## ADAM-6500

# **Web-enabled Communication Controller**

# **User's Manual**

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Part No. 2003650000 3rd Edition Printed in Taiwan May 2004

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

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3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.

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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

### Technical support and sales assistance

If you have any technical questions about the ADAM-6500 or any other Advantech products, please visit our support website at:

http://www.advantech.com/support

For more information about Advantech's products and sales information, please visit: <a href="http://www.advantech.com">http://www.advantech.com</a>

# Contents

CHA	PTER 1 ADAM-6500 OVERVIEW	5
Intr	ODUCTION	6
11	FEATURES	6
1.1	Embedded web-enabled HMI/SCADA software (Option) 6	
	Rich Legacy Controllers and OPC device connection support	
	Windows® CE-based open embedded system	
	Reliable and Powerful Out-of-Box solution platform	
1.2	HARDWARE SPECIFICATIONS	7
1.3	SAFETY PRECAUTIONS	7
1.4	CHASSIS DIMENSIONS	8
СНА	PTER 2 HARDWARE FUNCTIONALITY	9
2.1	ADAM-6500 Peripherals	10
2.2	COM1~COM5: RS-232/485 INTERFACES	
	Automatic Data Flow Control Function for RS-48510	
2.3	LAN: ETHERNET CONNECTOR	11
2.4	POWER CONNECTOR	11
2.5	LED INDICATORS	11
СНА	PTER 3 INITIAL SETUP	12
3.1	INITIAL PROCEDURE	
3.2	CONFIGURE ADAM-6500 : USCOPE REMOTE DISPLAY TOOL	
СНА	PTER 4 : ADVANCED APPLICATION	19
4.1	INSERT COMPACTFLASH <sup>TM</sup> CARD	
4.2	ACTIVESYNC CONNECTION BETWEEN COMPUTER AND ADAM-6500	
4.3	REMOTE ACCESS SERVER CONFIGURATION	
	Dial-up configuration27	
	Dial-in Configuration	
4.4	AUTORUN CONFIGURATION NOTE	
	Autorun Configuration Procedure	
4.5	APPLICATION DEVELOPMENT PROCEDURE	
	Application development Procedure	

4.6	SAVE YO	UR SETTINGS	41
4.7	INSTALLA	ATION FOR DRIVERS, EXAMPLE	42
	4.7.1.	ADAM Device Manager, ADAM DLL Driver	
	4.7.2.	The ADAM Driver Example Installation43	
	4.7.3.	Modbus/RTU Driver for WinCE.NET44	
	4.7.4.	ADAM DLL Driver Test Procedure	

### Chapter 1 ADAM-6500 Overview

This chapter gives background information on the ADAM-6500. It shows you the ADAM-6500 overview and specifications.

Sections include:

- Introduction
- Features
- Hardware Specifications
- Web-enabled HMI/SCADA (Advantech Studio) Features
- Safety Precautions
- ADAM-6500 Series
- Chassis Dimensions

### Introduction

Advantech ADAM-6500 is a powerful embedded and web-enabled solution platform that connects devices data with enterprise systems. By equipping with remote I/O modules and bundling with web-based SCADA/HMI software just like Advantech Studio, ADAM-6500 can automatically captures real-time data from the plant floor and then analyzes, controls and distributes this information to enterprise systems via the Internet. You can easily access the data through graphic interfaces anytime and anywhere. Its powerful I/O connectivity lets the ADAM-6500 easily get data from the ADAM-4000/5000/6000 series to versatile legacy controllers and 3<sup>rd</sup> party I/Os. It is possible to access or even diagnose the system problem immediately through any browser. Using Microsoft Windows CE embedded features and compact flash storage, the ADAM-6500 offers a high reliability platform for industrial automation with no risk of hard disk crashes.

### 1.1 Features

The Advantech ADAM-6500 provides users with the most requested functions as seen below:

- □ Windows CE-based open embedded system
- Embedded Web-enabled HMI/SCADA software
- □ Rich legacy controllers and OPC device connection supporting
- **Constitution** Reliable and Powerful Out-of-Box solution platform

The Advantech ADAM-6500 offers the following main features:

### Embedded web-enabled HMI/SCADA software (Option)

HMI/SCADA software and HTTP v1.10 compliant (a persistent connection allows multiple downloads with less overhead, and also improves caching while making it easier to create virtual hosts) web server are established on ADAM-6500 and allow you to remotely view and control I/O data from anywhere on anytime.

### **Rich Legacy Controllers and OPC device connection support**

With three RS-232, two RS-485 ports and industrial standard OPC server, ADAM-6500 can connect versatile I/Os and control devices including Advantech ADAM-4000, 5000 and 6000 series, user can also connect with the third party device just like Allen-Bradley PLC, Mitsubishi A type & FX series PLC, Modbus RTU protocol PLC, Omron C type PLC and Profibus DP compliant device through OPC server or specific drivers.

### Windows® CE-based open embedded system

With no hard disk needed, the ADAM-6500 features increased reliability. More importantly, Windows® CE (Windows CE.NET 4.1) unfailingly performs time-sensitive tasks with deterministic responses to events. This is a key feature in most industrial applications.

