

CipherLab Reference Manual

Windows CE Mobile Computer

9500

Version 2.14



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IMPORTANT NOTICES

FOR USA

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

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

This device complies with Part 15 of the FCC 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.

FOR CANADA

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

This device complies with Part 15 of the FCC 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.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par l'Industrie.

FOR HAND-HELD PRODUCT WITH RF FUNCTIONS

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body. It only operated in hand-held used.

If you only transfer data to the host wirelessly, please keep the minimum distance 20 cm between machine & your body.

FOR PRODUCT WITH LASER



CAUTION

This laser component emits FDA / IEC Class 2 laser light at the exit port. Do not stare into beam.

SAFETY PRECAUTIONS

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

- ▶ The use of any batteries or charging devices, which are not originally sold or manufactured by CipherLab, will void your warranty and may cause damage to human body or the product itself.
- ▶ DO NOT disassemble, incinerate or short circuit the battery.
- ▶ DO NOT expose the scanner or the battery to any flammable sources.
- ▶ For green-environment issue, it's important that batteries should be recycled in a proper way.
- ▶ Under no circumstances, internal components are self-serviceable.
- ▶ The charging and communication cradle uses an AC power adaptor. A socket outlet shall be installed near the equipment and shall be easily accessible. Make sure there is stable power supply for the mobile computer or its peripherals to operate properly.

CARE & MAINTENANCE

- ▶ This mobile computer is intended for industrial use. The mobile computer is rated IP 64, however, it may do damage to the mobile computer when being exposed to extreme temperatures or soaked wet.
- ▶ When the body of the mobile computer gets dirty, use a clean and wet cloth to wipe off the dust. DO NOT use/mix any bleach or cleaner. Always keep the LCD dry.
- ▶ For a liquid crystal display (LCD) or touch screen, use a clean, non-abrasive, lint-free cloth to wipe dust off the screen. DO NOT use any pointed or sharp object to move against the surface.
- ▶ If you want to put away the mobile computer for a period of time, download the collected data to a host computer, and then take out the battery pack. Store the mobile computer and battery pack separately.
- ▶ When the mobile computer resumes its work, the main and backup batteries will take a certain time to become fully charged.
- ▶ If you shall find the mobile computer malfunctioning, write down the specific scenario and consult your local sales representative.

RELEASE NOTES

Version	Date	Notes
2.14	May 04, 2011	▶ Modified: 3.5 Upgrading OS Image — Procedures updated
2.13	Mar. 18, 2011	▶ Modified: Important Notices — Modify RF statement
2.12	Feb. 23, 2011	▶ Modified: Remove Clean boot
2.11	Nov. 24, 2010	▶ New: Calibrating the Screen ▶ Modified: 1.4.2 Re-calibrating the Screen — Recalibration process is required for initial use
2.10	Nov. 03, 2010	▶ New: 3.1 Application Manager ▶ Modified: 1.2 Memory — Turn on CF power to use a CF card ▶ Modified: 7.5 Notifications (for Good Read) — Change vibrator duration to 0~5.0 (sec.) ▶ Modified: Appendix I~IV — Add more GS1 DataBar symbologies ▶ Modified: Appendix II — Remove Repeat/Momentary/Aiming/Auto Power Off Mode, add "Replace Field Separator" for GS1-128, and support ISBT 128 and UPC-E1 with CCD/Laser scan engine ▶ Modified: Appendix III — Add Scan Mode and "UPC/EAN Security Level" ▶ Modified: Appendix IV — Add "Intercharacter Gap Size" under Codabar and Code 39
2.09	Mar. 04, 2009	▶ Modified: 9500PPC removed ▶ Modified: Appendixes I~IV — GS1-128 (EAN-128), GS1 DataBar Omnidirectional (RSS-14), GS1 DataBar Limited (RSS Limited), GS1 DataBar Expanded (RSS Expanded)
2.08	Aug. 05, 2008	▶ Modified: 2.6 Upgrading OS Image — automatic cold boot at the last step
2.07	July 09, 2008	▶ Modified: 1.7 Communications — Illustrations updated
2.06	June 30, 2008	▶ New: Supports 802.11b/g module for wireless networking ▶ Modified: 1.1.3, 2.1.1 & 2.1.2 Battery icons ▶ Modified: 1.3.4 Task Key ▶ Modified: 3.2.2, 3.2.3 & 4.1 Screenshots of Wireless Power Manager updated ▶ Modified: Appendix IV 2D Scan Engine — Image Capture
2.05	Apr. 16, 2008	▶ Modified: 2.5.3 Auto Run — AutoRun.ini and cabinet files ▶ Modified: 4.3.3 Data Output — Keyboard Emulation options include "Local machine", "RDP server" ▶ Modified: 4.3.4 Notifications — Remove warning beep ▶ Modified: Appendix II~IV — Update default values of ReaderConfig

- | | | |
|------|---------------|---|
| 2.04 | Mar. 04, 2008 | <ul style="list-style-type: none"> ▶ New: Charging the Battery — 4-Slot Battery Charger ▶ New: 1.1.3 and 2.1.2 — Battery charge icon with dynamic bars ▶ New: 2.1.2 and 3.2.4 — Wi-Fi status icon with dynamic bars for wireless signal strength ▶ Modified: 2.5.3 — Auto Run examples ▶ Modified: 4.2 Bluetooth Manager — Remove [Exit] button ▶ New: Appendix III, IV — AIM Code ID |
| 2.03 | Jan. 02, 2008 | <ul style="list-style-type: none"> ▶ Modified: 4.5.4 Backup file version & insufficient memory issues (Version 1.00.0010 & 1.00.0011) |
| 2.02 | Nov. 22, 2007 | <ul style="list-style-type: none"> ▶ Modified: 4.3 — UI of ReaderConfig.exe changed ▶ Modified: Appendix II~IV — default values updated |
| 2.01 | Oct. 03, 2007 | Minor changes |
| 2.00 | July 10, 2007 | New Word template applied |
| 1.10 | June 20, 2007 | <ul style="list-style-type: none"> ▶ Modified: 5.5 Backup Utility — Backup directory & Auto Restore settings |
| 1.09 | June 11, 2007 | <ul style="list-style-type: none"> ▶ New: 3.2.3 Auto Run ▶ New: 5.5 Backup Utility ▶ New: Appendix II ~ IV ▶ Modified: 4.2 Connections ▶ Modified: 5.3 ReaderConfig settings ▶ Modified: Appendix I — Scan Engine Settings |
| 1.08 | Feb. 26, 2007 | <ul style="list-style-type: none"> ▶ Modified: 1.5.6 — Status LED: Remove indication for “Low Battery” ▶ Modified: 5.3.2~4 — General tab > Data Output > Windows Message & Event |
| 1.07 | Dec. 26, 2006 | <ul style="list-style-type: none"> ▶ Modified: 5.2 — Bluetooth Manager capable of ActiveSync |
| 1.06 | Dec. 22, 2006 | <ul style="list-style-type: none"> ▶ Modified: 1.5.4 — Task key undefined for OS version 1.0 and later |
| 1.05 | Dec. 12, 2006 | <ul style="list-style-type: none"> ▶ Modified: 4.2.2 — GPRS Properties: Specify AP Name |
| 1.04 | Nov. 03, 2006 | <ul style="list-style-type: none"> ▶ Modified: 3.3 — OS Update steps 7 ~9 |
| 1.03 | Oct. 27, 2006 | <ul style="list-style-type: none"> ▶ Modified: Supports GPRS functionality via CF Type II slot if installed (No GSM!) |
| 1.02 | Oct. 16, 2006 | <ul style="list-style-type: none"> ▶ Modified: 3.4 — USB driver will be installed automatically |
| 1.01 | Sep. 27, 2006 | Initial release |

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INTRODUCTION

9500 Mobile Computer, running Windows CE 5.0, is designed to allow more flexibility in customization of applications.

CipherLab has integrated powerful utilities for data collection, processing, and transmission. Its large color transfective TFT display guarantees ease in reading in all lighting conditions. Built-in with Bluetooth and 802.11b/g technologies, 9500 Mobile Computer also allows for GPRS connectivity, and therefore, delivers a total wireless solution.

9500 Mobile Computer is robust in construction to meet industry grade requirements, and has been found durable and resistant to shock, water, and dust. It is specifically designed for all-day, everyday use as well as for data-intensive applications in harsh environments.

This manual serves to guide you through how to install, configure, and operate the mobile computer. The Care & Maintenance section is specifically prepared for those who are in charge of taking care of the mobile computer.

We recommend you to keep one copy of the manual at hand for quick reference or maintenance purposes. To avoid any improper disposal or operation, please read the manual thoroughly before use.

Thank you for choosing CipherLab products!

FEATURES

- ▶ Ergonomic design - ruggedized yet streamlined, with hand strap for secure hold
- ▶ Built tough to survive drop test and sealed against moisture/dust to industrial standard IP 64
- ▶ Microsoft Windows CE 5.0 operating system, 520 MHz Intel PXA270 processor
- ▶ 128 MB non-volatile NAND flash memory to store OS and software programs (part of the free space is used as a storage card called DiskOnChip)
- ▶ 128 MB SDRAM to store and run programs, as well as store program data
- ▶ One CompactFlash (CF) Type II expansion slot for memory card and peripherals (when no GPRS card is present)
- ▶ One Secure Digital (SD) expansion slot for memory card
- ▶ Dual mode support - One scan engine (integrated barcode scanner/imager) plus one RFID reader
- ▶ Total wireless solution — connectivity includes Bluetooth, 802.11b/g and GPRS
- ▶ A 3.5" color transfective TFT display delivers excellent visibility in all lighting conditions
- ▶ Programmable feedback includes speaker and vibrator
- ▶ Built-in power tools include Reader Configuration Utility, Backup Utility, etc.
- ▶ Quick link to any backend database through MIRROR Emulator programs for VT100/220 and IBM 5250 emulation
- ▶ Easy customization of data collection applications through FORGE Application Generator (AG*.exe for desktop PC)
- ▶ Programming support System API (LIB and DLL) and Reader API (DLL)

INSIDE THE PACKAGE

The following items are included in the package. Save the box and packaging material for future use in case you need to store or ship the mobile computer.

- ▶ 9500 Mobile Computer
- ▶ Rechargeable Li-ion battery pack
- ▶ Stylus
- ▶ Hand Strap
- ▶ Product CD

Note: For battery charging, you will need to purchase a charging cradle separately.

ACCESSORIES

Rich choices of optional accessories are available for you to enhance the total performance of the mobile computer.

- ▶ Pistol Grip (detachable)
- ▶ Belt Holster
- ▶ Protective Cover
- ▶ Memory Card, SD or CF card (if no GPRS card in the CF slot)
- ▶ Spare rechargeable Li-ion battery
- ▶ 4-Slot Battery Charger
- ▶ Charging & Communication Cradle
- ▶ Vehicle Cradle
- ▶ Travel Charger

QUICK START

OVERVIEW

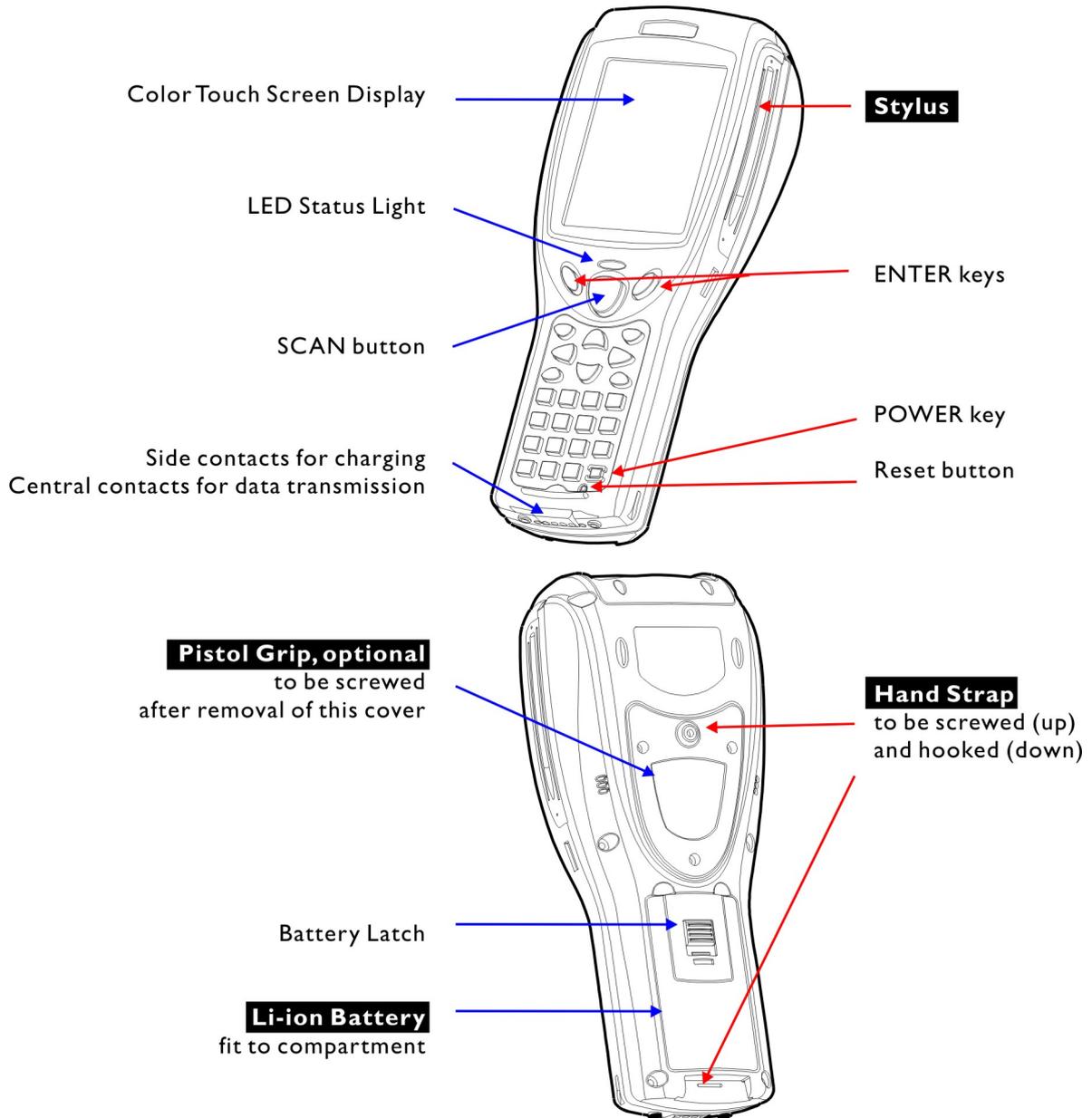


Figure 1: Overview

INSTALLING HAND STRAP

The hand strap is ideal for one-handed operation, which requires safe and convenient hold of the mobile computer.

Warning: Always make sure the hand strap is well hooked and screwed to the back of the mobile computer before use.

When the hand strap is desired, install it to the mobile computer by following these steps:

- 1) Place the mobile computer face down on a flat and clean surface.
- 2) Screw one end of the hand strap to the shield-like cover on the back of the mobile computer.
- 3) Insert and hook the other end of the hand strap to the bottom of the mobile computer.
- 4) Make sure the hand strap is securely attached to the mobile computer.

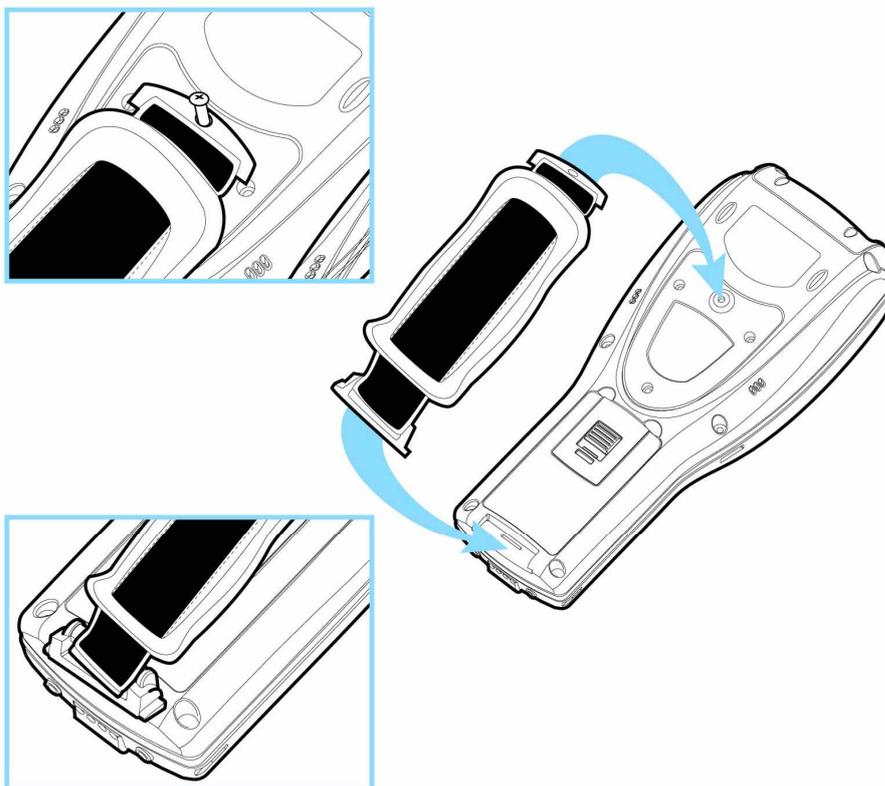


Figure 2: Installing the Hand Strap

INSTALLING PISTOL GRIP

This contoured pistol grip enables intuitive trigger-and-scan operation, which is very helpful in scan intensive applications. When a pistol grip is necessary, install it to the mobile computer by following these steps:

- 1) Place the mobile computer face down on a flat and clean surface.
- 2) Remove the shield-like cover on the back of the mobile computer by unscrewing.
If the hand strap is installed, remove it first. Keep the cover and screws for future use when the pistol grip is not desired.
- 3) Connect the power connector from the pistol grip to the receptacle on the mobile computer.
- 4) Screw the pistol grip to the back of the mobile computer.
- 5) Make sure all screws are tightened up.
- 6) Turn on the mobile computer and test the trigger while running ReaderConfig.exe.

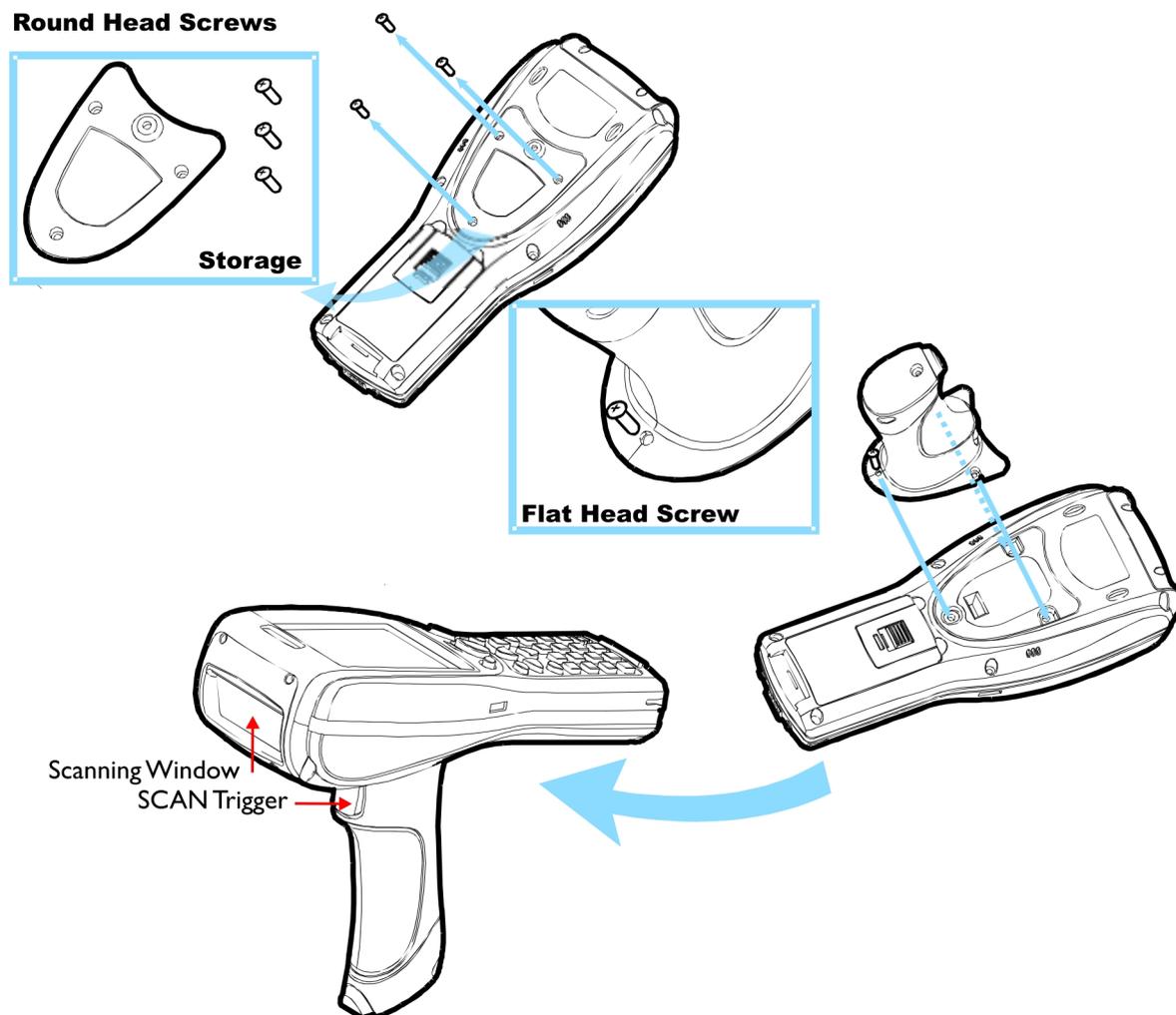


Figure 3: Installing the Pistol Grip

INSERTING SD OR CF CARD

When you wish to expand memory or add a peripheral, follow these steps to install the CF or SD card to the mobile computer:

- 1) Press  to turn off the mobile computer.
- 2) Remove the top enclosure of the mobile computer by unscrewing the four screws.
- 3) Insert your card properly.
- 4) Replace the top enclosure and tighten the screws.

Warning: Make sure the mobile computer is set to Suspend mode; otherwise, it may cause damage to the mobile computer. If not factory-installed, the Ingress Protection rating of enclosures may not be the same as claimed.



Figure 4: Inserting the SD or CF Card

INSTALLING BATTERY

When you first receive the package, the rechargeable functionality of the backup battery is turned off. It is controlled by a DIP switch inside the battery compartment as shown below. For shipping and storage purposes, save the mobile computer and the main battery in separate packages, and slide the DIP switch to the OFF position (to your right). This will keep both batteries in good condition for future use.



Note: Any improper handling may reduce the battery life.

- 1) Hold the mobile computer still as shown below.
- 2) Use the stylus (or a sharp-pointed object, such as a pencil) to adjust the DIP switch to the ON position. (top) Now the internal backup battery can be charged by the main battery.
- 3) Slide the battery pack into the battery compartment at a proper angle ($30^{\circ}\sim 45^{\circ}$) so that the tabs on the bottom of the battery are hooked in the grooves of the compartment. Make sure that the battery is snugly fit into the compartment.
- 4) Slide the battery latch to lock the battery in the compartment.

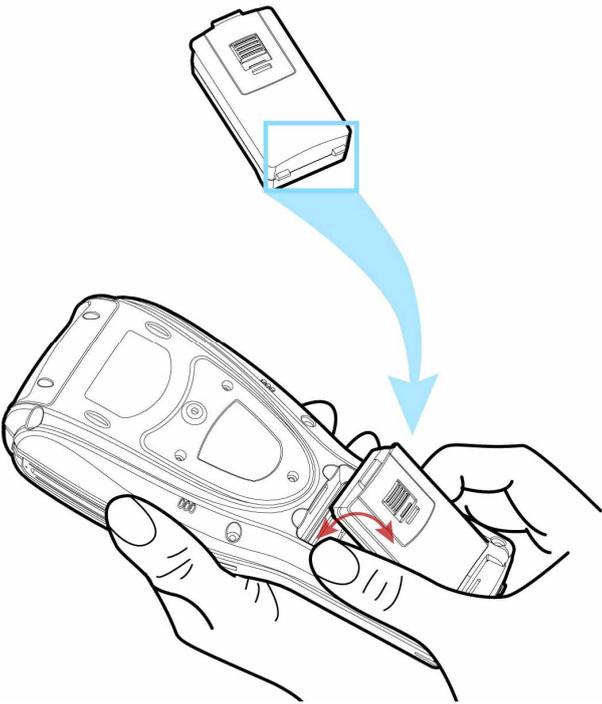


Figure 5: Installing the Main Battery

CHARGING & COMMUNICATIONS

The main and backup batteries may not be charged to full for shipment. When you first receive the package, you will need to charge batteries to full before using the mobile computer.

Because the internal backup battery is constantly charged from the main battery, the initial charging requires installing the battery pack to the mobile computer and then seating the mobile computer in the cradle for charging. This will have both the main and backup batteries charged at the same time.

Note: To charge the backup battery, make sure that you slide the DIP switch inside the battery compartment to the ON position.

Charging Time

- ▶ It takes approximately 8 hours to charge the batteries to full. After the initial charging, it takes only 4 hours to fully charge the batteries. The LED above the [SCAN] button is red while charging and will turn green when charging is done.
- ▶ In order to charge the backup battery, the main battery must be inserted and left inside, whether the mobile computer is in use or not. However, it is not necessary to fully charge the backup battery for the mobile computer to work.

Charging Temperature

- ▶ It is recommended to charge the battery at room temperature (18°C to 25°C) for optimal performance.
- ▶ Battery charging stops when the temperature drops below 0°C or exceeds 40°C.

