CipherLab
Reference Manual

Windows Embedded Compact 6.0

Mobile Computer 9700

Version 1.07

PREFACE

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CONTACT

For product consultancy and technical support, please contact CIPHERLAB's sales representative in your local area. You may also visit CIPHERLAB web site for more information.

CIPHERLAB CO., LTD.
Website: http://www.CipherLab.com

SAFETY NOTICES

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 and your body.

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 numerique respecte les limites de bruits radioelectriques applicables aux appareils numeriques de Classe B prescrites dans la norme sur le material brouilleur: "Appareils Numeriques," NMB-003 edictee par l'Industrie.

FOR UNITED STATES

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 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 adapter. 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 IP65, however, the mobile computer can get damaged when being exposed to extreme temperatures or soaked wet.
- When the enclosure 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 contact the surface with any pointed or sharp object.
- 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, it takes some time for the main and backup batteries to become fully charged.
- If you shall find the mobile computer malfunctioning, write down the specific scenario and consult the sales representative in your local area.
- Keep the mobile computer away from any magnets and magnetic fields to prevent the laser engine from malfunctioning.

Declaration of Conformity

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Type of Equipment

Mobile Computer

Model(s) Declared

9700

Initial Year of Manufacture **2014**

Reference to the specification under which conformity is declared in accordance with Directive- 2004/108/EC, 1999/5/EC

EN 301 489-1 V1.9.2 2011-09
EN 300 328 V1.8.1 2012-06
EN 55022:2010+AC:2011
EN 61000-3-2:2006+A1:2009+A2:2009
EN 301 489-17 V2.2.1 2012-09
EN 301 893 V1.7.1 2012-06
EN 55024:2010
EN 61000-3-3:2013

The manufacturer also declares the conformity of above mentioned product with the actual required safety standards in accordance with Directive 2006/95/EC

EN 60950-1：2006+A11:2009+A1:2010+A12:2011
Safety for information technology equipment including electrical business equipment

I the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Manufactory Representative:

Signature

Full Name *Herbie Jiang*

Title *Manager* ON 2014 / June / 17

RELEASE NOTES

Version	Date	Notes
1.07	June 8, 2018	▸ Modify 6.1 Update Hidden Partition & OS Image
1.06	Aug 20, 2015	▸ Modify the description of some keys in 53 key mapping table and express the behavior with characters, VK definition and hexadecimal value
1.05	Jul 22, 2015	▸ Delete description relating to CD ▸ Add Related Documentation to Introduction
1.04	Mar 10, 2015	▸ Update 1.8 Direct Data Communication: Add WMDC description in ▸ Add 6.1 Update Hidden Partition ▸ Update Code 11, Matrix 2 of 5 code length settings in Appendix V Near/Far 2D Imager ▸ Update Appendix V: Near/Far 2D Imager: Add notes for Trioptic Code 39, Full ASCII Code 39, ISBT 128
1.03	Dec 11, 2014	▸ Rename Green/Red keys in 1.5.1 Physical Keypad ▸ Revise Input Mode Icons in 1.5.1 Physical Keypad
1.02	Dec 1, 2014	▸ Update 6.2 Control Panel: Add Audio Gain Control
1.01	Nov 10, 2014	▸ Update 1.2.1 Power Menu – Add Warm Boot option ▸ Update backup battery charging time in 1.4 Battery, 1.4.2 Charge Batteries, and Specifications ▸ Update Alpha key function on 53-key keypad in 1.5.1 Physical Keypad – Modifier keys ▸ Update 53-key keypad descriptions in 1.5.1 Physical Keypad and Appendix VI ▸ Update steps in 1.7.3 Insert SD Card ▸ Add note for trigger light beam and timeout in 2.1.2 General Settings – Scanner Preferences ▸ Update Near/Far 2D Imager settings in 2.1.2 General Settings – Scanner Preferences ▸ Update descriptions for "Presentation Mode" and "Timeout Between Symbols" in 2.1.2 General Settings – Scanner Preferences ▸ Update Auto Enter options for Data Output in 2.1.2 General Settings – Scanner Preferences ▸ Update screenshots in 2.1.3 Symbology for Reader Configuration ▸ Update default items available in 3.1 Desktop ▸ Update 3.2.1 Launch Program: update list of preinstalled programs available in Start menu ▸ Update 5.1.4 Keypad Modes for Button Assignment ▸ Remove 5.2.1 Install Signature Utility ▸ Update 5.3.3 Device Data Backup and Restore for Backup Utility: Add partial restore and auto-restore under Device Data Restore ▸ Update 5.4 Push to Talk: Add Operation Mode ▸ Update 6.2 Control Panel: Add PTT Configuration, Audio Gain Control ▸ Add warning message to COM Port Mapping in 6.2 Control Panel ▸ Update operating time in Specifications

		▸ Update supported symbology list in Appendix I: Near/Far 2D Imager (EX25) supports Bookland EAN, GS1-128, UPC E1 ▸ Update supported symbologies in Appendix V: Near/Far 2D Imager (EX25) ▸ Update Appendix VI: Physical Keypad Reference Table
1.00	Jun 20, 2014	Initial release

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INTRODUCTION

Thank you for choosing CipherLab products. CipherLab welcomes another Windows Embedded by introducing 9700 Series Mobile Computer. Powered by Windows Embedded Compact 6.0, the mobile computer delivers better user experience and advances enterprise mobile computing.

The mobile computer has transflective LCD to hold up the readability in a wide range of light conditions, courtesy of the supplementary backlight enabled by a built-in ambient light sensor. Also on board is a G-sensor to save power according to the mobile computer's motion and posture. G-sensor also enables screen orientation when the device is posed sideways or upright. Furthermore, the mobile computer has integrated a built-in e-compass and gyroscope, both of which provide useful functions in navigation.

The series sports satisfactory data connections by integrating a communication port for direct data exchange. For wireless data connection, it hosts a Bluetooth and 802.11b/g module.

Dedicated to data capture, the mobile computer has essential 1D (laser) reader or 2D imager. Rated with IP65, the rugged 9700 is light-weighted and easy to cradle in your hand, and will be your good help on field works.

ABOUT THIS DOCUMENT

This guide distills the information about 9700 Series Mobile Computer. Subjects discussed include the mobile computer's physical features, platform basics, software and applications, and part of the accessories to boost the mobile computer's performance.

We recommend that you keep one copy of this manual at hand for the quick reference for necessary maintenance.

FEATURES

- Rugged yet smoothened outlined, with hand strap for secure hold
- IP65-rated tough form to survive drop, shock, heat, cold, and impervious to moisture/dust
- Windows CE 6.0 OS, TI OMAP3730 1GHz CPU
- 512MB SDRAM to run application programs
- 4GB NAND flash to store OS, applications, settings and so on
- Storage expansion: Up to 32GB MicroSDHC
- Sunlight-readable screen to enhance the viewability of outdoor use
- Ambient light sensor to enable supplementary backlight for LCD and keypad
- G-sensor for power management and screen orientation
- 2 symmetric side-triggers for ambidextrous scanning
- Total data solution — supports Bluetooth, 802.11a/b/g/n
- C++ and .Net programming support

INSIDE THIS PACKAGE

The mobile computer ships with the following items. Save the box and packaging material in case of future need to store or deliver the mobile computer.

- Mobile Computer
- Rechargeable Li-ion battery pack (standard/high capacity)
- Stylus
- Screen protector
- Hand strap
- Quick Start Guide

ACCESSORIES

Optional accessories to enhance the mobile computer's performance are:

- Snap-on Charging and Communication Cable (USB or RS-232)
- Charging & Communication Cradle
- Pistol Grip
- Snap-On Car Charger
- 4-Slot Terminal (Ethernet) Cradle
- 4-Slot Battery Charger
- Belt Holster

RELATED DOCUMENTATION

Log in to GoBetween to access related documentation about the 9700 mobile computer from the CipherLab Central Service (CCS) platform. Download the GoBetween desktop or mobile device application, or launch the GoBetween Lite web application from the following site: http://ccs.cipherlab.com/.

Chapter 1

USE MOBILE COMPUTER

Before the mobile computer takes part in your work, get to know it first. This chapter includes the basic features of the mobile computer including the power supply, memory, and the units that bridge users with the mobile computer. This chapter helps you set the mobile computer to work at the earliest.

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1.1. TAKE A TOUR

This section shows the major components on the mobile computer and inside battery chamber. You will also learn how to power on/off the mobile computer and how the mobile computer gives information about its status.

1.1.1. OVERVIEW

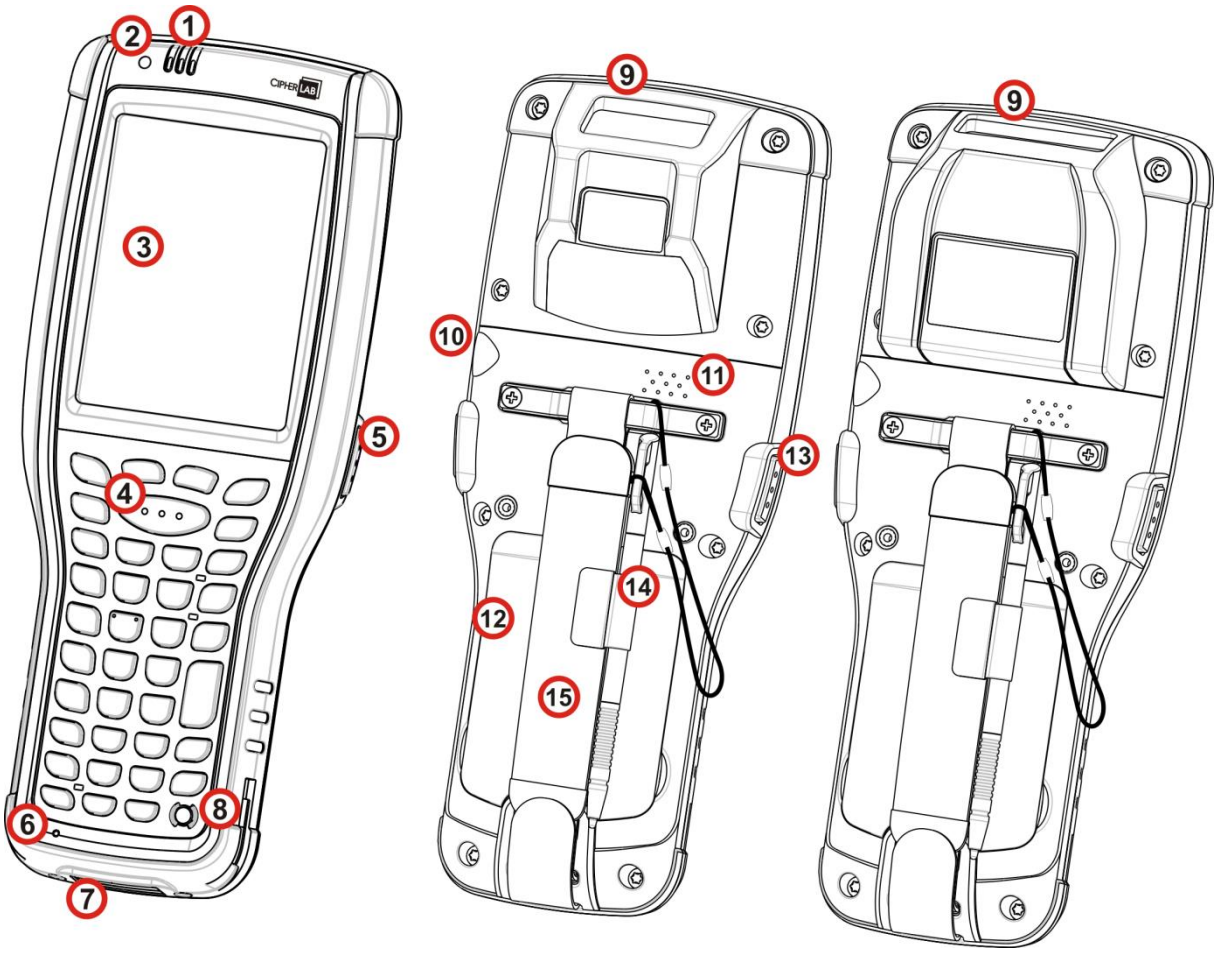


Figure 1: Overview

No.	Description	No.	Description
1	Status LED (refer to Notifications)	2	Light sensor
3	Touch screen	4	Scan key
5	Side-trigger (user definable)	6	Microphone
7	Direct charging & communication port	8	Power key
9	Scan window	10	Headset jack
11	Speaker	12	Battery
13	Side-trigger (user definable)	14	Stylus (with attaching cord)
15	Handstrap		

1.1.2. BEFORE INITIAL USE

Prior to using the mobile computer for the first time, we recommend applying the protective film over the LCD. This will prevent scratching the touch screen during daily usage, and also help enhance the durability of the touch screen.

To apply the LCD protective film:

1) Upon delivery, the touch screen of the mobile computer is covered with a thin transparent film. Peel off and discard this film.
2) Wipe the touch screen with a clean, non-abrasive, lint-free cloth.
3) Carefully apply the LCD protective film to the touch screen by aligning its edges with the edges of the touch screen. Make sure the film adheres tightly to the surface.

The mobile computer is then ready for usage.

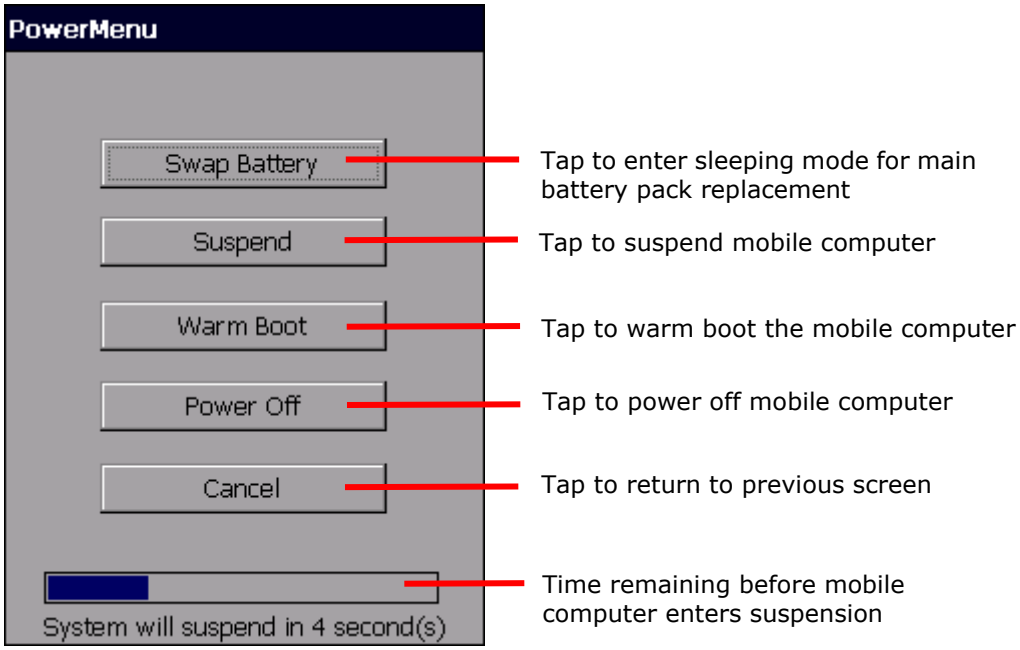
1.2. POWER ON/OFF MOBILE COMPUTER

To power on the mobile computer, press the Power button sitting at the upper right of the keypad. The mobile computer powers on.

1.2.1. POWER MENU

The 9700 mobile computer features a power menu. This menu allows you to select whether you would like to power off the mobile computer, enter suspension, or enter sleeping mode for main battery replacement.

To enter this power menu, press the power button for more than three seconds. A menu will open on-screen with a countdown bar at the bottom.



Menu options are as follows:

Action to take	Description
Swap Battery	If you would like to replace the main battery pack on the mobile computer, select this option to let the mobile computer enter sleeping mode. After the main battery has been replaced, wake up the mobile computer by pressing the power button. All applications and tasks will remain active.
Suspend (default)	When the mobile computer is not under frequent use, select this option to let the mobile computer enter suspension and save power. This is the default function, and when no option is selected in the power menu, the mobile computer will automatically enter suspension after 5 seconds. When you need to use the mobile computer once more, resume it by pressing the power button or central scan key. All applications and tasks will remain active. See also Suspend & Reset Mobile Computer.

Warm Boot	Select this option to warm boot (restart) the mobile computer. This will close all applications and tasks currently running. All unsaved data will be lost.
Power Off	Select this option if you will not be using the mobile computer in a while and would like to power it off. This will close all applications and tasks currently running. All unsaved data will be lost.
Cancel	Selecting this option will close the menu and return to the previously active screen. All applications and tasks will remain active.

Note: If you wish to replace the main battery pack on the mobile computer, aside from taking the steps above, please also make sure the following requirements are met. Otherwise, the mobile computer might function abnormally, and will require system restart.

(1) Make sure the backup battery on the mobile computer is not drained out. Check Backup Battery Level before taking any actions.

(2) After selecting **Swap Battery** in the power menu, proceed to replacing the battery as soon as possible.

1.3. NOTIFICATIONS

The mobile computer features visible, audible, and tactile feedback to draw users' prompt awareness of the mobile computer's contiguous events such as barcode reading, wireless/mobile data connections, and battery charging.

STATUS LED

Three LED lights are located on the upper-right corner of the mobile computer. Their functions are:

Matter	LED Color	Action	Description
Battery Charging (Left)	Green, Orange, Red	Green, solid	Battery is fully charged.
		Orange, solid	Battery is being charged, and the battery level is sufficient to power on the mobile computer.
		Red, solid	Battery is being charged, however the battery level is insufficient to power on the mobile computer.
		Red, blinking fast	Battery charging error has occurred, for instance, charging temperature is below 0°C or above 35°C, or adapter is plugged in but no battery is present.
Radios (Middle)	Blue	Blue, blinking	Wi-Fi or Bluetooth in use.
Scanning Good Read (Right)	Green	Green, flashes once	Indicates good reading of the scanned barcode. Enable/Disable this LED light on the Reader Config Notification Settings page. To set the good read LED via API deployment, see the 9700 Programming Guide for details.

SPEAKER

The mobile computer has a speaker on the back for audio signaling and playback.

The speaker sounds for system events, application warnings, on-screen item selection and physical keypad stroke. In noisy environments, the speaker remains efficacious with the help of a Bluetooth headset. To control sound volume, see Volume Control.

The speaker also sounds for successful barcode reading, which can be controlled on the Reader Config Notification Settings page.

VIBRATOR

The mobile computer owes its tactile feedback to the vibrator built inside. Vibration delivered to the mobile computer alerts users of its currents status.

Working based on user's sense, the vibrator is particularly helpful when the mobile computer is serving in a noisy environment.

Same as the speaker and LED light, the vibrator also works for good barcode reading. Enable/disable vibration and set its duration on the Reader Config Notification Settings page. Alternatively, program the vibrator through API deployment to have it vibrate when a successful reading occurs. See the 9700 Programming Guide for details.

1.4. BATTERY

The 9700 mobile computer is fed by two batteries, main battery pack and backup battery. The main battery is removable and replaceable from the battery chamber while the backup battery is mounted on the main board inside the mobile computer.

When the mobile computer is shipped, the main battery is stored in a package separated from the mobile computer, which keeps it in good condition for future use.

MAIN BATTERY

The main battery is a Li-ion battery pack which comes in two different capacities, a 3.7V, 3600mAh battery which takes approximately 4 hours to charge to full, and a 3.7V, 5400mAh battery which takes around 6 hours to charge to full. The working time of the mobile computer varies by its working states. A battery icon seated on the taskbar will show the remaining Main Battery Level.

See also Install/Remove Main Battery for installing the main battery.

BACKUP BATTERY

The backup battery is settled on the main board inside the mobile computer. It is a 3.6V, 15mAh rechargeable Ni-MH battery. When the main battery is absent or depleted, the backup battery takes over to feed the mobile computer. Without the main battery, a fully charged backup battery retains the data in the DRAM and holds the system in suspension for 30 minutes (as long as the wireless modules are inactive).

The backup battery is rechargeable by the main battery pack. It takes 36 hours to charge it to full. See Backup Battery Level.

Note:

(1) On initial use of the mobile computer, it is recommended that a fully charged main battery is placed in the main battery compartment for at least three days, in order to allow the backup battery to charge to a full state.

(2) When removing the main battery pack, actual data retention time will depend on the backup battery level. Check backup battery level before replacing the main battery to ensure your data is retained.

1.4.1. INSTALL/REMOVE MAIN BATTERY

Follow the steps below to install the main battery:

1) The handstrap is installed over the battery chamber. You do not need to remove the handstrap to install the battery; simply lift up the handstrap to allow enough space to insert the battery.
2) Place the main battery pack into the battery chamber with the contact pins facing down. Fix the upper end first, and press the lower end down until the battery "clicks" into place.

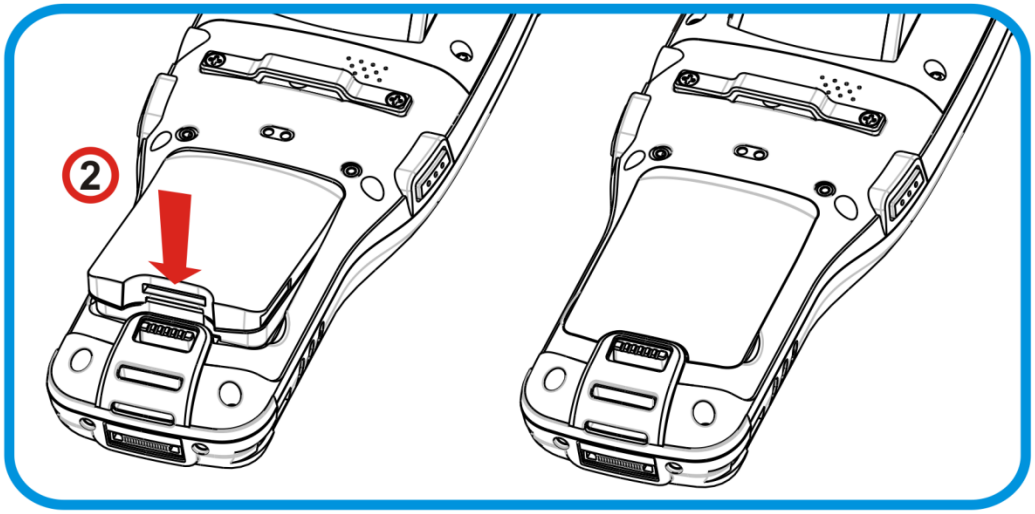


Figure 2: Install main battery

Follow the steps below to remove the main battery:

1) A battery latch is located at the lower end of the main battery. Push the latch down and the battery will be released.

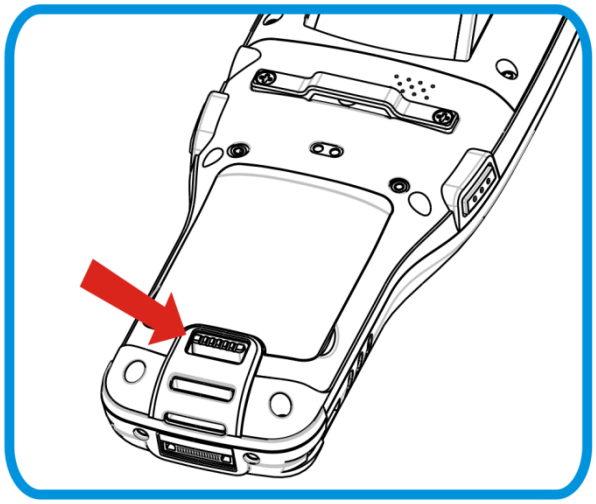


Figure 3: Remove main battery

Note: (1) When main battery level drops to low level, charge it ASAP or replace it with a charged battery.
(2) Always turn off the mobile computer to replace the main battery pack.
(3) Any improper handling may reduce battery life.

1.4.2. CHARGE BATTERIES

Due to shipment, it is likely that the main battery and backup battery won't be fully charged when you receive the package. Before setting the mobile computer to work, charge the main battery to full by direct charging via a power adapter (with the help of a Snap-on Charging & Communication Cable or Charging & Communication Cradle).

Some key facts about charging batteries:

Charging Time

- **Main battery:** It takes approximately 4 hours to charge the 3.3V, 3600mAh main battery, and approximately 6 hours to charge the 3.3V, 5400mAh main battery. The battery charging LED above the touch screen lights red or orange during charging (depending on the battery level at the moment), and lights green when the mobile computer is completely charged. See Status LED for details about the LED indicator.
- **Backup battery:** The backup battery is a 3.6V, 15mAh Ni-MH battery which is rechargeable by the main battery. It takes around 36 hours to charge it to full, however it does not need to be fully charged for the mobile computer to work.

Charging Temperature

- It is recommended that batteries be charged at room temperature (18°C~25°C) for optimal performance.
- Charging stops when temperature drops below 0°C or exceeds 35°C. In this case the battery charging LED will be continuously blinking in red.

Power Consumption

- When all radios (802.11 a/b/g/n, Bluetooth) are active on battery power, main battery level will drop substantially.
- In order to prevent the system from shutting down due to depletion of the main battery, we suggest that you keep a fully charged battery for replacement or have the mobile computer access the radios on external power.

The following guides how to charge batteries.

DIRECT CHARGING USING SNAP-ON CABLE

Direct charging of the mobile computer relies on the Snap-on Charging & Communication Cable (hereinafter "snap-on cable"). There is a power jack on the connector of this cable to connect external power.

Prior to charging, install the main battery as described in Install/Remove Main Battery. Then follow the steps below:

1) Attach the snap-on cable to the mobile computer.
2) Plug the head of the power adapter cord into the power jack located on the snap-on cable's connector.
3) Connect the power adapter to a power outlet.

To output data to your PC or laptop, connect the snap-on cable (either through USB or RS-232 connection) to it. See Direct Data Communication for follow-ups.

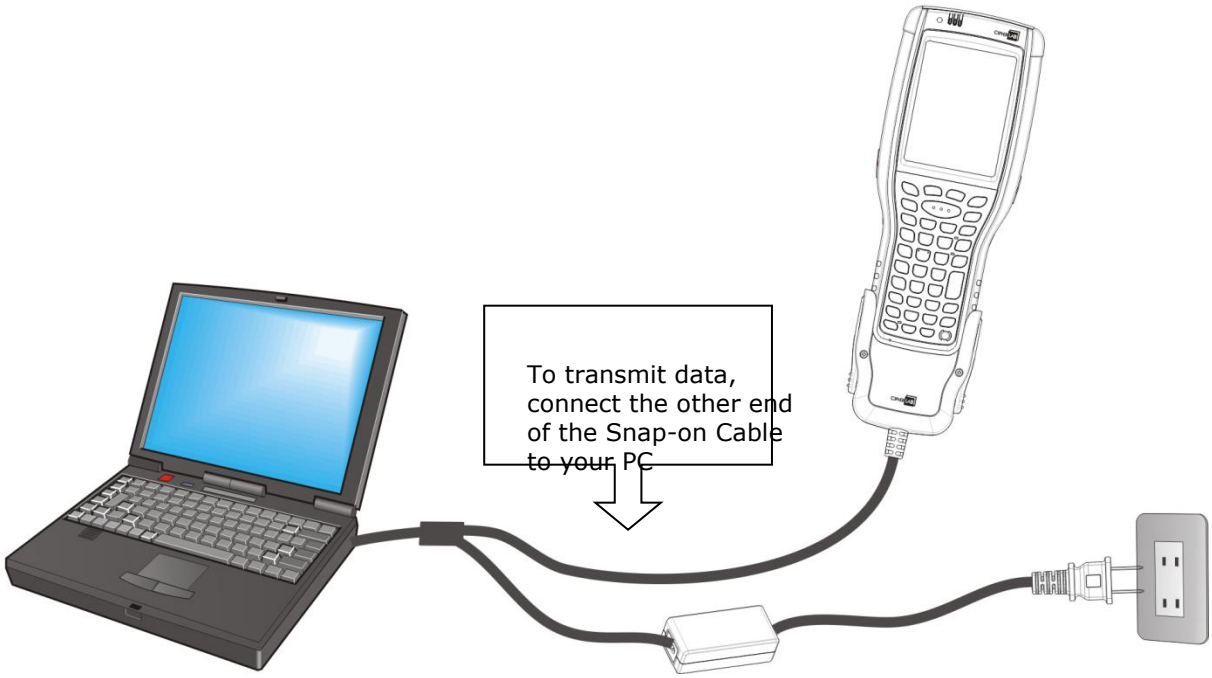


Figure 4: Direct Charging Using Snap-on Cable

DIRECT CHARGING USING CRADLE

Direct cradle charging makes use of a Charging & Communication Cradle (hereinafter "cradle"). The cradle is one of the accessories you can opt for.

Prior to charging, install main battery as described in Install/Remove Main Battery. Then follow the steps below:

1) Seat the mobile computer onto the cradle.

2) Connect the cradle to an external power source using the power adapter.

To output data to your PC or laptop, connect the mobile computer and your PC with a microUSB cable. See Direct Data Communication for follow-ups.

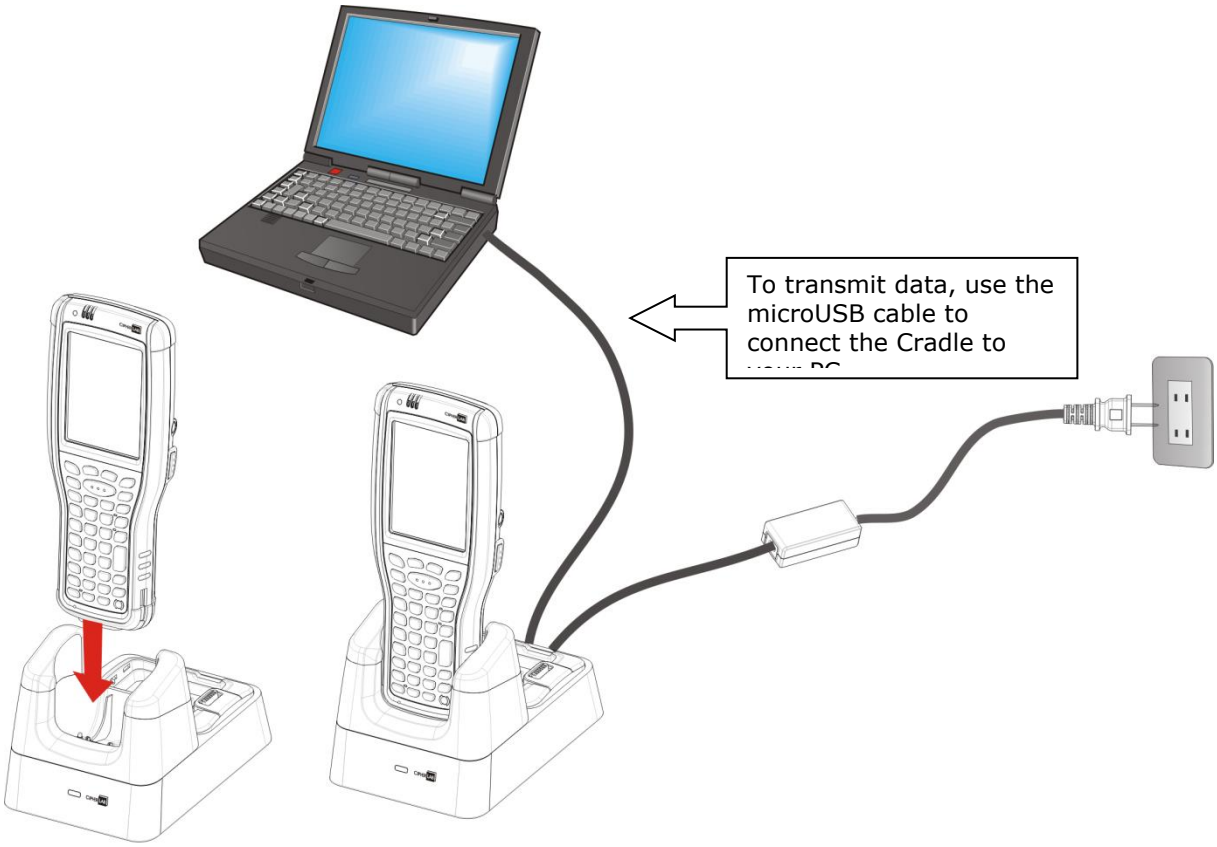


Figure 5: Direct Charging Using Cradle

REPLACE MAIN BATTERY PACK

The Charging and Communication Cradle holds a separate charging compartment for the main battery pack. This allows the mobile computer and a separate main battery pack to be charged either individually or simultaneously. We advise you to keep a fully charged battery at hand at all times.

Before replacing the main battery pack, turn off the mobile computer. Insert a charged main battery pack as shown in Install/Remove Main Battery and power on the mobile computer.

1.4.3. MONITOR BATTERY LEVEL

The main battery is the only source that feeds the mobile computer to work. It also supplies the backup battery on main board to retain the data stored in DRAM. Hence when main battery level gets low, recharge it or change it as soon as possible. Most critically, back up the important data from time to time to protect your work.

MAIN BATTERY LEVEL

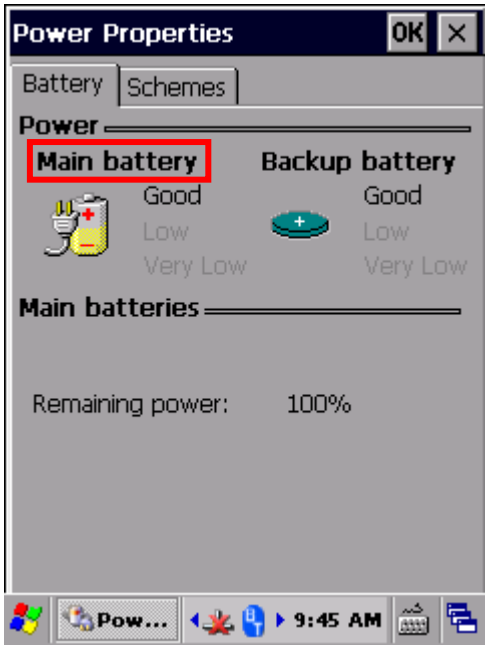
To check the main battery level:

1) Tap **Start** | **Settings** | **Control Panel** | **Power** .

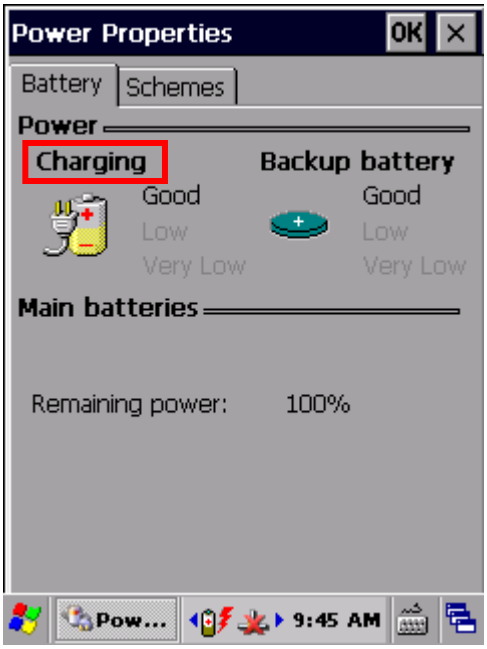
   Power Properties window opens showing **Battery** tab page. Main battery level is summarized under **Power** label as "Good", "Low" or "Very Low". Precise battery level is also shown in percentage under the **Main batteries** label.

   Depending on whether the main battery is being charged, charging status will show "Main battery", meaning the mobile computer is on battery power, or "Charging", meaning that external power is connected.

Main battery isn't being charged.



Main battery is being charged.

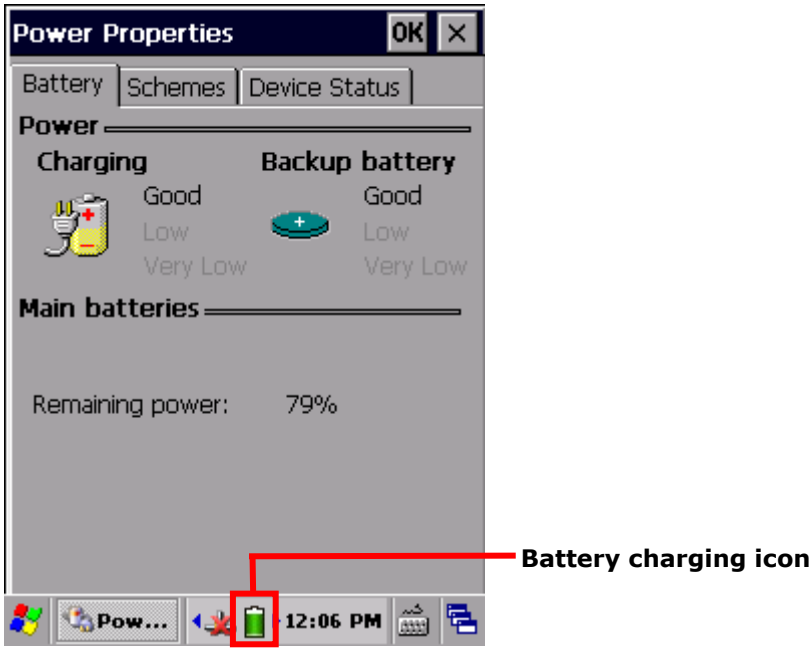


Main battery level is summarized into three levels:

Description	Battery Status
Good	Main battery level is good (40~100%).
Low	Main battery level is low (20~39%). Charging is recommended.
Very Low	Main battery level is very low (<19%) and needs to be charged immediately.

BATTERY STATUS ICONS

The OS features a couple of icons that deliver main battery status. These icons can be found on the taskbar, which is settled at the bottom of every screen.

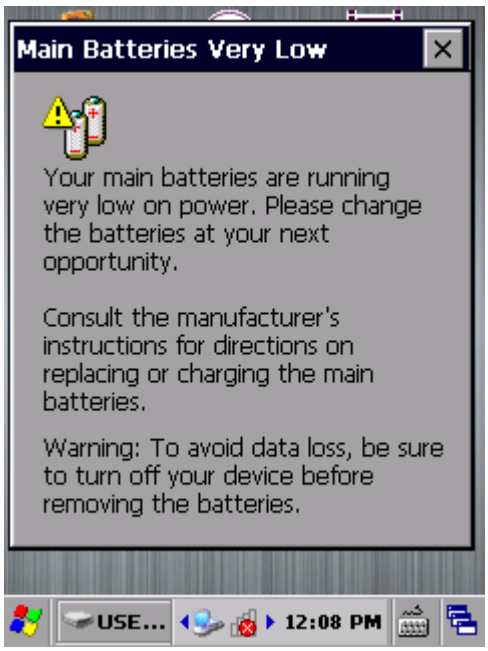


Battery level is illustrated by the following icons :

Icon	Battery Status
	Main battery level is 91%~100%.
	Main battery level is 71%~90%.
	Main battery level is 51%~70%.
	Main battery level is 21%~50%.
	Main battery level is 11%~20%.
	Main battery level is 1%~10%. Charge or replace main battery immediately!
	Main battery is being charged from external power.
	Mobile computer is connected to external power, but main battery level is full and does not need charging.

LOW BATTERY ALERT

When main battery level drops below 40%, the mobile computer prompts "Main Battery Low" for a recharge. When further reduced to under 20%, the mobile computer prompts "Main Battery Very low" to solicit your immediate action.



Low battery may incur shutdown to the mobile computer and cause DRAM data damage. Always save data before running short of power or keep a fully charged battery at hand for replacement.

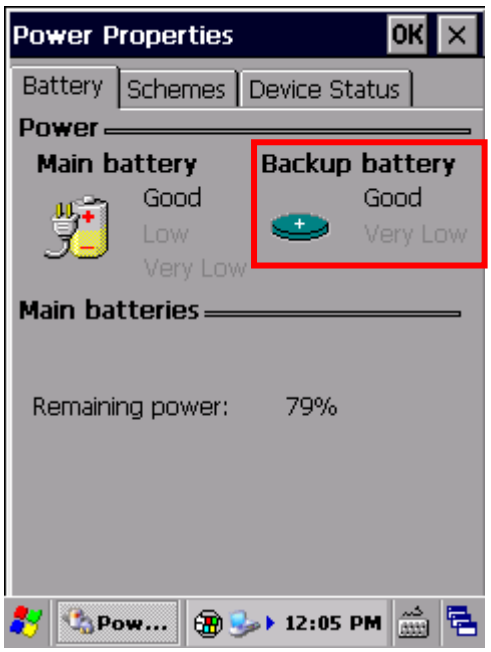
Note: Constant usage of the mobile computer at low battery level can affect battery life. For maximum performance, recharge the battery periodically to avoid battery drain out and maintain good battery health.

When main battery drains out, the mobile computer shuts down automatically. Backup battery takes over to hold DRAM data for 30 minutes if it is fully charged. When this occurs, replace main battery pack immediately to avoid data loss.

BACKUP BATTERY LEVEL

1) To check backup battery level, tap **Start** | **Settings** | **Control Panel** | **Power** .

   On **Battery** tab page of **Power Properties** window, backup battery level is summarized as "Good", "Low" or "Very Low" under the **Power** label.



   Backup battery level descriptions are as follows:

Description	Battery Status
Good	Backup battery level is good.
Low	Backup battery level is low. Charging is recommended.
Very Low	Backup battery level is very low and needs to be charged immediately.

BATTERY STATUS ICONS

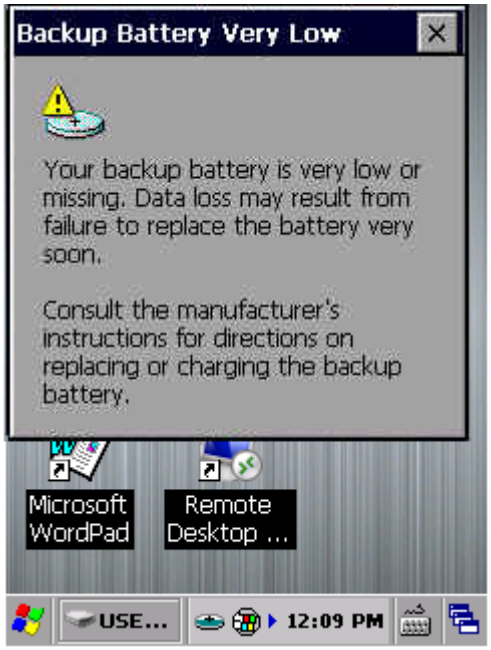
When backup battery level is low, an icon pops-up on the taskbar as a sign of notification.

Battery level is summarized into two levels:

Icon	Battery Status
	Backup battery level is low.
	Backup battery level is extremely low and requires charging immediately.

LOW BATTERY ALERT

When backup battery level drops to "Very Low", the mobile computer prompts a "Backup Battery Very Low" warning to alert users that backup battery level is almost drained out.



Backup battery is rechargeable by the main battery pack. Low backup battery puts DRAM data in great danger. Remember to save data from time to time or keep a fully charged battery at hand for replacement.

Once backup battery drains out completely, the data in DRAM is gone. Any data that has not been saved will be lost!

1.4.4. POWER MANAGEMENT

Power issues are critical for portable devices. Always turn off the features you don't need on the mobile computer in order to save power. To extend battery life as long as possible, always take the following actions:

- Suspend the mobile computer when it isn't actively in use. See Suspend Mobile Computer
- Turn down LCD backlight brightness as described in Adjust Backlight, and set a shorter LCD timeout as described in Auto-Suspension
- Auto Sync the mobile computer with your PC less frequently. See Direct Data Communication
- If you are using any "push e-mail" or any automatic syncing service on the mobile computer, change the syncing schedule to manually check updates
- When Wi-Fi or Bluetooth isn't in use, turn it off. See Radios

1.5. KEYPAD

The mobile computer has a physical keypad and a touch screen to receive user's input. Among the two, the touch screen provides more intuitiveness in interacting with the device.

This section shows how to input text using physical keypad and on-screen keyboard. To know how to operate the mobile computer using the touch screen, see Touch Control.

1.5.1. PHYSICAL KEYPAD

The physical keypad, which receives supplementary backlight along with the screen, comes in three formats: 30-key, 38-key and 53-key. Each type of keypad wedges a set of "enhanced keys" along the top and a set of character keys at the lower half. All keypads support multi-key operation, which normally requires two keys hit simultaneously, one of which is a modifier key. The keypads are equally capable of entering numbers, letters, symbols and punctuation marks, and delivering function keys.

Figure 6: 30-key numeric keypad

Figure 7: 38-key numeric & function keypad

Figure 8: 53-key alphanumeric keypad

NUMERIC KEYPAD (30-KEY)

The numeric keypad possesses 30 keys, including the number keys 0-9, and Esc, Ctrl, Space, Backspace, Enter and period key (.). Also featured are function keys F1 to F4. The power key is seated at the lower right corner of the keypad.

The orange Function key and blue Alpha key are modifier keys located under the Basic keys, and can be used to change the keypad input mode. The Alpha key can be used to enter numbers 2-9 or letters A-Z, or trigger the Shift key, and the Function key , with accompanied use of other keys, can be used to produce function keys (F5 to F12), adjust volume and touch screen backlight, or lock the keypad.

NUMERIC & FUNCTION KEYPAD (38-KEY)

The numeric and function keypad possesses function keys (F1 to F10) which can assist usage in special applications. The keypad provides number keys 0-9, as well as Esc, Ctrl, Space, Backspace, Enter key, period key (.) and comma key (,).The power key is also seated at the lower right corner of the keypad.

The numeric and function keypad also features a blue Alpha key , Shift key and orange Function key . When triggered, the Alpha key can be used to enter letters A-Z . The Shift key is located right below the Alpha key, and is used to change alphabetic input to uppercase. The Function key is seated on the lower end of the keypad, and extends the number of Fn keys to F14. It can also be used with other keys to produce function keys (F11 to F14), adjust volume and touch screen backlight, or lock the keypad.

ALPHANUMERIC KEYPAD (53-KEY)

The 53-key alphanumeric keypad features three available configurations which can be applied in connection sessions to different host terminals. All three keypad configurations feature the letter keys A-Z and number keys 0-9, Esc key, Ctrl key, Backspace key, Shift key, Enter key, period key (.) and comma key (,). The power key is located near the upper right corner of the keypad.

As for modifier keys, the alphanumeric keypads are equipped with a blue Alpha key and Shift key . The Alpha key combined with other keys on the keypad can enter a variety of symbols, or adjust volume and touch screen backlight. It can also be used to trigger the Alt key, function keys F1-F10, and enter other text editing keys (tab leftward and rightward). As for the Shift key, it allows entering of Shift+1, 2, 3…10. In addition, it locks the keypad when used with the Backspace key.

Note: The three configurations of the 53-key keypad are functionally identical. However when CipherLab's Terminal Emulation or other terminal emulation software is running on the device, each of the three configurations features different commands for application during host sessions.

53-key VT keypad

53-key 3270 keypad

53-key 5250 keypad

BASIC KEYS

These are a set of keys kept at the top of the keypad throughout all three keypad types.

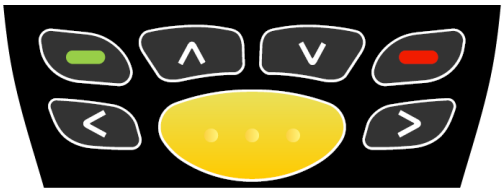


Figure 9: Basic keys

Basic keys deliver the following functions:

Key	Description
SCAN KEY	Press the scan key to read a barcode in place.
ARROW KEYS	The arrow keys are circled around the center scan key. These can be used to move the cursor up, down, left or right during text input, or move between items in certain applications.
GREEN/RED KEY	By default, these two keys input the functions F14 and F15. You may also define their new key functions using CipherLab's Button Assignment.

MODIFIER KEYS

The keypads have five different modifier keys integrated on it. The key trigger and recovery methods differ slightly according to keypad type.

Key	Keypad	Key Location	How to enter	How to resume
Alpha (Blue)	30-key	Available on keypad	Press Alpha key once to enter Alpha Lock mode	Press Alpha key once more to return to default input mode
	38-key	Available on keypad		
	53-key	Available on keypad	Press Alpha key once to enter Alpha mode	Keypad returns to default input mode upon pressing any button
Function (Orange)	30-key	Available on keypad	Press Fn key once to enter Fn mode	Keypad returns to default input mode upon pressing any button engraved in orange ▸ If Alpha key is pressed, keypad will return to Alpha mode until Alpha key is pressed again
	38-key	Available on keypad		
	53-key	Not available	--	--
Shift	30-key	Available under Alpha mode	Under Alpha mode, press the period key (.) once to enter Shift mode Under Alpha mode, press the period key (.) twice to enter Shift Lock mode	Under Shift mode, keypad returns to default input mode upon pressing any button Under Shift Lock mode, keypad returns to default input mode upon pressing Shift key once more, or upon pressing Ctrl or Alt key
	38-key	Available on keypad	Press Shift key once to enter Shift mode Press Shift key twice to enter Shift Lock mode	
	53-key	Available on keypad		
Ctrl	30-key	Available on keypad	Press Ctrl key once to enter Ctrl mode ▸ Press Ctrl key first, then press the key to deliver the Ctrl function to.	Keypad returns to default input mode upon pressing any button
	38-key	Available on keypad		
	53-key	Available on keypad		
Alt	30-key	Available under Alpha mode	Press Alt key once to enter Alt mode ▸ Press Alt key first, then press the key to deliver the Alt function to.	Keypad returns to default input mode upon pressing any button
	38-key	Available under Fn mode		
	53-key	Available under Alpha mode		

ALPHA KEY

The Alpha key is equipped with an LED indicator. When the Alpha key is pressed, the LED will light up in blue to indicate that Alpha key is activated. The 30-key and 38-key keypads enter Alpha lock mode when Alpha key is pressed, and only when Alpha key is pressed once more will the LED go off, and thus the keypad returns to default input mode. The 53-key keypad enters Alpha mode when Alpha key is pressed, and the Alpha key LED goes off and the keypad returns to default input mode once another key is pressed.

The Alpha key delivers the following functions on each of the keypads:

Keypad	Alpha key	Key Function
30-key		▸ Under Alpha mode, press number keys 2-9 to enter lowercase letters a-z ▸ Under Alpha mode, press number keys 0 and 1 to enter punctuation marks ▸ Under Alpha mode, press period key to enter Shift mode, in which pressing number keys 2-9 enters uppercase letters A-Z, and pressing arrow keys moves the cursor up, down, left and right
38-key		▸ Under Alpha mode, press arrow keys, number keys 0-9, Function keys F1-F10 and punctuation keys to enter lowercase letters a-z ▸ Under Alpha mode, press Shift key to enter Shift mode, in which pressing arrow keys, number keys 0-9, Function keys F1-F10 and punctuation keys enters uppercase letters A-Z
53-key		▸ Under Alpha mode, press letter keys A-Z to enter symbols, adjust volume or touch screen backlight ▸ Under Alpha mode, press Ctrl key to trigger Alt mode ▸ Under Alpha mode, press Space/Backspace key to Insert/Delete ▸ Under Alpha mode, press number keys 0-9 to trigger function keys F1-F10 ▸ Under Alpha mode, press period key (.) or asterisk key (*) to move to the previous or next tab spot

Note: Alpha mode can coexist with Function mode. When both modes are active, the dominant mode depends on the last pressed key. If you press Function key and then press Alpha key, Alpha mode will be the effective for the next pressed key.

SHIFT KEY

The Shift key is equipped with an LED indicator. When the Shift key is pressed once, the LED will light up in green to indicate that Shift mode is activated. The LED goes off when another key is pressed and the keypad returns to default input mode. When the Shift key is pressed twice, the keypad will enter Shift lock mode and the LED will stay lit until Shift key is pressed once more.

The Shift key delivers the following functions on each of the keypads:

Keypad	Shift key	Key Function
30-key	(Alpha mode)	▸ Under Alpha mode, press Shift key to enter Shift mode, and press number keys 2-9 to enter uppercase letters A-Z ▸ Under Alpha mode, press Shift key to enter Shift mode, and press arrow keys to move the cursor up, down, right or left ▸ Under Alpha mode, press Shift key to enter Shift mode, and press F1 +F4 to enter Shift+F1 to F4

38-key		▸ Under Shift mode, press number keys 0-9 to enter Shift+0-9 ▸ Under Shift mode, press arrow keys to move the cursor up, down, right or left ▸ Under Shift mode, press Green key/Red key to enter Shift+F14/F15 ▸ Under Shift mode, press F1 to F10 to enter Shift+F1 to F10 ▸ Under Alpha mode, press Shift key to enter Shift mode, and press arrow keys, number keys 0-9, function keys F1 to F10, period key and comma key to enter uppercase letters A-Z
53-key		▸ Under Shift mode, press letter keys a-z to enter uppercase letters A-Z ▸ Under Shift mode, press 0-9 to trigger function keys F11 to F20 ▸ Under Shift mode, press Backspace key to lock the keypad

Note: If you are using the on-screen keyboard, tap CAP (Caps Lock) to switch between uppercase and lowercase alphabetic modes.

FUNCTION KEY

The Function key is equipped with an LED indicator. When the Function key is pressed, the LED will light up in orange to indicate that Function key is activated. When Function key is pressed once more, the LED will go off and the keypad will return to default input mode.

The Function key delivers the following functions on each of the keypads:

Keypad	Fn key	Key Function
30-key		▸ Under Function mode, press number keys 1-4 and function keys F1-F4 to enter function keys F5-F12 ▸ Under Function mode, press other number keys to adjust volume, touch screen backlight or enter a hyphen (-) ▸ Under Function mode, press arrow keys to deliver Home, End, Page Up, Page Down ▸ Under Function mode, press Ctrl key to activate Alt key ▸ Under Function mode, press Backspace to lock the keypad ▸ Under Function mode, press space key to open the Start menu
38-key		▸ Under Function mode, press number keys 1-4 and function keys F1-F4 to enter function keys F11-F14 ▸ Under Function mode, press other Fn keys to adjust volume, touch screen backlight ▸ Under Function mode, press arrow keys to deliver Home, End, Page Up, Page Down ▸ Under Function mode, press Ctrl key to activate Alt key ▸ Under Function mode, press Backspace to lock the keypad ▸ Under Function mode, press space key to open the Start menu
53-key	Not available	None

Note: Function mode can coexist with Alpha mode. When both modes are active, the dominant mode depends on the last pressed key. If you press Alpha key and then press Function key, Function mode will be the effective for the next pressed key.

KEYPAD LOCK

All three keypads feature a keypad lock mode, which can be triggered by pressing a hot key combination. When the keypad lock mode is triggered, all keys on the keypad will become locked to prevent any accidental pressing of keys. A keypad lock icon will appear on the taskbar to indicate keys are currently locked.

To release the keypad lock mode, press the keypad lock hot key combination again. The input mode on the mobile computer will return to default state.

To trigger or release keypad lock mode:

- On the 30-key keypad, press the Function key followed by the backspace key
- On the 38-key keypad, press the Function key followed by the backspace key
- On the 53-key keypad, press the Shift key followed by the backspace key

Note: Under keypad lock mode, the only available keys aside from the keypad lock button itself are the power key and scan keys.

INPUT MODE ICONS

When the Shift key, Alpha key and Function key are pressed, corresponding icons will appear on the taskbar to indicate the current input mode.

When the input mode is changed, a corresponding icon will appear on the taskbar

Icon	Description	Trigger and Withdrawal
No icon	▸ 30-key keypad enters numbers 0-9 and function keys F1-F4 ▸ 38-key keypad enters numbers 0-9 and Function keys F1-F10 ▸ 53-key keypad enters numbers 0-9 and lowercase letters a-z	Default mode. This mode remains until Alpha key, Shift key or Function key is pressed.
▲	▸ 30-key keypad enters one uppercase letter A-Z ▸ 38-key keypad enters one symbol. When Alpha key is pressed, 38-key keypad enters one uppercase letter A-Z ▸ 53-key keypad enters one uppercase letter A-Z. When Alpha key is pressed, 53-key keypad enters one symbol	▸ On the 30-key keypad, press Alpha key to enter Alpha mode, then press the period key [.] ▸ On the 38-key keypad and 53-key keypad, press Shift key once to enter this mode Returns to default input mode once a key is pressed.
□	▸ 30-key keypad enters uppercase letters A-Z ▸ 38-key keypad enters symbols. When Alpha key is pressed, 38-key keypad enters uppercase letters A-Z	▸ On the 30-key keypad, press the Alpha key to enter Alpha mode, then press the period key [.] ▸ On the 38-key keypad and 53-key keypad, press Shift key twice to enter this mode

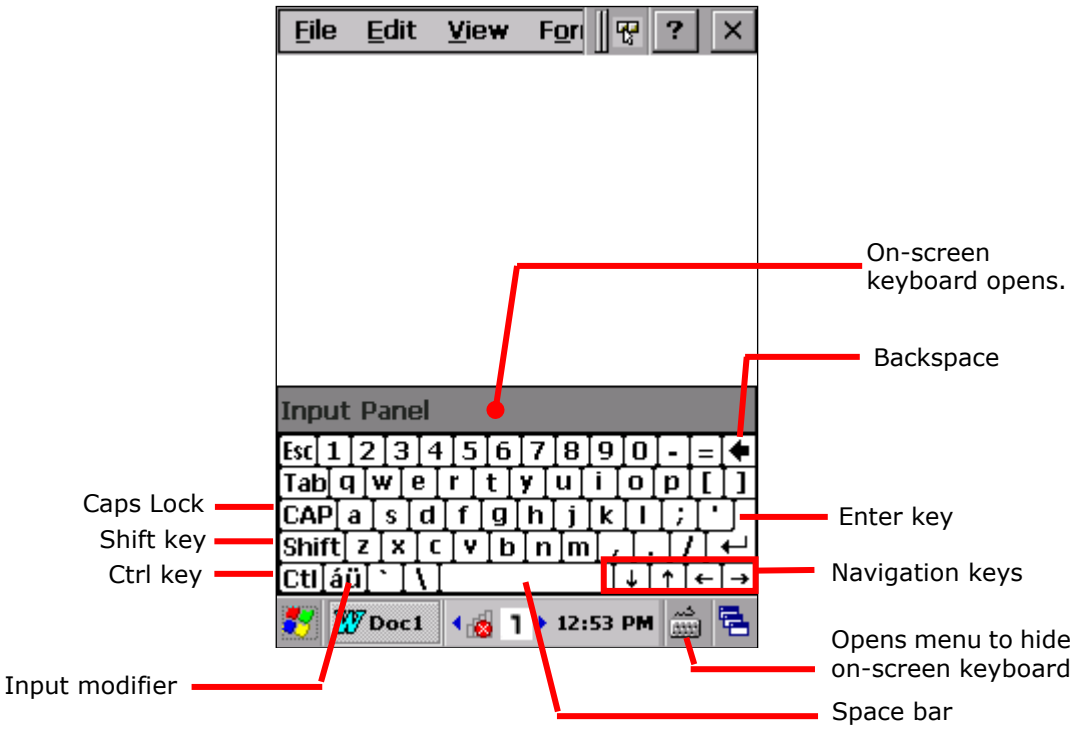
	▸ 53-key keypad enters uppercase letters A-Z. When Alpha key is pressed, 53-key keypad enters symbols	▸ On the 30-key keypad, press the period key [.] once more to return to Alpha mode, or press the Alpha key to return to default input mode ▸ On the 38-key keypad and 53-key keypad, press Shift key once more to return to default input mode
	▸ 30-key keypad enters lowercase letters a-z engraved in blue ▸ 38-key keypad enters lowercase letters a-z engraved in blue ▸ 53-key keypad enters symbols or key values engraved in blue	Press Alpha key once to enter this mode. ▸ On the 30-key and 38-key keypad, press the Alpha key once more to return to default input mode ▸ The 53-key keypad returns to default input mode once a key is pressed
	▸ 30-key keypad enters F5-F12 and the key values engraved in orange ▸ 38-key keypad enters F11-F14 and the key values engraved in orange	Press Function key once to enter this mode. ▸ When Function mode is on, Shift mode and Alpha Key mode are both retained Returns to default input mode once a key is pressed. ▸ If the Alpha key is pressed next, the system will enter Alpha input mode
CTRL	The function of the Alt key is delivered along with another key. For instance, press Ctrl and then press the letter a in order to deliver Ctrl+a.	Press Ctrl key once to trigger this mode. Returns to default input mode once a key is pressed.
ALT	The function of the Alt key is delivered along with another key. For instance, press Alt and then press the letter a in order to deliver Alt+a.	▸ On the 30-key and 38-key keypad, press the Function key first, then press the Ctrl key ▸ On the 53-key keypad, press the Shift key first, then press the Ctrl key Returns to default input mode once a key is pressed.

