Create new Web Virtual D	irectory			

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tual Directory Creation Wiz	zard
	Welcome to the Virtual Directory Creation Wizard
	This wizard will help you create a new Virtual Directory on this Web site.
	Click Next to continue.
	Kancel
tual Directory Creation Wizar irtual Directory Alias You must give the virtual direc	rd 🛛 🔀 tory a short name, or alias, for quick reference.
Type the alias you want to use same naming conventions that	e to gain access to this Web virtual directory. Use the t you would for naming a directory.
<u>A</u> lias: Tweb	
Inde	

2. Follow the virtual directory creation wizard and complete the steps to create the virtual directory **c:\Inetpub**.

Type the alias, for example web, into the text box. Click Next to continue.



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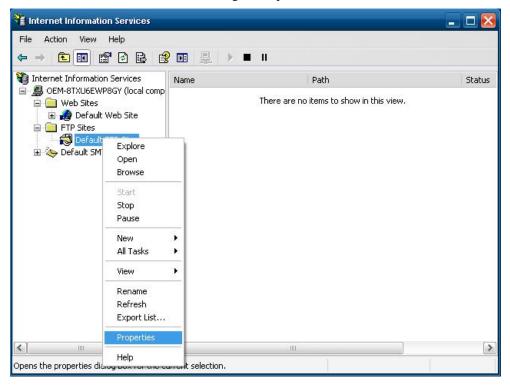
📲 Internet Ini	formation Services	- 🗆 X
File Action	View Help	
🗢 🔿 🖻	Virtual Directory Creation Wizard	
Internet Ir	Access Permissions What access permissions do you want to set for this virtual directory?	Status
	Allow the following:	
ین ب	I Read	
Ŧ	✓ Run scripts (such as ASP)	
E 🦲 FT	Execute (such as ISAPI applications or CGI)	
🗄 🏷 De	🗖 Write	
	Browse	
	Click Next to complete the wizard.	
	<back next=""> Cancel</back>	
1		>
Virtual Dire	ectory Creation Wizard	
	You have successfully	
	completed the Virtual	
	Directory Creation Wizard.	
	A Port	
	A Date of the second seco	
	Click Finish to continue.	
	< Back Finish Cance	ell

internet Information Services			🛛 🔀
		П	
 Internet Information Services OEM-8TXU6EWP8GY (local comp Web Sites Default Web Site MSMQ Scripts Printers Sspnet_client Web AdminScripts ftproot issamples mairoot Scripts Web FTP Sites Default SMTP Virtual Server 	Name AdminScripts Itproot iissamples mailroot Scripts www.woot Default.htm	Path	Status
<	<		>

- 3. When you complete the steps, the virtual directory **WEB** will appear under **Default WEB** Site.
- On your desktop, type [IP Address]/WEB/Default.htm (e.g., 192.168.1.127/WEB/Default.htm). The following message will appear. The steps are indicated in the following sequence of diagrams.



If you need to use the FTP server, you must create the default password for your account and turn on the write permission on your home directory located in c:\intepub\ftproot. Select FTP Site \rightarrow Default FTP Site \rightarrow Properties \rightarrow Home Directory, and checkmark the Write checkbox. You should now be able to transmit files through the ftp server.



When connecting to this resource, the content should come from: ⓐ a directory located on this computer ⓐ a share located on another computer FTP Site Directory <u>Local Path:</u> <u>C:\inetpub\ftproot</u> <u>M</u> Read <u>Write</u> <u>Log visits</u>	TP Site	Security Accou	unts Messages	Home Directory		
Local Path: c:\inetpub\ftproot <u>B</u> rowse. ☑ Bead ☑ Write ☑ Log visits Directory Listing Style ◯ UNIX ®		0	a <u>d</u> irectory locate	d on this compute		
 □ Write ☑ Log visits Directory Listing Style ○ UNIX ● 			\inetpub\ftproot		Browse	
O UNIX ®			 <u>W</u> rite			
	Directo	ry Listing Style				
⊚ M <u>S</u> -DOS ®	OL	JNI <u>X</u> ⊗				
	() ()	1 <u>S</u> -DOS ⊗				

ODBC Data Source Administrator

[Control Panel] → [Administrative Tools] → Data Sources (ODBC)

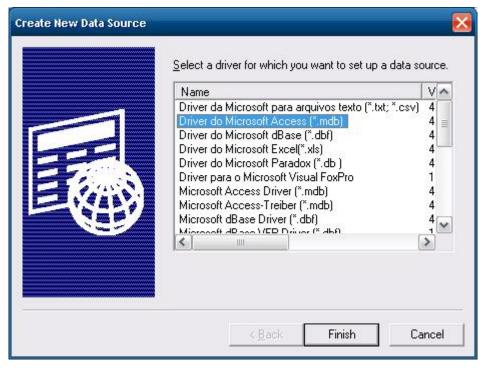
This database source configuration tool is for users to add, delete, or set up the data source, and then display information about the installed ODBC drivers. You can create a new data source or trace the calls to ODBC functions.