### **Reliable and Powerful Out-of-Box solution platform**

ADAM-6500 provides reputed industrial hardware with StrongArm processor and Windows® CE-based embedded software bundled solution. This translates into long-time stability and powerful computing capability to fulfill most different applications.

### **1.2 Hardware Specifications**

CPU: StrongArm 206 MHz

RAM: 32 MB SDRAM on board

**Operating System** : Microsoft Windows CE.NET 4.1

Storage: 16 MB flash memory on board, 1 CompactFlash Card (Optional)

Serial Port: Three RS-232, two RS-485 ports

- Automatic RS-485 data flow control
- RS-485 isolated 1500VRMS
- Data bits: 5, 6, 7, 8
- Stop bits: 1, 1.5, 2
- Parity: none, even, odd
- RS-232 max data distance: 50 feet (15.2 meters)
- RS-485 max data distance: 4000 feet (1220 meters)

Ethernet Port: One 10Base-T Ethernet

LED: One power LED

Power supply voltage: 10-30 VDC, 24VDC recommended

**Power Requirement**: 0.25A typical under +24V power input

**Operating temperature**:  $0 \sim 65$  ( $0 \sim 149$ )

### **1.3 Safety Precautions**

The following sections tell how to make each connection. In most cases, you will simply need to connect a standard cable. All of the connector pin assignments are shown in Appendix A.

### Warning!

Always completely disconnect the power cord from your PC chassis whenever you are working on it. Do not make connections while the power is on. A sudden rush of power can damage sensitive electronic components. Only experienced electronics personnel should open the PC chassis.

### **Caution!**

Always ground yourself to remove any static electric charge before touching ADAM-6500. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag..

### 1.4 Chassis Dimensions



### **Chapter 2 Hardware Functionality**

This chapter shows how to set up the ADAM-6500's hardware functions, including connecting peripherals, switches and indicators.

Sections include:

- ADAM-6500 Peripherals
- RS-232/485 Interfaces Assignment
- LAN: Ethernet Connector
- Power Connector
- LED Indicators

### 2.1 ADAM-6500 Peripherals

The following figures show the connectors on ADAM-6500. The following sections give you detail information about function of each peripheral.



Figure 2-1: ADAM-6500 front view

### 2.2 COM1~COM5: RS-232/485 Interfaces

The ADAM-6500 offers five serial communication interface ports, and they are COM 1, COM 2, COM 3, COM 4 and COM 5. COM 1 ~ COM 3 are RS-232 ports and COM 4/COM 5 are RS-485 ports, and Table 2-1 lists the setting of serial ports.

Table	Table 2-1: Serial ports default setting			
COM Port	Default Setting			
COM1	RS-232 (Sub-D 9 pin connector)			
COM2	<b>RS-232</b>			
COM3	<b>RS-232</b>			
COM4	RS-485			
COM5	RS-485			

### Automatic Data Flow Control Function for RS-485

In RS-485 mode, ADAM-6500 automatically senses the direction of incoming data and switches its

transmission direction accordingly. Therefore no handshaking signal (e.g. RTS signal) is necessary. This feature lets you simply and quickly build an RS-485 network with just two wires. More importantly, application software previously written for half duplex RS-232 environments can be maintained without need for modification.

### 2.3 LAN: Ethernet Connector

The ADAM-6500 is equipped with 10 Based-T Ethernet port. The Ethernet port provides a standard RJ-45 jack on board, and LED indicators on the front side to show its Link (Yellow LED) and Active (Green LED) status.

### 2.4 Power Connector

The ADAM-6500 comes with a Phoenix connector that carries 10~30VDC external power input. The recommended power input is 24VDC.

### 2.5 LED Indicators

There are one power LEDs on the ADAM-6500 front panel for indicating system status:

ON : Power ON Off : Power OFF

### **Chapter 3 Initial Setup**

This chapter shows how to initial the ADAM-6500, sections include:

- Initial Procedure
- Configure ADAM6500

### 3.1 Initial Procedure

The ADAM-6500 offers an easy setup feature: It takes three easy steps for your initial setup before use. Take out the ADAM-6500 from the package and follow the steps below for initial setup:

**Step 1:** Connect all peripheral devices, such as RJ-45 connector of Ethernet connection, RS-232 and RS-485 connectors.

**Step 2:** Connect the power cord to the ADAM-6500 and plug the other end of the cord into the power outlet, and then ADAM-6500 boots up immediately.

**Step 3:** The ADAM-6500 default IP is set as 10.0.0.1. Please set the IP of your host computer to be static IP : 10.0.0.XXX for connection with ADAM-6500.

**Step 4:** Using the uScope tool to re-configure the IP of ADAM-6500 to meet your network configuration. The path of uScope Remote Display Tool in ADAM-6500 CD is "\uScope Remote Display Tool\uScope.EXE ".