1.5.2. ON-SCREEN KEYBOARD

The OS provides users with an on-screen keyboard. The on-screen keyboard supports entering a series of diacritics for European languages by tapping a modifier key.

The on-screen keyboard auto-opens in some applications when a text input field is selected.

In case the on-screen keyboard doesn't open automatically, tap the keyboard icon on the taskbar and select **Keyboard** to open it. When opened, the on-screen keypad is ready to enter lowercase letters, numbers, and a few frequently used symbols.



MODIFIER KEYS

Although the touch screen is a resistive single-touch type, use of modifier keys, which normally involves hitting two keys, are still available on the on-screen keyboard.

On the on-screen keyboard there are four modifier keys, which are seated at the left edge. These keys work as follows:

1) Press a modifier key on on-screen keyboard.

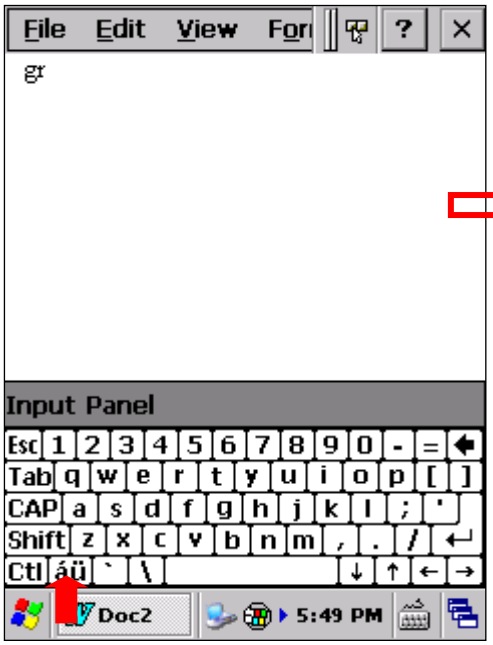
   The on-screen keyboard enters modifier state.

2) Press the second key.

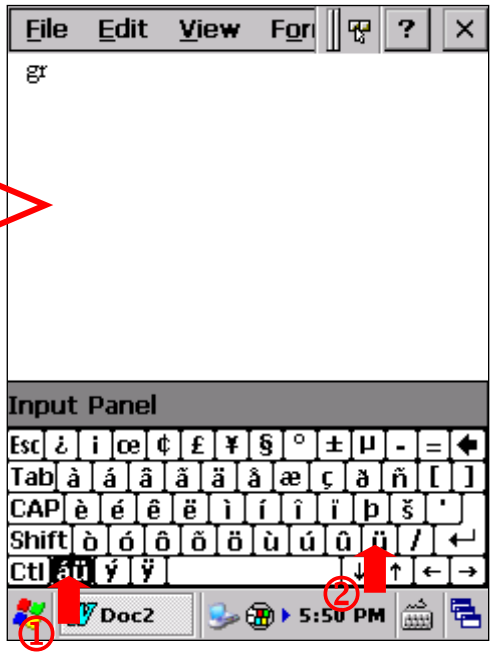
   The desired performance will be produced in the active application or on the screen open at the moment.

Modifier keys are explicated as following

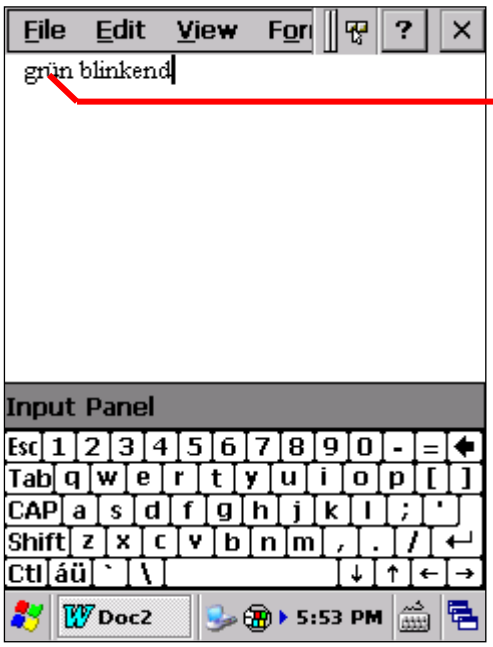
Key	Description
Ctrl key Ctl	Once tapped, it becomes color-inverted Ctl and causes a special action from OS or the active application when a character key is tapped. It quits once the said action is triggered or when it is tapped again. For example: Tap Ctl key and then tap key "A" to produce Ctrl+A function, which in Windows environment usually selects all content on the active screen. Once "A" is tapped, the on-screen keyboard quits Ctrl state.
Shift key Shift	Once tapped, it becomes color-inverted Shift and capitalizes the letter typed. It quits once a character key is tapped or it is tapped again. To enter all caps, use Caps Lock CAP.
Caps Lock CAP	Once tapped, it becomes color-inverted CAP and capitalizes all the alphabetic characters typed. It doesn't quit until it is tapped again. This key does not affect numbers, punctuation marks, or symbols.
Input modifier áü	Once tapped, it becomes color-inverted áü and presents a series of accented vowels such as ä, æ, ë, ï, ö, ú or letter variants such as ß and ç which are needed for European languages. It quits once a character key is tapped.



Tap áü key on on-screen keyboard.



áü key becomes color-inverted áü. Then tap a character key.

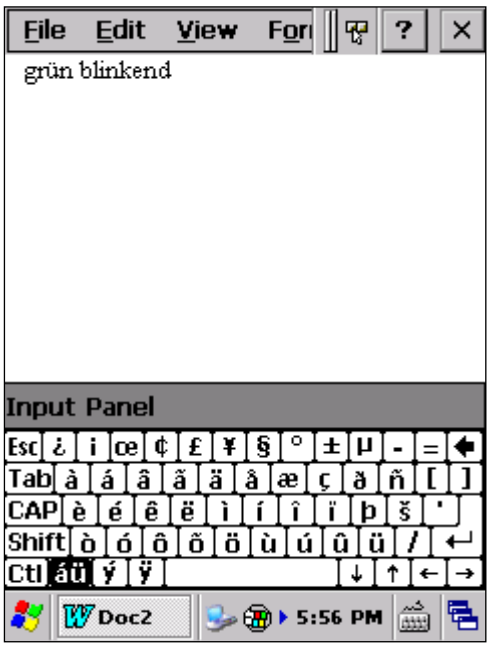


Letter variant "ü" is entered

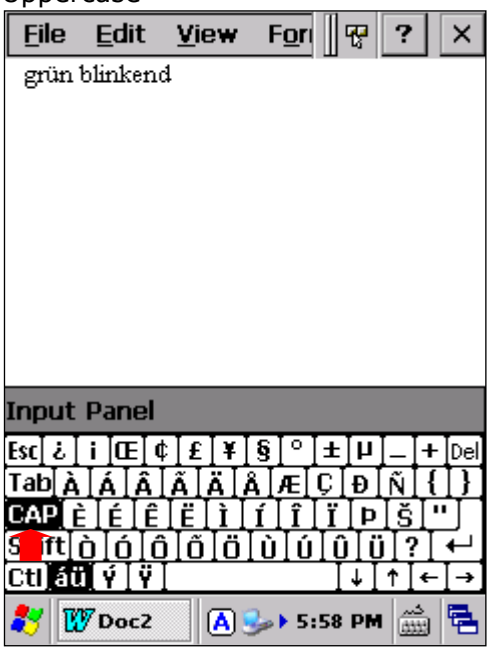
After the letter variant "ü" is entered, the on-screen keyboard restores to normal English alphanumeric layout.

Diacritical letters and letter variants are presented both in lowercase and uppercase.

Lowercase



Uppercase

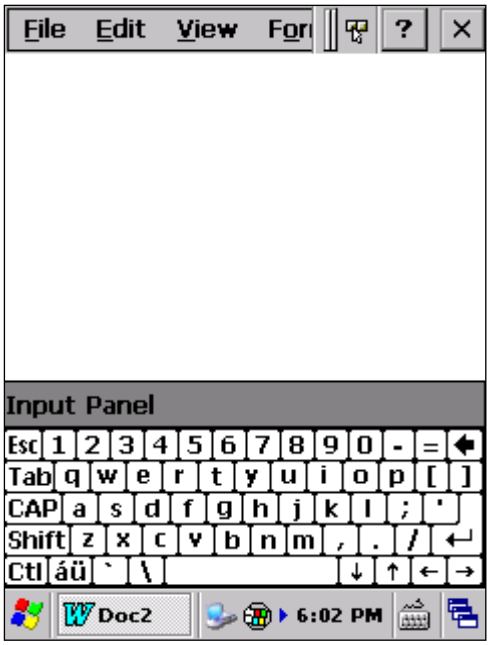


OTHER KEYS

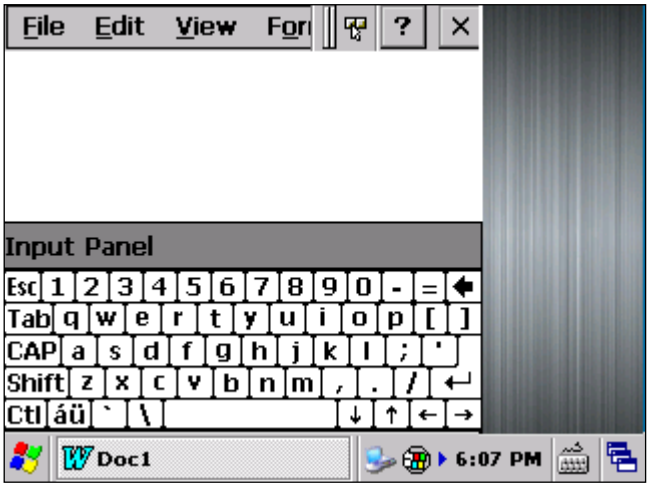
Key	Description
Tab key Tab	Navigates among the highlight items in some applications. For text input, it inserts Tab character, which means it moves caret to the next tab stop.
Backspace ←	Erases the characters to the left of caret.
Enter key ↵	Executes a command or confirms input. When text input, it inserts a break between paragraphs.
Navigation keys ↓ ↑ ← →	Move caret in an input field. In certain applications, they navigate vertically or horizontally among highlight items.
Spacebar	Inserts a blank space where caret is.

CHANGE KEYBOARD ORIENTATION

The mobile computer is built-in with a G-sensor and supports screen orientation, which is enabled by default. So when the mobile computer turns sideways or upright, the screen changes its orientation, and on-screen keyboard also readjusts itself to the new orientation.



Upright (Portrait Mode)



Sideways (Landscape Mode)

To disable automatic screen rotation, see Screen Orientation.

1.5.3. EDIT TEXT

On the mobile computer, cut, copy, and paste text within an application or across applications by the menu commands. Some applications don't support editing some or all of the text they display while others may offer their own way to edit text.

EDIT TEXT IN INPUT FIELDS

To edit text in a text input field:

1) Tap where you want to edit text.

   Caret moves to the desired place and manifests itself as a vertical bar that blinks to indicate where the typed or pasted text will be inserted.

2) Type, paste or delete text.

   To paste text, see Paste Text.

SELECT TEXT

When you see some text on a page you want to copy, select it first by tapping and dragging the caret so the desired text is highlighted.

CUT OR COPY TEXT

After a text is selected, tap the **Edit** menu on the title bar of the active window to open an option menu that includes **Copy**/**Cut** commands. Tap them to copy/cut the selected text.

PASTE TEXT

Within the OS, texts can be copied to and from certain applications.

To paste text:

1) Tap the text field where you want to paste the text.
2) Tap the **Edit** menu on the title bar of the active window and select the **Paste** command.

1.6. TOUCH CONTROL

The mobile computer's LCD is overlaid by a resistive touch panel and thus forms a resistive touch screen. Since a resistive touch screen locates the user's touch by the force applied on it, by operating with the stylus one can apply minimum force to trigger actions from the touch screen.

Touch control is one of the main ways to interact with the mobile computer. It provides the ability to manipulate icons, buttons, menu commands, the on-screen keyboard, or any on-screen items.

1.6.1. USE TOUCH SCREEN

The mobile computer comes with a stylus. Use it to touch-operate the mobile computer. Apply the gestures below to work on the touch screen:

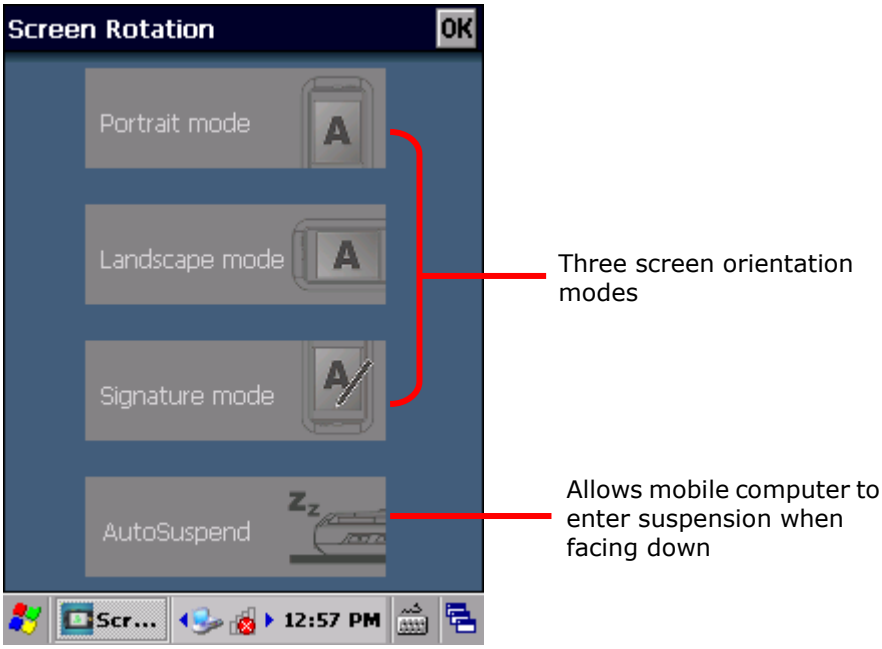
- **Tap** – Touch any item on the screen such as an application icon or a setting icon to work on it, or touch any key on the on-screen keyboard to type it.
- **Tap and hold** – Touch an item on the screen and do not release until an action occurs.
- **Drag** – Touch and hold an item for a moment and then, without release, move the item on-screen until you reach the target.
- **Double-tap** – Touch quickly twice on certain screens to zoom. For example, double-tap a section of a webpage in a web browser to zoom that section so it fits the width of the screen. Some applications such as map-info applications support picture zooming with double-tap.
- **Rotate screen** – On most screens, the screen rotates as the mobile computer changes its orientations between upright and sideways.

1.6.2. SCREEN ORIENTATION

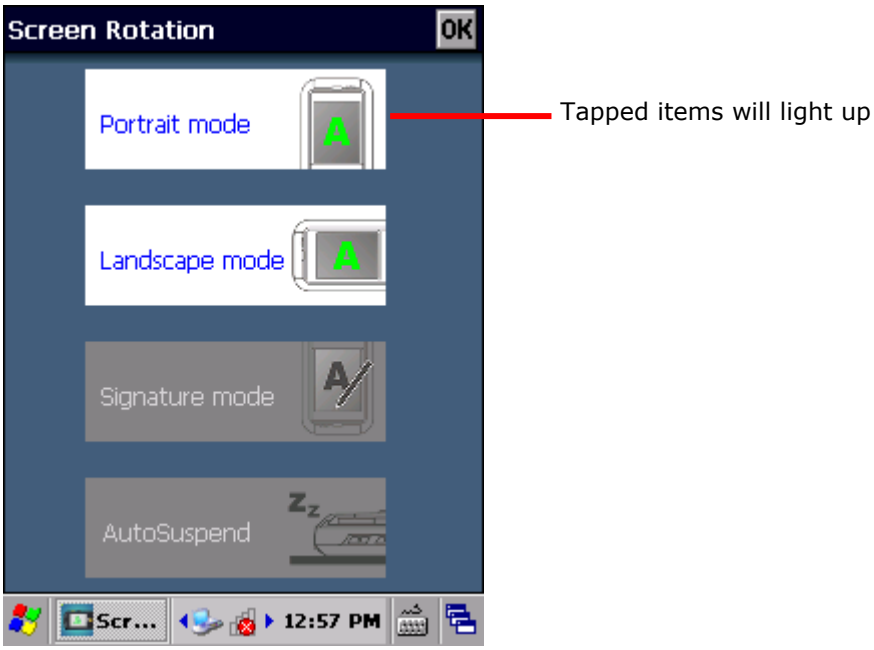
The mobile computer has a built-in G-sensor for screen orientation. In order to enable automatic screen orientation:

1) Tap **Start** | **Settings** | **Control Panel** | **Screen Rotation** .

Screen Rotation window opens with three orientation modes to select from and an option to suspend the mobile computer when the screen is facing down.



2) Tap the modes that you wish to enable. The tapped item will light up to indicate it is currently enabled.



3) Tap **OK** on the title bar to apply the changes.

The mobile computer will then automatically switch between the enabled modes according to its physical orientation. For instance, if **Portrait** and **Landscape** modes are enabled, the touch screen will switch between upright and sideways view according to the user's holding position. However, if only **Portrait** (upright) mode is enabled, the touch screen will stay in upright mode regardless of the mobile computer's orientation.

SIGNATURE MODE

The signature mode is for combined usage with the CipherLab application **Signature**. With this mode enabled, the screen will immediately rotate 180° when the front of the mobile computer is tilted outwards, which is convenient for signing by a second party.

Note: If no modes are selected in **Screen Rotation**, the mobile computer's touch screen will be fixed in portrait mode.

1.6.3. ADJUST BACKLIGHT

Screen backlight can be adjusted manually or automatically. Upon shipping, the mobile computer is set to automatic adjustment, which helps saves power. Alternatively you can set the backlight manually according to your preferences.

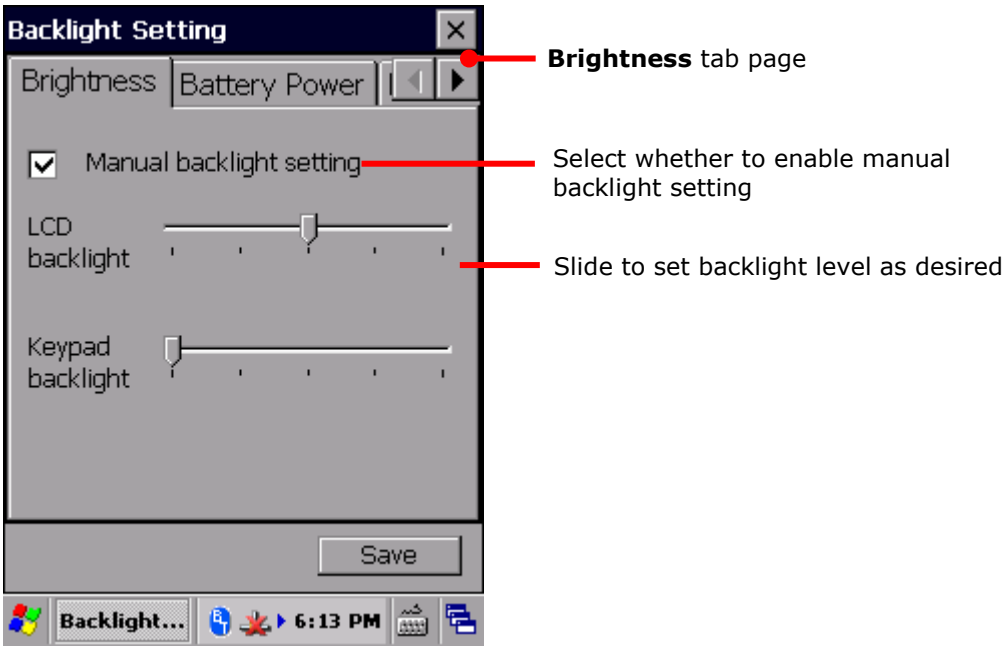
MANUAL BACKLIGHT ADJUSTMENT

To adjust screen backlight:

1) Tap **Start** | **Settings** | **Control Panel** | **Backlight Setting** .

   Brightness tab page opens with a checkbox to enable manual backlight setting, and a slider bar for setting screen backlight level.

   By default, **Manual backlight setting** is checked, and screen and keypad backlights will stay at the set level and will not adjust automatically. When **Manual backlight setting** is unchecked, the light sensor embedded on the front of the mobile computer will detect current lighting environments, and screen and keypad backlights will adjust automatically according to the backlight profiles set under the **Profile** tab page.



2) Tap **Save** in the lower right corner to apply the settings.

AUTOMATIC BACKLIGHT PROFILES

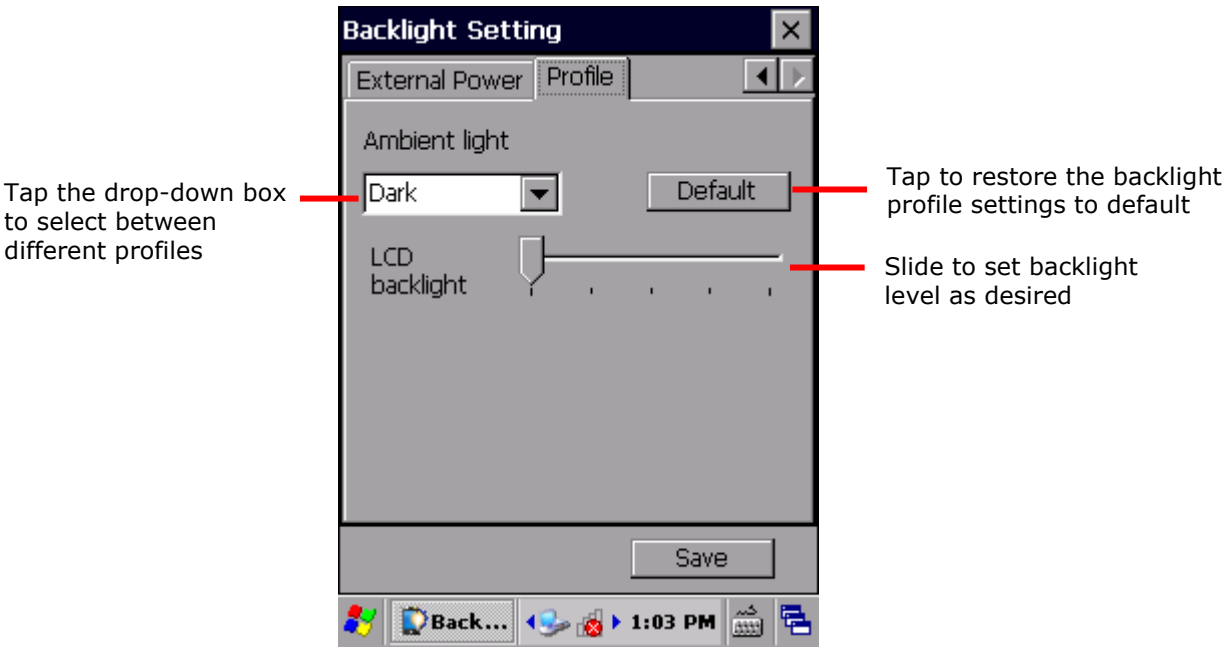
The mobile computer stores three backlight profiles to represent backlight level under different environments. These can be configured according to user's likings.

To set backlight profiles:

1) Tap **Start** | **Settings** | **Control Panel** | **Backlight Setting** .
2) Uncheck **Manual backlight setting** to enable profile function.
3) Switch to the **Profile** tab page.

   Three profiles, **Dark**, **Bright**, and **Brightest** are available in the drop-down box. Select the profile you would like to modify and use the slider bar below to set the backlight levels to your preferences. The screen backlight will change temporarily to show the effect.

   To restore profile settings to default, tap the **Default** button at the top right corner.



4) Tap **Save** in the lower right corner to apply the settings.

1.6.4. CALIBRATION

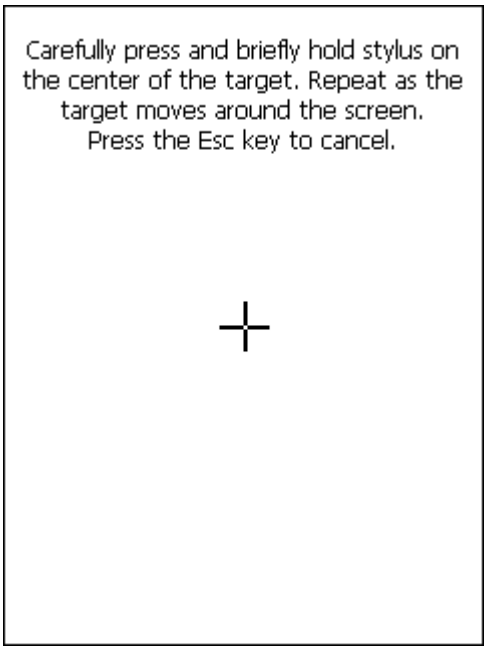
A resistive touch screen needs calibration to work accurately after serving for a period of time. Calibration aligns the coordinates of the touch panel and the LCD underneath to improve touch accuracy.

To calibrate the touch screen:

1) Tap **Start** | **Settings** | **Control Panel** | **Stylus** .

2) Tap **Calibration** tab page.

   Calibration tab page opens. Tap **Recalibrate** button to open the calibration screen.



3) Using the stylus, tap firmly at the center of the cross that appears on-screen. Five crosses will appear in sequence.

   Follow the on-screen instructions to save the new calibration settings or restore the old settings. Once completed, the screen returns to **Calibration** tab page.

1.7. MEMORY

The mobile computer packs the following memory units to retain data and instructions from users:

- Internal Storage: Random-access Memory (RAM) and Flash memory

  512 MB SDRAM for temporary storage and fast access of active applications. When the main battery pack is absent, SDRAM is fed by backup battery to retain data.

  4GB flash memory to store OS (Windows Embedded Compact 6.0), application files, settings, and other data used by applications.

- External Storage

  Insert a storage card to increase the mobile computer's storage capacity. Supported are MicroSDHC cards up to 32GB.

1.7.1. DATA LOSS CAUTION

When main battery is absent or used up, backup battery on the main board takes over to supply power to the mobile computer. A fully charged backup battery retains SDRAM data and suspends the mobile computer for 30 minutes.

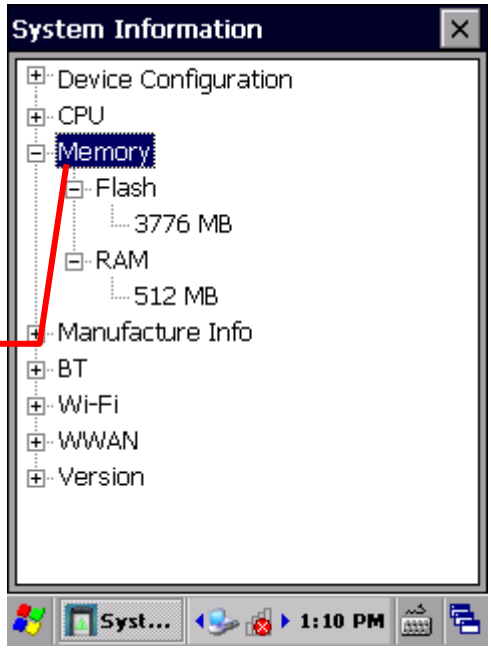
Note if you are leaving the mobile computer to sit for a couple of days, data loss will occur when both main and backup batteries drain out. Consider backing up data before putting away the mobile computer.

1.7.2. CHECK STORAGE

INTERNAL STORAGE

To check internal storage size:

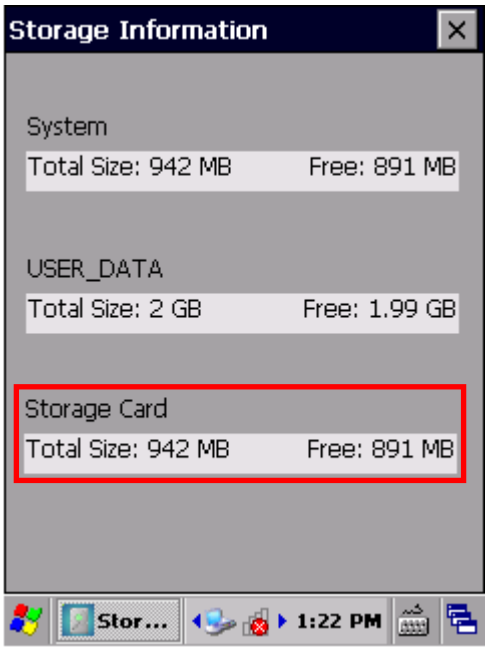
1) Tap **Start** | **Settings** | **Control Panel** | **System Information** . The application opens revealing information about the mobile computer's assemblage and hardware/firmware components, including device manufacturer, device ID, memory size, and firmware/software version. RAM and Flash size are also listed among this info.



Expand to view information on memory size

EXTERNAL STORAGE

Tap **Start** | **Settings** | **Control Panel** | **Storage Information** . The **Storage Card** label shows the available space on the storage card (if no storage card is installed on the mobile computer, the available size will be displayed as 0).



1.7.3. INSERT SD CARD

Day-to-day use of the mobile computer might cause the available internal storage to run short. Equip the mobile computer with an external memory unit to expand storage capacity.

Follow the steps below to install a SD card:

1) Power off the mobile computer.
2) Place the mobile computer face-down on a flat and soft surface.
3) Lift up the handstrap slightly to remove the main battery pack as described in Install/Remove Main Battery.
4) The SD card socket is equipped with a hinged cover. Push the hinged cover right and lift the cover up to open the card socket. Insert your SD card in the indicated direction .
5) Close the hinged cover and push the cover left to have it locked.
6) A plastic cover is provided for the SD card socket to prevent moisture accumulation. Press the plastic cover down to secure it on top of the SD card socket.
7) Replace the main battery pack.

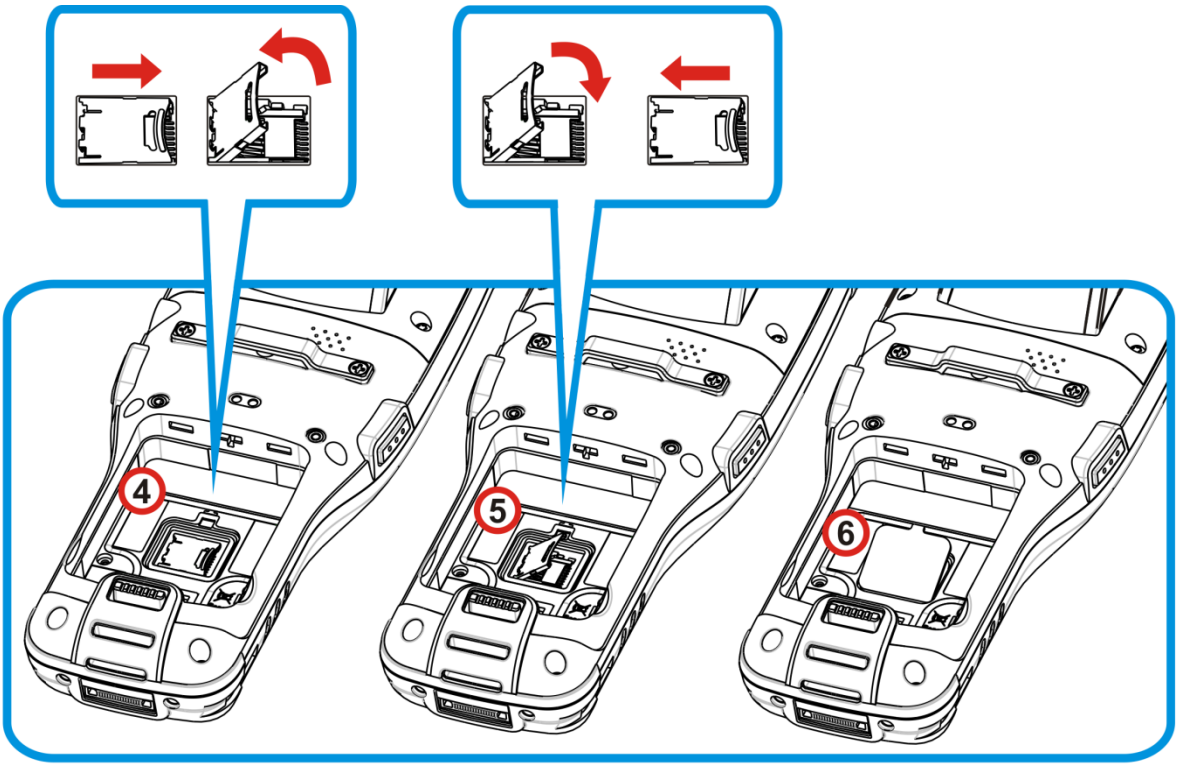


Figure 10: Inserting SD Card

1.8. DIRECT DATA COMMUNICATION

"Direct" data connection means "hardwired" data connection between the mobile computer and a Windows-based PC as opposed to wireless connection. Direct data connection relies on a RS-232 cable or a USB cable (sometimes plus an auxiliary cradle) between the two mentioned devices. Once the mobile computer and PC are "directly" connected with each other by a RS-232 or USB-cable, they can sync data with each other.

1.8.1. USE SNAP-ON CABLE

Direct data communication using a cable:

1) Connect the mobile computer to your PC with a Snap-on Charging and Communication Cable (either USB or RS-232 type).
2) To charge the mobile computer, connect an external power source to the Snap-on Cable.
3) On the mobile computer, tap **Start** | **Settings** | **Control Panel** | **USB Connection** .
4) To connect the mobile computer and PC via ActiveSync or Windows Mobile Device Center, select **ActiveSync Advanced Network Mode** or **ActiveSync Serial Mode**.

   To treat the mobile computer as an external storage device, choose **Mass Storage – SD Card**. Note that **Mass Storage** is only supported when as SD card is installed on the mobile computer.
5) Tap **OK** on the title bar to apply the settings.

   If one of the first two options is selected, ActiveSync will automatically detect connection between the two and prompt for data synchronization.

   See Syncing Tools and subsequent sections to know how to use ActiveSync.

Note: The 9700 mobile computer uses COM9 for serial transmission via RS-232.

Figure 11: Direct Data Communication Using Snap-on Cable

1.8.2. USE CRADLE

Direct cradle charging makes use of a Charging & Communication Cradle (hereinafter "cradle"). The cradle is one of the accessories you can opt for.

Prior to charging, install main battery as described in Install/Remove Main Battery. Then follow the steps below:

1) Seat the mobile computer into the cradle. Connect one end of the USB cable to the Cradle and the other end to the PC.
2) To charge the mobile computer, connect the cradle to an external power source using the power adapter.
3) Tap **Start** | **Settings** | **Control Panel** | **USB Connection** .
4) To connect to the PC via ActiveSync, choose **ActiveSync Advanced Network Mode ActiveSync Advanced Network Mode**.

   To treat the mobile computer as an external storage device, choose **Mass Storage – SD Card**. Note that **Mass Storage** is only supported when as SD card is installed on the mobile computer.
5) Tap **OK** on the title bar to apply the settings.

   If one of the first two options is selected, see Syncing Tools and subsequent sections to know how to use ActiveSync.

Note: The cradle supports USB Host Mode via a USB OTG cable.

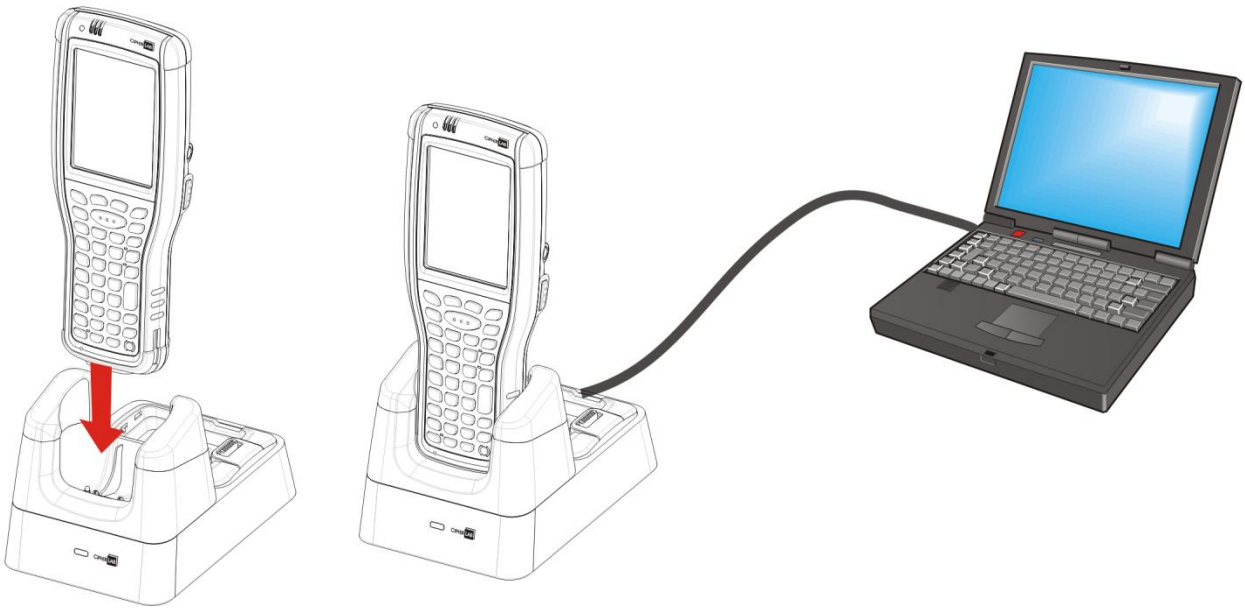


Figure 12: Direct Data Communication Using Cradle

1.8.3. SYNCING TOOLS

Microsoft's syncing tools enables users to update or back up the data on their mobile computers to desktop computers.

Two syncing tools are featured by Microsoft - ActiveSync and Windows Mobile Device Center (WMDC). Which tool to use depends on which OS is running on your PC. See the rule below:

OS	Syncing Program
Windows Vista or later	Windows Mobile Device Center
Windows XP SP3 and earlier	ActiveSync

ActiveSync and WMDC can be downloaded from Microsoft's website. Download and install the right one on your PC.

1.8.4. SYNC PARTNERSHIP

Once a direct connection is established between the mobile computer and your PC as described in Use Snap-on Cable, they are able to form the following ties:

Sync Partnership	Services
Synchronization Relationship	▸ Allows the mobile computer and PC to sync data with each other. ▸ Allows PC to add and remove programs to/from the mobile computer. ▸ Allows PC to browse files on the mobile computer. ▸ Allows PC to copy files to/from the mobile computer. ▸ Allows PC to back up the files on the mobile computer.
Temporary Relationship (Mobile computer works as a "guest" to PC)	▸ Allows PC to add and remove programs to/from the mobile computer. ▸ Allows PC to browse files on the mobile computer. ▸ Allows PC to copy files to/from the mobile computer. ▸ Allows PC to back up the files on the mobile computer.

Note that data stored on external storage (the SD card) cannot be synchronized.

See Syncing Actions to Take for details about the mentioned services.

1.8.5. 1ST USB SYNC

CONNECT WITH ACTIVESYNC

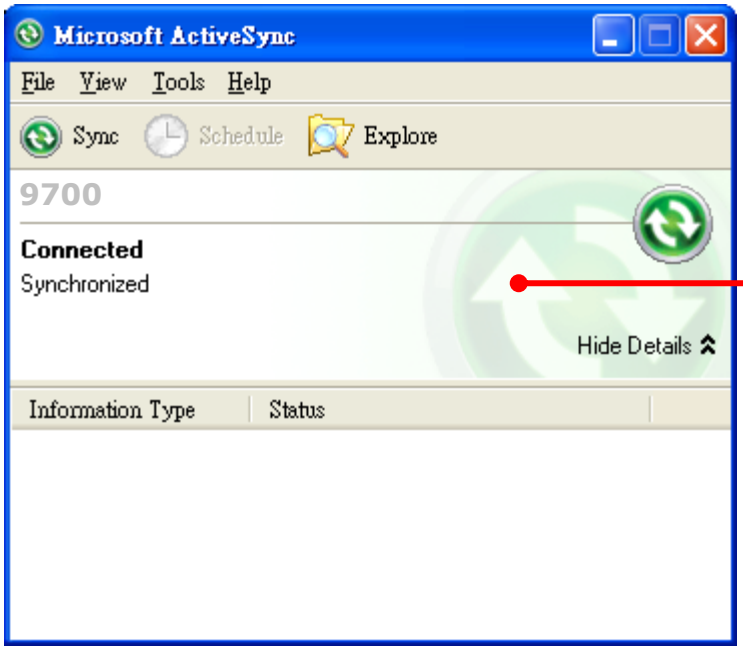
This section will guide you through USB syncing.

1) Download ActiveSync as described in Syncing Tools and install it on your PC.
2) Connect the mobile computer and your PC as described in Use Snap-on Cable.
3) On your PC, run the syncing program.

   ActiveSync will detect the mobile computer. **Sync Setup Wizard** launches and prompts to set up Sync Partnership between two computers.

4) Click **Next** for "Synchronization Relationship", or click **Cancel** for "Temporary Relationship" if you don't plan to connect to the PC on a regular basis.

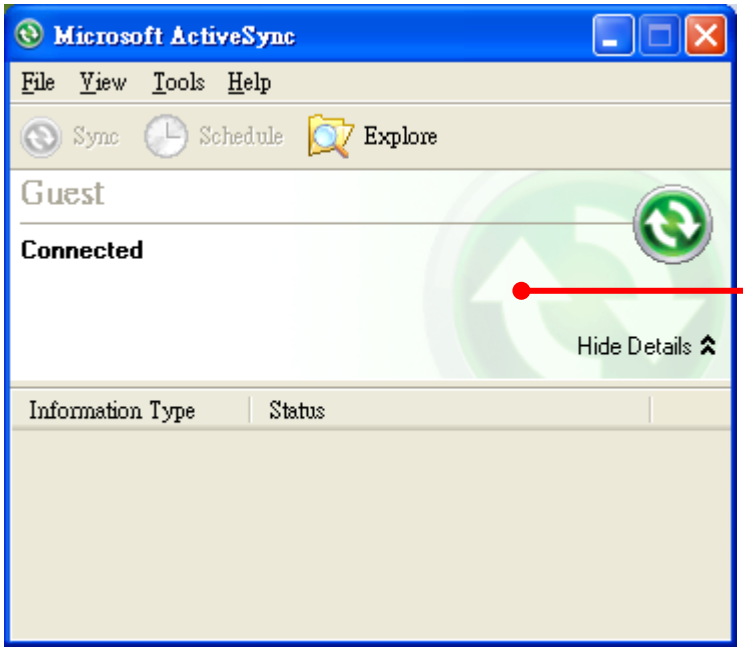
   If you have clicked **Next**, follow the on-screen instructions and select the data categories you would like to synchronize. Once confirmed, synchronization will begin shortly, and when the process is finished, ActiveSync window will show "Synchronized" to indicate that the data on the mobile computer and PC are identical.



A "Synchronization Relationship" is established between the mobile computer and the PC

OR

If you have pressed **Cancel**, Microsoft ActiveSync opens showing "Guest" and "Connected". The mobile computer and the PC are connected but the data is not synchronized.



A "Temporary Relationship" is established between the mobile computer and the PC

Note: If you encounter trouble during USB ActiveSync connection, tap **Start** | **Settings** | **Control Panel** | **USB Connection** and make sure "**ActiveSync Serial Mode"** is selected.

CONNECT WITH WMDC

1) Download WMDC as described in Syncing Tools and install it on your PC.
2) Connect the mobile computer and your PC as described in Use Snap-on Cable.
3) On your PC, run the syncing program.

   WMDC will detect the mobile computer, and the status will change from "Connecting" to "Connected".

4) Click **Set up your device** to synchronize the information on your device with the mobile computer, or click **Connect without setting up your device** if you don't plan to connect to the PC on a regular basis.
5) Click **Mobile Device Settings** | **Connection Settings** to adjust partnership settings.

1.8.6. DISCONNECT USB PARTNERSHIP

To disconnect USB partnership:

1) On your PC, open ActiveSync or WMDC by double-clicking its icon in the notification area.
2) In ActiveSync, click **File** | **Connection Settings** on the menu bar

   In WMDC, click Mobile Device Settings | Connection Settings.
3) Deselect **Allow USB connections**.
4) Click the **OK** button to apply the change and quit setting.

   The next time your mobile computer is plugged to your PC, the syncing tool no longer attempts to connect to it.

1.8.7. SYNCING ACTIONS TO TAKE

Once "Synchronization Relationship" or "Temporary Relationship" is established between two computers, a variety of actions can be taken to enhance resource sharing between them as previously mentioned in Sync Partnership.

"Synchronization Relationship" is more advanced than "Temporary Relationship" as it is capable of syncing Microsoft Office Outlook data. However "Temporary Relationship" provides satisfactory file sharing if you don't want to synchronize information.

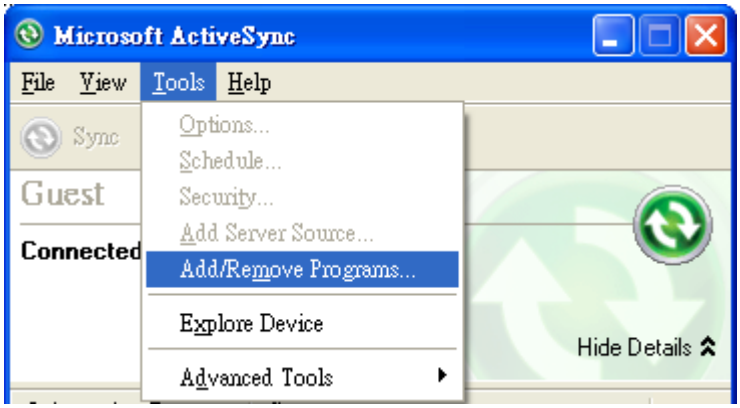
ADD/REMOVE PROGRAMS

The applications to be installed on the mobile computer need to be installed on your PC first. Download the application programs to your PC first and install them on your PC so they can be installed onto the mobile computer later.

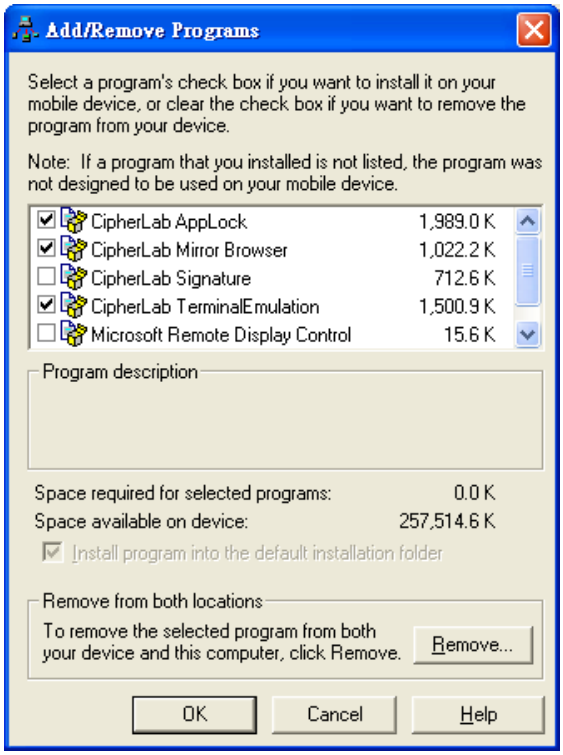
Many application programs are installed in different ways. Read their installation guides or documentation to understand how they are installed. If you are installing an application that cannot be installed on your PC first, try to install it right from the mobile computer. See Install Applications for more details.

To install an application on the mobile computer:

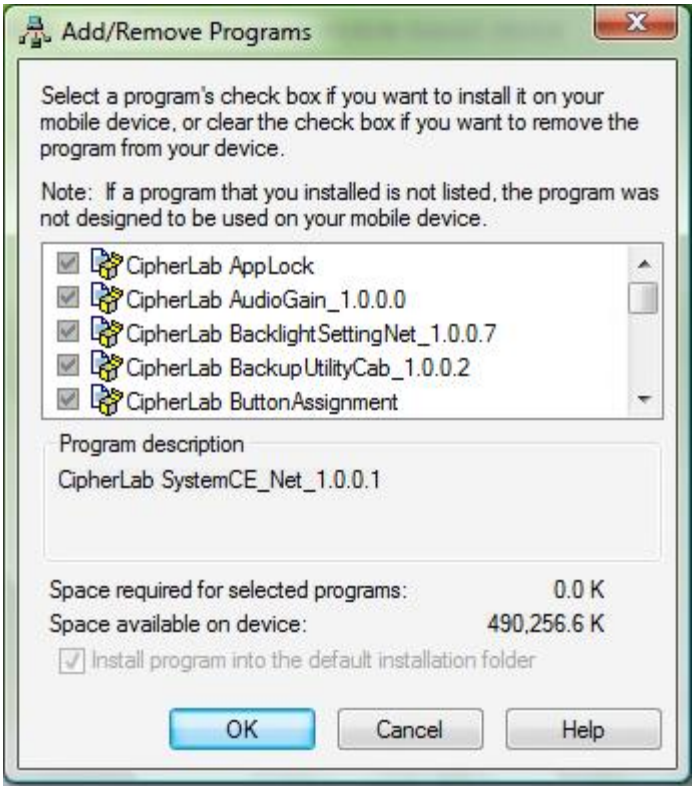
1) Connect two computers as described in Use Snap-on Cable.
2) Sync two computers as described in 1st USB Sync.
3) In ActiveSync, select **Tools** | **Add/Remove Programs** from the menu bar.



ActiveSync starts to search for the application programs installed on your PC and opens its [**Add/Remove Programs**] dialog which lists those found. Each entry comes with a check box on the left. An unchecked box means the program is yet to install to the mobile computer while a checked one means an installed program.


Add/Remove Programs
Select a program's check box if you want to install it on your mobile device, or clear the check box if you want to remove the program from your device.
Note: If a program that you installed is not listed, the program was not designed to be used on your mobile device.
CipherLab AppLock 1,989.0 K
CipherLab Mirror Browser 1,022.2 K
CipherLab Signature 712.6 K
CipherLab TerminalEmulation 1,500.9 K
Microsoft Remote Display Control 15.6 K
Program description
Space required for selected programs: 0.0 K
Space available on device: 257,514.6 K
Install program into the default installation folder
Remove from both locations
To remove the selected program from both your device and this computer, click Remove.
Remove...
OK
Cancel
Help

In WMDC, click **Programs and Services** | **Add/Remove programs**.



4) Select the application program(s) to install to the mobile computer, and deselect the application program(s) to uninstall from the mobile computer.

5) Press the **OK** button.

   The syncing tool proceeds to install programs and/or remove programs to/from the mobile computer.

6) Follow the on-screen instructions on both your PC and the mobile computer to proceed.

Noteworthy facts:

- Normally the application program(s) downloaded from external resources are installed to the mobile computer's directory at **My Device\Program Files**. However sometimes there are exceptions and the actual situation depends on the application.
- You can also uninstall applications directly on the mobile computer rather than on the PC. See Uninstall Applications for more details.
- If you would like to uninstall a program that isn't listed in the [**Add/Remove Programs**] dialog, browse to it on the mobile computer by tapping **My Device** on the desktop. Tap and hold it, and select **Delete** from the context menu that pops up.

ADD APPLICATION SHORTCUTS TO START MENU

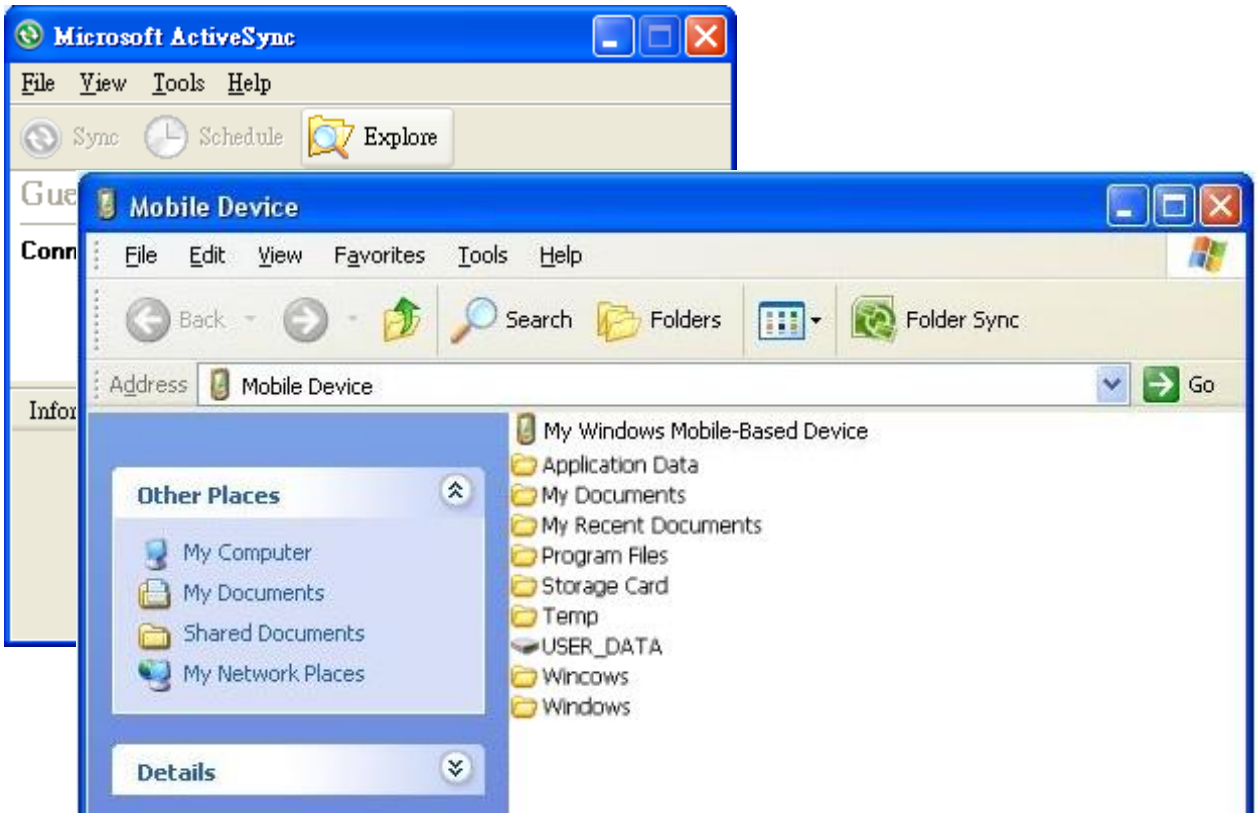
To add an application shortcut to Start menu:

1) Connect two computers as described in Use Snap-on Cable.

2) Sync two computers as described in 1st USB Sync.

3) In ActiveSync, select **Tools** | **Explore Device** from the menu bar, or press **Explore** on the toolbar.

   The mobile computer's internal storage root directory "**Mobile Device**" opens presenting a few folders (and files).



   In WMDC, click **File Management** | **Browse the contents of your device**.

4) Double-click **My Windows Mobile-Based Device** .

5) Double-click **Program Files**.

   Program Files folder opens. This is where the downloaded applications are normally installed on the mobile computer's local storage.

   In the folder, each sub-folder stores an application.

6) Open the folder of the application to create shortcut for.

7) Find the executable file of that application. Right-click on it and select **Copy** from the context menu that comes up.

8) Browse to **My Windows Mobile-Based Device\Windows\Start Menu\Programs**.

9) Right-click any vacant spot in the folder and select **Paste shortcut** from the context menu that comes up.

   A shortcut to the application is added to Start screen.

Note: You can also copy & paste by the sequence **Create Shortcut** -> **Cut** -> **Paste**.

You can also add an application shortcut to Start menu directly on the mobile computer. See Add Items to Start Menu for more details.

REMOVE ITEMS FROM START MENU

To remove an added shortcut from Start menu, delete the shortcut from **My Device\Windows\Programs** folder.