1. Click **Add** to continue.

ser Dat Name	a Sources: Driver	Add
		Bemove
		<u>C</u> onfigure.
	An ODBC User data source stores information about h	
O	the indicated data provider. A User data source is onl and can only be used on the current machine.	y visible to you,

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2. Select the driver to set up a data source (in this case, we select **Driver do Microsoft Access** (*.mdb)).



3. Select the database and then click **OK**.

elect Database		
Database N <u>a</u> me	<u>D</u> irectories:	ОК
mxdb.mdb	c:\	Cancel
11K05.11d0 2	Documents and Se	<u>H</u> elp
	new Folder	E Bead Only
	v2101 ₩	Exclusive
List Files of <u>T</u> ype:	Dri <u>v</u> es:	
Access Databases (*.m 👻	🖃 c: 👻	Network

4. Type Data Source Name and Description and then click OK.

Data Source Name:	mxobdc			ОК
Description: Database	moxa odbc			Cancel
Database: C:\mxd	lb.mdb			Help
Select	Create	Repair	Compact	Advanced
System Database				
None				
C Database:				

5. A user data source has been successfully established. Click **OK** to finish.

<u>U</u> ser Data Name	a Sources: Driver	A <u>d</u> d
mxobde	Driver do Microsoft Access (*.mdb)	<u>R</u> emove
		<u>C</u> onfigure
 ()	An ODBC User data source stores information about the indicated data provider. A User data source is and can only be used on the current machine.	

Performance Monitor

[Control Panel] \rightarrow [Administrative Tools] \rightarrow Performance. You can use this tool to monitor system and network resources.

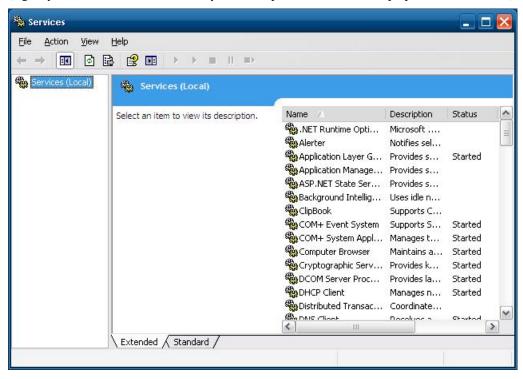
Note: Performance		_ 🗆 🔀
ion yiew Favorites ← → € 📧 😭 👀	<u>W</u> indow <u>H</u> elp	<u>_ 8 ×</u>
Console Root	□ □ </td <td></td>	
	Last 0.000 Average 16.142 Minimum Maximum 135.013 Duration Color Scale Counter Instance Parent Object 1.000 Pages/sec Memory 100 Avg. Disk Qu _Total Physic	0.000 1:40 Computer \\OEM-8TX \\OEM-8TX \\OEM-8TX

Services

[Control Panel] → [Administrative Tools] → Services

You can use this utility to start/stop/restart services.

(e.g. If you do not need telnet service you can stop it and set the "startup option" to "manual".)



4 System Recovery

The DA-710-XPE ready-to-run embedded computers are a Windows Embedded Standard 2009 platform. This chapter describes the recovery process in the event of system instability.

The following topics are covered in this chapter:

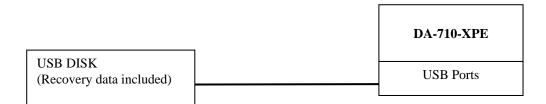
- **Recovery Environment**
- Recovery Procedure
- **Uninstalling Recovery Utility**

Recovery Environment

The environment includes a DA-710-XPE embedded computer and a bootable USB disk with the recovery programs and system image file.

Hardware

The hardware used includes a PC, a DA-710-XPE computer and a USB disk with the recovery programs. (Note: The USB disk should be at least 2GB.).



Recovery Procedure

Step 1: Install XPE Disk Recovery

Insert the software CD (in your package) into your computer and find **XPeRecovery.msi** in the **recovery** folder. Double-click **XPeRecovery.msi** to start the setup process and click **Next**.



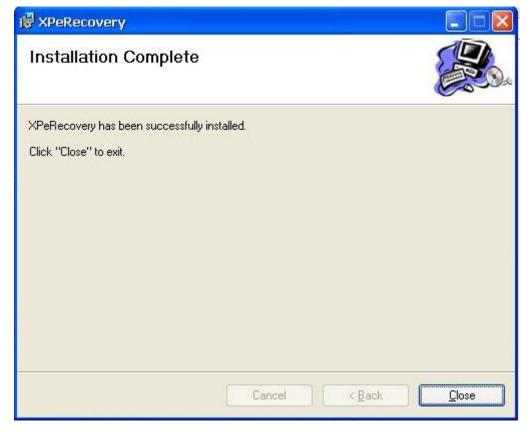
Click Browse and select the folder you wish to install to and then click Next.