Operation on Battery Power

- ▶ When 802.11b/g, GSM/GPRS, and BT are all enabled on battery power, the main battery charge will drop down substantially.
- ▶ In order to prevent a cold boot after the battery is drained out, we suggest that you keep a fresh battery for replacement or connect the mobile computer to an external power.

USING WIRELESS NETWORKS

The mobile computer supports state-of-the-art wireless technologies, Bluetooth and 802.11b/g, so that it is able to send/receive data in real time in an efficient way. You may choose to have the GPRS module embedded for a total wireless solution for data communications. Refer to the associated utilities.

USING CRADLE

The cradle is designed for charging and communications at the same time.

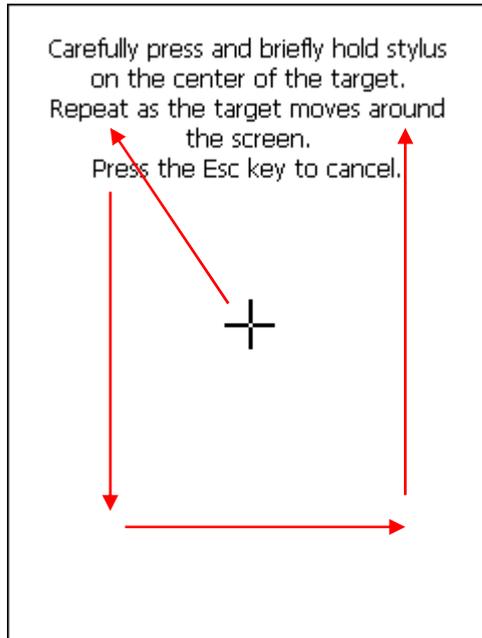
- 1) Place the cradle on a flat and clean surface.
- 2) Connect the power supply cord to the power jack on the back of the cradle, and then connect the other end of the power supply cord to a suitable power outlet. The cradle is ready for charging the mobile computer, as well as the spare battery pack.
- 3) Seat the mobile computer in the cradle.
- 4) If data communications are desired at the same time, you can establish a proper connection with a computer or remote host. For example, you may establish a USB connection for ActiveSync. Refer to [2.3 Using ActiveSync](#).

Note: Make sure that you have Microsoft ActiveSync installed on your computer before you connect the cable from the cradle's USB device port () to your computer.

CALIBRATING THE SCREEN

Starting from OS version 1.44G0409.101122, the recalibration process is required to ensure touch screen accuracy for initial use.

Follow the on-screen instruction to complete the recalibration process, and then press the [Enter] key to save new settings.



USING 9500 MOBILE COMPUTER

This chapter explains the features and usage of 9500 Mobile Computer.

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1.1 BATTERY

▶ Main Battery

9500 Mobile Computer is powered by a rechargeable 3.7 V/4000 mAh Li-ion battery pack, and it takes approximately 4 hours to fully charge it. However, the charging time may vary by working condition. During normal operation, the mobile computer can work for up to 21 hours in batch mode. For non-stop power on the road, you may purchase a spare battery pack.

▶ Backup Battery

The backup battery on the main board takes charge when the main battery is removed or drained out. When fully charged, the 3.7 V/110 mAh rechargeable Lithium button cell helps retain data in SRAM and maintain the system running in suspend mode for at least 6 hours without the main battery. In the meantime, you have to replace the main battery as soon as possible.

Note: For a new battery, make sure it is fully charged before use. Always prepare a spare battery pack, especially when you are on the road.

1.1.1 UNDERSTANDING THE BATTERY ICONS

The battery pack is the only power source for the mobile computer to work. It also charges the backup battery on the main board so that the data stored in SRAM can be retained properly. Therefore, when the main battery charge goes low, you need to replace the battery pack with a charged one or charge it as soon as possible. Most of all, you should backup important data on a regular basis.

Double-tap a battery icon so that you can quickly access the [Power Properties] dialog box.

Battery Status Icons	Description
	Battery charge remaining in the main battery – The more bars, the more power in the main battery.
	Main battery is ready for charging.
	Main battery charge becomes low and needs charging.
	Main battery charge becomes very low and needs charging immediately.
	Backup battery charge becomes low and needs charging.
	Backup battery charge becomes very low and needs charging immediately.

Warning: Data loss may occur with SRAM during low battery condition. Always save data before running out of power or keep a fresh battery for replacement.

1.1.2 POWER MANAGEMENT

For any portable device, power management is a critical issue especially when you are on the road. Below are some tips to help you save battery power.

Warning: Using backlight, wireless connectivity, and peripherals while on battery power will substantially reduce battery power.

- ▶ To speed up charging, turn off the mobile computer and seat it in the cradle.
- ▶ Bring a second battery pack on the road.
- ▶ Stop wireless connectivity, Bluetooth, 802.11b/g or GPRS that is not in use.
- ▶ Go to **Start | Settings | Control Panel** and double-tap the **Display** icon. Refer to [1.4.1 Adjusting the Backlight](#).
- ▶ Go to **Start | Settings | Control Panel** and double-tap the **Power** icon.
 1. In the Battery tab (left below), you can always monitor the charging status.



2. Tap the Schemes tab (right above).
3. Select the desired power scheme and options for suspending operation when not in use. The system can be set to three different states to conserve power:
 - User Idle state
 - System Idle state
 - Suspend state

The time choices represent the amount of time that must pass before the system will switch to the next power conservation state. If you keep the default settings, 9500 will enter the User Idle state in 1 minute, go to the System Idle state in another 3 minutes, and then the Suspend state in another 5 minutes.

That is, 9500 will switch to Suspend mode after a total of 9 minutes.

1.2 MEMORY

▶ Flash Memory (ROM)

128 megabytes flash memory for storing OS (Windows CE 5.0) and custom application programs. Yet a small portion of the memory is referred to as DiskOnChip, which can store data and programs that you wish to retain even after hardware reset.

▶ Random-access Memory (RAM)

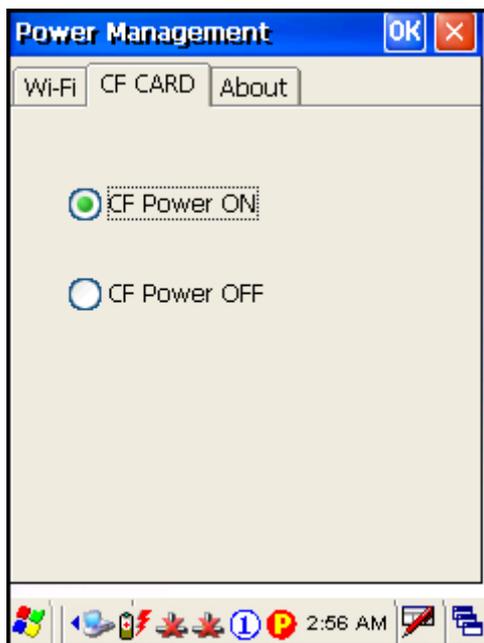
128 megabytes SDRAM for storing and running programs, as well as storing program data. Its contents will be retained by the backup battery.

▶ Expansion Slot

The mobile computer is equipped with two card slots, one SD and one CompactFlash Type II. You may upgrade memory by inserting an optional SD or CF memory card.

Note: If you are using the CF memory card, make sure the power to the CF module is turned on through **Power Management**.

1. Tap the icon  on the taskbar to access **Power Management**.



2. Select [CF Power ON] and tap . The icon  will become  to indicate that CF power is turned on.

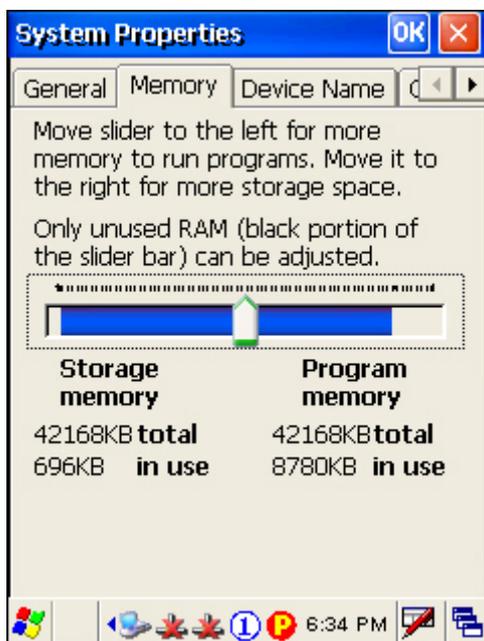
1.2.1 CAUTION OF DATA LOSS

When the main battery is removed or drained, the backup battery on the main board is to retain the contents of SRAM and maintain the OS in suspend mode for at least 6 hours, on condition that the backup battery has already been fully charged.

If you want to put away the mobile computer for a couple of days, you should be aware that data loss occurs when both the main and backup batteries discharge completely. Therefore, it is necessary to backup data and files before putting away the mobile computer!

1.2.2 CHECKING THE STORAGE SPACE

- ▶ Go to **Start | Settings | Control Panel** and double-tap the **System** icon.
 1. In the Memory tab, it displays the current capacity and usage of the onboard SDRAM.



2. You may tap, hold, and drag the slider to re-allocate the memory.

SDRAM	Storage Memory (left)	Program Memory (right)
128 MB onboard	It refers to the memory allocated for file and data storage.	It refers to the memory allocated for running programs.

- ▶ Double-tap **My Device** on the desktop, and then tap and hold the **DiskOnChip** icon. Select Properties from the pop-up menu. In the Properties tab, it displays the current capacity and usage of DiskOnChip.



Note: The DiskOnChip is part of the onboard 128 MB flash memory. Because the flash memory is non-volatile, data or programs stored in DiskOnChip will not be erased after hardware reset.

- ▶ Go to **Start | Settings | Control Panel** and double-tap the **Storage Manager** icon. Here provides a tool for administrators to reformat the DiskOnChip folder or storage card (SD or CF).

Warning: This tool is for the use of system administrators only. Everything on the storage device will be permanently erased after reformatting.

1.3 KEYPAD

Silicon rubber has been chosen for their durability and prompt feedback.

Note: Functionality of keys is application-dependent.

The 27-key keypad includes alphanumeric, navigation, function keys, and so on. This keypad is set to numeric mode by default.



Figure 6: 27-key Layout

1.3.1 KEYPAD SETTINGS

The LED backlight of keypad is turned off by default. It can be toggled ON/OFF by the key combination:  + . It is suggested to turn on the keypad backlight while working in a dark area; however, using backlight while on battery power will substantially reduce battery power.

The Character Repeat functionality is enabled by default. Go to **Start | Settings | Control Panel** and double-tap the **Keyboard** icon. You may cancel the check box to disable it. When enabled, tap, hold, and drag the slider for a desired Repeat Delay and Repeat Rate.

1.3.2 ALPHA KEY

This alphanumeric keypad is set to numeric mode by default. The Alpha key serves as a toggle among numeric, alpha (lower-case alphabetic), and ALPHA (upper-case alphabetic) input modes.

Note: It is not necessary to hold down the [Alpha] key.

The alpha icon will appear on the status bar in a sequence as shown below.

Status Icon	Alpha Key	Input Mode
	---	Numbers
	Press  one time	Lower-case alphabetic
	Press  two times	Upper-case alphabetic

Note: If you are using the software keypad via SIP, tap CAP (Caps Lock) to toggle between upper case and lower case alphabetic modes.

1.3.3 FUNCTION KEY

The [Func] (= Function) key serves as a modifier key, and the functionality of each key combination is application-dependent.

- 1) To enable this modifier key, press  on the keypad. Its icon  will appear on the status bar.
- 2) Now press another key to get the value of key combination (say, press [1] to get the value of F1). The icon will go off now.
- 3) To get the value of another key combination modified by the [Func] key, repeat the above steps.
- 4) To abort the key modification, press  again, and the icon will go off.

Note: It is not necessary to hold down the [Func] key.

Below is a list of the factory setting for a variety of key combinations.

Key Combination	Action
 , 	PgUp (red-coded): move text up one screenful
 , 	PgDn (red-coded): move text down one screenful
 , 	Home (red-coded): move to the beginning of screen or document
 , 	End (red-coded): move to the end of screen or document
 , 	Toggle ON/OFF the backlight of keypad only
 , 	Turn ON the backlight of LCD and decrease its luminosity
 , 	Turn ON the backlight of LCD and increase its luminosity

Note: Press the [Func] key first, and then press the second key for a specific function.

1.3.4 TASK KEY

By default, the [Task] key is undefined. It can be programmed as a shortcut key for a specific program or action. Refer to Windows CE Products Programming Guide for the supplied API – SetKeyPadBind().

1.4 TOUCH SCREEN

The mobile computer comes with a 3.5" TFT graphic LCD, 320 by 240 pixels resolution (QVGA). The LED backlight of screen, which helps ease reading under dim environments, can be controlled manually and automatically.

Warning: Using backlight while on battery power will substantially reduce battery power. It is suggested to dim the backlight while working in a well-lit area or automatically turn off the mobile computer when not in use.

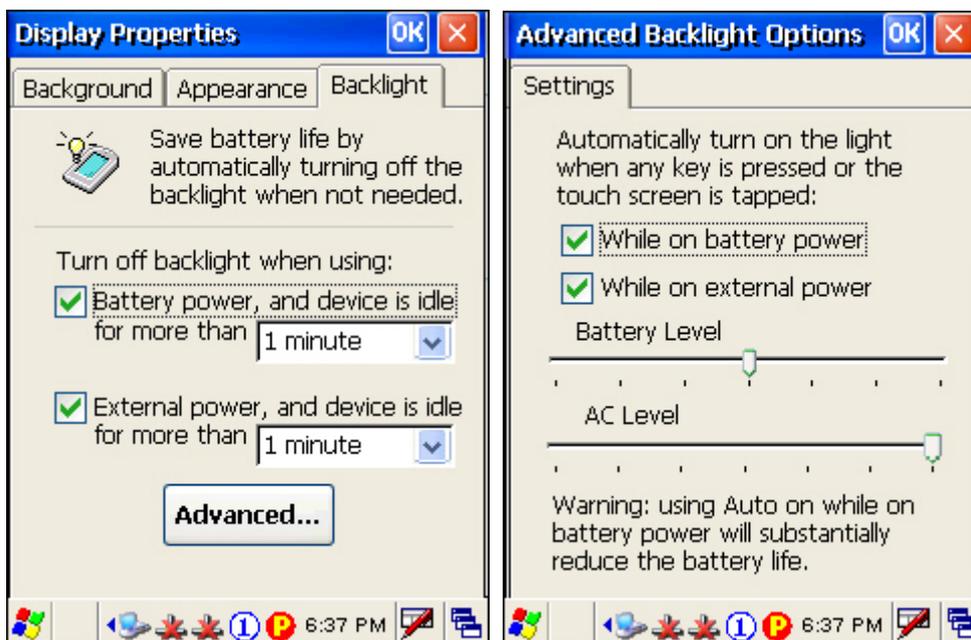
1.4.1 ADJUSTING THE BACKLIGHT

The LED backlight of the screen can be turned on and adjusted decreasingly or increasingly by the following key combinations. Keep pressing the key combination until the luminosity is decreased or increased to a desired level.

Key Combination	Action
 , 	Turn ON the backlight of LCD and decrease its luminosity
 , 	Turn ON the backlight of LCD and increase its luminosity

Note: Press the [Func] key first, and then press the second key for adjustment.

- 1) Go to **Start | Settings | Control Panel** and double-tap the **Display** icon.
- 2) Tap the Backlight tab. (left below)



- 3) Select one or both of the check boxes to automatically turn off the LCD backlight when using batteries or external power. From the appropriate list, select the amount of time the device should be idle before the backlight is turned off.
- 4) Tap the [Advanced] button.
- 5) In the Settings tab (right above), you can select the luminosity of backlight when it is set to be automatically turned on by pressing any key or tapping the screen. Tap, hold, and drag the slider for AC and battery powered respectively. For more luminosity, move the slider to the right.

1.4.2 RE-CALIBRATING THE SCREEN

This LCD is also a touch screen that can be calibrated through screen alignment. For initial use, the recalibration process is required to ensure touch screen accuracy.

- 1) Go to **Start | Settings | Control Panel** and double-tap the **Stylus** icon.
- 2) Tap the Calibration tab, and then tap the [Recalibrate] button.



Warning: Do not use any pointed or sharp objects to move against the surface of the screen.

1.5 NOTIFICATIONS

1.5.1 STATUS LED

The tri-color LED on top of the [SCAN] button is used to provide information on the charging status or wireless power status.

Tri-color LED	Status	Description
Red LED	Solid	Charging 9500
Green LED	Solid	Charging done
Red/green LED	Flashing	Charging error
Blue LED	Solid	Bluetooth enabled

1.5.2 AUDIO

The mono speaker on the back of the mobile computer can be used to play sounds for events in Windows and programs, or play audio files such as .WAV files. In addition, it can be programmed for status feedback.

1.5.3 VIBRATOR

The mobile computer is integrated with a vibrator, which is software programmable for feedback. This can be helpful when working in noisy environments.

1.6 DATA CAPTURE

A wide variety of scan engines is available for delivering flexibility to meet different requirements. Depending on the scan engine integrated, the mobile computer is capable of scanning barcodes of a number of symbologies that are enabled by default while running ReaderConfig.exe. If you need to scan barcodes that are encoded in a different symbology, enable the symbology first. Refer to Appendixes for details on scan engine settings.

- ▶ [Appendix I - Scan Engine Settings](#) lists the symbologies and RFID tags supported.
- ▶ [Appendix II - Linear Imager \(CCD\), Laser \(SE950\)](#) provides information on the reader settings as well as symbology settings for the CCD or Laser scan engine.
- ▶ [Appendix III - LR, ELR Laser](#) provides information on the reader settings as well as symbology settings for the (Extra) Long Range Laser scan engine.
- ▶ [Appendix IV - 2D Imager](#) provides information on the reader settings as well as symbology settings for the 2D scan engine.

Note: The mobile computer allows the co-existence of one integrated scan engine and the RFID reader.

1.7 CHARGING & COMMUNICATIONS

Item	Description
A	Charging slot for seating the mobile computer
B	LED Indicators ( , Link/TX, Power)
C	Charging slot for spare battery
D	USB Device Port
E	USB Host Port
F	Ethernet Port (RJ-45)
G	Power Jack

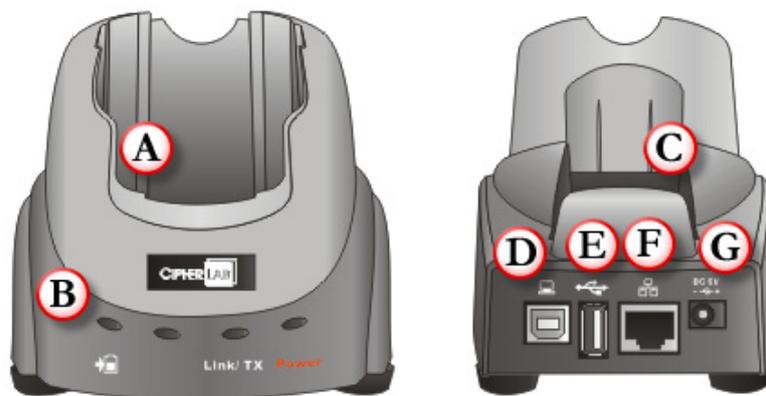


Figure 7: Charging & Communication Cradle

The cradle provides tri-color LED indicators on the front panel to indicate power and connection statuses.

Indicators	Status	Description
 Charging Status of Spare Battery	Off	Battery not ready
	Red, solid	Charging spare battery
	Green, solid	Charging done
	Red/green, flashing	Error occurs
Link/TX	Green, solid	Ethernet connected
	Green, flashing	Transmitting / Receiving data
POWER	Off	Power not ready
	Green, solid	Power ready

Note: For charging status of the mobile computer, please check the LED on top of the [SCAN] button. Refer to [1.5.1 Status LED](#).

1.8 BATTERY CHARGER

Below is the 4-Slot Battery Charger for 9500.

- 1) The Battery Charger can be mounted on table or wall. Drill two holes (centers spaced 160 millimeters apart), secure the two supplied screws, and mount the Battery Charger by sliding over screws.
- 2) Slide the battery into the battery compartment at a proper angle, with contacts facing to back.
- 3) Connect the power supply cord to the power receptacle on the charger. Connect the other end of the power supply cord to a suitable power outlet.
- 4) Press the power switch on, and the Battery Charger's LED will be red.
- 5) While charging, the LED of the battery compartment will be red. When fully charged, the LED will be green.

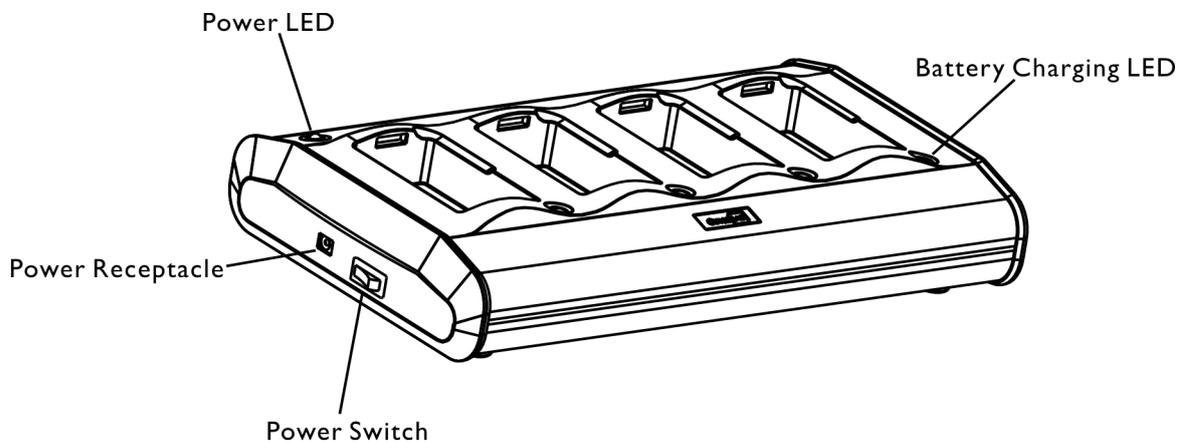


Figure 8: 4-Slot Battery Charger

Indicator	Status	Description
Power	Off	Power off
	Red, solid	Power on
Battery Charging	Off	Battery not ready
	Red, solid	Charging battery
	Green, solid	Charging done
	Red/green, flashing	Error occurs

LEARNING WINDOWS CE BASICS

This chapter mainly describes the basic skills to work with 9500 Mobile Computer. The add-on utilities for applications regarding data collection, processing, and transmission, are introduced in the following chapters.

9500 Mobile Computer is specifically designed for real-time data collection in the Windows CE 5.0 environment. It won't take long for any Windows user to get familiarized with it. Keep these basic skills in mind and explore this Windows CE device at ease.

- ▶ Double-tap an item to select it.
- ▶ Tap and hold an item to see a menu that enables tasks, such as cut, copy, rename, delete, etc.
- ▶ Tap and drag to select multiple items.
- ▶ Tap  or  on the toolbar to close an active window, a dialog box, or a running application.

If the button is not displayed, press [ESC] on the physical keypad.

- ▶ Tap  on the toolbar to save the current settings and exit the application (or minimize the window in some applications).

If the button is not displayed, press [Enter] on the physical keypad.

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2.1 GETTING STARTED

When 9500 Mobile Computer is fully charged, you may remove it from the cradle. Then, press  to turn on the mobile computer and wait for the Windows CE desktop to come up. If you are using the mobile computer for the first time, there are a couple of things to do after the desktop comes up.

- ▶ To select your time zone and set the local time: **Start | Settings | Control Panel** and select **Date/Time**.

2.1.1 SUSPEND MODE

Like your PDA, Pocket PC and most handheld devices, 9500 Mobile Computer functions when it is turned on. This is because the Windows CE operating system eliminates the booting process and runs continuously.

Turn On (= Resume from Suspend)

Press  to turn on the mobile computer.

Turn Off (= Suspend)

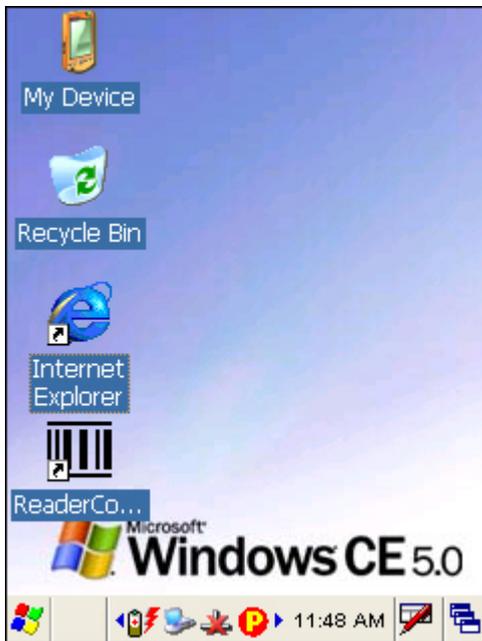
Press  to turn off the mobile computer. Alternatively, you may select Suspend from the Start Menu.

- ▶ The system is now ready for use but not in use. This is referred to as Suspend mode or Standby mode. It means the system is in power-saving status and waiting for user interference.

Warning: In order to save battery power, it is suggested that the mobile computer is set to be automatically turned off when not in use. Refer to [1.1.2 Power Management](#) for more information about saving power.

2.1.2 DESKTOP

The desktop appears when the mobile computer is turned on.



Tap and hold anywhere blank on the screen to manage or configure the desktop.



Alternatively, you may tap  to the right of the taskbar, and then select **Desktop**.

Note: To customize the desktop, tap anywhere blank on the desktop and select **Properties**.

2.1.3 TASKBAR

The taskbar is at the bottom of the screen for displaying the following:

- ▶ **Start** button 
- ▶ **SIP** button 
- ▶ **Switch Task** button 
- ▶ Status icons for various connections, minimized program windows, and so on.



Note: To configure different connections, go to **Start | Settings** and select **Network and Dial-up Connections**.

