



MobileView™ Tablet T750

2727-T7P30D1F

User Manual

Rockwell Automation

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.ab.com/manuals/gi) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual we use notes to make you aware of safety considerations.

	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
ATTENTION	 Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you: identify a hazard avoid a hazard recognize the consequence
SHOCK HAZARD	Labels may be located on or inside the drive to alert people that dangerous voltage may be present.
BURN HAZARD	Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.

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Read this preface to familiarize yourself with the rest of the manual. It provides information concerning:

- who should use this manual
- related documentation
- conventions used in this manual
- intended uses
- European Communities (EC) Directive Compliance
- Standard and agency certifications
- Rockwell Automation Support

Who Should Use thisThis manual is for the individuals responsible for installing,
configuring, troubleshooting, and operating the MobileView terminal
in an industrial environment.

Related Documentation The following documents contain additional information concerning Rockwell Automation products. To obtain a copy, contact your local Rockwell Automation office or distributor.

For	Read this Document	Publication Number
Instructions on using and caring for your MobileView Tablet.	MobileView Tablet T750 Quick Start	2727-QS001
Instructions on Flash Upgrade procedures for your MobileView Tablet.	MobileView Tablet T750 Flash Upgrade Getting Results	2727-GR001

Common Techniques Used in this Manual

Intended Uses

The following conventions are used throughout this manual:

- Bulleted lists such as this one provide information, not procedural steps.
- Numbered lists provide sequential steps or hierarchical information.
- *Italic* type is used for emphasis.

The MobileView Tablet may only be used for the types of use described in this manual. The MobileView Tablet has been developed, manufactured, tested and documented in accordance with the appropriate safety standards. If you follow the instructions and safety precautions relating to the intended use are properly observed, the

Tablet does not under normal circumstances represent a danger to the health of personnel or a risk of damage to other property or equipment. Agency Approvals and The MobileView Tablet has been tested for compliance and has obtained the following approvals: Compliance • UL - This device is UL listed to United States and Canadian safety standards, UL-1950 and CAN/CSA 22.2 - No. 950-95 (ITE equipment). • FCC RF Transmitter - This device complies with part 15 of the FCC 47 CFR, including the Modular Approval requirements for RF transmitters/receivers. • Canadian RF Transmitter - This device meets all the requirements of the Canadian Interference-Causing Equipment Regulation, including the Modular Approval requirements of RF transmitters/receivers. **European Communities (EC)** CE Marked: This device complies with EU directives 73-23-EEC (Low Voltage Directive) and 89-366-EEC (EMC Directive). It has been tested **Directive Compliance** and meets the requirements of the harmonized standard EN 60950 (safety of information technology equipment, including electric business equipment), and also complies with the requirements of EN 61326 (Class A) and EN 61000-4-2, 3, 4, 5, 6, 8, and 11. Further, this device complies with the requirements of RF transmitter/receivers. This is a Class A product intended for use in an ATTENTION industrial environment. In a domestic environment, this product may cause radio interference. If this occurs, the user may be required to take adequate measures. **PCMIA Card Declarations** Manufacturers Federal Communication Commission Declaration of Conformity Statement of Conformity Models: AIR-LMC 34X Series and AIR-LMC 35X Series

FCC Certification Numbers: LDK102035 (Air LMC 34X), LDK102040 (Air LMC 35X)

Manufacturer:

Cisco Systems, Inc. 170 West Tasman Drive San Jose, CA 95134-1706 USA

This device complies with Part 15 rules. Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference, and
- **2.** This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and complies with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and radiates radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference. However, there is no guarantee that interference will not occur. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician.



The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modifications to said product not expressly approved by Cisco could void the user's authority to operate this device.

Department of Communications - Canada

Canadian Compliance Statement

This Class B Digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

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Cet appareil numerique de la classe B respecte les exigences du Reglement sur le material broilleur du Canad.

This device complies with Class B Limits of Industry Canada. Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference, and
- **2.** This device must accept any interference received, including interference that may cause undesired operation.

The device is certified to the requirements of RS-139-1 and RSS-210 for 2.4 GHz spread spectrum devices. The use of this device in a system operating either partially of completely outdoors may require the user to obtain a license for the system according to the Canadian regulations. For further information, contact your local Industry Canada office.

European Telecommunications Standards Institute

Statement of Compliance

Information to User

This equipment has been tested and found to comply with the R&TTE Directive as follows:

For units with Cisco Air-LMC 340 Series radios

Radio: ETS 300.328 EMC: ETS 300.826 Safety: EN 60950

For units with Cisco Air-LMC 350 Series radios

Radio: EN 300.328-1, EN 300.328-2 EMC: EN 301.489-1, EN 301-489-17 Safety: EN 60950

This type of accepted equipment is designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the installation instructions, may cause harmful interference to radio communications.

PCMIA Card Radio Module Safety Information

FCC Approval

The FCC with its action in the ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The Cisco/Aironet 350 Series products meet the uncontrolled environmental limits found in OET-65 and ANSI C-95.1, 1991. Proper operation of this radio according to the instructions found in this manual results in exposure substantially below the FCC's recommended limits.

ATTENTION	 Do not touch or move antenna(s) while the unit is transmitting or receiving. Do not hold any component containing the radio so that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.
	• Do not operate radio or attempt to transmit data unless the antenna is connected; if the antenna is not connected, the radio may be damaged.



Do not operate a portable transmitter near unshielded blasting caps or in an explosive environment unless it is a type especially qualified for such use.

Warning to Handheld Computer Users

To comply with the FCC RF exposure limits, it is recommended when using a handheld computer with an integrated RF transmitter and antenna, that the antenna should not be positioned closer than 5 cm (2 in) from your body or nearby persons for extended periods of time while it is in the transmitting mode (or operating). If the antenna is positioned less than 5 cm (2 in) from the user, it is recommended that the user limit exposure time.

Rockwell Automation Support

Rockwell Automation offers support services worldwide, with over 75 Sales/Support Offices, 512 authorized Distributors and 260 authorized Systems Integrators located throughout the United States alone, plus Rockwell Automation representatives in every major country in the world.

Local Product Support

Contact your local Rockwell Automation representative for:

- sales and order support
- product technical training
- warranty support
- support service agreements

Technical Product Assistance

If you need to contact Rockwell Automation for technical assistance, please review the *Troubleshooting* information in 7 of this manual first. Then call your local Rockwell Automation representative.

Your Questions or Comments on this Manual

If you find a problem with this manual, or you have any suggestions for how this manual could be made more useful to you, please contact us at the address below:

Rockwell Automation Control and Information Group Technical Communication, Dept. A602V P.O. Box 2086 Milwaukee, WI 53201-2086

or visit our internet page at:

http://www.rockwellautomation.com

Hardware Description

Hardware Features

The MobileView Tablet is shown below. The hardware elements, controls, indicators, and ports are described in the following pages.



Hardware Elements

- **RF Antenna:** A PCMIA Radio Module Card is installed to support data transmission over an RF network.
- **Stylus:** Use the stylus to input data and execute functions by touching the screen. See page 3-4 for more information about using the stylus.
- **Touch Screen:** The LCD touch screen displays information and is used to input data and execute functions. The screen measures 7.7 inches diagonally. See page 3-3 for more information about using the screen.
- Speaker: The speaker makes system sounds audible.
- **Microphone:** The microphone enables you to record sounds (to be implemented in a future release).

Controls and Indicators

The MobileView Tablet contains the following controls and indicators. Detailed information about using each control and indicator is given in subsequent chapters.

Control/Indicator	Symbol	Description
	N/A	Battery Status LEDs: The LEDs indicate the battery charge level. A fully charged battery is represented by having all five green indicators lit. See page 4-2 for more information.
		Screen Brightness: Press the buttons with the stylus to increase or decrease brightness. See page 3-3 for more information.
- ①	- ① +	Screen Contrast: Press the buttons with the stylus to increase or decrease contrast. See page 3-3 for more information.

Programmable Buttons: The four programmable buttons allow one-touch access to applications. The button associations can be changed, but by default, the buttons are set as shown below. See page 3-12 for information on changing the buttons.

•	•	Opens terminal server client (configurable).
•	••	Opens wireless link status (configurable).
0	•••	Opens on-screen keyboard (configurable).
•	••••	Opens Windows Explorer (configurable).
		Navigational Arrow Buttons: The navigational buttons can move the current selection up, down, left, or right. Pressing the left and right arrow buttons simultaneously performs the same function as pressing the Esc (Escape) key on a computer keyboard (configurable). See page 3-13 for information on changing the buttons.
	<u> </u>	Start/Enter Button: Press this button to power up the MobileView Tablet 750 after it has been powered down or to enter an active selection.

Control/Indicator	Symbol	Description
<u> </u>	N/A	Notification LEDs: The LEDs can glow green, yellow or red. They are programmable and can be used to notify the user of an event, such as a low battery warning. See the Allen-Bradley website (www.ab.com) for more information on the optional "Software Developer's Toolkit" (catalog number 2727-MRSDK1).
AN TY X	**	Next and Previous Buttons: The next and previous buttons are programmed to move to the next or previous selection (configurable). See page 3-13 for information on changing the buttons.
	× ⁄	Plus and Minus Buttons: The plus (+) and minus (-) buttons operate similar to the same PC keyboard buttons depending on the context of current active application (configurable). See page 3-13 for more information on changing the buttons.

I/O Ports



Port	Symbol	Description
	J	Connects a Barcode wand to the Tablet. Refer to Connecting a Barcode Reader on page 6-5
		Connects a digital gage to the Tablet.
		Infrared Port: This port will enable you to send and receive data by infrared beam (IrDA) between the Tablet and a PC, keyboard, or a PCL3 compliant printer. WIN CE IrDA compliance is necessary for successful communications.

Port	Symbol	Description
۲	۲	Foot Switch Port: This port will connect a normally open, push-button foot switch. The Foot Switch duplicates the action of pressing the Enter key.
۲		External Power Receptacle: Connects to the AC adapter and charger or another external power source.
	Ļţ	RS-232 Port: Connects to a serial cable (2727-TRC1) between the tablet and a desktop computer for data transfer or for other RS-232 connections. The serial interface port operates up to 115 Kbps baud rate.
	÷	Universal Serial Bus (USB) Port: Connects to USB devices, such as a mouse or keyboard. The Tablet supports both fast (12Mbps) and slow (1.5 Mbps) data transfer speeds.
0 ())) /		Video/Monitor Connector: Connects to an external VGA monitor. When connected, the MobileView Tablet screen appears on both the Tablet and the external monitor.
۲	4	External Audio Port: Connects to an external speaker, headphone, or microphone.
0	N/A	Reset Button: Performs either a soft or full reset. See pages 7-2 and 7-3 for details about resetting the MobileView Tablet.

See 6 for additional information on hardware connections and configuration.

See 8 for hardware specifications and accessories.

Quick Start

Installing the Battery

1. Slide the battery into the battery compartment until the battery cover plate is flush with the Tablet case, then slide the cover plate up. You should feel the battery snap into place.





Install only the battery supplied with your MobileView Tablet. Use of any other battery could result in a hazard to the operator and damage to equipment.

2. To close the battery compartment, gently slide the battery cover-plate up.



Startup/Power On

Press the ENTER button to turn the MobileView Tablet ON.



If the battery level is sufficient enough, the following power-up screen should appear.



If power-up screen does not appear, connect the MobileView Tablet to the ac adapter/charger to operate on ac power and charge the battery.

Using the AC Adapter/Charger

Plug the jack end of the cable from the AC adapter into the charger port as shown. The battery will recharge when connected to external power.



IMPORTANT

Use only the AC Adapter supplied with your MobileView Tablet. Using another type of adapter may cause a malfunction or damage the battery pack.

