CipherLab
Reference Manual

Windows Embedded Compact 6.0

CP60 / CP60G (CE)

Version 1.06

CIPHER LAB

PREFACE

COPYRIGHT

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DISCLAIMER

TRADEMARK RECOGNITION

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

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.

SAFETY NOTICES

RADIO WAVE EXPOSURE AND SPECIFIC ABSOR PTION RATE (SAR) INFORMATION

This mobile computer model CP60G has been designed to comply with applicable safety requirements for exposure to radio waves. These requirements are based on scientific guidelines that include safety margins designed to assure the safety of all persons, regardless of age and health.

The radio wave exposure guidelines employ a unit of measurement known as the Specific Absorption Rate, or SAR. Tests for SAR are conducted using standardized methods with the phone transmitting at its highest certified power level in all used frequency bands.

While there may be differences between the SAR levels of various phone models, they are all designed to meet the relevant guidelines for exposure to radio waves.
SAR data information for residents in countries that have adopted the SAR limit recommended by the International Commission of Non-Ionizing Radiation Protection (ICNIRP), which is 2 W/kg averaged over ten (10) gram of tissue (for example European Union, Brazil and Australia):

The highest SAR value for this model phone when tested by CIPHERLAB for use at the body is 1.35 W/kg (10g).

FOR UNITED STATES

THESE PRODUCT MODELS HAVE BEEN CERTIFIED IN COMPLIANCE WITH THE GOVERNMENT'S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

The CP60 series mobile computer has been designed to comply with applicable safety requirements for exposure to radio waves. Your mobile computer is a radio transmitter and receiver. It is designed to not exceed the limits* of exposure to radio frequency (RF) energy set by governmental authorities. These limits establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by international scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a safety margin designed to assure the safety of all individuals, regardless of age and health.

The radio wave exposure guidelines employ a unit of measurement known as the Specific Absorption Rate (SAR). Tests for SAR are conducted using standardized methods with the product transmitting at its highest certified power level in all used frequency bands. While there may be differences between the SAR levels of various product models, they are all designed to meet the relevant guidelines for exposure to radio waves.

The highest reported SAR values for body-worn accessory and simultaneous transmission are 0.76W/kg, and 1.27W/kg respectively for CP60G. The highest reported SAR values for body-worn operation are 1.03W/Kg for CP60. For body-worn operation, the product has been tested when positioned a minimum of 15 mm from the body without any metal parts in the vicinity of the product.

Before a WWAN model is available for sale to the public in the US, it must be tested and certified by the Federal Communications Commission (FCC) that it does not exceed the limit established by the government-adopted requirement for safe exposure*. The tests are performed in positions and locations (i.e., by the ear and worn on the body) as required by the FCC for each model. The FCC has granted an Equipment Authorization for this phone model with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. While there may be differences between the SAR levels of various phones, all mobile phones granted an FCC equipment authorization meet the government requirement for safe exposure. SAR information on this phone model is on file at the FCC and can be found under the Display Grant section of http://www.fcc.gov/oet/fccid after searching on FCC ID Q3N-CP60G.

In the United States and Canada, the SAR limit for mobile product used by the public is 1.6 watts/kilogram (W/kg) averaged over one gram of tissue. The standard incorporates a margin of safety to give additional protection for the public and to account for any variations in measurements.

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 IP65/67, however, the mobile computer can get damaged when being exposed to extreme temperatures or soaked wet.
- If the mobile computer is exposed to water, dry the device with a cloth. Be careful of the key pad and I/O connector; wipe the water away from them as soon as possible. If the mobile computer is covered with a protective case, remove the case before drying the device. Do not use the device or put the protective case on until the device is completely dried. It is recommended that the mobile computer and its removed components be stored in a drying cabinet and dehumidified for 12 hours before being used again.
- 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 touchscreen, 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.