### 3.2 Configure ADAM-6500 : uScope Remote Display Tool

This tool works only with Ethernet connection. it's requires both of your computer and the ADAM-6500 has same Subnet Mask. The default IP address for ADAM-6500 is : 10.0.0.1 and the default Subnet mask is: 255.255.255.0. So you can set your computer IP address to 10.0.0.2 and set the Subnet mask to 255.255.255.0.



\*actually you can set any IP address that other than 10.0.0.1 from 10.0.0.1 to 10.0.0.255. If you connected you computer and ADAM-6500 to a router, don't set your computer IP address the same as the Router's.

Connect ADAM-6500 with your computer by using a cross-over Ethernet cable. Or connect both ADAM-6500 and your computer into a hub.

After ADAM-6500 boot up, it will broadcast it's IP to the network. uScope Remote Display tool running on you computer will detect the UDP message that send out by ADAM-6500 and show the device name and IP in it's device list. You can select and connect to the device (ADAM-6500) in the list as you want.

Double Click the uScope icon in configuration computer:

🎢 uScope Remote Display			×
Last connected device	Device 26955		Reset
×		Connect	w List Exit

Click the "Show List" bottom :

)evice Name	IP Addr	Avail
)evice 26955	10.0.0.1	Y

Choose the connected device in the list :

IP Addr	Avail
10.0.0.1	Y
	Cl
	Co
	IP Addr 10.0.0.1

After clicking "Connect" bottom, the configuration computer will connect with ADAM-6500. The remote display screen will be as following :



Please go to the "Command Prompt" for network IP setting :





User can use "ipchange" command for IP change setting in command prompt mode. Please type "ipchange /?" for command reference.



If the DHCP is choose, the "ipchange 1" will be used as set up command. If this ADAM-6500 will be set as the specific IP address, the setting command and procedure should be as following :



Press "Enter", the remote display screen will show the following message.

🝸 CE Remote Window	
<u>File E</u> dit <u>H</u> elp	×
Pocket CMD v 4.10	
<pre>\&gt; ipchange /?</pre>	-
********* IP Changing Utility *********	
Advantech Automation Corp. 2003	
Usage: ipchage paraml param2 param3	
paraml: 1 or 0 (Enable/Disable DHCP)	200000
param2: xxx.xxx.xxx.xxx (IP Address)	
param3: xxx.xxx.xxx.xxx (Subnet Mask)	
255.255.255.0 will be used if	
param3 is omitted.	
example:	
ipchange 0 192.168.0.12 255.255.255.0	
*********	
<pre>\&gt; ipchange 0 172.18.3.102 255.255.255.0</pre>	
New Network Settings:	
DHCP: Disabled	
IP Address: 172.18.3.102	
Subnet Mask: 255.255.255.0	
Saving Regitry	
	•
🟹 Start 🛛 🎇 Command Prompt	📥 🐯 🖉 1:32 PM 🛛 🞯

Wait for the "Saving Registry Done" to make sure the IP change setting work is successfully done.

🔭 CE Remote Window	_ 🗆 🗡
<u>File Edit Help</u>	×
<pre>Pocket CMD v 4.10 \&gt; ipchange /? ************************************</pre>	
Subnet Mask: 255.255.255.0 Saving Regitry Done Note: New settings will take effect after reboot.  >	
Start Command Prompt	🕹 🎇 🍠 1:32 PM 🛛 🞯

Re-power on the ADAM-6500 module to re-boot the WinCE for new IP address implement.

### **Chapter 4 : Advanced Application**

- Insert CompactFlash<sup>TM</sup> Card
- ActiveSync Connection
- Remote Access Service Configuration
- Autorun Configuration
- Application Development Procedure
- Save Your Setting

### 4.1 Insert CompactFlash<sup>TM</sup> Card

The procedure for installing a CompactFlash<sup>™</sup> card into the ADAM-6500 is as follows, and please follows these steps carefully.

**Step 1:** Remove power cord.

Step 2: Unscrew two screws from the rear plane of the ADAM-6500.

**Step 3:** Remove the front plastic case.

**Step 4:** Plug a CompactFlash<sup>™</sup> card with user's OS and application program into a CompactFlash<sup>™</sup> card slot on board.

**Step 5:** Screw back the rear plane with two screws.

### 4.2 ActiveSync connection between computer and ADAM-6500

- Using a null-modem cable connect ADAM-6500 COM1 with one of COM port on your computer
- Install Microsoft ActiveSync software on your computer and make the serial port you want connect with ADAM-6500 available for ActiveSync (see ActiveSync help for details).
- Power on or reset ADAM-6500. By default, ADAM-6500 will run repllog.exe when it boot up. This program will try connect to you desktop through ActiveSync. If all settings are correct, ADAM-6500 will automatically connect to you desktop after it boot up.

Note: ADAM-6500 will use 115200 as it default BaudRate to do the ActiveSync connection. If ActiveSync program running on your computer never accept a connection at this BaudRate before, probably you'll get timeout. Since it need scan from low BaudRate to the high BaudRate , if that takes too long, ADAM-6500 will stop trying connect to your computer. So, you'd better use another CE device which has a display to connect to you Desktop through ActiveSync at 115200 BaudRate first. Thus ActieSync on your desktop PC will remember this Baud Rate, and next time when ADAM6500 try to connect to it at this Baud Rate, it'll be connected easily.