Power Save Reactivation

The MobileView Tablet 750 also includes a battery power saving feature that suspends Tablet operations, including screen operations, if Tablet is idle beyond suspend timer setting. The default setting is 5 minutes. To reactivate Tablet, press any of the program, navigational, or start/enter buttons. If the AC Adapter/Charger is connected, tapping the touch screen will also reactivate the Tablet.

RF Network Configuration IP Address Configuration

The internal Cisco wireless LAN adapter is preconfigured to obtain an IP address via DHCP. If a specified IP address is desired, perform the following steps.

Remote Communication

Your network configuration affects how you remotely communicate with an internet, intranet, or between two or more MobileView Tablets. Since there are a variety of possible network configurations, we recommend you contact your network administrator or internet service provider (ISP) to help set up remote communications. The network administrator or ISP should be able to provide the necessary configuration information, such as the network configuration settings, the network architecture, and an IP address for the Tablet (if needed with your installation).

The following is an example of a remote communication setup, using a radio frequency (RF) network interface card, installed inside the MobileView Tablet. This installation also requires a properly configured access point for the RF signal.

Example of an RF Network Configuration

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- 2. Double-tap on the Network icon.
- 3. Tap the Adapters tab in the Network Configuration dialog box.

4. Select Cisco Wireless LAN Adapter from the list of drivers, then tap the Properties button.



5. Tap the IP address tab and select either "Obtain an IP address via DHCP" or "Specify an IP address", depending on your network configuration. If you select to specify an IP address, you need to fill out the information in the three text boxes with information from your network administrator or ISP.

Use the on-screen keyboard to enter the text. The on-screen keyboard is accessed by taping the keyboard icon on the task bar.

'Aironet Wireless LAN Adapte	er' Settings		OK ×	
IP Address Name Servers				
An IP address can be	🖲 Obtain an IP add	ress via DHCP		– DHCP option
computer. If your network	🔿 Specify an IP add	tress		selected
does not automatically assign IP addresses, ask your network	IP <u>A</u> ddress:	(1)		
administrator for an address, and then type it in the space	S <u>u</u> bnet Mask:	(2)		
provided	Default <u>G</u> ateway:	(3)		

(1) Must be a unique address from all others on the LAN.

(2) Must be identical to the server subnet mask.

- **6.** Tap OK in the settings dialog box. A notification appears, informing you that you will need to either remove and reinstall your card or restart the computer for your new settings to take effect. Tap OK.
- 7. Tap OK in the Network Configuration dialog box.
- **8.** Press and quickly release the Reset button with the stylus to restart the Tablet.



IMPORTANT

Do not press and hold in the reset button for more than a second or you will start a full reset where all data on the Tablet is deleted and parameters are reset to their initial default settings.

Wireless Adapter Setup

To communicate successfully, the internal Cisco wireless LAN adapter properties must be set to match your server's wireless LAN adapter or wireless access points properties.

To set internal Cisco wireless LAN adapter properties:

- **1.** Tap the Start button on the task bar.
- 2. Select Programs and then the Wireless Utilities folder.
- 3. Tap Cisco Setup selection to activate setup window.

ACU	? OK ×
Property:	Value:
SSID Client Name Infrastructure Mode Power Save Mode WEP	•
Driver V	ersion 2.22.16
Firmware \	Version V4.25.30
350 Series R	ladio is Associated
<u>O</u> K g	Cancel About

4. Enter the appropriate property selections and values. Use the on-screen keyboard shown above to enter alphanumeric characters where needed. On-screen keyboard can be accessed by taping the keyboard icon on the task bar.

See Chapter 5 for more detailed information on the property settings for the client adapter.

Confirming Wireless Link

Once RF network configuration is completed and PC wireless LAN adapter or wireless access points are enabled, follow the steps below to confirm wireless link.

- **1.** Tap the Start button on the task bar.
- 2. Select Programs and then the Wireless Utilities folder.
- 3. Tap the Cisco Link Status selection to activate status window.



Status screen should indicate overall link status as "Good" or "Excellent".

Starting Terminal Services

To connect to a terminal server as a CE client, follow these steps:

1. Double tap the Terminal Server Client shortcut on the Tablet's desktop or select the Terminal Server Client application from the Programs/Terminal Server Client folder of the Start menu.



- **2.** Enter the Terminal Server's name or valid TCP/IP address in the server box using the on-screen keyboard or select one of the server names or addresses listing in the recent servers box.
- **3.** Tap the connect button.

A server logon window, similar to the one shown below, should appear.

2										
My Computer										
@										
Recycle Bin										
Terminalse	L	ogon t	o Netv	work Se	erver	ОК	×			
		Resourc	e: \\4	40-QA-T	JP\IPC	\$				
		<u>U</u> ser Na	me:							
		Passwo	rd:							
		D <u>o</u> main	:		_	_	1			
					date de	ault				
	_ L			- cre	dential	S				
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A CONTRACTOR OF THE ACCOUNTS O						1.1		r ⊞ ⊒ ∠	10 Ph	'' <u>2</u> 2

Enter your user name and password to operate as an active CE client.

- **1.** Close down all applications that are running on CE client.
- **2.** Tap the Start button on the CE client task bar, select Shutdown and then choose Log Off Administrator to disconnect from terminal server.
- **3.** From Tablet power-up screen, tap the Start button on the task bar and then select Suspend to shut down power to all Tablet components except RAM memory.

Shut Down/Suspend

General Tablet Operation and Configuration

Initialization and Startup

Installing the Battery

1. Slide the battery into the battery compartment until the battery cover plate is flush with the Tablet case, then slide the cover plate up. You should feel the battery snap into place.





Install only the battery supplied with your MobileView Tablet. Use of any other battery could result in a hazard to the operator and damage to equipment.

2. To close the battery compartment, gently slide the battery cover-plate up.



Startup/Power On

Press the ENTER button to turn the MobileView Tablet ON.





If the battery level is sufficient enough, the following power-up screen should appear.

If power-up screen does not appear, connect the MobileView Tablet to the ac adapter/charger to operate on ac power and charge the battery.

Using the AC Adapter/Charger

Plug the jack end of the cable from the AC adapter into the charger port as shown. The battery will recharge when connected to external power.



IMPORTANT Use only the AC Adapter supplied with your MobileView Tablet. Using another type of adapter may cause a malfunction or damage the battery pack.

Power Save Reactivation

The MobileView Tablet T750 also includes a battery power saving feature that suspends Tablet operations, including screen operations, if Tablet is idle beyond suspend timer setting. The default setting is 5 minutes. To reactivate Tablet, press any of the program, navigational, or start/enter buttons. If the AC Adapter/Charger is connected, tapping the touch screen will also reactivate the Tablet.

Adjusting Screen Brightness and Contrast

Use the Screen Brightness and Contrast buttons at the top of the Tablet to adjust the appearance of the screen.

TIP

Increasing brightness uses more battery power. To conserve on battery power, decrease the brightness and increase the contrast. Adjust the settings until the screen is readable.

- To increase the brightness, press and hold the + brightness button.
- To decrease the brightness, press and hold the brightness button.
- To increase the contrast, press and hold the + contrast button.
- To decrease the contrast, press and hold the contrast button.



General Input/Activation Methods

You activate Tablet functions and applications using a combination of methods:

- Select or activate items on the touch screen by tapping them with the stylus
- Enter text into applications by tapping characters on the on-screen keyboard
- Write entries onto the screen using the stylus like a pencil
- Press the Tablet buttons
- Input data using a gage or other external input devices

Touch Screen

The touch screen that is mounted over the color display is used to input data and execute functions. Information can be input by using the on-screen keyboard, the CalliGrapher handwriting recognition program, or writing or drawing with the stylus in ScreenDraw mode.

Stylus

The stylus is used to input data and execute functions by touching the screen. An audible click occurs when the screen is touched. The following operations can be performed with the stylus:

- **Tap:** one quick touch of the stylus to the screen. A tap is used to press an on-screen button, select a menu item, press a key on the keyboard, and other similar operations.
- **Right Mouse Click**: press and hold the stylus on the screen for more than one second. This simulates a right mouse click.
- **Double-tap:** two taps on the screen, in quick succession. Double-tapping is used on icons to display a window and with certain application operations.
- **Drag:** pressing the stylus lightly on the screen and moving it across the screen. Dragging is used for *gestures* and to move small windows. Most applications will fill the entire screen and they cannot be sized or moved. Smaller windows, such as the Keyboard, can be moved by holding the stylus on the title bar of the Window and dragging it to a different location.
- Writing or drawing: the stylus can be used to write or draw on the screen. See ScreenDraw Mode on page 3-9 for more information. Handwriting can also be used with CalliGrapher's handwriting recognition program. See Handwriting Recognition on page 3-8 for more information.

TIP To avoid losing the stylus, always keep it in the Tablet's stylus holder when it is not in use.

IMPORTANT To avoid scratching or damaging the screen, never use a pen, pencil or other sharp implement in place of the stylus.

For more information on using the stylus, see CalliGrapher's on-line Help.

Taskbar Operation

The taskbar appears along the bottom of the screen. The following is an example; your taskbar may look different.

Start W Doc1		5	t. 🛯 🖉 🔬	🏓 10:24 AM	
 Start button	Application button	Statu icon	is Input buttons	Status icons	Desktop button

ltem	Operation
Start button	Tap the Start button to display the Start menu.
Application button	Tap an application button to restore or minimize an open application.
Input buttons	Tap the Stylus, Pen, or Keyboard button to select the input method.
Status icons	Double-tap a status icon to display information about the status of the Tablet, such as date/time, power management information, and communication status.
Desktop button	Tap the desktop button to display or minimize the <i>active</i> application (depending on the current status) - similar to the function of the application button.

Command Bar Operation

The command bar appears at the top of the screen when an application is running. Its appearance is dependent on the application. In general, there is a toolbar and a menu bar. See your application's on-line Help for more information.





On-screen Keyboard

On-Screen Keyboard

The on-screen keyboard allows you to type and enter text into programs, in a similar manner to using an external computer keyboard.

Operating On-Screen Keyboard

1. Tap the keyboard icon on the task bar to access the on-screen keyboard.



TIP

You may also display the on-screen keyboard by the down-up gesture.



Gesture to display keyboard

The handwriting recognition mode must be activated. Refer to Handwriting Recognition on page 3-8 for more information.

- 2. Tap the keys on the on-screen keyboard to enter information.
 - Tap the magnifying glass to make the keyboard larger;
 - Tap it again to restore the keyboard to the smaller size.
- **3.** To close the on-screen keyboard, tap the keyboard icon in the taskbar or the X on the keyboard display.

Adding the Keyboard Icon to the Taskbar

To ease keyboard selection, you can add the keyboard to the taskbar at the bottom of the touch screen as follows:

1. Hold the stylus on the Stylus \square or Pen \square icon in the taskbar until the CalliGrapher menu appears, then tap Options.

✓ Recognition Mode ScreenDraw Mode	
✓ Sound On Options ──	 Tap Options to customize CalliGrapher settings
Letter Shape Selector	
Help	
Close CalliGrapher	

TIP

You can also access CalliGrapher Options by tapping the Start button and selecting Settings Control Panel then double-tapping the CalliGrapher icon.

- 2. Tap the Icons tab in the CalliGrapher Options dialog box.
- 3. Tap the keyboard check box under Actions.



4. Tap Apply and the keyboard icon appears in the taskbar.



You can tap OK to apply the changes and close the dialog box simultaneously.

Handwriting Recognition

CalliGrapher is the handwriting recognition program installed on the MobileView Tablet. When handwriting recognition (Recognition Mode) is activated, you can write anywhere on the screen and the text is entered into the active program or window.