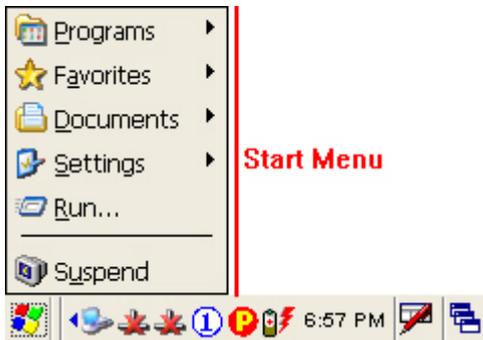
Icon	Description	See Also
	Tap it to switch to desktop or any task, such as a running program or window.	Switch Task
	Tap it to change the input method.	Software Input Panel (SIP)
	It indicates the amount of battery charge remaining in the main battery. The more bars, the more power in the main battery.	1.1.1 Understanding the Battery Icons
	It indicates the main battery status.	
	It indicates the backup battery status.	
	It indicates the current input mode of keypad.	1.3.2 Alpha Key
	It indicates the modifier key is enabled. (= Function mode)	1.3.3 Function Key
	It indicates that your cradle is directly connected to a computer via USB port. The USB connection for ActiveSync operation is successfully established. ▶ Double-tap it to view status. Tap [Disconnect] if necessary.	3.4 Connection Settings
	It provides access to the Bluetooth services. ▶ Initially, you need to go to Start Programs BTManager to open Bluetooth Manager so that this icon will appear on the taskbar.	Using Bluetooth

	<p>It indicates a specific network connection fails (= disconnected). Double-tap it to access the Wireless Information tab if there is any.</p> <ul style="list-style-type: none"> ▶ Bluetooth PAN connection ▶ Ethernet connection 	Using Bluetooth
	<p>It indicates a specific network connection has been established successfully. Double-tap it to view or renew IP Information.</p> <ul style="list-style-type: none"> ▶ Bluetooth PAN connection ▶ Ethernet connection 	
	<p>It provides control of the power to the 802.11b/g and GPRS modules.</p> <ul style="list-style-type: none"> ▶ Tap the icon to configure the power setting. 	
	<p>It indicates the GPRS module is enabled.</p> <ul style="list-style-type: none"> ▶ Tap the icon to configure the power setting. ▶ See GPRS status icon  below. 	Using GPRS
	<p>The GPRS connection has been opened. If it fails, the icon will be gone. If the icon persists, it means the GPRS connection is successfully established.</p> <ul style="list-style-type: none"> ▶ Double-tap it to view status. Tap [Disconnect] if necessary. 	
	<p>It indicates a CF card other than GPRS is enabled.</p>	
	<p>It indicates the Wi-Fi module (802.11b/g) is enabled. The more green bars, the stronger the signal.</p> <ul style="list-style-type: none"> ▶ See wireless status icons   below. 	Using 802.11 Radio
	<p>The Wi-Fi connection fails. (= disconnected)</p> <ul style="list-style-type: none"> ▶ Double-tap it to access the Wireless Information tab for establishing a new connection. 	
	<p>The Wi-Fi connection is successfully established.</p> <ul style="list-style-type: none"> ▶ Double-tap it to view or renew IP & Wireless Information. 	
	<p>It provides access to the Reader Configuration Utility.</p> <ul style="list-style-type: none"> ▶ Initially, you need to double-tap the ReaderConfig shortcut on the desktop so that this icon will appear on the taskbar. 	

Note: In OS version 1.1 and later, it can display up to 5 status icons for U.S. and European languages and up to 4 status icons for Asian languages.

2.1.4 START MENU

Tap the **Start** button  on the taskbar to open the **Start Menu**.



Options	Description
Programs	Provides access to available programs that are stored in the directory: \Windows\Programs
Favorites	Provides access to your favorite links to webpages that are stored in the directory: \Windows\Favorites
Documents	Provides access to recent opened documents in the directory: \Windows\Recent
Settings	Provides access to <ul style="list-style-type: none"> ▶ Control Panel ▶ Network and Dial-up Connections ▶ Taskbar and Start Menu
Run...	Opens a program or folder or document.
Suspend	Enters the Suspend mode.

Note: To configure the Start menu and taskbar, go to **Start | Settings** and select **Taskbar and Start Menu**.

2.1.5 INPUT METHODS

Data entry can be performed by the following methods:

Physical Keypad

Type with the physical keypad.

Data Capture

Scan barcode or RFID tag in applications, e.g. WordPad, CipherLab's FORGE Application Generator, etc.

Software Keypad

Type or write using SIP (Soft Input Panel):

Tap the SIP button  on the taskbar to select a SIP mode or hide the input panel.



In each mode, the characters appear as typed text on the screen.

Options	Description
Keyboard	To type using the virtual keyboard.
Transcriber	To write freely on the screen in applications, such as WordPad, Inbox, etc.

2.2 MANAGING PROGRAMS

2.2.1 QUICK LAUNCH A PROGRAM

Tap the **Start** button to view the **Start Menu**. To quick launch a program, tap it from the Programs folder.

Note: Alternatively, you may tap **Start** and select **Run** to run a specific program or open a document.



If you wish to quick launch a new program, add it to the Programs folder: **My Device\Windows\Programs**. The program will become available in the **Start Menu**. To add a new program or subfolder to the Programs folder, you can either use **Windows Explorer** or **ActiveSync**.

- ▶ Windows Explorer: to move the program by [Copy] and [Paste Shortcut].
- ▶ ActiveSync on the desktop computer: to create a shortcut to the program, and place the shortcut in the Programs folder.

Warning: To avoid making any changes to the program configurations by accident, we recommend you to use [Copy] and [Paste Shortcut] rather than [Cut] and [Paste].

2.2.2 SWITCH AMONG PROGRAMS AND DESKTOP

Tap  to the right of the taskbar and select a running program.

2.2.3 EXIT A PROGRAM

In general, the system manages memory automatically, and there is no need to exit a program in order to open another or to conserve memory. However, random access memory (SDRAM) may be used up when running too many programs. As a result, it will slow down the operation or cause program errors. In that case, you should stop one or more running programs to free memory. In order to use memory in a more efficient way, you are recommended to exit a program when it is not desired any longer.

Warning: Always remember to save data or settings before you exit a program.

Tap  or  to close an active window, a dialog box, or a running application. If the button is not displayed on the toolbar, press [ESC] on the physical keypad.

Tap  to save the current settings and exit the application (or minimize the window in some applications). If the button is not displayed on the toolbar, press [Enter] on the physical keypad.

Note: Some programs, such as the Reader Configuration Utility (ReaderConfig.exe), may create an associated icon on the taskbar. You may tap the icon and select [Exit] from the pop-up menu.

2.3 USING ACTIVESYNC

ActiveSync is used to synchronize information between 9500 Mobile Computer and your desktop computer, to install programs on the mobile computer, and to backup and restore the mobile computer.

The Microsoft ActiveSync program has to be installed on your desktop computer first.

- ▶ To download the up-to-date version of the program, you may need to go to Microsoft's official web site for Windows Mobile devices as shown below.

<http://www.microsoft.com/windowsmobile/default.mspx>

<http://www.microsoft.com/windowsmobile/activesync/activesync45.mspx>

- ▶ After downloading and installation, run the program. For detailed information on the program, you may click the Help menu, and then select the Microsoft ActiveSync Help.

2.3.1 SYNCHRONIZATION WITH YOUR COMPUTER

- 1) Follow these instructions for initial ActiveSync operation:
 - ▶ Connect the USB cable from the cradle's USB device port () to your computer.
 - ▶ Connect the power cable from the cradle to a nearby power outlet.
 - ▶ Turn on the mobile computer and seat it in the cradle.
- 2) Your computer will automatically detect the USB device. Click [OK] when the connection is established.
- 3) Select which partnership to set up. If you want to synchronize data between the mobile computer and your personal computer, select Standard Partnership; otherwise, select Guest Partnership.
- 4) Wait a few seconds for the mobile computer to get connected (and synchronized if a Standard Partnership is selected).

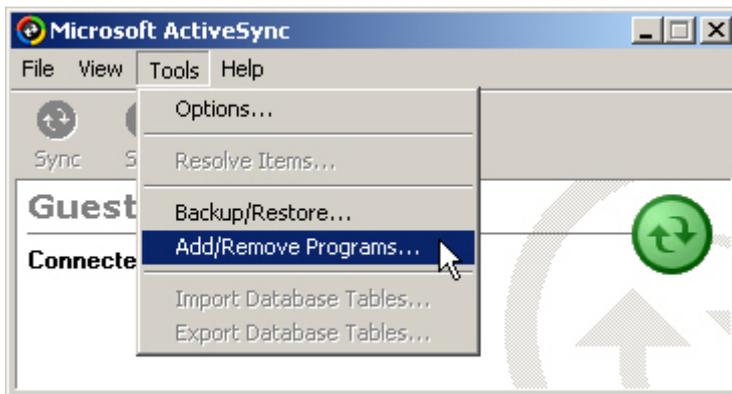
Note: (1) For ActiveSync via Bluetooth, refer to [Using Bluetooth](#).

(2) We recommend that you have ActiveSync 3.7.1 installed on your computer because ActiveSync 4.x does not officially support Windows CE 5.0 devices.

2.3.2 ADD/REMOVE PROGRAMS

Click [Add/Remove Programs] from the Tools Menu so that you can proceed to install a program that is designed to be used on a mobile device running Windows CE. If a user program is no longer desired, you may remove it from the system.

Click [Add/Remove Programs] from the Tools Menu so that you can un-install a program that is designed to be used on a mobile device running Windows CE.



Alternative to Install New Programs (Copy & Paste)

You may install a new program manually.

1. When connected, open the Microsoft ActiveSync window on your desktop computer.
2. Click the Explorer button from the toolbar.
3. Navigate to the target folder, e.g. the Programs folder (\\Windows\\Programs), depending on where you wish to access the program.
4. Navigate through file folders on your computer to find the new program (.CAB, .EXE, etc.)
5. Right-click the program and select [copy] from the pop-up menu.
6. Back to the target folder in step 3. Right-click anywhere blank and select [Paste] from the pop-up menu.
7. On the mobile computer, go to **Start | Programs** and the new program will appear.

Alternative to Remove Programs (Control Panel)

You may un-install a new program manually.

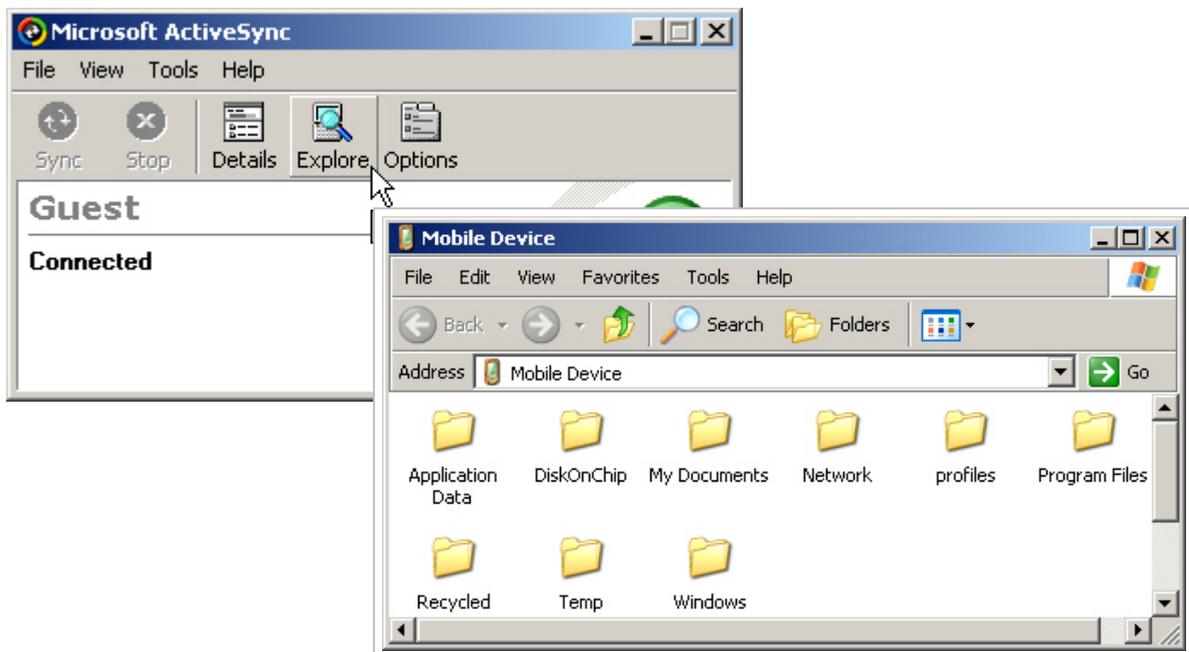
1. Go to **Start | Settings | Control Panel** and select **Remove Programs**.
2. Tap the name of the program that you want to delete.
3. Tap [Remove].
4. Tap [Yes] to un-install the program.

Note: If the program does not appear in the list of installed programs, you may use Windows Explorer to locate it. Tap and hold the program to select [Delete] from the pop-up menu.

2.3.3 EXPLORE DEVICE

Add a Program to Start Menu

1. When connected, open the Microsoft ActiveSync window on your desktop computer.
2. Click the Explorer button from the toolbar.



3. Navigate through file folders to find the program you desire.
4. Right-click the program and select [Create Shortcut] from the pop-up menu.
5. Right-click the shortcut and select [Cut] from the pop-up menu.
6. Navigate to the Programs folder – **My Device\Windows\Programs**.
7. Right-click anywhere blank on the window and select [Paste] from the pop-up menu. The new program will be added to the Programs folder.
8. On the mobile computer, go to **Start | Programs** and the new program will appear now.

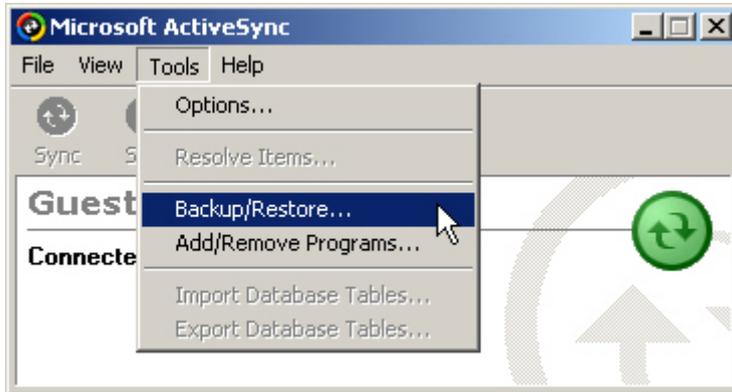
Note: [Create Shortcut], [Cut], and [Paste]: The same result can be performed by [Copy] and [Paste Shortcut].

Create a New Folder

1. When connected, open the Microsoft ActiveSync window on your desktop computer.
2. Click the Explorer button from the toolbar.
3. Navigate to the target folder where you wish to create a new folder.
4. Right-click anywhere blank on the window and select [New Folder] from the pop-up menu. A subfolder will be created.

2.3.4 BACKUP/RESTORE

To best protect your work, you should regularly back up information on your mobile computer. You can perform a backup by during the ActiveSync operation. The backup file is stored on your desktop computer.

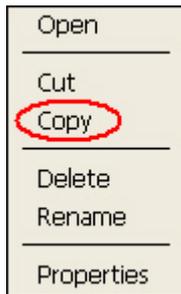


Note: The CipherLab Backup Utility is provided in OS 1.20.0409.070524 or later versions for the same purposes, and will save the backup file to the DiskOnChip folder.

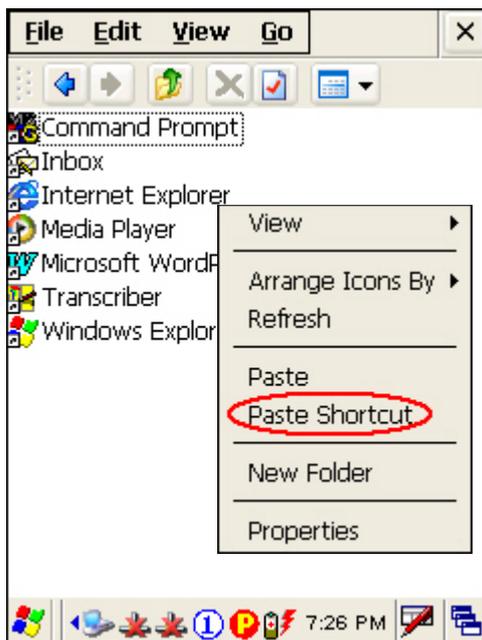
2.4 USING WINDOWS EXPLORER

2.4.1 ADD A PROGRAM TO START MENU

- 1) Go to **Start | Programs** and select **Windows Explorer**. Alternatively, you can press the [Task] key on the keypad to launch **Windows Explorer**.
- 2) Navigate through file folders to find the program you desire.
- 3) Tap and hold the program to select [Copy] from the pop-up menu.



- 4) Navigate to the Programs folder – **My Device\Windows\Programs**.
- 5) Tap and hold anywhere blank on the screen to select [Paste Shortcut] from the pop-up menu. The new program will be added to the Programs folder.



- 6) Go to **Start | Programs** and the new program will appear now.

2.4.2 CREATE A NEW FOLDER

- 1) Go to **Start | Programs** and select **Windows Explorer**. Alternatively, you can press the [Task] key on the keypad to launch **Windows Explorer**.
- 2) Navigate through file folders to find where you wish to create a new folder.
- 3) Tap and hold anywhere blank on the window and select [New Folder] from the pop-up menu. A subfolder will be created.

2.5 SYSTEM RESET

Reset the mobile computer when it stops responding to input.

- ▶ Software Reset: Simply press the [Reset] button.
- ▶ Hardware Reset: Press the [Reset] button and  at the same time.

Warning: Never perform hardware reset unless software reset cannot solve your problems.

2.5.1 SOFTWARE RESET (WARM REBOOT)

Software reset, also known as a warm boot, will restart the mobile computer and keep all the saved files.

Software Reset (= Warm Reboot)

- ▶ Use the stylus to press the [Reset] button.
- ▶ During operation, the removal of main battery will start software reset too.

Warning: Data loss may occur when files are not properly closed before software reset.

2.5.2 HARDWARE RESET (COLD REBOOT)

Hardware reset, also known as a cold boot, will restart the mobile computer and initializes SDRAM. Data and program files stored in SDRAM will be erased after hardware reset. But you can restore data that is previously synchronized with your computer by performing an ActiveSync operation, or backed up by using CipherLab Backup Utility.

Hardware Reset (= Cold Reboot)

Press  and [Reset] button at the same time.

Warning: Only the files stored in the Flash File System are retained during hardware reset.

2.6 AUTO RUN

Auto Run is supported in OS 1.20.0409.070524 or later versions.

- ▶ To find out your OS version, go to **Start | Settings | Control Panel** and select **System**. Select the Device Name tab.

Upon hardware or software reset, the OS shall automatically execute **AutoRun.exe** and/or **AutoRun.ini** if any of the two files can be found in the “\DiskOnChip” folder or on SD card.

If AutoRun.exe exists

- ▶ Upon cold boot, the OS shall automatically execute **AutoRun.exe**
- ▶ Upon warm boot, the OS shall automatically execute **AutoRun.exe**

If AutoRun.ini exists

- ▶ Upon cold boot, the OS shall automatically check the contents of **AutoRun.ini** and execute them (if there is any).

Any line prefixed with a semicolon “;” is supposed to be a comment line only; otherwise it is an executable file or command and shall be executed (line by line). The line to execute a cabinet file (.cab) must be specified with two dots “. .” for the absolute path. For example,

```
\DiskOnChip\cerdisp.exe
:\DiskOnChip\ReaderConfig.exe
;\DiskOnChip\RF9500_CE.exe
..\DiskOnChip\cerdisp.cab
:..\DiskOnChip\ReaderConfig.cab
```

- ▶ Upon warm boot, the OS shall automatically check the contents of **AutoRun.ini** and execute any line that is prefixed with a colon “:”.

Any line prefixed with a semicolon “;” is supposed to be a comment line only. The line to execute a cabinet file (.cab) must be specified with a colon “:”, followed by two dots “. .” for the absolute path. For example,

```
:\DiskOnChip\ReaderConfig.exe
;\DiskOnChip\RF9500_CE.exe
:..\DiskOnChip\ReaderConfig.cab
```

Note: Because the cabinet files are designed to install the application, tidy up, and then “self destruct”, they will be automatically deleted from your mobile computer after installation. However, **AutoRun.ini** will backup the original files (.cab) while installing cabinet files, and restore them after installation. Consequently, these cabinet files will be automatically re-installed to your mobile computer upon cold boot or warm boot, if specified in **AutoRun.ini**.

CONFIGURING 9500 MOBILE COMPUTER

In this chapter, a brief on the system settings is provided for your reference. The **Application Manager** is specifically designed for the administrator to manage the accessibility of applications and protect the integrity of the system on the mobile computer. It serves as a portal that allows launching routine application programs automatically upon a reboot, preventing users from running potentially distracting applications, as well as to restricting access to changing device settings.

Note: User settings are stored in SDRAM and will be overwritten by the system defaults after hardware reset. However, you can use the CipherLab Backup Utility to backup the current registry for restore purpose.

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3.5 Upgrading OS Image	58

3.1 APPLICATION MANAGER

Application Manager has powerful features and is easy to use —

- ▶ Provides full control over executable files of the Programs folder, desktop and Control (Panel)
- ▶ Can limit access to essential device settings
- ▶ Can prevent from potentially distracting applications
- ▶ Can execute routine application automatically upon a reboot
- ▶ Provides user name and/or password protection
- ▶ Allows setting up an administrator account
- ▶ Supports multiple languages
- ▶ Supports show/hide taskbar and toolbar
- ▶ Supports enable/disable taskbar, partially or fully
- ▶ Distributes user settings at a few clicks

After restarting the mobile computer upon completion of installation, the **Application Manager** automatically starts up with programs and settings made accessible based on the system. If you have logged in as an administrator, you are allowed to manage program accessibility.

Note: For details on the installation and usage, please refer to the separate user guide.

3.2 DEVICE NAME & CONFIGURATION

3.2.1 CHANGING DEVICE NAME

- 1) Go to **Start | Settings | Control Panel** and select **System** to obtain essential system information.
- 2) Select the Device Name tab to change the identification for the mobile computer.



3.2.2 UNDERSTANDING DEVICE CONFIGURATION

The device configuration of 9500 Mobile Computer is displayed in 5 digits: xxxx-x

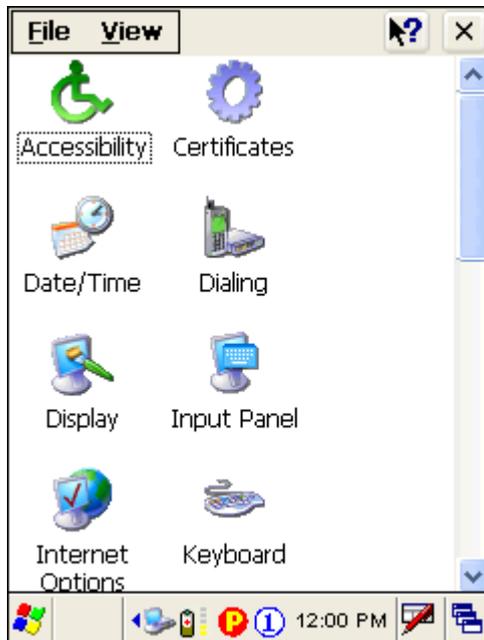
Take the screenshot of System Properties above for example. Its device configuration is "5410-0"; therefore, the mobile computer has the following features –

- ▶ 27-key
- ▶ A scan engine that employs Extra Long Range Laser scan engine
- ▶ Integrated communications: Bluetooth and Wi-Fi modules
- ▶ An RFID reader

Device Code	Modular Component	Types
1st digit	Reader module	0= none 1= CCD scan engine 2= Laser scan engine 3= 2D scan engine 4= Long Range Laser scan engine 5= Extra Long Range Laser scan engine
2nd digit	Wireless module	3= Bluetooth + GPRS 4= Bluetooth + 802.11b/g 5= Bluetooth only 7= Bluetooth + GPRS + 802.11b/g
3rd digit	RFID module	0= none 1= RFID reader
4th digit	Reserved	(Hardware version)
5th digit	Keypad module	0= 27-key

3.3 SYSTEM SETTINGS

Go to **Start | Settings | Control Panel**.