You can also remove an added shortcut from Start menu directly on the mobile computer. See Add Items to Start Menu for more details.

ADD ITEM SHORTCUTS TO DESKTOP

To add a shortcut of an application or file to the mobile computer's desktop:

1) Connect two computers as described in Use Snap-on Cable.
2) Sync two computers as described in 1st USB Sync
3) In ActiveSync, select **Tools** | **Explore Pocket PC** from the menu bar, or press **Explore** on the toolbar.

   In WMDC, click **File Management** | **Browse the contents of yo**ur device.

   The mobile computer's internal storage root directory "**My Device**" opens presenting a few folders.
4) Browse to the file to create shortcut for.
5) Right-click on the file and select **Copy** from the context menu that comes up.
6) Browse to **My Device\Windows\Desktop**.
7) Right-click any vacant spot in the folder and select **Paste shortcut** from the pop-up menu that comes up.

   A shortcut to the file is added to the mobile computer's desktop.

Note: You can also copy & paste by the sequence **Create Shortcut** -> **Cut** -> **Paste**.

You can also add a file shortcut to the desktop directly on the mobile computer. See Add Items to Start Menu or more details.

CREATE NEW FOLDERS

To create a new folder on the mobile computer:

1) Connect two computers as described in Use Snap-on Cable.
2) Sync two computers as described in 1st USB Sync.
3) In ActiveSync, select **Tools** | **Explore Pocket PC** from the menu bar, or press **Explore** on the toolbar.

   In WMDC, click **File Management** | **Browse the contents of your device**.
4) Browse where you want to create a folder.
5) Right-click any vacant spot there.

   Context menu opens
6) Select **New Folder**.

   A new folder is created.

BACKUP DATA

To best protect your work, back up the data on your mobile computer regularly. You may choose to manually back up using ActiveSync to copy & paste the files to your PC.

USB PASS-THROUGH NETWORKING

ActiveSync supports "Pass-Through Networking" whereby the mobile computer networks using your PC's data connection.

For security, disable network bridging on the PC, especially the bridging to a Remote NDIS adapter. For more information on network bridging, see Windows Help on the PC.

After sync partnership is set up between the mobile computer and your PC:

1) In ActiveSync, select **File** | **Connection Settings** from the menu bar.

   In WMDC, click **Mobile Device Settings** | **Connection Settings**.

2) For **This computer is connected to**, select a network which your PC should connect to when passing through the syncing tool. Options are:

Option	Description
Automatic	Auto-detects proxy ▸ This option detects if a proxy should be used when passing connections through the PC. If yes, configure the proxy on the mobile computer. ▸ This option best suits connecting to a PC (laptop) that may be used at home (with no proxy), as well as to a corporate network (with proxy).
Work Network	Always uses proxy ▸ This option assumes a proxy should be used when passing connections through the PC, and uses whatever proxy is already configured on the mobile computer. ▸ This option best suits connecting to a PC that is always on corporate network.
The Internet	Never uses proxy ▸ This option assumes no proxy is necessary when passing connections through the PC. ▸ This option best suits connecting to a PC connected directly to the Internet through ISP (at home)

3) In ActiveSync, select **Open ActiveSync when my device connects**.

4) Press **OK** button to apply the change and quit settings.

1.9. VOLUME AND AUDIO

1.9.1. AUDIO PLAYBACK

Use a headset for audio playback and hands-free telephone communication.

The headset jack (3.5 mm DIA) is built up on one side of the mobile computer and sealed with a hinged rubber. Open the rubber to reveal the headset jack. Plug the connector of your headset to the jack.

Bluetooth headsets are also supported to deliver better mobility. See Use Bluetooth.

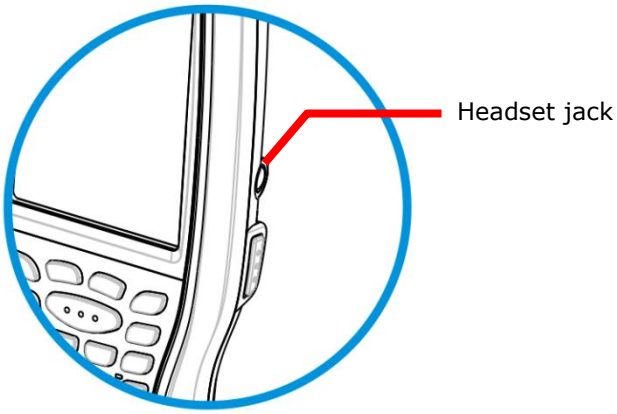


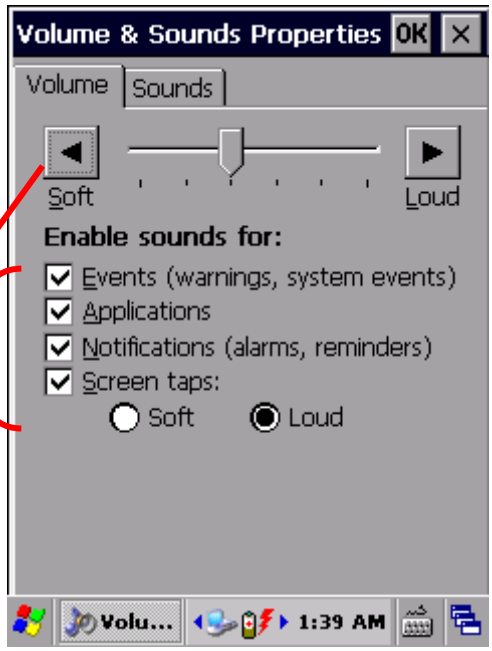
Figure 13: Audio Playback

1.9.2. VOLUME CONTROL

The mobile computer features an on-screen volume gauge to control the system volume, including event sounds, notifications and media playback.

1) Tap **Start** | **Settings** | **Control Panel** | **Volume & Sounds**.

   Volume & Sounds Properties window opens showing a slider to adjust system volume and a few checkboxes to select the occasions to play system sounds for.



2) Adjust the settings to meet your needs.

   When finished, tap **OK** on the title bar to apply the settings.

Chapter 2

DATA CAPTURE

Although highly converged, the mobile computer is also a dedicated barcode reader. The mobile computer is shipped with either a (laser) 1D reader or 2D imager. A number of symbologies are supported and data about them can be decoded and collected.

After data has been collected, the mobile computer can output it locally to applications installed on the mobile computer or to the host computer so data storage, advanced data analysis and more special services can be performed.

This chapter describes how to collect data with reader modules.

IN THIS CHAPTER

2.1 Configure Reader 61
2.2 Read Printed Barcodes 80

2.1. CONFIGURE READER

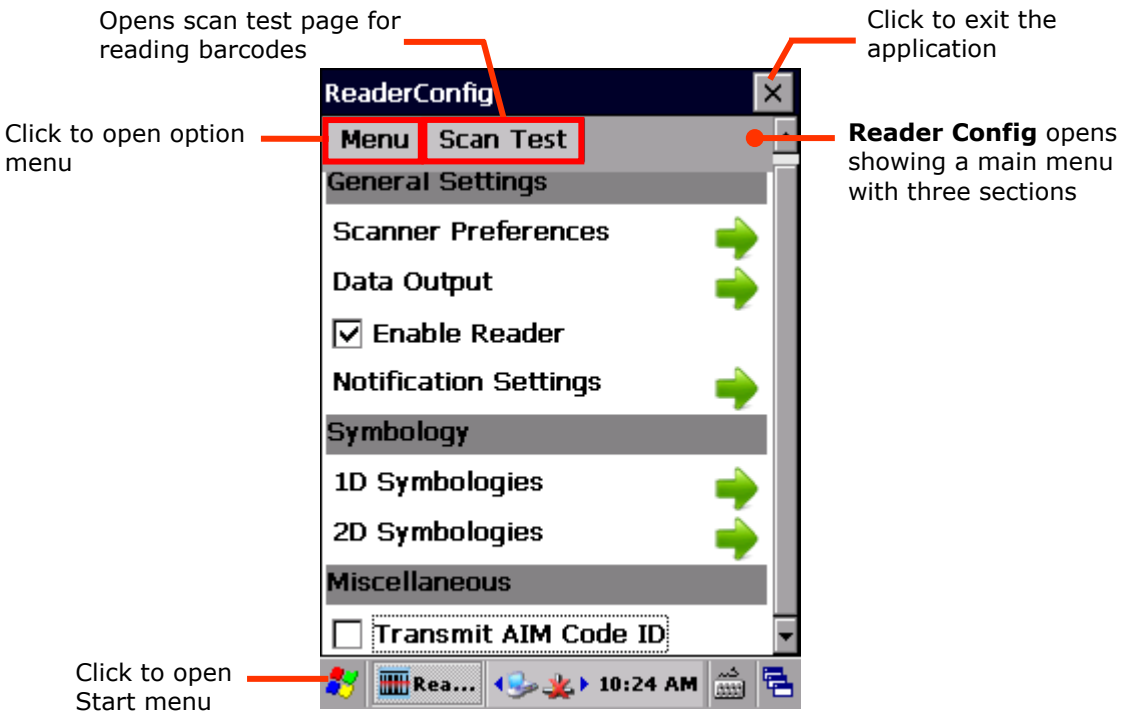
The mobile computer is capable of reading printed barcodes. The reader module can be a either a (laser) 1D reader or a 2D imager. The mobile computer is installed with a CipherLab utility **Reader Config** to configure the scan engine built inside. Use it to create a profile of settings that best suits your needs.

2.1.1. LAUNCH READER CONFIG

To launch Reader Config:

1) Tap **Start** | **Settings** | **Control Panel** | **Reader Configuration** .

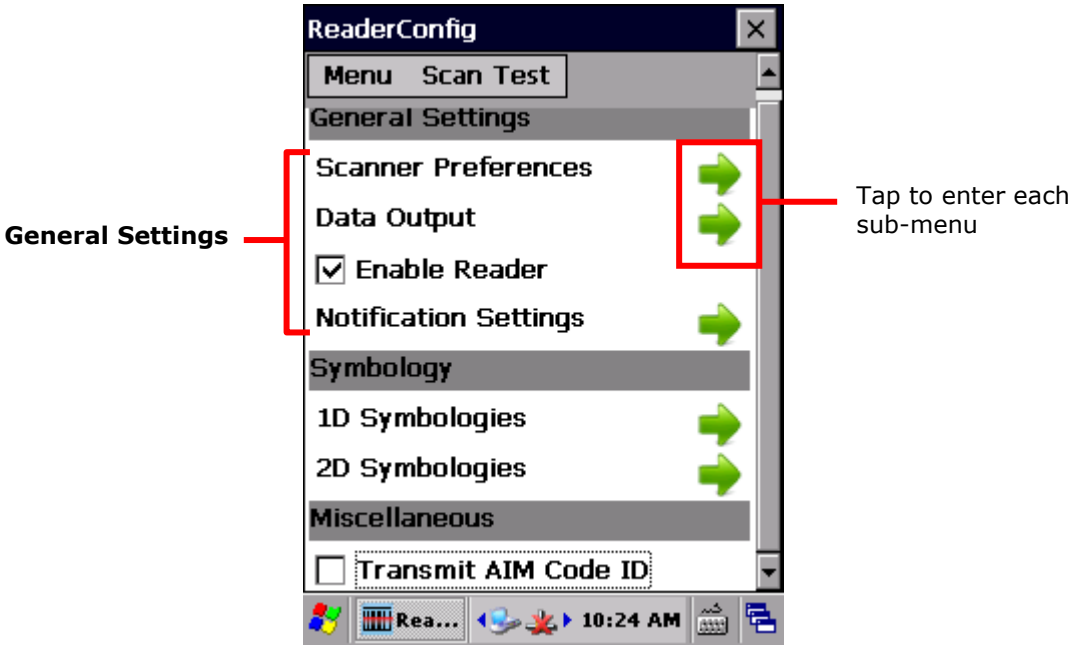
   Reader Config launches in context with the reader module(s) on board the mobile computer. On the main settings page are three sections: **General Settings**, **Symbology** and **Miscellaneous**.



The following will guide to settings provided in each of the three sections.

2.1.2. GENERAL SETTINGS

General Settings is where all reader settings are accessed from except for symbologies settings. Tap the green arrow next to each item to enter the sub-menu for that given item.



The functions under **General Settings** include:

- Scanner Preferences
- Data Output
- Enable Reader - enabled by default
- Notification Settings

SCANNER PREFERENCES

Scanner Preferences page can be entered by tapping the given item on the **Reader Config** main settings page. The options provided in this page differ according to the type of scan engine (either 1D or 2D) built within the mobile computer.

To open **Scanner Preferences** page:

1) Open **Reader Config** as described in Launch Reader Config.

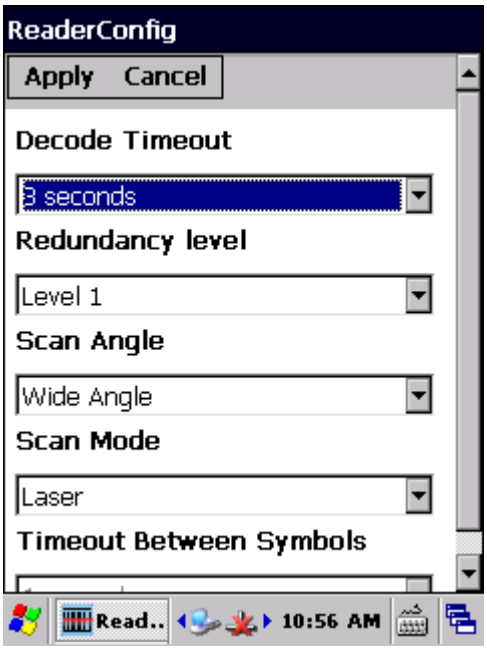
   Reader Config settings page opens.

2) Tap the arrow next to **Scanner Preferences**.

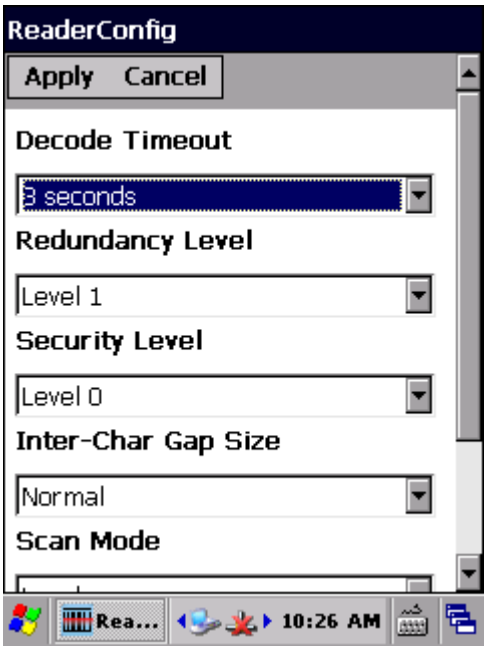
Scanner Preferences settings page opens.

Featured settings are different for 1D (laser) reader, 2D imager and near/far 2D imager:

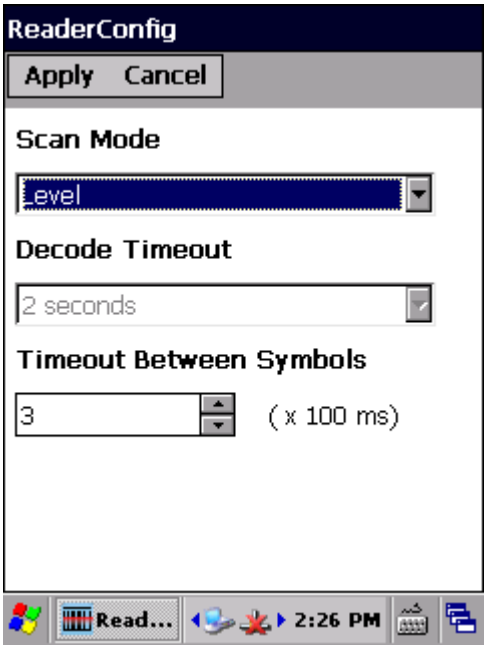
1D (laser) reader settings



2D imager settings



Near/far 2D imager settings



1D (LASER) READER SETTINGS

Setting	Description	Default
Decode Timeout	Sets the maximum time for the decoding process during a scan. Configurable between 1 sec to 9 sec.	3 sec
Redundancy Level	Sets how many successful readings should be done before linear barcodes such as Codabar, MSI, and Interleaved 2 of 5 can be decoded. Levels 1 to 4 available. The readings needed for each level are as follows: **Level** / **Description** Level 1: The following barcodes must be successfully read twice before being decoded: Codabar, MSI, Industrial 25 (Discrete 25), Interleaved 25. Level 2: All barcodes must be successfully read twice before being decoded. Level 3: All barcodes must be successfully read twice before being decoded, except for the following which must be read three times: MSI, Industrial 25 (Discrete 25), Interleaved 25. Level 4: All barcodes must be successfully read three times before being decoded.	Level 1
Scan Angle	Sets the scan angle for laser scan engine. ▸ **Wide Angle**: 47° (Extended range laser reader is fixed at Wide Angle) ▸ **Narrow Angle**: 35°	Narrow Angle
Scan Mode	Sets the reader's scanning behavior. Options available are **Continuous** and **Level** modes. ▸ **Continuous**: Used for continuous reading of barcodes. The scan engine remains on when this mode is activated. ▸ **Level**: Reads a barcode when the trigger is pressed.	Level
Timeout Between Symbols	Sets the time for the barcode reader to resurrect its ability to once more decode the barcode it just decoded. ▸ Only applied in **Continuous** mode	1 sec

Note: On the 1D laser reader, the light beam will be sent out when the trigger is pressed down, and will stop when the trigger is released, or the decode timeout has passed.

2D IMAGER SETTINGS

<table>
<tr><th>Setting</th><th>Description</th><th>Default</th></tr>
<tr><td>Decode Timeout</td><td>Sets the maximum time for the decoding process during a scan. Configurable between 1 sec to 9 sec.</td><td>3 sec.</td></tr>
<tr><td>Redundancy Level</td><td>Sets how many successful readings should be done before linear barcodes such as Codabar, MSI, and Interleaved 2 of 5 can be decoded. Levels 1 to 4 available.</td><td>Level 1</td></tr>
<tr><td>Security Level</td><td>Sets the security level to ensure decoding accuracy considering the printed quality of barcodes such as Code 128, Code 93, and UPC/EAN. The higher the level is, the more security is ensured. Options are:
<table>
<tr><th>Level</th><th>Description</th></tr>
<tr><td>0</td><td>With this default, the scan engine is aggressive enough to decode most “in-spec” barcodes.</td></tr>
<tr><td>1</td><td>Select this level if misdecodes have occurred. It fixes most misdecodes.</td></tr>
<tr><td>2</td><td>Select this level if Level 1 should fail to eliminate misdecodes.</td></tr>
<tr><td>3</td><td>Select this level if Security Level 2 should fail to prevent misdecodes. However, as this level actually impairs the decoding ability of the decoder, a safer solution would be to improve the quality of the bar codes to read.</td></tr>
</table></td><td>Level 0</td></tr>
<tr><td>Inter-Char Gap Size</td><td>Sets the intercharacter gap size for Code 39 and Codabar. Switch between Normal and Large.</td><td>Normal</td></tr>
<tr><td>Scan Mode</td><td>Sets the reader’s scanning behavior. Options available are Level and Presentation Mode.

Level: The decoding process is activated by a trigger event, and continues until the trigger event ends, a valid decode happens or decode session time-out is reached.
Presentation Mode: The imager engine attempts to decode a barcode when an object appears in its field of view. To enter this mode, select “Presentation Mode” and tap Apply. Once activated, the imager will stay on, and will only be deactivated if one of the following occurs: the trigger is pressed, or the time interval specified in Decode Timeout passes without any new object coming into its field of view.
</td><td>Level</td></tr>
<tr><td>Decoding Illumination</td><td>Enables an LED light beam to aid barcode reading.</td><td>Selected (Enabled)</td></tr>
<tr><td>Decode Aiming Pattern</td><td>Projects a crosshair at the center of the laser light beam to facilitate barcode reading.</td><td>Selected (Enabled)</td></tr>
<tr><td>Picklist Mode</td><td>When selected, only barcodes aligned at the crosshair of the laser light beam will be decoded.</td><td>Deselected (Disabled)</td></tr>
<tr><td>Display Mode</td><td>Enable improved performance for reading barcodes on electronic displays and mobile phones.</td><td>Deselected (Disabled)</td></tr>
</table>

Note: On the 2D Imager, the light beam will be sent out when the trigger is pressed down, and will stop when the trigger is released, or the decode timeout has passed.

NEAR/FAR 2D IMAGER SETTINGS

Setting	Description	Default
Scan Mode	Sets the imager engine's scanning behavior. Options available are **Level** and **Presentation Mode**. ▸ Level: Decoding process is activated by a trigger event and continues until the trigger event ends, a valid decode happens or decode session time-out is reached. ▸ Presentation Mode: The imager engine attempts to decode a barcode when an object appears in its field of view. To enter this mode, select Presentation Mode and tap **Apply**. Once activated, the imager will stay on, and will only be deactivated if one of the following occurs: the trigger is pressed, or the time interval specified in **Decode Timeout** passes without any new object coming into its field of view.	Level
Decode Timeout	Sets the maximum time for the decoding process during a scan. Configurable between 1 sec to 9 sec. ▸ Only applied in **Presentation Mode**	2 sec.
Timeout Between Symbols	Sets the time for the imager engine to resurrect its ability to once more decode a barcode it just decoded. Configurable between 0 to 2500 ms in increments of 100 ms. ▸ This prevents the imager from consecutively decoding the same barcode more than once. When a timeout period is set, the imager will wait for the set time interval before allowing a second decoding of the just decoded barcode. The timeout begins when the barcode is removed from the imager's field of view.	300 ms

Note: On the near/far 2D Imager, the light beam will be sent out when the trigger is pressed down, and will stop when the trigger is released.

DATA OUTPUT

Data Output allows users to set the way to output decoded data.

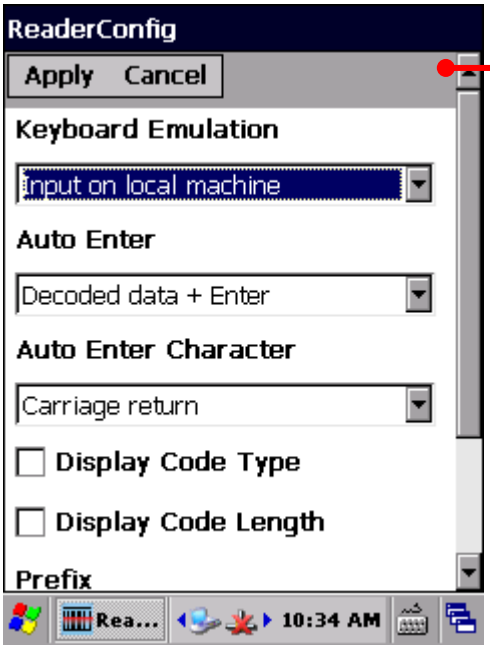
To open **Data Output** settings page:

1) Open **Reader Config** as described in Launch Reader Config.

   Reader Config main menu opens.

2) Tap the arrow next to **Data Output**.

   Data Output settings page opens.



[Data Output] settings

WHERE TO OUTPUT

Keyboard Emulation setting controls where the decoded data is to be output.

Setting	Descriptions	Default
Keyboard Emulation	Treats decoded data as typed text and outputs it to the active application locally on the mobile computer or remotely on a computer. Options are: ▸ Disable – Disables **Keyboard emulation** whereby decoded data won't be output. ▸ Input on local machine – Passes decoded data locally to the active application on the mobile computer. Simply run an application such as Wordpad to collect decoded data. ▸ Input on remote PC – Passes decoded data to the active application on the remote computer connected. Set up a remote PC connection to collect data. (Note this option is unable to pass double-byte characters such as Big-5 or Unicode characters.)	Input on local machine

HOW TO OUTPUT

After the output destination is set, configure how to output decoded data, i.e. the "format" to present decoded data.

Setting	Description	Default
Auto Enter	Adds an ENTER character before or after each string of decoded data. The ENTER character can be defined in the "Auto Enter character" field below. This function saves the trouble of pressing a confirmation key to accept each string of decoded data. Options are: ▸ Disable ▸ Decoded data + Enter char ▸ Enter char + Decoded data	Decoded data + Enter char
Auto Enter character	Adds a key code before or after the decoded data. If [Auto Enter] is enabled, select the ENTER character to send. Options are: ▸ None ▸ Carriage Return ▸ Tab ▸ Space ▸ Comma ▸ Semicolon	Carriage Return
Display Code Type	Prefixes the output data with code type information.	Deselected (Disabled)
Show Code Length	Suffixes the output data with code length information.	Deselected (Disabled)
Prefix	Affixes 0 to 10 characters to the left of the output data. Tap the keyboard icon next to the input field to open a character table for entering the prefix. ▸ Prefixes containing invisible characters are supported.	--
Suffix	Affixes 0 to 10 characters to the right of the output data. Tap the keyboard icon next to the input field to open a character table for entering the suffix. ▸ Suffixes containing invisible characters are supported.	--
Field Delimiter	Sets the delimiter to separate the output barcode data to the following pieces: code type, decoded barcode data, and code length (if applicable). Options are: ▸ Comma ▸ Semicolon ▸ Full stop	Comma

ENABLE READER

Features a checkbox to enable or disable reader scanning ability. When enabled, light beam will be sent out each time the trigger (scan key) is pressed.

NOTIFICATION SETTINGS

Notification Settings enables audible, visible and tactile feedback for scanning good read, which helps notify the user of a successful decoding.

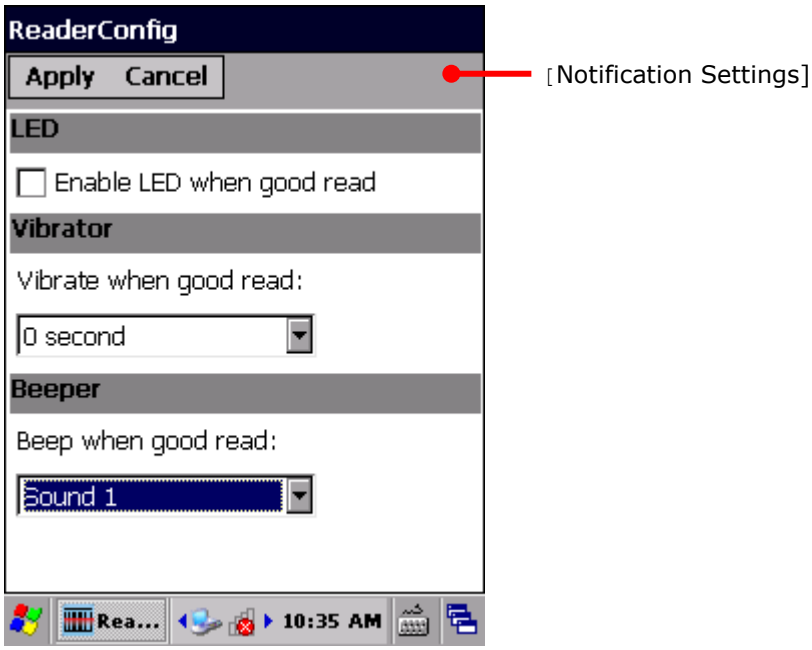
To open **Notification Settings** page:

1) Open **Reader Config** as described in Launch Reader Config.

   Reader Config main menu opens.

2) Tap the arrow next to **Notification Settings**.

   Notification Settings page opens.

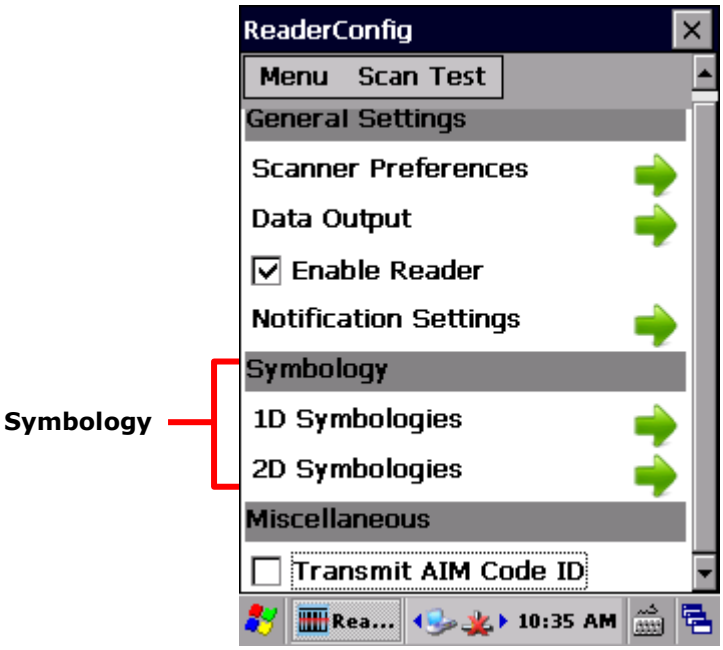


Setting		Description	Default
LED	Enable LED when good read	Selects to enable/disable LED light (left) for scanning good read. See Status LED for details.	Deselected (Disabled)
Vibrator	Vibrate when good read	Enables/disables tactile feedback (vibration) for good read and sets the duration to vibrate.	0 second (Disabled)
Beeper	Beep when good read	Sets the beeper sound for scanning good read. Users can choose to mute the beeper sound, or configure the beeper between sounds 1 to 9.	Sound 1

2.1.3. SYMBOLOGY

Symbology section sets the symbologies to read, and also enables/disables some feature(s) for a symbology to read, such as:

- Customize and transmit start/stop characters
- Verify/transmit check digits
- Enable/disable addon digits
- Convert to another symbology
- Transmit symbology ID



To open **Symbology** settings page:

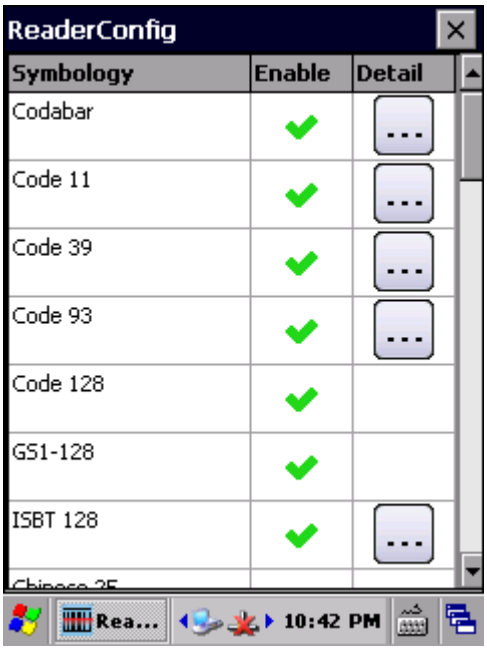
1) Open **Reader Config** as described in Launch Reader Config.

   Reader Config main menu opens.

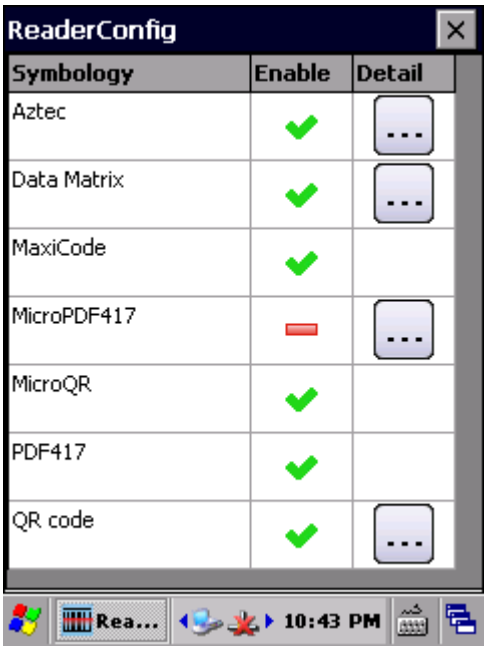
2) Tap the arrow next to **1D Symbologies** (or **2D Symbologies** in the case of a 2D imager).

Symbology settings page opens listing all symbologies which can be decoded.

1D Symbologies



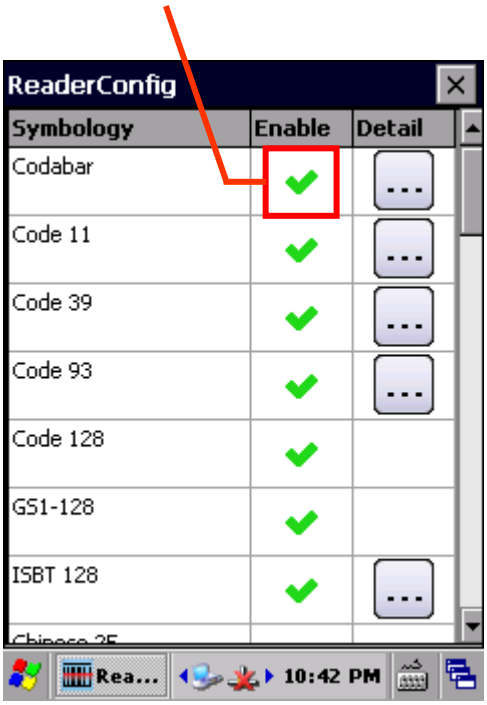
2D Symbologies



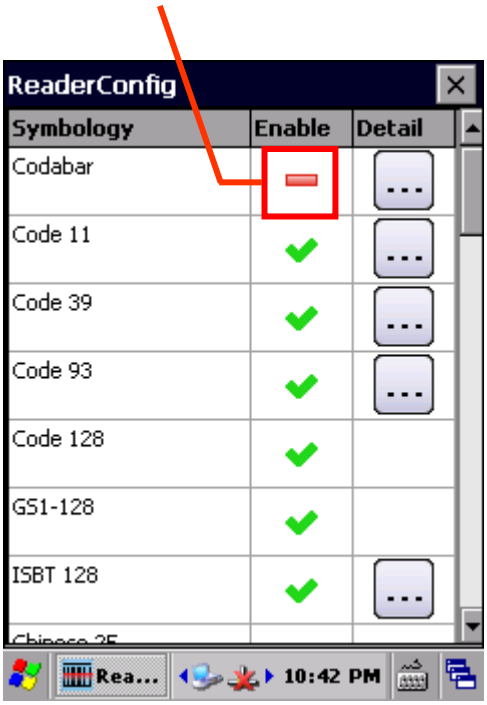
ENABLE/DISABLE SYMBOLOGY

The icon in the **Enable** column indicates whether the specific symbology is enabled. A check ✔ indicates that decoding of the symbology is enabled, while a short bar ▬ indicates decoding of the symbology is disabled. Tap the icon to switch between enable/disable modes.

Tap to disable symbology

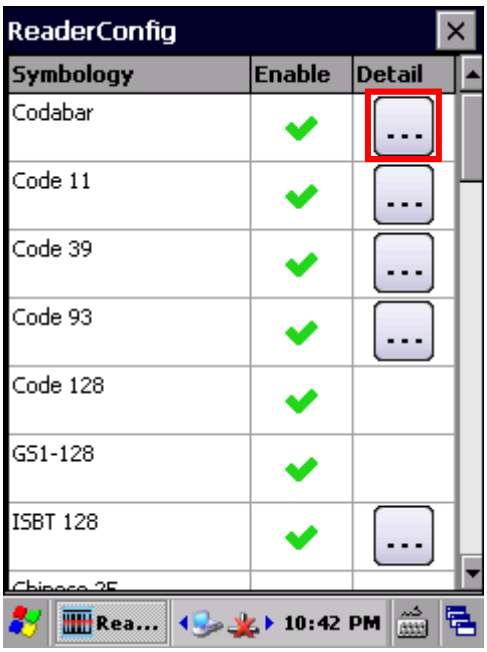


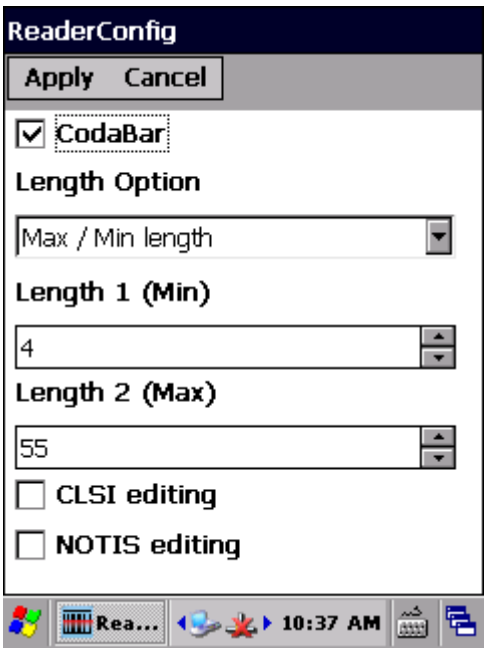
Tap to enable symbology



SYMBOLOGY SETTINGS

Tap the browse button in the **Detail** column of each symbology to access detailed settings for the specific symbology.

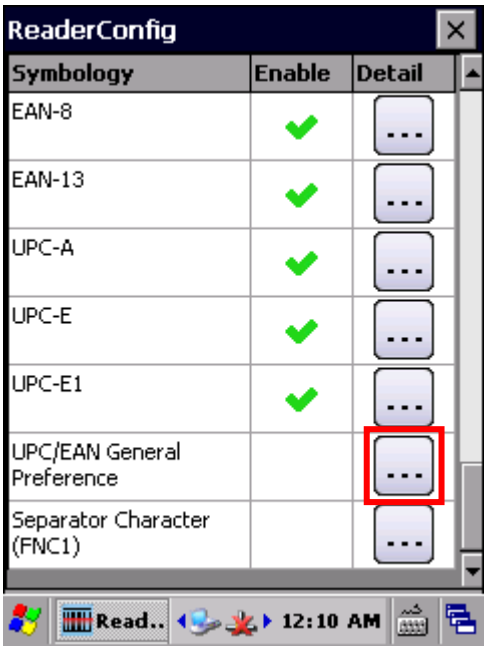


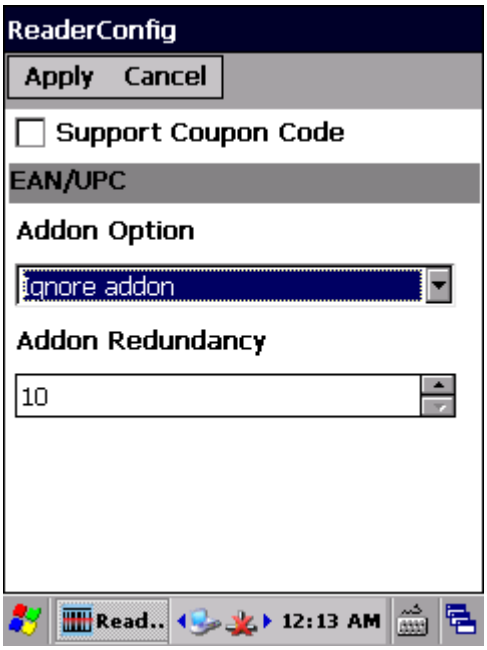


GENERAL PREFERENCES

For certain symbologies, common settings are grouped together and displayed in a detailed settings page for that barcode family. To open the general settings page for a set of symbologies, tap the arrow next to **General Preference**.

General settings are provided for Composite Code, Postal Code, and UPC/EAN families.



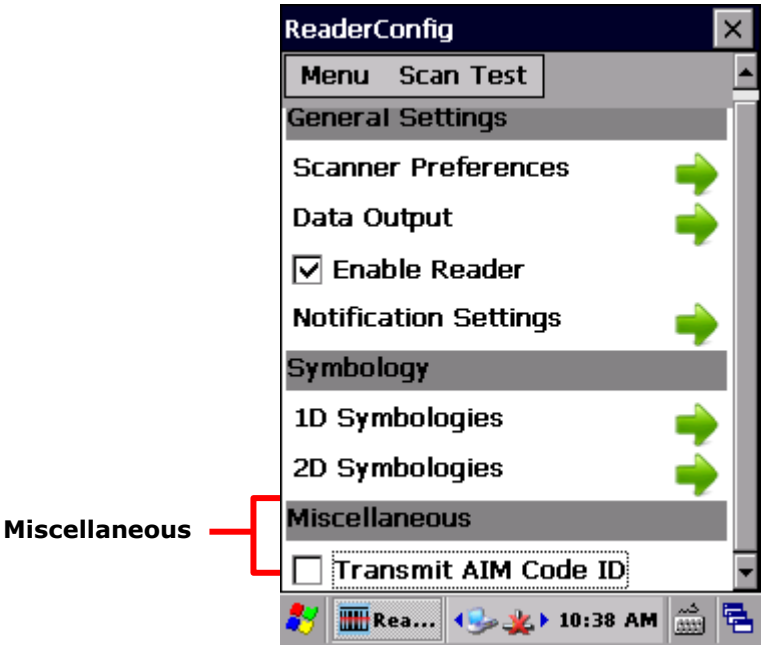


For details about the featured settings:

- See Appendix II: Laser Symbology Settings.
- See Appendix III: Extended Range Laser Symbology Settings.
- See Appendix IV: 2D Imager Symbology Settings.
- See Appendix V: Near/far 2D Imager Symbology Settings.

2.1.4. MISCELLANEOUS

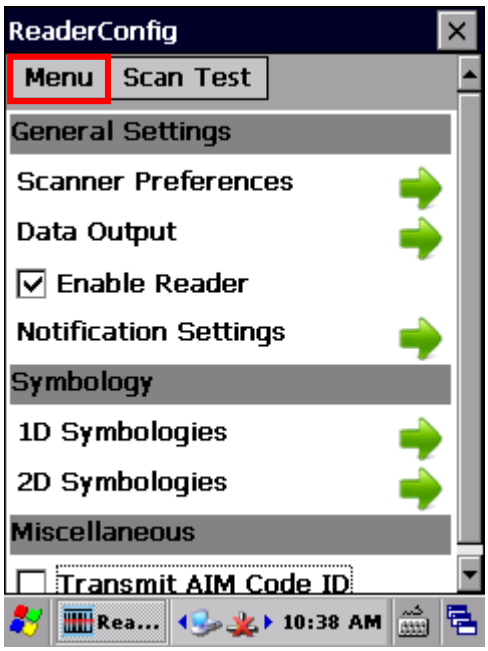
This section allows enabling code ID transmission for easy identification of the scanned barcode, and enabling picklist mode to enhance decoding accuracy.

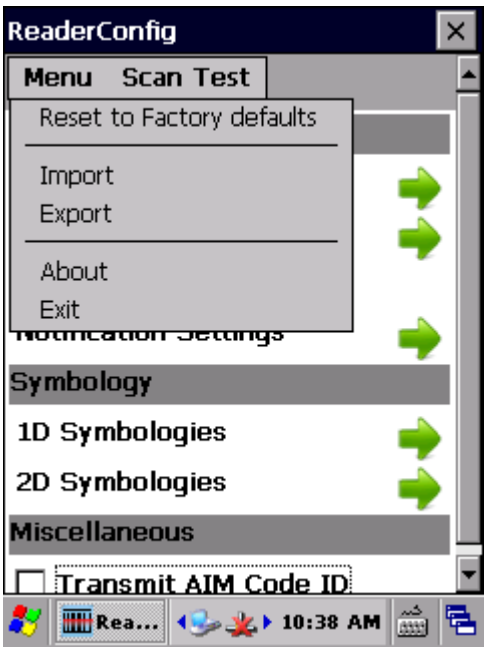


Setting	Description	Default
Transmit AIM Code ID	Sets whether to include AIM code ID character in the decoded data. For AIM code ID, see the following: ▸ Appendix II: Laser Symbology Settings. ▸ Appendix III: Extended Range Laser Symbology Settings. ▸ Appendix IV: 2D Imager Symbology Settings. ▸ Appendix V: Near/far 2D Imager Symbology Settings.	Deselected (Disabled)

2.1.5. READER CONFIG OPTION MENU

Reader Config provides an option menu which is accessible on the menu bar of the main settings page. This menu allows you to import/export all settings in a re-usable format, reset all settings back to factory default, view copyright and version information, and exit the application.





RESET TO FACTORY DEFAULTS

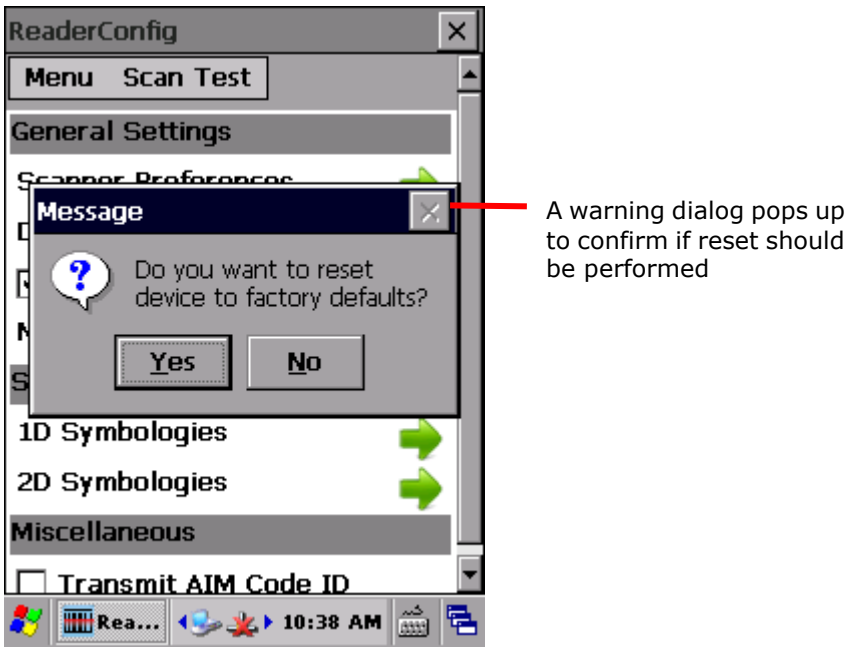
This function restores all settings in the **Reader Config** application to default.

To enable Factory Reset:

1) Open **Reader Config** as described in Launch Reader Config.

   Reader Config main menu opens.

2) Tap **Menu** button on the menu bar to open the option menu.
3) Tap **Reset to Factory defaults**.
4) A warning dialog appears confirming whether to restore all application settings back to default. Tap **Yes** to reset or **No** to close the dialog.



IMPORT AND EXPORT

Reader Config supports saving the settings and exporting them as an .xml file.

Previously exported symbology and scanner settings can be imported again on the mobile computer. This can also be used to implement identical Reader Config settings on two or more devices.

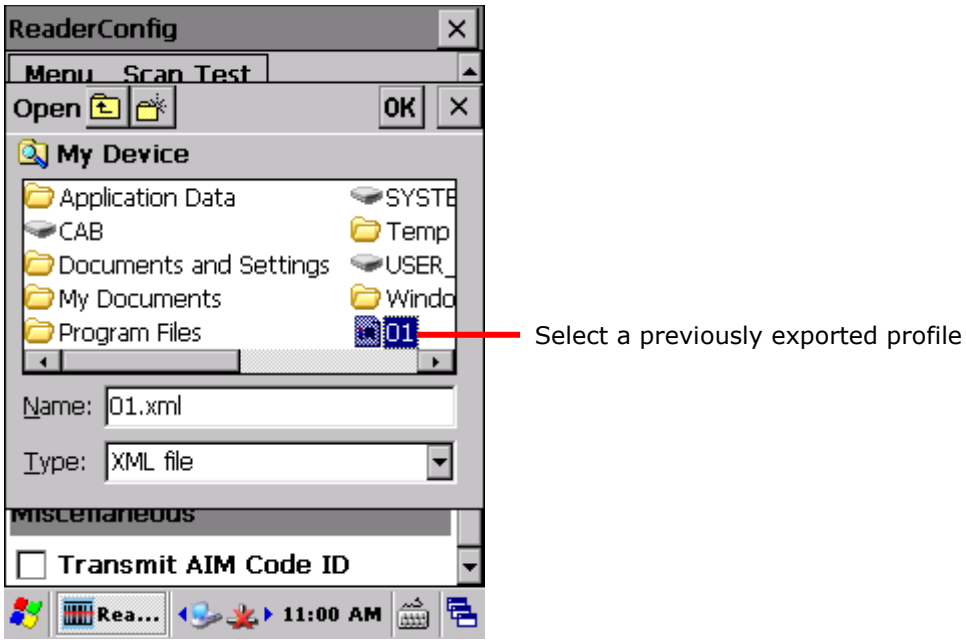
To import settings:

1) Open **Reader Config** as described in Launch Reader Config.

   Reader Config main menu opens.

2) Tap **Menu** button on the menu bar to open the option menu.
3) Tap **Import** in the option menu.

   A page opens allowing you to select a previously saved profile.



4) Select the profile you would like to apply and tap **OK**. In a few seconds a prompt will appear on the mobile computer to indicate settings have been imported successfully.

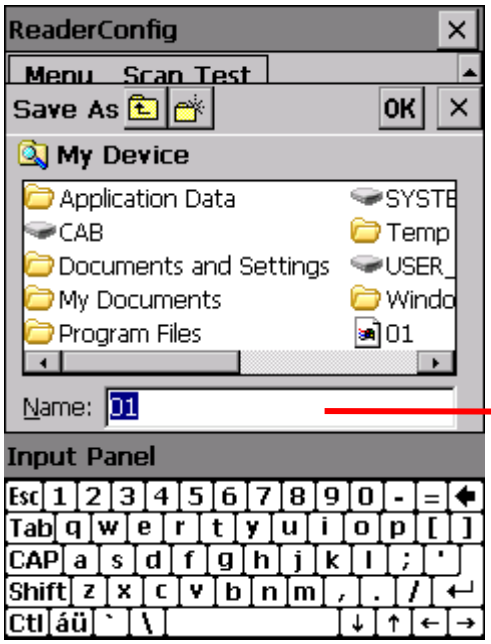
To export settings:

1) Open **Reader Config** as described in Launch Reader Config.

   Reader Config main menu opens.

2) Tap **Menu** button on the menu bar to open the option menu.
3) Tap **Export**.

   An export page opens allowing you to enter and select information about the profile to be saved.

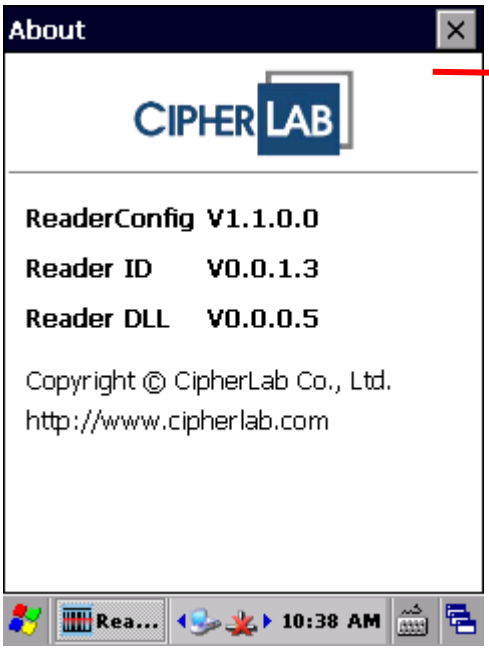


Enter a name for the profile to save

4) Enter file name, storage folder and location. Tap **OK** to export. A prompt will appear on-screen to notify that settings have been exported.

ABOUT

Tap **About** in the Reader Config option menu to display software version and copyright information.



Information about the software

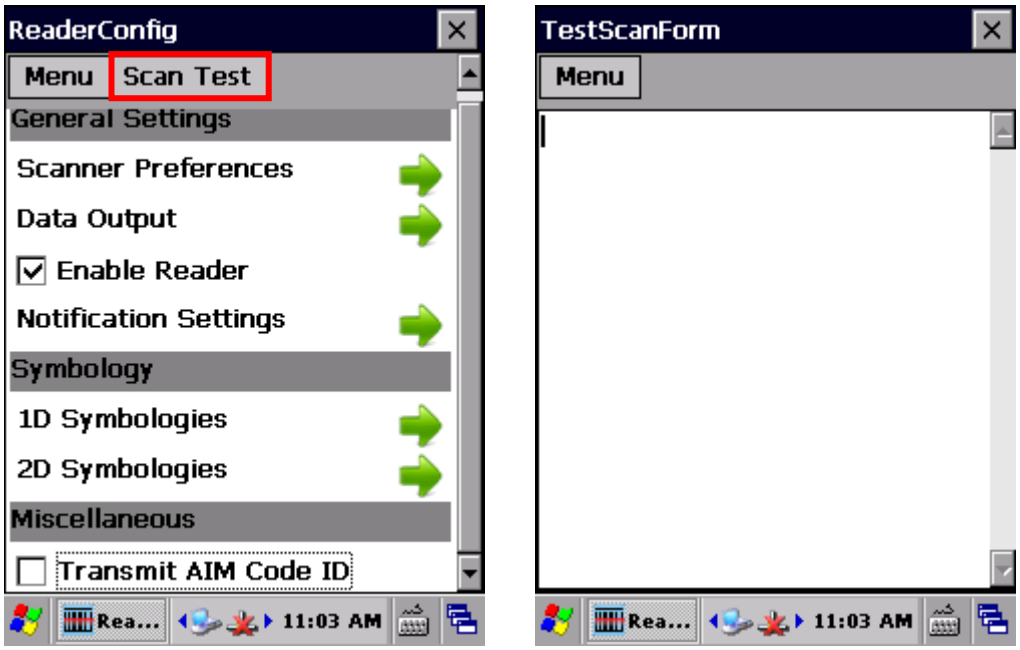
2.2. READ PRINTED BARCODES

Aside from output to destinations as per Keyboard Emulation settings, Reader Config provides a **Scan Test** feature for quick viewing of decoded data.

To perform test scanning of barcodes:

1) Open **Reader Config** as described in Launch Reader Config.
2) Tap **Scan Test** on the menu bar.

   A Test Scan Form opens for displaying the scanned data.



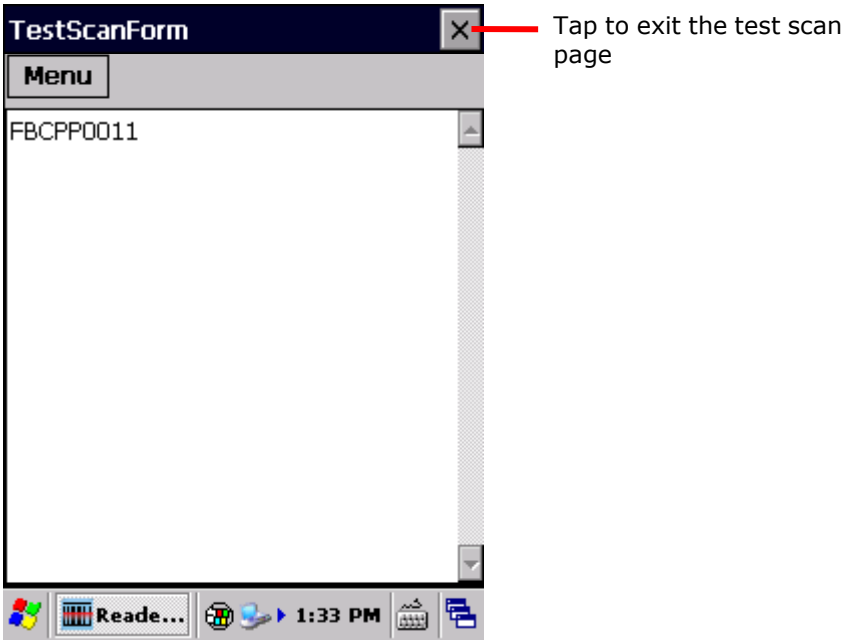
3) Aim the scanning window at the printed barcode to read and press the scan key (or any of the two side triggers).

   The scanning light beams to read the printed barcodes.

   The scanning light goes off once data is decoded, or decoding timeout is reached.

Figure 14: Read printed barcodes

The decoded data will appear on the page. When finished viewing, tap ✕ on the title bar to leave the test scan page.

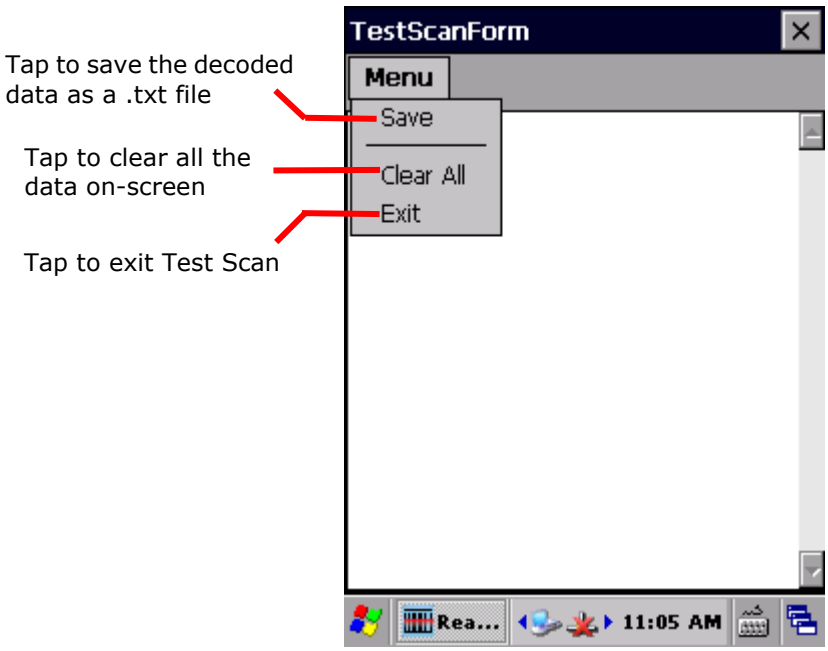


To display more information such as barcode type and length, configure the reader as in Data Output.

You may also configure the reader module(s) as described in Configure Reader before starting to collect data.

TEST SCAN MENU

Tap the **Menu** button to save the decoded data as a .txt file, clear all data shown on the screen, or exit the Test Scan page.



Chapter 3

OPERATING SYSTEM

The mobile computer is powered by Windows Embedded Compact 6.0, a member of Windows Embedded family. Windows Embedded Compact 6.0 bears much similarity to desktop OS, and users rely only on a few basic gestures such as tap, double-tap and drag to navigate within the OS.