To use Handwriting Recognition mode, follow these steps:

- **1.** Tap on the Stylus \bowtie icon in the taskbar at the bottom of the screen to activate handwriting recognition mode.
- **2.** To improve the accuracy of handwriting recognition:
 - Use large handwriting.
 - Do not rest your palm on the screen.
 - Follow the suggestions in CalliGrapher's on-line Help.
- **3.** Optimize handwriting recognition by pressing and holding the stylus on the Stylus **∑** icon. Select the Letter Shapes Selector on the CalliGrapher menu. Follow the Letter Shapes Selector instructions in the on-line Help.

✓ Recognition Mode — ScreenDraw Mode	 Recognition Mode is active
✓ Sound On Options	
Letter Shape Selector —	— Tap to personalize handwriting recognition
Help	— Tap to access CalliGrapher's on-line Help
Close CalliGrapher	

TIP

To access CalliGrapher's on-line Help, press and hold the stylus on the Stylus or Pen icon. On the CalliGrapher menu, tap on Help. You can find additional help at ParaGraph's website: <u>http://www.paragraph.com</u>. From their home page, select CalliGrapher's Quick Start Guide.

Gestures

Gestures can be used for common operations, such as accessing the keyboard as described on page 3-6. A few examples of gestures that function at the current cursor location are shown below. See CalliGrapher's on-line Help on CalliGrapher Gestures for more information.

Gesture	Function
$\leftarrow \downarrow$	Return
$\stackrel{\downarrow}{\longleftarrow}$	Space
<i>—</i>	Backspace - draw the line from right to left
\rightarrow	Select Words - draw the line from left to right

ScreenDraw Mode

The stylus can be used to write or draw anywhere on the screen. Any marks you make on the screen remain on top of all open windows. The writing or drawing can be edited, saved, erased, or sent to the recognition program if the marks are all recognizable handwriting.

To use ScreenDraw mode, follow these steps:

- **1.** Tap on the Pen sicon in the taskbar at the bottom of the screen to activate ScreenDraw mode.
- 2. Hold the stylus on the Pen S icon in the taskbar until the CalliGrapher menu appears. Select the desired action (Clear Ink, Save InkNote, Load InkNote, Recognize Ink).



Changing the Display Orientation

The screen display can be set for portrait (vertical) or landscape (horizontal) orientation, depending on your preference.

Follow these steps to change the orientation of the screen display:

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap on the Display icon to open the Display Properties dialog box.

Display Properties ? OK 🗙	
Background Appearance Backlight	
Image: (None)	— Landscape check box
LCD CRT Mouse cursor Landscape <u>Restart</u>	

- **3.** On the Background tab, tap the Landscape check box to select or deselect the Landscape orientation.
- **4.** Tap the Restart button.

TIP

The touch screen will automatically recalibrate so the stylus works correctly with it. However, if you are having problems selecting with the stylus, manually calibrate the screen as instructed on page 3-17.

Button Configuration

The MobileView Tablet features configurable buttons including four Program buttons, Navigational Arrows, Next and Previous buttons, and Plus and Minus buttons. The buttons can be reprogrammed by changing the Buttons settings in the Control Panel as described on the following pages. The default button responses are shown below.

Default Button Operation

Button	Symbol	Description	
•	•	Opens terminal server client (configurable).	
•	••	Opens wireless link status (configurable).	
•	•••	Opens on-screen keyboard (configurable).	
•	••••	Opens Windows Explorer (configurable).	
	*	Navigational Arrow Buttons: The navigational buttons can move the current selection up, down, left, or right. Pressing the left and right arrow buttons simultaneously performs the same function as pressing the Esc (Escape) key on a computer keyboard.	
P	<u>ج</u>	Start/Enter Button: Press this button to power up the MobileView Tablet T750 after it has been powered down or to enter an active selection.	
	N/A	Notification LEDs: The LEDs can glow green, yellow or red. They are programmable and can be used to notify the user of an event, such as a low battery warning.	
XXXXXX	**	Next and Previous Buttons: The next and previous buttons are programmed to move to the next or previous selection (configurable).	
	× /	Plus and Minus Buttons: The plus (+) and minus (-) buttons operate similar to the same PC keyboard buttons depending on the context of current active application (configurable).	

Button Combinations

There are three possible button combinations that can be programmed that have the following defaults.

Button Combination	Function
left and right	Performs the same function as pressing the Esc (Escape) key on a PC keyboard
right and +	Performs the same function as pressing the Tab key on a PC keyboard
left and previous	Performs the same function as pressing the Tab key on a PC keyboard

Quick Launch Settings

There are four Quick Launch settings available. By default, the Quick Launch settings are associated with the four Program Buttons and in the instructions below, it is assumed that is how they are being used.

You can change the Quick Launch button associations as described in Advanced Button Configuration on page 3-13.

Follow these steps to change the Quick Launch settings:

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- 2. Double-tap on the Buttons icon to open the Buttons dialog box.

Buttons	
. \Windows\mstsc40.exe Browse	——Quick Launch button indicator ——Browse button
\Windows\CiscoLinkStatus.exe Browse	——Associated program (text box)
··· \Windows\SoftKeyboard.exe Browse	
···· \Windows\explorer.exe Browse	——— Load Defaults button
OK Cancel Load Defaults Advanced	

Indicators for the four program buttons are shown on the left side of the dialog box. They represent Quick Launch 1, 2, 3, and 4 accordingly. The program currently associated with each
Quick Launch is shown in the text box next to each button indicator.

- **3.** To change the program associations, press the respective Browse buttons.
- **4.** Using the browse dialog box, select the program you want the Quick Launch button associated with. In the example below, Pocket Paint (ppaint.exe) is selected.

	Open 🗈 💣 🧱 🏢 🦳 ? Q \Windows\	ок 🗙
Selected program	PocketTV.exe point.exe pregedit.exe primer.exe	₩ pwo \$ 3 rapi ®rem \$repl
	▲ Name: ppaint.exe	
	Type: Executable (*.exe)	•

5. Press the OK button to enter your change into the edit box in the Buttons dialog box. Repeat the process to change other Quick Launch settings if desired.

TIP

To revert to the default button settings, press the Load Defaults button in the Buttons dialog box.

Advanced Button Configuration

The Advanced button configuration allows you to associate any of the programmable buttons with a variety of PC type key functions or Quick Launch activations.

Follow these steps to make button associations:

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap on the Buttons icon to open the Buttons dialog box and then tap the Advanced button.



The left side of the Button Configuration window lists the programmable buttons and button combinations. The right side shows a list of functions or keystrokes that can be associated with those buttons. When you select a button on the left, the function associated with that button is highlighted. In the example below, the first program button is associated with Quick Launch 1.



- **3.** Tap the button you want to reprogram, then tap the desired function or keystroke from the "Keys" list. Tap OK.
- **4.** To configure another button, tap the Advanced button again and repeat the process until all the desired buttons are reprogrammed.

TIP

To revert to the default button settings, press the Load Defaults button in the configuration dialog box.

Registry Settings

As you customize your MobileView Tablet, many of the settings you choose are stored in the Registry file. Back up the Registry file after making significant changes to your configuration so that you have a quick way to restore your configuration in the event of a total power loss.

Saving Registry Settings

The Registry Backup Utility, named RegBackup.exe, is located in the Windows directory. The following procedure describes how to start the utility and backup your registry settings file.

1. Tap on the Start button and select Programs, MobileView, Backup.

The Registry Backup Utility dialog box opens:



- **2.** Select the type of backup to perform:
 - Backup Now Store the contents of the Registry, Windows Profiles, Favorites, and database contents to the Storage Card (i.e., non-volatile "disk-on-chip" memory).
 - Restore and Reboot Restores the last backup from the Storage Card and restarts the MobileView Tablet.

TIP

Registry backup files have the extension .FDF, and may be copied to your host computer for additional backup protection.

3. A message appears to inform you of the backup. Click on Exit to close the window.

Restoring Registry Settings

The Registry Backup Utility, named RegBackup.exe, is located in the Windows directory. The following procedure describes how to start the utility and restore your registry settings file.

1. Tap on the Start button and select Programs, MobileView, Backup.

The Registry Backup Utility dialog box opens:



- **2.** Backup the registry again. Refer to Saving Registry Settings on page 3-15.
- **3.** Select Restore and Reboot from the Backup Utility window.
- **4.** The system restores the last seccussful backup and restarts the MobileView Tablet.

Storage Card Operations The built in 32 MB flash storage card may be used to store registry settings, data, and applications to prevent loss under power failure conditions. Refer to Saving Registry Settings on page 3-15 and Restoring Registry Settings on page 3-16 for more information on storing and restoring registry data.

To view the contents of the flash storage card, activate Windows Explorer from the Start, Programs menu or press the fourth Programs button on the Tablet (if the default Quick Launch setting has been preserved). You will find a folder named Storage Card in My Computer. Double tap Storage Card to view contents. Use Microsoft ActiveSync software to transfer data files and applications between the Tablet's storage card and a PC. See pages 5-24 through 5-29 in this manual for details.

Adjusting the Volume and Sounds

To adjust the volume and sounds, follow these steps:

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap the Volume & Sounds icon to open the Volume & Sounds Properties dialog box

	Volume & So	unds Properties 🛛 ? OK 🗙
Tabs	Volume Sour	nds
Increase volume		Enable sounds for: ✓ Events (warnings, beeps and system events) ✓ Applications (program specific and all other sounds) ✓ Notifications (alarms, appointments and reminders) Enable clicks and taps for:
Decrease volume	▼ <u>S</u> oft	✓ Hardware buttons: ● Loud ○ Soft ✓ Screen taps: ● Loud ○ Soft

- **3.** Tap the Volume tab.
- **4.** Tap the up and down arrows to increase or decrease the volume.
- 5. Tap the check boxes to enable or disable the sound prompts.
- **6.** If you want to change the sounds used for various events, tap the Sounds tab and make the desired changes.
- 7. Tap **OK** to enter your changes.

Screen Recalibration The screen does not normally need to be recalibrated. If you are having problems selecting menus and other items with the stylus, follow this procedure to recalibrate the screen.

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap the Stylus icon to open the Stylus Properties dialog box.

- **3.** To adjust the double-tap sensitivity, tap the Double-Tap tab and follow the instructions there.
- **4.** To calibrate the screen, tap the Calibration tab, then tap the Recalibrate button.



5. Press and briefly hold the stylus on the center of the target. Repeat as the target moves around the screen.



While calibrating, be careful not to lean your hand on the screen or touch the screen, except with the stylus. If you miss the center of a target with the stylus, keep the stylus on the screen and slide it to the target's center, then lift the stylus.

6. Press the Enter button to accept the new settings.



To quit calibration without saving the changes, simultaneously press the left and right arrow buttons to Escape.

7. Tap OK to close the window.

Setting the Date and Time

Follow these steps to check and set the date and time properties:

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap on the Date/Time icon to open the Date/Time Properties dialog box.



- **3.** If the information is not correct, tap the calendar's left and right arrows to move forward or backward in the calendar until you reach the correct month and year.
- **4.** Tap today's date on the calendar.
- **5.** Tap the hour to select it and use the up and down arrows to change the hour. Change the minutes and seconds in the same manner.
- **6.** Tap the pull-down list to select your time zone, then tap Apply.
- 7. Tap the check box to select or deselect daylight savings time.
- **8.** When all the settings are correct, tap Apply.
- 9. Tap OK to close the dialog box.

Internet Time

Type the Host Name or IP Address in the box that the MobileView Tablet uses to retrieve the time information.