#### ActiveSync Connection

The tool is used for the application program on-line programming/debug requirement. User has to install the Microsoft ActiveSync program in configuration computer first. For the detail operating procedure of ActiveSync, please follow the steps by steps operating guide.

#### Step 1 : Setup the ActiveSync in configuration computer

- 1. Insert ADAM-6500 CD into the CD-ROM in the configuration computer.
- Install ADAM-6500 Software Development Kit for eVC++ from below path: \Windows CE .NET V4.1\SDK\ADAM6500\_SDK\_SRAM\_V1.00.msi

- 3. Install Microsoft ActiveSync 3.6 from below path: \Windows CE.NET V4.1\Utility\Microsoft ActiveSync 3.6.exe
- 4. Please connect the ActiveSync cable (Null Modem cable, Advantech part no. : 1703093000) to COM1 of ADAM-6500 and the COM port of configuration computer for ActiveSync communication.
- **Step 2 : Please connect the ADAM-6500 via uScope through Ethernet first.**



Step 3 : Please go to "My Computer" icon and double click it.

🔋 My Comp	uter								ļ
檔案E	編輯(E)	檢視(♡)	我的最愛(2	L) 工具(T)	說明( <u>H</u> )	令 上一頁	• = • 🖬	,	•
]網址(D) [	My Com	puter						-	-
	P	)	Þ		D	1		Þ	
Databases	FLAS	SH My	Documents	Network	profiles	Program Files	Temp	Windows	
Control Pane	1								

Step 4 : Please go to Windows icon and double click it.

📴 CE Remote	Window							_ 🗆 ×
<u>File E</u> dit	<u>V</u> iew <u>G</u> o	F <u>a</u> vorites	$\leftarrow \rightarrow$	È X 😭	<b>Ⅲ</b> ▼			? ×
Address \\	Vindows							-
	$\triangleright$	$\triangleright$	$\triangleright$	$\triangleright$	$\triangleright$	$\triangleright$	$\triangleright$	
Desktop	Favorites	Fonts	Install	Programs	Recent	StartUp	UPnP	
D www	ceconfig	cemgrc	Cenotepad	Cerdisp		Sonninc 😪	📴 control	
explorer	FTPD	ipchange	msmqadm	net	apisrv	rasrecvy	RAS rasreset	
reboot	regedit	regsave	regsvrce	Peolog	services	sleep	startup	
tbreboot	tty	unload	3.1.1 ver	<i>MQ Etch</i> visadm	😻 wceload	windowsce		
Start 6	Difference					See da A	Si # 5:400	M 🔯

Step 5 : Please go to "repllog" icon and double click it to startup this program.



The dialog "connecting to ActiveSync" represents the ADAM-6500 is standby for the ActiveSync connection from configuration computer.

**Step 6 : Please startup the Microsoft ActvieSync program in configuration computer.** 



Note : Please make sure the COM port in your configuration computer had been set as the communication port. If not, the startup screen of ActiveSync will show the following display.



Please go to the "Connection Setting..." in "File" for COM port setup.



Step 7 : Go to the "File" and select "Get Connected" for communicating with ADAM-6500.



The "Get Connected" dialog will lead user to complete the connection procedure. Please refer the following picture.





Please press the "Next" bottom, the following dialog will represent the configuration computer being trying to establish the communication with ADAM-6500.

Get Connected	×
Checking COM Ports Please wait while Setup locates your mobile device.	Ţ.
Progress Looking for a mobile device Checking on CDM Port 1 Checking IR and USB	
<上一步(E)   下一步(I) >   <b>「阪浦</b> 」	說明

If the ActiveSync communication between ADAM-6500 and configuration computer is established successfully, the connected dialog will be shown as following :

🕸 Microsoft ActiveSync	
<u>File V</u> iew <u>T</u> ools <u>H</u> elp	
Sync Stop Details Explore Options	
Guest	
Connected	
Information Type Status	

If the communication is failed, please repeat the procedure from step 5 to step 7.

#### Step 8 : User can begin to transfer the file from configuration computer to connected ADAM-6500.



Double click "My Computer" in "Mobile Device" for file translation.



### 4.3 Remote Access Server Configuration

### Introduction

ADAM-6500 provides "Remote Access Services" which offers the possibilities for remote network and user to have TCP/IP access local mail servers, access to database, web servers or other Intranet services. The following description introduces how to set the dial-up and dial-in configuration.

### Dial-up configuration

Step 1 : Press start of task bar of window system and select "Setting" → "Networking and Dial-up connections".



Step 2 : Double click "Make New Connection", then a dialog window will pop out. Select Dial-Up Connection and press Next >.