CIPHER LAB

Declaration of Conformity

C €

Manufacturer	EC Representative's information
CIPHERLAB Co., Ltd.	**CIPHERLAB GmbH**
12F., 333, Dunhua S. Rd., Sec. 2	Gießerallee 21, 47877 Willich
Taipei, Taiwan 106, R.O.C.	Germany
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Type of Equipment

Mobile Computer

Model(s) Declared

CP60

Initial Year of Manufacture   **2014**

Reference to the specification under which conformity is declared in accordance with Council Directive- 2004/108/EC (EMC), 1999/5/EC (R&TTE), 2006/95/EC (LVD), 2011/65/EU (RoHS), 1999/519/EC (EMF).

EN 300 328 V1.7.1	EN 300 440-1 V1.6.1
EN 300 440-2 V1.4.1	EN 301 489-1 V1.9.2
EN 301 489-17 V2.2.1	EN 301 893 V1.6.1
EN 301 489-3 V1.4.1	EN 60950-1：2006+A11+A1+A12:2011
EN 62311:2008	EN 55024：2010
EN 55022: 2010	EN61000-3-2 :2006/A1:2009/A2:2009
EN 61000-3-3 :2008	

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

Signature

Full Name   Herbie Jiang

Title   Manager

2014/Aug./22

$C\epsilon$ Declaration of Conformity

Manufacturer	EC Representative's information
CIPHERLAB Co., Ltd.	**CIPHERLAB GmbH**
12F., 333, Dunhua S. Rd., Sec. 2	Gießerallee 21, 47877 Willich
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Tel: +886 2 8647 1166	Tel: +49 2154 89777 20
http://www.cipherlab.com	http://www.cipherlab.com

Type of Equipment

Mobile Computer

Model(s) Declared

CP60G

Initial Year of Manufacture   **2014**

Reference to the specification under which conformity is declared in accordance with Council Directive- 2004/108/EC (EMC), 1999/5/EC (R&TTE), 2006/95/EC (LVD), 2011/65/EU (RoHS), 1999/519/EC (EMF).

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EN 300 440-2 V1.4.1	EN 301 489-1 V1.9.2
EN 301 489-17 V2.2.1	EN 301 489-24 V1.5.1
EN 301 489-3 V1.4.1	EN 301 489-7 V1.3.1
EN 301 511 V9.0.2	EN 301 908-1 V5.2.1
EN 301 908-2 V5.2.1	EN 62479:2010
EN 62311:2008	EN 60950-1：2006+A11+A1+A12:2011
EN 61000-3-2 :2006/A1:2009/A2:2009	EN 61000-3-3 :2008
EN 55024 : 2010	EN 55022 : 2010
EN 301 893 V1.6.1	
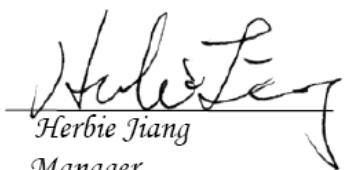
I the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Signature

Full Name   *Herbie Jiang*

Title   *Manager*

2014/Aug./22

RELEASE NOTES

Version	Date	Notes
1.06	June 8, 2018	‣ Modify 7.1 Update OS Image
1.05	Apr 25, 2016	‣ Update CARE & MAINTENANCE
1.04	Jul 23, 2014	‣ Delete description relating to CD ‣ Add Related Documentation to Introduction
1.03	Oct 23, 2014	‣ Remove ActiveSync Advance Network Mode from USB Connection ‣ Add Shift key, PTT key to available key assignment list in 6.1 Button Assignment ‣ Add 6.4 Push to Talk ‣ Add PTT Configuration in 7.2 Control Panel ‣ Add warning message to COM Port Mapping in 7.2 Control Panel
1.02	Sep 30, 2014	‣ Revise description for Wireless Manager in 7.2 Control Panel
1.01	Aug 22, 2014	‣ Replace Declaration of Conformity ‣ Replace screenshots to match latest OS version ‣ Modify notes for swapping main battery in 1.2.1 Power Menu, 1.4.1 Main Battery Setup, and 1.4.2 Charge Batteries - Replace Main Battery Pack ‣ Revise 2D scan mode options to Laser, Presentation Mode and Auto Aim in 2.1.2 General Settings – Scanner Preferences ‣ Add 5.1 Access Cellular WAN ‣ Add GPRS Manager to 7.2 Control Panel ‣ Add description in 7.3 Connection Settings
1.00	Oct 18, 2013	‣ Initial release