Date/Time Properties	? OK ×
Date/Time Internet Time	
Server Hostname or IP Address	Note: if a server is not specified, a DNS will be used.
Update Now	

Power Management

Introduction

Keeping the MobileView Tablet supplied with power is extremely important. The data, customized settings, and files you save on the Tablet are stored in RAM. If the power is not managed properly, stored information may be lost.

Tablet settings and files may also be saved to the Flash storage card to avoid loss during a power failure. See 3 for more information.

If the Tablet detects a power fault during operation, it performs a graceful shutdown. The internal backup battery maintains power to retain your data for up to two minutes if the main battery pack is removed or runs out of power. To avoid losing data, connect to an external power source and recharge the battery or replace the main battery pack as soon as possible. You can recharge the battery as instructed on page 4-5. You can also remove and replace the battery pack with a fully charged battery as instructed in Replacing the Main Battery Pack on page 4-7.

TIP

The Windows CE operating system and standard programs installed on the Tablet are stored in Flash Memory and cannot be erased or lost.

Battery Safety

Replacing or handling the battery incorrectly may present a risk of fire or explosion, which could cause serious injury.
• Only replace the main battery pack with the same type of battery, specified by Rockwell Automation (catalog number 2727-TRB7).
• Do not disassemble, short-circuit, or incinerate batteries or expose them to temperatures above +60°C (+140°F).
• Do not subject batteries to impact.
 Do not use rusty, discolored, cracked, or otherwise damaged batteries.
• Properly dispose of batteries. Check with your local solid waste officials for details about recycling options or for proper disposal in your area; or contact Rockwell Automation for instructions.

Checking the Power Level

The power level of the batteries can be checked in three different ways:

- Check the five battery status LEDs at the top left corner of the Tablet case for the *battery charge level* (a percentage based on the main battery's capacity).
- Check the battery pack LEDs for the true power level of the main battery (you must remove the battery to view these LEDs).
- Check the Tablet's power properties, using the Control Panel, for information on the power status of both the main battery pack and backup battery.



Main Battery Status LEDs

The Tablet can typically operate for up to 8 hours before the batteries require recharging. This operation time may vary based on Tablet settings, use, and environmental conditions. The five battery status LEDs, on the top left corner of the Tablet, indicate the main battery charge level in 20% increments. The charge level represented by the LEDS is shown in the following table.

Charge Level	LEDs Lit
80 to 100%	5
60 to 79%	4
40 to 59%	3
20 to 39%	2
10 to 19%	1
Less than 10%	1 (display flashes)

Table 4.1 Main Battery Status LEDs

The Main Battery Status LEDs show the power level of the battery, based on the battery's original capacity. Over time, the capacity of the main battery pack gradually declines and it will no longer charge to its original level. To see the true power level of the battery, you need to check the main battery pack LEDs.

Main Battery Pack LEDs

Check the main battery pack LEDs by following these steps:

- **1.** Remove the battery as instructed in Replacing the Main Battery Pack on page 4-7.
- **2.** Press and release the TEST button. The current battery power level LED is displayed.
- **3.** If the battery no longer charges to full (F) capacity, but only to 1/2 or less, you should replace the battery to avoid unexpected power loss.

Power Properties Dialog Box

The power properties dialog box battery tab provides additional information about the power status of the main battery and backup battery.

To check the power properties, follow this procedure:

- **1.** Tap on the Start button.
- 2. From the Start menu, tap Settings, Control Panel.



3. Double-tap the Power icon to open the Power Properties dialog box:



If the AC power or other external power source is plugged in, you can double-tap either the AC power icon 🗊 or the battery charging icon 🗊 on the task bar to display the power properties.



4. Tap the Battery tab. Check the status of the Main and Backup batteries.

Battery Status

The Power Properties dialog box indicates battery status using the following terms:

Status	Description
Good	Battery power level is sufficient to operate the Tablet.
Low (main battery only)	Battery power level has dropped significantly. Recharge the batteries as soon as possible.
Very Low	Battery power level is at 2% or less. A notification popup appears on the screen and an audible warning will sound. Recharge the batteries immediately to avoid losing power.
Tablet powers down	Battery power level is at 1%. Recharge the batteries immediately to avoid losing data.
Charging	The main battery (left column) heading changes to read Charging when the AC power adapter is connected and the main battery is charging.
External	The main battery (left column) heading changes to read External when the main battery is not installed and the Tablet is running on external power only.

Managing Battery Power

Optimizing Main Battery Life

Following these tips can help optimize battery life and avoid a sudden power loss:

- Shorten the Suspend Timer's time period. See Automatic Suspend Mode Operation on page 4-8.
- Lower the screen brightness and use the contrast setting to increase readability. See page 3-3 to change the screen settings.
- Turn off unneeded sounds or mute the audio. See page 3-17 to adjust the sounds.
- Operate the Tablet with AC power connected whenever possible. See Using the AC Power Adapter/Battery Charger, below.

Using the AC Power Adapter/Battery Charger

You can connect the Tablet to the 100 to 240V ac power source using the AC power adapter to operate on AC power and to charge the battery.

The battery is fully charged (to its capacity) when the five battery LED indicators are green. Verify the percentage of battery capacity by looking at the power feature in the control panel. Tap the Start button and select Settings, Control Panel, Power. Use the AC power adapter when you:

- Run the Tablet for long periods of time
- Recharge the battery
- Communicate with a PC



The Suspend Timer turns off when an external power source is connected to the Tablet, unless the timer has been enabled to remain on. Refer to Automatic Suspend Mode Operation on page 4-8.

IMPORTANT

TIP

Use only the AC adapter supplied with your MobileView Tablet. Using another type of adapter may cause a malfunction or damage the battery pack.



To charge the main battery pack, follow these steps:

- **1.** Connect the AC adapter to the Tablet's power port.
- **2.** Connect the other end to the 100 to 240V ac power source.



Over time, the capacity of a battery pack gradually declines. If you notice that the battery pack does not stay charged as long as expected, it is probably time to replace it with a new battery.

- To check battery capacity, see Main Battery Pack LEDs on page 4-3.
- To replace the battery, see Replacing the Main Battery Pack on page 4-7.

Using the Single Battery Charging Station

To charge the main battery pack without the use of the MobileView Tablet itself, you may use the single battery charging station (Allen-Bradley catalog number 2727-TRSP1). To charge the main battery pack in the single battery charging station, follow these steps:

- **1.** Plug the battery charging station into the 100 to 240V ac power source, using the AC adapter provided with the charging station.
- **2.** Remove the battery from the Tablet as instructed in Replacing the Main Battery Pack, on page 4-7.
- **3.** Slide the battery, battery cover end up, into the battery charger cradle until the red light on the battery charger comes on. When the light on the battery charger turns green, the battery is finished charging.
- **4.** Check the battery pack LEDs for the battery power level as instructed in Main Battery Pack LEDs on page 4-3, before placing the main battery into the Tablet.

Replacing the Main Battery Pack

IMPORTANT

The internal backup battery maintains power to retain your data for up to two minutes if the main battery pack is removed or runs out of power. To avoid losing data, files, or registry settings, save registry settings files and data to the storage card, connect to an external power source and recharge or replace the main battery pack immediately. See Using the AC Power Adapter/Battery Charger on page 4-5. See Saving Registry Settings and Storage Card Operations in 3.

IMPORTANT

The internal backup battery is not replaceable. It charges automatically when the Tablet is connected to AC power.

To replace the main battery pack, follow these steps:

- **1.** Slide battery cover plate down (about one-eight of an inch).
- 2. Remove the battery by sliding the battery (and the cover plate) towards you (away from the case) until the battery is completely removed from the case.
- **3.** Slide the battery into the battery compartment until the battery cover plate is flush with the Tablet case, then slide the cover plate up. You should feel the battery snap into place.







Install only the battery supplied with your MobileView Tablet. Use of any other battery could result in a hazard to the operator and damage to equipment.

4. To close the battery compartment, gently slide the battery cover-plate up.

Using Suspend Mode



In suspend mode, power is only supplied to the RAM to maintain its contents; no other system components are powered. Suspend mode consumes less power than the Idle or On modes.

Activating Suspend Mode Manually

To activate suspend mode manually, follow these steps:

1. Tap on the Start button and select Suspend from the menu.

The screen blacks-out.

2. To reactivate the Tablet and turn off the suspend mode, press any key.

Automatic Suspend Mode Operation

You can save battery power and prevent unauthorized use of the Tablet by setting the Tablet to idle mode after a set period of idle time. To set the idle timer, follow these steps:

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap the Power icon to open the Power Properties dialog box:

TIP

If the AC power or other external power source is plugged in, you can double-tap either the AC power icon 🗊 or the battery charging icon 💕 to display the power properties.



- **3.** Tap the Power Off tab.
- 4. Tap the drop-down list and tap the desired time period.
- **5.** If you want the automatic suspend mode to be effective when an external power source is being used, tap the check box to enable this option and select a time period in selection box located directly below the check box.
- 6. Tap OK to enter your settings and close the dialog box.

Communications Configuration

RF Network Communications

IP Address Configuration

The internal Cisco wireless LAN adapter is preconfigured to obtain an IP address via DHCP. If a specified IP address is desired, perform the following steps.

Remote Communication

Your network configuration affects how you remotely communicate with an internet, intranet, or between two or more MobileView Tablets. Since there are a variety of possible network configurations, we recommend you contact your network administrator or internet service provider (ISP) to help set up remote communications. The network administrator or ISP should be able to provide the necessary configuration information, such as the network configuration settings, the network architecture, and an IP address for the Tablet (if needed with your installation).

The following is an example of a remote communication setup, using a radio frequency (RF) network interface card, installed inside the MobileView Tablet. This installation also requires a properly configured access point for the RF signal.

Example of an RF Network Configuration

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- 2. Double-tap on the Network icon.
- 3. Tap the Adapters tab in the Network Configuration dialog box.
- **4.** Select Cisco Wireless LAN Adapter from the list of drivers, then tap the Properties button.



5. Tap the IP address tab and select either "Obtain an IP address via DHCP" or "Specify an IP address", depending on your network configuration. If you select to specify an IP address, you need to fill out the information in the three text boxes with information from your network administrator or ISP.

Use the on-screen keyboard to enter the text. The on-screen keyboard is accessed by taping the keyboard icon on the task bar.

'Aironet Wireless LAN Adapte	r' Settings		ок 🗙	
IP Address Name Servers				
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space provided	Optain an IP add Specify an IP add IP Address: Subnet Mask: Default Gateway:	dress via DHCP Idress (1) . (2) . (3) .	· · · · · · · · · · · · · · · · · · ·	– DHCP option selected

(1) Must be a unique address from all others on the LAN.

- (2) Must be identical to the server subnet mask.
- (3) This is optional.
- **6.** Tap OK in the settings dialog box. A notification appears, informing you that you will need to either remove and reinstall your card or restart the computer for your new settings to take effect. Tap OK.
- 7. Tap OK in the Network Configuration dialog box.
- **8.** Press and quickly release the Reset button with the stylus to restart the Tablet.

IMPORTANT

Do not press and hold in the reset button for more than a second or you will start a full reset where all data on the Tablet is deleted and parameters are reset to their initial default settings.



Wireless Adapter Setup

To communicate successfully, the internal Cisco wireless LAN adapter properties must be set to match your server's wireless LAN adapter or wireless access points properties.

To set internal Cisco wireless LAN adapter properties:

- **1.** Tap the Start button on the task bar.
- 2. Select Programs and then the Wireless Utilities folder.
- **3.** Tap Cisco Setup selection to activate setup window.



4. Enter the appropriate property selections and values. Use the on-screen keyboard shown above to enter alphanumeric characters where needed. On-screen keyboard can be accessed by taping the keyboard icon on the task bar.