CE Kendle Whitow	
File Edit View Advanced	? ×
N 💁 💱	
Make New ActiveSync LAN90001	
Connection	
Start Network Connections	🕹 🕲 🏓 10:26 AM 🔞
The CP Description of the Second	
File Edit View Advanced   X   M   Pa   V-   IIII	? ×
	? 🗙
Elle     Edit     View     Advanced     X     Image:	? 🗙
Elle     Edit     View     Advanced     X     Image: Advanced       Image: Advanced     X     Image: Advanced     X     Image: Advanced       Image: Advanced     X     X     Image: Advanced     Image: Advanced       Image: Advanced     X     X     X     Image: Advanced       Image: Advanced     X     X     X	? 🗙
Ele     Edit     View     Advanced     X       ActiveSync     LAN90001	? ×
Elle       Edit       View       Advanced       X       Image: Section 1         ActiveSync       LAN90001         Make New Connection       X         Type a name for the connection:	? ×
Ele       Edit       View       Advanced       X       Image: Section         ActiveSync       LAN90001         Make New Connection       X         Type a name for the connection:       X         My Connection       X	? ×
Ele       Edit       Yew       Advanced       X minimum         ActiveSync       Association       X       X         ActiveSync       LAN90001       X       X         Type a name for the connection       X       X         Select the connection type:       X       X	? ×
Ele       Edit       Yew       Advanced       X minimized         ActiveSync       LAN90001         Make New Connection       X         Type a name for the connection:       X         My Connection       Select the connection type:         O Dial-Up Connection	? ×
Ele       Edit       Yew       Advanced       Xer       Image: Comparison of the connection         ActiveSync       LAN90001         Make New Connection       Xer         Type a name for the connection:       Xer         Select the connection       Select the connection         Select the connection       Direct Connection         Direct Connection       Direct Connection	? ×
File       Edit       Yee       Advanced       Yee       File       Time         ActiveSync       LAN90001       Image: Advanced       Image:	? ×
Ele       Edit       Yee       Advanced       Xer       Page 2- []]]         ActiveSync       LAN90001         Make New Connection       X         Type a name for the connection:       Xer         My Connection       Xer         Select the connection type:       Dial-Up Connection         Dial-Up Connection       Direct Connection         Virtual Private Network       PPP over Ethernet [PPPoE]	? ×
Ele       Edit       Yew       Advanced       Xer       Page 2-1         ActiveSync       LAN90001         Make New Connection       X         Type a name for the connection:       X         My Connection       X         Select the connection type:       Dial-Up Connection         Direct Connection       Direct Connection         Virtual Private Network       PPP over Ethernet [PPPoE]          Back       Next >	? ×
Ele       Edit       Yew       Advanced       Xer       Page 2- Time         ActiveSync       LAN90001       ActiveSync       LAN90001         Make New Connection       Xer       Type a name for the connection:       Xer         Type a name for the connection       My Connection       Select the connection       Dial-Up Connection         Select the connection       Direct Connection       Direct Connection         Virtual Private Network       PPP over Ethernet [PPPoE]          Eack       Next >	? ×
File       Edit       Yew       Advanced       Xer       Image: Commentation         ActiveSync       LAN90001         Make New Connection       X         Type a name for the connection:       Xer         W Connection       Xer         Select the connection       Dial-Up Connection         O Dial-Up Connection       Direct Connection         Virtual Private Network       PPP over Ethernet [PPPoE]         < Back       Next >	? 🗙
File       Edit       Yew       Advanced       Yew       File       Yew         Image: ActiveSync       LAN90001         Image: ActiveSync       Image: ActiveSync         Image: ActiveSync       Image: ActiveSync <td>? 🗙</td>	? 🗙
File       Edit       Yew       Advanced       Yew       Page 2-1         Image: ActiveSync       LAN90001         ActiveSync       LAN90001         Image: ActiveSync       Image: ActiveSync	? ×

Step 3 : Setup the device according to the specification of the modem and press Next >.

🔀 CE Remote Window	
File Edit View Advanced	? ×
😼 🛸 🖗	
ActiveSync LAN90001	
Modem	
RAS CONNECTION	
Select a modem:	
Hayes Compatible on COM1:	
Haves Compatible on COM1:	
TCP/IP Settings  Security Settings	
< <u>B</u> ack <u>N</u> ext >	
Start Network Connections	🗢 🖓 🌫 10:28 AM 🗾

Enter the telephone number in the "Phone Number" window. Press Finish button to complete the dial-up configuration.

🔀 CE Remote Window	
Image: Second standard sta	
Start Network Connections	🕹 🍣 🏓 10:30 AM 🔯

Step 4 : Press start of task bar of window system and select "Setting"  $\rightarrow$  "Networking and Dial-up connections". Double click the new connection that you made previously (it is RAS Connection in this case), and it will pop out the "Dial-Up Connection" dialog window. Enter your user name / password, then press Dial Properties.