🗑 XPeRecovery	
Select Installation Folder	
The installer will install XPeRecovery to the following folder.	
To install in this folder, click "Next". To install to a different fo	lder, enter it below or click "Browse".
<u>F</u> older:	
C:\Program Files\XPeRecovery\	Browse
	Disk Cost
Install XPeRecovery for yourself, or for anyone who uses th	nis computer:
E veryone	
◯ Just me	
Cancel	< Back Next >

Click Next to start the installation.

😴 XPeRecovery	
Confirm Installation	
The installer is ready to install XPeRecovery on your computer. Click "Next" to start the installation.	
Cancel < Ba	ick Next >

Click Close to finish.



Step 2: Extract Recovery Image from PC to USB disk

After the installation is complete, you will see the **XPeRecovery** shortcut on your desktop. You can start the USB disk recovery utility by opening this shortcut. Double-click the shortcut then click **OPEN** to select the image file. This file is located on the software CD in the **recovery** folder, and the filename is **da710_V1.0_Build_09120909.wim**. You may also copy this file to your PC. In the following example, we have already copied the image file to the D drive of the PC.

XPeRecovery			
Select Image File			
		OPEN	
Select Disk to rest			
	Format USB Disk	Renew	
Progress 0	%		
0%		100%	
	Remain : M	ins Secs	
Apply		ancel	
Open			in 19
Look in: 🗇 Nev	v Volume (D:)	E - E	ā.
	ments and Settings		-
🐸 🛅 minin	t		
My Recent data Documents	wim 0_V1.0_Build_09120909.wim		
Desktop			
-			
My Documents			
My Computer			
~			
File name		<u> </u>	Open
My Network Files of ty Places	4 A start of the start of th	<u> </u>	Cancel
	C Open as read-only		

Select Image File			
D:\DA-710_V1.0_Bui	ild_09120909.wim	OPEN	Ĩ.
Select Disk to restore E:\ Progress 11 %	I Format USB Disk	Renew	
0%	Remain : 1 M	Ains 26 Secs	100%
Apply		Cancel	

Click the drop-down list and select your USB disk drive letter (in this example, it is the E drive), and check **Format USB Disk**.

Click Apply to start the process; the utility will display the progress and time remaining

Select Image File		
D:\DA-710_V1.0_E	Juild_09120909.wim	OPEN
Select Disk to resto	re image	
E:\ 💌	Recovery 🛛 🛛	Renew
Progress 100	Apply image completed.	100%
Apply		hs 0 Secs Cancel

This message will appear when the process is complete. Click **OK**.

Step 3: Change the BIOS Settings

NOTE: If you have already installed a CompactFlash card in the DA-710-XPE, remove this CompactFlash card before starting recovery.

Insert the USB disk on any USB port of the DA-710-XPE, and then you need to change the BIOS settings to boot from USB disk. Turn on the computer and press **DEL** to enter the BIOS setup menu. Select **Hard Disk Boot Priority** and press **Enter**.

Phoenix - AwardBIOS CMOS Setup Utility			
Main Advanced Periphera	ls Power HW Monitor Def	aults Exit	
	ls Power HW Monitor Def [CDROM] [Hard Disk] [Removable] [Enabled]		
		ESC:Exit F1:General Help F7:Turbo Settings	

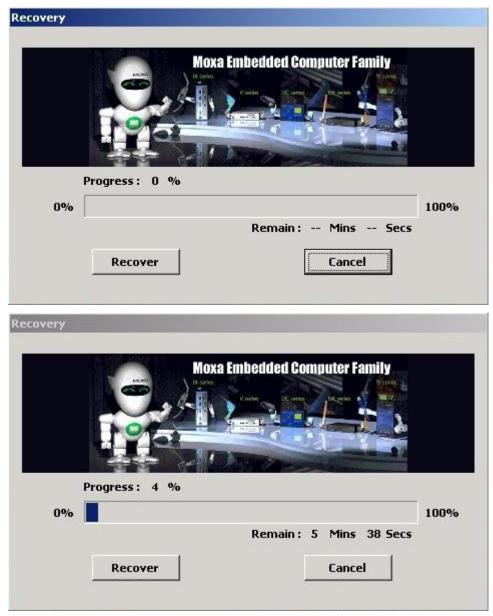
Select USB disk and then press "+" to make it the first boot device. Warning: Incorrect boot disk priority will lead to recovery failure.