Please refer to the Cisco Systems, Inc. website for more information on proper wireless system setup:

http://www.cisco.com/univercd/cc/td/doc/product/wireless/

Parameter	Description
SSID	The service set identifier (SSID) identifies the specific wireless network that you want to access. Range: You can key in up to 32 characters (case sensitive) Default: A blank field
	Note: If you leave this parameter blank, your client adapter can associate to any access point on the network that is configured to allow broadcast SSIDs (see the AP Radio Hardware page in the access point management system). If the access point with which the client adapter is to communicate is not configured to allow broadcast SSIDs, the value of this parameter must match the SSID of the access point. Otherwise, the client adapter cannot access the network.
Client Name	A logical name for your Windows CE device. It allows an administrator to determine which devices are connected to the access point without having to memorize every MAC address. This name is included in the access point's list of connected devices. Range: You can key in up to 16 characters Default: A blank field
	Note: Each computer on the network should have a unique client name.
Infrastructure Mode	Specifies the type of network in which your client adapter is installed. Options: Yes or No Default: Yes
	Yes: Indicates that your wireless network is connected to a wired Ethernet network through an access point. No: Indicates that your wireless network consists of a few wireless devices that are not connected to a wired Ethernet Network through an access point (referred to as <i>ad hoc mode</i>).

Parameter	Description
Power Save Mode	Sets your client adapter to its optimum power-consumption setting. Options : CAM, Fast PSP, or Max PSP Default : CAM (Constantly Awake Mode)
	 CAM: Keeps the client adapter powered up continuously so there is little lag in message response time. Consumes the most power but offers the highest throughput. Is recommended for desktop computers and devices that use AC power. Fast PSP: Fast PSP (Power Save Mode) switches between PSP mode and CAM mode, depending on network traffic. This mode switches to CAM when retrieving a large number of packets and switches back to PSP after the packets have been retrieved. Max PSP: Max PSP (Max Power Savings) causes the access point to buffer incoming messages for the client adapter, which wakes up periodically and polls the access point to see if any buffered message are waiting for it. The adapter can request each message and then go back to sleep. Conserves the most power but offers the lowest throughput. Is recommended for devices for which power consumption is the ultimate concern (such as small battery-powered devices).
WEP	Enables or disables WEP for your client adapter. Options : Enabled or Disabled Default : Disabled This parameter can be used in two ways:
	 If you set a WEP key using CEM, you must also select Enabled for this parameter to enable WEP for your client adapter. If you enabled LEAP for your client adapter, this parameter is changed automatically to Enabled, and the RADUIS server assigns a dynamic, session-based WEP key to the adapter

Parameter	Description
Authentication Type	Defines how your client adapter attempts to authenticate to an access point. Options: Open or Shared Key Default: Open
	 Open Authentication: Allows your client adapter, regardless of its WEP settings, to associate with an access point. If LEAP is enabled on your client adapter, Open Authentication is the only available option. Shared Key Authentication: Allows your client adapter to associate only with access points that have the same WEP key. This option is available only if the client adapter has been assigned a static WEP key in CEM, static WEP is enabled, and LEAP is not enabled. The access point sends a known unencrypted "challenge packet" to the client adapter, which encrypts the packet and sends it back to the access point. The access point attempts to decrypt the encrypted packet and sends an authentication response packet indicating the success or failure of the
	decryption back to the client adapter.
LEAP	Enables or disables LEAP authentication for your client adapter. Options : Enabled or Disabled Default : Disabled
	Enabled : Enables LEAP after you enter a username and password in WLM. Note : This parameter must be enabled before you set a LEAP username and password in WLM. Disabled : Disables LEAP. LEAP can be disabled as desired.
Mixed Mode	Indicates if the client adapter can associate to an access point that allows both WEP and non-WEP associations.
	• If the access point with which the client adapter is to associate has WEP set to Optional, you must enable Mixed Mode on the adapter (regardless of whether WEP is enabled on the adapter). Otherwise, the client adapter cannot establish a connection with the access point.
	 If the access point with which the client adapter is to associate does not have WEP set to Optional, Mixed Mode should be set to Disabled on the adapter.
	Options : Enabled or Disabled Default : Disabled
	Note : For security reasons, Cisco recommends that WEP-enabled and WEP-disabled clients not be allowed in the same cell because broadcast packets will be sent unencrypted, even to clients running WEP.

Parameter	Description
World Mode	Enables the client adapter to adopt the maximum transmit power level and the frequency range of the access point to which it is associated, provided the access point is also configured for world mode. This parameter is available only in infrastructure mode and is designed for users who travel between countries and want their client adapters to associate to access points in different regulatory domains.
	Options : Enabled or Disabled Default : Disabled Note : When World Mode is enabled, the client adapter is limited to the maximum transmit power level allowed by the country of operation's regulatory agency.
Data Rates	Specifies the rate at which your client adapter should transmit or receive packets to or from access points (in infrastructure mode) or other clients (in ad hoc mode). Auto is recommended for infrastructure mode; setting a specific data rate is recommended for ad hoc mode.
	Options : Auto, 1 Mb Only, 2 Mb Only, 5.5 Mb Only, or 11 Mb Only Default : Auto
	 Auto: Uses the 11 Mbps data rate when possible but drops to lower rates when necessary. 1 Mb Only: Offers the greatest range but the lowest throughput. 2 Mb Only: Offers less range but greater throughput than the 1 Mbps Only option. 5.5 Mb Only: Offers less range but greater throughput than the 2 Mbps Only option. 11 Mb Only: Offers the greatest throughput but the lowest range.
	 Note: Your client adapter's data rate must be set to Auto or must match the data rate of the access point (in infrastructure mode) or the other clients (in ad hoc mode) with which it is to communicate. Otherwise, your client adapter may not be able to associate to them. Note: If ACU is running but a client adapter is not currently inserted in the Windows CE device, the data rate options are based on the last adapter that was running in the system.

Parameter	Description
Transmit Power	Defines the power level at which your client adapter transmits. This value must not be higher than that allowed by your country's regulatory agency (FCC in the U.S., DOC in Canada, ETSI in Europe, MKK in Japan, etc.).
	Options : Dependent on the power table programmed into the client adapter; see the information below. Default : Max (the maximum level programmed into the client adapter and allowed by your country's regulatory agency).
	 Note: Reducing the transmit power level conserves battery power but decreases radio range. Note: If the client adapter is running, ACU queries the adapter and displays the settings programmed into the adapter. If the client adapter is not running, ACU displays power level options based on the last known radio type. Note: When World Mode is enabled, the client adapter is limited to the maximum transmit power level allowed by the country of operations's regulatory agency. Note: If you are using an older version of a 340 or 350 series client adapter, your power level options may be different than those listed here.

Power Levels	Client Adapter Type
Max, 100 mW, 50 mW, 30 mW, 20 mW, 5 mW, or 1 mW	350 series PC and LM cards
Max, 30 mW, or 1 mW	340 series PC cards
Max, 30 mW, 15 mW, 5 mW, or 1 mW	340 series LM cards

Confirming Wireless Link

Once RF network configuration is completed and PC wireless LAN adapter or wireless access points are enabled, follow the steps below to confirm wireless link.

- **1.** Tap the Start button on the task bar.
- 2. Select Programs and then the Wireless Utilities folder.
- 3. Tap the Cisco Link Status selection to activate status window.



Status screen should indicate overall link status as "Good" or "Excellent". Site survey and statistic applications are also available in the Wireless Utilities programs folder. Refer to 7 for more troubleshooting information.

When you use your client adapter with Windows CE, you can protect your data as it is transmitted through your wireless network by encrypting it through the use of wired equivalent privacy (WEP) encryption keys. With WEP encryption, the transmitting device encrypts each packet with a WEP key, and the receiving device uses that same key to decrypt each packet.

The WEP keys used to encrypt and decrypt transmitted data can be statically associated with your adapter or dynamically created as part of the LEAP authentication process. The information in Static WEP Keys, page 5-10 and Dynamic WEP Keys with LEAP, page 5-10 can help you to decide which type of WEP keys you want to use. Dynamic WEP keys with LEAP offer a higher degree of security than static WEP keys.

WEP keys, whether static or dynamic, are either 40 or 128 bits in length. 128-bit WEP keys contain more information than 40-bit keys and, therefore, offer a greater level of security.

TIP

Refer to the "Additional WEP Key Security Features section on page 5-12 for information on three security features that can make your WEP keys even more secure.

Overview of Security Features

Static WEP Keys

Each device within your wireless network can be assigned up to four static WEP keys. If a device receives a packet that is not encrypted with the appropriate key (as the WEP keys of all devices that are to communicate with each other must match), the device discards the packet and never delivers it to the intended receiver.

Static WEP keys are write-only and temporary; therefore, they cannot be read back from the client adapter and they are lost when power to the adapter is removed or the Windows CE device is rebooted. Although the keys are temporary, you do not need to re-enter them each time the client adapter is inserted or the Windows CE device is rebooted. This is because the keys are stored (in an encrypted format for security reasons) in the registry of the Windows CE device. When the driver loads and reads the client adapter's registry parameters, it also finds the static WEP keys, unencrypts them, and stores them in volatile memory on the adapter.

TIP

Prior versions of the client software for Windows CE permitted WEP keys to be stored in either Flash memory (persistent) or volatile memory (temporary). If your client adapter has WEP keys that are stored in Flash memory from a prior release, Client Encryption Manager (CEM) version 2.10 or greater allows you to store WEP keys only in volatile memory, and these keys are used instead of those stored in Flash memory.

The CEM utility enables you to view the current WEP key settings for the client adapter and then to assign new WEP keys or overwrite existing WEP keys, and the Aironet Client Utility (ACU) allows you to enable or disable static WEP. Refer to the "Using Static WEP" section on page 5-15 for instructions.

Dynamic WEP Keys with LEAP

The new standard for wireless LAN security, as defined by the Institute of Electrical and Electronics Engineers (IEEE), is called 802.1X for 802.11 or simply 802.1X. An access point that supports 802.1X and its protocol, Extensible Authentication Protocol (EAP), acts as the interface between a wireless client and an authentication server, such as a Remote Authentication Dial-In User Service (RADIUS) server, to which the access point communicates over the wired network. The 802.1X authentication type that is available on Windows CE devices is EAP-Cisco Wireless, or LEAP. Support for LEAP is provided not in the Windows CE operating system but in your client adapter's firmware and the Cisco software that supports it. RADIUS servers that support LEAP include Cisco Secure ACS version 2.6 and greater, Cisco Access Registrar version1.7 and greater, and Funk Steel-Belted RADIUS version 3.0 and greater.

LEAP is enabled in ACU, and a LEAP username and password are entered in the Wireless Login Module (WLM). The username and password are used by the client adapter to perform mutual authentication with the RADIUS server through the access point. The LEAP username and password are stored in the client adapter's volatile memory; therefore, they are temporary and need to be re-entered whenever power is removed from the adapter, typically due to the client adapter being ejected or the system powering down.

TIP Prior versions of the client software for Windows CE stored the LEAP username and password in the client adapter's nonvolatile Flash memory, which was referred to as device-level LEAP. If a LEAP username and password are stored in your client adapter's Flash memory from a prior release, WLM version 2.10 or greater erases them before a new username and password are written to the adapter's volatile memory, thereby disabling device-level LEAP.

When you enable Network-EAP on your access point and LEAP on your client adapter, authentication to the network occurs in the following sequence:

1. The client adapter associates to an access point and begins the authentication process.

TIP

The client does not gain access to the network until mutual authentication between the client and the RADIUS server is successful.

2. Communicating through the access point, the client and RADIUS server complete a mutual authentication process, with the password being the shared secret for authentication. The password is never transmitted during the process.