IN THIS CHAPTER

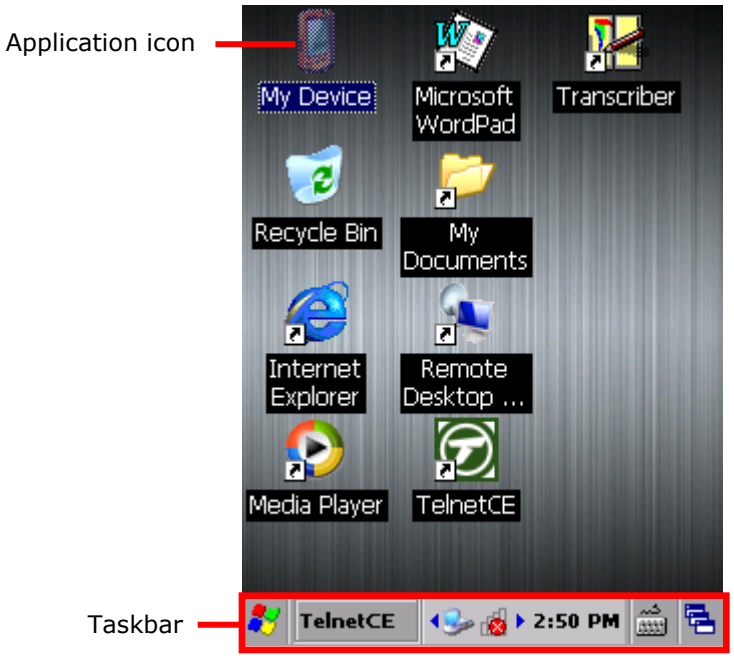
3.1 Desktop 83
3.2 Managing Programs..... 90
3.3 Suspend & Reset Mobile Computer 95

3.1. DESKTOP

Desktop is where all features on the mobile computer are accessed from.

Basic operations on the desktop:

- Tap the Start button to open the Start menu.
- Double-tap an application icon on the desktop to open it.
- Tap a blank spot on the desktop to open an option menu for customizing the wallpaper and the items to display. See Customize Desktop and Start Menu for more details.



Items on the desktop include:

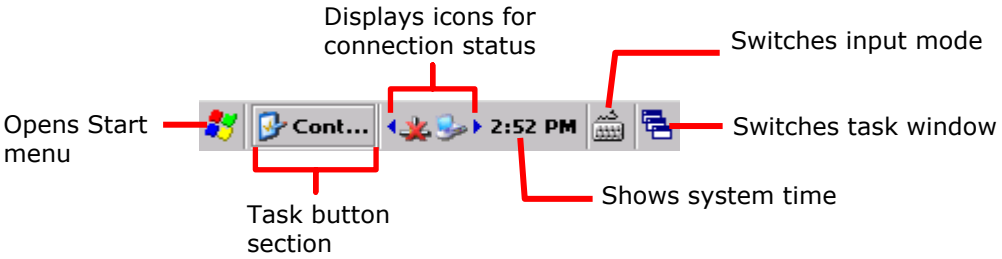
Icon	Description
	File explorer for the mobile computer's internal storage.
	Recycle bin.
	Shortcut for Internet Explorer.
	Shortcut for Windows Media Player.
	Shortcut for Microsoft WordPad.
	Shortcut which opens **\My Device\My Documents** directory.
	Shortcut for Remote Desktop Connection.
	Shortcut for TelnetCE application.

	Shortcut which enables Transcriber as the active input mode.

3.1.1. TASKBAR

At the bottom of the screen is the taskbar, which is divided into the following sections:

- Start button: opens Start menu
- Task button section that shows a button of the current application open on-screen
- Notification area which displays icons for connection status of the mobile computer, as well as system time
- A keyboard icon for switching input mode
- A task icon to switch between active applications or re-open the desktop



STATUS ICONS

The OS presents the following icons for users. Note there may be application-specific icons not included here.

Options	Description
	External power source connected and charging.
	Battery icons indicate the amount of power remaining in the main battery. The higher the green level, the more power in the main battery.
	When the battery icon changes to red, main battery level is low and needs charging immediately.
	Backup battery level is low; check if main battery level is full, or connect the mobile computer to external power to avoid battery depletion and data loss.
CTRL ALT	These icons appear on the taskbar when Shift key, Alpha key, Function key, Ctrl key and Alt keys are pressed. See Input Mode Icons for details.
	PC connection icon that appears when ActiveSync or WMDC connection is established.
	A specific wireless connection is terminated or has failed. Double-tap the icon to open a window to check IP information. Included connections are: - Bluetooth PAN

- 802.11a/b/g/n

A specific wireless connection has been established successfully.

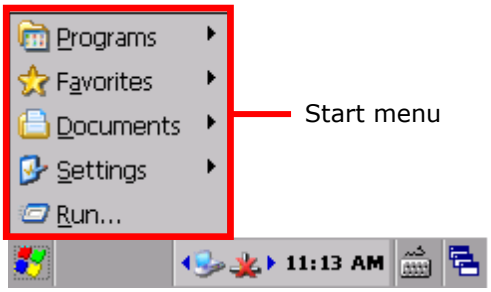
Double-tap the icon to open a dialog to check IP information. Included connections are:

- Bluetooth PAN
- 802.11a/b/g/n

Indicates the Wi-Fi module is enabled. The more the green bars, the stronger the signal.

3.1.2. START MENU

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



Options	Description
Programs	Accesses programs stored in the directory **My Device\Windows\Programs**.
Favorites	Accesses favorite links to webpages that are stored under the directory **My Device\Windows\Favorites**.
Documents	Accesses recently opened documents stored under the directory **My Device\Windows\Recent**.
Settings	Provides access to the following: - Control Panel - Network and Dial-up Connections - Taskbar and Start Menu
Run	Opens a program, folder or document as specified.

3.1.3. CUSTOMIZE DESKTOP AND START MENU

Customize the desktop by changing the background, application shortcuts, and so on. Rearrange the application shortcuts to make the applications that you use most often easy to access.

CHANGE BACKGROUND

You may change the background of the desktop to a picture of your own choice.

1) Tap and hold any blank space on the desktop.

   A pop-up menu shows with actions to take to the desktop.

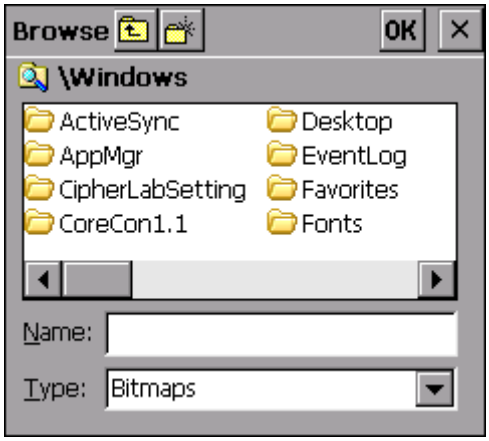
2) Tap **Properties** in the pop-up menu.

   Display Properties window opens showing two tab pages for changing desktop background and OS appearance.

3) Tap **Browse** button on the **Background** tab page.

4) In the Browse window that pops up, select the image file you would like to apply as the desktop background.

   Supported file formats are .bmp, .gif and .jpg files.



The selected file will appear on the desktop as the background image.

CHANGE APPEARANCE

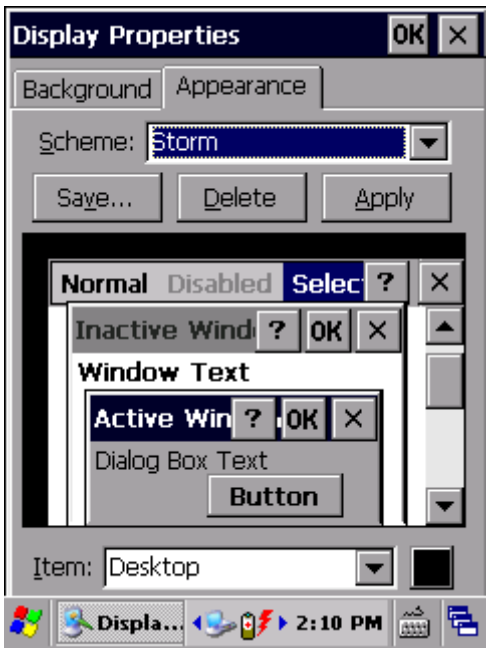
You may change the overall scheme, color of title bars, dialog boxes, menu text, selected items and so on to suit your preferences.

1) Tap and hold any blank space on the desktop.

   A pop-up menu shows with actions to take to the desktop.

2) Tap **Properties** in the pop-up menu.

3) Tap **Appearance** tab to open a page for changing the scheme style and item color.



ADD ITEMS TO DESKTOP

ADD APPLICATION SHORTCUTS

1) On the mobile computer, tap **My Device** on the desktop.
2) Browse to the executable file of the program you would like to create a shortcut for.
3) Tap and hold the file. A pop-up menu will show on the screen.
4) Tap **Copy** in the pop-up menu.

   Browse to **My Device\Windows\Desktop**.
5) Tap and hold any blank space on the screen and select **Paste shortcut** from the pop-up menu that comes up.

   A shortcut to the program is added to the mobile computer's desktop.

ADD BOOKMARKED WEBPAGE SHORTCUTS

1) On the mobile computer, tap **My Device** on the desktop.
2) Browse to **My Device\Windows\Favorites**.
3) Tap and hold the bookmark to create a shortcut for. A pop-up menu will show on the screen.
4) Tap **Copy** in the pop-up menu.
5) Browse to **My Device\Windows\Desktop**.
6) Tap and hold any blank space on the screen and select **Paste shortcut** from the pop-up menu that comes up.

   A shortcut to the bookmarked webpage is added to the mobile computer's desktop.

ADD FILE SHORTCUTS

1) On the mobile computer, tap **My Device** on the desktop.
2) Browse to the file to create a shortcut for.
3) Tap and hold the file. A pop-up menu will show on the screen.
4) Tap **Copy** in the pop-up menu.
5) Browse to **My Device\Windows\Desktop**.
6) Tap and hold any blank space on the screen and select **Paste shortcut** from the pop-up menu that comes up.

   A shortcut to the bookmarked webpage is added to the mobile computer's desktop.

ADD ITEMS TO START MENU

ADD APPLICATION SHORTCUTS

1) On the mobile computer, tap **My Device** on the desktop.
2) Browse to the executable file of the program you would like to create a shortcut for.
3) Tap and hold the file. A pop-up menu will show on the screen.
4) Tap **Copy** in the pop-up menu.
5) Browse to **My Device\Windows\Programs**.
6) Tap and hold any blank space on the screen and select **Paste shortcut** from the pop-up menu that comes up.

A shortcut to the program is added to the Start Menu.

REMOVE ITEMS FROM START MENU

1) On the mobile computer, tap **My Device** on the desktop.
2) Browse to **My Device\Windows\Programs**.

   Programs folder opens. All applications available in the Start menu can be found here.
3) Tap and hold the application to remove. A pop-up menu shows on the screen.
4) Tap **Delete**.

   The application is removed from Start Menu.

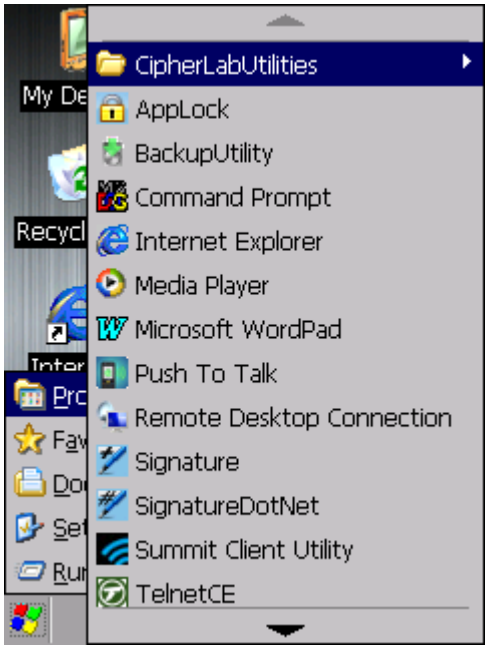
3.2. MANAGING PROGRAMS

3.2.1. LAUNCH PROGRAM

1) Tap **Start** | **Programs** to display a menu listing all the programs installed on the mobile computer.

Note: Use this menu to launch any programs newly installed on the mobile computer. Alternatively, you may add a shortcut of the program on the desktop. See Add Items to Desktop.

2) Tap the desired program to launch it on-screen.



The programs pre-installed on the mobile computer include:

Icon	Description
	CIPHERLAB UTILITIES (Reserved folder.)
	APPLOCK AppLock limits access to programs and settings on the mobile computer through an authorization mechanism. See the AppLock User Guide for details.
	BACKUP UTILITY Performs backup and restore of registry and system files.
	COMMAND PROMPT Command line interpreter program which can be used to execute commands.
	INTERNET EXPLORER Browser for the world wide web.
	MEDIA PLAYER Audio/video file player.

MICROSOFT WORDPAD

Wordpad for entering text.

PUSH TO TALK

Transmits real-time audio content through wireless connection.

REMOTE DESKTOP CONNECTION

Program for connection to a remote computer.

SIGNATURE

Signature application which is available for C++ programming via API deployment. See the 9700 C++ Programming Guide for details.

SIGNATUREDOTNET

Signature application which is available for .NET programming via API deployment. See the 9700 .NET Programming Guide for details.

SUMMIT CLIENT UTILITY

Utility which controls Wi-Fi connection, adjusts settings and performs diagnostic tests.

TELNET CE

Terminal emulation application provided by Wavelink. Check the TelnetCE User Guide, which can be downloaded from the following page:

www.wavelink.com/Cipherlab-device-downloads

TERMINAL EMULATION

Terminal emulation application allows the mobile computer to act as a telnet client and connect to a host computer to use the applications running on it. See the Terminal Emulation User Guide for details.

TRANSCRIBER

Application for handwriting recognition.

WINDOWS EXPLORER

Browser for the mobile computer's internal storage.

3.2.2. SWITCH BETWEEN ACTIVE TASKS

To switch between the active tasks currently running on the mobile computer, tap on the Taskbar. In the pop-up menu that shows up, tap the program or task button to open, or tap **Desktop** to minimize the active window and display the desktop.

3.2.3. EXIT A PROGRAM

To ensure efficient use of the memory, you should exit a program when it is no longer in use

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

Tap to close an active window, dialog box, or running program. You may alternatively press **ESC** on the physical keypad to close a dialog box or running program.

Tap to save the current settings and close a dialog, program, or minimize the window for certain programs. You may alternatively press **Enter** on the physical keypad to save settings and close a dialog or program.

3.2.4. INSTALL APPLICATIONS

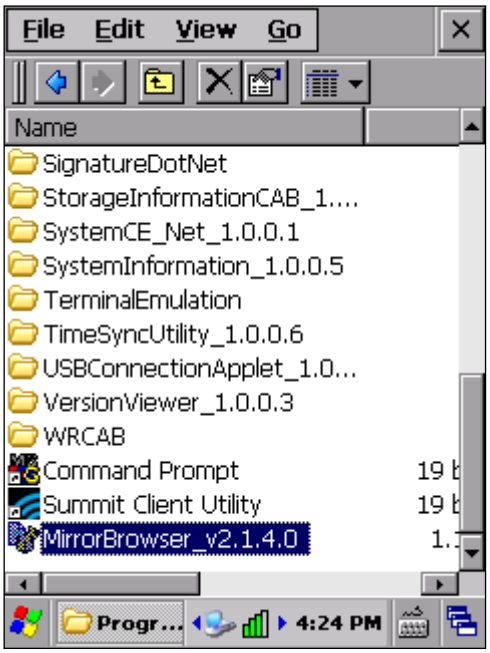
DOWNLOAD AND INSTALL APPLICATIONS

As mentioned in Add/Remove Programs, you can download and install an application on your PC first and offload it to the mobile computer later using Microsoft ActiveSync or WMDC.

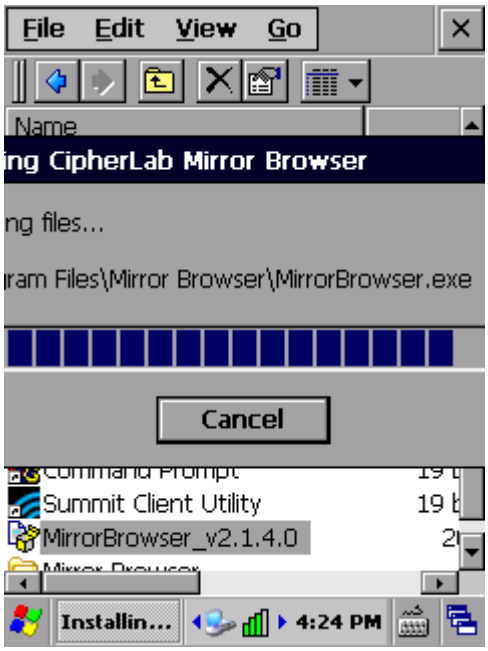
Alternatively, the OS allows you to install an application right from the mobile computer. Follow the steps below to complete installation:

1) Using your PC, copy the installation file (.CAB) to the mobile computer's internal storage.

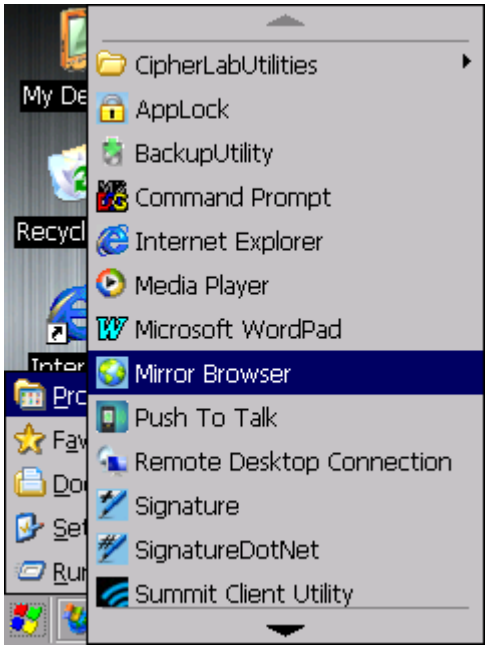
2) On the mobile computer, use **My Device** (**File Explorer**) to browse to the installation file.



3) Tap the file to begin the installation process. Confirm the location to install the program if necessary. The program proceeds to install to the specified location.



4) When installation is finished, launch it by tapping **Start** | **Programs** and locating it in the Programs menu.



Alternatively, you may download an application to install from the Internet. See Use Wi-Fi for how to connect the mobile computer to the Internet.

Note: To ensure protection of your mobile computer, download applications from trusted sources only.

UNINSTALL APPLICATIONS

On the mobile computer, the acquired (non-inherent) applications can be depleted from the OS through manual removal (uninstallation). To uninstall an application:

1) Tap **Start** | **Settings** | **Control Panel** | **Remove Programs** .

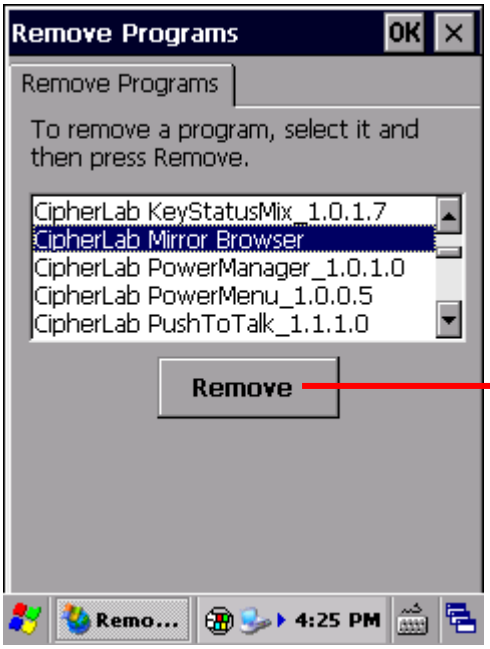
   Remove Programs opens showing the applications downloaded and installed from external sources.

2) Tap the application to remove.

   The **Remove** button becomes available.

3) Tap **Remove** to uninstall the application.

4) Follow on-screen instructions to complete through the uninstallation process.



Tap to remove the selected application

3.3. SUSPEND & RESET MOBILE COMPUTER

To save from repeatedly charging and replacing batteries, suspend the mobile computer when you are not actively using it. Suspending (or "turning off") the mobile computer holds the device from running without cutting off power. It is a "soft-off" state which enables less power consumption, and also a state which the device can quickly awake from since there is no need to restart the OS and applications.

3.3.1. SUSPEND MOBILE COMPUTER

The mobile computer is suspendable both manually and automatically.

MANUAL SUSPENSION

Press the power button for three seconds. The Power Menu opens.

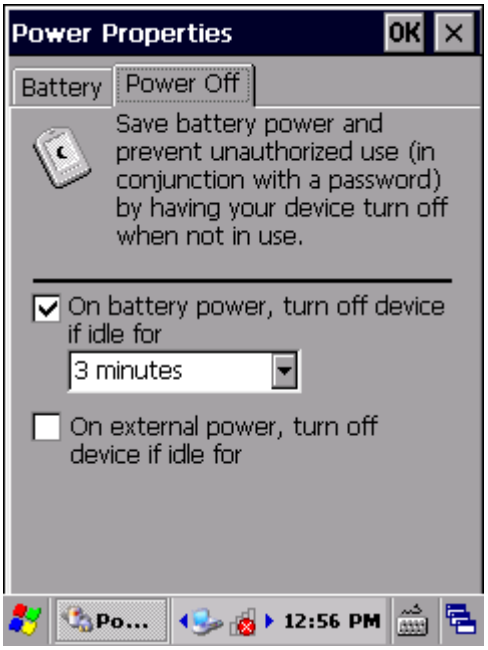
1) Select **Suspend** in the power menu.

   The mobile computer enters suspension mode.

OR

   Do not select any item, and the mobile computer will automatically enter suspension in five seconds.

AUTO-SUSPENSION



Set up a power plan to suspend the mobile computer in apt timing. This helps preserve battery life.

1) Tap **Start** | **Settings** | **Control Panel** | **Power** | **Power Off** tab page.
2) Select the "On battery power, turn off device if idle for" checkbox, and set a time limit to suspend the mobile computer after it has been in idle state. Power plans are available for both battery power and external power.
3) Tap OK to save the settings and close the application, or ✕ to exit the application directly.

Note the following cases will also cause the mobile computer to enter suspension:

- Battery fails
- When the touch screen of the mobile computer is facing down

To get the most from the battery power, see Power Management.

3.3.2. WAKE UP MOBILE COMPUTER

"Waking up" refers to restoring the suspended device to its previous working state. The mobile computer can be awoken both manually and automatically.

MANUAL AWAKENING

Press (without holding) the power button or central scan key to wake up the mobile computer.

AUTO-AWAKENING

The mobile computer wakes up by itself when either of the following happens:

- USB or serial cable is plugged in
- AC power cord is plugged in
- RTC alarm occurs

Note: The mobile computer cannot be awoken if the main battery and battery chamber contact pins are not perfectly in contact.

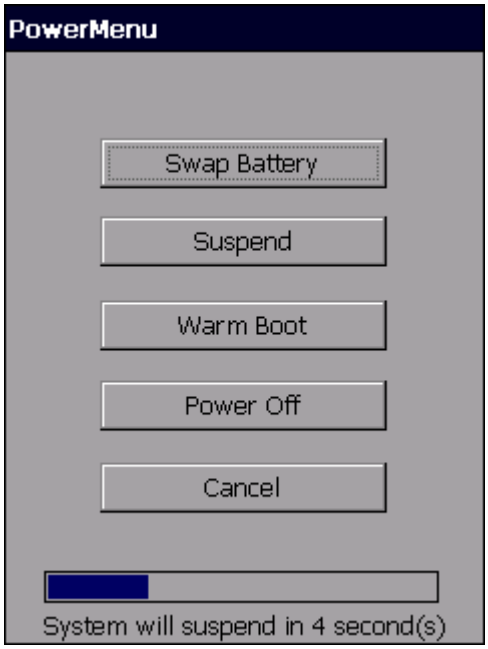
3.3.3. RESTART MOBILE COMPTUER (WARM BOOT)

When the system becomes erroneous and applications fail to respond properly, proceed to restart the mobile computer. After the mobile computer is restarted, DRAM will be initialized, and all data cached in DRAM and any unsaved tasks will be erased. However all user data, system settings and clock/calendar time will be preserved.

To restart the mobile computer:

1) Press and hold the power button for around three seconds.

   A Power Menu shows on-screen.



2) Tap **Warm Boot** in the menu. The mobile computer shuts down and then restarts to show the desktop.

Chapter 4

RADIOS

The mobile computer is a versatile networker. It integrates Wi-Fi and Bluetooth for wireless data. With the help of these radios, the mobile computer keeps users online all the time.

In this chapter, you will learn how these radios can work for you.

IN THIS CHAPTER

4.1 Use Wi-Fi 99
4.2 Use Bluetooth 125

4.1. USE WI-FI

The mobile computer is capable of Wi-Fi, a wireless networking technology making use of an access point, also known as "hotspot", to connect to a wireless local area network.

To use Wi-Fi, the mobile computer has to connect to a hotspot. Some hotspots are open for connection while others request a key to authenticate access. If this is the case, the authentication key must be included in the mobile computer's Wi-Fi settings.

For authentications based on secure certificates, see Certificates.

Wi-Fi settings and power are controlled via Summit Client Utility (SCU). When Wi-Fi is not in use, turn it off to extend battery life. See Power On/Off Wi-Fi.

Summit Client Utility functions by the use of Wi-Fi profiles. Profiles are a set of radio and security settings that are stored in the registry. You may create, rename, edit and delete profiles, as well as alter global settings that apply to every profile or to Summit Client Utility (SCU) itself. For more details on profile settings, please visit the following websites:

http://www.lairdtech.com/Products/Embedded-Wireless-Solutions/Documentation/LCM-Users-Guide

4.1.1. POWER ON/OFF WI-FI

Before configuring any Wi-Fi connection settings, check if Wi-Fi power is turned on.

To turn on Wi-Fi:

1) Tap **Start** | **Settings** | **Control Panel** | **Wireless Manager** .

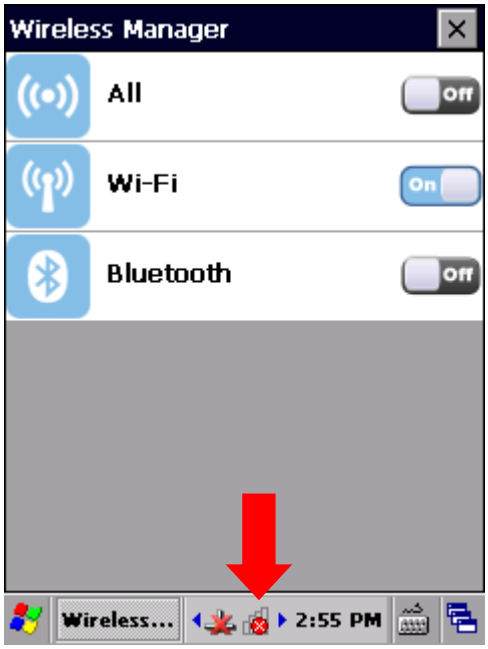
2) Make sure the Wi-Fi label is turned "on" .

   If the Wi-Fi label is turned "off", tap the "Off" icon . Wi-Fi power is switched on in a few seconds.

Note: Wi-Fi power settings under Wireless Manager will be kept through suspension and warm boot. After the mobile computer resumes from suspension or restarts, Wi-Fi power status will be maintained and the mobile computer will attempt to reconnect the previous connection.

SYSTEM TRAY ICON

The taskbar features a system tray icon to show Wi-Fi status.



The icons available for Wi-Fi connection are as follows:

Icon	Description
	Indicates no Wi-Fi connection is established.
	Indicates poor Wi-Fi signal (RSSI value is -90 dBm or weaker).
	Indicates relatively low Wi-Fi signal (RSSI value is stronger than -90 dBm but does not exceed -70 dBm).
	Indicates good Wi-Fi signal (RSSI value is stronger than -70 dBm but does not exceed -50 dBm).
	Indicates high Wi-Fi signal (RSSI value is stronger than -50 dBm).

4.1.2. LAUNCH SCU

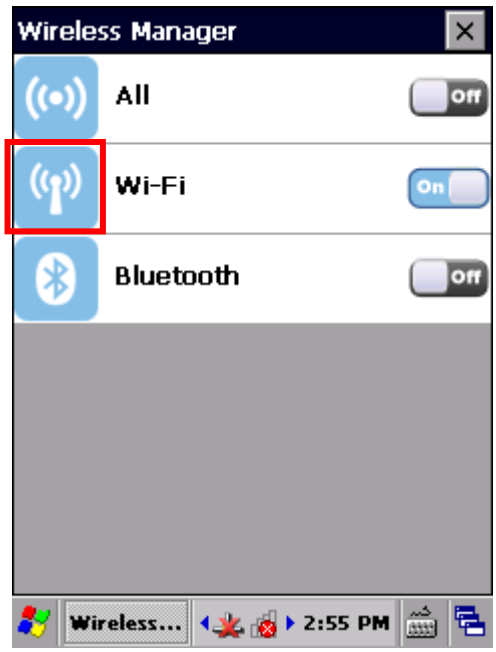
Wi-Fi settings can be adjusted with Summit Client Utility. Within this application are three tab pages which allow users to select the access point for connection, create profiles for better management, perform diagnostics on connectivity, and fine-tune property settings to meet their individual requirements.

To launch SCU:

Tap **Start** | **Settings** | **Control Panel** | **SCU** .

OR

Tap the Wi-Fi icon on the **Wireless Manager** settings page.

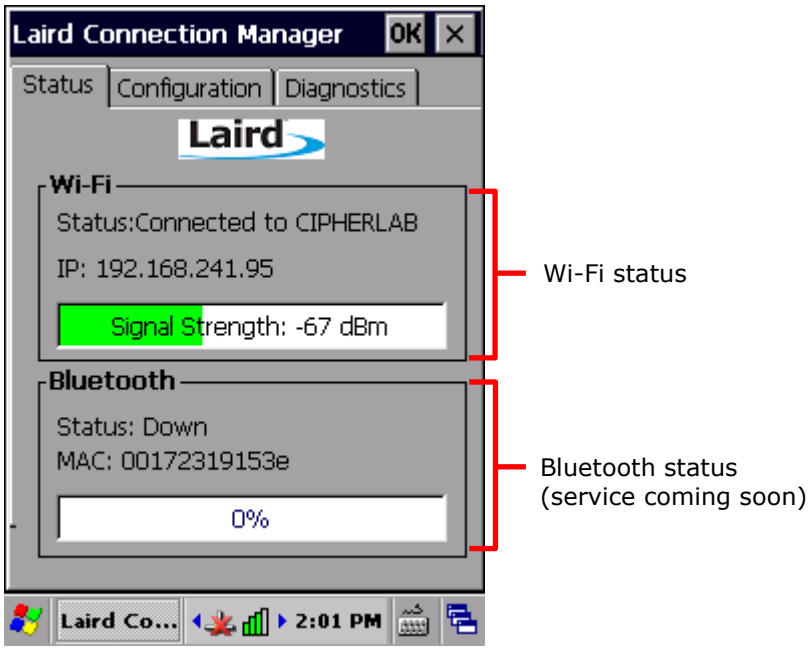


SCU opens showing three tab pages: **Status**, **Configuration** and **Diagnostics**.

The following sections explicate in detail the settings on each of these pages.

4.1.3. STATUS TAB PAGE

The **Status** tab page provides basic information on WLAN connection and Bluetooth status. Wi-Fi settings can be configured on Configuration Tab page.

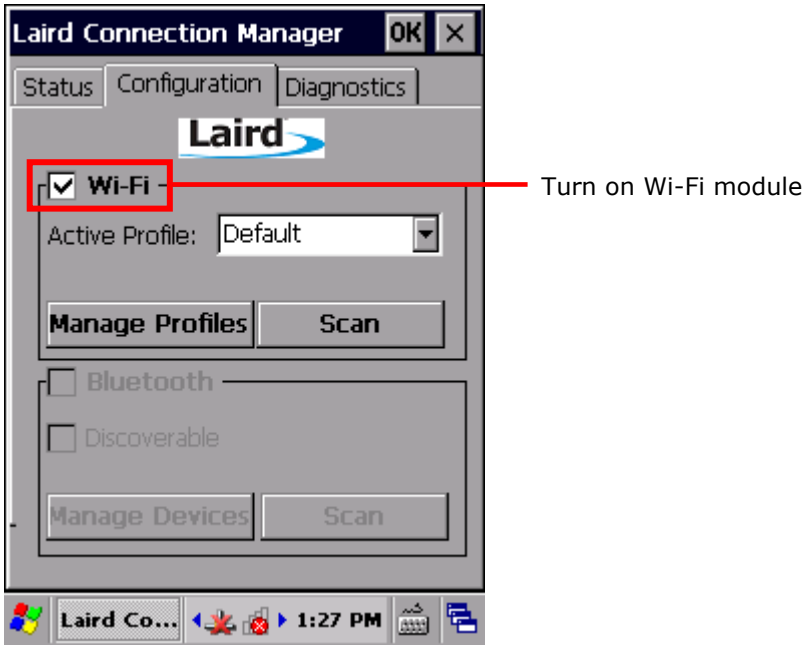


Note: SCU does not currently support viewing or configuring Bluetooth settings.

4.1.4. CONFIGURATION TAB PAGE

TURN ON/OFF WI-FI MODULE

Select the Wi-Fi checkbox to turn on Wi-Fi. Deselect it to shut down Wi-Fi.

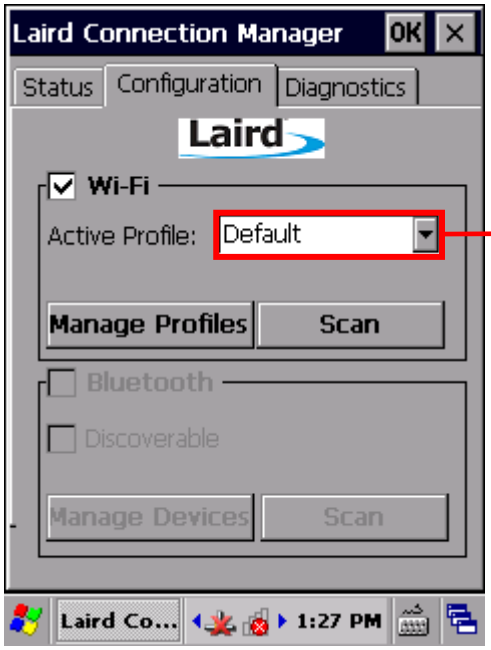


Note: SCU does not allow configuration of Bluetooth settings. To establish and manage Bluetooth connections, tap **Start** | **Settings** | **Control Panel** | **BT Manager** .

ACTIVE PROFILE

A profile is a set of parameters that define the manner which a device associates to a wireless LAN (WLAN) infrastructure. A profile contains information including the System Set Identifier (SSID, the "name" of the WLAN infrastructure), means of data encryption, authentication type, and security credentials.

Select an active profile in the drop-down box on the **Configuration** tab page. To add a profile other than the "Default" profile, see Create Wi-Fi Profile.



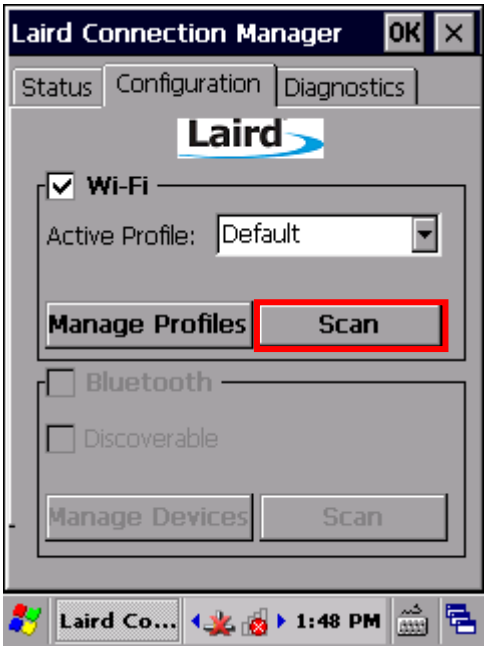
Tap to select an active profile in the drop-down bar

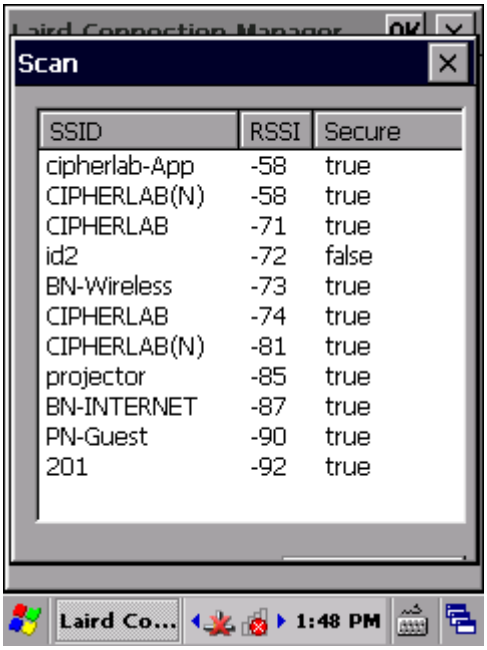
CREATE WI-FI PROFILE

To create a Wi-Fi Profile:

1) Open SCU as described in Launch SCU.
2) Tap the **Configuration** tab to show the Configuration tab page.
3) Tap **Scan** to view a list of access points that are broadcasting their SSIDs. You may sort the list by tapping the column headers.

   Tap **Refresh** to update the list of available access points.

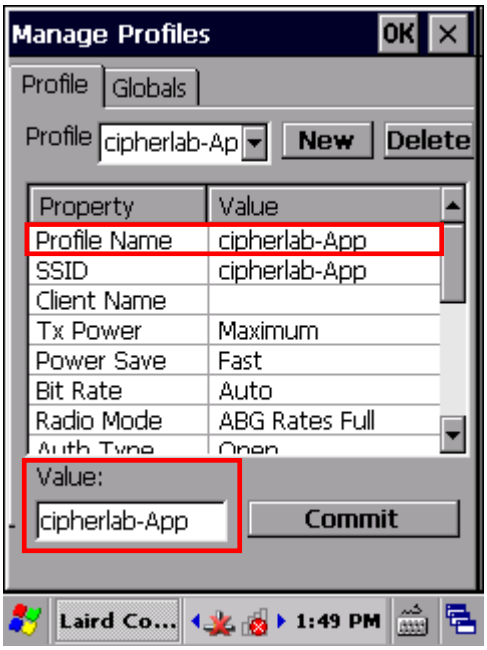




Item	Description
SSID	Service Set Identifier (SSID)
RSSI	Received Signal Strength Indication (RSSI)
Secure	Indicates whether data encryption is enabled: true or false

4) Tap twice on any of the access points to create a new profile for it. A prompt shows confirming whether to create a profile with the identified SSID, encryption and EAP type. Tap **Yes** to continue.

5) A profile settings page opens showing detailed radio settings. Tap each item and adjust its **Value** to suit your needs.



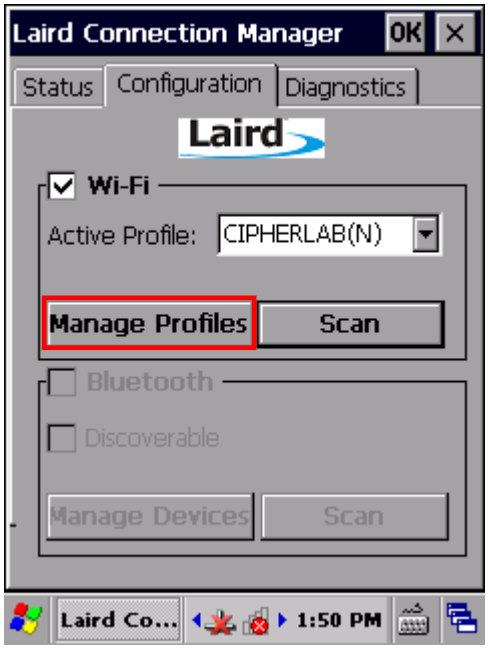
6) When finished fine-tuning all settings, tap **Commit** to save the profile.
7) Tap **OK** on the title bar to close the Profile Settings page and return to Configuration settings.

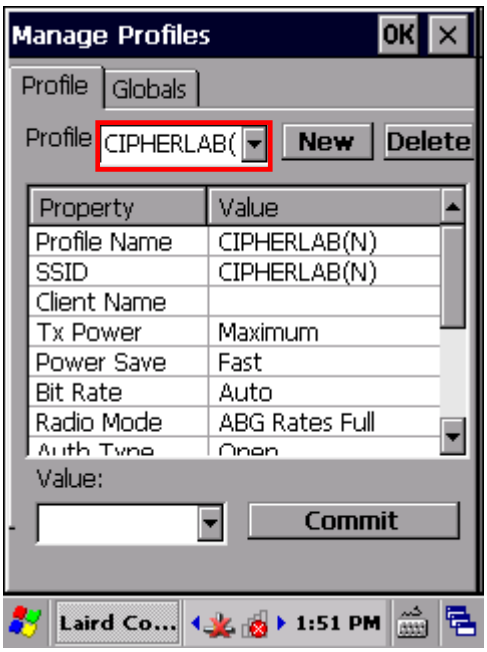
If you would like to directly activate the newly created profile, select it as the Active Profile on the Configuration settings page.

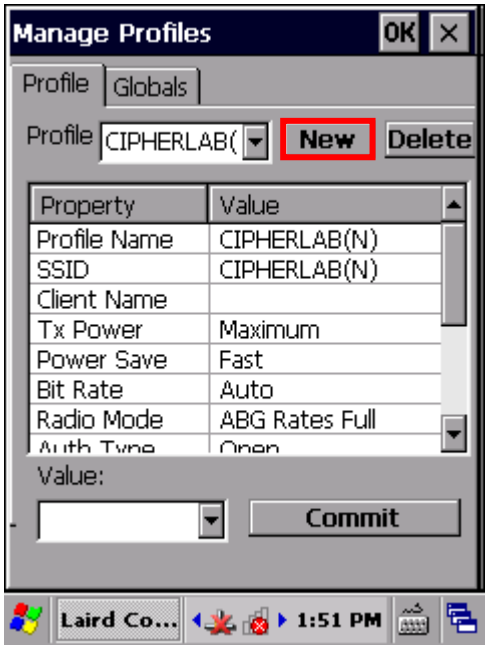
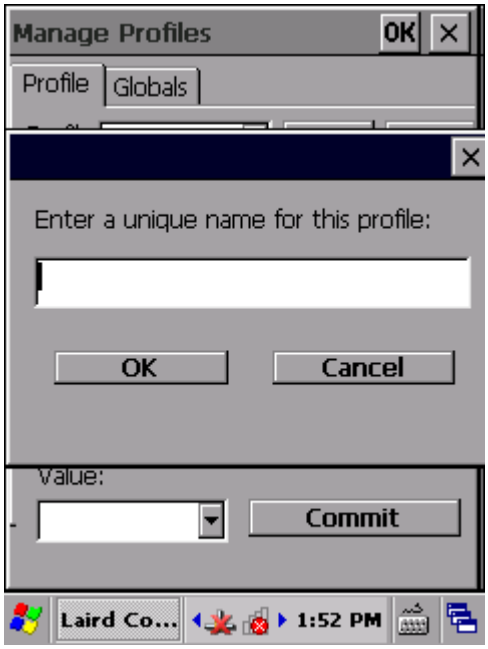
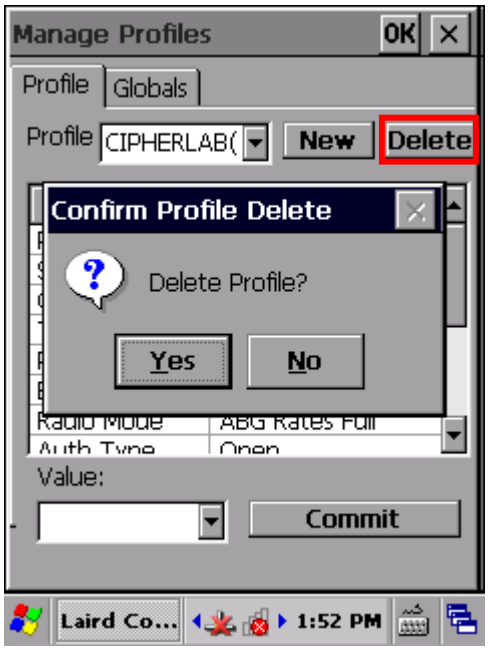
MANAGE WI-FI PROFILE

To manage your profiles:

1) Open SCU's **Configuration** tab page as described in Create Wi-Fi Profile.
2) Tap **Manage Profiles** to open the Profile settings page.

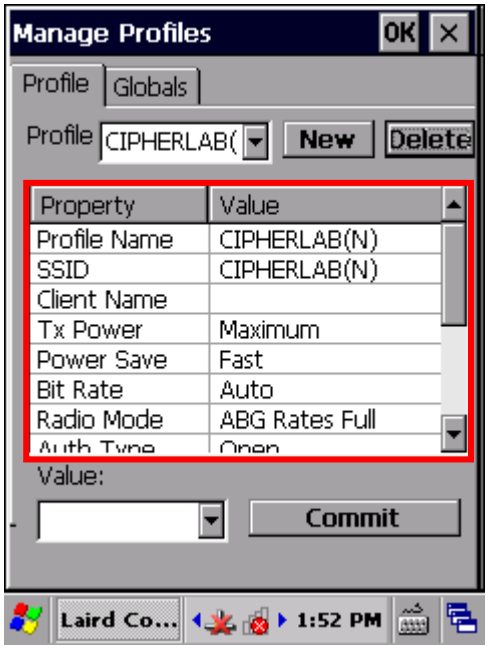


Item	Description
Profile	When SCU is first launched, "Default" is the active profile. Unless it is modified, this profile does not specify an SSID, EAP type or encryption method. You can chose to do the following: ▸ Modify the default profile ▸ Tap **New** to add a new profile ▸ Select an existing profile from the drop-down menu and configure 

New	Tap **New** and enter a unique name for the profile. Configure the Radio settings, Encryption, EAP Type, and other settings for this new profile. ▸ The name for each profile must be unique ▸ You can define up to 20 profiles  
Delete	Select a profile from the drop-down menu and tap **Delete**. ▸ You cannot delete the Active Profile. Make sure the selected profile is not the active profile under **Configuration** tab page. 

Radio Settings

After selecting a profile in the **Profile** drop-down bar, configure radio settings in the scrollable menu below.



Property	Description
Profile Name	Tap to rename the selected profile. Up to 32 characters allowed.
SSID	Service Set Identifier (SSID) for the WLAN infrastructure to which the radio will connect. If no SSID is specified, the radio will only associate to an access point that broadcasts its SSID. ▸ Value: A string of up to 32 characters ▸ Default: None
Client Name	Name assigned to the mobile computer with Summit radio installed. ▸ Value: A string of up to 16 characters ▸ Default: None
Tx Power	The power of the radio in milliwats (mW). In certain cases this value will be overwritten by the access point, which will dictate to the radio which power to use. ▸ Value: Maximum (Maximum power defined for the current regulatory domain) or a specified percentage 75%, 50%, 25%, 10% ▸ Default: Maximum
Power Save	Power save mode for the radio. Set the radio to its optimum power-consumption setting. ▸ Value: CAM: Constantly Awake Mode (CAM) keeps the radio powered up continuously so there is minimal lag in message response time. This mode consumes the most power but offers the highest throughput. It is recommended when AC power is in use.

	Maximum: In Max Power Savings (Max PSP) mode, the access point buffers incoming messages for the radio, which wakes up periodically and connects to the access point to see if any buffered messages are waiting. The radio requests buffered messages and then goes back to sleep. It conserves the most power but offers the lowest throughput. It is recommended when battery power is in use. Fast: Power Save Mode (Fast PSP) switches between the two modes described above, depending on network traffic. This mode switches to CAM when retrieving a large number of packets and switches back to PSP (= Power Save Polling) after the packets have been retrieved. It is recommended when power consumption is a concern but you need greater throughput than that allowed by Max PSP. ▸ Default: Fast
Bit Rate	The measurement of how much data is transmitted in a given amount of time from one location to another. ▸ Value: Auto (rate is negotiated automatically with the AP) ▸ Default: Auto
Radio Mode	Use of 802.11a/b/g/n frequencies and data rates when interacting with an AP, or the use of ad hoc to associate to a station radio. ▸ Value: B rates only, BG rates full, G rates only, BG LRS, A rates only, ABG rates full, BGA rates full, Ad Hoc B rates only: 1, 2, 5.5, and 11 Mbps. BG rates full: All B and G rates, plus N rates if supported. G rates only: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps. BG LRS: 1, 2, 5.5, 6, 11, 24, 36, and 54 Mbps. This should only be used with Cisco APs running IOS in autonomous mode (without controllers). A rates only: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps, plus N rates if supported. ABG rates full: All A rates and all B and G rates, with A rates (the 802.11a radio) preferred, plus N if supported. BGA rates full: All B and G rates and all A rates, with B and G rates (the .11g radio) preferred, plus N rates if supported.

	Ad Hoc: When selected, the Summit radio associates to another station radio that is in ad hoc mode and has the same SSID and, if configured, static WEP key. ▸ Default: ABG rates full
Auth Type	802.11 authentication type used when associating to an AP. ▸ Value: Open, Shared (shared-key), LEAP (Network-EAP) ▸ Default: Open ▸ It is recommended that the default setting Open is selected.
WPA	WPA and WPA2 support the same authentication methods and similar key management methods; the difference is mainly in area of encryption. WPA defines TKIP as the primary encryption method, while WPA2 defines AES-CCMP as the primary encryption method. ▸ Value: None, WPA, WPA2 ▸ Default: None
Encryption	This specifies the type of key used to encrypt and decrypt transmitted data, and how that key is specified or derived. Select Encryption type in the **Value** drop-down box.

Item	Description
None	N/A
TKIP	The encryption method defined with WPA. TKIP uses RC4 encryption as does WEP.
AES-CCMP	The encryption method defined with IEEE 802.11i and certified with WPA2. AES-CCMP is stronger than RC4
WEP	The encryption method defined with the original IEEE 802.11 standards; encrypts transmitted data using 64-bit or 128-bit encryption.
CKIP	CKIP is supported for use only with static WEP. For CKIP, encryption keys need to be defined in SCU; for CKIP-EAP, encryption keys are derived dynamically from an EAP authentication.

Authentication	This is the protocol used to authenticate the device and its user if the WLAN uses the Enterprise version of Wi-Fi Protected Access (WPA) and WPA2. Select Authentication type in the **Value** drop-down box, then enter the credentials necessary for each type in the appeared fields.

Item	Description
None	N/A
LEAP	Credentials values for LEAP: ▸ User Name (up to 64 characters) ▸ Password (up to 32 characters)
EAP-FAST	Credentials values for EAP-FAST ▸ User Name (up to 64 characters)

			▸ Password (up to 32 characters) ▸ PAC Filename (up to 32 characters): You may create a protected access credential (PAC) for each client device. When creating a PAC manually, you must store it in the directory identified in Certs Path on the **Globals** settings page. To use automatic provisioning, leave this field blank. ▸ PAC Password (up to 32 characters)
		PEAP-MSCHAP	Credentials values for PEAP-MSCHAP, PEAP-GTC, EAP-TTLS: ▸ User Name (up to 64 characters) ▸ Password (up to 32 characters) ▸ CA Cert: Filename and extension of root certificate authority (CA) digital certificate (up to 32 characters). Specify the Certs Path in **Globals** settings page > **Certs Path**.
		PEAP-GTC	
		EAP-TTLS	
		EAP-TLS	Credentials values for EAP-TLS and PEAP-TLS: ▸ User: Username or Domain/Username (up to 64 characters) ▸ User Cert: Filename and extension of user certificate residing in the Microsoft certificate store. See 錯誤! 找不到參照來源。. ▸ CA Cert: Filename and extension of root certificate authority (CA) digital certificate (up to 32 characters). Specify the Certs Path in **Globals** settings page > **Certs Path**.
		PEAP-TLS	
		PSK	Pre-shared keys (PSK) consist of up to 256 bits entered as a string of up to 64 hexadecimal digits.
	Fast Reauth	The expedited WPA key handshake used to reduce roaming time to 125 msec or less. Available for WPA TKIP and WPA2 AES-CCMP. ▸ Value: None, CCKM ▸ Default: None	
Value	Use this box to change the value of a selected item. Depending on the item property, this can be done by choosing a value from a drop-down list, or entering the desired value with the on-screen or physical keypad. 		

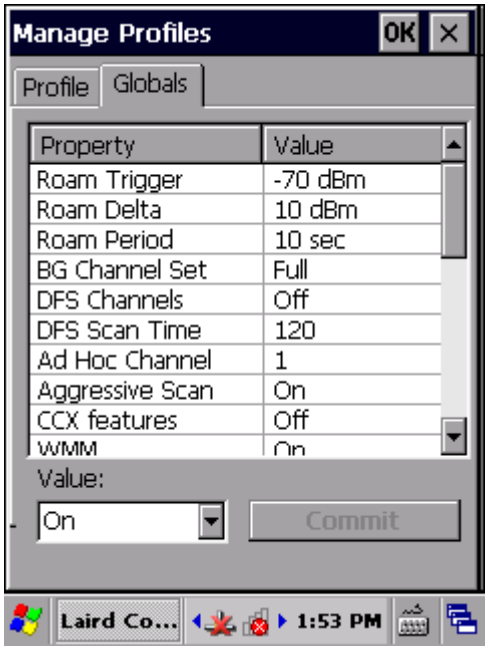
Commit	After making any changes on the **Profile** tab page, the **Commit** button must be tapped in order for the settings to take effect.

MANAGE GLOBAL SETTINGS

Global settings include radio and security settings that apply to all profiles in SCU.

To open the Global settings page:

1) Open SCU's Configuration tab page as described in Create Wi-Fi Profile.
2) Tap **Manage Profiles** to open the Profile settings page.
3) Tap the **Globals** tab to open the Global settings page.



Property	Value
Roam Trigger	When the moving average RSSI from the current AP is weaker than Roam Trigger, radio does a roam scan where it probes for an AP with a signal that is at least Roam Delta dBm stronger. ▸ Value (dBm): -50, -55, -60, -65, -70, -75, -80, -85, -90, Custom ▸ Default: -70 dBm
Roam Delta	When Roam Trigger is met, a second AP's signal strength (RSSI) must be Roam Delta dBm stronger than the moving average RSSI for the current AP before radio will attempt to roam to the second AP. ▸ Value (dBm): 5, 10, 15, 20, 25, 30, 35 ▸ Default: 10 dBm
Roam Period	After association or roam scan (with no roam), radio will collect RSSI scan data from Roam Period seconds before considering roaming. ▸ Value (sec): 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, Custom ▸ Default: 10 (seconds)
BG Channel Set	Defines the 2.4 GHz channels to be scanned when the radio is contemplating a roam and needs to determine what APs are available. Item: Full — Description: All channels Item: 1, 6, 11 — Description: The most commonly used 2.4 GHz channels

<table>
<tr><td></td><td>
<table>
<tr><td>1, 7, 13</td><td>For ETSI and TELEC radios only</td></tr>
<tr><td>Custom</td><td>Indicates the system registry has been edited to include a value other than those available in the drop-down value</td></tr>
</table>
Default: Full
</td></tr>
<tr><td>DFS Channels</td><td>Indicates whether to support 5 GHz (802.11a) channels where dynamic frequency selection (DFS) is required.
Value: On, Off
Default: Off</td></tr>
<tr><td>DFS Scan Time</td><td>Enables determining the dwell (listen) time when passively scanning on a DFS channel.
Valid range of 20-500 ms configurable
Default: 120
When the DFS Scan Time is changed to a value lower than default, it is recommended that the beacon period in the WLAN infrastructure is changed as well. Ideally, the dwell time should be 1.5 times than that of the beacon period.</td></tr>
<tr><td>Ad Hoc Channel</td><td>The channel to be used for an ad hoc connection if the active profile has a Radio Mode value of “Ad Hoc”.
Value:
<table>
<tr><td>1~14</td><td>One of the 2.4 GHz channels</td></tr>
<tr><td>36, 40, 44, 48</td><td>UNII-1 channels</td></tr>
</table>
Default: 1
If a channel that is not supported is selected, then SCU will automatically apply the default channel setting (1).</td></tr>
<tr><td>Aggressive Scan</td><td>Aggressive scanning complements and works in conjunction with the standard scanning that is configured through the Roam Trigger, Roam Delta, and Roam Period settings. It is recommended that aggressive scanning is enabled unless there is significant co-channel interference because of overlapping coverage from APs that are on the same channel.
Value: On, Off
Default: On</td></tr>
<tr><td>CCX features</td><td>Whether to allow the use of Cisco information element (IE) and CCX version number to authorize support for CCX features.
Value: Full, Off
Full mode uses Cisco IE and CCX version number and enables support for all CCX features. Off mode disables all support for Cisco IE and CCX version number.
Default: N/A
If the radio fails to connect to an 802.11n wireless network, set CCX features as “Off” and try again.</td></tr>
<tr><td>WMM</td><td>Whether to allow the use of Wi-Fi Multimedia (WMM) Extensions or not.
Value: On, Off
Default: Off
Changing this setting requires suspend/resume of the mobile computer to take effect.</td></tr>
</table>

<table>
<tr><td>Auth Server</td><td>Type of authentication server being used for EAP authentication.
▸ Value:
<table><tr><td>Type 1</td><td>Cisco Secure ACS or another server that uses PEAPv1 for PEAP with EAP-MSCHAPV2 (PEAP-MSCHAP)</td></tr><tr><td>Type 2</td><td>A different authentication server, such as Juniper Networks Steel Belted RADIUS, that uses PEAPv0 for PEAP-MSCHAP</td></tr></table>▸ Default: Type 1</td></tr>
<tr><td>TTLS Inner Method</td><td>Authentication method used within secure tunnel created by EAP-TTLS.
▸ Value:
<table><tr><td>Auto-EAP</td><td>Any available EAP method</td></tr><tr><td>MSCHAPV2</td><td></td></tr><tr><td>MSCHAP</td><td></td></tr><tr><td>PAP</td><td></td></tr><tr><td>CHAP</td><td></td></tr><tr><td>EAP-MSCHAPV2</td><td></td></tr></table>▸ Default: Auto-EAP</td></tr>
<tr><td>PMK Caching</td><td>The type of Pairwise Master Key (PMK) caching to use with a WPA2 encryption type (alternative to WPA2 CCKM).
▸ Value: Standard or OPMK (opportunistic PMK)
▸ Default: Standard</td></tr>
<tr><td>TX Diversity</td><td>How to handle antenna diversity when transmitting data to AP.
▸ Value:
<table><tr><td>Main Only</td><td>Use main antenna only</td></tr><tr><td>Aux Only</td><td>Use auxiliary antenna only</td></tr><tr><td>On</td><td>Use diversity</td></tr></table>▸ Default: On</td></tr>
<tr><td>RX Diversity</td><td>How to handle antenna diversity when receiving data from AP.
▸ Default: On-start on Main
▸ This is a fixed setting; on startup, the main antenna is always used</td></tr>
<tr><td>Frag Thresh</td><td>When packet size exceeds the set threshold, it becomes fragmented.
▸ Value: 256 ~ 2346
▸ Default: 2346 (bytes)</td></tr>
<tr><td>RTS Thresh</td><td>When packet size exceeds the set threshold, RTS/CTS is required on link.
▸ Value: 0 ~ 2347
▸ Default: 2347 (bytes)</td></tr>
<tr><td>LED</td><td>Indicates whether or not an LED is used.
▸ Value: On, Off
▸ Default: Off</td></tr>
<tr><td>Tray Icon</td><td>Whether to enable the system tray icon or not.
▸ Value: On, Off
▸ Default: On</td></tr>
</table>

Admin Password	N/A
Auth Timeout (s)	Specifies how long it will wait for an EAP authentication request to succeed or fail. If authentication credentials are specified in the active profile and the authentication times out, then association will fail. If authentication credentials are not specified in the active profile and the authentication times out, then the user will be required to enter credentials again. ▸ Value: 3 ~ 60 ▸ Default: 8 (seconds)
Certs path	File path where the certificate for EAP authentication is stored. ▸ Value: A valid directory path of up to 64 characters ▸ Default: Depends on device
Supplicant	The user (client) making a request to gain access to system resources through the authentication server. ▸ Value: Summit, Third Party ▸ Default: Summit
Auto Profile	Activate or deactivate automatic profile selection. ▸ Value: On, Off ▸ Default: Off ▸ When On is selected, proceed to the Profile settings page and select from the existing profiles those which you would like to add to the Auto Profile list. The number of profiles in this list is limited to 19. When Auto Profile is activated, the Summit radio will attempt to associate to an access point after a device startup or resume, and it will try out each listed profile in order until the radio associates to an access point. The successful profile becomes the active profile and remains active until one of the following occurs: ▸ The device goes through suspension and resume, power-cycling, or restart, which causes the radio to go through the automatic profile selection process once more. ▸ Auto Profile is turned off and an active profile is manually selected on the SCU **Configuration** tab.