Phoenix - AwardBIOS CMOS Setup Ut Advanced	ility
Hard Disk Boot Priority	Item Help
1. USB-HDDØ : TDKMediaTrans-It Edge 2. ChØ M. : SPCC IDE Flash Module 3. Bootable Add-in Cards	Menu Level ► Use <f> or <↓> to select a device , then press <+> to move it up , or <-> to move it down the list. Press <esc> to exit this menu.</esc></f>
↑↓:Move PU/PD/+/-:Change Priority F10:S F5:Previous Values F6:System Defaults F	ave ESC:Exit 7:Turbo Defaults

Press F10 and then press Enter to save and leave the BIOS setup.

Step 4: Reboot the Computer and Start Recovery

The system will boot from the USB disk and then enter Windows Pre-installation Environment. The recovery utility window will appear as below. Click **Recover** to start system recovery.



) It series	bedded Com		
	Reco	overy			2
	ress :	pply image c	ompleted.	_	100%
0%	Recover	1	kemain: u	Cancel	Secs

Click OK when the recovery process is complete and system will reboot.

Step 5: Change the BIOS Setting to Boot from Original Disk.

Now, you need to change the boot priority so that it can boot from the original disk. As the system reboots, press **DEL** to enter BIOS setup menu. Select **Hard Disk Boot Priority** and press **Enter**. Make sure that the hard disk has first boot priority.

Phoenix - AwardBIOS CMOS Setup Utility				
Advanced				
Hard Disk Boot Priority	Item Help			
1. <mark>Ch0 M. : SPCC IDE Flash Module</mark> 2. USB-HDD0 : TDKMediaTrans-It Edge 3. Bootable Add-in Cards	<pre>Menu Level ► Use <1> or <4> to select a device , then press <+> to move it up , or <-> to move it down the list. Press <esc> to exit this menu.</esc></pre>			
↑↓:Move PU/PD/+/-:Change Priority F16 F5:Previous Values F6:System Defaults				

Press F10 and then press Enter to save and leave the BIOS settings.

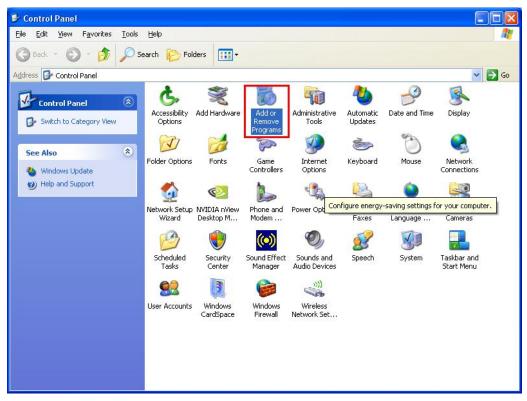
Step 6: Reboot the Computer.

Remove the USB disk from the USB port before restarting and rebooting the DA-710-XPE. You need to wait for about ten to fifteen minutes while the system recovers. **DO NOT power off or shut down the computer** during this time. When the operating system has successfully launched, you need to restart your computer so that the new settings can be activated.



Uninstalling Recovery Utility

To uninstall the recovery utility, double-click Add or Remove Programs from Start \rightarrow Control Panel.



🐻 Add or Rei	move Programs				<
	Currently installed programs:	Show up <u>d</u> ates	Sort by: Name	~	
Change or	By THICLOSOIC NET IT AMENVOIR 2.0 DERVICE PACK 2		Size	185.001918 🔨	Ē
Remove Programs	🔀 Microsoft .NET Framework 3.0 Service Pack 2		Size	179.00MB	
-	B Microsoft .NET Framework 3.5 SP1		Size	28.04MB	
	😼 Moxa Device Manager		Size	21.27MB	
Add <u>N</u> ew Programs	🔀 MSXML 4.0 SP2 (KB954430)		Size	2.67MB	
-	🥶 Nero 6 Ultra Edition		Size	39.26MB	
	NVIDIA Drivers				
Add/Remove Windows	📸 OCR Software by I.R.I.S 7.0		Size	3.09MB	
Components	j∰ [®] PComm Lite Ver1.3		Size	8.01MB	2
Set Program Access and	🙀 Realtek AC'97 Audio		Size	39.91MB	
	😼 SiSRaidPackage		Size	2.71MB	
	🧐 StreamAuthor		Size	65.81MB	
Defaults	🕿 Windows Driver Package - Hewlett-Packard Image (12/27/2006	8.0.0.0)		=	
	🔀 Windows XP Service Pack 3			-	
	🞥 WinRAR ????		Size	3.08MB	
	f		Size	0.65MB	
	Click here for support information.		Used	<u>rarely</u>	
	To change this program or remove it from your computer, click Cl	hange or Remove.	Change	Remove	

Click **XPeRecovery** from program list, and then click **Remove** to continue.

Click Yes to uninstall. Once complete, the recovery utility will be removed from the system.