Items	Description
 Accessibility	<p>In the [Accessibility] dialog box, you may use these options to customize the way an external keyboard, display, or mouse functions. Many of these features are useful to people without disabilities.</p> <ul style="list-style-type: none"> ▶ Keyboard tab: Select StickyKeys to enable simultaneous keystrokes while pressing one key at a time; select ToggleKeys to emit sounds when certain locking keys are pressed. ▶ Sound tab: Select SoundSentry to provide visual warnings for system sounds. ▶ Display tab: Select High Contrast to improve screen contrast with alternative colors. ▶ Mouse tab: Select MouseKeys to enable the keyboard to perform mouse functions ▶ General tab: Select Automatic Reset if you wish to turn off accessibility features after a specific period of time; select Notification if you wish to hear a sound when turning a feature on or off.
 Certificates	<p>In the [Certificates] dialog box, you may view or modify digital certificates that some application use to establish trust for secure connections.</p>
 Date/Time	<p>In the [Date/Time] dialog box, you may change date, time, and time zone settings.</p>
 Dialing	<p>In the [Dialing Properties] dialog box, you may configure settings for modem communications, such as the GPRS modem.</p>

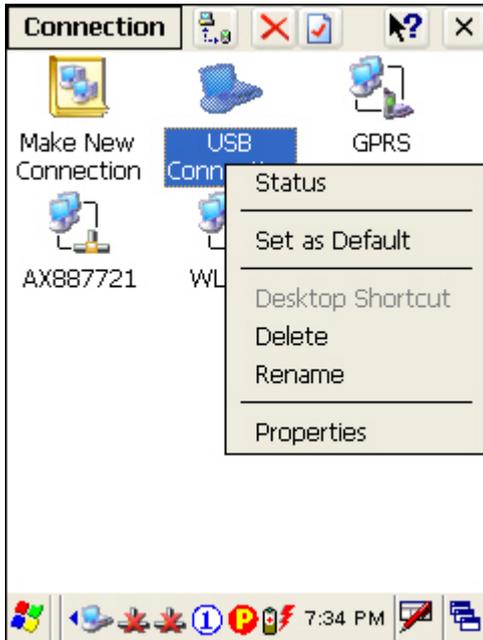
 Display	<p>In the [Display Properties] dialog box,</p> <ul style="list-style-type: none"> ▶ Background tab: Select an image for the background. ▶ Appearance tab: Select a desired color scheme for windows, dialog boxes, and items. ▶ Backlight tab: Specify for how long the mobile computer is idle and then the backlight will be automatically turned off while on battery power and external power (in the charging cradle) respectively. Tap the [Advanced] button to move the slider and adjust the brightness of the LCD backlight when it is set to be automatically turned on once a key is pressed or you tap the touch screen.
 Input Panel	<p>In the [Input Panel Properties] dialog box, you may configure how the Soft Input Panel (SIP) works.</p>
 Internet Options	<p>In the [Internet Options] dialog box, you may configure how the mobile computer connects to the Internet.</p>
 Keyboard	<p>Connect an external keyboard to the cradle via the USB Host port.</p> <p>In the [Keyboard Properties] dialog box, you may configure settings for character repeat.</p>
 Mouse	<p>Connect a mouse to the cradle via the USB Host port.</p> <p>In the [Mouse Properties] dialog box, you may configure and test your double-click settings.</p>
 Network and Dial-up Co...	<p>In the [Network and Dial-up Connections] window, you may configure settings for the mobile computer connects to a network directly or through a modem. Alternatively, you may tap Start Settings Network and Dial-up Connections.</p> <ul style="list-style-type: none"> ▶ USB Connection (via USB device port on the cradle) ▶ GPRS (through a GPRS modem) ▶ AX88772 (via Ethernet port on the cradle) ▶ WLAN (via 802.11b/g) ▶ BTPAN (via Bluetooth)
 Owner	<p>In the [Owner Properties] dialog box,</p> <ul style="list-style-type: none"> ▶ Identification/Notes tab: Type your contact information or notes. ▶ Network ID tab: Type the user name, password, and domain name used to log on to the remote network.
 Password	<p>In the [Password Properties] dialog box, you may apply password protection at power-on to limit access to the mobile computer.</p>
 PC Connection	<p>In the [PC Connection Properties] dialog box, you may disable the direct connection between the mobile computer and a desktop computer.</p> <ul style="list-style-type: none"> ▶ By default, the mobile computer is enabled to directly connect to a desktop computer via the cradle's USB port. Alternatively, you may tap Start Settings Network and Dial-up Connections and select USB Connection. ▶ You may change to use Bluetooth if ActiveSync via Bluetooth has been enabled in Bluetooth Manager.

 Power	In the [Power Properties] dialog box, <ul style="list-style-type: none"> ▶ Battery tab: You may view the current status of main and backup batteries. ▶ Schemes tab: You may configure the power scheme and switching. ▶ Device Status tab: You may view the devices that are consuming power.
 Regional Settings	In the [Regional and Language Settings] dialog box, <ul style="list-style-type: none"> ▶ Region tab: You may customize the appearance and formatting to your geographic region. ▶ Language tab: By default, it is set to English (United States). ▶ Input tab: By default, it is set to English (United States)-US.
 Remove Programs	In the [Remove Programs] dialog box, you may remove any program that is installed earlier.
 Storage Manager	In the [Storage Properties] dialog box, <ul style="list-style-type: none"> ▶ Storage Manager tab: You may reformat the available storage device, either the DiskOnChip folder or storage card. Actions include "Dismount the storage device", "Format the storage device", and "Set up disk partitions". The Storage Manager is for the use of system administrators only.
 Stylus	In the [Stylus Properties] dialog box, <ul style="list-style-type: none"> ▶ Double-Tap tab: You may configure and test your double-tap settings. ▶ Calibration tab: You may need to re-calibrate the touch screen if it is not responding properly to your taps.
 System	In the [System Properties] dialog box, <ul style="list-style-type: none"> ▶ General tab: You may view the system information. ▶ Memory tab: You may move the slider and adjust the SDRAM allocation. ▶ Device Name tab: You may type a name and description for identifying the mobile computer. ▶ Copyrights tab: You may view the important statements on copyrights.
 Terminal Server Client	Client access licenses (CALs) issued by the Terminal Server license server allow clients to connect to the terminal server. Use Remote Desktop Connection to log onto a Windows Terminal Server or a computer remotely. You may access all of the programs, files, and network resources on the remote host or terminal server.
 Volume & Sounds	In the [Volume & Sounds Properties] dialog box, <ul style="list-style-type: none"> ▶ Volume tab: You may move the slider and adjust the volume and select to play sounds for Events, Applications or Notifications. ▶ Sounds tab: You may configure sounds for different Windows events.

3.4 CONNECTION SETTINGS

There are two ways to access the connections settings:

- ▶ Go to **Start | Settings | Control Panel** and select **Network and Dial-up Connections**.
- ▶ Go to **Start | Settings | Network and Dial-up Connections**.



Ignore [Properties] as any changes made will affect ActiveSync connection.

Connections	Description
 USB Connection	<p>This is a shortcut to USB Connection, and the selected interface is USB for factory setting. This connection is reflected in the control panel for direct PC connection.</p> <div style="text-align: center;">  PC Connection </div> <p>Start Settings Control Panel Connection</p> <p>The USB connection is specifically for performing the ActiveSync operation via the cradle. Generally, it will automatically establish the connection and start the ActiveSync operation when you seat the mobile computer in the cradle. To stop the ActiveSync operation, simply remove the mobile computer.</p> <p>Alternatively, you may double-tap the status icon  from the taskbar and tap [Disconnect].</p> <ul style="list-style-type: none"> ▶ When connected, the status icon will appear on the taskbar. ▶ When disconnected, this icon will disappear.

 GPRS	<p>This is a shortcut to GPRS connection. Note that the power to the GPRS module must be turned on through Power Management  for establishing a connection.</p> <ul style="list-style-type: none"> ▶ When GPRS power is turned on, the icon  will become . ▶ When connected to a GPRS modem, the status icon  will appear on the taskbar. ▶ When disconnected, this icon will disappear.
 WLAN1	<p>This is the control of 802.11b/g module for wireless local area networking (WLAN) connection, which is not available until the power to 802.11b/g module is turned on through Power Management .</p> <ul style="list-style-type: none"> ▶ When Wi-Fi power is turned on, the icon  will become , and the network status icon  will appear on the taskbar. ▶ When connected, this icon  will become  indicating the signal strength, and the network status icon  will become . ▶ When disconnected, this icon will become  again.
 BTPAN1	<p>This is the control of Bluetooth module for wireless personal area networking (WPAN) connection, which is not available until Bluetooth Manager  is executed.</p> <ul style="list-style-type: none"> ▶ When available, the connection status icon  will appear on the taskbar. ▶ When connected, this icon will become . ▶ When disconnected, this icon will become  again.
 AX887721	<p>This is the control of Ethernet module AX88772. It is enabled automatically when the mobile computer is seated in the cradle.</p> <ul style="list-style-type: none"> ▶ When available, the status icon  will appear on the taskbar. ▶ When a Cat. 5 cable is connected, this icon will become . ▶ When disconnected, this icon will become  again.

Note: By default, DHCP is enabled for networking. Instead of using DHCP, select [Properties] and specify a static IP address to the mobile computer. Only change these settings according to your network administrator's instructions.

Toolbar Items	Description	Remarks	
	Tap this button to open the Connection menu. The available options depend on the connection you select.	Tap and hold the icon of a desired connection type. Then, select an option from its associated menu.	
	Tap this button to toggle on/off the connection you select. The toggle is used for Enable/Disable or Connect/Disconnect.		
	Tap this button to delete the connection you select.		
	Tap this button to view the properties of the connection you select.		

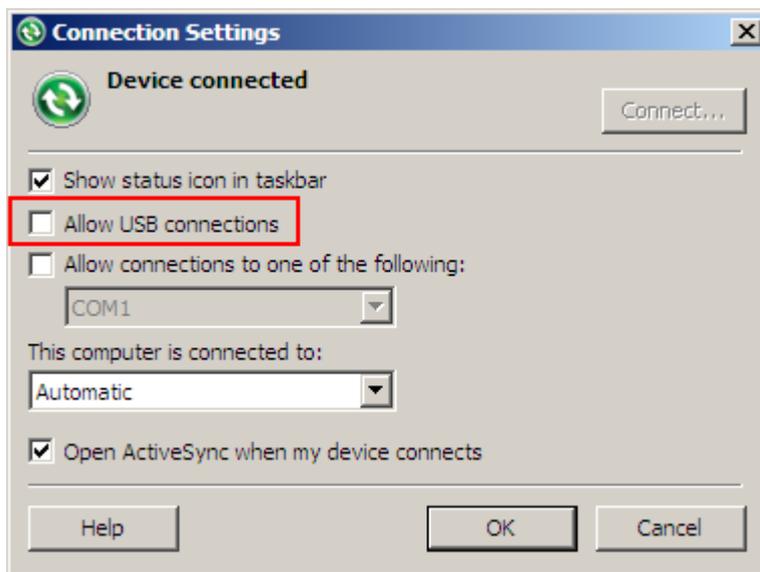
3.5 UPGRADING OS IMAGE

You can upgrade the OS image on your mobile computer via the program "DLDR.exe" on the desktop of your computer. Please contact your sales representative for the OS upgrade utility "DLDR.exe".

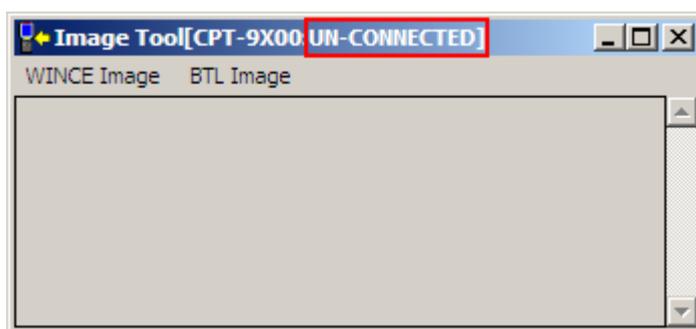
Note: Before upgrading, it is suggested to delete the "\\DiskOnChip\Sysbak" folder.

- 1) Install Microsoft ActiveSync on your computer. For initial ActiveSync operation, refer to [2.3 Using ActiveSync](#) for details.

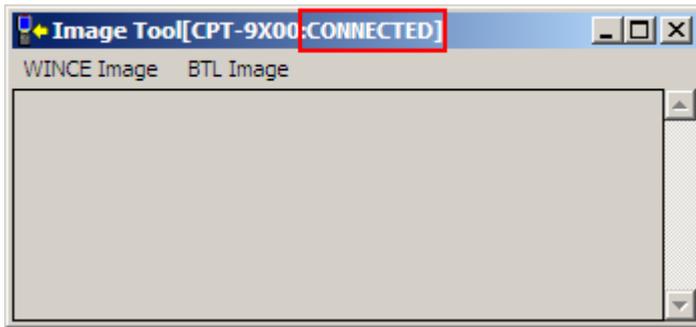
Now, disable the ActiveSync operation as shown below.



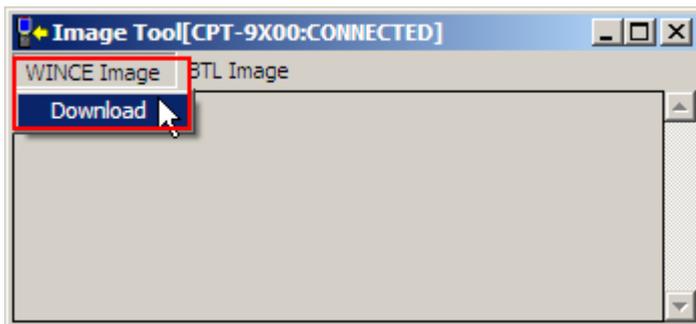
- 2) Run the Image Tool "DLDR.exe" on your computer.



- 3) Press [Reset] +  to perform hardware reset on 9500, and then immediately press  +  +  in three seconds so that 9500 can enter the "Download" mode.
- 4) Seat 9500 in the cradle.
- 5) Press [Enter] on 9500 to start the download process. It will try to connect to your computer.
- 6) In the Image Tool, it will show 9500 has been connected successfully.



Go to **WINCE Image | Download**, and select the desired image file (*.nb0).



It will take approximately 5 minutes before a message is displayed on the mobile computer to indicate the OS upgrade is completed successfully. It will then perform hardware reset on 9500 automatically.

Warning: Do not press any key on the mobile computer while upgrading OS image and make sure the power cord is connected.

USING 802.11 RADIO

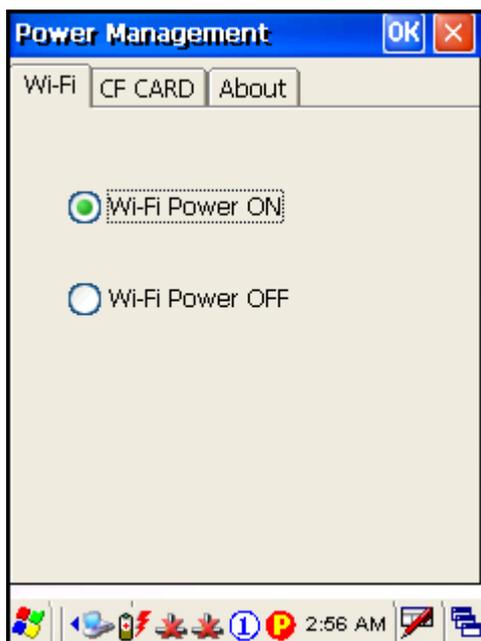
The Wi-Fi module integrated on the mobile computer lets you configure and connect to network wirelessly.

IN THIS CHAPTER

4.1 Turn On Wi-Fi Power	61
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4.1 TURN ON WI-FI POWER

- 1) Tap the icon  on the taskbar to access **Power Management**.



- 2) Select [Wi-Fi Power ON] and tap .
- 3) It takes several seconds to turn on the power to module.

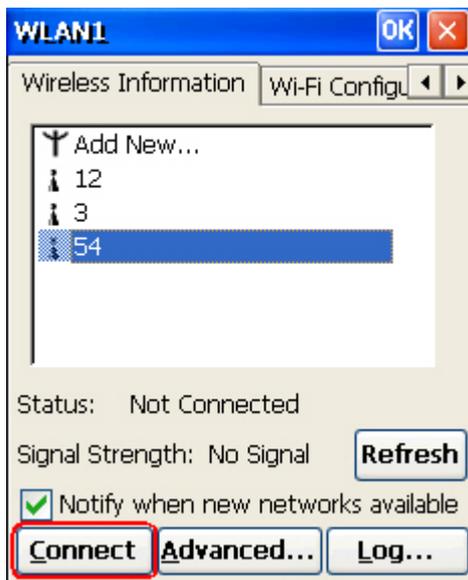


The icon indicates that 802.11b/g power is turned on, and the green bars indicate the wireless signal strength. The more the bars, the stronger the signal.

4.2 WLAN CONNECTION

4.2.1 CONNECTING TO WI-FI ACCESS POINT

- 1) Double-tap  on the taskbar to access **WLAN1**.
- 2) On the Wireless Information tab, select an available network and tap [Connect].



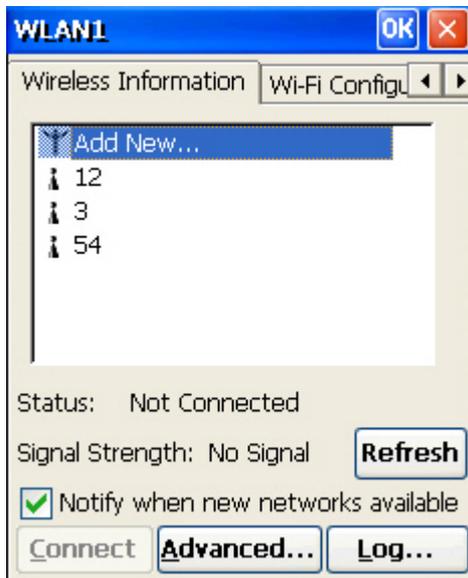
- 3) If you need to change the network settings, double-tap the selected network, and the Wireless Properties dialog box appears for configuration.
- 4) Wait a few seconds for the mobile computer to automatically connect to the preferred network you have configured.

A strong signal  (five bars) usually means that the wireless network is close or there is no interference. For best performance, connect to the wireless network with the strongest signal. However, if an unsecured network has a stronger signal than a security-enabled one, it's safer for your data if you connect to the security-enabled network (but you must be an authorized user of that network).

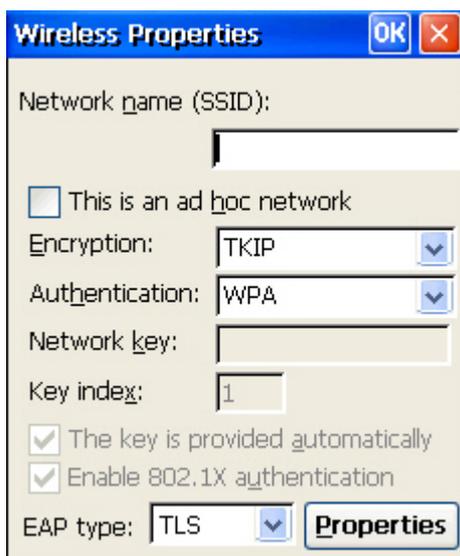
To improve the signal strength, you can move your mobile computer closer to the wireless router or access point, or move the router or access point so it's not close to sources of interference such as brick walls or walls that contain metal support beams.

4.2.2 CONFIGURING WI-FI PROPERTIES

- 1) Double-tap [Add New...] to add a new network option.



- 2) If the network configuration is correct, tap [OK] in the Wireless Properties dialog box.

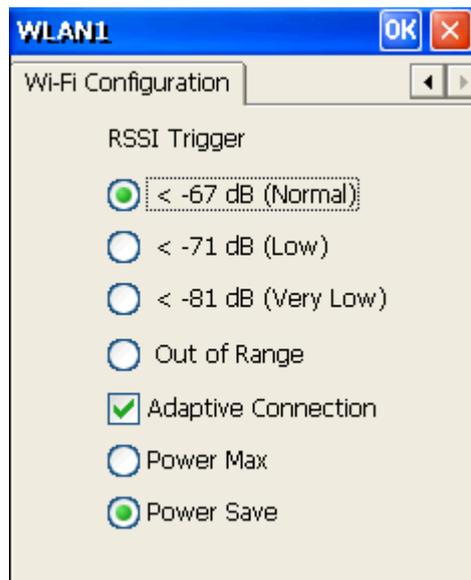


- 3) Tap [Advanced] on the Wireless Information tab for more network settings.

4.2.2 RSSI TRIGGER

RSSI stands for Received Signal Strength Indication. Use an RSSI value to determine when it comes below a certain threshold at which point the mobile computer will seamlessly switch the network connection, for example, while moving in and out of range between different access points. Select [Adaptive Connection] and pick up a suitable value.

Cancel the selection of [Adaptive Connection] when you are using a third-party application capable of configuring the switching itself in order to maintain a constant connection to the network.



USING BLUETOOTH

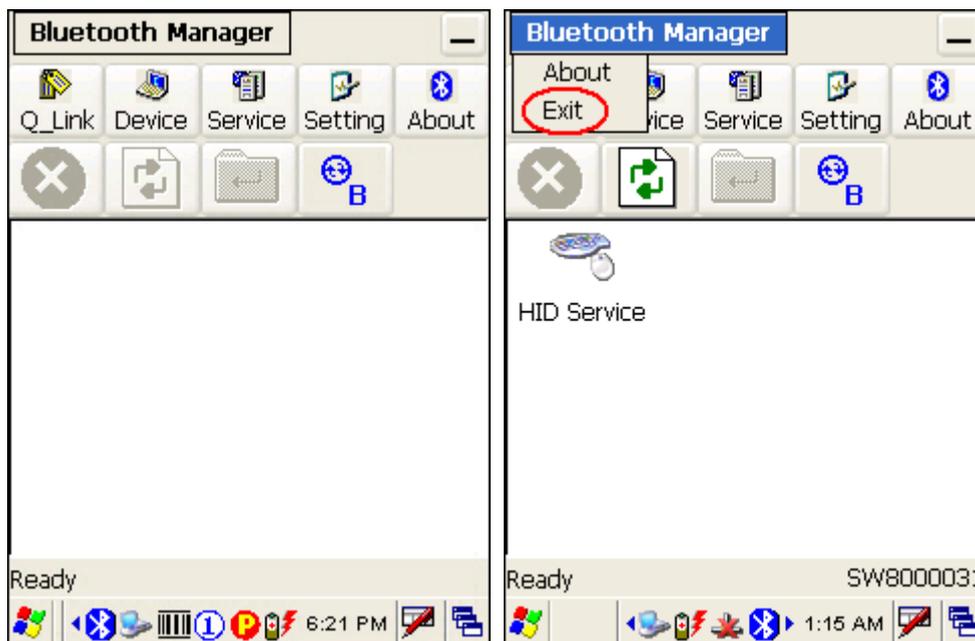
Bluetooth Manager lets you configure Bluetooth settings and use Bluetooth services provided on the remote devices.

IN THIS CHAPTER

5.1 Turn on Bluetooth Power.....	65
5.2 Search Devices.....	70
5.3 Pair Devices.....	71
5.4 File Transfer.....	75
5.5 Object Push.....	77
5.6 Serial Port Service.....	78
5.7 Manage Local Services.....	82

5.1 TURN ON BLUETOOTH POWER

- Go to **Start | Programs | BTManager** to open **Bluetooth Manager**.



- It takes several seconds to enable Bluetooth services. The associated icon  will appear on the taskbar. Meanwhile, the LED on the mobile computer will turn blue.

Tap **Bluetooth Manager** and select [Exit] from the drop-down menu, as shown right above, to exit the application. The LED on the mobile computer will go off.

5.1.1 BLUETOOTH PROFILES SUPPORTED

The supported Bluetooth profiles are:

- ▶ Serial Port Profile (SPP)
- ▶ Object Push Profile (OPP)
- ▶ File Transfer Profile (FTP)
- ▶ Dial-Up Networking Profile (DUN)
- ▶ Synchronization Profile (SP)
- ▶ Personal Area Networking Profile (PAN)
- ▶ Human Interface Device Profile (HID)

5.1.2 BLUETOOTH TOOLBAR

Buttons	Description	See Also						
	<p>Tap this button to view shortcuts to preferred Bluetooth services, which may be provided on different Bluetooth devices. Then tap a desired Bluetooth service to establish a quick link.</p> <p>You will have to make a connection and created a shortcut to a specific Bluetooth service first.</p>							
	<p>Tap this button to view Bluetooth devices discovered during this session.</p> <ul style="list-style-type: none"> ▶ If you tap the button for the first time, it will start the inquiry process to discover nearby Bluetooth devices. 	 						
	<p>Tap this button to view Bluetooth services provided on 9500.</p> <ul style="list-style-type: none"> ▶ By default, these services are all available, and therefore, displayed along with a plug icon "🔌". ▶ To view or change properties of a service, tap and hold it to select [Properties] from the pop-up menu. <table border="1" data-bbox="395 1370 1284 1534"> <thead> <tr> <th>Local Path</th> <th>Bluetooth Service on 9500</th> </tr> </thead> <tbody> <tr> <td>\Temp</td> <td>File Transfer</td> </tr> <tr> <td>\My Documents</td> <td>Object Push</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ▶ To disable a service, tap and hold it to select [Stop]. 	Local Path	Bluetooth Service on 9500	\Temp	File Transfer	\My Documents	Object Push	
Local Path	Bluetooth Service on 9500							
\Temp	File Transfer							
\My Documents	Object Push							

 <p>Setting</p>	<p>Tap this button to view Bluetooth properties.</p>	 <p>System</p>
<p>General tab</p>	<p>It displays device name, MAC address, as well as the device type.</p>	
<p>Security tab</p>	 <p>▶ If you wish to change the device name of the mobile computer, go to Start Settings Control Panel and select System.</p>  <p>▶ Authentication Setting: It is disabled by default. When enabled, PIN code is required.</p> <p>▶ Discoverability: It is set discoverable by default. If you do not wish to provide Bluetooth services to other remote devices, cancel the check box.</p> <p>▶ Default PIN: It is disabled by default. You may set a link key to skip the PIN code input.</p>	
<p>Options tab</p>		 <p>Service</p>

	<ul style="list-style-type: none"> ▶ Start minimized: When selected, once you run Bluetooth Manager, its window will be minimized to an icon  on the taskbar. Only when you tap the icon, will it open Bluetooth Manager window. Refer to the "Minimized" button below. ▶ Auto Client COM Port: When enabled, the default COM port for remote Serial Port service will be assigned automatically. When disabled, you can select a COM port. ▶ Auto Server COM Port: When enabled, the COM port for local Serial Port service will be assigned automatically (COM6 by default). 	
	<p>Tap this button and tap [Connect via Cradle] to stop ActiveSync via Bluetooth.</p>	
	<p>Tap this button to minimize Bluetooth Manager window.</p>	
	<p>Tap this button to stop inquiring.</p>	
	<p>Tap this button to refresh the device list.</p>	
	<p>When using the File Transfer service on a remote device, you can tap this button to move up one level if a subfolder exists.</p>	
	<p>Tap this button to view Bluetooth profiles supported -</p> <ul style="list-style-type: none"> ▶ SPP for Serial Port Profile ▶ OPP for Object Push Profile ▶ FTP for File Transfer Profile ▶ DUN for Dial-Up Networking Profile (supports Client only) <p>Note that the mobile computer also supports the following profiles -</p> <ul style="list-style-type: none"> ▶ Personal Area Networking (PAN) Profile ▶ Human Interface Device (HID) Profile 	

5.1.3 SET DISCOVERABLE

- 1) Tap  to access the menu that allows you to set your device discoverable.