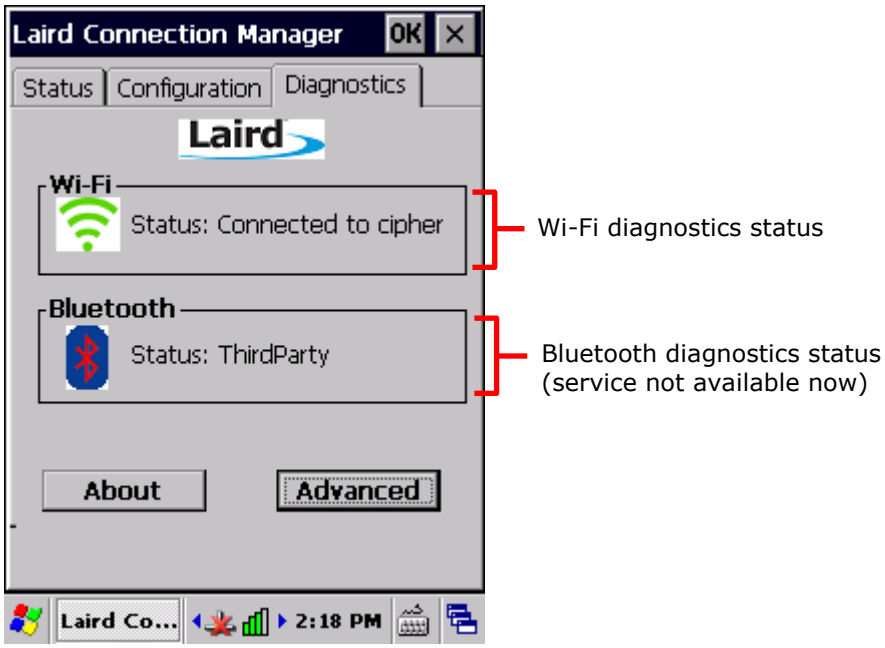
4.1.5. DIAGNOSTICS TAB PAGE

Perform diagnostic tests to troubleshoot connection issues when necessary.

To open the Diagnostics page:

1) Open SCU as described in Launch SCU.
2) Tap the **Diagnostics** tab to show the Diagnostics page.

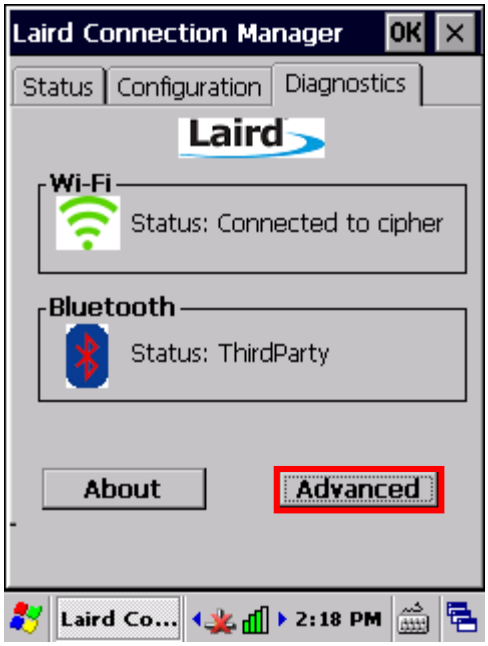
   Diagnostics status for Wi-Fi and Bluetooth shows, along with on-screen buttons to open Advanced settings and view software version information.



ADVANCED DIAGNOSTICS

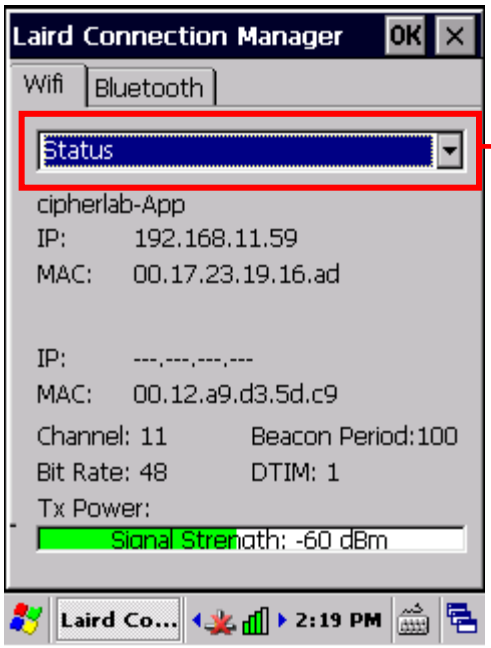
To access Advanced diagnostics settings:

1) Open Diagnostics Tab page.
2) Tap the **Advanced** button to open advanced diagnostics settings.



CHECK STATUS

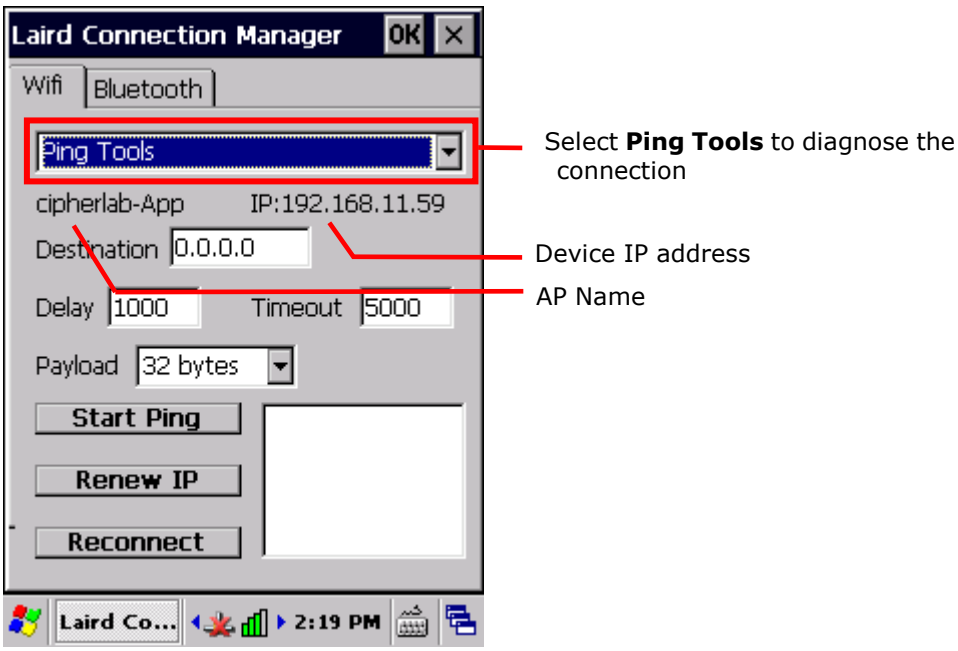
To check diagnostics status, select **Status** in the drop-down bar.



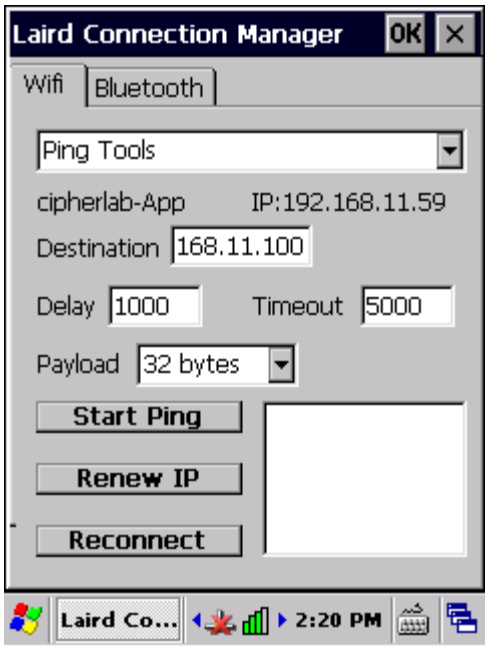
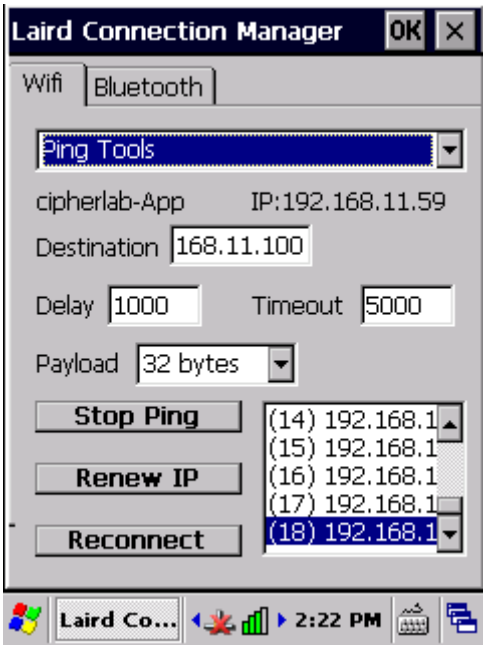
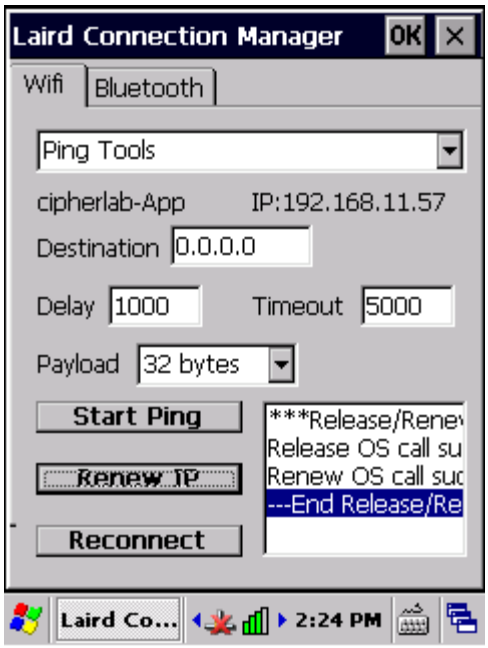
Select **Status** to check connection details

USE PING TOOLS

To perform ping tests, select **Ping Tools** in the drop-down bar.



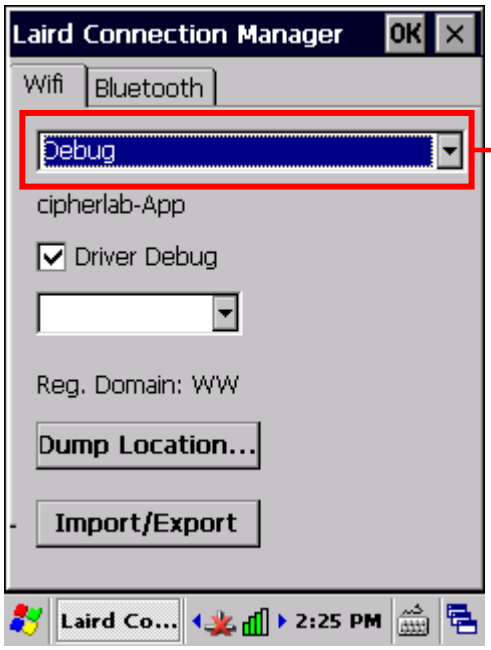
Item	Description
Destination	Enter the address to ping.
Ping Payload	The amount of data to be transmitted on a ping. ▸ Value: 32, 64, 128, 256, 512, 1024 ▸ Default: 32 (bytes)
Ping Delay	The amount of time that elapses between successive ping requests. ▸ Value: 0~7200000 ▸ Default: 1000 (milliseconds)
Timeout ms	The amount of time that elapses without a response before ping request is considered a failure. ▸ Value: 0~30000 ▸ Default: 5000 (milliseconds)
Start Ping	Enter the address to ping to in the **Destination** field and tap **Start Ping**. A continuous ping will begin until the following happens: **Stop Ping** is tapped, the, the application is exited, or the radio is removed. Activity status will be logged in the output box below.

	  When an active ping is initiated, the screen displays a ping indicator that blinks in green (for a successful ping) or red (for an unsuccessful ping). The ping indicator is hidden when the screen is switched to a tab other than Diags or Status.
Release/Renew	Obtain a new IP address through DHCP release/renew, and log all activity in the output area at the bottom. 

Reconnect	Disable and enable the radio, apply or re-apply the current profile, attempt to associate and authenticate to the wireless network, and log all activity in the output area at the bottom.

USE DEBUG TOOLS

To check debug settings, select **Debug** in the drop-down bar.



Select **Debug** to check debug settings

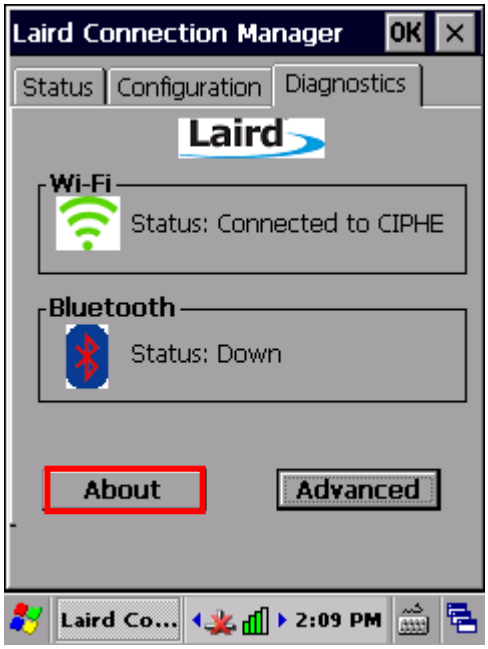
Item	Description
Driver Debug	Select whether to debug the WLAN driver, and the output mode for driver debug. ▸ Value: Not set, 1-Text(Low), 2-Text, 3-Text(High), 4-Serial(Low), 5-Serial, 6-Serial(High) ▸ Default: Not set ▸ When set as 1-Text(Low), 2-Text, or 3-Text(High), SCU will continue to export debug logs to the mobile computer's internal storage. Do not select any of these options unless necessary.
Reg. Domain	Indicates the regulatory domain or domains for which the radio is configured by default. Default setting is "Worldwide", which means that the radio can be used in any domain.
Dump Location…	Dumps the diagnostics results to a desired location in the form of a .txt file.
Import/Export	Imports/exports SCU settings as a profile (.sdc format). When exporting, you may select to include Global Settings, Third Party Config settings or Profile Settings. When importing, you may select to add to existing settings, or replace the set values in Global Settings, Third Party Config and Profiles.

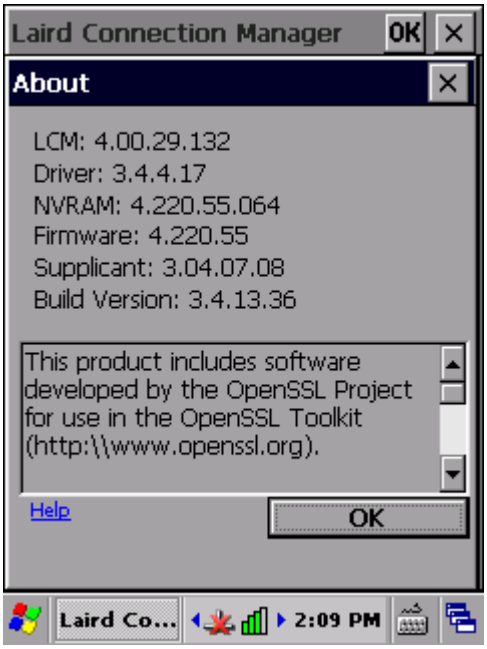
Note: It is recommended that Driver Debug output settings are kept as default and not changed.

SOFTWARE VERSION INFORMATION

To check software version information:

1) Open Diagnostics Tab page.
2) Tap the **About** button to view information about SCU version, device driver, and software developer.





4.2. USE BLUETOOTH

The mobile computer is Bluetooth-enabled to synchronize data with other devices such as PCs, car hands-free kits, headsets, printers, PDAs, and cell phones.

Class II Bluetooth devices enable wireless connections over a short distance of around 10 meters. It is specified in IEEE 802.15.1 as a "wireless personal area network" (WPAN).

To connect a Bluetooth device for the first time, the mobile computer needs to "pair" with it. Such "pairing" involves authentication between two devices to justify their accesses to each other. After this initial pairing, the two devices can connect to each other without the need of a second pairing procedure.

4.2.1. BLUETOOTH PROFILES SUPPORTED

Bluetooth Profiles Supported		
Serial Port Profile	(SPP)	supports Server/Client
Object Push Profile	(OPP)	supports Server/Client
File Transfer Profile	(FTP)	supports Server/Client
Personal Area Networking Profile	(PAN)	
Human Interface Device Profile	(HID)	supports keyboard and mouse without cursor
Headset Profile	(HSP)	
Hands-Free Profile	(HFP)	

4.2.2. CHANGE BLUTOOTH NAME

By default, the mobile computer uses the device name for its Bluetooth name. Change the device name to make it more recognizable.

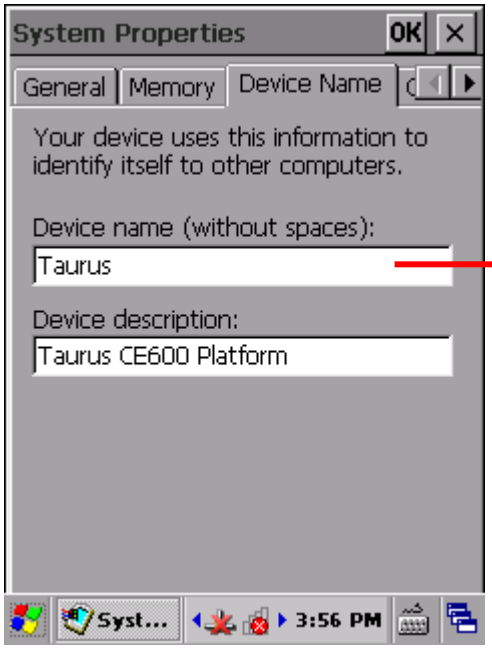
To change the mobile computer's device name:

1) Tap **Start** | **Settings** | **Control Panel** | **System** .

   System Properties page opens showing **General** tab page.

2) Tap **Device Name** tab.

Device ID tab page opens.



Change device name to make the mobile computer more recognizable.

3) Enter a name of your choice.
4) Tap **OK** on the title bar to apply the change.

4.2.3. TURN ON/OFF BLUETOOTH

To turn on/off Bluetooth power:

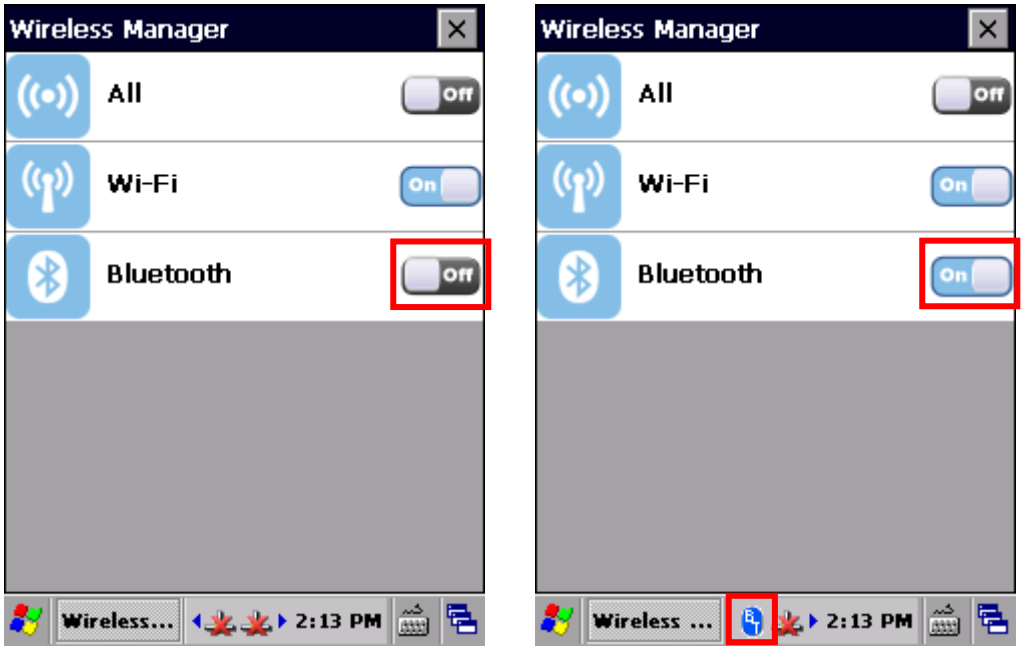
1) Tap Start | **Settings** | **Control Panel** | **Wireless Manager** .

   Wireless Manager opens.

2) Make sure the Bluetooth label is turned "on" .

   If the Bluetooth label is turned "off", tap the "Off" icon to switch on Bluetooth power. After a few seconds, Bluetooth power is switched on.

   When Bluetooth power is switched on, an associated icon will appear on the taskbar.



3) To turn off Bluetooth, tap the "on" icon to have it disabled. Once Bluetooth is disabled, the icon will disappear from the taskbar.

Note: Bluetooth power settings under Wireless Manager will be kept through suspension and warm boot. After the mobile computer resumes from suspension or restarts, Bluetooth power status will be maintained.

4.2.4. SET BLUETOOTH VISIBILITY

By opening or closing Bluetooth visibility, you can control whether or not other Bluetooth devices can discover the mobile computer.

To set Bluetooth visibility on the mobile computer:

1) Tap the Bluetooth icon on the taskbar and select **Setting** in the pop-up menu.

2) A Bluetooth Settings window opens on-screen.

   To open Bluetooth visibility, select the **Yes** checkbox for "Let other devices discover."

   To hide the mobile computer from other Bluetooth devices, deselect the checkbox.

3) Tap **OK** on the title bar of the window.

4.2.5. LAUNCH BT CONNECT

BT Connect is a connection tool for establishing Bluetooth partnerships.

To launch **BT Connect**:

1) Tap the Bluetooth icon on the taskbar and select **Maximized** in the pop-up menu.

   BT Connect launches with a menu bar on top and a blank field for searching devices.

See below for a description of menu bar items and their functions:

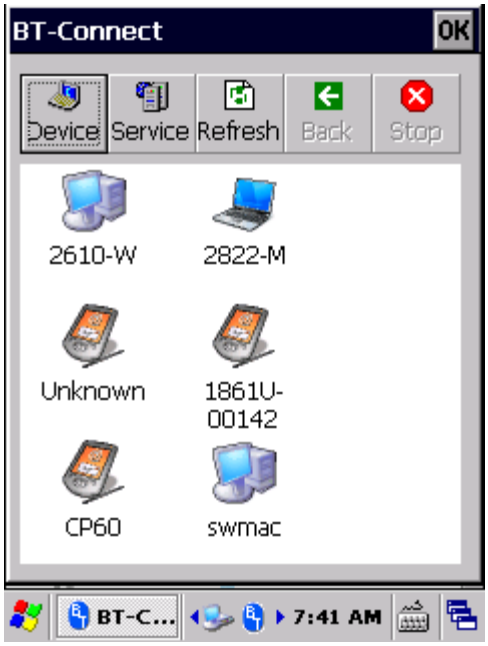
Button	Description
Device	Tap to list the Bluetooth devices discovered by the mobile computer. If you tap the button for the first time, it will start the inquiry process of discovering nearby Bluetooth devices.
Service	Tap to view the Bluetooth services provided on the mobile computer. ▸ File Transfer and Object Push services are available by default. ▸ To change the properties for FTP or OPP services, tap and hold the item and select **Change local path** from the pop-up menu. Local path / Description: ▸ \Temp\Ftp — ▸ File Transfer (FTP) ▸ \My Documents\DefaultInbox — ▸ Object Push (OPP)
Refresh	Tap to refresh the device list or Bluetooth services provided once a connection has been established.
Back	Tap to return to the previous screen.
Stop	Tap to stop discovering Bluetooth devices, disconnect existing connections or unload services.

4.2.6. SEARCH FOR BLUETOOTH DEVICES

To search for a Bluetooth device to connect to:

1) Tap **Device**

to discover Bluetooth devices nearby. Wait for a few seconds for the mobile computer to list all the discovered devices.



2) If the device that you wish to connect to is not listed, make sure its Bluetooth status is set as discoverable.

   Then tap **Refresh**

to search for the device again.

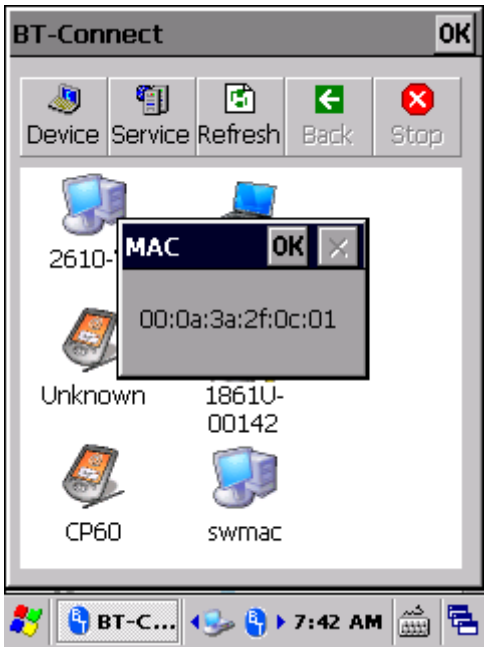
4.2.7. PAIR BLUETOOTH DEVICES

IDENTIFY BLUETOOTH DEVICE

To check the identity of a Bluetooth device:

1) Open **BT-Connect** page as described in Launch BT Connect.
2) In the device list, tap and hold a device until a pop-up menu appears.

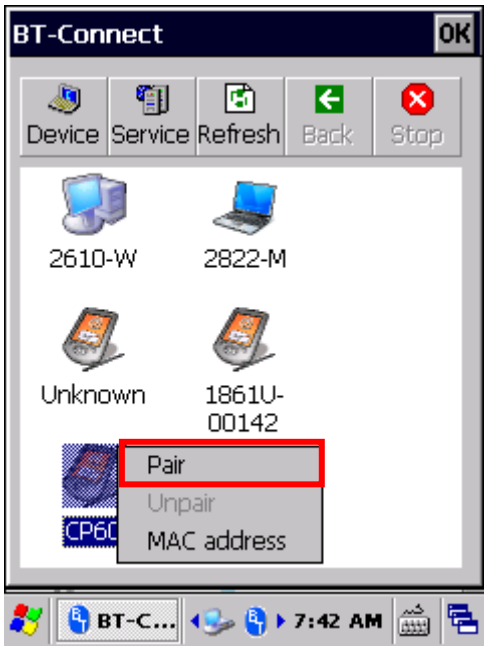
3) Tap **MAC address** in the menu to identify the selected device.



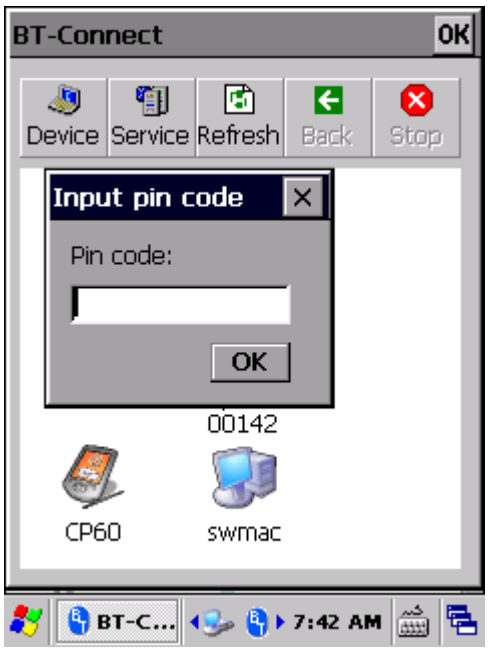
PAIR

If authentication is enabled on the Bluetooth device, pairing will be required to connect to that device. Pairing can be done by using a pin code to ensure secure Bluetooth connection.

1) In the device list, tap and hold the device to pair with. Select **Pair** in the pop-up menu.

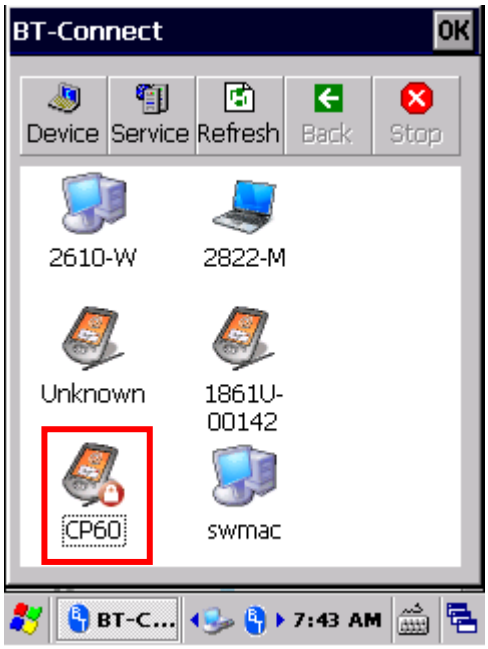


2) Enter a pin code in the pop-up window that appears.

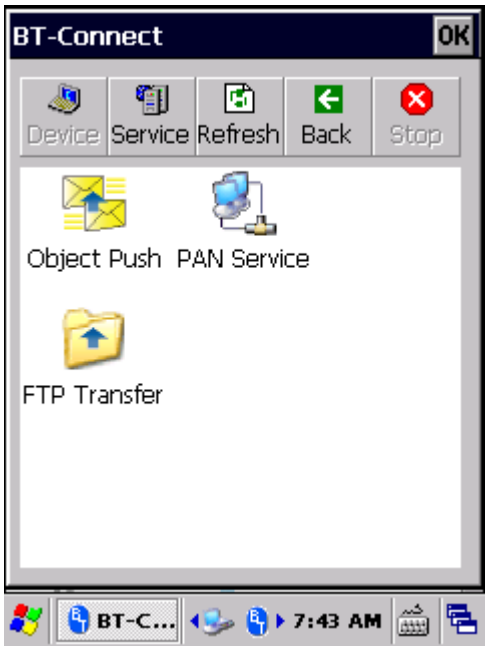


3) On the remote Bluetooth device, a prompt will show requesting you to enter the pin code. Enter it in order to confirm the Bluetooth partnership.

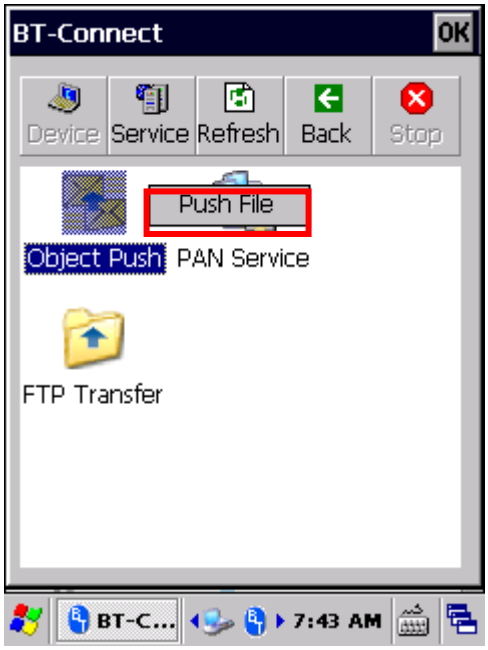
Once the mobile computer and the remote Bluetooth device are paired, a lock icon will be displayed next to the device.



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



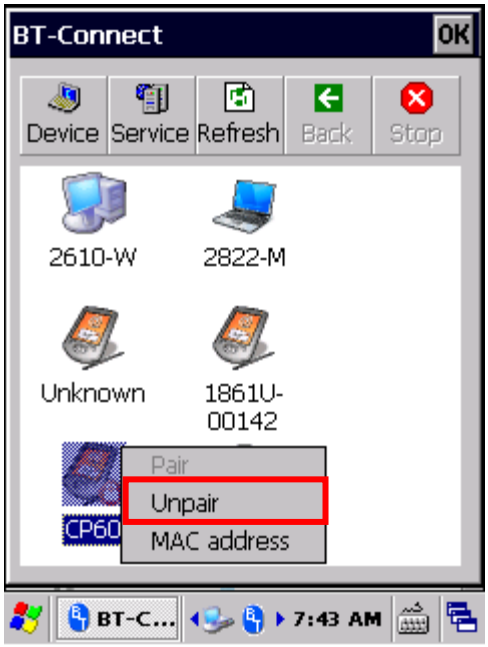
5) Tap and hold a desired Bluetooth service to take further actions.



UNPAIR

To unpair a Bluetooth device:

1) In the device list, tap and hold the device to unpair. A pop-up menu will appear.
2) Select **Unpair** in the pop-up menu.



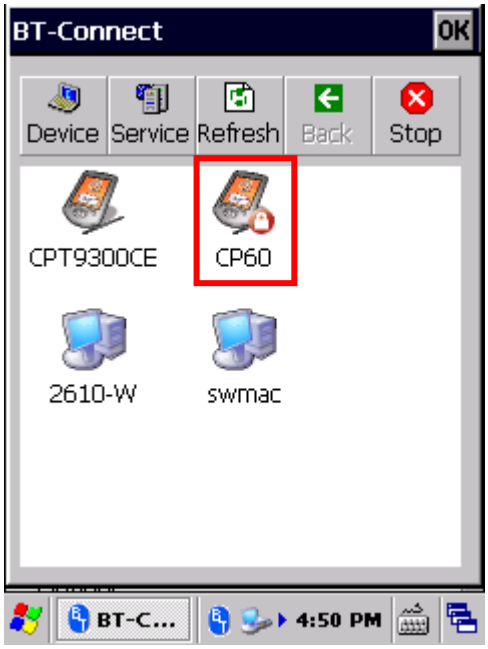
4.2.8. BLUETOOTH DATA TRANSFER

After the mobile computer is paired to a remote Bluetooth Device, it is ready to begin Bluetooth data communication.

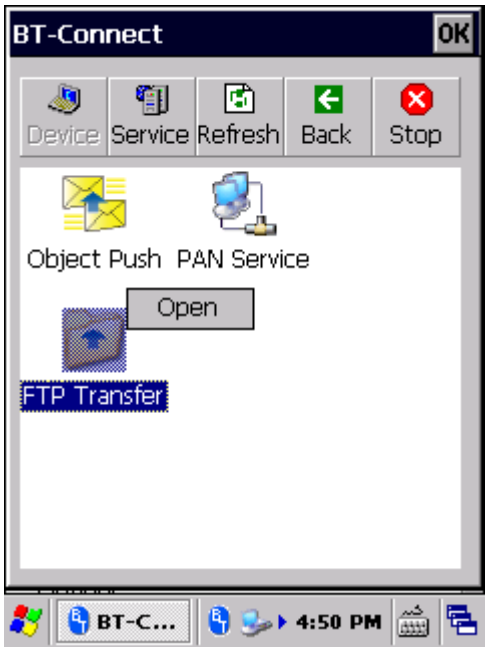
FILE TRANSFER

To exchange files via file transfer (FTP) service:

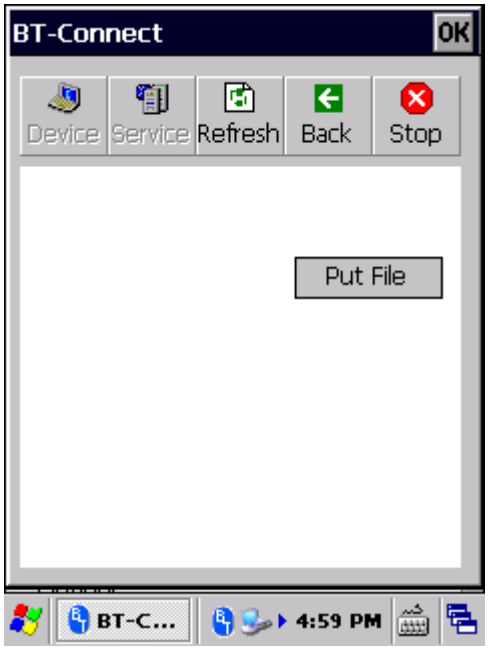
1) On the **Device** page, double-tap the paired Bluetooth device.



2) Tap and hold **FTP Transfer** and select **Open** in the pop-up menu.

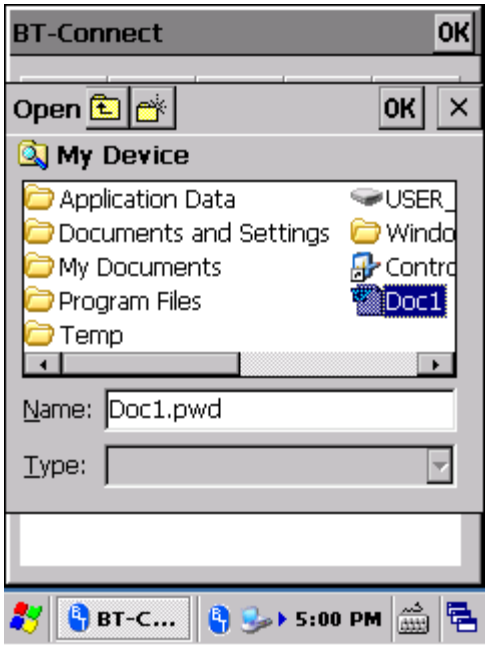


3) Tap and hold a blank spot on the page and select **Put File** in the pop-up menu.

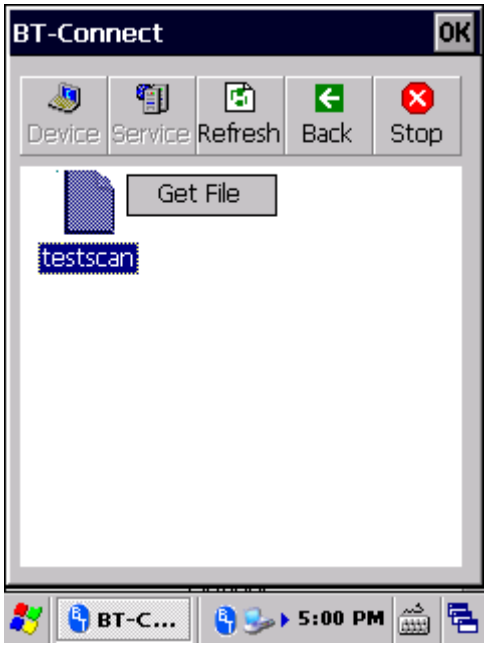


4) Select an object to transfer to the paired Bluetooth device.

   On the remote Bluetooth device, the object will be stored under the directory specified on **Service** page | **FTP Transfer** | **Change Local Path**.



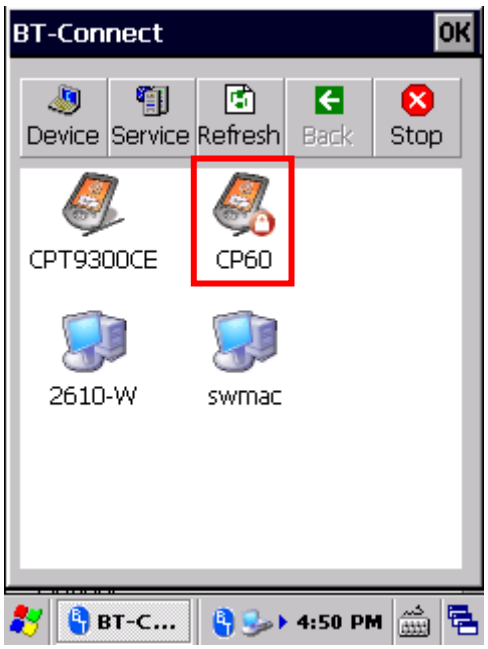
5) To store a transferred file to the specified local path on the mobile computer, tap and hold a file and select **Get File** in the pop-up menu.



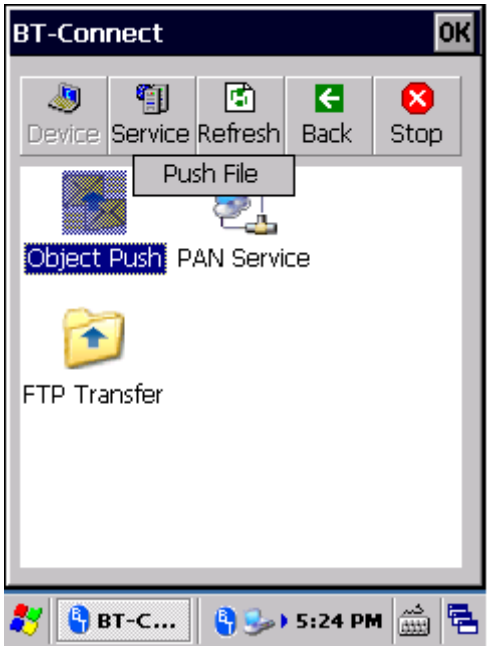
OBJECT PUSH

To use object push (OPP) service to send an object to a remote Bluetooth device:

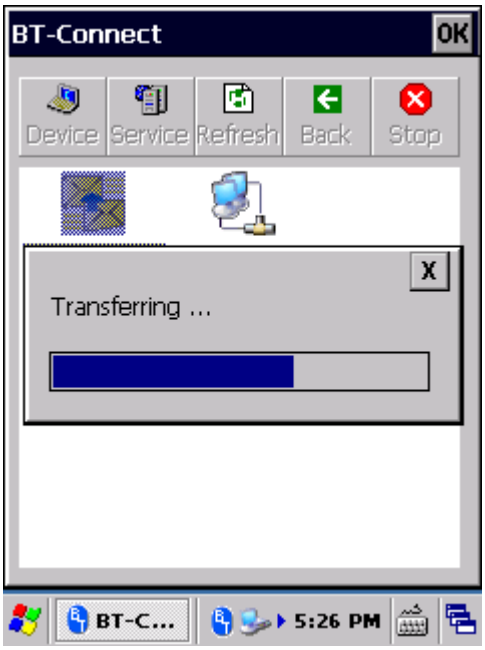
1) On the **Device** page, double-tap the paired Bluetooth device to open a page showing its available services.



2) Tap and hold **Object Push** and select **Push File** in the pop-up menu.



3) Select an object to transfer to the paired Bluetooth device. Wait for a few moments while the file transfers to the remote Bluetooth device.



4) On the remote Bluetooth device, the object will be stored under the directory specified on **Service** page | **Object Push** | **Change Local Path**.

PAN SERVICE

To use personal area network (PAN) service shared by the Bluetooth device to connect to the Internet:

1) On the **Device** page, double-tap the paired Bluetooth device to open a page showing its available services.

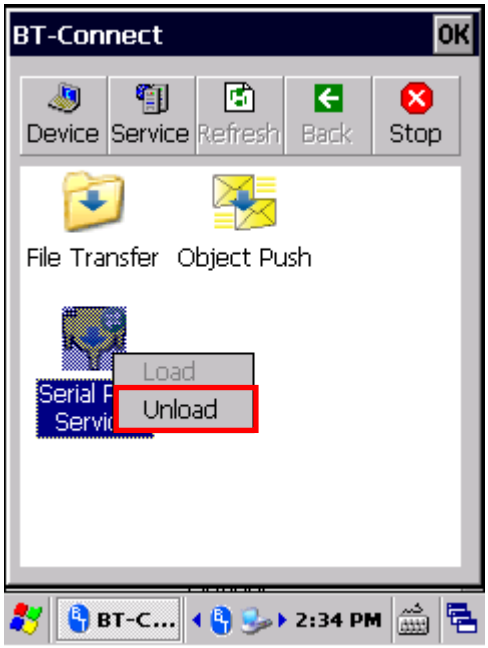
2) Tap and hold **PAN Service** and select **Connect** in the pop-up menu.

3) The paired Bluetooth device is then connected to mobile computer through PAN network.

SERIAL PORT SERVICE

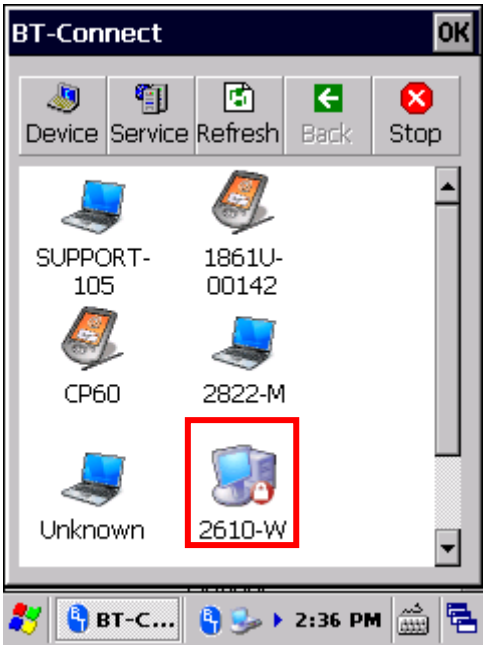
To use Serial Port Service:

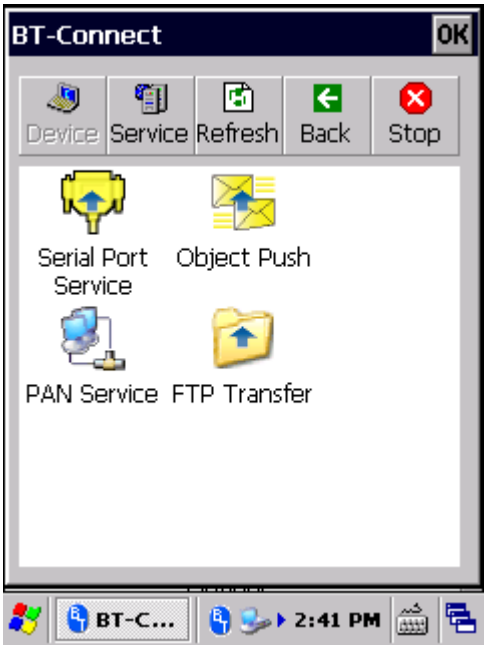
1) On the **Service** page, check if the Bluetooth virtual COM port is occupied by the local SPP service (i.e. whether a green connection icon is present). If so, tap and hold the service and select **Unload** in the pop-up menu.



Note: The mobile computer provides one virtual COM port as the output and/or input port for Bluetooth. Before using the COM port for outgoing serial port (SPP) service, be sure to unload the local SPP service so the COM port is available for outgoing communication.

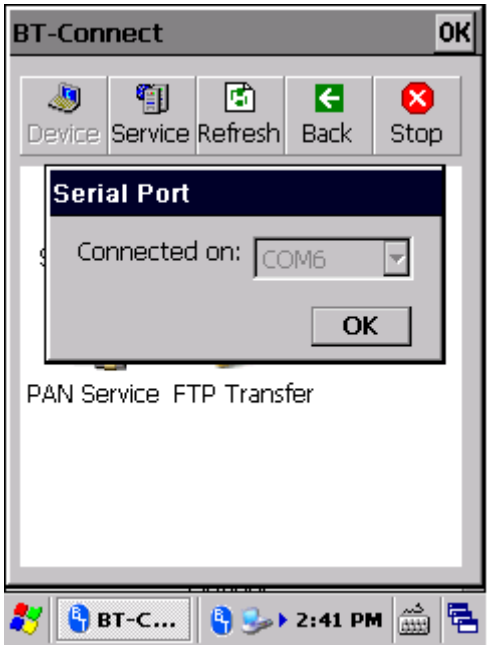
2) On the **Device** tab, double-tap the paired device to open a page showing the available services for that device.



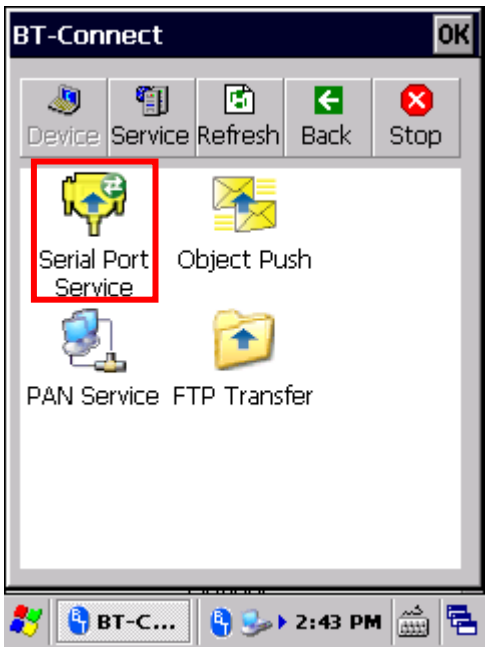


3) Tap and hold **Serial Port Service** and select **Connect** in the pop-up menu.

4) By default, the mobile computer uses COM6 as the Bluetooth SPP COM port. Tap **OK** in the pop-up window to confirm.



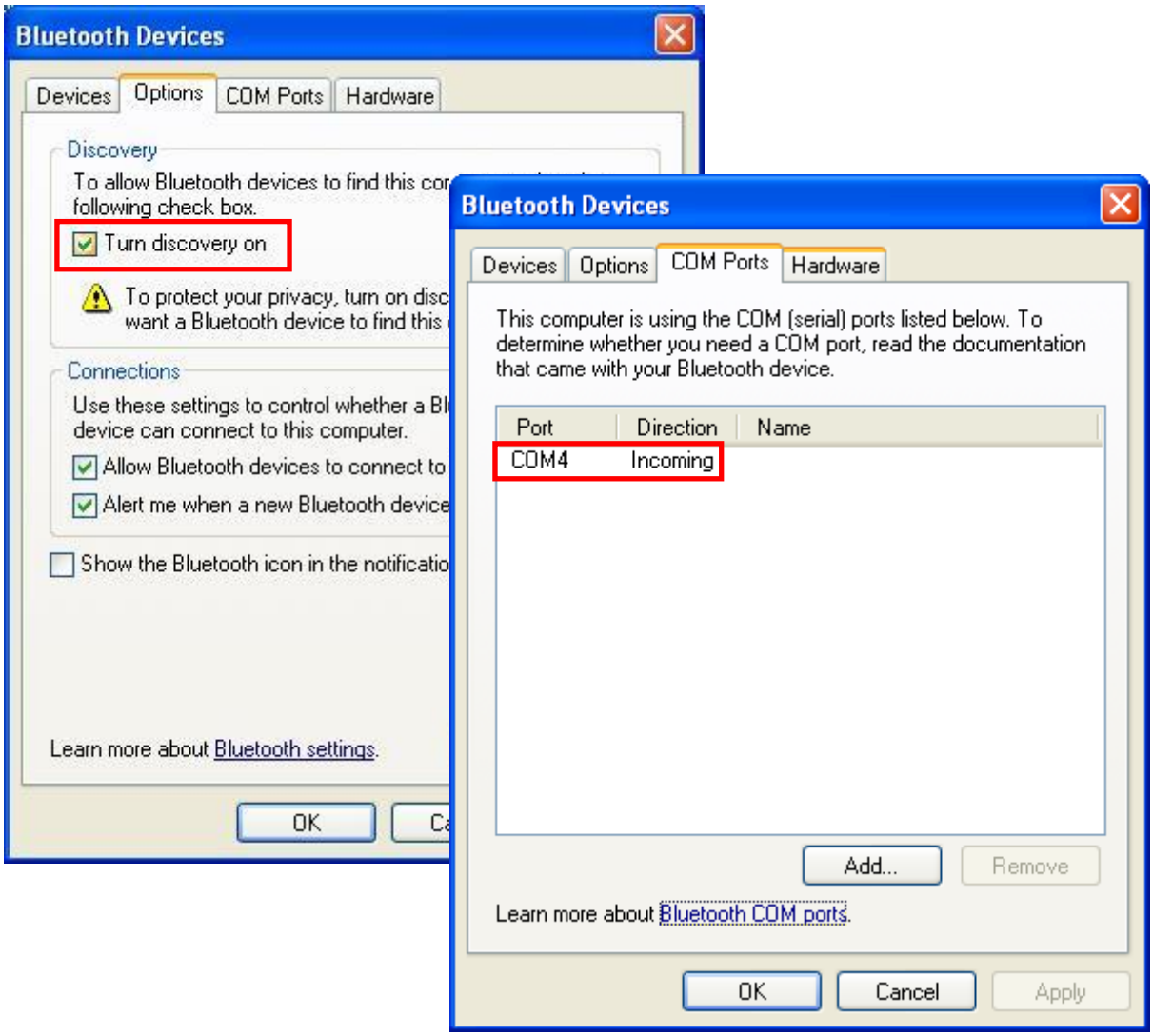
5) A connection icon appears to indicate that serial port service is now active.



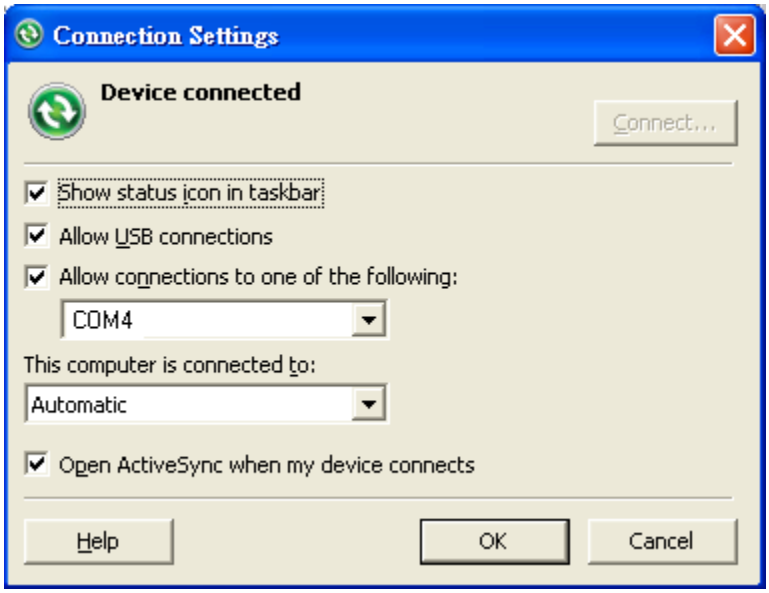
BLUETOOTH ACTIVESYNC

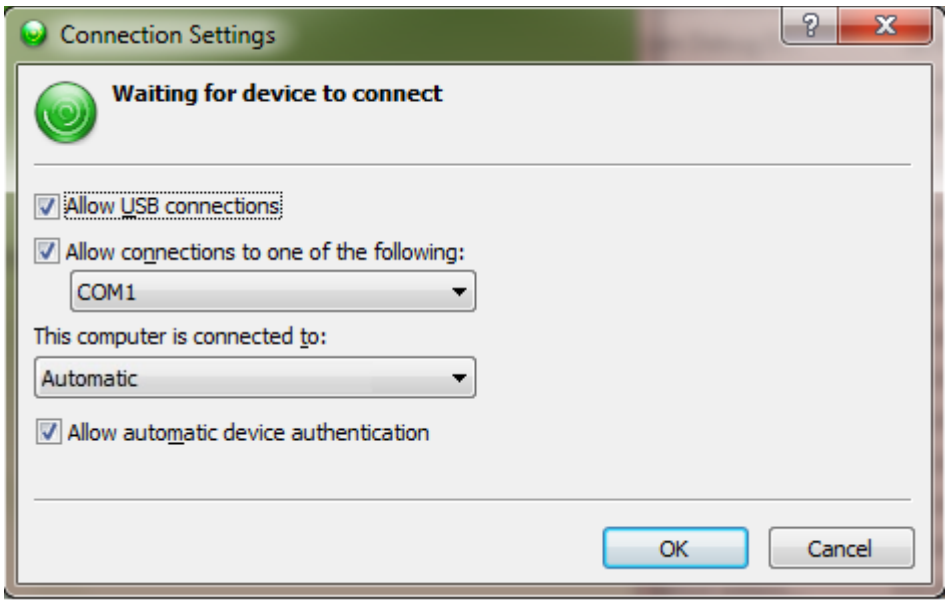
To create ActiveSync connection between your PC and mobile computer via Bluetooth, first you will need to configure Bluetooth settings on your PC.