CONTENTS

INTRODUCTION

Thank you for choosing CipherLab products. CipherLab welcomes another Windows Embedded by introducing CP60 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 connections it hosts each Bluetooth and 802.11b/g module while a HSPA+ (3.8G) module is provided on option.

Dedicated to data capture, the mobile computer has essential 1D (laser) reader or 2D imager. A high-spec 5 mega-pixel camera also comes inside to take pictures to deliver better documentation for users.

Rated with IP65/67, the rugged CP60 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 CP60 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
- IP65/67-rated tough form to survive drop, shock, heat, cold, and impervious to moisture/dust
- Windows CE 6.0 OS, TI DM3730 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
- Gyroscope sensor and E-compass for direction and location sensing
- 2 symmetric side-triggers for ambidextrous scanning
- Total data solution — supporting Bluetooth, 802.11a/b/g/n and HSPA+
- Built-in GPS receiver to deliver location discovery information
- 5 mega-pixel camera for taking pictures
- 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
- Belt Holster for CP60 with Pistol Grip
- Belt Holster with Shoulder Strap for CP60 without Pistol Grip
- 4-slot Battery Charger
- Snap-On Car Charging Kit
- Vehicle Mount Cradle
- 4-slot Terminal Cradle

RELATED DOCUMENTATION

Log in to GoBetween to access related documentation about the CP60 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.

IN THIS CHAPTER

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.
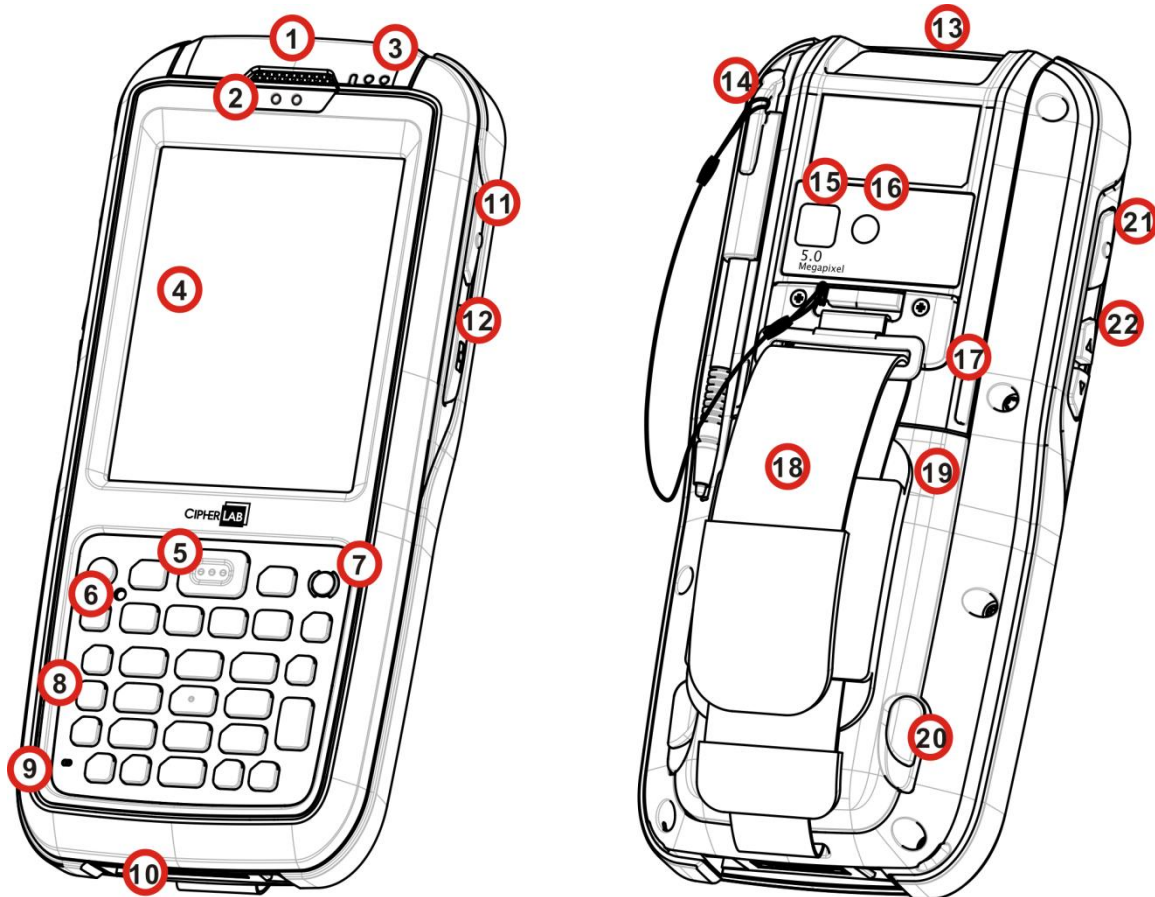
1.1.1. OVERVIEW