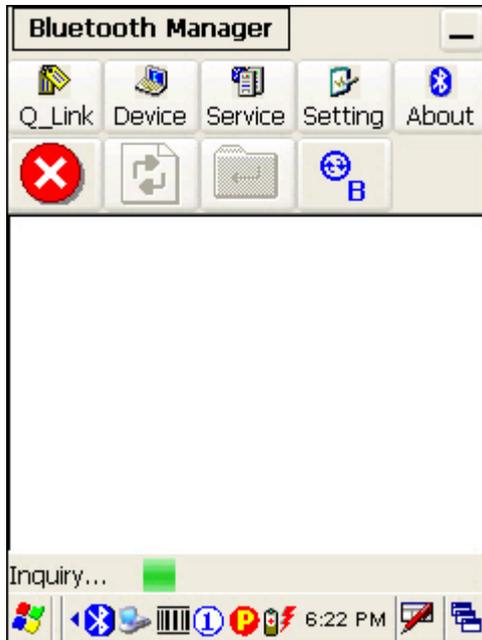
- 2) In the Security tab, cancel the check box if you want to hide the mobile computer from other Bluetooth devices.



When **Bluetooth Manager** window is minimized, tap  on the taskbar to maximize the window.

5.2 SEARCH DEVICES

- 1) Tap  to discover nearby Bluetooth devices.



- 2) Wait for a few seconds, and it will list the discovered devices.



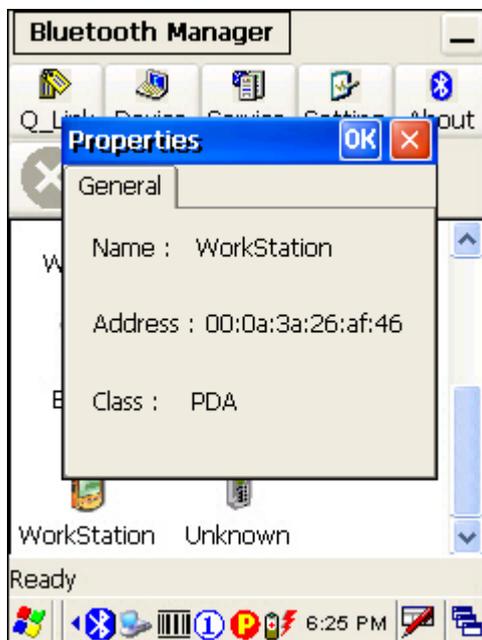
- 3) If you do not see the device that you want to connect to, make sure it is set discoverable.

Tap  to search again.

5.3 PAIR DEVICES

5.3.1 IDENTIFY REMOTE DEVICE

From the device list, tap and hold the desired device to select [Properties] from the pop-up menu.



5.3.2 PAIR

When authentication is enabled on the remote device, you will have to exchange a passkey (= pair) with it before starting a connection.

- 1) From the device list, tap and hold the desired device to select [Pair] from the pop-up menu.



- 2) Enter the PIN code that is specified on the remote device.



- 3) Once paired successfully, the paired device will be displayed along with a lock icon "🔒".



- 4) Double-tap the remote device to find out the available Bluetooth services.



- 5) Tap and hold a desired Bluetooth service, e.g. Serial Port Service, to select [Connect] from the pop-up menu. Refer to the following sections:

[5.4 File Transfer](#)

[5.5 Object Push](#)

[5.6 Serial Port Service](#)



- 6) Once the connection has been established, the connected service will be displayed along with a plug icon "🔌".
- 7) If you wish to add a service to the Q_Link list for establishing a quick connection in the future, tap and hold the service to select [Create Shortcut] from the pop-up menu.



5.3.3 UNPAIR

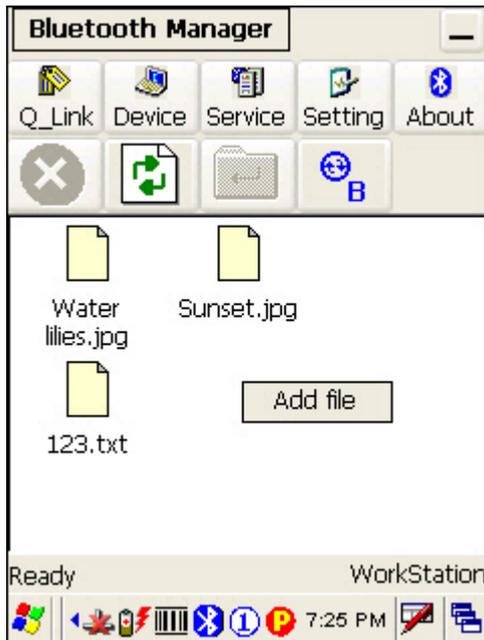
From the device list, tap and hold the desired device to select [Unpair] from the pop-up menu.

Note: The mobile computer must be unpaired on the remote device as well. For example, remove it from the device list on PC. (Both devices must be unpaired!)

5.4 FILE TRANSFER

5.4.1 UPLOAD A FILE

- 1) Tap and hold the File Transfer service.
- 2) Select [Connect] (and assign COM port if necessary).
- 3) Tap and hold anywhere blank to select [Add file] from the pop-up menu.



- 4) Choose the file you wish to upload to the remote device.
- 5) The mobile computer will start uploading the file to the remote device.

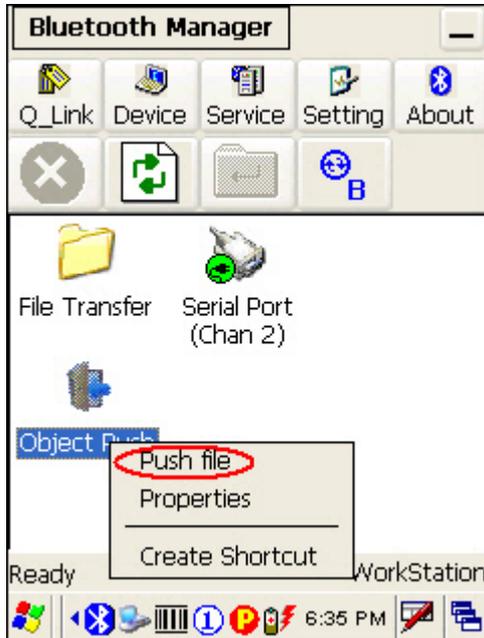
5.4.2 DOWNLOAD A FILE

- 1) Tap and hold the File Transfer service.
- 2) Select [Connect] (and assign COM port if necessary).
- 3) Tap and hold a desired file to select [Get File] from the pop-up menu. The mobile computer will start downloading the file from the remote device.



5.5 OBJECT PUSH

- 1) Tap and hold the Object Push service.
- 2) Select [Push file] to send a file or PIM item, e.g. a business card.



- 3) Choose the file you wish to send.



- 4) The mobile computer will start sending the file.

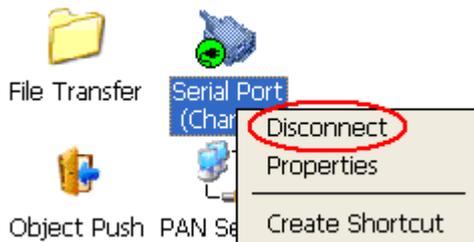
5.6 SERIAL PORT SERVICE

5.6.1 SERIAL PORT SERVICE

- 1) Tap and hold the Serial Port Service.
- 2) Select [Connect] from the pop-up menu. If "Auto Client COM Port" is disabled in  Setting, you will need to select a COM port.



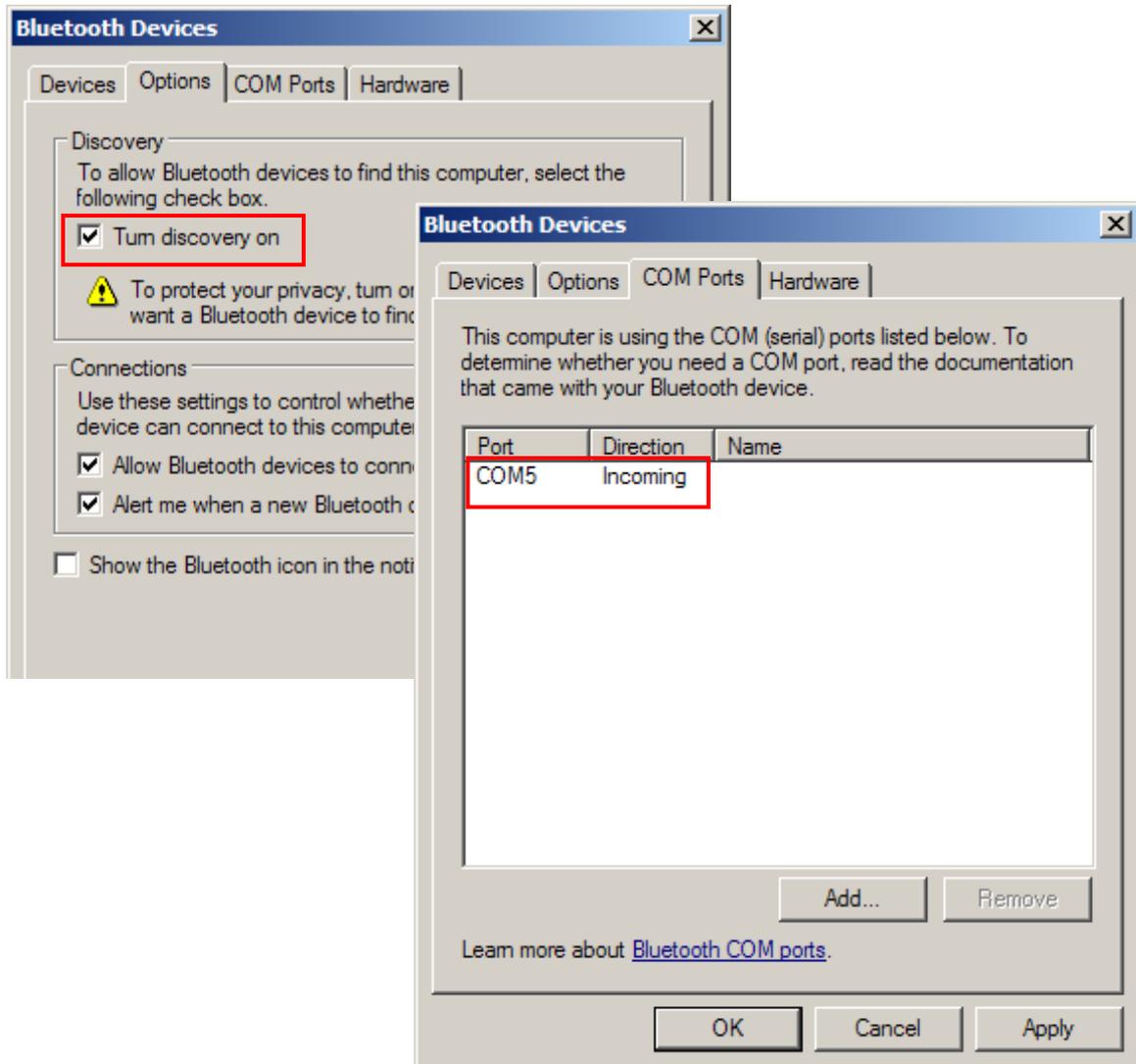
- 3) Once the connection has been established, the connected service will be displayed along with a plug icon "🔌".
- 4) To stop using the service, tap and hold it to select [Disconnect]. The plug icon will disappear.



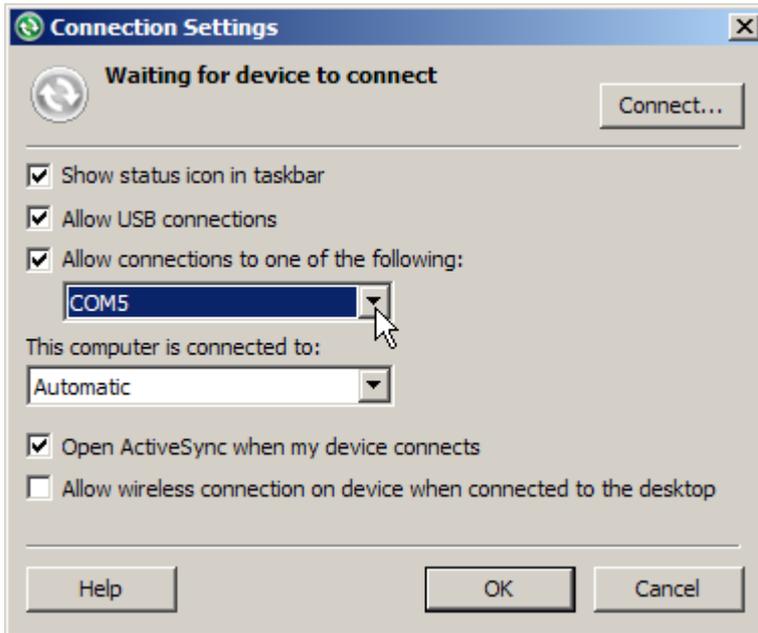
5.6.2 BLUETOOTH ACTIVESYNC

For ActiveSync via Bluetooth, you must configure Bluetooth settings correctly on your computer first.

- 1) Configure Bluetooth settings for your computer, such as "Turn discovery on", adding a COM port (Incoming), etc.



- 2) Allow connections to the specified COM port in ActiveSync.



- 3) Connect the mobile computer to your computer.
- 4) On the mobile computer, tap and hold Serial Port Service to select [Connect to ActiveSync] from the pop-up menu. It uses COM8 to connect to your computer by default.



- 5) To stop ActiveSync via Bluetooth, tap  and then tap [Connect via Cradle].



5.7 MANAGE LOCAL SERVICES

By default, File Transfer, Serial Port, and Object Push services are made available, and therefore, displayed along with a plug icon “”.

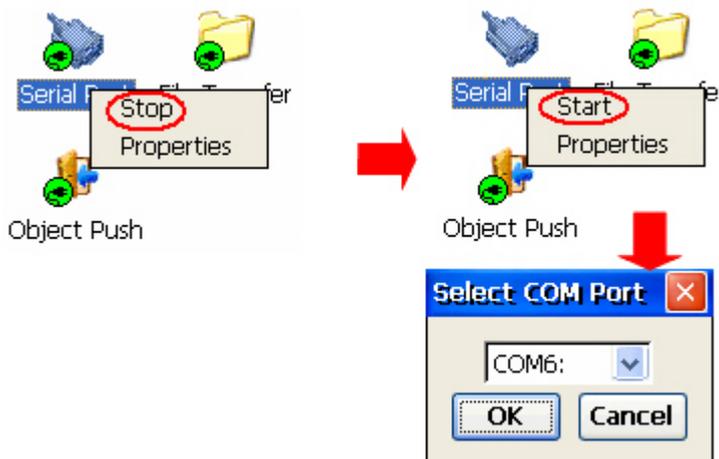
5.7.1 SERIAL PORT SERVICE

Change Serial COM Port

You can change the COM port. Tap and hold it to select [Properties] from the pop-up menu. If "Auto Server COM Port" is enabled in the [Setting] button, the COM port providing Serial Port service will be assigned automatically (COM6 by default).

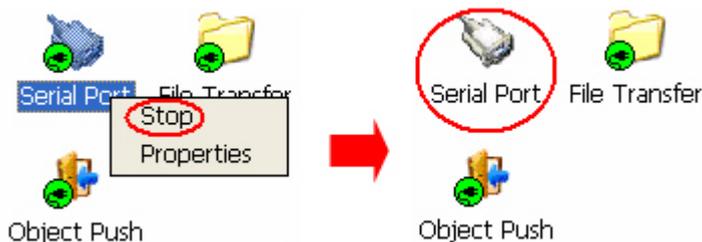


If "Auto Server COM Port" is disabled, you can select a COM port by following these steps:



Stop/Start Service

You can disable or enable the service. When disabled, it becomes unavailable to a remote device.

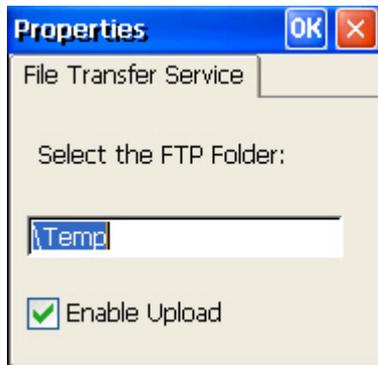


5.7.2 FILE TRANSFER

Change Local Path

You can change the FTP folder. Tap and hold it to select [Properties] from the pop-up menu.

- ▶ By default, uploading files to the mobile computer is allowed. You can cancel the check box to prohibit uploading.



Stop/Start Service

You can disable or enable the service. When disabled, it becomes unavailable to a remote device.

5.7.3 OBJECT PUSH

Change Local Path

You can change the exchange folder for Object Push. Tap and hold it to select [Properties] from the pop-up menu.



Stop/Start Service

You can disable or enable the service. When disabled, it becomes unavailable to a remote device.

USING GPRS

9500 Mobile Computer allows connecting to network over General Packet Radio Service (GPRS). Insert SIM card before turning on the power to GPRS module. Refer to [Inserting SD or CF Card](#).

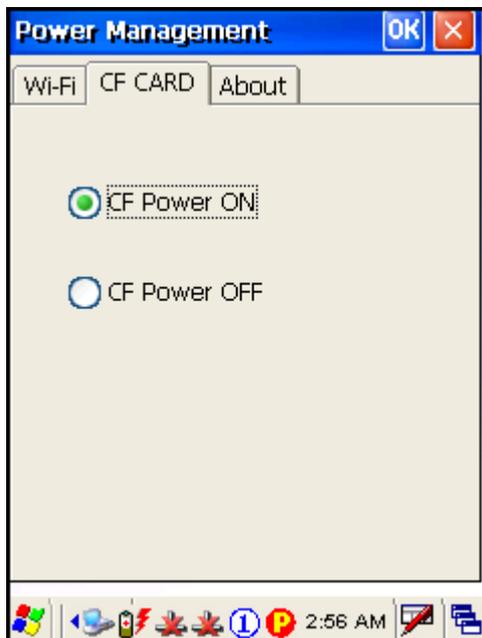
Note: This icon  on the taskbar indicates that other CF card is present instead of GPRS.

IN THIS CHAPTER

6.1 Turn On GSM/GPRS Power	85
6.2 GPRS Connection	87

6.1 TURN ON GSM/GPRS POWER

- 1) Tap the icon  on the taskbar to access **Power Management**.



- 2) Select [CF Power ON] and tap .

- 3) A dialog box will be displayed asking you to enter the PIN code.



Note: The PIN verification on the mobile computer only allows two attempts because the system will always process the default number first (= "1234" for factory setting). Unless it matches the PIN code of your SIM card, you will have to manually input the correct PIN code. If you succeed, the PIN code you input will overwrite the factory setting and become the default PIN code. If you fail two times, the PIN will be blocked, and you will need to obtain the PUK code from your network operator and unblock the SIM card on your cellular phone.

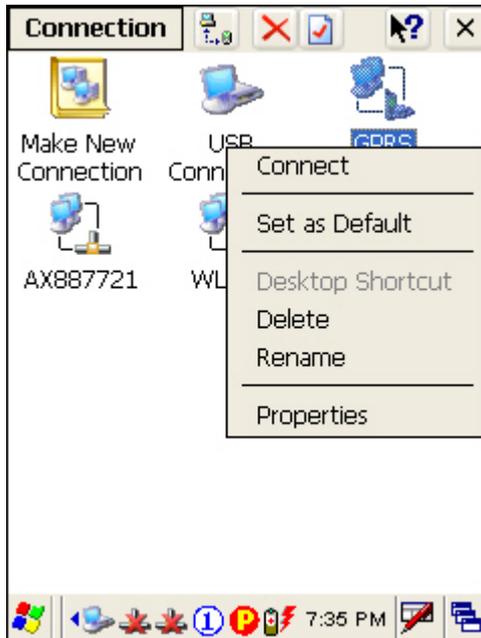
- 4) It takes several seconds to turn on the power to module.

The icon  will become  to indicate that GPRS power is turned on.

6.2 GPRS CONNECTION

6.2.1 CONNECTING TO GPRS MODEM

- 1) Go to **Start | Settings | Network and Dial-up Connections**.
- 2) Tap and hold "GPRS" to select [Connect] from the pop-up menu.



- 3) If your dial-up configuration is correct, tap the [Connect] button in the Dial-Up Connection dialog box. Refer to [6.2.2 Configuring Dialing Properties](#).

Note: You must connect to the GPRS modem specified by the mobile phone operator.

- 4) After you tap the [Connect] button, the GPRS status will go through opening port, user authenticated, device connected until it is connected finally.

The status icon  will appear on the taskbar to indicate the GPRS connection has been established successfully. If you want to disconnect, double-tap the icon and tap the [Disconnect] button.

6.2.2 CONFIGURING DIALING PROPERTIES

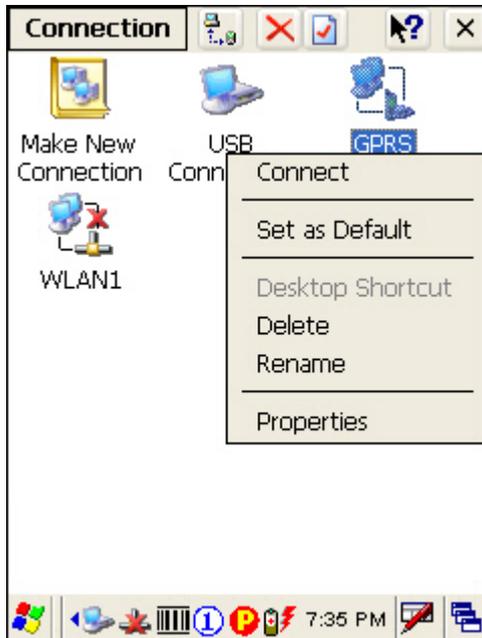
If you need to configure the dial-up settings, tap the [Dial Properties] button in the Dial-Up Connection dialog box.



Note: Alternatively, you may go to **Start | Settings | Control Panel** and select **Dialing**.

6.2.3 CONFIGURING GPRS PROPERTIES

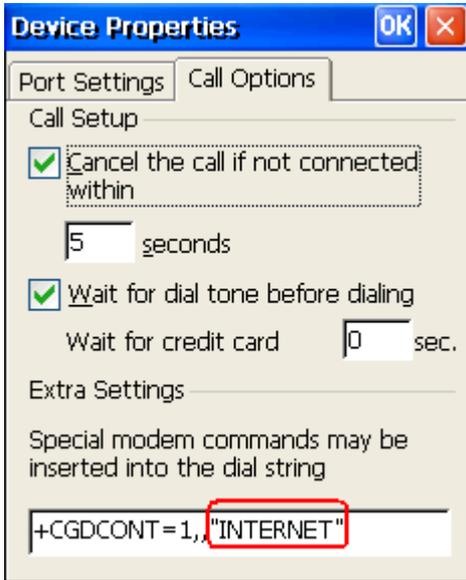
- 1) Go to **Start | Settings | Network and Dial-up Connections**.
- 2) Tap and hold "GPRS" to select [Properties] from the pop-up menu.



- 3) The default GPRS modem will appear as shown below. Tap [Configure].



- 4) Select the Call Options tab. The special modem commands inserted into the dial string must be [+CGDCONT=1,,"AP name"]. For example, change "INTERNET" below to the name of your GPRS AP.



USING READER CONFIGURATION UTILITY

Reader Configuration Utility is the tool that lets you manage the barcode and RFID readers integrated on the mobile computer.

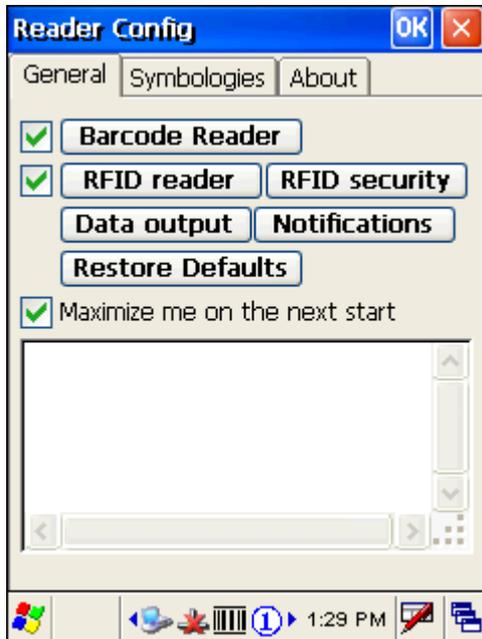
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7.1 Run ReaderConfig.exe	92
7.2 Barcode Reader Settings.....	93
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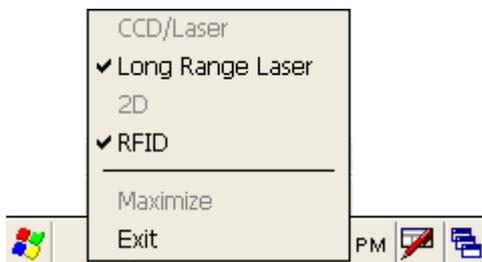
7.1 RUN READERCONFIG.EXE

- 1) Go to **Start | Programs | ReaderConfig** to open the **Reader Configuration Utility**.

The associated icon  will appear on the taskbar.



- 2) Tap the icon  to access the menu that allows you to choose and enable one or both of the readers. There will be a check mark in front of the reader if it is enabled. If the RFID Reader is installed, the option will be available.



- 3) To meet your application requirements, proceed to configure associated reader settings as well as barcode settings.

Note: (1) The ReaderConfig.exe utility will automatically detect the reader module(s) that is currently installed in the mobile computer.
 (2) If you wish to reload the default settings, delete the ReaderCfgINI.txt file in DiskOnChip before launching the program, or tap [Restore Defaults] on the General tab after launching the program.