1) On your PC, configure necessary Bluetooth settings, such as turn Bluetooth discovery on, allow other Bluetooth devices to connect to the PC, and add a COM port for incoming connection.



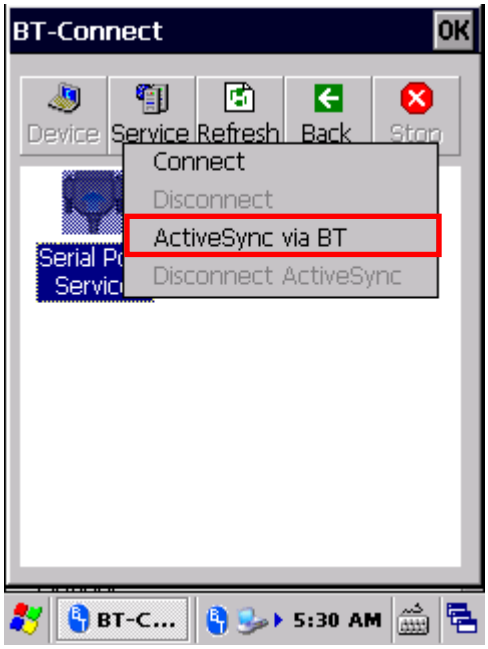
2) On the PC, open **ActiveSync** | **File** | **Connection Settings**, or **WMDC** | **Mobile Device Settings** | **Connection Settings** and specify the COM port for incoming connection.





3) On the mobile computer, make sure Serial Port Service is enabled in **BT Manager**.
4) On the **Device** page, double-tap your PC to view its available services.
5) Tap and hold **Serial Port Services** and select **ActiveSync via BT** in the pop-up menu.

The mobile computer then connects to your PC via ActiveSync.



4.2.9. RE-CONNECTION

By default, **BT-Connect** will automatically re-connect to the previous services the next time the mobile computer goes through a Bluetooth power cycle. The preferred devices and services will also be reflected on the **Preference** tab page of BT Manager.

This section explains the statuses of previously connected devices/services and their re-connection settings.

PREFERRED DEVICE LIST

Tap the **Device** tab page in **BT-Connect** to check the statuses of previously connected devices.

Example	Device Status	Settings in BT-Manager
	The device has been paired with ( ) and at least one service has been re-connected successfully, such as Headset/Handsfree, HID, PAN, or SPP.	Last Connection = **Y** (on the Preference Tab)
	The device has been paired with ( ) but have the following settings for remote services, such as Headset/Handsfree, HID, PAN, or SPP: (1) Last Connection is set as **N**, meaning none of the services are required to be re-connected. (2) Last Connection is set as **Y**, but the device fails to be re-connected.	Last Connection = **N** or **Y** (on the Preference Tab)
	The device is not paired, yet it has services which do not require PIN code exchange and are set as not to be re-connected (such as DUN, FTP, or OPP).	Last Connection = **N** (on the Preference Tab)

Note: The re-connection settings are configurable in BT Manager. If you want to remove a specific device from the device list, you have to manually delete records of all its Bluetooth services on the Preference Tab.

4.2.10. PREFERRED SERVICES

On the **Device** tab page in **BT-Connect**, double-tap the preferred device to view its available Bluetooth service(s).

Example	Service Status	Settings in BT-Manager
Serial Port Service	The service is re-connected ( ).	Last Connection = **Y** (on the Preference Tab)
Object Push	The service is available for re-connection.	Last Connection = **N** (on the Preference Tab)
PAN Service	A previously connected service becomes disconnected ( ) since partnership with the remote Bluetooth device has been interrupted.	Last Connection = **Y** (on the Preference Tab)
FTP Transfer	The service is manually disconnected, and partnership with the remote Bluetooth device has been interrupted.	Last Connection = **N** (on the Preference Tab)

To reconnect to a specific service, tap and hold it and select **Connect** in the pop-up menu.

Or tap Refresh to update service status for the remote Bluetooth device.

Note: You can select to re-connect to a specific service. Refer to Preference Tab to configure connection settings for the service.

4.2.11. MANAGE LOCAL SERVICES

LOAD/UNLOAD SERVICE

You may select to load or unload a certain service. When a service is unloaded, it will become unavailable to paired Bluetooth devices. When it is re-loaded, it will become available once more.

1) On the **Service** page, tap and hold an item to open a pop-up menu.

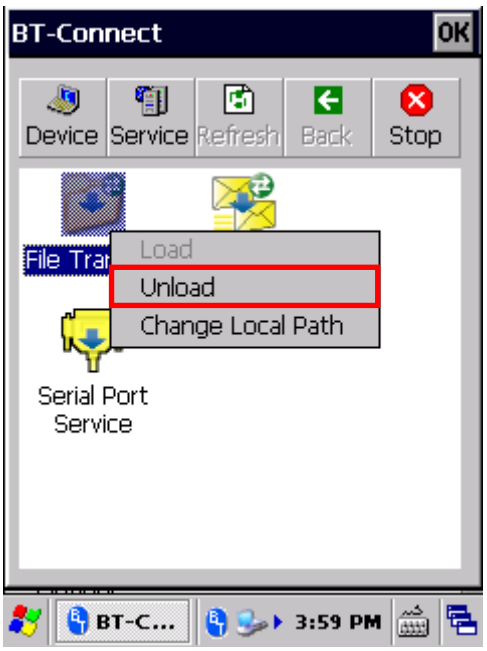
   An active service will have a connection icon next to it. Select to **Unload** it in the pop-up menu.

OR

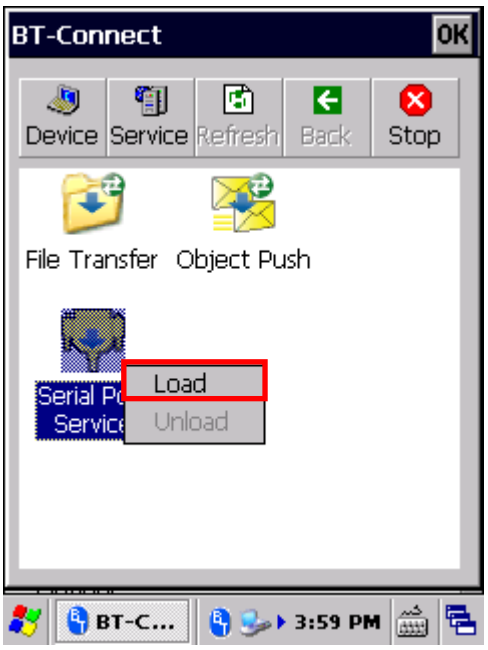
   Select an inactive service and **Load** it in the pop-up menu.

Note: File Transfer (FTP) and Object Push (OPP) services are loaded/unloaded simultaneously.

Select an active service to unload it.



Select an inactive service to load it.

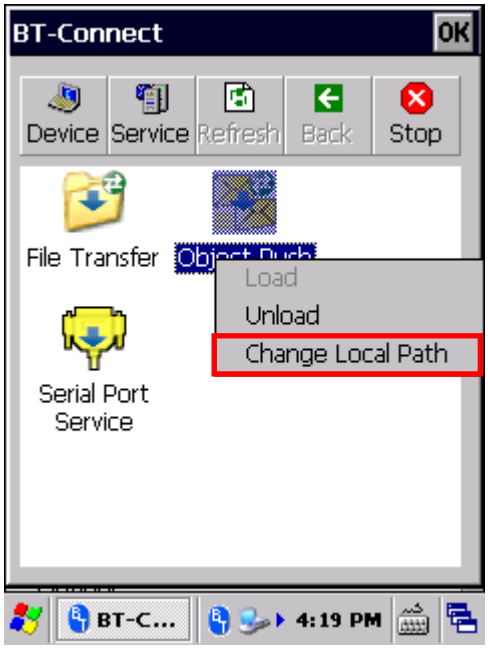


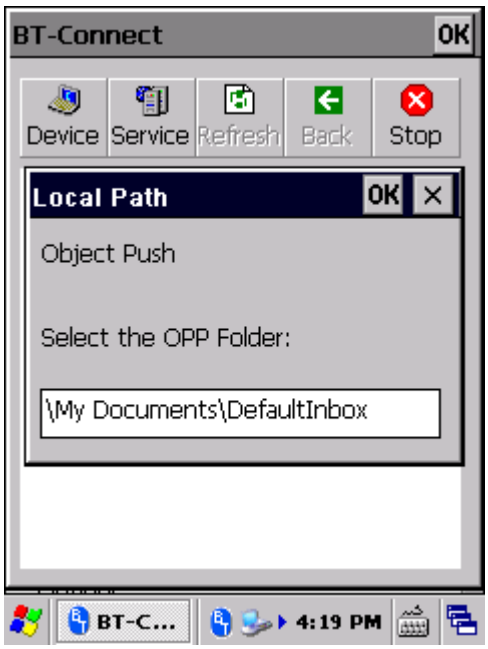
CHANGE LOCAL PATH

For **File Transfer** and **Object Push** services, you may change the path for file exchange.

1) On the **Service** page, tap and hold an item to open a pop-up menu.

   Select **Change Local Path** in the pop-up menu and enter an inbox storage path.





2) Tap **OK** to confirm the change.

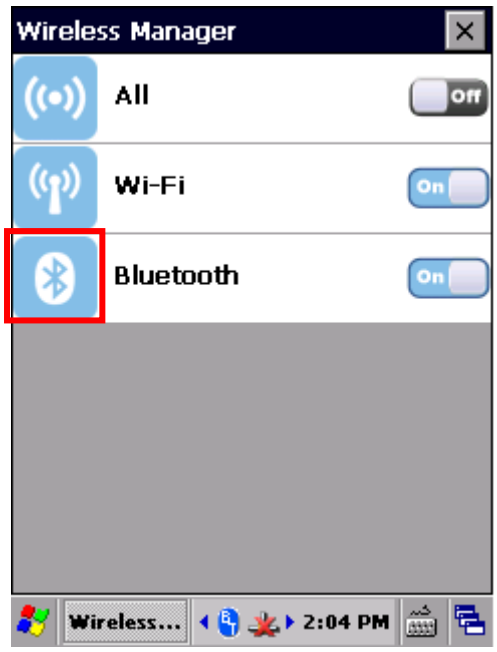
4.2.12. BT MANAGER

Advanced Bluetooth settings regarding Bluetooth reconnection, Bluetooth inquiry time and more can be adjusted using **BT Manager**.

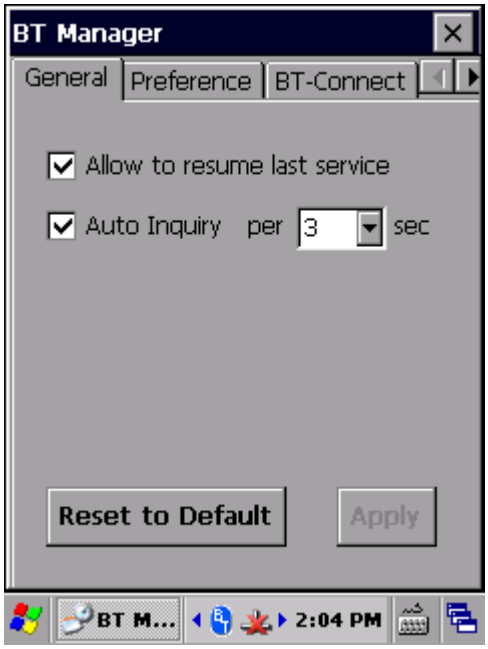
1) Tap **Start** | **Settings** | **Control Panel** | **BT Manager** .

OR

Tap the Bluetooth icon on the Wireless Manager settings page.

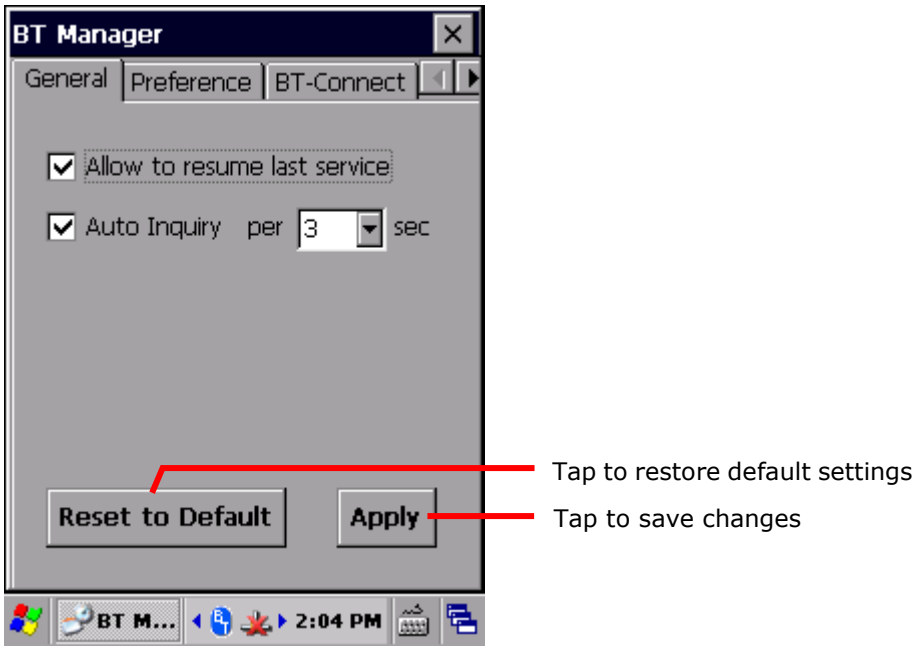


BT Manager window will open showing four tab pages: **General**, **Preference**, **BT-Connect** and **About**.



GENERAL TAB

This page sets whether to allow reconnection of Bluetooth services and auto-inquiry of Bluetooth devices.



Setting	Description
Allow to resume last service	Select to automatically re-connect to all previous Bluetooth services after the mobile computer resumes from warm boot, or goes through a Bluetooth power cycle.
Auto Inquiry per [ ] sec	Select to perform an inquiry on a remote device at a regular interval after the mobile computer resumes from suspension.

- Use Preference tab page to configure "Last Connection" and "Auto Inquiry" settings for a specific service.

Note: Disabling "Auto Inquiry" helps save battery power. Enable this function only when necessary.

PREFERENCE TAB

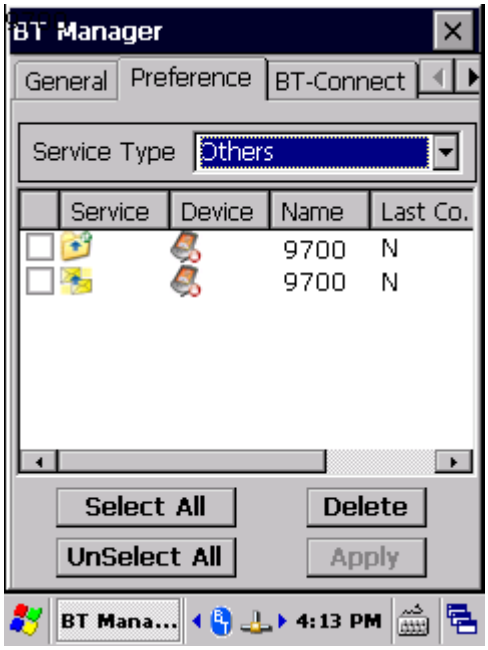
BT Manager helps sort out preference for all remote services which were previously connected/disconnected. Select a desired service type from the drop-down menu:

- Headset/Handsfree
- HID
- PAN
- SPP
- Others (FTP, OPP, and DUN)

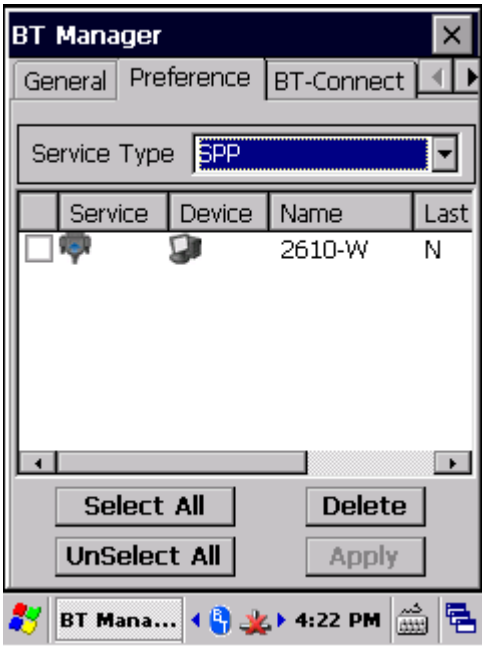
MANAGING BLUETOOTH SERVICES

Bluetooth devices which deliver the selected service type will be shown in the content field, including service/device icons, device names, and default connection settings (Last Connection and Auto Inquiry).

A colored icon indicates the service is available for use



A grayed out icon indicates the service is currently unavailable

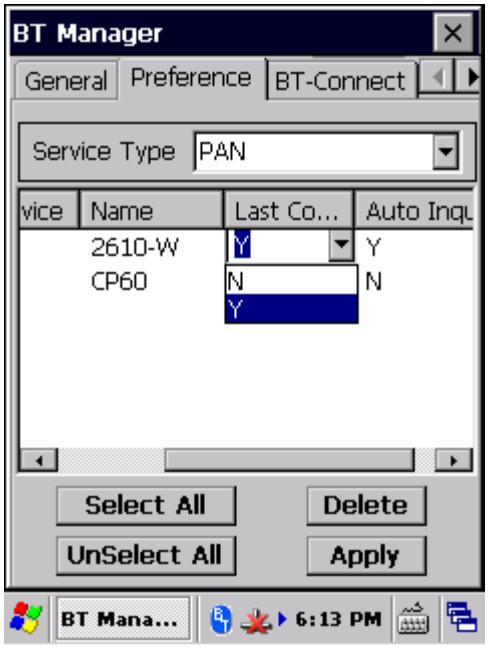


Setting	Description
Select All	Tap to select all the listed service(s).
Unselect All	Tap to deselect all the listed service(s).
Delete	Tap to delete the selected service(s). ▸ If a service is currently active, it cannot be deleted.
Apply	Tap to save any made changes.

CONFIGURING CONNECTION SETTINGS

Change the connection preference for a specific service by enabling (selecting **Y**) or disabling (selecting **N**) the last two columns, **Last Connection** and **Auto Inquiry**.

- If you select **Y** for **Last Connection** or **Auto Inquiry**, "Allow to resume last service" and "Auto Inquiry" must be enabled on the **General** tab. On the other hand, the connection settings will be ignored if the two settings are disabled on the General tab.

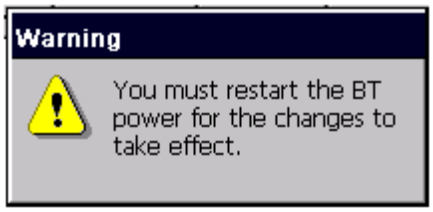


Options	Description
Last Connection	Decide whether to re-connect to the previous services when the mobile computer reboots or goes through a Bluetooth power cycle. Configurable services include: ▸ Headset/Handsfree ▸ HID ▸ PAN ▸ SPP
Auto Inquiry	Based on the settings for "Last Connection", tap this field to decide whether to detect a device after a specific time interval. For Headset/Handsfree, HID, and PAN services, the value of "Auto Inquiry" will automatically follow the settings for "Last Connection". For SPP service, when "Last Connection" is enabled (= "Y"), the value of "Auto Inquiry" can be manually set to "Y" or "N". ▸ If Auto Inquiry is enabled, tap the General Tab to set the interval for the mobile computer to perform an inquiry.

Note: To save the battery power of your mobile computer, we suggest you disable "Auto Inquiry" unless necessary.

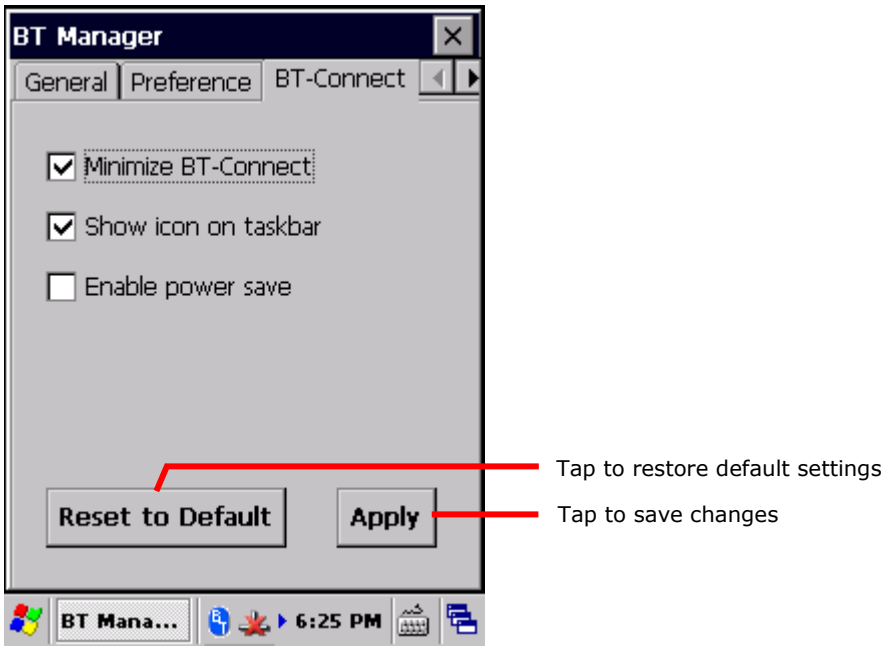
SAVING PREFERENCE CHANGES

After making changes to preference settings, tap **Apply**. A warning dialog will show reminding that for the settings to take effect, you will need to restart Bluetooth power. Proceed to perform a Bluetooth power cycle as in Turn On/Off Bluetooth.



BT-CONNECT TAB

The **BT-Connect** tab allows configuration of the "**BT-Connect** window", which can be opened by tapping the Bluetooth icon on the taskbar.



Setting	Description
Minimize BT-Connect	Select to have the **BT Connect** window minimized on the taskbar after it is launched to continue providing Bluetooth services.
Show icon on taskbar	Select whether to display the Bluetooth icon on the taskbar when **BT Connect** is running.
Enable power save	Select whether to maintain Bluetooth connections in low power consumption mode until a profile becomes active.

ABOUT TAB

This page delivers version and copyright information about the software.

Chapter 5

MORE APPLICATIONS

Aside from the dedicated Reader Configuration which empowers the mobile computer's with a specialty in data capture as mentioned in Data Capture, more manufacturer-developed applications are preinstalled to strengthen user's system management and make the mobile computer more eligible.

These applications include:

Applications	Description
Button Assignment	Assigns new functions to some physical keys.
Signature Utility	Captures, views, edits signatures.
Backup Utility	Performs backup and restore of registry and system files.
Push to Talk	Transmits real-time audio content through wireless connection.

IN THIS CHAPTER

5.1 Button Assignment 157
5.2 Signature Utility 170
5.3 Backup Utility 174
5.4 Push to Talk 187

5.1. BUTTON ASSIGNMENT

Button Assignment can re-define the functions of physical keys so that they trigger different actions. Settings made to one or more keys can be saved as a profile, allowing users to switch conveniently in between different sets of settings. Key functions under Function Mode (triggered by pressing the Function Key) can also be re-defined.

5.1.1. LAUNCH BUTTON ASSIGNMENT

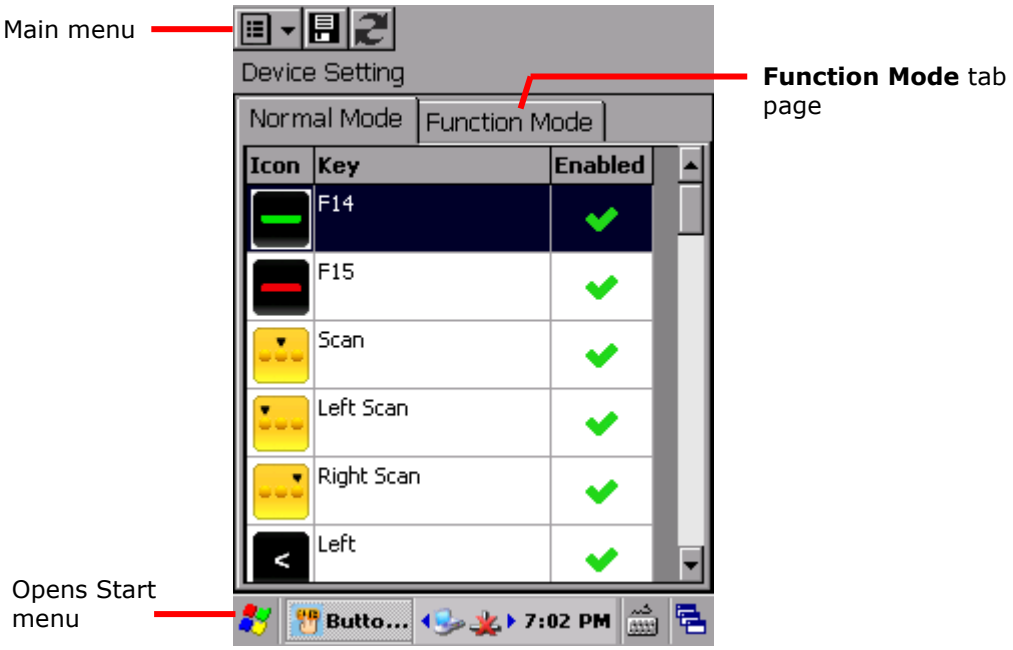
To launch button assignment:

1) Tap **Start** | **Settings** | **Control Panel** | **Button Assignment** .

   Button Assignment opens showing **Normal Mode** tab page with an additional **Function Mode** tab page.

   The Normal Mode tab page consists of a table listing three columns: **Icon** column displaying the buttons available for reassignment, **Key** column showing the assigned function of each button, and **Enabled** column to enable or disable the indicated buttons in a single tap.

   At the upper left of the screen is a taskbar that can be used to open additional settings, save a profile or refresh settings to the stored profile.



TOOLBAR

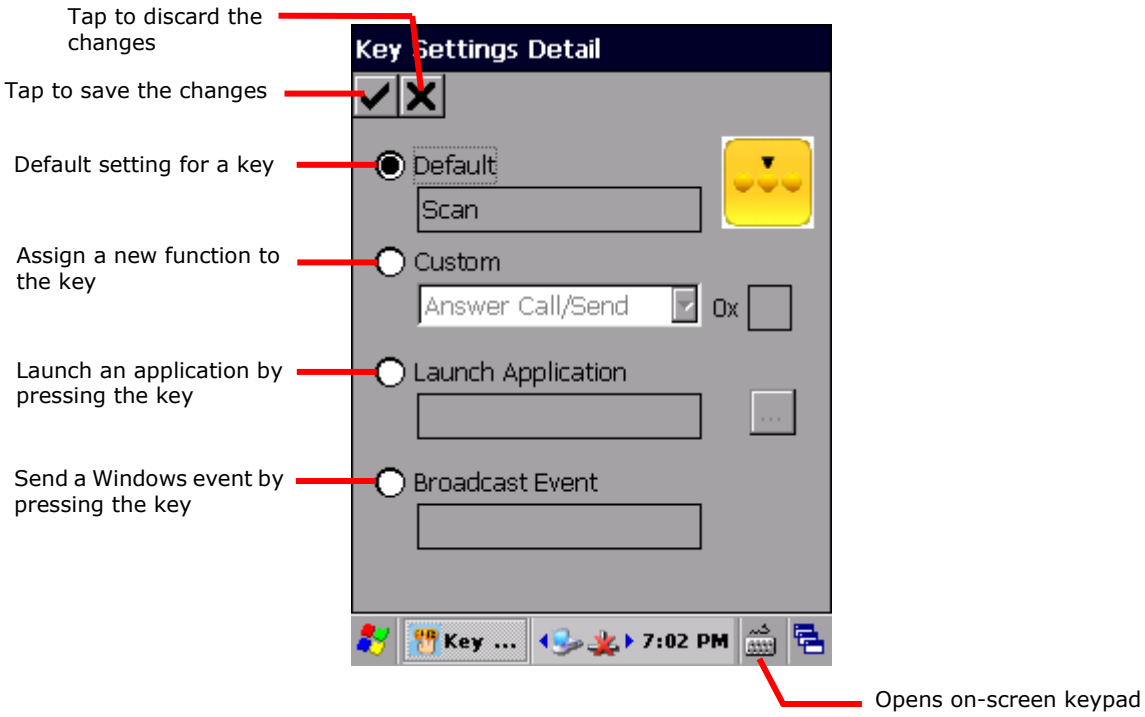
Toolbar icon	Description
	Opens Button Assignment main menu which can be used to manage profiles, reset settings to default, obtain version information, or exit the application.
	Saves current settings as a new profile, or saves changes made to the profile currently opened.
	Refreshes the screen to profile settings as stored.

5.1.2. REDEFINE KEYS

To assign a new function for a re-definable key:

1) Launch Button Assignment as described in Launch Button Assignment.
2) Scroll to the button you would like to re-define, and tap twice on the icon or text.

   Settings page for that button will open showing four options to set button function.



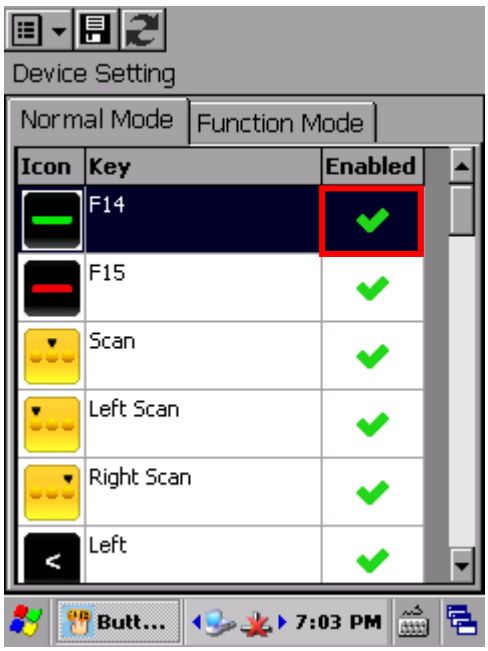
Item	Value
Default	Sets the key function back to factory default.
Custom	Provides a drop-down list to select the preferred function for the specific key. (Options available differ with the key.) Either select a pre-defined function, or select “”User define” and enter a valid ASCII key code (0x00~0xFF) in the text box.
Launch Application	Opens an application by pressing the specific key. Browse to the .exe file of the desired application.
Broadcast Event	Input a Windows message event which will be triggered each time the button is pressed.

3) Re-assign the button as desired, and tap ✔ to save, or ✕ to cancel.
4) Open the Button Assignment main menu and tap **Write to device** to apply changes.

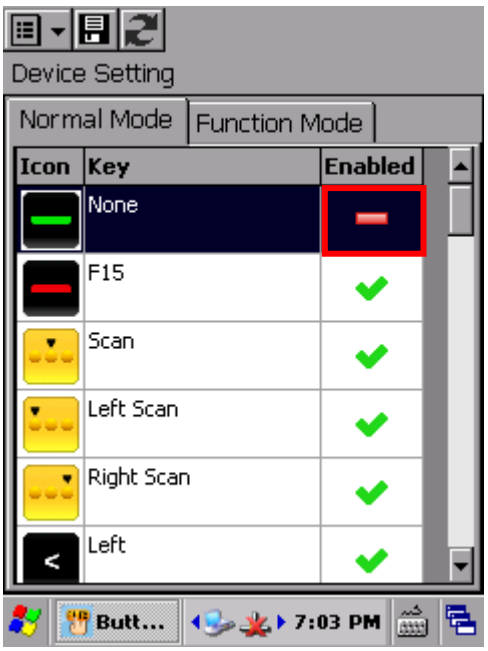
DISABLE/ENABLE KEY FUNCTION

The last column in the Device Setting list gives an overview of key status. Users can disable or enable a key by giving a single tap on this column. By disabling keys, keys are "locked" as no actual function will take place when they are pressed.

Enabled items will display as ✔ while disabled items will appear as ▬ .



Tap the "Enabled" column to enable or disable the indicated function.



Once keys are disabled, the icon changes and the function for that key will appear as "None".

Note:

(1) To access the settings page for a key, its status needs to be set as "Enabled".

(2) When a key is disabled and then enabled, its function will return to default settings.

5.1.3. MAIN MENU

When the main menu button is tapped, an option menu opens providing the following functions:

Item	Description
User Profile	Displays the existing profiles (not including default settings), and a toolbar to manage profiles: **Toolbar icon** — **Description** ✔ — Applies the selected profile. ✕ — Returns to the previous page. 🗑 — Deletes the selected profile. Imports a previously exported profile. Exports the selected profile as an .xml file.
Read from device	Reads and displays the current settings on the mobile computer. This should be done: ▸ Before creating a new profile ▸ To check the current environment on the mobile computer.
Write to device	Applies the currently displayed settings to the mobile computer. Button functions on the device will not alter until **Write to device** is tapped. This should be done: ▸ After creating a new profile ▸ After changing an existing profile ▸ After settings are reset to default ▸ After the active profile has been deleted, and the user wishes to replace previous settings on the device. Only by tapping this option will the displayed settings come into action.
Reset to default	Resets the displayed settings to default. For default settings to take effect on the mobile computer, **Write to device** must be tapped.
About	Displays copyright and version information.
Exit	Exits the application.

MANAGE PROFILES

CREATE PROFILE

To create a new profile:

1) Load factory default settings, or read current settings from device first.
2) Modify the settings directly according to your needs, then tap to open a page where you can enter a name for the new profile.
3) Tap ✔ to save, or ✕ to cancel.

EDIT PROFILE

To edit an existing profile:

1) Tap the main menu button and tap **User Profile** in the option menu.
2) Select the profile you wish to edit, then tap ✔.

   The selected profile opens.
3) Modify the profile according to your needs, then tap .
4) In the dialog box that appears, tap **Yes** to proceed, or **No** to cancel.

DELETE PROFILE

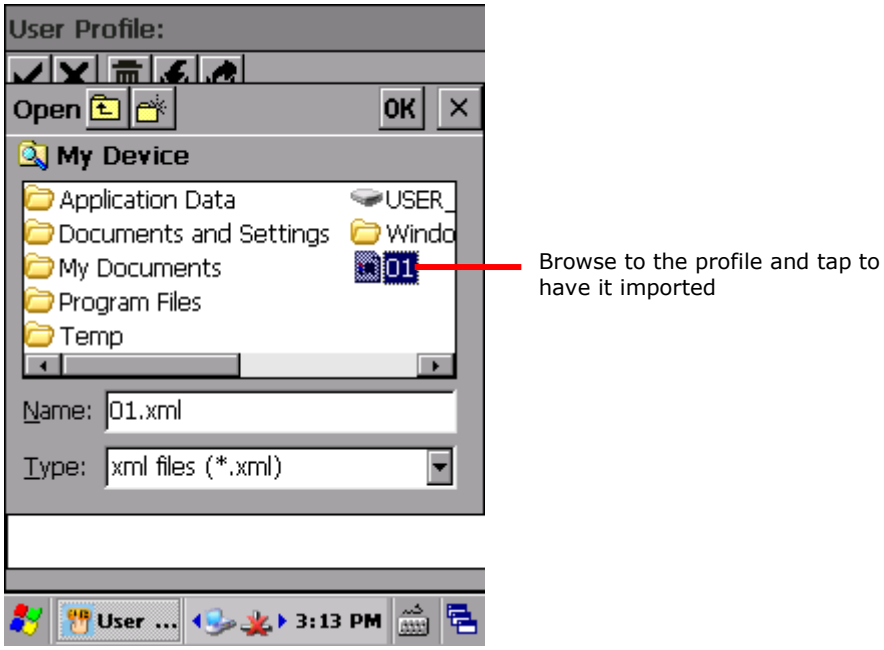
To delete an existing profile:

1) Tap the main menu button and tap **User Profile** in the option menu.
2) Select the profile you wish to delete, then tap .
3) In the dialog box that appears, tap **Yes** to proceed, or **No** to cancel.

IMPORT/EXPORT PROFILE

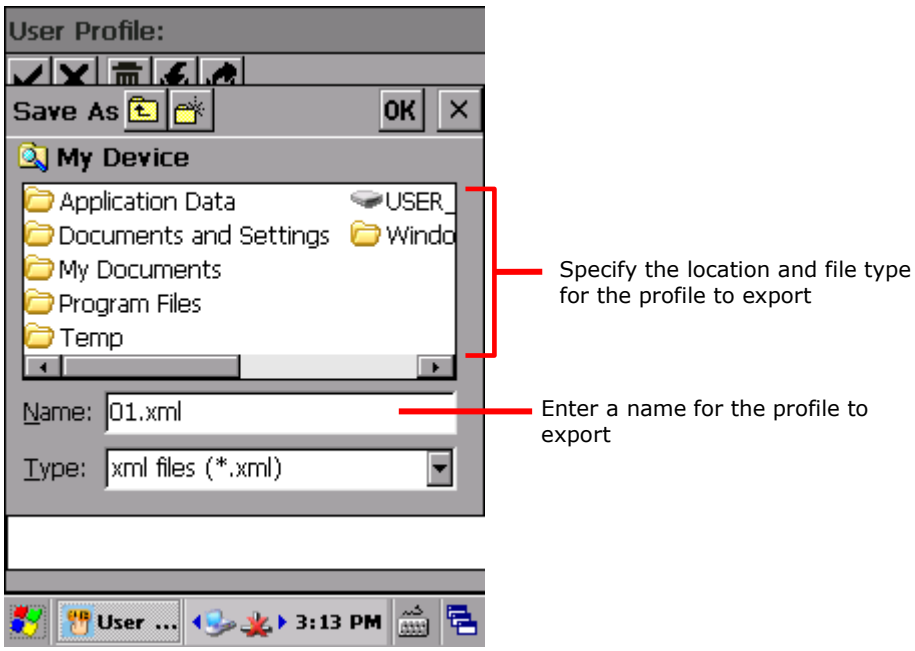
Profile settings can be exported as an independent .xml file, which may be transferred to other devices so they can share identical button assignment settings.

1) Open the main menu button and tap **User Profile** in the option menu.
2) Tap to import a previously exported profile.



OR

Select the profile you wish to export, then tap to enter export settings.

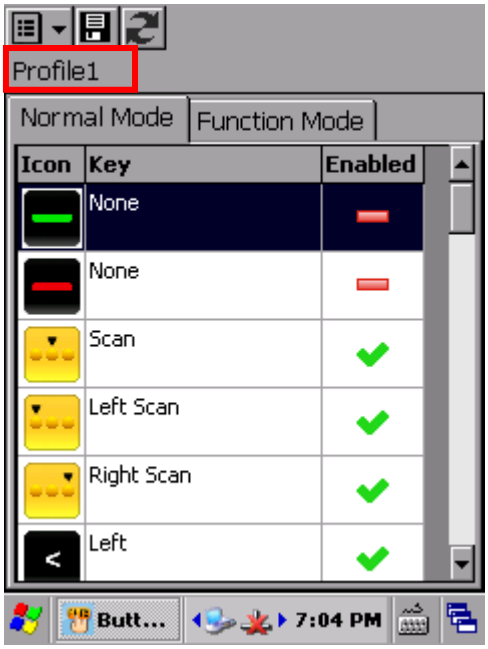


3) In the dialog box that appears, tap **Yes** to proceed, or **No** to cancel.

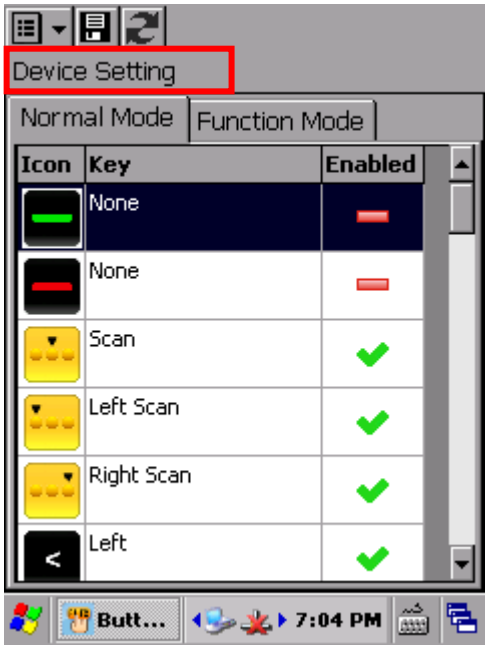
READ/WRITE SETTINGS

Use **Read from device** and **Write to device** to read the current settings on the device, or write the newly changed settings to the device in order for them to take effect. See Main Menu for when to use these options.

When Button Assignment application is launched, tapping **Read from device** will get the settings currently active on the device, which may be either default settings, a saved profile, or settings previously written to the device. Regardless of where the active settings derive from, they will be presented as "Device Setting" as denoted at the top of the page.



When a new profile is created and saved, the profile name will appear at the top left of the page.



After the profile is "written to the device", the profile name will be replaced with "Device Setting" the next time the application is opened, or when **Read from device** is tapped.

RESET TO DEFAULT

Tapping **Reset to default** in the option menu will display default settings. This can be followed by the steps below.

- To apply default settings to the mobile computer, tap **Write to device** in the option menu.
- To create a new profile from default settings, make changes directly and tap the save button .

5.1.4. KEYPAD MODES

The 30-key numeric keypad and 38-key numeric & function keypad provide two different modes for Button Assignment, normal mode and function mode. To enable function mode, simply press the Function Key.

On the 53-key alphanumeric keypad, only normal mode is available.

30-KEY KEYPAD

Button	Normal mode	Function mode	Key Options	Special Options (Normal mode)
	F14	F14	Answer Call / Send End (Call) Start OK Home End Left Right Up Down Page Up Page Down Volume Down Volume Up Increase Backlight Brightness Decrease Backlight Brightness Backspace Enter Esc Tab Shift - . * # ! @ $ % ^ & ( )	
	F15	F15		
	Scan	N/A		Push to Talk
	Left Scan	N/A		Push to Talk
	Right Scan	N/A		Push to Talk
<	Left	Home		
^	Up	Page Up		
v	Down	Page Down		
>	Right	End		
ESC	Esc	Esc		
␣	Space	Start		
←	Backspace	Keypad Lock		
↵	Enter	Enter		
.	[.] Period key	N/A		
1	[1] Number key	F9		
2	[2] Number key	F10		

3	[3] Number key	F11	1, 2, 3.....9, 0 F1-24 User Define	
4	[4] Number key	F12		
5	[5] Number key	Increase Backlight Brightness		
6	[6] Number key	Volume Up		
7	[7] Number key	N/A		
8	[8] Number key	Decrease Backlight Brightness		
9	[9] Number key	Volume Down		
0	[0] Number key	N/A		
F1	F1	F5		
F2	F2	F6		
F3	F3	F7		
F4	F4	F8		

38-KEY KEYPAD

Button	Normal mode	Function mode	Key Options	Special Options (Normal mode)
	F14	F14	Answer Call / Send End (Call) Start OK Home End Left Right Up Down Page Up Page Down Volume Down Volume Up Increase Backlight Brightness Decrease Backlight Brightness Backspace Enter Esc Tab Shift - . * # ! @ $ % ^ & ( ) 1, 2, 3.....9, 0 F1-24 User Define	
	F15	F15		
	Scan	N/A		Push to Talk
	Left Scan	N/A		Push to Talk
	Right Scan	N/A		Push to Talk
<	Left	Home		
^	Up	Page Up		
v	Down	Page Down		
>	Right	End		
ESC	Esc	Esc		
␣	Space	Start		
←	Backspace	Keypad Lock		
↵	Enter	Enter		
,	[,] Comma key			
.	[.] Period key	N/A		
1 2 3 4 5 6 7 8 9 0	Keys 1, 2, 3 .....9, 0	--		
F1	F1	F11		
F2	F2	F12		

F3	F3	F13		
F4	F4	F14		
F5	F5	N/A		
F6	F6	Increase Backlight Brightness		
F7	F7	Volume Up		
F8	F8	N/A		
F9	F9	Decrease Backlight Brightness		
F10	F10	Volume Down		

53-KEY KEYPAD

Button	Normal mode	Key Options	Special Options
	F14	Answer Call / Send End (Call) Start OK Home End Left Right Up Down Page Up Page Down Volume Down Volume Up Increase Backlight Brightness Decrease Backlight Brightness Backspace Enter Esc Tab Shift - . * # ! @ $ % ^ & ( ) 1, 2, 3.....9, 0 F1-24 User Define	
	F15		
	Scan		Push to Talk
	Left Scan		Push to Talk
	Right Scan		Push to Talk
<	Left		
^	Up		
v	Down		
>	Right		
ESC	Esc		
␣	Space		
←	Backspace		
↵	Enter		
*	[*] Asterisk key		
.	[.] Period key		
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	Keys A-Z		

	Keys 1, 2, 3…..9, 0

Note: Under normal mode, the scan key and side trigger keys (left/right scan key) can be assigned as the Push to Talk trigger key.

5.2. SIGNATURE UTILITY

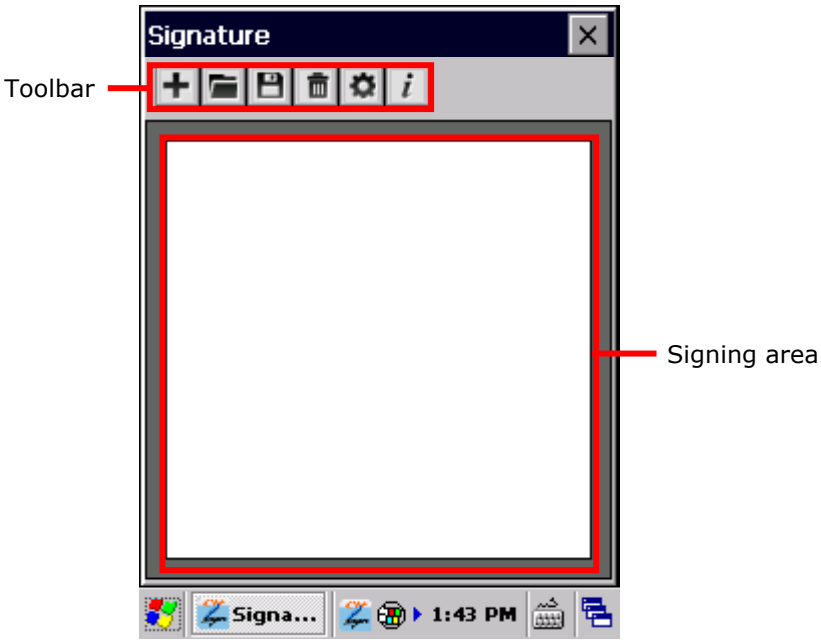
Signature utility captures, views and edits signature files.

5.2.1. LAUNCH SIGNATURE UTILITY

To launch Signature utility:

1) Tap **Start** | **Programs** | **Signature** .

   Signature utility opens showing a toolbar along the top and a signing area within its window.



TOOLBAR & SIGNING AREA

Toolbar features a few icons to launch actions from the utility.

Toolbar icon	Description
+	Creates a new file.
	Loads a signature image.
	Saves the affixed signature to an image file (BMP, JPG or Locus format).
	Clears signing area.
	Opens preferences settings.
i	Views utility info including developer and software version.

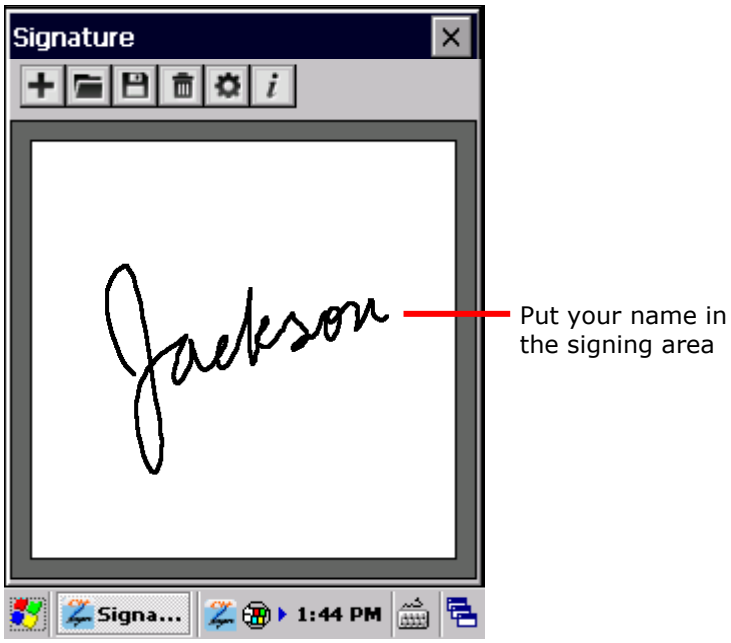
5.2.2. CAPTURE SIGNATURE

To capture a signature:

1) Launch Signature utility as described in Launch Signature Utility.

   Signature utility launches.

2) Use the stylus to sign a name in the signing area.



3) Tap icon to save the signature as an image in BMP, JPG or Locus format.

OR

   Tap icon to discard the signature and sign again.

4) Tap on the upper right corner to quit Signature utility.

5.2.3. VIEW OR EDIT EXISTING SIGNATURES

To view the existing signature(s) on the storage of the mobile computer:

1) Launch Signature utility as described in Launch Signature Utility.

   Signature utility launches.

2) Tap icon on toolbar.

   The utility opens a screen allowing users to select the location and file type of the signature to view.

3) Browse to the folder where the signature is stored, and select which file type of signature to view.

   All signature files meeting the requirements are listed.

4) Tap the signature file to view.

   The file opens on-screen overlaid by a dialog asking if you want to modify the opened signature file.

5) Confirm **Yes** if you want to change the opened signature.

OR

   Confirm **No** if you only want to view it.

Note: Signature utility loads images of maximum 640 x 480 pixels. If it tries to load an image beyond this limit, an error message will prompt and the image cannot be opened.

5.2.4. PREFERENCES

The utility supports preferences settings which change the utility's behaviors when it is used. Users are able to change the size and color of the signing pen stroke, and customize the background color of the signing area.

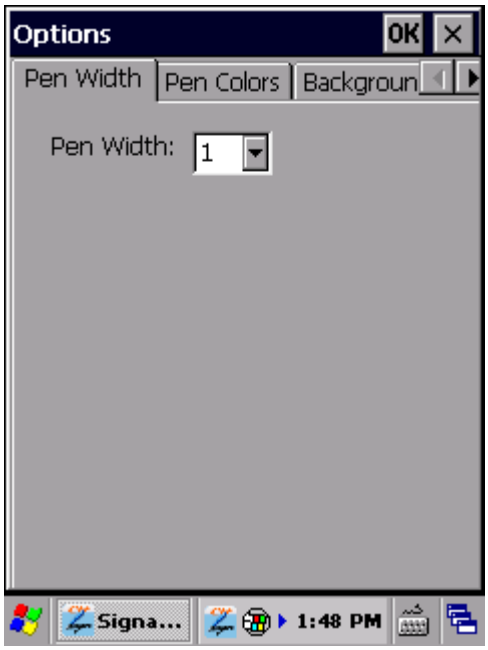
To access the utility's preferences settings:

1) Launch Signature utility as described in Launch Signature Utility.

   Signature utility launches.

2) Tap icon on toolbar.

   Preferences settings open showing **Pen Width** tab page.



3) Select between **Pen Width**, **Pen Colors** and **Background Colors** tabs to customize signing preferences.
4) Tap the "OK" command to save changes, or tap **CANCEL** label to quit settings without saving changes.

5.3. BACKUP UTILITY

CipherLab's Backup Utility performs backup and restore, a process of copying files and putting them back to system. They are very important for a computer or database once it is rendered unusable by any software or hardware error.

Backup Utility facilitates backing up important files from time to time to save it for usage during unexpected errors.

Features:

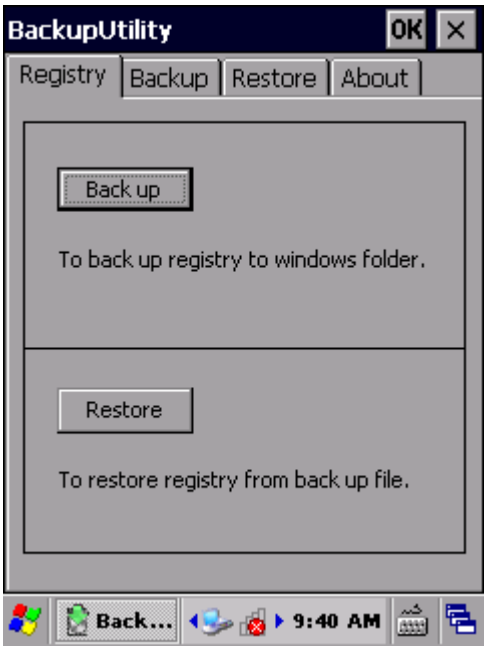
- Reserves and restores system registry and system files.
- Flexible file selection.

5.3.1. LAUNCH BACKUP UTILITY

To launch Backup Utility:

I) Tap **Start** | **Programs** | **Backup Utility** .

Backup Utility opens showing **Registry** tab page.



The four tab pages serve the following functions:

Tab page	Description
Registry	▸ Backs up system registry. ▸ Recovers system registry.
Backup	Makes duplicate copy of system files.
Restore	Recovers system files.
About	Delivers software version and developer info.

5.3.2. REGISTRY BACKUP AND RESTORE

The registry is a database of the information about system configuration and application settings that form the basis of operating system. You may back up and restore the system registry to keep the mobile computer at a stable condition.

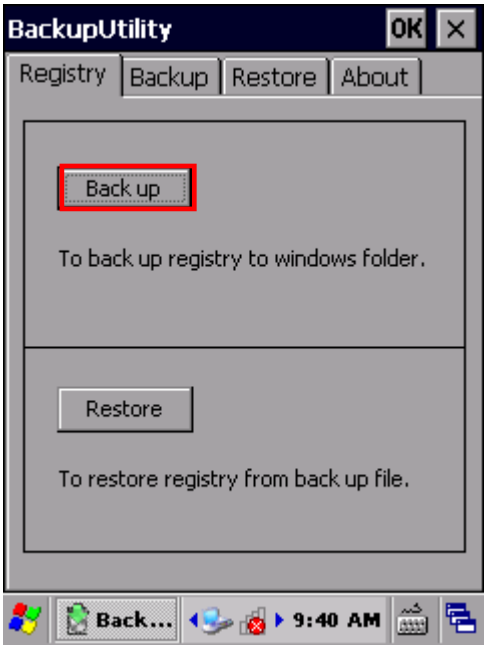
REGISTRY BACKUP

You may use registry backup to reserve the system configuration and application settings at a checkpoint when the condition is stable, which can come to rescue when the system becomes unstable and erroneous.

To back up the system registry:

1) Launch Backup Utility as described in Launch Backup Utility.
2) Tap the **Back up** button.

   A dialog pops up prompting you to close all processes and programs before registry backup.



3) Tap OK to proceed, or tap ✕ to cancel.

Registry backup is completed within a few seconds. Tap OK to close the window.

Warning: Whenever changes are made to the system configurations and settings, remember to perform registry backup again to update the system registry.

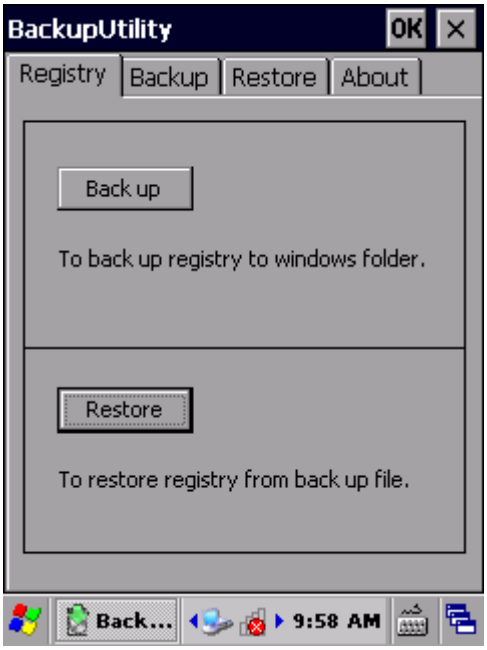
REGISTRY RESTORE

Registry restore brings system configuration and application settings back to an earlier checkpoint when the environment is stable. Perform backup of system registry on a regular basis to facilitate restore at a later stage.

To restore system registry:

1) Launch Backup Utility as described in Launch Backup Utility.
2) Tap the **Restore** button.

   A dialog pops up prompting you to close all processes before restore.



3) Tap OK to proceed, or tap ✕ to cancel.

The mobile computer proceeds to restore the registry. When completed, a dialog pops up confirming that system reboot (warm boot) must be performed for the changes to take effect.

4) Tap OK to reboot the mobile computer. System configuration and application settings are restored to an earlier stage.

5.3.3. DEVICE DATA BACKUP AND RESTORE

DEVICE DATA BACKUP

The **Backup** tab page can be applied for backup of system files and user data.

To back up system file(s):

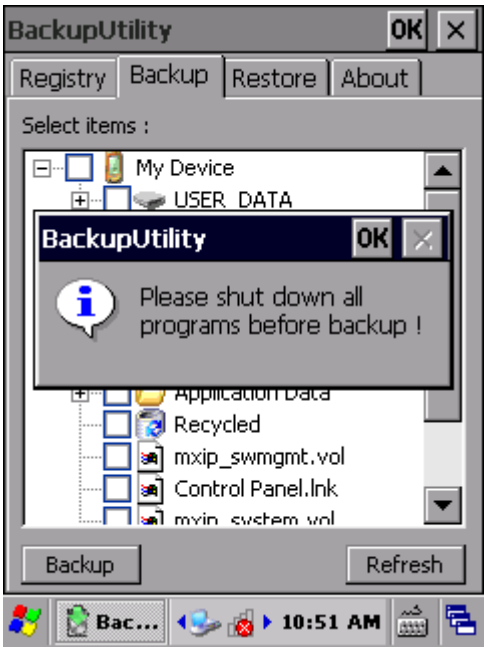
1) Launch Backup Utility as described in Launch Backup Utility.