Figure 1: Overview

No.	Description	No.	Description
1	Receiver (reserved)	2	Sensors (proximity sensor & light sensor)
3	Status LEDs	4	Touchscreen
5	Scan key	6	Reset button (recessed in keypad)
7	Power button	8	Keypad
9	Microphone (reserved)	10	Charging and communication port
11	Side trigger (user-definable)	12	Application key
13	Scan window	14	Stylus (with attaching cord)
15	Camera	16	Camera flash
17	Speaker	18	Handstrap
19	Battery door	20	Battery door latch
21	Side trigger (user-definable)	22	Volume rocker

1.1.2. INSIDE BATTERY CHAMBER

Inside the battery chamber of the mobile computer are the sockets for SIM card and storage card. Each is equipped with a hinged cover.
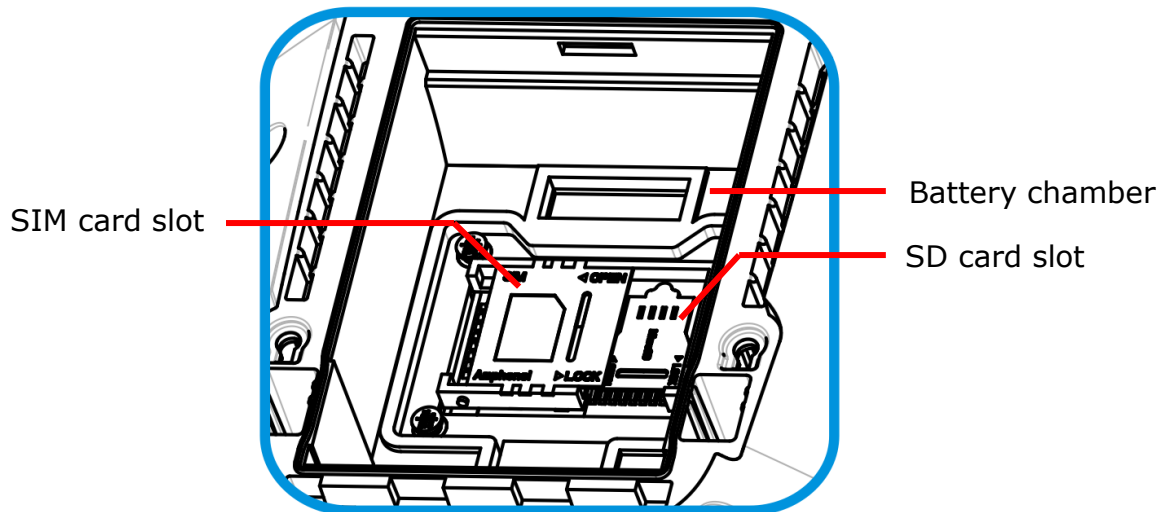

SIM card slot

Battery chamber

SD card slot

Figure 2: Inside Battery Chamber

1.1.3. 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 touchscreen during daily usage, and also help enhance the durability of the touchscreen.