🔽 CE Remote Window	_ 🗆 ×
Eile       Edit       Yew       Advanced       Yer       Image: Comparison of the second secon	? ×
Dial-Up Connection         Image: RAS Connection         User Name:       liwelee         Password:       ********         Dgmain:	
Start Network Connecti  CB Remote Window  File Edit View Advanced X II Pa X-III	10:32 AM
Image: Second state sta	
Dialing Properties       OK ×         When dialing from:       Work       New       Remove         Local settings are:       Dialing Patterns       ss         The local grea code is:       1       Dialing Patterns       cel         Dial using:       Ione       Pulse         Disable call waiting by dialing:       V	
彩 Start Network Connecti	11:07 AM 🞯

Step 5 : Press Dialing Patterns button in the Dialing Properties window. Edit the dialing pattern for each type of call to change how the phone is dialed.

NOTE: Country/Region Code, please enter "E" or "e". Area Code, please enter "F" or "f". Number, please enter "G" or "g".

CE Remote Window	<u>_</u> _×
File Edit View Advanced 🗙 🖬 🖭 📰	? ×
RAS ActiveSync LAN90001 Connection	901 ¥6356
Dial-Up Connection	]
RAS Connection	
User Name: liweilee Phone: 9,4125678	
Dialing Properties Dialing Patterns OK	×
When dialing from: Work Edit the dialing pattern for each type of call to change ho the phone is dialed.	w
Local settings are: For Local calls dial:	
The local country/region code i	_
Dial using For International calls dial: Disable call waiting by dialing 9,011,EFG	
(E,e = Country/Region Code; F,f = Area Code; G,g = Number)	
🕽 Start 🔊 Network Connecti	10:33 AM 📝

Step 6 : Double click My Connection 2 and press Connection button to build a PPP connection.

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### **Dial-in Configuration**





**Step 2 : Double click the RAS Server icon from Control Panel.** 

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Step 3 : Select the "General" tab under "Advantech RAS Server Configuration". Select "Enable RAS", "Use Static IP Address" and enter a specified IP in Static IP Address blank.

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Step 4 : Select the "Input Lines" tab under "Advantech RAS Server Configuration". Click Add button to setup the input line according to the available RAS device.

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Step 5 : select the "Logon Security" tab under "Advantech RAS Server Configuration". Select security protocol if necessary.



Step 6 : Select the "Logon Security" tab under "Advantech RAS Server Configuration". Add a new account for remote access services.

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Step 7 : After all settings are completed, press Apply button and then it will pop up the RasConfig dialog window. Press Yes button to save registry setting to storage card.

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RAS configuration procedure is completed and you can access ADAM-6500 via remote device.

### 4.4 Autorun Configuration Note

#### Introduction

This document introduces how to execute applications automatically when you boot ADAM-6500 up.

#### **Autorun Configuration Procedure**

Step 1 : Execute cenotepad according below path: \Windows\cenotepad.exe

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Recent		Folder		
C StartUp		Folder		
C UPnP		Folder		
C www		Folder		
🛤 ceconfig.h	9.08KB	H File	6/16/2003 8:25:51 PM	
cemgrc.exe	17.5KB	Application	5/31/2002 4:20:30 PM	
🧠 cenotepad.exe	10.0KB	Application	6/11/2003 9:06:20 AM	
le cerdisp.exe	15.0KB	Application	6/16/2003 8:25:22 PM	
B cerdisp	23 bytes	Shortcut	6/11/2003 9:18:24 AM	
🔊 cetlstub.dll	5.00KB	Application Extension	5/31/2002 4:20:42 PM	
🛋 close.2bp	134 bytes	2BP File	6/6/2002 6:00:00 PM	
💑 cmd.exe	64.5KB	Application	6/16/2003 8:38:05 PM	
式 cmd	19 bytes	Shortcut	6/6/2002 6:00:00 PM	
🔍 conninc.exe	104KB	Application	6/16/2003 8:38:05 PM	
🕞 control.exe	15.5KB	Application	6/16/2003 8:38:10 PM	
🔂 control	23 bytes	Shortcut	6/6/2002 6:00:00 PM	
copyrts.txt	630 bytes	TXT File	6/6/2002 6:00:00 PM	
a cour.ttf	158KB	TrueTvne Font file	6/6/2002 6:00:00 PM	
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Step 2 : Select "File"  $\rightarrow$  "Open" to open the file startup.bat according to below path: \*Flash*\*STARTUP*\*startup.bat* 

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Name	Size Type	Modified
Startup	Folder	
Startup.bat	50 bytes Unknown Type	6/19/2003 11:53:29 AM
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Enter the application path that you want to execute when ADAM-6500 boot up. For example, if you want to execute the application "cenotepad" when ADAM-6500 boot up, you can enter its path in **startup.ini**.



Step 3 : After setting, you can restart ADAM-6500 and it will execute the application (cenotepad) automatically.

### 4.5 Application Development Procedure

#### Introduction

ADAM-6500 provides the Software Development Kit (SDK) and the built-in runtime library; you can use your existing windows-based programming skills to develop applications easily and rapidly through those tools. This document introduces how to develop custom application step by step.