- **3.** If mutual authentication is successful, the client and RADIUS server derive a dynamic, session-based WEP key that is unique to the client.
- **4.** The RADIUS server transmits the key to the access point using a secure channel on the wired LAN.
- **5.** For the length of a session, or time period, the access point and the client use this key to encrypt or decrypt all unicast packets that travel between them.

Refer to the "Using LEAP" section on page 5-21 for instructions on enabling or disabling LEAP and entering the LEAP username and password.

TIP

Refer to the IEEE 802.11 Standard for more information on 802.1X authentication and to the following URL for additional information on RADIUS servers: http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/12cgcr/secur_c /scprt2/scrad.htm

Additional WEP Key Security Features

Client adapter firmware version 4.25.23 and greater and Windows CE driver version 2.2x and greater support three new security features designed to prevent sophisticated attacks on your wireless network's WEP keys. These features (MIC, TKIP, and broadcast key rotation) do not need to be enabled on the client adapter; they are supported automatically in the driver and firmware versions listed above. However, they must be enabled on the access point.

TIP

Access point firmware version 11.10T or greater is required to enable these security features. Refer to the Cisco Aironet Access Point Software Configuration Guide for instructions on enabling these security features on the access point.

Message Integrity Check (MIC)

MIC prevents bit-flip attacks on encrypted packets. During a bit-flip attack, an intruder intercepts an encrypted message, alters it slightly, and retransmits it, and the receiver accepts the retransmitted message as legitimate. The MIC adds a few bytes to each packet to make the packets tamper-proof.

The ACU screen displays the word "(MIC)" next to the current status if MIC is supported by the client adapter's driver and firmware and is enabled on the access point.





If you enable MIC on the access point, your client adapter's driver must support MIC; otherwise, the client cannot associate.

Temporal Key Integrity Protocol (TKI P)

This feature, also referred to as WEP key hashing, defends against an attack on WEP in which the intruder uses the initialization vector (IV) in encrypted packets to calculate the WEP key. TKIP removes the predictability that an intruder relies on to determine the WEP key by exploiting IVs. It protects both unicast and broadcast WEP keys.

TIP

If you enable TKIP on the access point, your client adapter's firmware must support TKIP; otherwise, the client cannot associate.

Broadcast Key Rotation

EAP authentication provides dynamic unicast WEP keys for client devices but uses static broadcast, or multicast, keys. When you enable broadcast WEP key rotation, the access point provides a dynamic broadcast WEP key and changes it at the interval you select. When you enable this feature, only wireless client devices using LEAP or EAP-TLS authentication can associate to the access point. Client devices using static WEP (with open, shared key, or EAP-MD5 authentication) cannot associate.

Synchronizing Security Features

In order to use any of the security features discussed in this section, both your client adapter and the access point to which it will associate must be set appropriately. Table 5.1 indicates the client and access point settings required for each security feature. This chapter also provides specific instructions for enabling the security features on your client adapter. Refer to the Cisco Aironet Access Point Software Configuration Guide for instructions on enabling the features on the access point.

Security Feature	Client Setting	Access Point Setting	
Static WEP with open authentication	Create a WEP key and enable Use Static WEP Keys and Open Authentication	Set up and enable WEP and enable Open Authentication	
Static WEP with shared key authentication	Create a WEP key and enable Use Static WEP Keys and Shared Key Authentication	Set up and enable WEP and enable Shared Key Authentication	
LEAP authentication	Enable LEAP	Set up and enable WEP and enable Network-EAP	
MIC	Use driver version 2.2x or greater	Set up and enable WEP with full encryption, set MIC to MMH, and set Use Aironet Extensions to Yes	
ТКІР	Use firmware version 4.25.23 or greater	Set up and enable WEP, set TKIP to Cisco, and set Use Aironet Extensions to Yes	
Broadcast key rotation	Use firmware version 4.25.23 or greater and enable LEAP	Set up and enable WEP and set Broadcast WEP Key Rotation Interval to any value other then zero (0)	

Table 5.1 Client and Access Point Security Settings

Using Static WEP

This section provides instructions for entering new static WEP keys or overwriting existing static WEP keys. Follow the procedures in the order listed below:

- **1.** Open CEM; see below
- **2.** View the client adapter's current static WEP key settings; see page 5-16
- **3.** Perform one of the following:
 - Enter a new static WEP key and enable WEP; see page 5-17
 - Overwrite an existing static WEP key; see page 5-18
- 4. Change the CEM password (optional); see page 5-19

Opening CEM

Follow the steps below to open CEM.

1. Double-click the Cisco CEM icon or select Start/Programs/Cisco/Client Encryption Manager. The Enter password screen appears, provided client adapter is installed in the Windows CE device and is running.

Enter Password: 🛛 🗙	
CISCO CEM	Client Encryption Manager
Password:	Version 2.20.00
	<u>OK</u> <u>C</u> ancel

2. Enter the correct password in the Password field and click OK.

Passwords are case sensitive and can contain up to 256 alphanumeric characters. The default password is Cisco (uppercase C followed by lowercase isco). For security reasons, the characters you enter are displayed as asterisks.

TIP

Refer to the "Changing the CEM Password" section on page 5-19 for instructions on changing the default password.

Viewing the Client Adapter's Current Static WEP Key Settings

Follow the steps below to view the client adapter's current static WEP key settings.

1. If you entered the password correctly in the Enter Password screen, the CEM screen appears.

CEM	? 0K ×
Already Transmit	Key Size
WEP Key 1	
□ WEP Key 2 0	00
WEP Key 3 🔿	\odot
WEP Key 4	
Change Password OK	<u>C</u> ancel

A checkmark appears in the Already Set? box for all existing static WEP keys.



For security reasons, the codes for existing static WEP keys do not appear on the screen.

- **2.** Perform one of the following:
 - If no static WEP keys have been set, go to the "Entering a New Static WEP Key and Enabling Static WEP" section on page 5-17 to set up one or more static WEP keys.
 - If you want to use an existing static WEP key, make sure the Transmit Key button to the left of the key is selected and click OK. This is the key that will be used to transmit packets. Then open ACU and make sure WEP is enabled.
 - If you want to overwrite an existing static WEP key, go to the "Overwriting an Existing Static WEP Key" section on page 5-18.

Entering a New Static WEP Key and Enabling Static WEP

Follow the steps to enter a new static WEP key for your client adapter.

1. If you entered the password correctly in the Enter Password screen, the CEM screen appears.

CEM ?	ок 🗙	
Already Transmit	Key Size	
Set ? Key	40 128	
WEP Key 1 (0123456789abcd)	\odot	
WEP Key 2	$\odot \circ$	
WEP Key 3	$\odot \circ$	
WEP Key 4	$\odot \circ$	
Change Password OK Cancel		

This screen allows you to create up to four static WEP keys.

- 2. For the static WEP key that you are entering (1, 2, 3, or 4), select a WEP key size of 40 or 128 on the right side of the screen. 128-bit client adapters can use 40- or 128-bit keys, but 40-bit adapters can use only 40-bit keys. If 128-bit is not supported by the client adapter, this option is grayed out, and you are unable to select it.
- **3.** Obtain the static WEP key from your system administrator and enter it in the blank field for the key you are creating. Follow the guidelines below to enter a new static WEP key:
- WEP keys can consist of the following hexadecimal characters: 0 to 9, A to F, and a to f.
- WEP keys must contain the following number of characters:
 - 10 hexadecimal characters for 40-bit keys Example: 12345abcde
 - 26 hexadecimal characters for 128-bit keys Example: AB34CD78EFab01cd23ef456789
- Your client adapter's WEP key must match the WEP key used by the access point (in infrastructure mode) or clients (in ad hoc mode) with which you are planning to communicate.
- When setting more than one WEP key, the keys must be assigned to the same WEP key numbers for all devices. For example, WEP key 2 must be WEP key number 2 on all devices. When multiple WEP keys are set, they must be in the same order on all devices.

TIP

After you enter a WEP key, you can write over it, but you cannot edit or delete it.

- **4.** Click the Transmit Key button to the left of the key you want to use to transmit packets. Only one WEP key can be selected as the transmit key.
- **5.** Click OK to write your WEP key(s) to the client adapter's volatile memory and the Windows CE registry and to exit the utility or click Cancel to exit the utility without updating the keys.
- **6.** Double-click the Cisco ACU icon or select Start/Programs/Cisco/Aironet Client Utility. The ACU screen appears.



- **7.** Select WEP under Property. Select Enabled from the list of options in the Value box to enable static WEP.
- 8. Click OK to save your changes and to exit the utility.

Overwriting an Existing Static WEP Key

Follow the steps below to overwrite an existing static WEP key.

1. If you entered the password correctly in the Enter Password screen, the CEM screen appears.

СЕМ	?	OK	×
Already Transmit		Key	Size
WEP Key 1		ĨÕ	$\overline{\mathbf{O}}$
WEP Key 2 O			0
WEP Key 3 🔿			0
WEP Key 4		\odot	0
Change Password OK		ancel]

A checkmark appears in the Already Set? box for all existing static WEP keys.
TIP

For security reasons, the codes for existing static WEP keys do not appear on the screen. Also, you can write over existing keys, but you cannot edit or delete them.

- 2. Decide which existing static WEP key you want to overwrite.
- **3.** Click within the blank field of that key.
- **4.** Enter a new key, following the guidelines outlined in Step 3 of the "Entering a New Static WEP Key and Enabling Static WEP" section on page 4.7.
- **5.** Make sure the Transmit Key button to the left of your key is selected, if you want this key to be used to transmit packets.
- **6.** Click OK to write your new static WEP key to the client adapter's volatile memory and the Windows CE registry and to exit the utility or click Cancel to exit the utility without overwriting any keys.
- 7. Open ACU and make sure WEP is enabled.

Changing the CEM Password

Follow the steps below if you want to change the password that allows you to access CEM.



For security reasons, Cisco recommends that you change the default password.

- 1. Double-click the Cisco CEM icon or select Start/Programs/Cisco/Client Encryption Manager.
- **2.** Enter the correct password in the Enter Password screen and click OK. The CEM screen appears.

3. Click the Change Password button. The Change Password screen appears.

Change Pa	ssword	?	×
Existing Password:			
New Password:			
Confirm New Password:			
	K <u>C</u> ano	el:	

- **4.** Enter the current password in the Existing Password field.
- 5. Enter a new password in the New Password Field.



Passwords are case sensitive and can contain up to 256 alphanumeric characters.

- 6. Re-enter the new password in the Confirm New Password field.
- 7. Click OK to save your new password or click Cancel to exit the screen without changing the password. If your password is accepted, the following message appears, "Password Successfully Changed."
- **8.** Click OK to exit the utility.

Disabling Static WEP

Follow the steps below if you ever need to disable static WEP.

- 1. Double-tap the Cisco ACU icon or select Start/Programs/Cisco/Aironet Client Utility. The ACU screen appears.
- **2.** Select WEP under Property. Select Disabled from the list of options in the Value box to disable WEP.
- **3.** Tap OK to save your changes and to exit the utility.

Using LEAP

This section provides instructions for enabling LEAP and entering the LEAP username and password.

LEAP is supported only on client adapters that

support WEP and use firmware version 4.13 or

TIP

TIP

greater.

In order to use LEAP authentication, your client adapter and access point firmware must have matching 802.1X draft standards. That is, if the access point uses draft 8 firmware (prior to 11.06) or has draft 8 selected, the client adapter must use draft 8 firmware (prior to 4.25.x). Similarly, if the access point uses draft 10 firmware (11.06 or later) and has draft 10 selected, the client adapter must use draft 10 firmware (4.25.x or later).

Enabling LEAP

Follow the steps below to enable LEAP for your client adapter.