7.2 BARCODE READER SETTINGS

The barcode reader configurations depend on the scan engine(s) installed. You can tell which reader is currently in use and make necessary changes on the General tab.

Barcode Reader	Description
CCD/Laser Reader	<p>If installed, tap the [Barcode Reader] button to configure the reader settings for CCD or Laser scan engine.</p> <ul style="list-style-type: none"> ▶ Refer to the Reader Settings Table in Appendix II - Linear Imager (CCD), Laser (SE950).
(Extra) Long Range Laser Reader	<p>If installed, tap the [Barcode Reader] button to configure the reader settings for Long Range Laser or Extra Long Range laser scan engine.</p> <ul style="list-style-type: none"> ▶ Refer to the Reader Settings Table in Appendix III - LR, ELR Laser.
2D Reader	<p>The 2D scan engine is capable of reading linear and 2D barcodes.</p> <p>If installed, tap the [Barcode Reader] button to configure the reader settings for 2D scan engine.</p> <ul style="list-style-type: none"> ▶ Refer to the Reader Settings Table in Appendix IV - 2D Imager.

7.3 RFID READER SETTINGS

If the RFID scan engine is present, configurable options will be displayed.

Note: Because it is possible to read barcode and RFID tag at the same time, it is recommended that only one scan engine is enabled at a time to prevent from misreading.

Some RFID tags support both read/write operations, on a page-by-page basis. You may find it necessary to define your own read/write operation. For reference only, the table below lists the start page for read/write operation on a number of RFID tags.

Start Page	Tag Type	Standard
-1	Start from byte 0 of the default page (see below) for all tags	
3	Mifare	ISO 14443A
4	SR176	ISO 14443B
3	ICODE SLI	ISO 15693
0	LRI512	ISO 15693
3	SRF55VxxP	ISO 15693
0	EM4135	ISO 15693
0	Tag-it HF-I	ISO 15693
0	Others	ISO 15693
5	ICODE	ICODE® (Phillips)

Note: Please refer to the specifications of your RFID tags for memory organization.

7.3.1 READ OPERATION

Read Settings

By default, the RFID tag is read from byte 0 of the default page. However, the default page, amount of bytes and number of pages of each tag may be different. Specify how many bytes of data you want to read from the tag.

Generally, the read data is user data obtained from the user block. If you are sure that the data is to be read from a non-user block, such as the lock block, you need to select the check box of [Display hex values] first.

7.3.2 WRITE OPERATION

Write Settings

Type the string that you want to write to a tag. By default, the string is written to the tag from byte 0 of the default page. However, the default page, amount of bytes and number of pages of each tag may be different. Therefore, the input string will automatically be truncated to fit into pages, and data may be discarded when it comes to the end of pages available.

Generally, it will write the input string to the user block, which is free for custom use. The string will be displayed as "user data". If you wish to write the string to a non-user block, such as the lock block, you need to select the check box of [Use hex values] first.

Once you have selected to use hex values for the string, the string length must be even. For example, if you want to write 0x0A, 0x0B and 0x00 to a tag, the string you input must be "0A0B00" instead of "AB0".

7.4 DATA OUTPUT

Tap the [Data Output] button on the General tab to choose from the three options for data output after decoding as well as configure associated settings.

Data Output		Default
Keyboard Emulation	<p>Data is emulated as typed text and sent to the active Window.</p> <ul style="list-style-type: none"> ▶ When "Local machine" is selected, simply run your application or built-in program, such as WordPad, to start with data collection. ▶ When "RDP server" is selected, run the Remote Desktop Connection program to connect to a remote computer. <p>Note that this option is unable to emulate double bytes, such as Big-5 or Unicode characters on the remote PC.</p>	Local machine
Windows Message	<p>When selected, a Windows message will be broadcasted after decoding.</p> <ul style="list-style-type: none"> ▶ Intercept the decode message in your application. ▶ Call Windows API (ReadMsgQueue) in your application to retrieve the decoded data. 	Disable
Windows Event	<p>When selected, a Windows event will be broadcasted after decoding.</p> <ul style="list-style-type: none"> ▶ Intercept the decode event in your application. ▶ Call Windows API (ReadMsgQueue) in your application to retrieve the decoded data. 	Disable

Note: (1) Refer to CipherLab WinCE Products Programming Guide for details on Windows Message and Windows Event. Sample programs are provided by request.
 (2) For the use of a different program rather than ReaderConfig.exe, a dynamic-link library (DLL) file is provided.

Auto ENTER	<p>This function can spare you the trouble of pressing the [Enter] key on the mobile computer to confirm each scan. It will automatically add an ENTER character in front or to the end of one scan.</p> <ul style="list-style-type: none"> ▶ No ▶ Scan + ENTER ▶ ENTER + Scan 	Scan + ENTER
Auto ENTER Character	<p>*Auto ENTER must be enabled.</p> <ul style="list-style-type: none"> ▶ None ▶ Carriage Return ▶ Tab ▶ Space ▶ Comma ▶ Semicolon 	Carriage Return
Prefix String	0~10 characters	NULL

Suffix String	0~10 characters	NULL
Display Code Type	Select the check box to prefix the code type to barcode data after decoding a barcode.	Disabled
Display Code Length	Select the check box to suffix the code length to barcode data after decoding a barcode.	Disabled
Display RFID UID	Select the check box to display UID after decoding an RFID tag.	Enabled
Display RFID User Data	Select the check box to display user data after decoding an RFID tag.	Disabled
Field Delimiter	Decide whether or not to use a delimiter to separate data fields after decoding a barcode or an RFID tag — <ul style="list-style-type: none"> ▶ Code type, barcode data, and code length if more than one field is displayed ▶ UID and user data if both are displayed 	, ' (comma)

7.5 NOTIFICATIONS (FOR GOOD READ)

Tap the [Notifications] button on the General tab to configure how you want to be notified of a successful decoding.

Sound / Vibration		Default
Good Read via speaker	Mute, or Sound 1~9	Sound 1
Good Read via vibrator	0~5.0 (sec.) <ul style="list-style-type: none"> ▶ 0 = Disable the vibrator 	0 (= Disable)

7.6 SYMBOLOGY SETTINGS

For barcode settings, tap the Symbologies tab.

- ▶ Refer to [Appendix I - Scan Engine Settings](#) for the symbologies or RFID tags supported by a scan engine.
- ▶ Refer to the Symbology Settings Table in [Appendix II - Linear Imager \(CCD\), Laser \(SE950\)](#).
- ▶ Refer to the Symbology Settings Table in [Appendix III - LR, ELR Laser](#).
- ▶ Refer to the Symbology Settings Table in [Appendix IV - 2D Imager](#).

MORE APPLICATIONS

9500 Mobile Computer provides more utilities and applications which are made accessible from **START | Programs**.

- ▶ **Backup Utility** lets you manipulate the way to backup programs and data.
- ▶ **Inbox** lets you send and receive e-mail by connecting to a POP3 or IMAP4 server.

IN THIS CHAPTER

8.1 Backup Utility.....	100
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8.1 BACKUP UTILITY

The **CipherLab Backup Utility** is provided with OS 1.20.0409.070524 or later versions. You can easily make copies of data and restore your mobile computer's specific registry settings, install applications, user data, etc.

- ▶ To find out your OS version, go to **Start | Settings | Control Panel** and select **System**. Select the Device Name tab.

You may use the backups (.bkc) for these purposes:

- ▶ Full Restore Operation
Backup all necessary files here (you don't have to select "Registry") so that you can restore your mobile computer to an operational state following a disaster.
- ▶ Partial Restore Operation
Backup a few specific files here so that you can restore small numbers of files after you have deleted them by accident or found them corrupted.
- ▶ Easy Cloning
Backup everything (including "Registry") necessary for cloning settings to other 9500 Mobile Computers.

8.1.1 MANAGING THE REGISTRY

Go to **Start | Programs | BackupUtility** to open the **CipherLab Backup Utility**. If you are using this backup utility for the first time, you must manually save the system registry to the DiskOnChip folder first! Tap [Save] now to save the current system registry to "\DiskOnChip\Sysbak\Registry.dat".

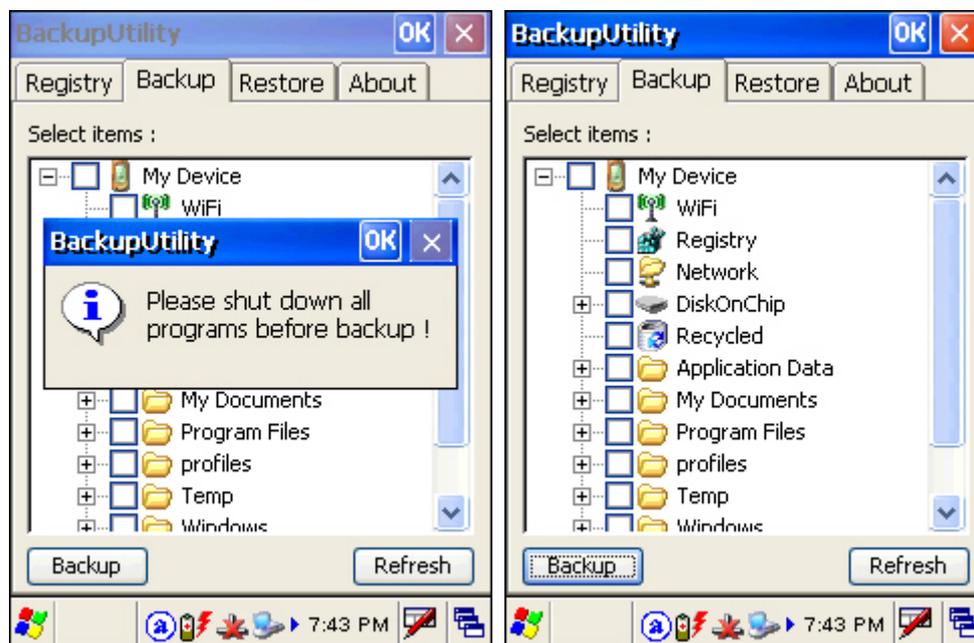


Warning: As long as you make any changes to the system configurations and settings, you must tap [Save] to update the system registry here. Otherwise, it will reload the old registry values in use after a cold boot.

If you wish to reset the current system configurations and settings to defaults, tap [Reset] to delete the current system registry "\DiskOnChip\Sysbak\Registry.dat". It will then reload the default registry values after a cold boot.

8.1.2 PREPARING FOR BACKUP

Tap the Backup tab and it will automatically start scanning the file system. Within a few minutes, it will generate a list for the backup operation.



If the items "Wi-Fi" and "Registry" are not listed, it means no Wifi.dat and Registry.dat are found in "\DiskOnChip\Sysbak\". Take necessary steps before you tap [Refresh] to refresh the list of available items.

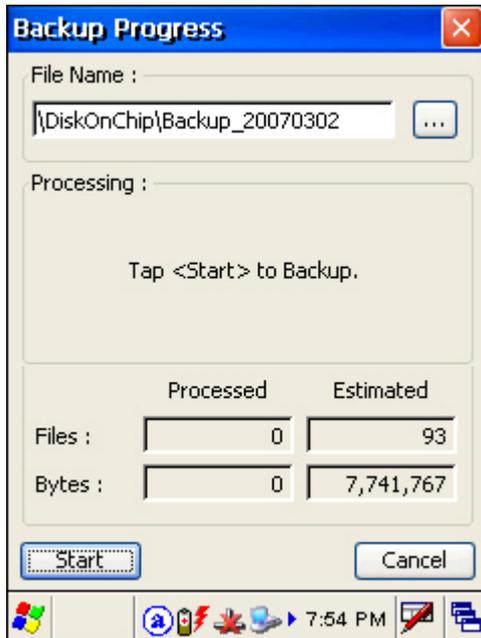
- ▶ Wi-Fi – Turn on the power to the 802.11b/g module through the **Power Management**, and then connect to an available network successfully.
- ▶ Registry - Go to the Registry tab and tap [Save].

Warning: You may not be able to backup all data when programs are still running! It is suggested that you exit all the applications before backup.

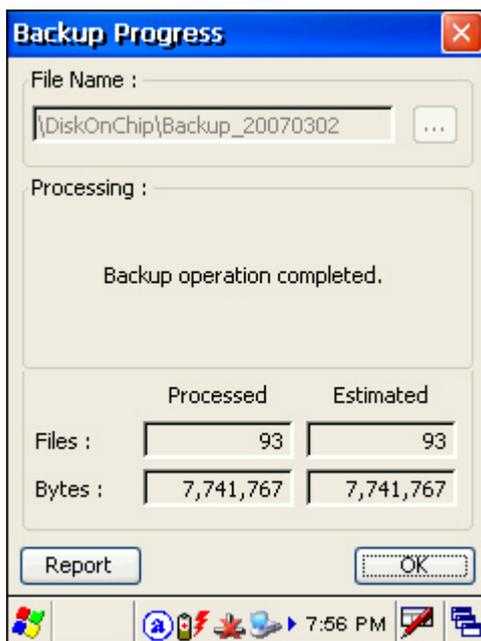
8.1.3 BACKING UP FILES

- 1) Select the items you wish to backup, and tap [Backup].
- 2) Tap  if you need to save the backup to a different directory or file name (.bkp).

By default, it will save the selected items to the DiskOnChip folder by the current date - the format of filename is "Backup_(4-digit year)(2-digit month)(2-digit date)".



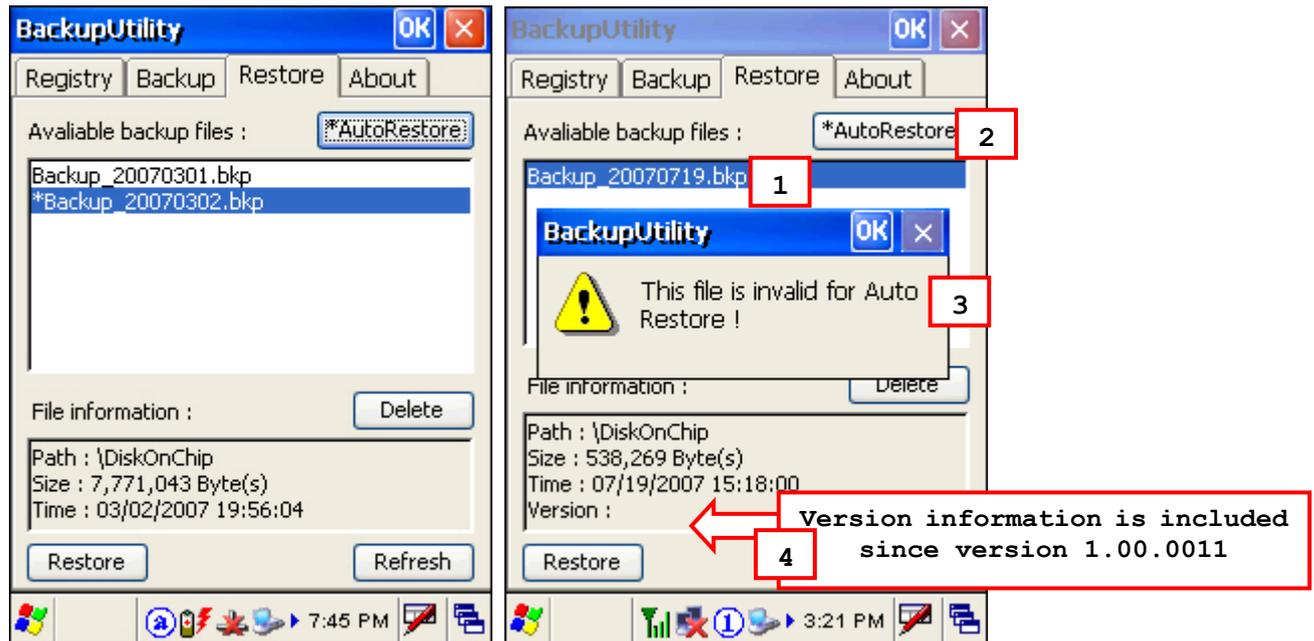
- 3) Tap [Start] to pack all the selected items into one .bkp file.
- 4) Once the backup process is completed, tap [Report] to view the log file if necessary.
- 5) Tap [OK] to close the current window.



Note: If you wish to backup files to this new directory or file name in future runs, you must tap **OK** on the toolbar to save the current settings and exit the application.

8.1.4 USING BACKUPS FOR RESTORE

After the backup operation, tap the Restore tab and it will automatically start scanning for any .bkp files. Specify how to use these backups for automatic or manual restore operation.



If a backup file has been selected for Auto Restore in your last operation, it will be prefixed with an asterisk on the list. However, if the version of this selected file is found earlier than 1.00.0010, a warning message "This file is invalid for Auto Restore!" will be displayed automatically. Close the warning dialog and it will abort the Auto Restore setting.

▶ File Manipulation

Tap [Refresh] to refresh the list of available backups. If a backup file is not desired any more, select it and tap [Delete].

▶ Auto Restore

Select a desired backup file from the list and tap [AutoRestore]. It will prefix an asterisk to the selected file, indicating the specific file will be used in the restore process that starts automatically right after a cold boot.

- ▶ During Auto Restore, the slider position indicating the system storage space (**Start** | **Settings** | **Control Panel** | **System**: Memory tab) will be automatically restored as well.

- ▶ Starting from version 1.00.0011, the backup file version is included in "File Information". If the selected backup file is generated by an earlier version, such version information will be blank, and it will not be allowed for Auto Restore! Close the warning dialog and it will abort the Auto Restore setting. (right above)
- ▶ For version earlier than 1.00.0010, such version information is unavailable (left above), and you will have to check the version of a backup file by performing a manual restore and aborting it before it starts. If the selected backup file is generated by an earlier version, it will fail to auto restore after a cold boot. If the version of the backup file is up-to-date, it will not display any warning message.

Warning: For the Auto Restore setting to take effect, you must tap  on the toolbar to save the current settings and exit the application.

▶ Manual Restore

Depending on specific requirements, you may perform a full or partial restore manually.

Full Restore Operation

1. Select a desired backup file from the list.
2. Tap [Restore].
3. Tap [Start] to run the restore process.
4. Once the restore process is completed, you will be asked to perform a warm boot. Tap [No] if you wish to warm boot later. You may tap [Report] to view the log file if necessary.

Partial Restore Operation

1. Double-tap a desired backup file from the list.
2. Select the desired items.
3. Tap [Restore].
4. Tap [Start] to run the restore process.
5. Once the restore process is completed, you will be asked to perform a warm boot. Tap [No] if you wish to warm boot later. You may tap [Report] to view the log file if necessary.

Warning: (1) You must perform a warm boot after the restore operation!
(2) You may encounter insufficient memory for the restore operation and be asked to check memory space on the system (SRAM), DiskOnChip, CF or SD card. If you insist on restoring it without deleting files, data loss or incomplete restore may occur!

8.2 INBOX

You can send and receive e-mail by connecting to a POP3 or IMAP4 server. **Inbox** provides an e-mail service for each method you use. Go to **Start | Programs | Inbox** to open the **Inbox** application. Tap and drag the toolbar handle to move it under the menu bar.



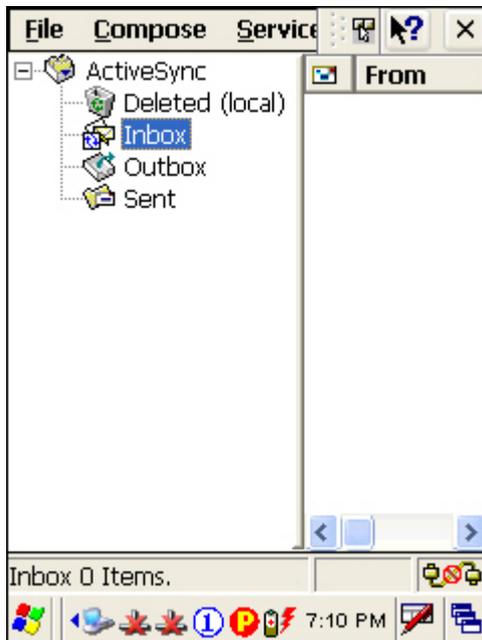
Toolbar Handle

The icons on the toolbar, from left to right, are for these functions —

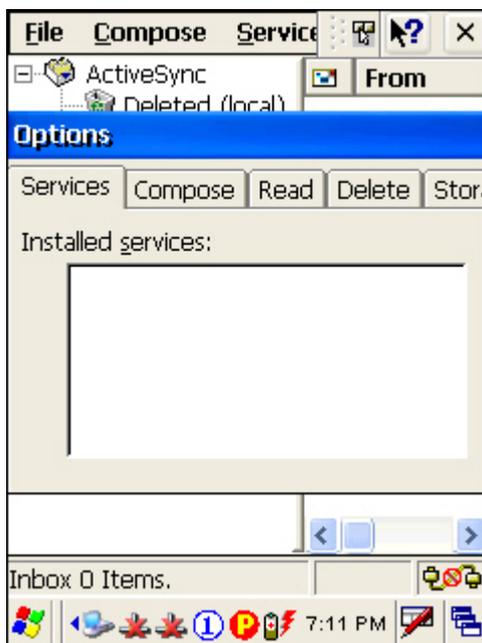
Button	Description	See Also
	Compose a new message	Compose New Message
	Reply to sender	Compose Reply to Sender
	Reply to all	Compose Reply to All
	Forward this message	Compose Forward
	Delete this message	File Delete
	Synchronize folders (multiple mailboxes for IMAP4)	Services Synchronize Folders
	Send and receive mail manually	Services Send/Receive Mail
	Connect or disconnect <ul style="list-style-type: none"> ▶ When connected, it will send and receive mail automatically. 	Services Connect

8.2.1 CREATING AN E-MAIL BOX

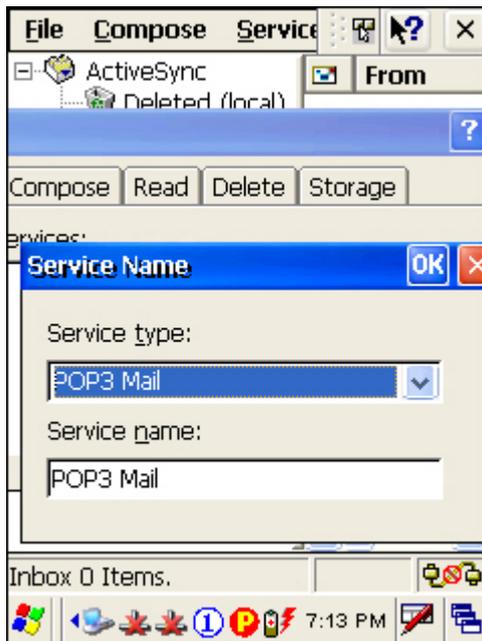
- 1) Select **Services | Options** from the menu bar.



- 2) Tap and drag the dialog box to show the right edge. Tap [Add] to create an e-mail service.



- 3) In the Service Name dialog box, select POP3 Mail or IMAP4 Mail for the service type.



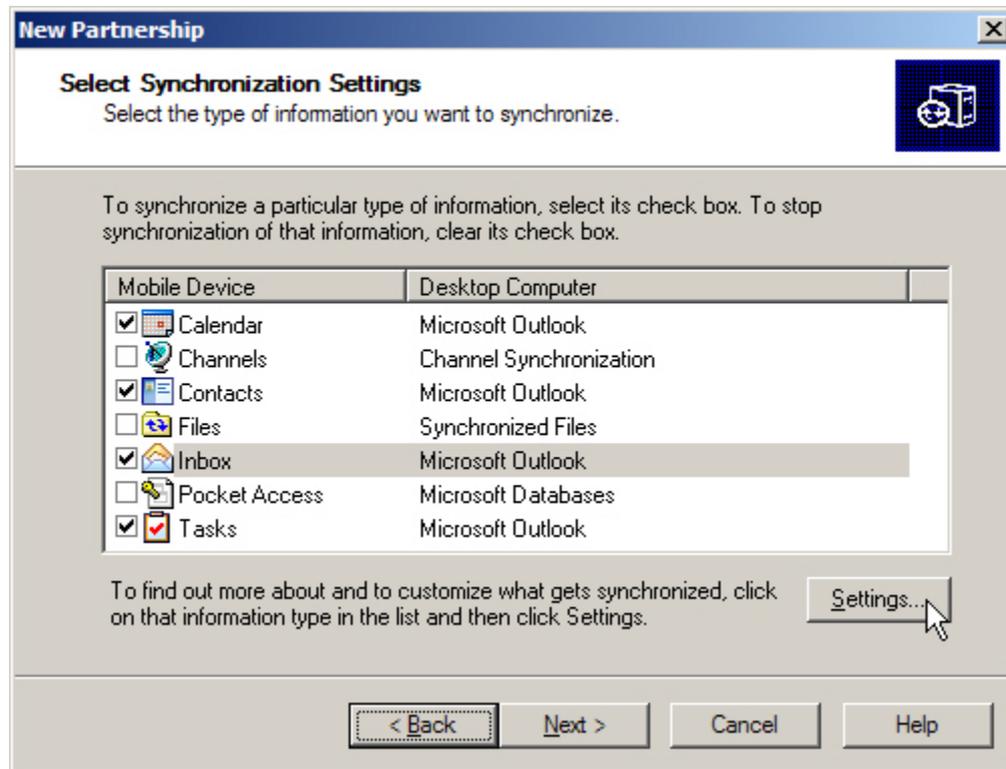
- 4) Change the name of e-mail service if necessary. Tap [OK].
 5) Proceed with the POP3 or IMAP4 Mail Service Definition (from 1/3 to 3/3).



- ▶ GPRS: Send and Receive e-mail through GPRS connection.
 - ▶ Network Connection: Send and Receive e-mail through Ethernet, 802.11b/g or Bluetooth PAN connection.
 - ▶ USB Connection: Send and Receive e-mail through USB connection via the cradle.
- 6) After you have successfully created an e-mail service, you may start using it now.

8.2.2 SYNCHRONIZING INBOX

You can synchronize the e-mail messages in Inbox with either Microsoft Outlook or Microsoft Exchange Server on your computer through the default ActiveSync mail service.