#### **Application development Procedure**

1. Install Microsoft eMbedded Visual C++ V4.00 with Service Pack 1

The Microsoft eMbedded Visual C++ tool is a desktop development environment for creating applications and system components for Windows CE .NET-powered devices. This version features new capabilities such as C++ exception handling, Run Time Type Information (RTTI), and a plethora of new debugger functionalities. Before you begin to develop your application, you must install Microsoft eMbedded Visual C++ first.

- 2. Insert ADAM-6500 CD into the CD-ROM in the host PC.
- 3. Install ADAM-6500 Software Development Kit for eMbedded Visual C++ from below path: \Windows CE.NET V4.1\SDK\ADAM6500\_SDK\_V1.00.msi
- Install Microsoft ActiveSync 3.6 from below path: \Windows CE.NET V4.1\Utility\Microsoft ActiveSync 3.6.exe
- 5. Build the connection between the host and ADAM-6500 via ActiveSync. Further information about *ActiveSync*, please refer to "ActiveSync Connection".
- 6. Execute eMbedded Visual C++.

Select "File" → "New" to open a new project. Select your project type in the left blank of window and enter the *new project name / location* in the right side of window. Please note that CPU type must select Win32 (WCE ARMV4).

New	<u>?</u> ×
Files Projects Workspaces	
<ul> <li>WCE Application</li> <li>WCE ATL COM AppWizard</li> <li>WCE Dynamic-Link Library</li> <li>WCE MFC ActiveX ControlWizard</li> <li>WCE MFC AppWizard (dll)</li> <li>WCE MFC AppWizard (exe)</li> <li>WCE Static Library</li> </ul>	Project name: test test Location: C:\TEMP\test C Create new workspace C Add to current workspace Dependency of: CPUs: CPUs: CPUs: CPUs: CPUs: CPUS: CP
	Win32 (WCE MIPSII)  Win32 (WCE MIPSII_FP)
2	OK Cancel

8. Select "ADAM6500" in the main window of eMbedded Visual C++.



9. After you complete above configuration procedure, you can start to develop your application. Press "Build"→

"Build xxx.exe" to compile your program to .exe file and download it to UNO.

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Workspace 'test': 1 p	
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Source Files     Update Remote Output File(s)     StdAfe can	
test.cpp ! Execute test.exe Ctd+F5	
test.rc Set Active Configuration	
testDlg.cpp Configurations	
E Cater in Sale Active Platform	
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	Ţ
Build / Debug / Find in Files 1 / Find in Files 2 /	
Builds the project	///

10. If you want to execute your program, press "**Build**" → "**Execute xxx.exe**" and then the program will be executed in ADAM-6500.

### 4.6 Save your settings

Once you made changes for ADAM6500, you may need run RegSave.exe to save Windows CE system Registry to CF card or on-board flash disk to keep your settings. See <u>Registry Saving</u> section for detail.

### **Registry Saving**

Running RegSave.exe to save system Registry to CF card or on-board Flash. you can specify command line parameter for RegSave.exe shown as below:

RegSave [-f] [-s] [-fs]

[-f]: Save Registry to Flash and CF card[-s]: RegSave will not display any message despite whether the action is succeeded or not.

[-fs]: combination of [-f] and [-s]

If you running RegSave.exe without parameter, it will only save Registry to CF card and it will display message to notify you whether the Registry has been successfully saved.

### 4.7 Installation for Drivers, Example

ADAM-6500 CD offers the ADAM Device Manager, DLL driver, Example and Modbus/RTU driver.

#### 4.7.1. ADAM Device Manager, ADAM DLL Driver

The file and path of ADAM Device Manager in ADMA-6500 CD : \Drivers\ADAM DLL Beta V1.0\Device Manager\ DeviceInstall\_ARM\_ce410.CAB

The file and path of ADAM DLL driver in ADAM-6500 CD : \Drivers\ADAM DLL Beta V1.0\Driver\ ADAM\_ARM\_ce410.CAB

Step 1 : Please insert the CD in CD-ROM of host PC and share it in network. Please connect the ADAM-6500 via uScope through Ethernet (please refer the Chapter 3.2 for the step by step guideline)

Step 2 : Please go to "My Computer" icon and double click it.



**Step 3 : Connect to the directory of host computer to copy the required file into ADAM-6500** (for example : Advantech Device Manager).



Step 4 : Double click the .CAB file to start the program installation. The installation wizard will guide user to install the software.

Note : The ".CAB" file is the installation program for WinCE. Please copy these file into ADAM-6500 image for installation directly. Please don't use WINZIP or the other tools to unzip it.

### 4.7.2. The ADAM Driver Example Installation

The file and path of ADAM DLL example in ADAM-6500 CD : All Example : \Windows CE\ADAM DLL Beta V1.0\Example\Example EXE File\All CONSOLE\_ARM\_CE410.CAB

Please use the related example to test the connected ADAM module.

```
Source Code : \Drivers\ADAM DLL Beta V1.0\Example\WinCE Source Code\ EXAMPLE.EXE
Please run this EXE file for installing in desktop PC directly
```

Please follow the same installation steps as Section 4.7.1 (for ADAM Device Manager and DLL Driver) to install it in ADAM-6500 WinCE.NET image.