1. Double-tap the Cisco ACU icon or select Start/Programs/Cisco/Aironet Client Utility. The ACU screen appears.



- 2. Select LEAP under Property.
- **3.** Select Enabled in the Value box.

- **4.** Click OK to enable LEAP and exit the utility. When LEAP is enabled, the following parameters in the ACU screen are changed automatically:
 - WEP is set to Enabled.
 - Authentication Type is set to Open.

Entering the LEAP Username and Password

Follow the steps below to enter the LEAP username and password.

1. WLM starts automatically whenever you start ACU with a client adapter inserted, change the LEAP parameter from Disabled to Enabled, and click OK. If LEAP is already enabled, WLM starts automatically whenever you insert the client adapter, reboot or reset the Windows CE device, or load new firmware.



You can also start WLM by selecting Start/Programs/Cisco/Wireless Login Module. You may want to do this if you inadvertently exited WLM after it started or if you roam to a different part of the network where a different login is required.

When WLM starts, the Wireless Login Module screen appears.



2. Obtain the username and password for your RADIUS server account from your system administrator.



The password is optional because not all host accounts on the RADIUS server are set up with a password.

3. Enter the username in the User Name field.

TIP

Usernames and passwords are case sensitive and can contain up to 32 alphanumeric characters.

TIP

If your device is running Windows CE 3.0 version 2002 and your RADIUS server account specifies a domain, enter the domain name before the username and separate the two with a forward slash (e.g. domain/username).

4. Enter the password in the Password field if the RADIUS server account for the Windows CE device was set up with a password.



For security reasons, the characters entered for the password are displayed as asterisks.

5. Tap OK. If the username and password were entered correctly, they are written to volatile memory on the client adapter. The username and password remain on the client adapter until power is removed from the adapter, typically due to the client adapter being ejected or the system powering down.

TIP

If a username and password are stored in the client adapter's Flash memory from a prior release, they are erased before the new username and password are written to the adapter's volatile memory, thereby disabling device-level LEAP.

- **6.** One of three scenarios occurs:
 - a. The client adapter authenticates to the RADIUS server using your username and password and receives a dynamic, session-based WEP key. The bottom of the ACU screen indicates that your client adapter is authenticated to an access point.
 - b. If you enter the username and password incorrectly or enter ones that are not valid for the RADIUS server on the network, the Wireless Login Module screen reappears with a message indicating that your login was incorrect. You are able to retry immediately by re-entering the username and password.
 - c. The client adapter times out while trying to authenticate, possibly because it is out of range of an access point. After 60 seconds, a message appears indicating that the first attempt to authenticate failed and that the client adapter will continue trying.

TIP

During the 60 seconds before the timeout occurs, WLM is running in the background. It is hidden and does not appear as a running program. If you try to start WLM during this time, nothing happens because it is already running.

Disabling LEAP

Follow the steps below if you ever need to disable LEAP.

- 1. Double-tap the Cisco ACU icon or select Start/Programs/Cisco/Aironet Client utility. The ACU screen appears.
- 2. Select LEAP under Property.
- **3.** Select Disabled in the Value box.
- 4. Click OK to disable LEAP and to exit the utility.

Personal Computer Serial Communications

Minimum Personal Computer Requirements

- Microsoft Windows NT Workstation 4.0 (Service Pack 3 or greater) or Windows 95, Windows 98/98SE, Windows 2000 (Professional version), Windows ME.
- Pentium processor
- 16 MB memory for Windows 95 or Windows 98
 32 MB memory for Windows NT or Windows ME
 64 MB memory for Windows 2000
- 10 to 50 MB available hard disk space
- 9 or 25 pin available communications port
- One CD-ROM drive
- VGA graphics card
- Keyboard
- Mouse or compatible pointing device

Tablet Communication Settings

Follow these steps to verify or change the serial communications settings on the Tablet:

- **1.** Tap on the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap the Communications icon to open the Communications Properties dialog box.



- **3.** Tap the PC Connection tab.
- **4.** Make sure the "Allow connection with desktop computer when device is attached" check box is checked.
- **5.** The default for "Connect Using" is Desktop @ 115200. Tap the Change button and change the setting if necessary.
 - You may also communicate to a PC with a WIN CE IrDA compliant infrared port. Tap the Change button and select IrDA from the Change Connection drop down menu.
- **6.** Tap OK button at the top of the dialog box to save changes and close.

Verifying PC Serial Port Availability

Follow these steps to verify that your PC serial port is available:

1. For Windows 95, Windows 98 and Windows NT systems: On your PC, click on the Start button and select Settings, Control Panel from the menu.

For Windows 2000 and Windows XP Systems: On your PC, right click My Computer, select Manage and then Device Manager.

2. For Windows 95 and Windows 98 systems: Double-click the System icon and select the Device Manager tab.

For Windows NT systems: Double-click the Ports icon.

For Windows 2000 and Windows XP systems: Double-click Ports from the menu.

- **3.** View the devices by type or number. Double-click the desired port.
- **4.** Click the Port Settings tab or Settings button and set the Bits Per Second or baud rate to match Tablet settings.

Communications Port (COM1) Properties ?	
Bits per second:	Bits per second setting
Data bits: 8	
Parity: None	
Stop bits: 1	
Elow control: Xon / Xoff	

5. Click OK to apply any changes and close the windows.

Installing Microsoft ActiveSync Software

Microsoft ActiveSync enables you to connect the Tablet to your PC. ActiveSync version 3.1 or greater is required. Download ActiveSync from the Internet at

www.microsoft.com/pocketpc/downloads/activesync.asp and follow Microsoft's installation instructions. When the software installation is complete, continue by following the procedure below.

Connecting the MobileView Tablet to a PC

Follow these steps to connect the Tablet to a PC:

- **1.** Connect the serial cable (Allen-Bradley catalog number 2727-TRC1) between the Tablet's RS-232 port and your PC's serial communications port.
- 2. Enable Web Server under the Network Interface options Start / Programs / MobileView / Network Interface.



- **3.** If ActiveSync or the Get Connected window is not open already on the PC, follow these steps:
 - Select Start, Programs, ActiveSync on the PC. The ActiveSync window opens.
 - In the ActiveSync window, select File, Get Connected from the menu bar. The Get Connected window will open.
- **4.** In the Get Connected window, click the Next button.

- **5.** The Tablet opens a connection status box. If Activesync does not automatically start, select Start / Programs / Activesync on the Tablet. Then select File / Get Connected on the PC.
- **6.** On the PC, the Get Connected window instructs you to wait while Setup locates your mobile device. When the PC and Tablet connect, the Tablet connection status box closes. The PC's ActiveSync window shows "Connected" and a New Partnership window will open.
- **7.** In the New Partnership window on the PC, click on No in response to the question "Would you like to set up a partnership?" Then, click the Next button.
- **8.** The New Partnership window closes and the ActiveSync window shows you are connected as "Guest".



ActiveSync Window (on PC)

Connection Status Box (on Tablet)



9. Once you are connected, you can use Windows Explorer to transfer files between your PC directories and your Mobile Device directories.

TIP

If the connection fails, try it again. If the connection still fails, reference ActiveSync Troubleshooter, which provides diagnostic steps to identify and correct problems. On the ActiveSync Help menu, click Microsoft ActiveSync Help. Double-click the ActiveSync Troubleshooter book, then double-click ActiveSync Troubleshooter.

Disconnecting PC Serial Communications

Follow these steps to disconnect communication between the Tablet and PC.

1. If the connection status box is minimized on the Tablet,

double-tap on the Connection icon 🖏 at the bottom of the Tablet screen to open it.



- **2.** Tap the Disconnect button. Communication disconnects and the connection status box closes.
- **3.** The ActiveSync window on the PC will show a status of "Not Connected".

Connecting to an Internet Service Provider

You must have the necessary configuration information from your network administrator or internet service provider (ISP) before you can configure your internet connection.

- 1. Tap on the Start button and select Programs, Internet Explorer.
- **2.** Internet Explorer opens. On the menu bar, tap View, Internet Options.
- **3.** Select "Access the Internet Using a Proxy Server" check box. Fill in the proxy information as directed by your ISP or System Administrator.

Internet Options		×
Start Page:	http://www.ab.com	
Searc <u>h</u> Page:	http://www.msn.com/access/allinon	
<u>⊂</u> ache Size (in KB):	560 Use LAN (no autodial)	
<u>A</u> utodial name:	Desktop @ 19200	
Network Access the <u>I</u> nte	rnet using a proxy server	
Address:	Port: Cancel	

4. Tap OK.

Configuring an E-mail Account

You will need all of the required setting information and may need the optional information to configure your e-mail account:

Required Information	Optional Information
Connection	Domain Name
POP3 Host	SMTP Host
User ID	E-mail Address
Password	

- 1. Tap on the Start button and select Programs, Inbox.
- 2. Tap Services, Options.
- **3.** In the Options dialog box, tap the Services tab, then tap the Add button.

Services tah	Options ? OK ×	
	Installed <u>services</u> :	——— Add button

4. Select the desired service type and enter the service name.

Service Name	ОК	×
Service type:		
POP3 Mail	┓	
Service <u>n</u> ame:		
POP3 Mail		
•		

- **5.** Tap OK.
- **6.** Enter the information provided by your ISP provider or network administrator.

POP3 Mail Ser	vice Definition (1/3)				? 0K ×
_[Required —		זר	Optior	nal — — — —	
<u>C</u> onnection:	Network Connection 💌		<u>D</u> oma	in (Windows N	IT):
POP3 Host:	Oak		L SMTP	h <u>o</u> st for sendir	ng mail:
<u>U</u> ser ID:	smith		oak		
Pass <u>w</u> ord:	****		Return	n <u>a</u> ddress:	
	Save password		smith	@oak.server.co	m
		< <u>B</u>	ack	<u>N</u> ext>	<u>F</u> inish

- **7.** If desired, tap the Next button to configure your connection settings. Tap Next again to configure your Inbox preferences.
- **8.** Tap the Finish button. The window will show the service you just configured in the box under "Installed services".

	Options	? 0K ×
	Services Compose Read Delete Stor	age
Added service —	Installed services: POP3 Mail *	<u>A</u> dd
		<u>R</u> emove
		Properties

9. Tap OK.

External Hardware Connections and Configuration

Printing From the MobileView Tablet



TIP

Printing from the Tablet requires additional battery power. Connect the AC power adapter to the Tablet if possible to avoid running out of power.

The Tablet's printer driver supports PCL3 compatible printers that support serial or infrared connections. To print from the Tablet, follow the instructions provided by your printing software supplier. Third-party Windows CE printing utilities are available from vendors such as:

- bSQUARE Corporation (bPrint) at <u>www.bsquare.com</u>
- Hewlett® Packard Company (HP JetSend™) at <u>www.jetsend.hp.com</u>

Connecting a Monitor

TIP

Using a monitor requires additional battery power. Connect the AC power adapter to the Tablet if possible to avoid running out of power.

When you connect an external VGA monitor cable to the Tablet's video/monitor port, the Tablet's screen information can display on both the Tablet's LCD screen and the external monitor.