2) Tap **Backup** tab.

   Backup Utility automatically starts searching and importing system and user items from the **\My Device** directory.

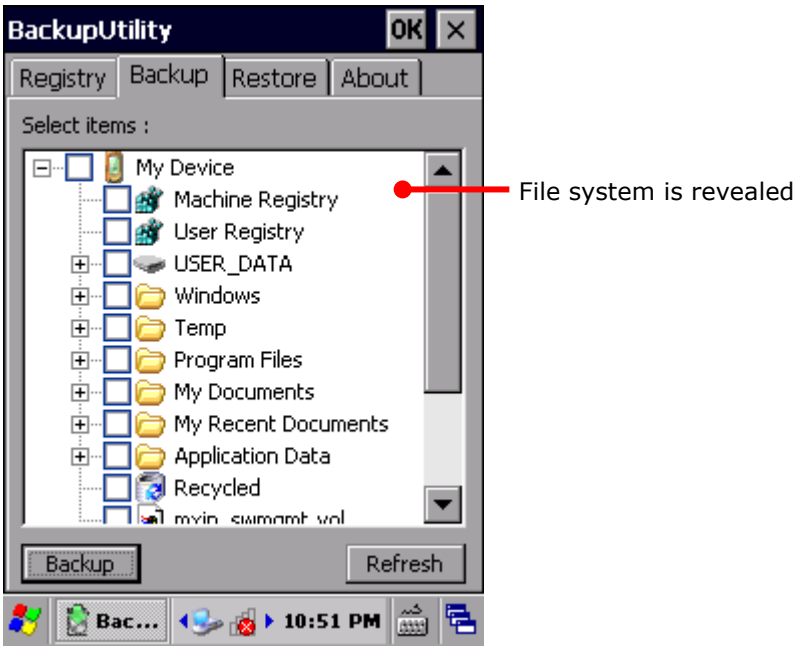
3) When the search is through, the discovered file system will come into view, overlaid by a dialog prompting that all applications should be closed before backup.

   Tap OK to close the dialog.



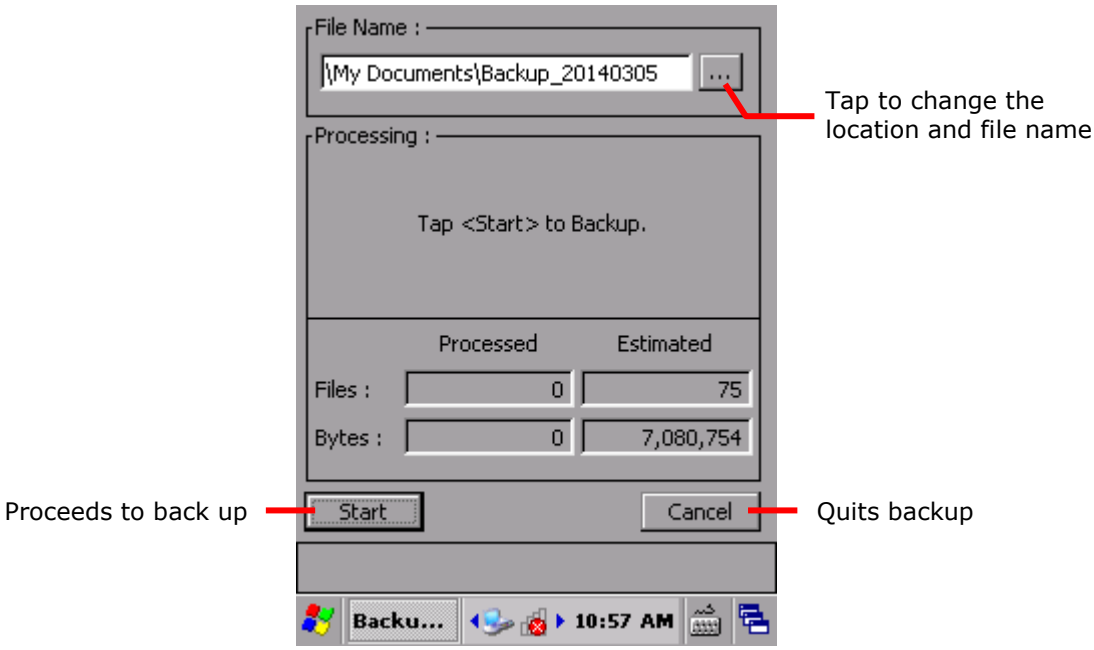
4) The file system is revealed as a tree-like structure in hierarchical order. Each plus sign (+) is a node to expand an item or sub-item. Each item comes with a check box for selection.

Select the items you would like to back up.



If the items "Machine Registry" and "User Registry" are not listed, it means registry backup has not been performed. Perform Registry Backup, and then tap **Refresh** to list all available items.

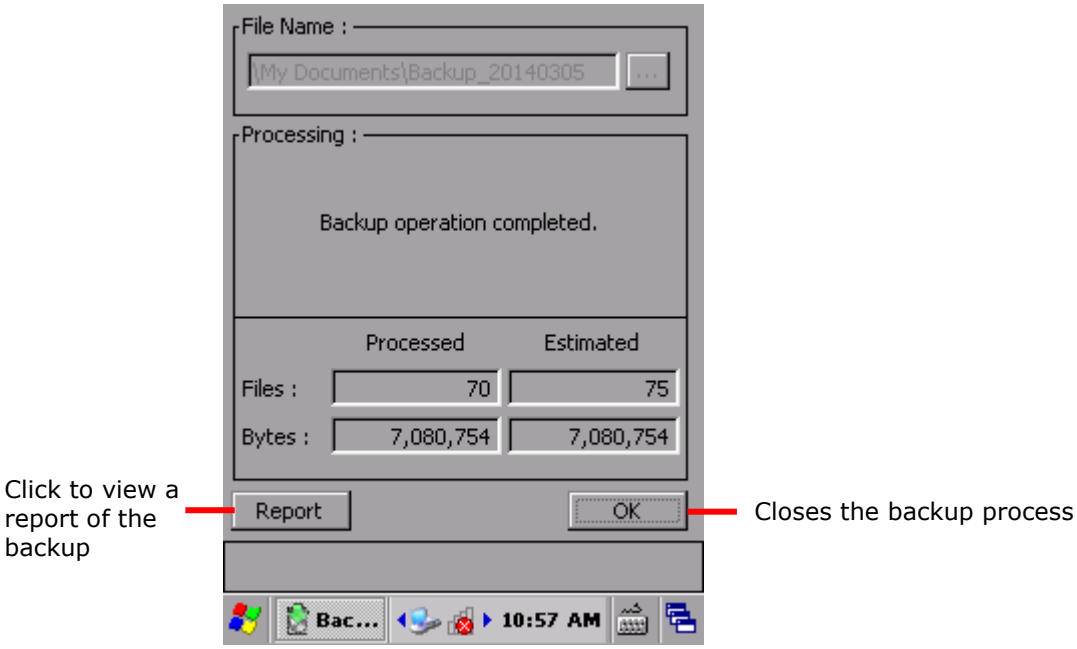
5) Tap the **Backup** button in the lower left corner. A page shows to change the storage location and file name of the backup file and the estimated file number and size.



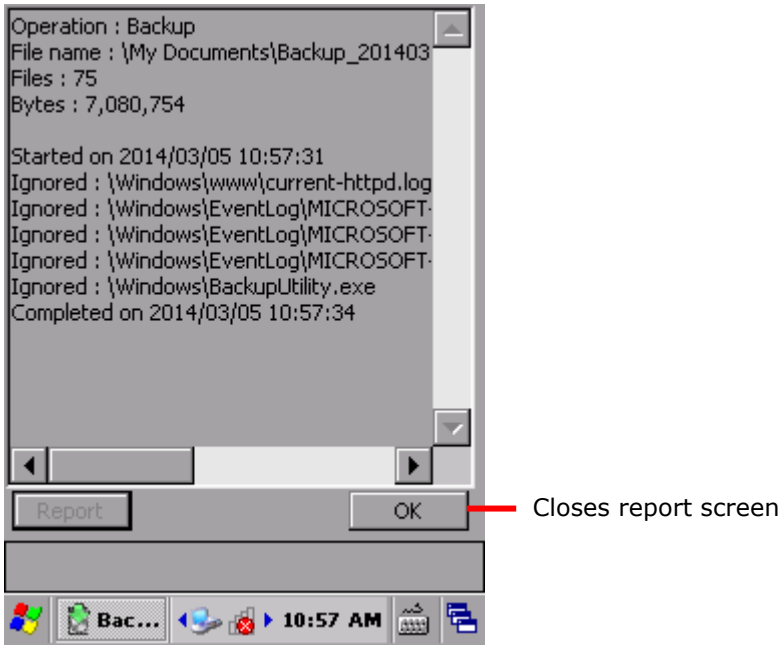
By default, the system backup file is saved to **\My Device\My Documents** with the default filename and extension "Backup_YYYYMMDD.bkp". You may modify the file name, or tap the Browse icon ... to adjust the storage location.

6) Tap **Start** to proceed.

Backup utility proceeds to generate a backup file for system data. Results are displayed on the screen.



7) Tap **OK** to finish and quit backup, or tap **Report** to view the details of the generation.



A backup file with .bkp format is generated under **\My Device\My Documents** for necessary restore in case of emergency.

DEVICE DATA RESTORE

You may restore system files and user data as long as any backup files are found in the storage, whether internal or external.

Restore can be performed either manually or automatically.

MANUAL RESTORE

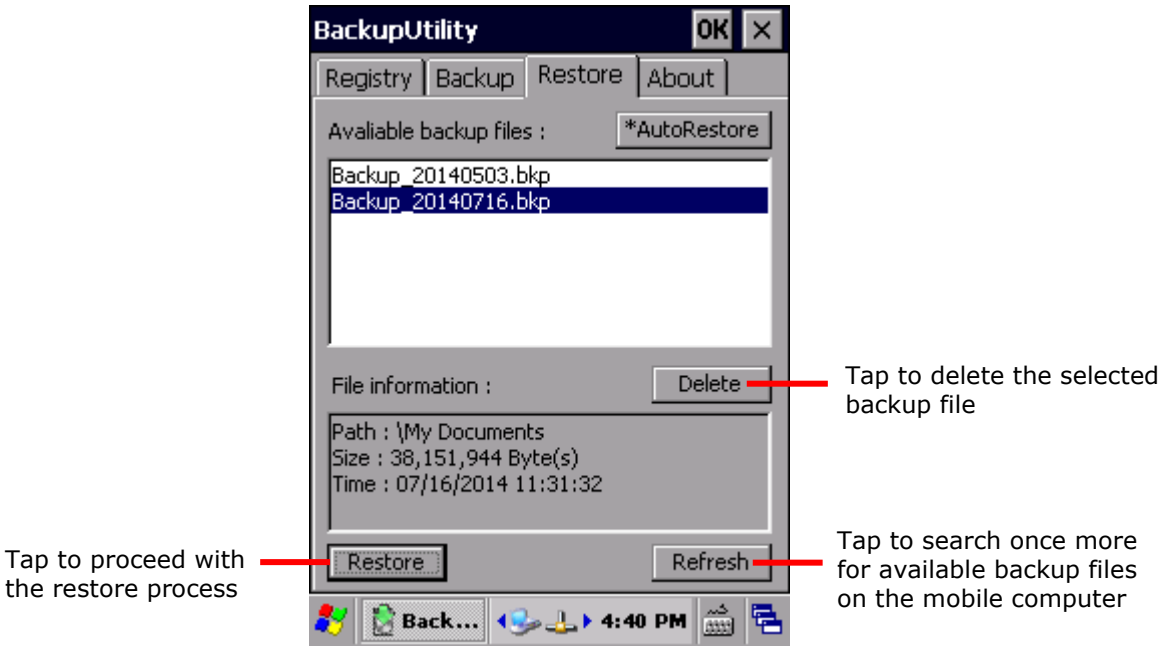
Full Restore

To restore device data:

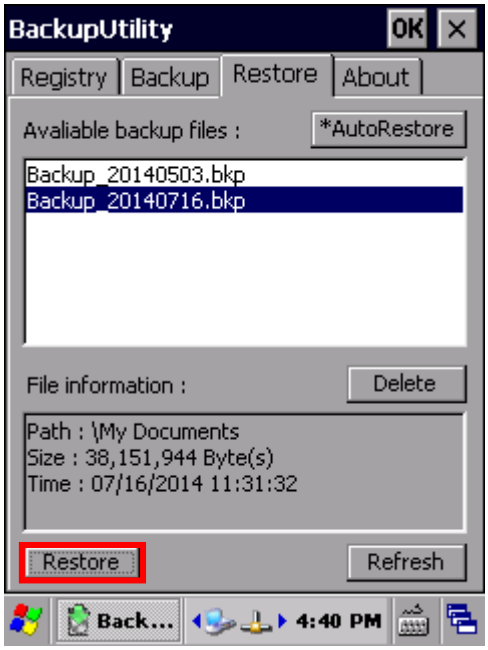
1) Launch Backup Utility as described in Launch Backup Utility.
2) Tap **Restore** tab.

   Backup Utility searches for available backup files on the mobile computer. Once the search is completed, the backup files ready for restore will be listed under **Available backup files**.

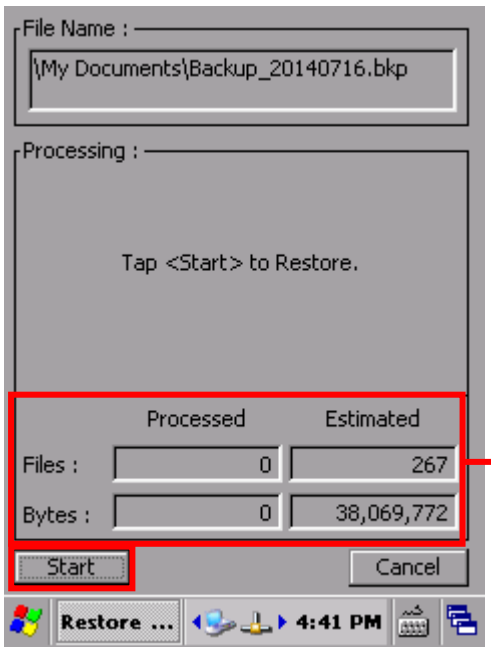
   If the auto-search doesn't start, or your desired backup file is not shown, tap the **Refresh** button to update the list of backup files.



3) Select a desired backup file from the list.
4) Tap the **Restore** button in the bottom left corner.

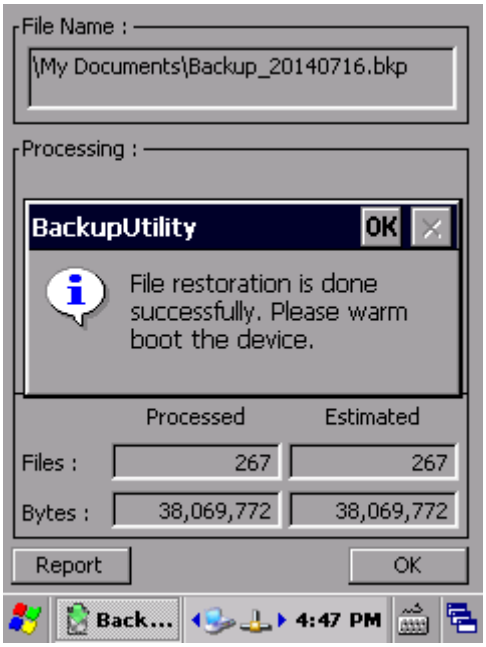


5) A screen opens showing an estimation of the required storage. Tap the bottom-left **Start** button.



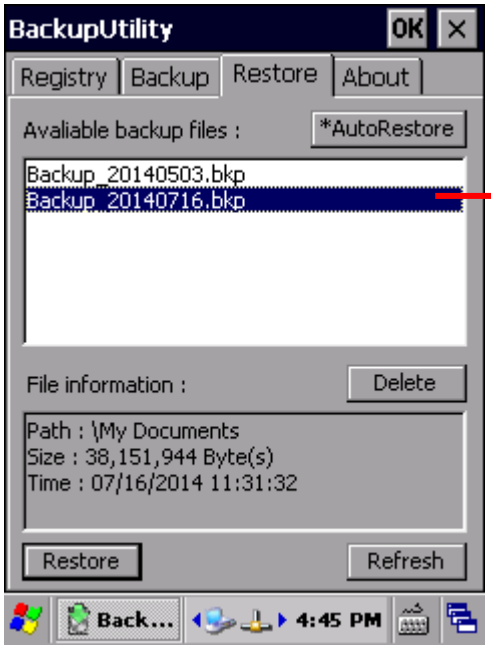
Estimation of required storage

6) Restore begins, and the selected backup file is placed back to the system. Follow the prompt message and restart the mobile computer to apply the changes.



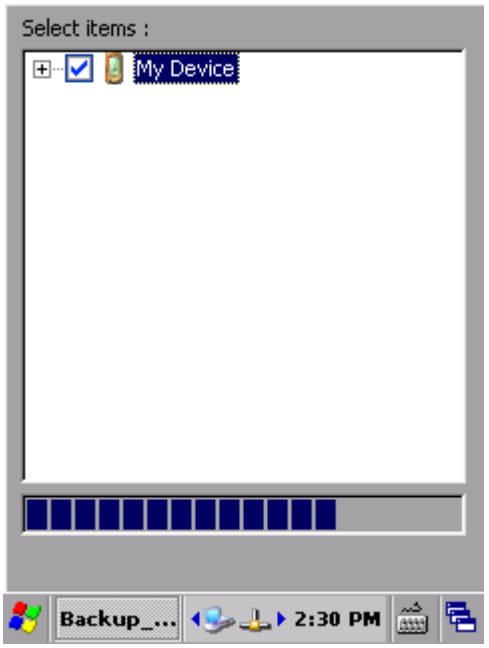
Partial Restore

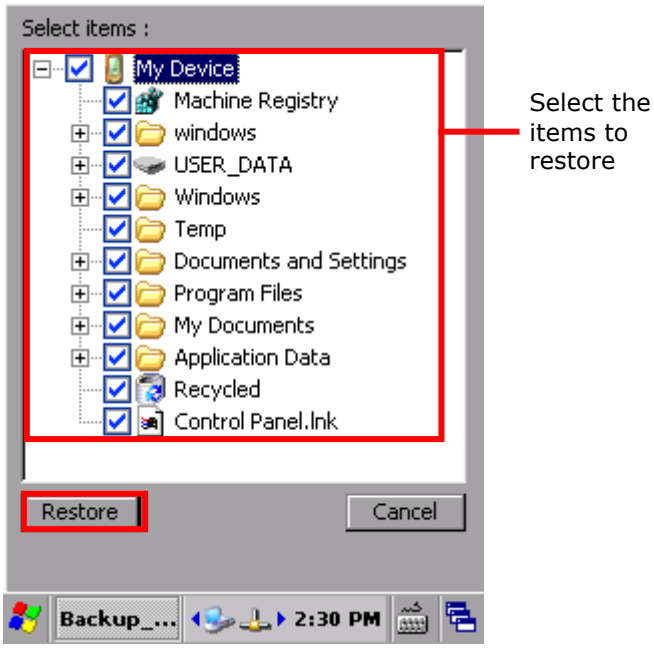
1) To perform partial restore, double-tap a desired backup file from the list.



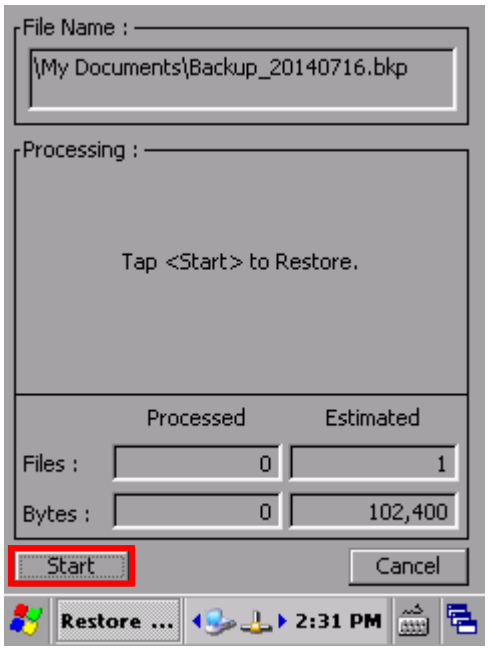
Double-tap the backup file to restore

2) Wait for a few seconds for the storage structure of the selected backup file to load. In the list that opens, select the items which you would like to restore, and tap **Restore**.





3) A screen opens showing an estimation of the required storage.
Tap **Start** to begin the restore process.

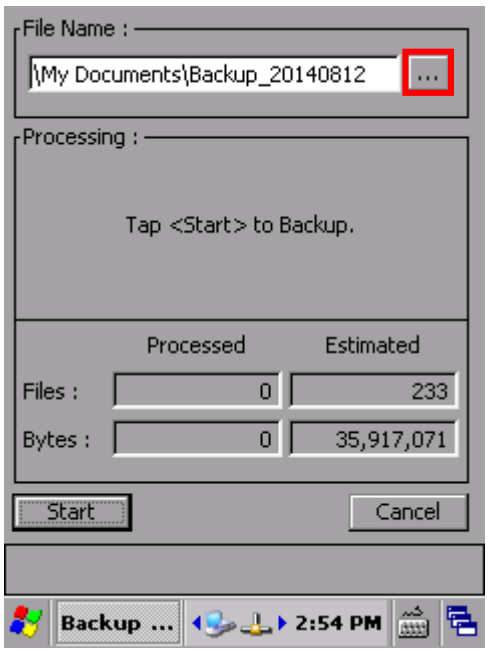


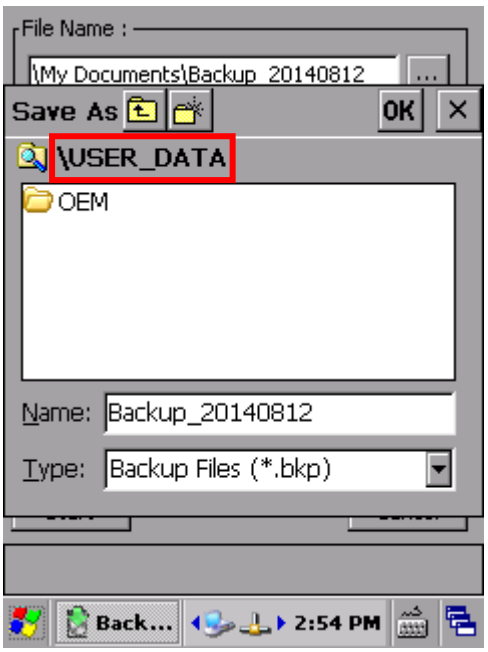
4) Restore begins, and the selected backup file is placed back to the system. Follow the prompt message and restart the mobile computer to apply the changes.

AUTO RESTORE

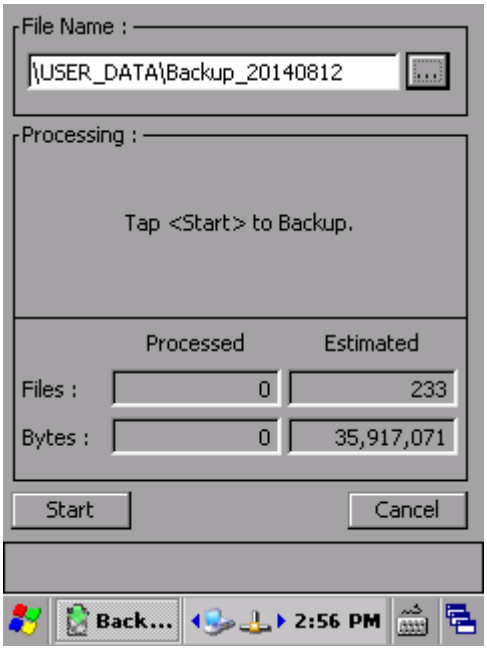
You may select a backup file for auto restore.

1) If you would like to use the auto restore function, when creating the backup file, store it under the **\USER_DATA** directory.



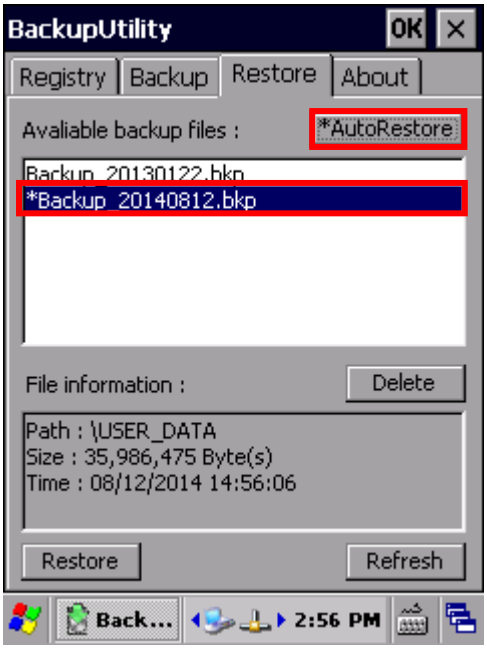


2) Tap **Start** to begin the restore process.



3) In the list of available backup files, select the backup file to restore, and tap ***AutoRestore**.

   The selected backup file will be marked with an asterisk, and will be used for the restore process which starts automatically once the device has gone through a factory reset (clean boot).



Note:

(1) During auto restore, the slider indicating system storage space under **Start** | **Settings** | **Control Panel** | **System** will be automatically restored as well.

(2) For auto restore to take effect, you must tap OK on the title bar to save the settings.

5.4. PUSH TO TALK

CipherLab Push to Talk is a walkie-talkie service that allows users of an active talk group to communicate with all other members of the group instantaneously with a simple push of a button.

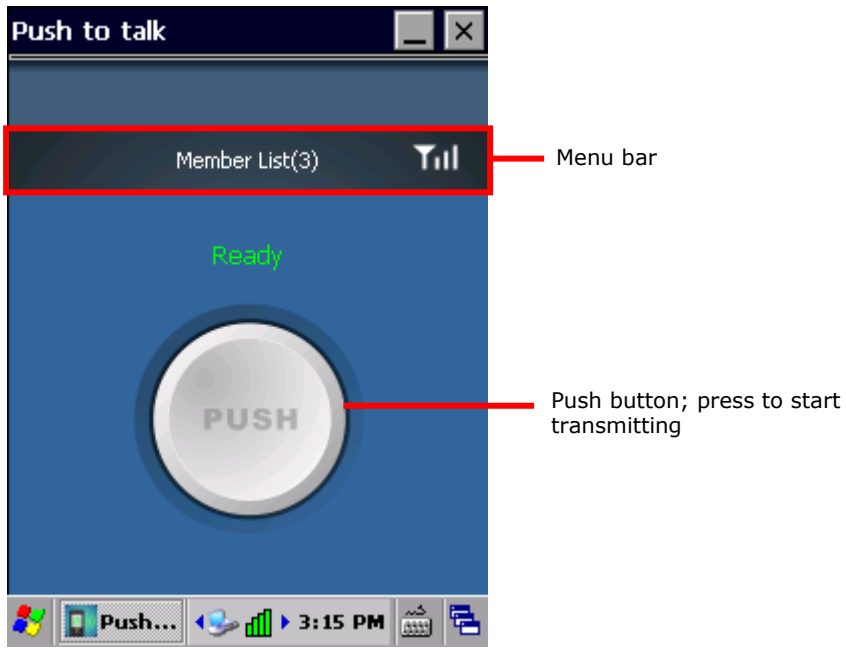
5.4.1. LAUNCH PUSH TO TALK

Once Push to Talk is launched for the first time on the mobile computer, it will be continuously running in the background to enable real-time communication.

To launch Push to Talk for the first time:

1) Tap **Start** | **Programs** | **Push to Talk** .

   Push to Talk opens showing a **PUSH** button in the middle and a menu bar at the top.



OPERATION MODE

According to the operation mode selected in 錯誤! 找不到參照來源。, Push to Talk will either remain on the screen after it is launched, or become minimized and run in the background.

To resize the application once it is minimized, tap and select it in the list of current tasks.

Available operation modes include:

Mode	Description
Normal Mode	When launched, Push to Talk opens and stays on-screen.
Auto-hide	When launched, Push to Talk is minimized; however, it opens on-screen when the physical Push button is pressed, and is automatically minimized once the Push button is released.
Always Hide	When launched, Push to Talk is minimized, and stays minimized at all times.

5.4.2. COMMUNICATE WITH GROUP MEMBERS

Push to Talk functions through group communication, meaning that when an audio transmission is initiated on one device, all other devices in that group will receive the audio message. Groups are established by Wi-Fi connection under a specific subnetwork (subnet). All devices that are currently running Push to Talk and are connected within a certain wireless subnet will be automatically incorporated as a group member.

A mobile computer can communicate with group members either by sending out audio content, or by receiving it. When a member in the group initiates an audio content, all other members turn into recipients and will automatically receive the audio content on their mobile computer.

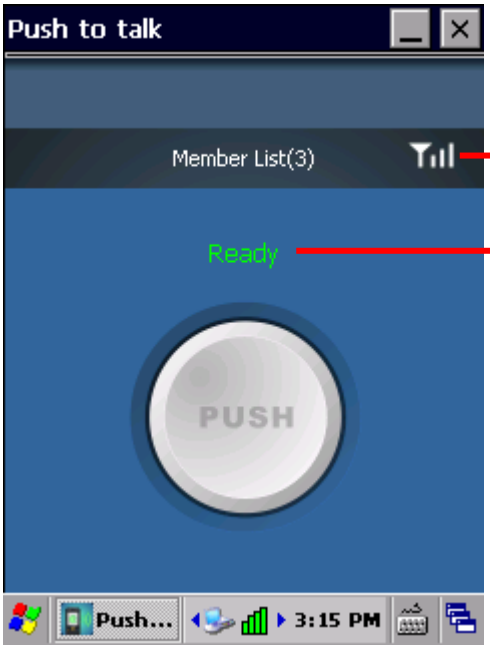
Note: For optimized performance, the Wi-Fi signal strength should be stronger than -60 dB.

SENDING AUDIO CONTENT

To send audio content to other devices:

1) Have all devices you would like to communicate with connect to a specific (or several specific) access point(s) as described in Use Wi-Fi. Make sure these access points belong to the same subnet.
2) On all of the devices, launch Push to Talk as described in Launch Push to Talk.

   Push to Talk opens in voice reception mode.



Status bars indicate Wi-Fi signal strength

"Ready" status indicates the device is in voice reception mode

3) Tap and hold the **PUSH** button. The button will turn red to indicate the device is ready for transmission. You can start talking into the receiver to transmit your message to all other devices in the group.

"Transmitting" status indicates the device is in transmit mode

When tapped and held, PUSH button turns red

When finished transmitting the audio message, let go of the **PUSH** button. The button will return to gray and the mobile computer will switch back to voice reception mode.

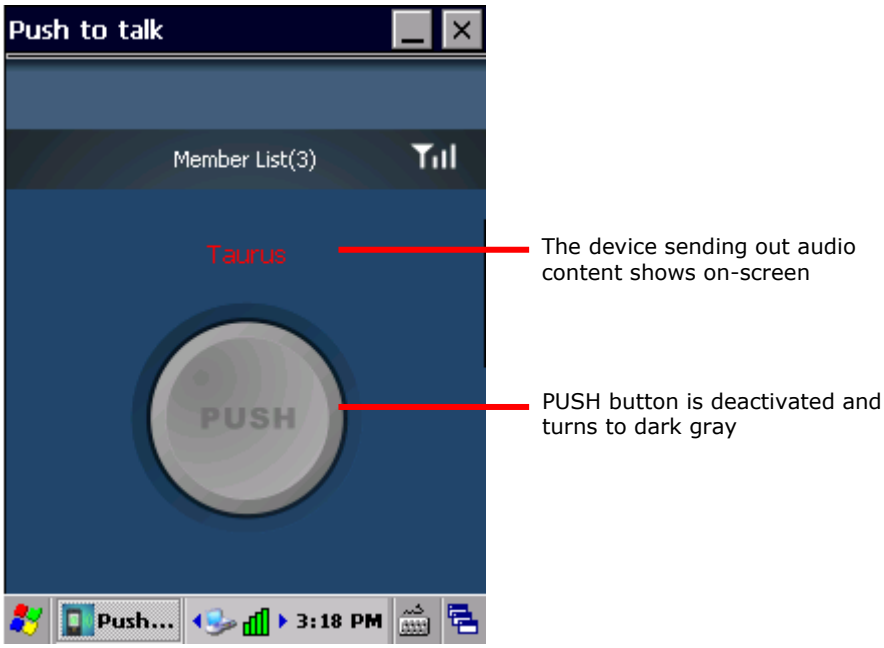
RECEIVING AUDIO CONTENT

To receive audio content from group members:

1) Have all devices you would like to communicate with connect to a specific (or several specific) access point(s) as described in Use Wi-Fi. Make sure these access points belong to the same subnet.
2) On all of the devices, launch Push to Talk as described in Launch Push to Talk.

   Push to Talk opens in voice reception mode.

   When another device in the group is sending out audio content, the **PUSH** button will become deactivated, and the device name currently transmitting the audio message will be shown on-screen.



3) As long as Push to Talk is running on the system, it is still open to receive audio messages from other devices even if it is not the active application on-screen. If you are working on other tasks or applications, the mobile computer will still receive audio messages once they are transmitted.

Note: The mobile computer will not be able to receive audio content when the system is under suspension, or when Wi-Fi has been disconnected.

ASSIGNING OTHER KEYS AS PUSH BUTTON

By default, communication can be done by tapping and holding the **PUSH** button on-screen. Alternatively you may assign a physical key to function as the **PUSH** button. The keys available for assignment are:

- Scan key
- Side triggers (Left and right scan keys)
- Application key

See Button Assignment for how to re-assign the above physical keys.

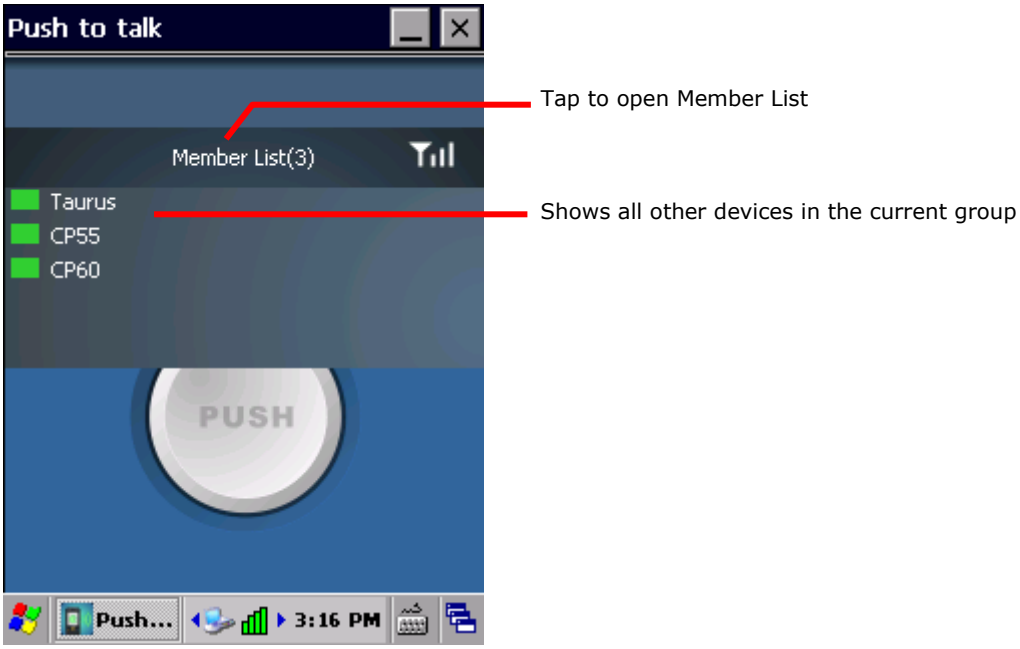
MANAGING MEMBER LIST

The Member List will show all other devices (not including the device under operation) that have connected to the wireless subnet and are currently running the Push to Talk application.

OPEN MEMBER LIST

1) Launch Push to Talk as described in Launch Push to Talk.
2) Tap **Member List** on the Push to Talk menu bar to view all members in the current group.

   The number of devices connected to the group will be shown on the Member List label.



   Tap **Member List** again to close the list.

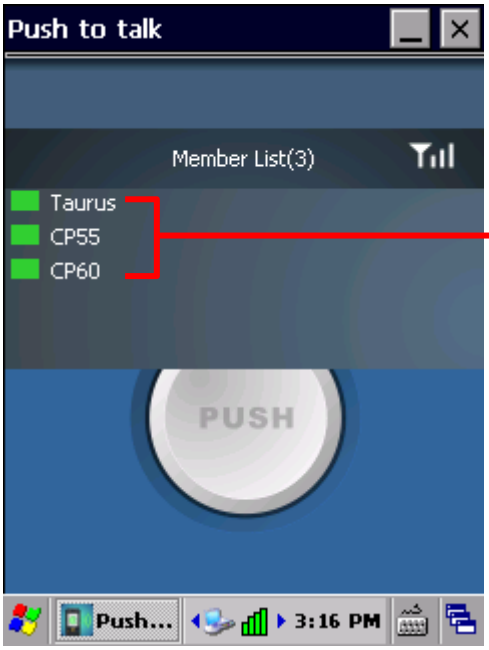
CHECK MEMBER STATUS

In the Member List, a short bar in front of the device name will change its color to indicate the status of that device. Possible colors are:

Status	Mode	Meaning
Green	Voice reception mode	Device is connected to the wireless subnet and is currently running Push to Talk.
Red	Active transmit mode	Device is transmitting audio message to other devices.
Yellow	Passive transmit mode	Device is receiving audio message from another device.
Gray	Disconnected	Device has been disconnected from the group. Make sure device has Wi-Fi access, the system hasn't shut down or entered suspension, and is still running the Push to Talk application.

VOICE RECEPTION MODE

When Push to Talk is opened, devices will be in voice reception mode and are ready to receive audio content. The status bar before the device name appears in green.

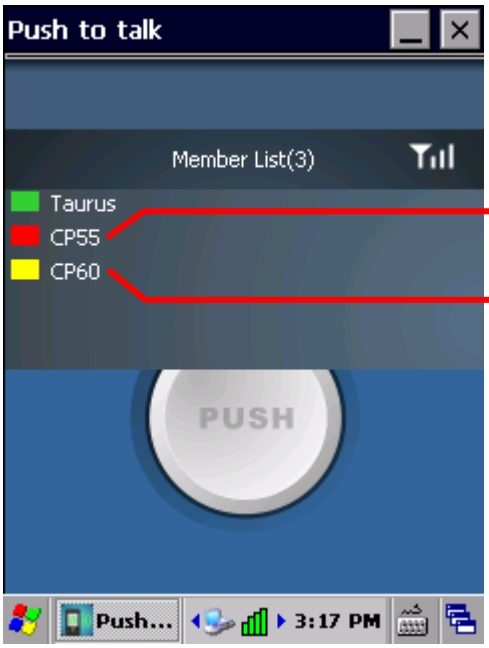


Green indicates a device is in voice reception mode

ACTIVE AND PASSIVE TRANSMIT MODES

When one of the devices in the group is sending out audio content, the status bar before that device name will change to red. The status bar for all other devices will change to yellow.

Note that in a certain group, only one device can be sending out audio content at a time. A separate transmission session can only be initiated when all devices have returned to voice reception (green) mode.

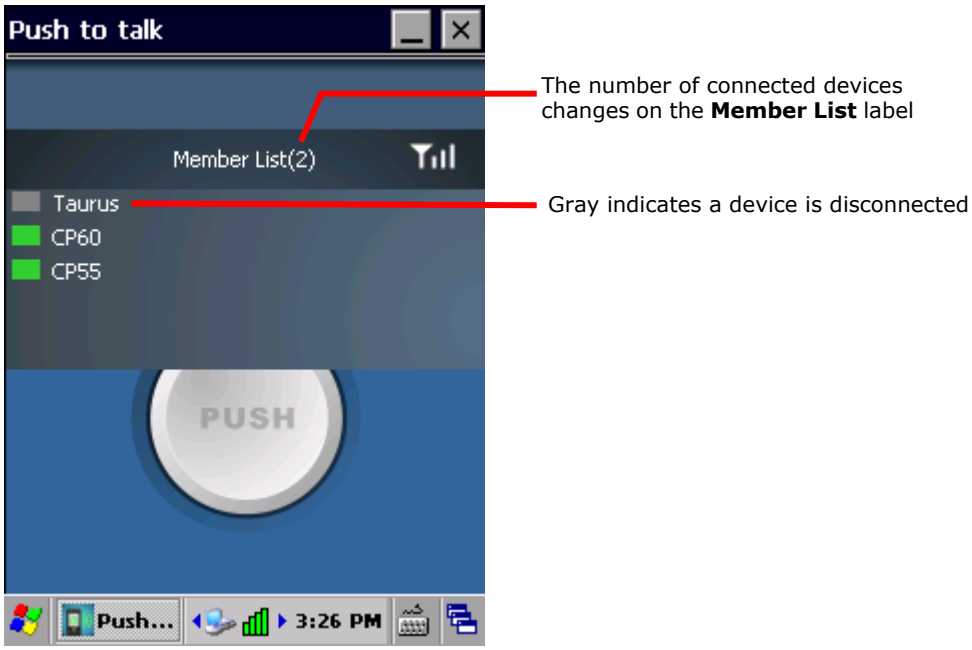


Red indicates a device is currently transmitting audio content

Yellow indicates a device is currently receiving audio content

DEVICE DISCONNECTED

When one or more of the devices in the group is disconnected, the status bar before the device name will change to gray. The **Member List** label will be updated to reflect the remaining number of connected devices. When this occurs, check the Wi-Fi connection status on that specific device, make sure the mobile computer is powered on and not in suspension, and the Push to Talk application is currently running.



CHANGING DEVICE NAME

In the member list, device names will appear as individually set under **Start Screen** | **Settings** | **System** | **About** | **Device ID** tab page. If you have a number of devices in the same group, modify the device names on some or all of them in order to distinguish between them.

Note: After changing the device name on one or more of the devices, have all the other devices in the group shut down Push to Talk and re-open it again. This will update the device names shown in the member list.

Chapter 6

MANAGE MOBILE COMPUTER

This chapter guides you to the system settings featured by the OS. Access these settings to define how the mobile computer looks, sounds, stores/secures your data, manages the applications, or exchanges data with your networks or other devices.

This chapter also includes the process for updating the OS image.

IN THIS CHAPTER

6.1 Update Hidden Partition & OS Image 195
6.2 Connection Settings 199
6.3 Taskbar and Start Menu Settings 201

6.1. UPDATE HIDDEN PARTITION & OS IMAGE

Hidden partition & OS image upgrade helps optimize the mobile computer's performance and functionality. There are two approaches for updating, through CipherLab **Mobile Deployment System**, or with the use of an SD card.

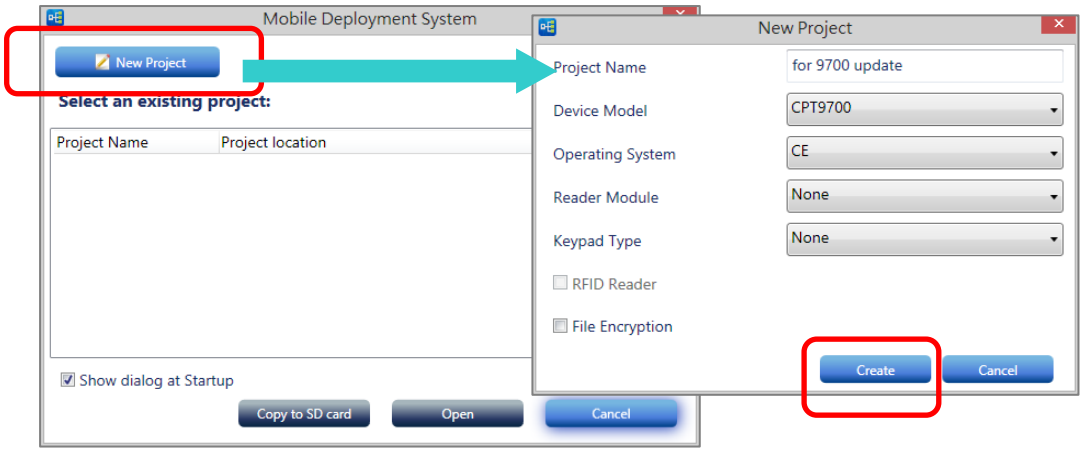
6.1.1. UPDATE VIA MOBILE DEPLOYMENT SYSTEM

The CipherLab **Mobile Deployment System** will load the selected OS image and the hidden partition file onto the mobile computer. The Mobile Deployment System tool, the hidden partition file (with the .clh extension) and the OS image file (with the .clp extension) of the latest version are required for update.

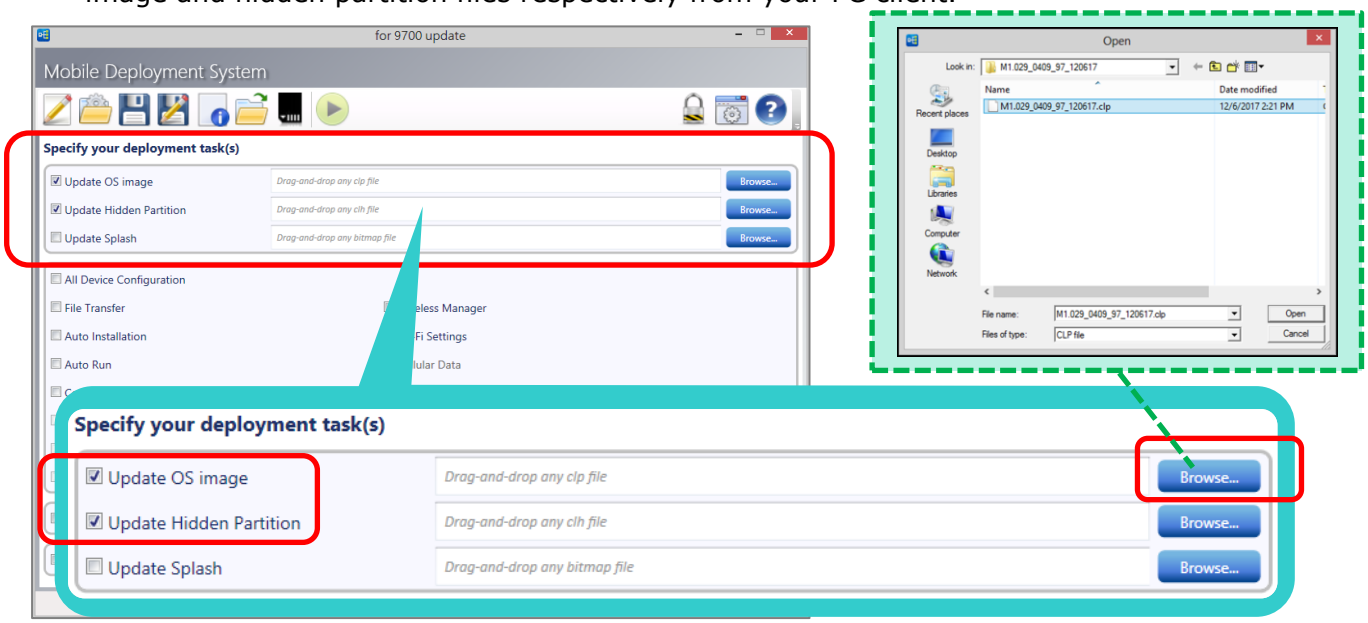
To update the mobile computer's operating system:

1) Obtain the CipherLab **Mobile Deployment System** tool and install it on your PC.

2) Open Mobile Deployment System, and select an existed project from the Project Name list to open. Or create a **New Project** and fill in all necessary fields and click "**Create**".

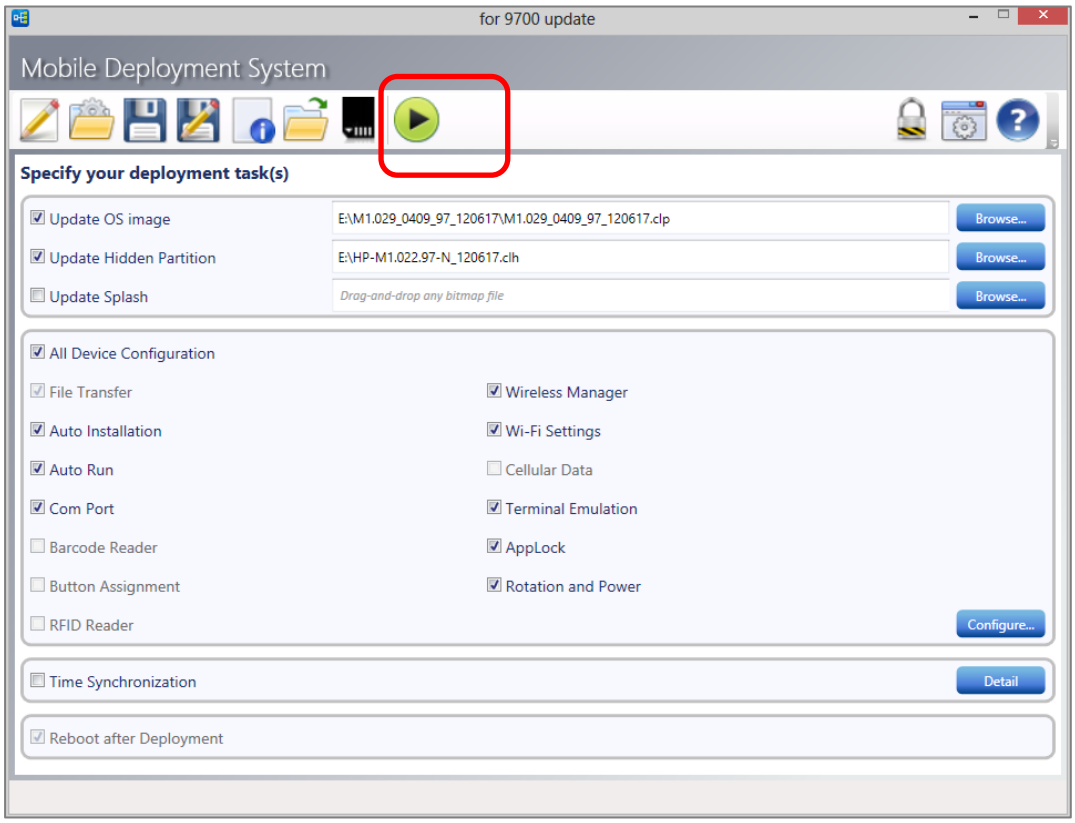


3) On the main menu, tick "**Update OS image**" and "**Update Hidden Partition**" under "**Specify your deployment task(s)**" and click "**Browse**" buttons to select the OS image and hidden partition files respectively from your PC client.

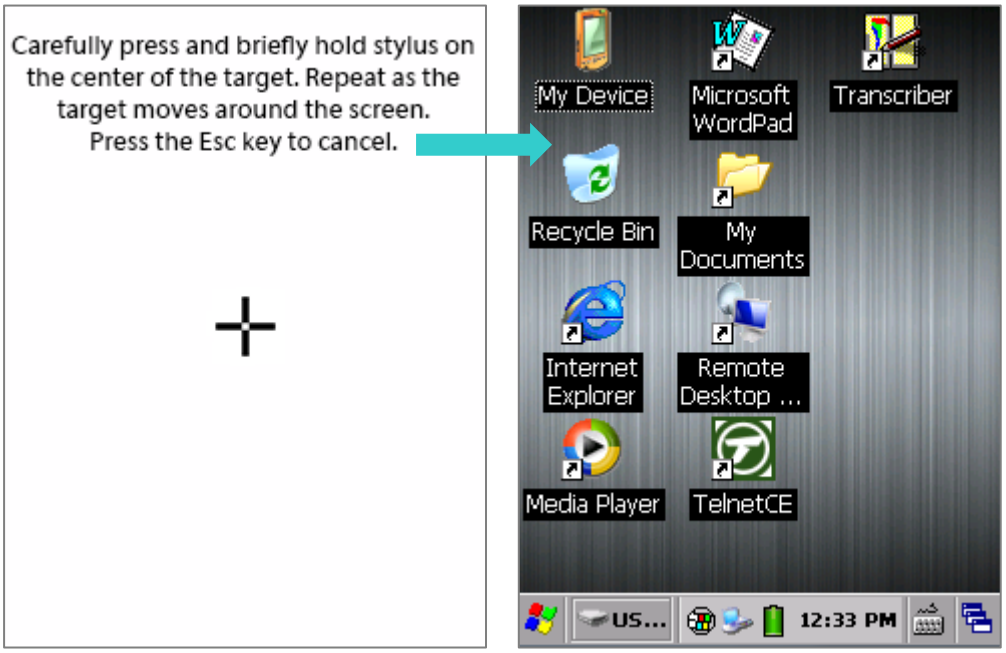


4) Power on the mobile computer and connect it to your PC through a Snap-on Cable or Cradle. Once "**Deploy**" button on the taskbar changes from to , the device is successfully connected.

5) Tap the "**Deploy**" button to proceed OS image upgrade.



6) After update is complete, the mobile computer will restart to show the calibration screen. Complete the calibration steps to display the desktop.

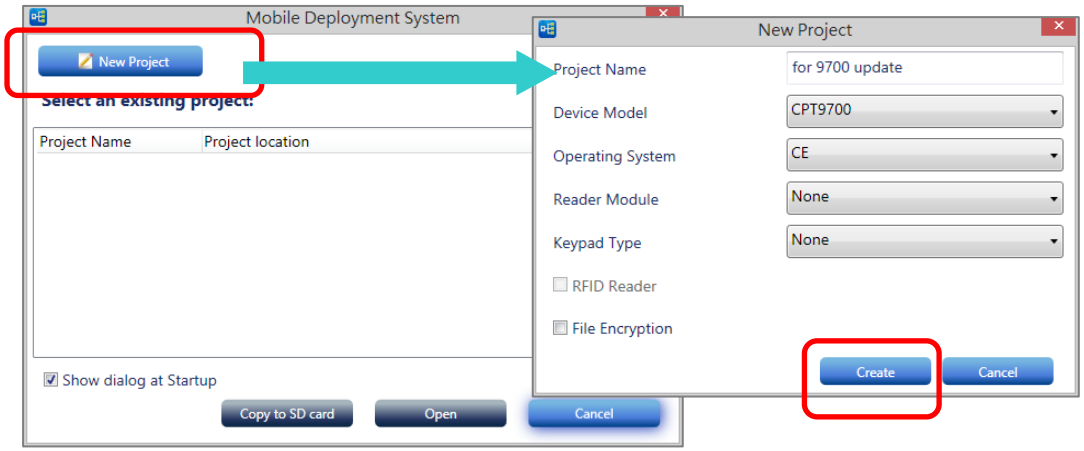


6.1.2. UPDATE WITH MEMORY CARD

You may also upgrade with the use of an SD card and the OS image and hidden partition files.

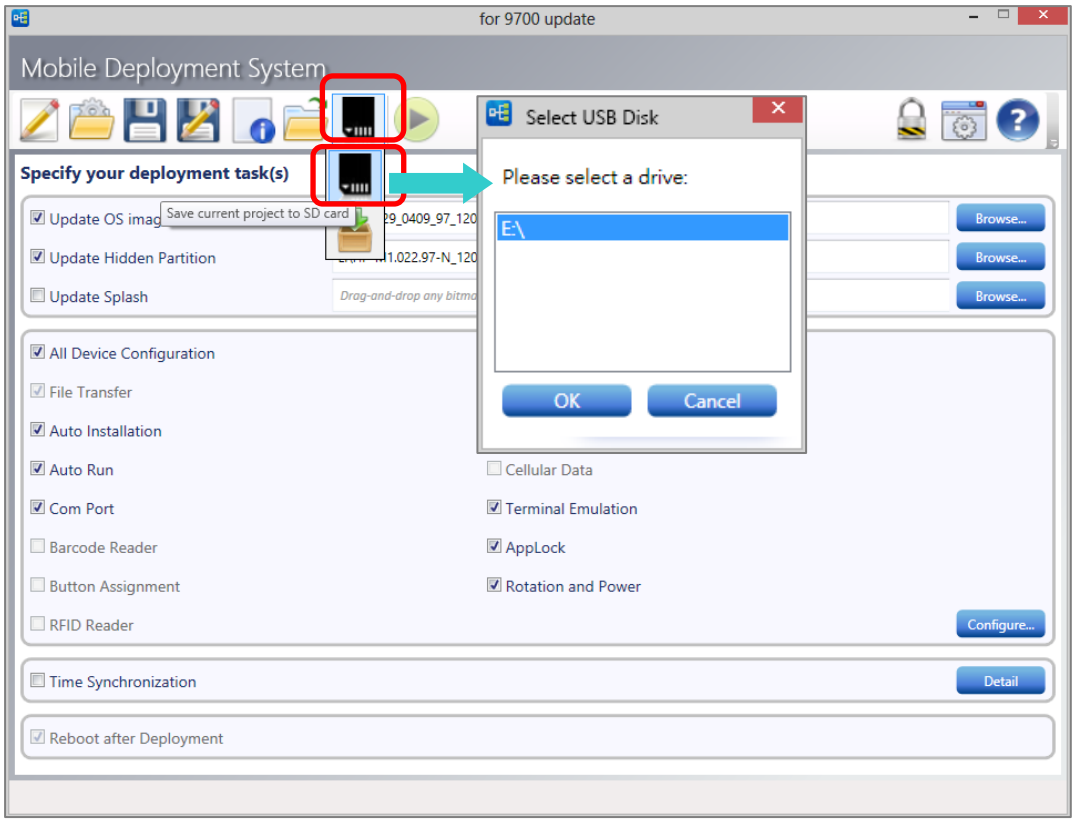
1) On your PC, insert a microSD card of at least 4GB and formatted to FAT32.

2) Open **Mobile Deployment System**, and select an existed project from **Project Name** list to open. Or create a New Project and fill in all necessary fields and click "**Create**".