When you seat the mobile computer in the cradle and connect it to your computer for the first time, ActiveSync 3.7.1 will guide you through setting up a partnership between the mobile computer and your desktop computer. Refer to [2.3 Using ActiveSync](#).

Select the check box of Inbox as shown below, and click [Settings] to configure it.

Note: ActiveSync 4.x does not support Inbox Synchronization. We recommend that you have ActiveSync 3.7.1 installed on your computer.

SPECIFICATIONS

PLATFORM, PROCESSOR & MEMORY

Operating System & CPU

Windows Version	Microsoft Windows CE 5.0
CPU	Marvell PXA270 at 520 MHz

Memory

ROM	128 MB non-volatile NAND flash memory
RAM	128 MB on-board SDRAM memory
Expansion Slots	One Secure Digital (SD) card slot for inserting memory card; One Compact Flash (CF) Type II card slot for memory card or peripheral card such as GPRS card

COMMUNICATIONS & DATA CAPTURE

Communications

USB via Cradle	USB 1.1 Specification Host port (type-A) / Device port (type-B)
Ethernet via Cradle	10/100BASE-TX for 10/100 Mbps over twisted pair cable (Cat. 5)
WPAN	Built-in module for Bluetooth Class 2 connectivity
WLAN	Built-in module for 802.11b/g networking
WWAN	▶ Ordering Option - built-in module for GPRS

Data & Image Capture

Barcode Reader	Ordering options include	▶ Linear imager (CCD) ▶ Laser (SE950) ▶ Long Range Laser ▶ Extra Long Range Laser ▶ 2D Imager
RFID Reader	Frequency 13.56 MHz	

ELECTRICAL CHARACTERISTICS

Batteries

Standard Battery Pack	Rechargeable Li-ion battery - 3.7 V, 4000 mAh
Backup Battery	Rechargeable Lithium battery - 3.7 V, 110 mAh Data retention for at least 6 hours

Power Adapter

Power Supply Cord	Input	AC 100~240 V, 50/60 Hz
	Output	DC 6 V, 3.3 A (Charging & Comm. Cradle, Travel Charger)
		DC 6 V, 6 A (4-Slot Battery Charger)

Working Time (Laser, one scan per 5 seconds)

Batch Mode with backlight	21 hours
Wi-Fi Mode with backlight	20 hours

PHYSICAL CHARACTERISTICS

Color Touch Screen Display

Display	3.5" Transflective TFT-LCD, 65536 colors
Resolution	240 (W) x 320 (L) QVGA size

Keypad

Layout	27 keys for alphanumeric layout
Backlight	LED backlight for display and keypad

Notifications

Status LED	Triple-color LED - Red / Green / Blue
Audio	Mono speaker integrated
Vibrator	9000 ± 2000 RPM, Max. 50 dB

Enclosures

Materials	Rubber & ABS plastic
Dimensions	230 mm (L) 91 mm (W) 63 mm (H)
Weight	Approx. 600 g (including battery, Laser scan engine)

ENVIRONMENTAL CHARACTERISTICS

Temperature

Operating	-10 °C to 50 °C
Storage	-20 °C to 60 °C

Humidity

Operating	10% to 90%, non-condensing
Storage	5% to 95%, non-condensing

Resistance

Impact Resistance	1.5 m, 5 drops per 6 sides
Splash/Dust Resistance	IP 64
Electrostatic Discharge	± 15 kV air discharge, ± 8 kV contact discharge

PROGRAMMING SUPPORT

Development Environment & Tools

Integrated Development Environment	Visual Studio 2005 Visual Studio .NET 2003 eMbedded Visual C++ 4.0 SP4
Software Development Kit	9500 SDK or Windows CE 5.0 Standard SDK System API (LIB and DLL) for system configuration Reader API (DLL) for reader configuration

Software & Utilities

Cipherlab software package	<ul style="list-style-type: none"> ▶ Reader Configuration Utility ▶ MIRROR Emulator (CipherNet) for VT100/220 or IBM 5250 emulation ▶ FORGE Application Generator ▶ STREAM Wireless Studio ▶ MIRROR Browser for web application
Third-party software	<ul style="list-style-type: none"> ▶ Wavelink Avalanche Enabler & Telnet Client ▶ MCL Collection – MCL Client

ACCESSORIES

Accessory Options

- ▶ Memory Card, SD or CF
- ▶ Pistol Grip
- ▶ Belt Holster
- ▶ Protective Cover
- ▶ Spare rechargeable battery pack
- ▶ 4-Slot Battery Charger
- ▶ Charging & Communication Cradle
- ▶ Vehicle Cradle
- ▶ Travel Charger

SCAN ENGINE SETTINGS

The **Reader Configuration Utility** (ReaderConfig.exe) allows configuring the following reader types, depending on the module equipped on your mobile computer:

- ▶ 1D Linear Imager (CCD)
- ▶ 1D Laser (SE950)
- ▶ 1D Long Range Laser
- ▶ 1D Extra Long Range Laser
- ▶ 2D Imager
- ▶ RFID reader

Options of different reader combination are allowed, such as 1D+RFID and 2D+RFID. For each combination, both readers can be initialized and ready for scanning at the same time (dual mode operation). For example, if you press the [SCAN] button while running the ReaderConfig utility on the mobile computer, it will read a barcode in position or an RFID tag in proximity depending on which one comes first.

Note: (1) You cannot have 1D+2D scan engines installed on the mobile computer because they are both barcode readers!

(2) You can run only one utility or application at a time to control the reader(s). For example, while running ReaderConfig.exe, you should not run FORGE Application Generator, STREAM Wireless Studio, MIRROR Browser, or any other application that uses ReaderDLL.

SYMBOLOGIES SUPPORTED

Varying by the scan engine installed, the supported symbologies or tag types are listed below. For details on configuring associated settings, please refer to each Appendix separately.

	CCD, Laser	LR, ELR	2D
Codabar	✓	✓	✓
Code 11	x	x	✓
Code 93	✓	✓	✓
Composite Code	x	x	✓
MSI	✓	✓	✓
Plessey	✓	x	x
Postal Codes	x	x	✓
Telepen	✓	x	x

Code 128	Code 128	✓	✓	✓
	GS1-128 (EAN-128)	✓	✓	✓
	ISBT 128	✓	✓	✓
Code 2 of 5	Industrial 25 (Discrete 25)	✓	✓	✓
	Interleaved 25	✓	✓	✓
	Matrix 25	✓	✗	✗
Code 3 of 9	Code 39	✓	✓	✓
	Trioptic Code 39	✗	✓	✓
	Italian Pharmacode (Code 32)	✓	✓	✓
	French Pharmacode	✓	✗	✗
EAN/UPC	EAN-8	✓	✓	✓
	EAN-13	✓	✓	✓
	Bookland EAN (ISBN)	✓	✓	✓
	UPC-E0	✓	✓	✓
	UPC-E1	✓	✓	✓
	UPC-A	✓	✓	✓
GS1 DataBar (RSS)	GS1 DataBar Omnidirectional (RSS-14)	✓	✓	✓
	GS1 DataBar Truncated	✓	✓	✓
	GS1 DataBar Stacked	✓	✓	✓
	GS1 DataBar Stacked Omnidirectional	✓	✓	✓
	GS1 DataBar Limited (RSS Limited)	✓	✓	✓
	GS1 DataBar Expanded (RSS Expanded)	✓	✓	✓
	GS1 DataBar Expanded Stacked	✓	✓	✓
2D Symbologies	PDF417	✗	✗	✓
	MicroPDF417	✗	✗	✓
	Data Matrix	✗	✗	✓
	Maxicode	✗	✗	✓
	QR Code	✗	✗	✓

RFID TAGS SUPPORTED

The RFID reader supports read/write operations depending on the tags. The supported labels include ISO 15693, Icode®, ISO 14443A, and ISO 14443B.

Currently, the performance of many tags has been confirmed, and the results are listed below for your reference. The results found with RFID module version 1.0 are different from those found with version 0.9 or older versions.

Note: You should study the specifications of RFID tags before use.

RFID Module Version 1.0		UID Only	Read Page	Write Page
ISO 14443A	Mifare Standard 1K	✓	✓	✓
	Mifare Standard 4K	✓	✓	✓
	Mifare Ultralight	✓	✓	✓
	Mifare DESFire	✓	---	---
	Mifare S50	✓	✓	✓
	SLE44R35	✓	---	---
	SLE66R35	✓	✓	✓
ISO 14443B	SRIX 4K	✓	✓	✓
	SR176	✓	✓	✓
ISO 15693	ICODE SLI	✓	✓	✓
	SRF55V02P	✓	---	---
	SRF55V02S	✓	---	---
	SRF55V10P	✓	---	---
	TI Tag-it HF-I	✓	✓	✓
ICODE® (Phillips)	ICODE	✓	✓	✓

LINEAR IMAGER (CCD), LASER (SE950)

The tables below list reader settings as well as symbology settings for the Linear Imager (CCD) or Laser (SE950) scan engine.

READER SETTINGS TABLE

CCD/Laser Engine	Description	Default
Time-out		3 sec.
1~9 (second)	Set the maximum time for decoding to continue during a scan attempt. It applies to the following scan modes only - <ul style="list-style-type: none"> ▶ Laser mode ▶ Auto Off mode 	
Scan Mode		Laser mode
Continuous Mode	Non-stop scanning <ul style="list-style-type: none"> ▶ To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning. 	
Test Mode	Non-stop scanning <ul style="list-style-type: none"> ▶ Capable of decoding the same barcode repeatedly 	
Alternate Mode	Press the scan trigger to start with scanning. <ul style="list-style-type: none"> ▶ The scanning won't stop until you press the trigger again. 	
Laser Mode	Hold down the scan trigger to start with scanning. <ul style="list-style-type: none"> ▶ The scanning won't stop until (a) a barcode is read, (b) the preset timeout expires, or (c) you release the trigger. 	
Auto Off Mode	Press the scan trigger to start with scanning. <ul style="list-style-type: none"> ▶ The scanning won't stop until (a) a barcode is read or (b) the preset timeout expires. 	
Read Redundancy		None
None	No redundancy means one successful decoding will make the reading valid and induce the "READER Event".	
One time, Two times, or Three times	The higher the reading security is (that is, the more redundancy the user selects), the slower the reading speed gets. <ul style="list-style-type: none"> ▶ If "Three Times" is selected, it will take a total of four consecutive successful decodings of the same barcode to make the reading valid. 	

SYMBOLGY SETTINGS TABLE

CCD/Laser Engine	Description	Default
Codabar		Enable
Select Start/Stop Characters	<p>If "Transmit Start/Stop Characters" is desired, select one set:</p> <ul style="list-style-type: none"> ▶ abcd / abcd ▶ abcd / tn*e ▶ ABCD / ABCD ▶ ABCD / TN*E 	abcd / abcd
Transmit Start/Stop Characters	Decide whether to include the start/stop characters in the data being transmitted.	No
Code 128		Enable
GS1-128 (EAN-128)		Enable
Transmit Code ID	Decide whether to include Code ID ("101") will be included in the data being transmitted.	No
Replace Field Separator	Decide whether to replace the field separator. If the barcode contains Field Separator "0x1D", it will be changed to the desired Field Separator. For example, type the desired character ";" (semicolon) as the new field separator. Then if the barcode contains Field Separator "0x1D", it will be changed to ";".	No
ISBT 128		Enable
Industrial 25 (Discrete 25)		Enable
Start/Stop Selection	This decides the readability of all 2 of 5 symbology variants. For example, flight tickets actually use an Industrial 2 of 5 barcode but with Interleaved 2 of 5 start/stop pattern. In order to read this barcode, the start/stop pattern selection parameter of Industrial 2 of 5 should set to "Interleaved 25".	Industrial 25
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range 	4~127
Interleaved 25		Enable
Start/Stop Selection	Refer to Industrial 25.	Interleaved 25
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes

Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range 	4~127
Matrix 25		Enable
Start/Stop Selection	Refer to Industrial 25.	Matrix 25
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range 	4~127
French Pharmacode		Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Italian Pharmacode (Code 32)		Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes

Note: For French/Italian Pharmacode, "Transmit Start/Stop Character" is not provided in UI but it is controlled by the same setting of Code 39.

Code 39		Enable
Transmit Start/Stop Character	Decide whether to include the start/stop characters "*" in the data being transmitted.	No
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable
Code 93		Enable
MSI		Disable
Verify Check Digit	<p>Select one of the three calculation formulas to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.</p> <ul style="list-style-type: none"> ▶ Single Modulo 10 ▶ Double Modulo 10 ▶ Modulo 11 & 10 	Single Modulo 10
Transmit Check Digit	<p>Decide whether to include the check digit in the data being transmitted.</p> <ul style="list-style-type: none"> ▶ Last digit not transmitted ▶ Both digits transmitted ▶ Both digits not transmitted 	Both digits transmitted

Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range 	4~127
Negative Barcode		Disable
Plessey		Disable
Convert to UK Plessey	When applied, each occurrence of the character "A" in the barcode data will be replaced by the character "X".	No
Transmit Check Digit	Decide whether to include the two check digits in the data being transmitted.	Yes
Telepen		Disable
Original Telepen (Numeric)	The original Telepen includes numeric characters.	Yes
AIM Telepen (Full ASCII)	AIM Telepen (Full ASCII) includes all the alphanumeric and special characters.	No
GS1 DataBar-14 (RSS-14)		Disable
GS1 DataBar-14 is short for GS1 DataBar Omnidirectional. This group consists of (1) GS1 DataBar Omnidirectional, (2) GS1 DataBar Truncated, (3) GS1 DataBar Stacked, and (4) GS1 DataBar Stacked Omnidirectional.		
Transmit Code ID	Decide whether to include Code ID ("je0") will be included in the data being transmitted.	Yes
Transmit Application ID	Decide whether to include the Application ID ("01") in the data being transmitted.	Yes
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
GS1 DataBar Limited (RSS Limited)		Disable
Transmit Code ID	Refer to RSS-14.	Yes
Transmit Application ID	Refer to RSS-14.	Yes
Transmit Check Digit	Refer to RSS-14.	Yes
GS1 DataBar Expanded (RSS Expanded)		Disable
This group consists of (1) GS1 DataBar Expanded, and (2) GS1 DataBar Expanded Stacked.		
Transmit Code ID	Refer to RSS-14.	Yes
EAN-8		Enable
Convert to EAN-13	The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Addon 2 / Addon 5	Decide whether to decode EAN-8 with addons.	No
EAN-13 / UPC-A		Enable
ISBN Conversion	The EAN-13 barcode starting with 978 and 979 will be converted to ISBN.	No
ISSN Conversion	The EAN-13 barcode starting with 977 will be converted to ISSN.	No

GTIN for EAN-13	The EAN-13 barcode will be expanded into 14-digit Global Trade Item Number (GTIN).	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Yes
Addon 2 / Addon 5	Decide whether to decode EAN-13/UPC-A with addons.	No
(UPC-A) Convert to EAN-13	The UPC-A barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	Yes
(UPC-A) Transmit Check Digit	Decide whether to include the UPC-A check digit in the data being transmitted.	Yes
(UPC-A) Transmit System Number	Decide whether to include the UPC-A System Number in the data being transmitted.	Yes
UPC-E		Enable
UPC-E0 / UPC-E1	Decide whether to decode the UPC-E0 barcodes only or both UPC-E0 and UPC-E1 barcodes.	UPC-E0 only
Convert to UPC-A	The UPC-E barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
Transmit Check Digit	Decide whether to include the UPC-E check digit in the data being transmitted.	Yes
Transmit System Number	Decide whether to include the UPC-E System Number in the data being transmitted.	No
Addon 2 / Addon 5	Decide whether to decode UPC-E with addons.	No

Note: UPC-E1 is supported with decoder version 1.02 or later.

LR, ELR LASER

The tables below list reader settings as well as symbology settings for the Long Range Laser (LR) or Extra Long Range Laser (ELR) scan engine.

READER SETTINGS TABLE

LR/ELR Engine	Description	Default										
Decode Time-out	Set the maximum time for decoding to continue during a scan attempt. ▶ 1~9 (second)	3.0 sec.										
Aiming Time-out	Decide whether to have the aiming dot. When you press the [SCAN] button, the scan engine will emit a red dot for aiming. It will stay on until it times out or you press the [SCAN] button again. Then, it will emit a scan beam. ▶ 0~9, in units of 1 second. ▶ Enter 0 if aiming is not desired.	No aiming										
Read Redundancy		Level 1										
Level 1	The following barcodes must be successfully read twice before being decoded: <table border="1" data-bbox="491 1137 1150 1391"> <thead> <tr> <th>Barcode Types</th> <th>Code Length</th> </tr> </thead> <tbody> <tr> <td>Codabar</td> <td>All</td> </tr> <tr> <td>MSI</td> <td>4 characters or less</td> </tr> <tr> <td>Industrial 25 (Discrete 25)</td> <td>8 characters or less</td> </tr> <tr> <td>Interleaved 25</td> <td>8 characters or less</td> </tr> </tbody> </table>	Barcode Types	Code Length	Codabar	All	MSI	4 characters or less	Industrial 25 (Discrete 25)	8 characters or less	Interleaved 25	8 characters or less	
Barcode Types	Code Length											
Codabar	All											
MSI	4 characters or less											
Industrial 25 (Discrete 25)	8 characters or less											
Interleaved 25	8 characters or less											
Level 2	All barcodes must be successfully read twice before being decoded.											
Level 3	All barcodes except for the following barcodes must be successfully read twice before being decoded. The following barcodes must be read three times: <table border="1" data-bbox="491 1543 1150 1749"> <thead> <tr> <th>Barcode Types "Excluded"</th> <th>Code Length</th> </tr> </thead> <tbody> <tr> <td>MSI</td> <td>4 characters or less</td> </tr> <tr> <td>Industrial 25 (Discrete 25)</td> <td>8 characters or less</td> </tr> <tr> <td>Interleaved 25</td> <td>8 characters or less</td> </tr> </tbody> </table>	Barcode Types "Excluded"	Code Length	MSI	4 characters or less	Industrial 25 (Discrete 25)	8 characters or less	Interleaved 25	8 characters or less			
Barcode Types "Excluded"	Code Length											
MSI	4 characters or less											
Industrial 25 (Discrete 25)	8 characters or less											
Interleaved 25	8 characters or less											
Level 4	All barcodes must be successfully read three times before being decoded.											

Scan Angle	Select the scan angle for the Long Range Laser scan engine. <ul style="list-style-type: none"> ▶ "narrow" for 30° ▶ "wide" for 42° 	Narrow
Scan Mode		Laser mode
Continuous Mode	Non-stop scanning <ul style="list-style-type: none"> ▶ To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning. 	
Laser Mode	Hold down the scan trigger to start with scanning. <ul style="list-style-type: none"> ▶ The scanning won't stop until (a) a barcode is read, (b) the preset timeout expires, or (c) you release the trigger. 	
Timeout between Same Symbol	When in Continuous mode, set the minimum time that must elapse before the scan engine decodes a second barcode, which is identical to the one that has just been decoded. This reduces the risk of accidentally scanning the same barcode twice. <ul style="list-style-type: none"> ▶ 0.0~9.9 (second) 	1.0 sec.

SYMBOLGY SETTINGS TABLE

LR/ELR Engine	Description	Default
Codabar		Enable
CLSI Editing	When applied, the CLSI editing strips the start/stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar barcode. <ul style="list-style-type: none"> ▶ The 14-character barcode length does not include start/stop characters. 	No
NOTIS Editing	Decide whether to include the start/stop characters in the data being transmitted. <ul style="list-style-type: none"> ▶ NOTIS Editing is to strip the start/stop characters, which equals to "Disable Transmit Start/Stop Characters". 	No
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55
Code 128		---
Code 128	Read standard Code 128 barcodes (= without leading FNC1 character).	Enable
GS1-128 (UCC/EAN-128)	Read UCC/EAN-128 barcodes with leading FNC1 character.	Enable
ISBT 128	Read ISBT 128 barcodes.	Enable
Industrial 25 (Discrete 25)		Enable
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55
Interleaved 25		Enable
Convert to EAN-13	Convert a 14-character barcode into EAN-13 if the following requirements are met: <ul style="list-style-type: none"> ▶ The barcode must have a leading 0 and a valid EAN-13 check digit. ▶ "Verify Check Digit" must be disabled. 	No
Verify Check Digit	Decide whether to verify the check digit. If desired, select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted. <ul style="list-style-type: none"> ▶ No ▶ USS algorithm ▶ OPCC algorithm 	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55

Code 39		Enable						
Convert to Code 32	Convert to Italian Pharmacode.	No						
Code 32 Prefix	Prefix character "A" to Code 32 barcodes.	No						
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No						
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted. ▶ "Verify Check Digit" must be enabled.	No						
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable						
Trioptic Code 39	Decide whether to decode Trioptic Code 39. ▶ Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. It always contains six characters.	Disable						
Select Length	▶ One or two fixed lengths ▶ Range (1~55)	4~55						
Code 93		Enable						
Select Length	▶ One or two fixed lengths ▶ Range (1~55)	4~55						
MSI		Enable						
Verify Check Digit	If Two Check Digits option is selected, an additional verification is required to ensure integrity. Select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted. <table border="1" data-bbox="491 1193 1201 1395"> <thead> <tr> <th>Check Digit</th> <th>Algorithm</th> </tr> </thead> <tbody> <tr> <td>One Check Digit</td> <td>Single Modulo 10</td> </tr> <tr> <td>Two Check Digits</td> <td>▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10</td> </tr> </tbody> </table>	Check Digit	Algorithm	One Check Digit	Single Modulo 10	Two Check Digits	▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10	Single Modulo 10
Check Digit	Algorithm							
One Check Digit	Single Modulo 10							
Two Check Digits	▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10							
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No						
Select Length	▶ One or two fixed lengths ▶ Range (1~55)	4~55						
GS1 DataBar (RSS)		---						
GS1 Databar-14	GS1 DataBar-14 is short for GS1 DataBar Omnidirectional. This group consists of (1) GS1 DataBar Omnidirectional, (2) GS1 DataBar Truncated, (3) GS1 DataBar Stacked, and (4) GS1 DataBar Stacked Omnidirectional.	Disable						
GS1 Databar Limited		Disable						
GS1 Databar Expanded	This group consists of (1) GS1 DataBar Expanded, and (2) GS1 DataBar Expanded Stacked.	Disable						

Convert RSS to UPC/EAN	"Convert to UPC/EAN" only applies to GS1 Databar-14 and GS1 Databar Limited barcodes not decoded as part of a Composite barcode. Convert to EAN-13 Strip the leading "010" from barcodes. ▶ "01" is the Application ID and must be followed by a single zero (the first digit encoded) Convert to UPC-A Strip the leading "0100" from barcodes. ▶ "01" is the Application ID and must be followed by two or more zeros (but not six zeros)	No
EAN-8		Enable
Convert to EAN-13	The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.	No
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
EAN-13		Enable
Bookland EAN (ISBN)	The EAN-13 barcode starting with 978 will be converted to ISBN.	Yes
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-A		Enable
Transmit Check Digit	Decide whether to include the UPC-A check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-A preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-E0		Enable
Transmit Check Digit	Decide whether to include the UPC-E0 check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E0 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E0 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UPC-E1		Disable
Transmit Check Digit	Decide whether to include the UPC-E1 check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E1 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	

Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UCC Coupon Extended Code		Disable
<p>Read UPC-A barcodes starting with digit "5", EAN-13 barcodes starting with digits "99", and UPC-A/GS1-128 Coupon Codes.</p> <ul style="list-style-type: none"> ▶ UPC-A, EAN-13, and GS1-128 must be enabled first! ▶ Use "Addon Redundancy" to control auto-discrimination of the GS1-128 (right half) of a coupon code. 		
UPC/EAN Addon		---
Addon 2 / Addon 5	<p>Decide whether to decode EAN-8, EAN-13, UPC-E0, UPC-E1, UPC-A with addons.</p> <ul style="list-style-type: none"> ▶ Ignore Addons ▶ Decode Only With Addons ▶ Auto-discriminate 	Ignore...
Addon Redundancy	When "Auto-discriminate" is applied, decide the number of times of supplementary decoding the same barcode that makes a valid reading.	7 times
UPC/EAN Security Level		Level 2
<p>Decide the decode security for UPC/EAN barcodes. Higher security levels are selected for decreasing levels of barcode quality. Note that increasing security level decreases the scan engine's aggressiveness; choose only that level of security necessary for the application.</p> <ul style="list-style-type: none"> ▶ Level 0 – Select this option for the scan engine to operate in its most aggressive state, providing sufficient security in decoding most "in-spec" UPC/EAN barcodes. ▶ Level 1 – As barcode quality level diminish, certain characters become prone to mis-decodes before others (i.e. 1, 2, 7, 8). Select this option for the scan engine to eliminate mis-decodes, which are limited to characters 1, 2, 7 and 8. ▶ Level 2 – This default setting allows the scan engine to eliminate most mis-decodes when the poorly printed barcodes occurrence not limited to characters 1, 2, 7 and 8. ▶ Level 3 – Select this option if Level 2 still fails to eliminate mis-decodes. However, selecting this option impairs the decoding ability of the scan engine. If this level of security is necessary, try to improve the barcode quality. 		