To Connect and Activate an External Monitor (CRT)

- 1. Connect the monitor cable to the Tablet's video/monitor port. **Video/monitor Port** 2. Tap the Start button and select Programs, MobileView, and CRT (ON, OFF). This toggles the use of the external monitor. When external monitor is activated, the Tablet's TIP screen resolution is reduced slightly. You may also toggle the use of the external monitor by using the following steps: 1. Tap the Start button and select Settings, Control Panel from the menu. **2.** Double-tap on the Display icon to open the Display Properties dialog box. Display Properties ? 0K × Background Appearance Backlight Image: (None) 🔽 Tile image on background. -Browse... **CRT** check box Advanced LCD CRT. Mouse cursor 🔽 Landscape <u>R</u>estart **Restart button**
 - 3. Tap the Background tab, then tap the CRT check box to select it.
 - **4.** Tap the Restart button to reboot the Tablet and activate the new setting. The screen information displays on both the Tablet's LCD screen and the external monitor (CRT).
 - TIP When external monitor is activated or deactivated from the Display Properties dialog, the image on the Tablet's screen changes without Automatic Contrast and Brightness adjustment. Use the Contrast and Brightness buttons to adjust the image.

To Disconnect and Deactivate External Monitor

- **1.** Tap the Start button and select Programs, MobileView, and CRT (ON, OFF). This toggles the use of the external monitor.
- **2.** Disconnect the monitor cable from the Tablet's Video/Monitor port.

You may also deactivate the external monitor by using the following steps:

- **1.** Tap the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap on the Display icon to open the Display Properties dialog box.
- 3. Tap the CRT check box to deselect it.
- **4.** Tap the Restart button to reboot the Tablet and activate the new setting. The screen information displays on only the Tablet's LCD screen.
- **5.** Disconnect the monitor cable from the Tablet's video/monitor port.

Connecting a Mouse or Keyboard

TIP

Using an external device with the Tablet requires additional battery power. Connect the AC power adapter to the Tablet if possible to avoid running out of power.

You can connect a device with a USB cable to the Tablet's USB port. The Tablet supports both fast (12Mbps) and slow (1.5 Mbps) data transfer speeds.

Mouse

When a mouse is connected, the Tablet accepts input from either the mouse or the stylus.

To Connect and Use the Mouse

- **1.** Tap the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap on the Display icon to open the Display Properties dialog box.

	Display Properties ? OK 🗙	
	Background Appearance Backlight	
Mouse cursor	Image: (None) ▲dwprood	
check box	CRT Mouse cursor ✓ Landscape <u>Restart</u>	—— Restart button

- **3.** Tap the Background tab, then tap the Mouse cursor check box to select it.
- **4.** Tap the Restart button to reboot the Tablet and activate the new setting. A mouse cursor appears on the Tablet's screen.



5. Connect the mouse cable to the Tablet's USB port. The mouse cursor moves on the screen as you move the mouse. Use the mouse with the Tablet in the same manner as you would use it with a PC.

To Disconnect the Mouse

- **1.** Tap the Start button and select Settings, Control Panel from the menu.
- **2.** Double-tap on the Display icon to open the Display Properties dialog box.
- **3.** Tap the Background tab, then tap the Mouse cursor check box to deselect it.
- **4.** Tap the Restart button to reboot the Tablet and activate the new setting.
- 5. Disconnect the mouse cable from the Tablet's USB port.

Keyboard

When a keyboard is connected, the Tablet accepts input from either the external USB or infrared keyboard or the on-screen keyboard.

To connect and use the keyboard, follow these steps:

- 1. Connect the keyboard cable to the Tablet's USB port or activate the infrared keyboard within the range of the Tablet's IrDA port. Use the keyboard with the Tablet in the same manner as you would use it with a PC.
- 2. Use the stylus and tap the Start Button.
- 3. Select Settings / Control Panel from the menu.
- **4.** Double tap the Keyboard icon to open the Keyboard Properties dialog.

Keyboa	rd Properties				?	OK ×
Repeat						
🔽 Er	nable character repeat					
Ŏ	Repeat <u>d</u> elay: Long	Sh <u>o</u> rt	AA	<u>R</u> epeat <u>S</u> low	rate:	<u>E</u> ast
				•	<u> </u>	
Tap) here and hold down a key	/ to test:				

- **5.** Set the Repeat Rate as desired.
- **6.** Use the keyboard as you would with a PC.
- **7.** Disconnect the keyboard cable or remove IrDA keyboard when you are finished using the keyboard.

You can input data to the Tablet using a barcode reader. Besides connecting the barcode reader you also need to set the communication parameters.

- **1.** Connect the barcode reader cable to the Tablet's barcode reader port.
- **2.** Tap the Start button and select Programs, MobileView, and Barcode Reader. You may also find this application in the Windows directory.



Connecting a Barcode Reader



Barcode Reader	,	ОК
Comm Port	COM2	•
Baud Rate	9600	-
Data Bits	7	-
Parity	Even	-
Stop Bits	1	-
🔽 Use Bar	code Wand	
<u>C</u> lose Config	guration Window	
E <u>x</u> it A	pplication	

- **3.** Set the communications parameters required by your barcode reader. Refer to your barcode reader's literature for the settings required.
- 4. Check the box Use Barcode Wand.
- **5.** Select Close Configuration Window or OK (in the upper right corner) to save the settings and minimize the window to the taskbar.
 - Selecting the Exit Application button closes the window without saving the current settings and deactivates the barcode reader.

TIP

TIP

Barcodes are read like keyboard entries directed to the selected cursor position, followed by a carriage return.

Maintenance and Troubleshooting

General Cautions

	To reduce the risk of electrical shock, immediately turn off the Tablet and unplug the AC power adapter under any of the following circumstances:Liquid is spilled onto the Tablet.The Tablet casing is damaged.The LCD is damaged.The Tablet's buttons are damaged.
IMPORTANT	 Follow these precautions to help maintain the condition of the Tablet and its AC power adapter: Do not place the AC power adapter near the IrDA port as it can interfere with communication. Avoid dropping the Tablet or its AC power adapter or impacting the units with other objects. Do not stack objects on top of the Tablet or its AC power adapter. Avoid exposing the Tablet to extreme temperature and humidity changes. If such changes are unavoidable, allow the Tablet to adjust to the change before turning it on.

Cleaning the MobileView Tablet

For the touch screen, clean gently with a lint-free cloth. Dampen with a mixture of 50% water and 50% Isopropal Alcohol if needed. Clean the unit daily when working in harsh environments.

For additional touch screen protection, apply the anti-glare protective overlay (Allen-Bradley catalog number 2727-TRG7) provided with the Tablet.

For the case, dampen a cloth with a mixture of 50% water and 50% Isopropal Alcohol or mild detergent. Use no harsh cleaning additives.

IMPORTANT

Do not use detergents or other harsh cleaning additives on the touch screen.

Storing the MobileView Tablet

Store the Tablet in an area that meets the following requirements:

- The storage area should be free of vibration and magnetic fields.
- The storage area should not expose the Tablet to solvents or corrosive gases.
- The storage temperatures should be from -5°C to +60°C (+23°F to +140°F).
- The storage humidity should be from +5 to +95% non-condensing.

Soft Reset

Doing a soft reset will delete any data that is in the process of being input or edited and was not saved before the reset. All the settings and the data stored in memory will be retained.

Do a soft reset whenever the MobileView Tablet fails to operate correctly because of an operational error or some other problem. If the soft reset does not resolve the problem, a full reset may be necessary.

To do a soft reset, use the stylus to press and quickly release the Tablet's Reset button.

IMPORTANT

Do not press and hold in the reset button for more than a second or you will start a full reset where all data is deleted and parameters are reset to their initial default settings.



Bottom View

Full Reset

IMPORTANT When a full reset is initiated, all data on the Tablet is deleted and parameters are reset to their initial factory default settings. Back up the data if possible before doing a full reset. Take precautions when backing up if a memory error has occurred as the error will also be backed up and could corrupt other data.

Do a full reset when:

- You want to delete all memory and return to the factory default settings.
- A non-recoverable operational problem occurs.

To perform a full reset, follow these steps:

- **1.** Close your applications if possible.
- **2.** Power down the Tablet by pressing and holding the reset button with the stylus until the screen turns black.
- **3.** To restart the Tablet, press the Enter button.

Errors After a Full Reset

If the hardware is defective or the full reset was not performed correctly, errors may continue after the full reset. If you suspect the full reset was not done correctly, repeat the process.

Troubleshooting

Be sure to check the following problems and solutions before contacting Rockwell Automation. See the Preface in this manual for additional information resources.

Problem	Solution	Page
Tablet will not power up.	 Check the main battery power. Connect external power source and recharge if necessary. 	4-2
	 If using the AC power adapter, make sure it is connected correctly and securely. 	4-5
	 Main battery is not installed correctly or is not fully seated. 	3-1
Touch screen is black.	 Tap the touch screen and/or press the Enter button to check if the Tablet is in suspend mode. 	4-8
	 Screen contrast set too light or brightness set too dark. 	3-3
Difficulty making selections with the stylus on the touch screen.	 Touch screen is out of alignment. Recalibrate the screen. 	3-17
Screen is locked up.	 Internal error. Do a soft reset to correct the error. If that does not solve the problem, do a full reset. 	7-2 to 7-3
An error message or notification appears on the screen.	Follow the instructions in the message.	
Tablet will not connect (communicate) with a PC.	 Check that the correct type of cable is being used and that it is firmly connected between the Tablet and PC ports. Check Microsoft ActiveSync's on-line Help Troubleshooter for further information. 	5-24 to 5-29

For Rockwell Automation Support, see page Preface-5. Have a detailed description of the problem, the circumstances when it occurred (the programs that were running, the steps you were taking) and what if anything you have done to resolve the problem.

If possible, check your system properties for the Firmware "Release" number by tapping Start, Settings, Control Panel, then double-tapping the System icon. Tap the General tab to view the Firmware Release number.

	System Properties ? OK ×	:
	General Memory	
Rele <u>ase</u> Number	rSystem: Computer: Microsoft(® Windows(® CE Processor Version 3.0. (Build 126) Expansion Slot: Cisco_Systems-350_5 Release: MV 3.0.0 ¹ 3 © 1996-2000 Microsoft Corp. All rights reserved. This computer program is protected by U.S. and international copyright laws. Memory: 31860 KB RAM Registered	
	rights reserved. This computer program is protected by U.S. and international copyright laws.	

Specification/Accessories

Specifications

Description	Specification
Processor	Hitachi SH-4 RISC (SH-7750)
Operating System	Microsoft Windows CE
Memory	32 MB Flash, 32 MB SDRAM, 32 MB RAM Back-up and File Storage
Wireless Technology	WiFi Compliant 802.11b Direct Sequencing T _x Power: 15 dBm
	R _x Sens: -83 dBm to -90 dBm
	Range at 1 Mbps1: 460m Open Environment
	90m Typical Office Environment
	Range at 11 Mbps1: 120m Open Environment
	30m Typical Office Environment
Display	Passive LCD 7.7 inch 640 x 480 with 256 colors
Touch Screen	7.7 inch analog resistive
Weight	1.36 kg (4 lbs)
Dimensions (LxWxH)	28 cm x 22 cm x 5 cm (11 in x 8.4 in x 2 in)
External Battery	Lithium Ion 3300 mAh (8 hour typical operation)
Internal Battery	Single cell nickel metal hydride, 450 mAh; 3-day operation
Operating Temperature	+0°C to +45°C (+32°F to +113°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	95% non-condensing
Power	AC Adapter: 100 to 240 VAC, 0.7A, 50/60 Hz DC Input: 15V, 2.0A
Agency Certification	CE, UL, ETS, FCC, Canadian Interference

Accessories

Description	Part Number
AC Adapter/Battery Charger	2727-TRA7
Replacement Battery	2727-TRB7
Single Battery Charging Station with AC Adapter and Battery	2727-TRSP1
Quad Battery Charging Station	2727-TRS74

Description	Part Number
Anti-glare Protective Overlay (Qty. 10)	2727-TRG7
Stylus with Tether (Qty. 5)	2727-RY1
Serial Cable for PC Interface	2727-TRC1

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Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using our products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of our products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

www.rockwellautomation.com

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