#### 4.7.3. Modbus/RTU Driver for WinCE.NET

The path of Modbus/TCP in ADAM-6500 CD : \**Drivers**\**ModbusRTU Driver**\

Step 1 : Please connect the ADAM-6500 via uScope through Ethernet (please refer the Chapter 3.2 for the step by step guideline)

Step 2 : Please go to "My Computer" icon and double click it.



Step 3 : Connect to the directory of Modbus/RTU driver of ADAM-6500 CD in host computer (please share the CD-ROM in network first) to copy the all of the content in this directory into ADAM-6500



Note : Please install the related driver program in "Flash" directory of ADAM-6500

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#### 4.7.4. ADAM DLL Driver Test Procedure

Step 1 : Please go to the \Flash\Advantech Driver\ in ADAM-6500. Click the "AdsDeviceInstal.exe" to start up the DeviceManager Installation.

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NDS4000.dll	70.0KB	Application Extension	4/5/2004 3:31:14 AM				
NDS5000.dll	62.0KB	Application Extension	4/5/2004 3:31:16 AM				
NdsComm.dll	15.0KB	Application Extension	12/29/2003 10:45:34 AM				
NdsDemo.dll	15.5KB	Application Extension	12/29/2003 10:45:36 AM				
AdsDeviceInstall.exe	17.5KB	Application	12/29/2003 10:45:36 AM				
NadsIni.dli	7.00KB	Application Extension	12/29/2003 10:45:36 AM				
ADSIODriver.dll	83.5KB	Application Extension	12/29/2003 10:45:36 AM				
ADSOFT.exe	5.00KB	Application	12/29/2003 10:54:24 AM				
AdsSimu.dll	15.5KB	Application Extension	12/29/2003 10:45:36 AM				
🔊 Cadsapi32.dll	33.5KB	Application Extension	12/29/2003 10:45:36 AM				
COUNTER.exe	5.50KB	Application	12/29/2003 10:54:24 AM				
DASOFT.EXE	5.00KB	Application	12/29/2003 10:54:24 AM				
🛅 Digin.exe	5.00KB	Application	12/29/2003 10:54:24 AM				
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FREQ.exe	5.50KB	Application	12/29/2003 10:54:26 AM				
🛅 thermo.exe	5.50KB	Application	12/29/2003 10:54:26 AM				
🔊 UniReg.dll	7.00KB	Application Extension	12/29/2003 10:45:36 AM				
💦 Start 🔯 Advantech Driver	AdsDevice	eInstall	🔕 🕹 🍠 3:00 AM [ 🚱				

Step 2 : Please go to the "Device" (in tool bar) to start up the "Setup" dialog.



Step 3 : Please go to the click the "Advantech COM Devices" to setup the COM Port of ADAM-6500. Please change the COM Port to "1".



Step 4 : Add the ADAM module for connection (the following example is ADAM-4018+). Please select the "AdvantechADAM-4000 Modules for RS-485" then click "Add" bottom.

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List of	
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Advantech ADAM-5000 Modules for RS-485	
<u></u>	

Step 5 : Select the added module in "Module Type" (example : ADAM-4018+)

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	B→ I     Advantech COM Devices       I     Add	
		F

Step 6 : Close the Window of Device Manager. Please click the ADSOFT.EXE for test ADAM-4018+ connection (ADSOFT.exe : AI Module test program, DASOFT.exe : AO Module test program, Digin.exe : DI Module test program, Digout.exe : DO Module test program, FREQ.exe : Counter Module test program, thermo.exe : Thermocouple Module test program)

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NDS5000.dll	62.0KB	Application Extension	4/5/2004 3:31:16 AM				
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🔊 AdsDemo.dll	15.5KB	Application Extension	12/29/2003 10:45:36 AM				
🔼 AdsDeviceInstall.exe	17.5KB	Application	12/29/2003 10:45:36 AM				
🔊 AqtsIni.dll	7.00KB	Application Extension	12/29/2003 10:45:36 AM				
NDriver.dll	83.5KB	Application Extension	12/29/2003 10:45:36 AM				
ADSOFT.exe	5.00KB	Application	12/29/2003 10:54:24 AM				
🔊 AdsSimu.dll	15.5KB	Application Extension	12/29/2003 10:45:36 AM				
🔊 Cadsapi32.dll	33.5KB	Application Extension	12/29/2003 10:45:36 AM				
COUNTER.exe	5.50KB	Application	12/29/2003 10:54:24 AM				
DASOFT.EXE	5.00KB	Application	12/29/2003 10:54:24 AM				
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🔊 UniReg.dll	7.00KB	Application Extension	12/29/2003 10:45:36 AM				
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**Step 7 : Please enter the Device Number, Module Number and Channel Number for connection test.** 



### **Appendix A : Configuration Hint :**

- 1. FTP password Owner : Password for boot-up can't save into registry. User have to reset the password after re-boot the ADAM-6500.
- 2. The computer must be set as the same network domain with the connected ADAM-6500 module for communicating requirement.