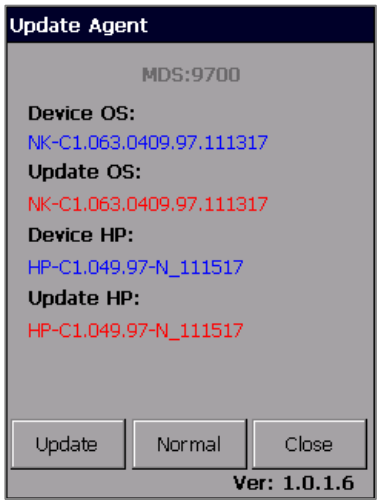
3) On the main menu, tick "**Update OS image**" and "**Update Hidden Partition**" under "**Specify your deployment task(s)**" and click "**Browse**" buttons to select the OS image and hidden partition files respectively from your PC client.

4) Tap "**Save current project to SD card**" button to save the files to the microSD card.

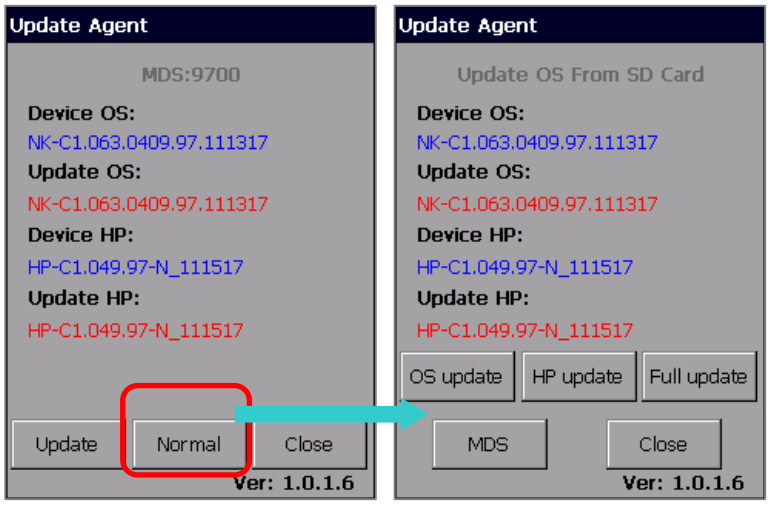


5) Eject the microSD card from the PC, and insert it into the card slot as described in Insert SD Card.

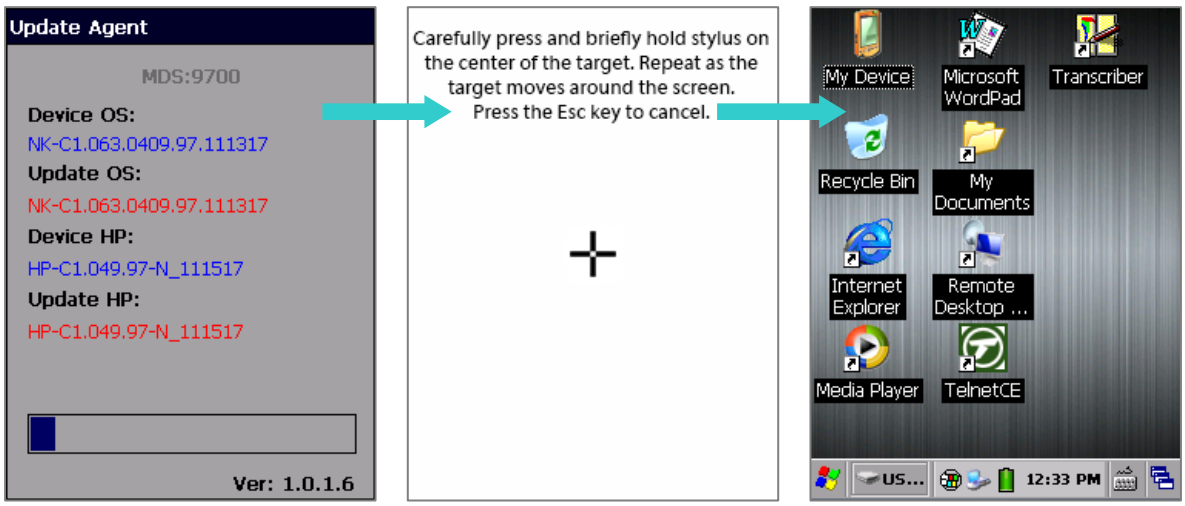
6) Power on the mobile computer, and click "**Update Agent**" in "**Storage Card**".



7) Click "**Update**" to update directly, or click "**Normal**" to select the option you need.



8) Once the update progress is completed, the mobile computer will restart to show the calibration screen. Complete the calibration steps to display the desktop. Then the update task is done.



6.2. CONNECTION SETTINGS

To access connection settings:

- Tap **Start** | **Settings** | **Control Panel** | **Network and Dial-up Connections**.

OR

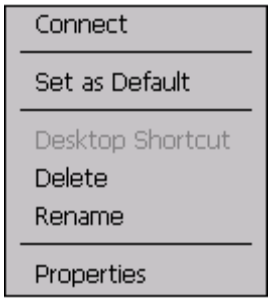
- Tap **Start** | **Settings** | **Network and Dial-up Connections**.

Icon	Description
	MAKE NEW CONNECTION Tap to create a new connection which is not listed.
	USB SERIAL Sets serial profile for USB connection to a PC via ActiveSync. Settings will be reflected under **Start** | **Settings** | **Control Panel** | **PC Connection** . When the mobile computer is connected to a PC, the connection is enabled automatically. ▸ When connected, an icon will appear on the taskbar. ▸ When disconnected, the icon will disappear. Note: Any changes to the **Properties** of this item will affect ActiveSync connection.
	SDCSD40N1 Refers to the 802.11 a/b/g/n module for connection via wireless local area network (WLAN). To enable this function, turn on Wi-Fi power in **Start** | **Settings** | **Control Panel** | **Wireless Manager** . ▸ An icon is located on the taskbar. ▸ When connected to WLAN, the icon will change to . ▸ When disconnected, the icon will return to .
	BTPAN1 Refers to connection via wireless personal area network (WPAN). This function is not available until Bluetooth power is turned on in **Start** | **Settings** | **Control Panel** | **Wireless Manager** . ▸ When Bluetooth power is turned on, an icon will appear on the taskbar. ▸ When connected to a Bluetooth device, the icon will change to . ▸ When disconnected to a Bluetooth device, the icon will return to . ▸ When Bluetooth power is turned off, the icon will disappear.

The taskbar items deliver the following functions:

Button	Description
Connection	Tap this button to open the Connection menu. The available options depend on the connection you select.
	Tap this button to toggle on/off the connection you select. This can be 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.

You may also tap and hold a connection item to open an option menu. The available functions differ for each type of connection.



6.3. TASKBAR AND START MENU SETTINGS

To access taskbar and Start Menu settings:

- Tap **Start** | **Settings** | **Taskbar and Start Menu**.

Tab page	Setting	Description
General	Always on top	Select to keep the taskbar at the top of the screen, even when an application is open.
	Auto hide	Select to auto hide the taskbar and reveal it by tapping on the bottom of the screen.
	Show Clock	Select to show clock time at the right side of the taskbar region.
Advanced	Clear	Tap to clear all contents in the Documents menu.
	Expand Control Panel	Select to show 錯誤! 找不到參照來源。 items in an expanded menu.

SPECIFICATIONS

PLATFORM, PROCESSOR & MEMORY

Operating System & CPU

OS Version	Microsoft Windows Embedded Compact 6.0
CPU	TI OMAP3730 1GHz Processor

Memory

RAM	512MB DDR SDRAM
Flash	4GB Flash ROM
Expansion Slot	One expansion slot, supports MicroSDHC up to 32GB

COMMUNICATIONS & DATA CAPTURE

Communications

USB Host/Client	USB 2.0
WPAN	Built-in module for Bluetooth version 2.1 + EDR Class II connectivity
WLAN	Built-in Cisco© CCX v4 certified module for 802.11 a/b/g/n networking

Data & Image Capture

Barcode Reader — Ordering options include

STANDARD READER UNIT

- Laser (Symbol SE955)
- 2D imager (Symbol SE4500)

LARGE READER UNIT

- 2D imager with decoder board (Symbol SE4500+PL4507)
- Extended range laser (Symbol SE1524)
- Near/far 2D imager (Intermec EX25)

ELECTRICAL CHARACTERISTICS

Batteries

Main Battery Pack	Standard capacity battery: 3.7V, 3600 mAh Large capacity battery: 3.7V, 5400 mAh Rechargeable Li-ion battery Charging time: approximately 4 hours for standard battery / 6 hours for large capacity battery
Backup Battery	3.6V, 15 mAh Rechargeable NiMH battery (charged via main battery) Data retention for 30 minutes Charging time: approximately 36 hours

Power Adapter

Power Supply Cord for Snap-on Cable	Input	AC 100~240V, 50/60 Hz
	Output	DC 5V, 4A
Power Supply Cord for Cradle	Input	AC 100~240V, 50/60 Hz
	Output	DC 12V, 3.3A

Operating Time

Minimum 13 hours for standard capacity battery/19 hours for large capacity battery performing scanning once per 20 seconds, with LCD at 50% backlight and speaker on (at default volume) at 25°C, Bluetooth off and IEEE 802.11 a/b/g/n on.

PHYSICAL CHARACTERISTICS

Color Tap Screen Display

Display	3.5” Transflective TFT-LCD, 65K colors, sunlight readable
Resolution	QVGA 240 (W) x 320 (H)

Keypad

Layout	Numeric keypad (30-key), Numeric & Function keypad (38-key), or Alphanumeric keypad (53-key)
Backlight	White LED backlight for display and keypad

Notifications

Status LED	Three LEDs for showing scanning good read, radio connection status and battery charging status
Audio	▸ Integrated with speaker and microphone ▸ 2.5mm 4-ring headset jack ▸ Bluetooth headset supported
Vibrator	0.45G force

Sensors

Built-in Sensors	G-sensor

Enclosures

Materials	Plastic & metal
Dimensions	214 mm (L) x 87 mm (W) x 47 mm (H) with battery
Weight	447g with 3600mAh battery; 478g with 5400mAh battery

ENVIRONMENTAL CHARACTERISTICS

Temperature

Operating[Note]	-20 °C to 50 °C / -4°F to 122°F
Storage	-30 °C to 70 °C / -22°F to 158°F (without battery) -30 °C to 60 °C / -22°F to 140°F (with battery)
Charging	0 °C to 35 °C / 32°F to 95°F (with battery)

Humidity

Operating	5% to 95%, non-condensing (Max 60°C / 140°F)
Storage	5% to 95%, non-condensing (Max 60°C / 140°F)

Resistance

Impact Resistance	Multiple 1.8 m (5.9 ft.) drops to concrete, meets and exceeds applicable MIL-STD 810G specifications
Tumble Test	500 tumbles (1,000 drops) at 1 m (1.6 ft) and 1,000 tumbles (2,000 drops) at 0.5 m (0.8 ft.) per applicable IEC tumble specifications
Splash/Dust Resistance	IP65 per applicable IEC 60529 sealing specs
Electrostatic Discharge	± 15 kV air discharge, ± 8 kV direct/indirect contact discharge

Note: CipherLab will not be held responsible for the mobile computer's malfunction incurred by the operation outside operating temperature range.

PROGRAMMING SUPPORT

Development Environment & Tools

Integrated Development Environment	Visual Studio 2008 Visual Studio 2005
Software Development Kit	Microsoft SDK System API (DLL) for system configuration Reader API (DLL) for reader configuration

Software & Utilities

CipherLab software package

- Reader Config
- Button Assignment
- Signature Capture
- Backup Utility
- Push to Talk
- AppLock
- MIRROR Browser for web application
- Terminal Emulation

Third-party software	▸ SOTI MobiControl for remote device control ▸ Wavelink Avalanche™ for remote device control ▸ Wavelink TE Terminal emulator and industrial web browser ▸ Naurtech CETerm – Terminal emulator (3270, 5250, VT) and industrial web browser ▸ SYSDEV Kalipso for mobile application generation

ACCESSORIES

Accessory Options

- Snap-on Charging and Communication Cable (USB or RS-232)
- Charging & Communication Cradle
- Pistol Grip
- Snap-on Car Charger
- 4-Slot Battery Charger
- 4-Slot Terminal Cradle
- Belt Holster

Appendix I

SCAN ENGINE SETTINGS

9700 Series Mobile Computer supports the following reader types. Reader availability depends on the hardware integrated on the mobile computer.

Scan Engine		ID
1D	*Laser*	*SE955*
1D	*Extended Range Laser (ER Laser)*	*SE1524*
2D	*2D Imager*	*SE4500*
		SE4500 + PL4507
2D	*Near/far 2D Imager (N/F 2D)*	*EX25*

Reader combination allowed is either 1D or 2D. When you hit a physical scan key, the mobile computer reads a printed barcode which is in position.

Note: 1D and 2D scan engines don't coexist on the mobile computer because they are both barcode readers and the mobile computer allows only one barcode reader on board.

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SYMBOLOGIES SUPPORTED

Depending on the scan engine integrated on the mobile computer, supported symbologies will differ as listed below.

		Laser	ER Laser	2D	N/F 2D
Codabar		✓	✓	✓	✓
Code 11		✓	✗	✓	✓
Code 39	Code 39	✓	✓	✓	✓
	Trioptic Code 39	✓	✓	✓	✓
	Italian Pharmacode (Code 32)	✓	✓	✓	✗
Code 93		✓	✓	✓	✓
Code 128	Code 128	✓	✓	✓	✓
	GS1-128 (EAN-128)	✓	✓	✓	✓
	ISBT 128	✓	✓	✓	✓
Code 2 of 5	Chinese 25	✓	✗	✓	✗
	Industrial 25 (Discrete 25)	✓	✓	✓	✓
	Interleaved 25	✓	✓	✓	✓
	Convert Interleaved 25 to EAN-13	✓	✓	✓	✗
	Matrix 25	✗	✗	✓	✓
Composite Code	Composite CC-A/B	✗	✗	✓	✓
	Composite CC-C	✗	✗	✓	✓
	Composite TLC 39	✗	✗	✓	✗
GS1 DataBar (RSS)	GS1 DataBar-14 (RSS-14)	✓	✓	✓	✓
	GS1 DataBar Limited (RSS Limited)	✓	✓	✓	✓
	GS1 DataBar Expanded (RSS Expanded)	✓	✓	✓	✓
	Convert to UPC/EAN	✓	✓	✓	✗
Inverse	Inverse 1D barcodes	✗	✗	✓	✗
Korean 3 of 5		✗	✗	✓	✗
MSI		✓	✓	✓	✓
Postal Codes	Australian Postal	✗	✗	✓	✓

	Japan Postal	✘	✘	✓	✓
	Netherlands KIX Code	✘	✘	✓	✓
	US Postnet	✘	✘	✓	✓
	US Planet	✘	✘	✓	✓
	UK Postal	✘	✘	✓	✘
EAN/UPC	EAN-8	✓	✓	✓	✓
	EAN-8 Extend	✓	✓	✓	✘
	EAN-13	✓	✓	✓	✓
	Bookland EAN (ISBN)	✓	✓	✓	✓
	ISSN EAN	✘	✘	✓	✓
	UPC-A	✓	✓	✓	✓
	UPC-E	✓	✓	✓	✓
	Convert UPC-E to UPC-A	✓	✓	✓	✓
	UPC-E1	✓	✓	✓	✓
	Convert UPC-E1 to UPC-A	✓	✓	✓	✓
2D Symbologies	Aztec	✘	✘	✓	✓
	Data Matrix	✘	✘	✓	✓
	Maxicode	✘	✘	✓	✓
	MicroPDF417	✘	✘	✓	✓
	MicroQR	✘	✘	✓	✘
	PDF417	✘	✘	✓	✓
	QR Code	✘	✘	✓	✓

Appendix II

LASER (SE955)

The tables below list the symbology settings for the 1D laser scan engine (SE955).

SYMBOLOGY SETTINGS

Symbology	Description	Default
CODABAR		
CodaBar		Enable
Codabar	Checkbox to enable Codabar decoding.	Enable
Length option	Sets the length of the Codabar symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
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. ▸ The 14-character barcode length does not include start/stop characters.	Disable
NOTIS Editing	Sets whether to include start/stop characters in the transmitted data. ▸ NOTIS Editing is to strip the start/stop characters, i.e. to disable "Transmit Start/Stop Characters".	Disable
CODE 11		
Code 11		Enable
Code 11	Checkbox to enable Code 11 decoding.	Enable
Check Digit Option	Sets whether to verify check digits according to the selected option. If the check digits are incorrect, the barcode will not be accepted. ▸ Disable ▸ One Check Digit ▸ Two Check Digits	Disable
Transmit Check Digit	Selects whether to include check digits in the transmitted data. ▸ Check Digit Option" must be enabled.	Disable
Length option	Sets the length of the Code 11 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)

CODE 39		
Code 39		Enable
Code 39	Checkbox to enable Code 39 decoding.	Enable
Trioptic Code 39	Selects 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
Convert to Code 32	Selects whether to convert decoded data to Italian Pharmacode.	Disable
Code 32 Prefix	Prefix character "A" to Code 32 barcodes. ▸ "Convert to Code 32" must be enabled for this to function properly.	Disable
Verify Check Digit	Selects whether to verify the Modulo 43 check digit. If the check digit is incorrect, the barcode will not be accepted.	Disable
Transmit Check Digit	Decide whether to include the check digit in the data to transmit. ▸ "Verify Check Digit" must be enabled.	Disable
Support Full ASCII	Selects whether to enable Code 39 Full ASCII decoding. Characters are paired to encode the full ASCII character set.	Disable
Length option	Sets the length of the Code 39 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
CODE 93		
Code 93		Enable
Code 93	Checkbox to enable Code 93 decoding.	Enable
Length option	Sets the length of the Code 93 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
CODE 128		
Code 128		Enable
GS1-128		Enable
ISBT 128		Enable
CODE 2 OF 5		
Chinese 25		Enable
Discrete 25		Enable
Discrete 25	Checkbox to enable Discrete 25 decoding.	Enable

Length option	Sets the length of the Discrete 2 of 5 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
Interleaved 25		Enable
Interleaved 25	Checkbox to enable Interleaved 2 of 5 decoding.	Enable
Length option	Sets the length of the Interleaved 2 of 5 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
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. ▸ Disable ▸ USS Check Digit ▸ OPCC Check Digit	Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Disable
Convert To EAN-13	Convert a 14-character Interleaved 25 barcode into EAN-13 if the following requirements are met: The barcode must have a leading 0 and a valid EAN-13 check digit.	Disable
GS1 DATABAR		
GS1 DataBar-14		Enable
GS1 DataBar Limited		Enable
GS1 DataBar Expanded		Enable
GS1 DataBar Convert to UPC/EAN		Disable
MSI		
MSI		Enable
MSI	Checkbox to enable MSI decoding.	Enable
Length option	Sets the length of the MSI symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
Check Digit Option	One check digit is mandatory for decoding MSI barcodes. Select whether a second check digit should be verified. If the check digits are incorrect, the barcode will not be accepted. ▸ One Check Digit ▸ Two Check Digits	One Check Digit
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Disable

Algorithm	When two check digits are set for verification, two choices are available for the pair of check digits. ▸ Modulo10 / Modulo11 ▸ Double Modulo 10	Double Modulo 10
UPC/EAN		
EAN-8		Enable
EAN-8	Checkbox to enable EAN-8 decoding.	Enable
EAN-8 Extend	Checkbox to enable converting EAN-8 to EAN-13 format.	Disable
EAN-13		Enable
EAN-13	Checkbox to enable EAN-13 decoding.	Enable
Bookland EAN	Checkbox to enable ISBN decoding. If enabled, select Bookland ISBN Format in the drop-down box below.	Enable
Bookland ISBN Format	Select to decode Bookland data starting with 978 as 10-digit format along with the Bookland check digit, or decode Bookland data starting with 978/979 as EAN-13 format.	Bookland ISBN-10
Transmit Check Digit	Decide whether to include the EAN-13 check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC-A		Enable
UPC-A	Checkbox to enable UPC-A decoding.	Enable
Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Transmit Check Digit	Decide whether to include the UPC-A check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC-E		Enable
UPC-E	Checkbox to enable UPC-E decoding.	Enable
Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Convert to UPC-A	The UPC-E barcode will be expanded into UPC-A format, and the next process will follow the settings configured for UPC-A.	Disable
Transmit Check Digit	Decide whether to include the UPC-E1 check digit (the last character in the barcode) in the data being transmitted.	Enable

UPC-E1		Disable
UPC-E1	Checkbox to enable UPC-E1 decoding.	Disable
Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A format, and the next process will follow the settings configured for UPC-A.	Disable
Transmit Check Digit	Decide whether to include the UPC-E1 check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC/EAN General Preference		
Support Coupon Code	Reads UPC-A barcodes starting with "5", EAN-13 barcodes starting with "99", and UPC-A/EAN-128 Coupon Codes. ▸ 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.	Disable
UPC/EAN Addon Option	Decide whether to decode EAN-8, EAN-13, UPC-E0, UPC-E1 or UPC-A with addons (including Addon 2 and 5). ▸ Ignore Addon ▸ Decode only with addons ▸ Auto-discriminate	Ignore Addon
UPC/EAN Addon Redundancy	When "Auto-discriminate" is applied, decide the number of times of supplementary decoding the same barcode to count as a valid read. Configurable between 2 and 30.	10
UPC/EAN Security Level	Sets the security level to ensure decoding accuracy considering the printed quality of the barcodes such as Code 128, Code 93, and UPC/EAN. The higher the level is, the more security is ensured. Options are:	Level 2

Level	Description
0	With this default, the scan engine is aggressive enough to decode most "in-spec" barcodes.
1	Select this level if misdecodes have occurred. It fixes most misdecodes.
2	Select this level if Level 1 should fail to eliminate misdecodes.
3	Select this level if Security Level 2 should fail to prevent misdecodes. However, as this level actually impairs the decoding ability of scan engine, it'd be better to improve the barcode's print quality if this level should be needed.

MISCELLANEOUS

Laser Engine	Description	Default
Miscellaneous Options		
Transmit AIM Code ID	Decide whether to include AIM Code ID in the data. Each AIM Code ID contains a three-character string "**]cm**": ▸] = 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, MicroQR
S	Industrial 25 (Discrete 25), IATA 2 of 5
U	Maxicode
X	Code 39 Trioptic, Bookland EAN, Matrix 25, US Postnet, US Planet, UK Postal, Japan Postal, Australian Postal, Dutch Postal
z	Aztec

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 4 and 1.
	7	Result of option values 4 and 3.
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.
Industrial 25 (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,]E3001234567890510.	
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]e0011001234567890 2.	

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

EAN.UCC	Native mode transmission

Composites (RSS, EAN-128, 2D portion of UPC composite)	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.
	EAN-128 emulation	
	1	Data packet is a EAN-128 barcode (= data is preceded with "`]JC1`").

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. ▸ 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. ▸ 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 EAN-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The barcode contains a EAN-128 symbol, and the first codeword is in the range 908-909.
	5	The barcode contains a EAN-128 symbol, and the first codeword is in the range 910-911.
	A PDF417 barcode, ABCD, with no transmission protocol enabled, is transmitted as `]L2`ABCD.	
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 / MicroQR 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
Aztec	0	Aztec symbol.
	C	Aztec Rune symbol.

Note: For JPEG files, these BPP settings are ignored for it always uses 8 bits per pixel!

Appendix III

EXTENDED RANGE LASER (SE1524)

The tables below list the symbology settings for the 1D extended range laser scan engine (SE1524).

SYMBOLOGY SETTINGS

Symbology	Description	Default
CODABAR		
CodaBar		Enable
Codabar	Checkbox to enable Codabar decoding.	Enable
Length option	Sets the length of the Codabar symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
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. ▸ The 14-character barcode length does not include start/stop characters.	Disable
NOTIS Editing	Sets whether to include start/stop characters in the transmitted data. ▸ NOTIS Editing is to strip the start/stop characters, i.e. to disable "Transmit Start/Stop Characters".	Disable
CODE 39		
Code 39		Enable
Code 39	Checkbox to enable Code 39 decoding.	Enable
Trioptic Code 39	Selects 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
Convert to Code 32	Selects whether to convert decoded data to Italian Pharmacode.	Disable
Code 32 Prefix	Prefix character “A” to Code 32 barcodes. ▸ “Convert to Code 32” must be enabled for this to function properly.	Disable
Verify Check Digit	Selects whether to verify the Modulo 43 check digit. If the check digit is incorrect, the barcode will not be accepted.	Disable
Transmit Check Digit	Decide whether to include the check digit in the data to transmit. ▸ “Verify Check Digit” must be enabled.	Disable

Support Full ASCII	Selects whether to enable Code 39 Full ASCII decoding. Characters are paired to encode the full ASCII character set.	Disable
Length option	Sets the length of the Code 39 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
CODE 93		
Code 93		Enable
Code 93	Checkbox to enable Code 93 decoding.	Enable
Length option	Sets the length of the Code 93 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
CODE 128		
Code 128		Enable
ISBT 128		Enable
GS1-128		Enable
CODE 2 OF 5		
Discrete 25		Enable
Discrete 25	Checkbox to enable Discrete 2 of 5 decoding.	Enable
Length option	Sets the length of the Discrete 2 of 5 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
Interleaved 25		Enable
Interleaved 25	Checkbox to enable Interleaved 2 of 5 decoding.	Enable
Length option	Sets the length of the Interleaved 2 of 5 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
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. ▸ Disable ▸ USS Check Digit ▸ OPCC Check Digit	Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Disable

Convert To EAN-13	Convert a 14-character Interleaved 25 barcode into EAN-13 if the following requirements are met: The barcode must have a leading 0 and a valid EAN-13 check digit.	Disable
GS1 DATABAR		
GS1 DataBar-14		Enable
GS1 DataBar Limited		Enable
GS1 DataBar Expanded		Enable
GS1 DataBar Convert to UPC/EAN		Disable
MSI		
MSI		Enable
MSI	Checkbox to enable MSI decoding.	Enable
Length option	Sets the length of the MSI symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
Check Digit Option	One check digit is mandatory for decoding MSI barcodes. Select whether a second check digit should be verified. If the check digits are incorrect, the barcode will not be accepted. ▸ One Check Digit ▸ Two Check Digits	One Check Digit
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Disable
Algorithm	When two check digits are set for verification, two choices are available for the pair of check digits. ▸ Modulo10 / Modulo11 ▸ Double Modulo 10	Double Modulo 10
UPC/EAN		
EAN-8		Enable
EAN-8	Checkbox to enable EAN-8 decoding.	Enable
EAN-8 Extend	Checkbox to enable converting EAN-8 to EAN-13 format.	Disable
EAN-13		Enable
EAN-13	Checkbox to enable EAN-13 decoding.	Enable
Bookland EAN	Checkbox to enable ISBN decoding. If enabled, select Bookland ISBN Format in the drop-down box below.	Enable
Bookland ISBN Format	Select to decode Bookland data starting with 978 as 10-digit format along with the Bookland check digit, or decode Bookland data starting with 978/979 as EAN-13 format.	Bookland ISBN-10
Transmit Check Digit	Decide whether to include the EAN-13 check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC-A		Enable
UPC-A	Checkbox to enable UPC-A decoding.	Enable

Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Transmit Check Digit	Decide whether to include the UPC-A check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC-E		Enable
UPC-E	Checkbox to enable UPC-E decoding.	Enable
Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Convert to UPC-A	The UPC-E barcode will be expanded into UPC-A format, and the next process will follow the settings configured for UPC-A.	Disable
Transmit Check Digit	Decide whether to include the UPC-E1 check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC-E1		Disable
UPC-E1	Checkbox to enable UPC-E1 decoding.	Disable
Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A format, and the next process will follow the settings configured for UPC-A.	Disable
Transmit Check Digit	Decide whether to include the UPC-E1 check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC/EAN General Preference		
Support Coupon Code	Reads UPC-A barcodes starting with “5”, EAN-13 barcodes starting with “99”, and UPC-A/EAN-128 Coupon Codes. ▸ 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.	Disable

UPC/EAN Addon Option	Decide whether to decode EAN-8, EAN-13 with addons (including Addon 2 and 5). ▸ Ignore Addon ▸ Decode only with addons ▸ Auto-discriminate	Ignore Addon
UPC/EAN Addon Redundancy	When "Auto-discriminate" is applied, decide the number of times of supplementary decoding the same barcode to count as a valid read. Configurable between 2 and 30.	10
UPC/EAN Security Level	Sets the security level to ensure decoding accuracy considering the printed quality of the barcodes such as Code 128, Code 93, and UPC/EAN. The higher the level is, the more security is ensured. Options are: Level — Description 0 — With this default, the scan engine is aggressive enough to decode most "in-spec" barcodes. 1 — Select this level if misdecodes have occurred. It fixes most misdecodes. 2 — Select this level if Level 1 should fail to eliminate misdecodes. 3 — Select this level if Security Level 2 should fail to prevent misdecodes. However, as this level actually impairs the decoding ability of scan engine, it'd be better to improve the barcode's print quality if this level should be needed.	Level 2

MISCELLANEOUS

Laser Engine	Description	Default
Miscellaneous Options		
Transmit AIM Code ID	Decide whether to include AIM Code ID in the data. Each AIM Code ID contains a three-character string "**]cm**": ▸] = Flag Character (ASCII 93) ▸ c = Code Character (see below) ▸ m = Modifier Character (see below)	Disable

Appendix IV

2D IMAGER (SE4500DL)

The tables below list the symbology settings for the 2D imager (SE4500DL).

SYMBOLOGY SETTINGS

1D SYMBOLOGIES

Symbology	Description	Default
CODABAR		
CodaBar		Enable
Codabar	Checkbox to enable Codabar decoding.	Enable
Length option	Sets the length of the Codabar symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
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. ▸ The 14-character barcode length does not include start/stop characters.	Disable
NOTIS Editing	Sets whether to include start/stop characters in the transmitted data. ▸ NOTIS Editing is to strip the start/stop characters, i.e. to disable "Transmit Start/Stop Characters".	Disable
CODE 11		
Code 11		Enable
Code 11	Checkbox to enable Code 11 decoding.	Enable
Check Digit Option	Sets whether to verify check digits according to the selected option. If the check digits are incorrect, the barcode will not be accepted. ▸ Disable ▸ One Check Digit ▸ Two Check Digits	Disable
Transmit Check Digit	Selects whether to include check digits in the transmitted data. ▸ Check Digit Option" must be enabled.	Disable
Length option	Sets the length of the Code 11 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)

CODE 39		
Code 39		Enable
Code 39	Checkbox to enable Code 39 decoding.	Enable
Trioptic Code 39	Selects 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
Convert to Code 32	Selects whether to convert decoded data to Italian Pharmacode.	Disable
Code 32 Prefix	Prefix character "A" to Code 32 barcodes. ▸ "Convert to Code 32" must be enabled for this to function properly.	Disable
Verify Check Digit	Selects whether to verify the Modulo 43 check digit. If the check digit is incorrect, the barcode will not be accepted.	Disable
Transmit Check Digit	Decide whether to include the check digit in the data to transmit. ▸ "Verify Check Digit" must be enabled.	Disable
Support Full ASCII	Selects whether to enable Code 39 Full ASCII decoding. Characters are paired to encode the full ASCII character set.	Disable
Length option	Sets the length of the Code 39 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
CODE 93		
Code 93		Enable
Code 93	Checkbox to enable Code 93 decoding.	Enable
Length option	Sets the length of the Code 93 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
CODE 128		
Code 128		Enable
GS1-128		Enable
ISBT-128		Enable
ISBT 128	Checkbox to enable ISBT 128 decoding.	Enable
Concatenation	Sets whether to enable decoding ISBT-128 by performing concatenation of ISBT data ▸ Disable: Does not perform concatenation ▸ Enable: Performs concatenation on all ISBT-128 barcodes. ▸ Auto-discriminate: Auto-discriminates between the ISBT-128 barcodes which require concatenation and those which do not need concatenation.	Disable

Concatenation Redundancy	When "Auto-discriminate" is applied, decide the number of times of supplementary decoding the same barcode to count as a valid read. Configurable between 2 and 20	10
CODE 2 OF 5		
Chinese 25		Enable
Discrete 25		Enable
Discrete 25	Checkbox to enable Discrete 2 of 5 decoding.	Enable
Length option	Sets the length of the Discrete 2 of 5 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
Interleaved 25		Enable
Interleaved 25	Checkbox to enable Interleaved 2 of 5 decoding.	Enable
Length option	Sets the length of the Interleaved 2 of 5 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
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. ▸ Disable ▸ USS Check Digit ▸ OPCC Check Digit	Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Disable
Convert To EAN-13	Convert a 14-character Interleaved 25 barcode into EAN-13 if the following requirements are met: ▸ The barcode must have a leading 0 and a valid EAN-13 check digit.	Disable
Matrix 25		Enable
Matrix 25	Checkbox to enable Matrix 2 of 5 decoding.	Enable
Length option	Sets the length of the Matrix 2 of 5 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
Redundancy	Sets read redundancy	Disable
Verify Check Digit	Select whether to verify the check digit, which is the last character of the barcode. If the check digit is incorrect, the barcode will not be accepted.	Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Disable
COMPOSITE		
Composite CC-A/B		Disable

Composite CC-C		Enable
Composite TLC 39		Disable
Composite General Preference		Enable
UPC Composite Mode	UPC barcodes can be "linked" with a 2D barcode during transmission as if they were one barcode. **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. ▸ CC-A/B or CC-C must be enabled. **Auto-discriminate** Transmit UPC barcodes as well as the 2D portion if present.	UPC always Linked
GS1-128 Emulation Mode	Sets GS1-128 emulation mode for UCC/EAN Composite Codes.	Disable
GS1 DATABAR		
GS1 DataBar-14		Enable
GS1 DataBar Limited		Enable
GS1 DataBar Expanded		Enable
GS1 DataBar Convert to UPC/EAN		Disable
KOREAN 3 OF 5		
Korean 3 of 5		Disable
INVERSE		
Inverse		Disable
MSI		
MSI		Enable
MSI	Checkbox to enable MSI decoding.	Enable
Length option	Sets the length of the MSI symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Max / Min Length (4-55)
Check Digit Option	One check digit is mandatory for decoding MSI barcodes. Select whether a second check digit should be verified. If the check digits are incorrect, the barcode will not be accepted. ▸ One Check Digit ▸ Two Check Digits	One Check Digit
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Disable

Algorithm	When two check digits are set for verification, two choices are available for the pair of check digits. ▸ Modulo10 / Modulo11 ▸ Double Modulo 10	Double Modulo 10
POSTAL CODE		
Australian Postal		Enable
Japan Postal		Enable
Netherlands KIX Code		Enable
US Postnet		Enable
US Planet		Enable
UK Postal		Enable
Postal General Preference		Enable
US Postal Check Digit	Decide whether to transmit check digit for US Postnet or US Planet.	Enable
UK Postal Check Digit	Decide whether to transmit check digit for UK Postal.	Enable
UPC/EAN		
EAN-8		Enable
EAN-8	Checkbox to enable EAN-8 decoding.	Enable
EAN-8 Extend	Checkbox to enable converting EAN-8 to EAN-13 format.	Disable
EAN-13		Enable
EAN-13	Checkbox to enable EAN-13 decoding.	Enable
Bookland EAN	Checkbox to enable ISBN decoding. If enabled, select Bookland ISBN Format in the drop-down box below.	Enable
Bookland ISBN Format	Decodes Bookland data starting with 978 in 10-digit format along with the Bookland check digit, or Bookland data starting with 978/979 as EAN-13 format.	Bookland ISBN-10
Transmit Check Digit	Decide whether to include the EAN-13 check digit (the last character in the barcode) in the data being transmitted.	Enable
ISSN EAN	Checkbox to enable ISSN EAN decoding.	Disable
UPC-A		Enable
UPC-A	Checkbox to enable UPC-A decoding.	Enable
Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Transmit Check Digit	Decide whether to include the UPC-A check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC-E		Enable
UPC-E	Checkbox to enable UPC-E decoding.	Enable

Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Convert to UPC-A	The UPC-E barcode will be expanded into UPC-A format, and the next process will follow the settings configured for UPC-A.	Disable
Transmit Check Digit	Decide whether to include the UPC-E1 check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC-E1		Disable
UPC-E1	Checkbox to enable UPC-E1 decoding.	Disable
Preamble	Decide whether to include the UPC-A/UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ No transmit: transmits none of the above ▸ Transmit System Character: transmits system number only ▸ Transmit Sys. Character and Country Code: transmits system number and country code	Transmit System Character
Convert to UPC-A	The UPC-E1 barcode will be expanded into UPC-A format, and the next process will follow the settings configured for UPC-A.	Disable
Transmit Check Digit	Decide whether to include the UPC-E1 check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC/EAN General Preference		
Support Coupon Code	Reads UPC-A barcodes starting with "5", EAN-13 barcodes starting with "99", and UPC-A/EAN-128 Coupon Codes. ▸ 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.	Disable
UPC/EAN Addon Option	Decide whether to decode EAN-8, EAN-13 with addons (including Addon 2 and 5). ▸ Ignore Addon ▸ Decode only with addons ▸ Auto-discriminate	Ignore Addon
UPC/EAN Addon Redundancy	When "Auto-discriminate" is applied, decide the number of times of supplementary decoding the same barcode to count as a valid read. Configurable between 2 and 30.	10
Separator Character (FNC1)		
Enable separator char	Enable the function code character separator, which is used to separate data fields of variable length and application identifiers of subsequent data fields in concatenated data strings. ▸ Applicable for EAN-128/GS1-128, Coupon code, GS1 DataBar, Composite Component barcodes	Disable

Separator char replace by	Tap the keyboard icon to open a mapping table for selecting a separator character to replace with. ▸ Enable separator char must be selected	None

2D SYMBOLOGIES

Symbology	Description	Default
Aztec		Enable
Aztec	Selects whether to enable Aztec decoding.	Enable
Aztec Inverse	Decide whether to decode Aztec Inverse. **Regular only** Decode regular Aztec barcodes only. **Inverse only** Decode inverse Aztec barcodes only. **Inverse Auto-detect** Decode both regular and inverse Aztec barcodes.	Regular only
Data Matrix		Enable
Data Matrix	Selects whether to enable Data Matrix decoding.	Enable
Data Matrix Inverse	Decide whether to decode Data Matrix Inverse. **Regular Only** Decode regular Data Matrix barcodes only. **Inverse Only** Decode inverse Data Matrix barcodes only. **Auto Detect** Decode both regular and inverse Data Matrix barcodes.	Regular Only
Decode Mirror Image	Selects whether to enable decode mirror images. **Never** Does not decode Data Matrix barcodes that are mirror images. **Always** Decodes Data Matrix barcodes that are mirror images. **Auto** Decodes both mirrored and unmirrored Data Matrix barcodes.	Never
Maxicode		Enable

MicroPDF417		Disable
MicroPDF417	Selects whether to enable MicroPDF417 decoding.	Disable
Code 128 Emulation	Transmit data from certain Micro PDF 417 barcodes as if it was encoded in Code 128 barcodes. ▸ Transmit AIM code ID character in **Miscellaneous** options must be enabled first. When applied, the MicroPDF417 barcodes are transmitted with one of these prefixes: **The first codeword of MicroPDF417 is 903-905:** The original Code ID "]L3" will be changed to "]C1". **The first codeword of MicroPDF417 is 908 or 909:** The original Code ID "]L4" will be changed to "]C2". **The first codeword of MicroPDF417 is 910 or 911:** The original Code ID "]L5" will be changed to "]C0".	Disable
MicroQR		Enable
PDF417		Enable
QR Code		Enable
QR Code	Selects whether to enable QR Code decoding.	Enable
QR Code Inverse	Decide whether to decode QR Code Inverse. **Regular Only** Decodes regular QR Code only. **Inverse Only** Decodes inverse QR Code only. **Inverse Auto-detect** Decodes both regular and inverse QR Codes.	Regular Only

MISCELLANEOUS

2D Engine	Description	Default
Miscellaneous Options		
Transmit AIM Code ID	Decide whether to include AIM Code ID in the data. Each AIM Code ID contains a three-character string "**]cm**": ▸] = Flag Character (ASCII 93) ▸ c = Code Character ▸ m = Modifier Character ▸ Refer to AIM Code ID – Code Characters.	Disable

Appendix V

NEAR/FAR 2D IMAGER (EX25)

The tables below list the symbology settings for the near/far 2D imager (EX25).

SYMBOLOGY SETTINGS

1D SYMBOLOGIES

Symbology	Description	Default
CODABAR		
CodaBar		Disable
Codabar	Checkbox to enable Codabar decoding.	Disable
Length option	Sets the length of the Codabar symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Two Fixed Length (6-0)
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. ▸ The 14-character barcode length does not include start/stop characters.	Disable
NOTIS Editing	Sets whether to include start/stop characters in the transmitted data. ▸ NOTIS Editing is to strip the start/stop characters, i.e. to disable "Transmit Start/Stop Characters".	Not transmitted
CODE 11		
Code 11		Disable
Code 11	Checkbox to enable Code 11 decoding.	Disable
Check Digit Option	Sets whether to verify check digits according to the selected option. If the check digits are incorrect, the barcode will not be accepted. ▸ Disable ▸ One Check Digit ▸ Two Check Digits	Disable
Transmit Check Digit	Selects whether to include check digits in the transmitted data. ▸ Check Digit Option" must be enabled.	Disable

Length option	Sets the length of the Code 11 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length When setting data length for Code 11, you must include both check digits in the specified string length for the reader to decode successfully.	Any Length (0-0)
CODE 39		
Code 39		Enable
Code 39	Checkbox to enable Code 39 decoding.	Enable
Trioptic Code 39	Selects 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. ▸ When a Trioptic Code 39 barcode is decoded, the code type will be displayed as Code 39.	Disable
Convert to Code 32	(Reserved)	--
Code 32 Prefix	(Reserved)	--
Verify Check Digit	Selects whether to verify the Modulo 43 check digit. If the check digit is incorrect, the barcode will not be accepted.	Disable
Transmit Check Digit	Decide whether to include the check digit in the data to transmit. ▸ "Verify Check Digit" must be enabled.	Disable
Support Full ASCII	Selects whether to enable Code 39 Full ASCII decoding. Characters are paired to encode the full ASCII character set. ▸ When a Code 39 full ASCII barcode is decoded, the code type will be displayed as Code 39.	Disable
Length option	Sets the length of the Code 39 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Any Length (0-0)
CODE 93		
Code 93		Disable
Code 93	Checkbox to enable Code 93 decoding.	Disable
Length option	Sets the length of the Code 93 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Any Length (0-0)
CODE 128		
Code 128		Enable
GS1-128		Enable
ISBT 128		Disable

ISBT 128	Checkbox to enable ISBT 128 decoding. ▸ When enabled, the reading range of Code 128 barcodes will decrease from 10m to 6-7m.	Disable
Concatenation	Sets whether to enable decoding ISBT-128 by performing concatenation of ISBT data ▸ Disable: Does not perform concatenation ▸ Enable: Performs concatenation on all ISBT-128 barcodes. ▸ Auto-discriminate: Auto-discriminates between the ISBT-128 barcodes which require concatenation and those which do not need concatenation.	Disable
Concatenation Redundancy	(Reserved)	--
CODE 2 OF 5		
Discrete 25		Disable
Discrete 25	Checkbox to enable Discrete 25 decoding.	Disable
Length option	Sets the length of the Discrete 25 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Two Fixed Length (6-0)
Interleaved 25		Disable
Interleaved 25	Checkbox to enable Interleaved 2 of 5 decoding.	Disable
Length option	Sets the length of the Interleaved 25 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Two Fixed Length (6-0)
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. ▸ Disable ▸ USS Check Digit ▸ OPCC Check Digit	Disable
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Disable
Convert to EAN-13	(Reserved)	--
Matrix 25		Disable
Matrix 25	Checkbox to enable Matrix 2 of 5 decoding.	Disable
Length option	Sets the length of the Matrix 25 symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Two Fixed Length (6-0)
Redundancy	(Reserved)	--
Verify Check Digit	(Reserved)	--

Transmit Check Digit	(Reserved)	--
COMPOSITE		
Composite CC-A/B		Disable
Composite CC-C		Disable
GS1 DATABAR		
GS1 DataBar-14		Disable
GS1 DataBar Limited		Disable
GS1 DataBar Expanded		Disable
MSI		
MSI		Disable
MSI	Checkbox to enable MSI decoding.	Disable
Length option	Sets the length of the MSI symbols to decode. ▸ One Fixed length (Length 1) ▸ Two Fixed lengths (Length 1>Length 2) ▸ Max / Min Length (range: 0-55; Length 1<Length 2) ▸ Any Length	Two Fixed Length (6-0)
Check Digit Option	One check digit is mandatory for decoding MSI barcodes. Select whether a second check digit should be verified. If the check digits are incorrect, the barcode will not be accepted. ▸ One Check Digit ▸ Two Check Digits	One Check Digit
Transmit Check Digit	Decide whether to include the check digit in the data being transmitted.	Enable
Algorithm	(Reserved)	--
POSTAL CODE		
Australian Postal		Disable
Japan Postal		Disable
Netherlands KIX Code		Disable
US Postnet		Disable
US Planet		Disable
Postal General Reference		
US Postal Check Digit	Decide whether to transmit check digit for US Postnet or US Planet.	Enable
UK Postal Check Digit	(Reserved)	--
UPC/EAN		
EAN-8		Enable
EAN-13		Enable
EAN-13	Checkbox to enable EAN-13 decoding.	Enable
Bookland EAN	Checkbox to enable ISBN decoding. If enabled, select Bookland ISBN Format in the drop-down box below.	Disable
Bookland ISBN Format	(Reserved)	--

Transmit Check Digit	(Reserved)	--
ISSN EAN	Checkbox to enable ISSN EAN decoding.	Disable
UPC-A		Enable
UPC-A	Checkbox to enable UPC-A decoding.	Enable
Preamble	Decide whether to include the UPC-A preamble System Character (and Country Code) in the data being transmitted. ▸ Enable ▸ Disable	Enable
Transmit Check Digit	Decide whether to include the UPC-A check digit (the last character in the barcode) in the data being transmitted.	Enable
UPC-E		Enable
UPC-E	Checkbox to enable UPC-E/UPC-E1 decoding.	Enable
Preamble	Decide whether to include the UPC-E/UPC-E1 preamble System Character (and Country Code) in the data being transmitted. ▸ Enable ▸ Disable	Enable
Convert to UPC-A	The UPC-E/UPC-E1 barcode will be expanded into UPC-A format, and the next process will follow the settings configured for UPC-A.	Disable
Transmit Check Digit	Decide whether to include the UPC-E/UPC-E1 check digit (the last character in the barcode) in the data being transmitted.	Enable
Separator Character (FNC1)		Enable
Enable separator char	Enable the function code character separator, which is used to identify and separate fields for variable length application identifiers. ▸ Applicable for EAN-128/GS1-128, Coupon code, GS1 DataBar, Composite Component barcodes.	Disable
Separator char replace by	Tap the keyboard icon to open a mapping table for selecting a separator character. ▸ Enable separator char must be selected	None

2D SYMBOLOGIES

Symbology	Description	Default
Aztec ▸ Detection of inverse Aztec barcodes is enabled automatically when *enableAztec* is enabled.		Disable
Data Matrix ▸ Detection of inverse DataMatrix barcodes is enabled automatically when *enableDataMatrix* is enabled.		Enable
Maxicode		Disable
MicroPDF417		Disable
MicroPDF417	Selects whether to enable MicroPDF417 decoding.	Disable
Code 128 Emulation	Transmit data from certain Micro PDF 417 barcodes as if it was encoded in Code 128 barcodes. ▸ Transmit AIM code ID character in **Miscellaneous** options must be enabled first. When applied, the MicroPDF417 barcodes are transmitted with one of these prefixes: **The first codeword of MicroPDF417 is 903-905:** The original Code ID "]L3" will be changed to "]C1". **The first codeword of MicroPDF417 is 908 or 909:** The original Code ID "]L4" will be changed to "]C2". **The first codeword of MicroPDF417 is 910 or 911:** The original Code ID "]L5" will be changed to "]C0".	Disable
PDF417		Enable
QR Code		Disable

MISCELLANEOUS

2D Engine	Description	Default
Miscellaneous Options		
Transmit AIM Code ID	Decide whether to include AIM Code ID in the data. Each AIM Code ID contains a three-character string "**]cm**": ▸] = Flag Character (ASCII 93) ▸ c = Code Character ▸ m = Modifier Character ▸ Refer to AIM Code ID – Code Characters.	Disable

Appendix VI

PHYSICAL KEYPAD REFERENCE TABLE

NUMERIC KEYPAD (30 KEYS)

Numeric keypad layout:

USING ALPHA, SHIFT & FN KEYS

Key	Normal Mode	[α] Mode				[α] + ⇧ Mode				[Fn] Mode
		1st press	2nd press	3rd press	4th press	1st press	2nd press	3rd press	4th press	
1	1	@	;	:		@	;	:		F9
2	2	a	b	c		A	B	C		F10
3	3	d	e	f		D	E	F		F11
4	4	g	h	i		G	H	I		F12
5	5	j	k	l		J	K	L		Backlight Increase
6	6	m	n	o		M	N	O		Volume Up
7	7	p	q	r	s	P	Q	R	S	-
8	8	t	u	v		T	U	V		Backlight Decrease
9	9	w	x	y	z	W	X	Y	Z	Volume Down
0	0	,	\	/		,	\	/		0
Up	Up	Up				Highlight Up				Page Up
Down	Down	Down				Highlight Down				Page Down
Left	Left	Left				Highlight Left				Home

Right	Right	Right	Highlight Right	End
Enter	Enter	Enter	Enter	Enter
Backspace	Backspace	Backspace	Backspace	Keypad Lock
Esc	Esc	Esc	Esc	Esc
.	.	Shift	Shift	.
Space	Space	Space	Space	Windows
Ctrl	Ctrl	Ctrl	Ctrl	Alt
Green	F14	F14	F14	F14
Red	F15	F15	F15	F15
F1	F1	F1	Shift+F1	F5
F2	F2	F2	Shift+F2	F6
F3	F3	F3	Shift+F3	F7
F4	F4	F4	Shift+F4	F8

Note: Although keys 0-9 allow up to four presses to input different values, the function of Ctrl and Alt can only be delivered to the value entered at the first press of each key. For instance, the keypad can deliver the functions Ctrl+a and Alt+a, but not Ctrl+c and Alt+c, since the letter “c” will require three presses of the number key “2”.

NUMERIC & FUNCTION KEYPAD (38 KEYS)

Numeric and Function keypad layout:

USING ALPHA, SHIFT & FN KEYS

Key	Normal Mode	[α] Mode	[α] + ⇧ Mode	⇧ Mode	[Fn] Mode
1	1	e	E	Shift+1	1
2	2	f	F	Shift+2	2
3	3	g	G	Shift+3	3
4	4	h	H	Shift+4	4
5	5	i	I	Shift+5	5
6	6	j	J	Shift+6	6
7	7	k	K	Shift+7	7
8	8	l	L	Shift+8	8
9	9	m	M	Shift+9	9
0	0	o	O	Shift+0	0
Up	Up	b	B	Highlight Up	Page Up
Down	Down	c	C	Highlight Down	Page Down
Left	Left	a	A	Highlight Left	Home
Right	Right	d	D	Highlight Right	End
Enter	Enter	Enter	Enter	Enter	Enter
Backspace	Backspace	Backspace	Backspace	Backspace	Keypad Lock
Esc	Esc	Esc	Esc	Esc	Esc
.	.	n	N	.	.
,	,	p	P	,	,
Space	Space	Space	Space	Space	Windows
Ctrl	Ctrl	Ctrl	Ctrl	Ctrl	Alt
Green	F14	F14	Shift+F14	Shift+F14	F14
Red	F15	F15	Shift+F15	Shift+F15	F15
F1	F1	q	Q	Shift+F1	F11
F2	F2	r	R	Shift+F2	F12

Key	Normal Mode	[α] Mode	[α] + ⇧ Mode	⇧ Mode	[Fn] Mode
1	1	e	E	Shift+1	1
2	2	f	F	Shift+2	2
3	3	g	G	Shift+3	3
4	4	h	H	Shift+4	4
5	5	i	I	Shift+5	5
6	6	j	J	Shift+6	6
7	7	k	K	Shift+7	7
8	8	l	L	Shift+8	8
9	9	m	M	Shift+9	9
0	0	o	O	Shift+0	0
Up	Up	b	B	Highlight Up	Page Up
Down	Down	c	C	Highlight Down	Page Down
Left	Left	a	A	Highlight Left	Home
Right	Right	d	D	Highlight Right	End
Enter	Enter	Enter	Enter	Enter	Enter
Backspace	Backspace	Backspace	Backspace	Backspace	Keypad Lock
Esc	Esc	Esc	Esc	Esc	Esc
.	.	n	N	.	.
,	,	p	P	,	,
Space	Space	Space	Space	Space	Windows
Ctrl	Ctrl	Ctrl	Ctrl	Ctrl	Alt
Green	F14	F14	Shift+F14	Shift+F14	F14
Red	F15	F15	Shift+F15	Shift+F15	F15
F1	F1	q	Q	Shift+F1	F11
F2	F2	r	R	Shift+F2	F12

F3	F3	s	S	Shift+F3	F13
F4	F4	t	T	Shift+F4	F14
F5	F5	u	U	Shift+F5	F5
F6	F6	v	V	Shift+F6	Backlight Increase
F7	F7	w	W	Shift+F7	Volume Up
F8	F8	x	X	Shift+F8	F8
F9	F9	y	Y	Shift+F9	Backlight Decrease
F10	F10	z	Z	Shift+F10	Volume Down
Shift	Shift	Shift	Shift	N/A	Shift

ALPHANUMERIC KEYPAD (53 KEYS)

Alphanumeric keypad layout:

VT emulator keypad

TN3270 emulator keypad

TN5250 emulator keypad

Note: All three configurations of the 53-key keypad deliver the same functions. However, certain key functions may differ according to the application in use, for instance when terminal emulation software is running.

USING ALPHA, SHIFT & FN KEYS

Key	Normal	⇧ Mode	[α] Mode	[Ctrl] Mode
1	1	Shift+1	F1(VK_F1)	Ctrl+1
2	2	Shift+2	F2(VK_F2)	Ctrl+2
3	3	Shift+3	F3(VK_F3)	Ctrl+3
4	4	Shift+4	F4(VK_F4)	Ctrl+4
5	5	Shift+5	F5(VK_F5)	Ctrl+5
6	6	Shift+6	F6(VK_F6)	Ctrl+6
7	7	Shift+7	F7(VK_F7)	Ctrl+7
8	8	Shift+8	F8(VK_F8)	Ctrl+8
9	9	Shift+9	F9(VK_F9)	Ctrl+9
0	0	Shift+0	F10(VK_F10)	Ctrl+0
*	*	*	Page Down (VK_NEXT)	Ctrl+^ ^^
Up	Up	Highlight Up	UP	Ctrl+Up
Down	Down	Highlight Down	DOWN	Ctrl+Down
Left	Left	Highlight Left	LEFT	Ctrl+Left
Right	Right	Highlight Right	RIGHT	Ctrl+Right
Enter	Enter	Enter	INSERT	Enter

Key	Normal	⇧ Mode	[α] Mode	[Ctrl] Mode
1	1	Shift+1	F1(VK_F1)	Ctrl+1
2	2	Shift+2	F2(VK_F2)	Ctrl+2
3	3	Shift+3	F3(VK_F3)	Ctrl+3
4	4	Shift+4	F4(VK_F4)	Ctrl+4
5	5	Shift+5	F5(VK_F5)	Ctrl+5
6	6	Shift+6	F6(VK_F6)	Ctrl+6
7	7	Shift+7	F7(VK_F7)	Ctrl+7
8	8	Shift+8	F8(VK_F8)	Ctrl+8
9	9	Shift+9	F9(VK_F9)	Ctrl+9
0	0	Shift+0	F10(VK_F10)	Ctrl+0
*	*	*	Page Down (VK_NEXT)	Ctrl+^ ^^
Up	Up	Highlight Up	UP	Ctrl+Up
Down	Down	Highlight Down	DOWN	Ctrl+Down
Left	Left	Highlight Left	LEFT	Ctrl+Left
Right	Right	Highlight Right	RIGHT	Ctrl+Right
Enter	Enter	Enter	INSERT	Enter

Backspace	Backspace	Keylock	END	Ctrl+\ ^\
Esc	Esc	Esc	Esc	Esc
.	.	>(Shift+.)	Page Up (VK_PRIOR)	Ctrl+] ^]
Space	Space	Space	TAB	Ctrl+_ ^_
Ctrl	Ctrl	Ctrl	Alt	N/A
Shift	Shift	N/A	Shift	N/A
Green	F14	Shift+F14	F14(VK_F14)	N/A
Red	F15	Shift+F15	F15(VK_F15)	N/A
A	a	A	, (COMMA)	Ctrl+a
B	b	B	. (PERIOD)	Ctrl+b
C	c	C	`(VK_APOSTROPHE)(0xDE)	Ctrl+c
D	d	D	Backlight +	Ctrl+d
E	e	E	[(VK_LBRACKET)(0xDB)	Ctrl+e
F	f	F	] (VK_RBRACKET)(0xDD)	Ctrl+f
G	g	G	\ (VK_BACKSLASH)(0xDC)	Ctrl+g
H	h	H	Vol+	Ctrl+h
I	i	I	Backlight -	Ctrl+i
J	j	J	0xC0	Ctrl+j
K	k	K	F12(VK_F12)	Ctrl+k
L	l	L	F11(VK_F11)	Ctrl+l
M	m	M	Vol -	Ctrl+m
N	n	N	- (VK_HYPHEN)(0xBD)	Ctrl+n
O	o	O	F13(VK_F13)	Ctrl+o
P	p	P	F14(VK_F14)	Ctrl+p
Q	q	Q	F15(VK_F15)	Ctrl+q
R	r	R	;(VK_SEMICOLON)(0xBA)	Ctrl+r
S	s	S	+ (VK_ADD)	Ctrl+s
T	t	T	-(VK_SUBTRACT)	Ctrl+t
U	u	U	* (VK_MULTIPLY)	Ctrl+u
V	v	V	/ (VK_SLASH)	Ctrl+v
W	w	W	= (VK_EQUAL)	Ctrl+x
X	x	X	: (VK_COLON)	Ctrl+w
Y	y	Y	Y (VK_Y)	Ctrl+y
Z	z	Z	N/A	Ctrl+z