MISCELLANEOUS

LR/ELR Engine	Description	Default
Miscellaneous Options		---
Transmit Code ID	<p>Decide whether to include AIM Code ID in the beginning of data. Each AIM Code ID contains the three-character string "]cm" –</p> <ul style="list-style-type: none"> ▶] = Flag Character (ASCII 93) ▶ c = Code Character (see below) ▶ m = Modifier Character (see below) 	Disable

AIM CODE ID – CODE CHARACTERS

Code Character	Code Type
A	Code 39
C	Code 128
E	UPC/EAN
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 25
M	MSI
S	Industrial 25 (Discrete 25), IATA 2 of 5
X	Code 39 Trioptic, Bookland EAN

AIM CODE ID – MODIFIER CHARACTERS

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Check digit has been verified.
	3	Check digit has been verified and stripped.
	4	Full ASCII conversion has been performed.
	5	Result of option values 1 and 4.
	7	Result of option values 3 and 4.
Code 128	0	Standard data packet. No Function Code 1“FNC1” in the first character position.
	1	Function Code 1“FNC1” in the first character position.
	2	Function Code 1“FNC1” in the second character position.
Interleaved 25	0	No check digit processing.
	1	Check digit has been verified.
	3	Check digit has been verified and stripped.
Codabar	0	No check digit processing.
Code 93	0	Always transmit 0.
MSI	0	Modulo 10 check digit verified and transmitted.
	1	Modulo 10 check digit verified but not transmitted.
Discrete 25	0	Always transmit 0.
UPC/EAN	0	Standard data packet in full EAN country code format, which is 13 digits for UPC-A and UPC-E (not including addons).
	1	Two-digit addons only.

	2	Five-digit addons only.
	4	EAN-8 data packet.
	A UPC-A with Addon 2 barcode, 012345678905-10, is transmitted to the host as a 21-character string, <code>1E00012345678905J1110</code> .	
Bookland EAN	0	Always transmit 0.
Trioptic Code 39	0	Always transmit 0.

2D IMAGER

The tables below list reader settings as well as symbology settings for the 2D scan engine.

READER SETTINGS TABLE

2D	Description	Default										
Decode Time-out	Set the maximum time for decoding to continue during a scan attempt. ▶ 1~9 (second)	3.0 sec.										
Focus Mode	Select the focus mode to control the working range: ▶ Far Focus – optimized to read at its far position ▶ Near Focus – optimized to read at its near position ▶ Smart Focus – toggles the focus position after every frame	Far Focus										
Decode Illumination	Decide whether to flash illumination on every barcode capture to aid decoding. ▶ Turn On (Internal LED) ▶ Turn Off	On										
Aiming Pattern	Decide whether to project the aiming pattern during barcode capture. ▶ Turn On ▶ Turn Off	On										
Read Redundancy		Level 1										
Level 1	The following barcodes must be successfully read twice before being decoded: <table border="1" data-bbox="491 1440 1150 1688"> <thead> <tr> <th>Barcode Types</th> <th>Code Length</th> </tr> </thead> <tbody> <tr> <td>Codabar</td> <td>8 characters or less</td> </tr> <tr> <td>MSI</td> <td>4 characters or less</td> </tr> <tr> <td>Industrial 25 (Discrete 25)</td> <td>8 characters or less</td> </tr> <tr> <td>Interleaved 25</td> <td>8 characters or less</td> </tr> </tbody> </table>	Barcode Types	Code Length	Codabar	8 characters or less	MSI	4 characters or less	Industrial 25 (Discrete 25)	8 characters or less	Interleaved 25	8 characters or less	
Barcode Types	Code Length											
Codabar	8 characters or less											
MSI	4 characters or less											
Industrial 25 (Discrete 25)	8 characters or less											
Interleaved 25	8 characters or less											
Level 2	All barcodes must be successfully read twice before being decoded.											
Level 3	All barcodes except for the following barcodes must be successfully read twice before being decoded.											

	<p>The following barcodes must be read three times:</p> <table border="1" data-bbox="491 275 1150 528"> <thead> <tr> <th data-bbox="491 275 879 342">Barcode Types "Excluded"</th> <th data-bbox="879 275 1150 342">Code Length</th> </tr> </thead> <tbody> <tr> <td data-bbox="491 342 879 387">Codabar</td> <td data-bbox="879 342 1150 387">8 characters or less</td> </tr> <tr> <td data-bbox="491 387 879 432">MSI</td> <td data-bbox="879 387 1150 432">4 characters or less</td> </tr> <tr> <td data-bbox="491 432 879 477">Industrial 25 (Discrete 25)</td> <td data-bbox="879 432 1150 477">8 characters or less</td> </tr> <tr> <td data-bbox="491 477 879 528">Interleaved 25</td> <td data-bbox="879 477 1150 528">8 characters or less</td> </tr> </tbody> </table>		Barcode Types "Excluded"	Code Length	Codabar	8 characters or less	MSI	4 characters or less	Industrial 25 (Discrete 25)	8 characters or less	Interleaved 25	8 characters or less
Barcode Types "Excluded"	Code Length											
Codabar	8 characters or less											
MSI	4 characters or less											
Industrial 25 (Discrete 25)	8 characters or less											
Interleaved 25	8 characters or less											
Level 4	All barcodes must be successfully read three times before being decoded.											
Security Level	<p>Select a decode security level appropriate for the barcode quality when reading delta barcodes such as Code 128, Code 93, UPC/EAN.</p> <ul style="list-style-type: none"> ▶ Security Level 0 – This default setting allows the scan engine to operate in its most aggressive state, providing sufficient security in decoding most "in-spec" barcodes. ▶ Security Level 1 – Select this option if misdecodes occur. This level should eliminate most misdecodes. ▶ Security Level 2 – Select this option if Security Level 1 fails to eliminate misdecodes. ▶ Security Level 3 – Select this option if Security Level 2 also fails to eliminate misdecodes. However, selecting this option impairs the decoding ability of the scan engine. If this level of security is necessary, try to improve the barcode quality. 	Level 0										

SYMBOLGY SETTINGS TABLE

1D SYMBOLOGIES

2D Engine	Description	Default
Codabar		Enable
CLSI Editing	When applied, the CLSI editing strips the start/stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar barcode. <ul style="list-style-type: none"> ▶ The 14-character barcode length does not include start/stop characters. 	No
NOTIS Editing	Decide whether to include the start/stop characters in the data being transmitted. <ul style="list-style-type: none"> ▶ NOTIS Editing is to strip the start/stop characters, which equals to "Disable Transmit Start/Stop Characters". 	No
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55
Intercharacter Gap Size	The Code 39 and Codabar symbologies have an intercharacter gap that is typically quite small. Due to various barcode printing technologies, this gap can grow larger than the maximum size allowed, preventing the scan engine from decoding a barcode. If this problem occurs, set it to "Large Intercharacter Gaps" to tolerate these out-of-specification barcodes. <ul style="list-style-type: none"> ▶ Normal intercharacter gaps ▶ Large intercharacter gaps 	Normal
Code 128		---
Code 128	Read standard Code 128 barcodes (= without leading FNC1 character).	Enable
GS1-128 (UCC/EAN-128)	Read UCC/EAN-128 barcodes with leading FNC1 character.	Enable
ISBT 128	Read ISBT 128 barcodes.	Enable
Industrial 25 (Discrete 25)		Enable
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55
Interleaved 25		Enable
Convert to EAN-13	Convert a 14-character barcode into EAN-13 if the following requirements are met: <ul style="list-style-type: none"> ▶ The barcode must have a leading 0 and a valid EAN-13 check digit. ▶ "Verify Check Digit" must be disabled. 	No

Verify Check Digit	Decide whether to verify the check digit. If desired, select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted. <ul style="list-style-type: none"> ▶ No ▶ USS algorithm ▶ OPCC algorithm 	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	No
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55
Code 39		Enable
Convert to Code 32	Convert to Italian Pharmacode.	No
Code 32 Prefix	Prefix character "A" to Code 32 barcodes.	No
Verify Check Digit	Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.	No
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted. <ul style="list-style-type: none"> ▶ "Verify Check Digit" must be enabled. 	No
Code 39 Full ASCII	Code 39 Full ASCII includes all the alphanumeric and special characters.	Disable
Trioptic Code 39	Decide whether to decode Trioptic Code 39. <ul style="list-style-type: none"> ▶ Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. It always contains six characters. 	Disable
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55
Intercharacter Gap Size	The Code 39 and Codabar symbologies have an intercharacter gap that is typically quite small. Due to various barcode printing technologies, this gap can grow larger than the maximum size allowed, preventing the scan engine from decoding a barcode. If this problem occurs, set it to "Large Intercharacter Gaps" to tolerate these out-of-specification barcodes. <ul style="list-style-type: none"> ▶ Normal intercharacter gaps ▶ Large intercharacter gaps 	Normal
Code 93		Enable
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55
MSI		Enable
Verify Check Digit	If Two Check Digits option is selected, an additional verification is required to ensure integrity. Select one of the algorithms below. If the check digit is incorrect, the barcode will not be accepted.	Single Modulo 10

	Check Digit	Algorithm	
	One Check Digit	Single Modulo 10	
	Two Check Digits	<ul style="list-style-type: none"> ▶ Mod 10/Mod 11 ▶ Mod 10/Mod 10 	
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.		No
Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 		4~55
GS1 DataBar (RSS)			---
GS1 Databar-14	GS1 DataBar-14 is short for GS1 DataBar Omnidirectional. This group consists of (1) GS1 DataBar Omnidirectional, (2) GS1 DataBar Truncated, (3) GS1 DataBar Stacked, and (4) GS1 DataBar Stacked Omnidirectional.		Enable
GS1 Databar Limited			Enable
GS1 Databar Expanded	This group consists of (1) GS1 DataBar Expanded, and (2) GS1 DataBar Expanded Stacked.		Enable
Convert RSS to UPC/EAN	<p>"Convert to UPC/EAN" only applies to GS1 Databar-14 and GS1 Databar Limited barcodes not decoded as part of a Composite barcode.</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p>Convert to EAN-13</p> <p>Strip the leading "010" from barcodes.</p> <ul style="list-style-type: none"> ▶ "01" is the Application ID and must be followed by a single zero (the first digit encoded) </div> <div style="border: 1px solid black; padding: 5px;"> <p>Convert to UPC-A</p> <p>Strip the leading "0100" from barcodes.</p> <ul style="list-style-type: none"> ▶ "01" is the Application ID and must be followed by two or more zeros (but not six zeros) </div>		No
EAN-8			Enable
Convert to EAN-13	The EAN-8 barcode will be expanded into EAN-13, and the next processing will follow the settings configured for EAN-13.		No
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.		
EAN-13			Enable
Bookland EAN (ISBN)	The EAN-13 barcode starting with 978 will be converted to ISBN.		Yes
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.		
UPC-A			Enable
Transmit Check Digit	Decide whether to include the UPC-A check digit in the data being transmitted.		Yes
Transmit Preamble	Decide whether to include the UPC-A preamble System Number (and Country Code) in the data being transmitted.		System Number

Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
UPC-E0		Enable
Transmit Check Digit	Decide whether to include the UPC-E0 check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E0 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E0 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UPC-E1		Disable
Transmit Check Digit	Decide whether to include the UPC-E1 check digit in the data being transmitted.	Yes
Transmit Preamble	Decide whether to include the UPC-E1 preamble System Number (and Country Code) in the data being transmitted.	System Number
Addon 2 / Addon 5	Refer to UPC/EAN Addon setting.	
Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A, and the next processing will follow the settings configured for UPC-A.	No
UCC Coupon Extended Code		Disable
<p>Read UPC-A barcodes starting with digit "5", EAN-13 barcodes starting with digits "99", and UPC-A/GS1-128 Coupon Codes.</p> <ul style="list-style-type: none"> ▶ UPC-A, EAN-13, and GS1-128 must be enabled first! ▶ Use "Addon Redundancy" to control auto-discrimination of the GS1-128 (right half) of a coupon code. 		
UPC/EAN Addon		---
Addon 2 / Addon 5	<p>Decide whether to decode EAN-8, EAN-13, UPC-E0, UPC-E1, UPC-A with addons.</p> <ul style="list-style-type: none"> ▶ Ignore Addons ▶ Decode Only With Addons ▶ Auto-discriminate 	Ignore...
Addon Redundancy	When "Auto-discriminate" is applied, decide the number of times of supplementary decoding the same barcode that makes a valid reading.	10 times
Code 11		Enable
Verify Check Digit	<p>Decide whether to verify the check digit. If the check digit is incorrect, the barcode will not be accepted.</p> <ul style="list-style-type: none"> ▶ No verification ▶ One Check Digit ▶ Two Check Digits 	No
Transmit Check Digit	<p>Decide whether to include the check digit in the data being transmitted.</p> <ul style="list-style-type: none"> ▶ "Verify Check Digit" must be enabled. 	No

Select Length	<ul style="list-style-type: none"> ▶ One or two fixed lengths ▶ Range (1~55) 	4~55							
Postal Codes		---							
US Postnet		Enable							
US Planet		Enable							
Transmit US Postal Check Digit	US Postnet or US Planet must be enabled first!	Enable							
UK Postal		Enable							
Transmit UK Postal Check Digit	UK Postal must be enabled first!	Enable							
Japan Postal		Enable							
Australian Postal		Enable							
Dutch Postal		Enable							
Composite Codes		---							
Composite CC-C		Enable							
Composite CC-A/B		Disable							
Composite TLC-39		Disable							
GS1-128 Emulation Mode for UCC/EAN Composite Codes	Transmit UCC/EAN Composite Code data as if it was encoded in GS1-128 barcodes.	Disable							
UPC Composite Mode	<p>UPC barcodes can be "linked" with a 2D barcode during transmission as if they were one barcode.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">UPC Never Linked</td> </tr> <tr> <td style="padding: 5px;">Transmit UPC barcodes regardless of whether a 2D barcode is detected.</td> </tr> <tr> <td style="padding: 5px;">UPC Always Linked</td> </tr> <tr> <td style="padding: 5px;">Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted.</td> </tr> <tr> <td style="padding: 5px;"> <ul style="list-style-type: none"> ▶ CC-A/B or CC-C must be enabled! </td> </tr> <tr> <td style="padding: 5px;">Auto-discriminate UPC Composites</td> </tr> <tr> <td style="padding: 5px;">Transmit UPC barcodes as well as the 2D portion if present.</td> </tr> </table>	UPC Never Linked	Transmit UPC barcodes regardless of whether a 2D barcode is detected.	UPC Always Linked	Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted.	<ul style="list-style-type: none"> ▶ CC-A/B or CC-C must be enabled! 	Auto-discriminate UPC Composites	Transmit UPC barcodes as well as the 2D portion if present.	UPC Always Linked
UPC Never Linked									
Transmit UPC barcodes regardless of whether a 2D barcode is detected.									
UPC Always Linked									
Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted.									
<ul style="list-style-type: none"> ▶ CC-A/B or CC-C must be enabled! 									
Auto-discriminate UPC Composites									
Transmit UPC barcodes as well as the 2D portion if present.									

2D SYMBOLOGIES

2D Engine	Description	Default			
2D Symbologies		---			
PDF417		Enable			
MicroPDF417		Disable			
MicroPDF417 Code 128 Emulation	<p>Transmit data from certain MicroPDF417 barcodes as if it was encoded in Code 128 barcodes.</p> <p>▶ Transmit AIM Code Identifier in Miscellaneous Options must be enabled first!</p> <p>When applied, the MicroPDF417 barcodes are transmitted with one of these prefixes:</p> <table border="1"> <tr> <td> <p>The first codeword of MicroPDF417 is 903-907, 912, 914, 915:</p> <p>The original Code ID "]L3" will be changed to "]C1".</p> </td> </tr> <tr> <td> <p>The first codeword of MicroPDF417 is 908 or 909:</p> <p>The original Code ID "]L4" will be changed to "]C2".</p> </td> </tr> <tr> <td> <p>The first codeword of MicroPDF417 is 910 or 911:</p> <p>The original Code ID "]L5" will be changed to "]C0".</p> </td> </tr> </table>	<p>The first codeword of MicroPDF417 is 903-907, 912, 914, 915:</p> <p>The original Code ID "]L3" will be changed to "]C1".</p>	<p>The first codeword of MicroPDF417 is 908 or 909:</p> <p>The original Code ID "]L4" will be changed to "]C2".</p>	<p>The first codeword of MicroPDF417 is 910 or 911:</p> <p>The original Code ID "]L5" will be changed to "]C0".</p>	Disable
<p>The first codeword of MicroPDF417 is 903-907, 912, 914, 915:</p> <p>The original Code ID "]L3" will be changed to "]C1".</p>					
<p>The first codeword of MicroPDF417 is 908 or 909:</p> <p>The original Code ID "]L4" will be changed to "]C2".</p>					
<p>The first codeword of MicroPDF417 is 910 or 911:</p> <p>The original Code ID "]L5" will be changed to "]C0".</p>					
Data Matrix		Enable			
Maxicode		Enable			
QR Code		Enable			
2D Symbologies - Macro PDF		---			
Macro PDF is a special feature for concatenating multiple PDF barcodes into one file, known as Macro PDF417 or Macro MicroPDF417.					
Transmit/Decode Mode	<p>Decide how to handle Macro PDF decoding.</p> <table border="1"> <tr> <td> <p>Buffer All Symbols / Transmit Macro PDF When Complete</p> <p>Transmit all decoded data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. If the decoded data exceeds the limit of 50 symbols, no transmission because the entire sequence was not scanned!</p> </td> </tr> <tr> <td> <p>Transmit Any Symbol in Set / No Particular Order</p> <p>Transmit data from each Macro PDF symbol as decoded, regardless of the sequence.</p> </td> </tr> </table>	<p>Buffer All Symbols / Transmit Macro PDF When Complete</p> <p>Transmit all decoded data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. If the decoded data exceeds the limit of 50 symbols, no transmission because the entire sequence was not scanned!</p>	<p>Transmit Any Symbol in Set / No Particular Order</p> <p>Transmit data from each Macro PDF symbol as decoded, regardless of the sequence.</p>	Passthrough All Symbols	
<p>Buffer All Symbols / Transmit Macro PDF When Complete</p> <p>Transmit all decoded data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. If the decoded data exceeds the limit of 50 symbols, no transmission because the entire sequence was not scanned!</p>					
<p>Transmit Any Symbol in Set / No Particular Order</p> <p>Transmit data from each Macro PDF symbol as decoded, regardless of the sequence.</p>					

	<p>Passthrough All Symbols</p> <p>Transmit and decode all Macro PDF symbols and perform no processing. In this mode, the host is responsible for detecting and parsing the Macro PDF sequences.</p>	
ESC Characters	When enabled, it uses the backslash "\" as an Escape character for systems that can process transmissions containing special data sequences. It will format special data according to the Global Label Identifier (GLI) protocol, which only affects the data portion of a Macro PDF symbol transmission. The Control Header, if enabled, is always sent with GLI formatting.	None

Note: When printing barcodes, keep each Macro PDF sequence separate, as each has a unique identifier. Do not mix barcodes from several Macro PDF sequences, even if they encode the same data. When you scan Macro PDF sequences, scan the entire Macro PDF sequence without interruption!

IMAGE CAPTURE & MISCELLANEOUS

2D Engine	Description	Default
Image Capture		Disable
Image Capture Illumination	Decide whether to flash illumination on every image capture to aid decoding. <ul style="list-style-type: none"> ▶ Turn On (Internal LED) ▶ Turn Off 	On
Image Capture Autoexposure	Decide whether to manually specify the gain and exposure time (only recommended for advanced users with difficult image capture situations).	On
Gain Time	Only applies when Image Capture Autoexposure is disabled. <ul style="list-style-type: none"> ▶ Gain is a means of amplifying the raw image data before it is converted into 256 grayscale values. Increasing the gain increases brightness and contrast, but also increases noise (undesired electrical fluctuations in the image) which makes the image less attractive and/or harder to decode. ▶ Set the manual gain time in the range of 79~127. 	100
Exposure Time	Only applies when Image Capture Autoexposure is disabled. <ul style="list-style-type: none"> ▶ Exposure Time controls the amount of time the CCD is allowed to collect light, much like the shutter speed for a camera. Generally, the brighter the environment, the lower the exposure time. Increasing the exposure time past 20 ms in a handheld application increases the risk of blurring the image due to hand jitter. ▶ Set the manual exposure time in the range of 5 ms, 10 ms, 15 ms, 20 ms, 25 ms, or 30 ms. 	10 ms

Snapshot Aiming Pattern	Decide whether to project the aiming pattern while capturing an image.	On
Image Resolution	Decide how to alter image resolution before compression. Multiple pixels are combined to one pixel, resulting in a smaller image containing the original content with reduced resolution. <ul style="list-style-type: none"> ▶ 640×480 (Full resolution) ▶ 320×240 (Half resolution) ▶ 212×160 (1/3 resolution) ▶ 160×120 (1/4 resolution) 	640×480
Image Format	Decide in which file format the image is saved. <ul style="list-style-type: none"> ▶ JPEG file format ▶ BMP file format 	JPEG
Optimized for JPEG Quality	Decide whether JPEG images are optimized for quality. <ul style="list-style-type: none"> ▶ Cancel the check box so that JPEG images are optimized for size. 	Enable
Select JPEG Quality	Set a value from 5 to 100, where "100" represents the highest quality image.	65
Select JPEG Size	Set a value from 5 to 150, which represents the file size in multiples of 1024 bytes (1K). For example, setting this value to 8 permits the file size to be as large as 8192 bytes.	40
Bits per Pixel	Select the number of significant bits per pixel (BPP) to use when capturing an image. <ul style="list-style-type: none"> ▶ 1 bit per pixel (for black and white images) ▶ 4 BPP (to assign 1 of 16 levels of grey to each pixel) ▶ 8 BPP (to assign 1 of 256 levels of grey to each pixel) 	8

Note: (1) For JPEG files, these BPP settings are ignored for it always uses 8 bits per pixel!
(2) When the image capture feature is enabled, press the [SCAN] button and it will capture an image instead of reading a barcode.

Miscellaneous Options		---
Transmit Code ID	Decide whether to include AIM Code ID in the beginning of data. Each AIM Code ID contains the three-character string "]cm " - <ul style="list-style-type: none"> ▶] = Flag Character (ASCII 93) ▶ c = Code Character (see below) ▶ m = Modifier Character (see below) 	Disable

AIM CODE ID – CODE CHARACTERS

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, Coupon (Code 128 portion)
d	Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	GS1 DataBar (RSS)
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 25
L	PDF417, Macro PDF417, Micro PDF417
M	MSI
Q	QR Code
S	Industrial 25 (Discrete 25), IATA 2 of 5
U	Maxicode
X	Code 39 Trioptic, Bookland EAN, US Postnet, US Planet, UK Postal, Japan Postal, Australian Postal, Dutch Postal

AIM CODE ID – MODIFIER CHARACTERS

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Check digit has been verified.
	3	Check digit has been verified and stripped.
	4	Full ASCII conversion has been performed.
	5	Result of option values 1 and 4.
	7	Result of option values 3 and 4.
Code 128	0	Standard data packet. No Function Code 1“FNC1” in the first character position.
	1	Function Code 1“FNC1” in the first character position.
	2	Function Code 1“FNC1” in the second character position.
Interleaved 25	0	No check digit processing.
	1	Check digit has been verified.
	3	Check digit has been verified and stripped.
Codabar	0	No check digit processing.
Code 93	0	Always transmit 0.

MSI	0	Modulo 10 check digit verified and transmitted.
	1	Modulo 10 check digit verified but not transmitted.
Discrete 25	0	Always transmit 0.
UPC/EAN	0	Standard data packet in full EAN country code format, which is 13 digits for UPC-A and UPC-E (not including addons).
	3	Standard data packet with two-digit or five-digit addons.
	4	EAN-8 data packet.
	A UPC-A with Addon 2 barcode, 012345678905-10, is transmitted to the host as a 18-character string, <code>1E3001234567890510</code> .	
Bookland EAN	0	Always transmit 0.
Trioptic Code 39	0	Always transmit 0.
Code 11	0	Single check digit (has been verified.)
	1	Two check digits (has been verified.)
	3	Check digit has been verified but not transmitted.
GS1 DataBar (RSS)	0	Always transmit 0.
	RSS-14 and RSS Limited will be transmitted with an Application Identifier "01". For example, an RSS-14 barcode, 10012345678902, is transmitted as <code>1e00110012345678902</code> .	

Note: In GS1-128 emulation mode, RSS is transmitted using Code 128 rules (= "`]C1`").

EAN.UCC Composites (RSS, GS1-128, 2D portion of UPC composite)	Native mode transmission	
	0	Standard data packet
	1	Data packet containing the data following an encoded symbol separator character.
	2	Data packet containing the data following an escape mechanism character. The data packet does not support the ECI protocol.
	3	Data packet containing the data following an escape mechanism character. The data packet supports the ECI protocol.
	GS1-128 emulation	
	1	Data packet is a GS1-128 barcode (= data is preceded with " <code>]JC1</code> ").

Note: UPC portion of composite is transmitted using UPC rules.

PDF417, Micro PDF417	0	Scan engine is set to conform to protocol defined in 1994 PDF417 symbology specifications. <ul style="list-style-type: none"> ▶ When this option is transmitted, the receiver cannot reliably determine whether ECIs have been invoked or whether data byte 92_{DEC} has been doubled in transmission.
	1	Scan engine is set to follow the ECI protocol (Extended

		Channel Interpretation). All data characters 92 _{DEC} are doubled.
	2	Scan engine is set for Basic Channel operation (no escape character transmission protocol). Data characters 92 _{DEC} are not doubled. <ul style="list-style-type: none"> ▶ When decoders are set to this mode, unbuffered Macro symbols and symbols requiring the decoder to convey ECI escape sequences cannot be transmitted.
	3	The barcode contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The barcode contains a GS1-128 symbol, and the first codeword is in the range 908-909.
	5	The barcode contains a GS1-128 symbol, and the first codeword is in the range 910-911.
		A PDF417 barcode, ABCD, with no transmission protocol enabled, is transmitted as]L2ABCD.
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.
Maxicode	0	Mode 4 or 5
	1	Mode 2 or 3
	2	Mode 4 or 5, ECI protocol implemented.
	3	Mode 2 or 3, ECI protocol implemented in secondary message.
QR Code	0	Model 1
	1	Model 2, ECI protocol not implemented.
	2	Model 2, ECI protocol implemented.
	3	Model 2, ECI protocol not implemented, FNC1 implied in first position.
	4	Model 2, ECI protocol implemented, FNC1 implied in first position.
	5	Model 2, ECI protocol not implemented, FNC1 implied in second position.
	6	Model 2, ECI protocol implemented, FNC1 implied in second position