To apply the LCD protective film:

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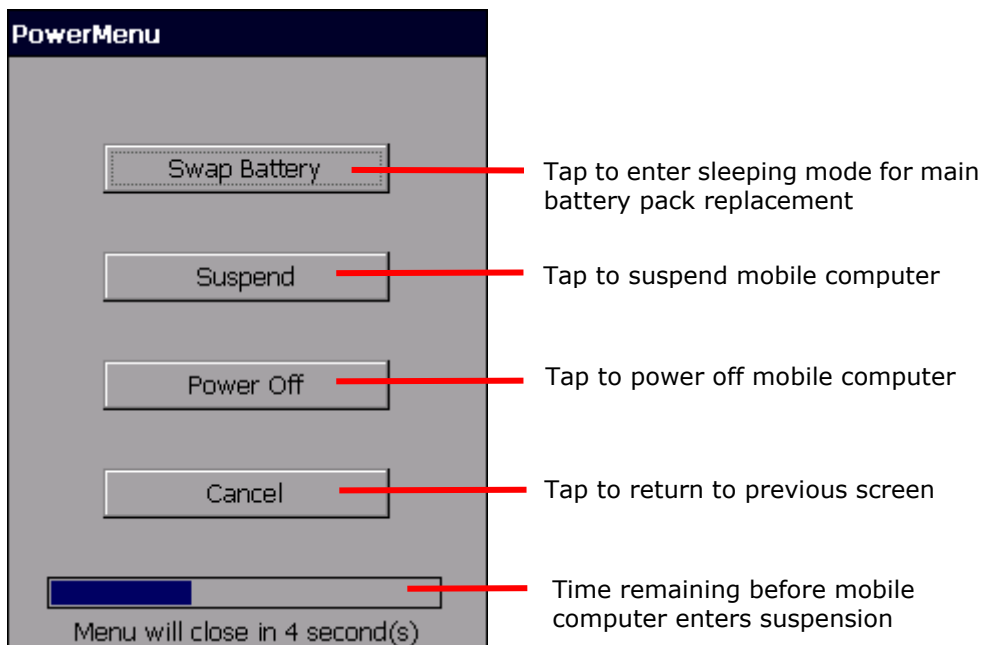
The mobile computer is then ready for usage.

1.2. POWER ON

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 CP60 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.

Swap Battery	Tap to enter sleeping mode for main battery pack replacement
Suspend	Tap to suspend mobile computer
Power Off	Tap to power off mobile computer
Cancel	Tap to return to previous screen
Menu will close in 4 second(s)	Time remaining before mobile computer enters suspension

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.

Power Off	Select this option if you would like to power off the mobile computer. This will close all applications and tasks currently running. All unsaved data will be lost.
	To power on the mobile computer, press the power button.
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 reset as described in Reset Mobile Computer.

(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
Scanning Good Read (Left)	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 CP60 Programming Guide for details.
Radios (Middle)	Blue	Blinking	Wi-Fi, Bluetooth or mobile data in use.
Battery Charging (Right)	Green, Orange, Red	Green, solid	Battery is nearly fully charged (battery level>95%).
		Orange, solid	Battery is charging, and battery level is sufficient for the mobile computer to power on.
		Red, solid	Battery is charging, but battery level is too low for the mobile computer to power on.
		Red, fast blinking continuously	Charging error that may be caused by temperature dropping below 0°C or exceeding 35°C. See also Charge Batteries.

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. Speaker good read sound is also programmable through API deployment. For details, see the CP60 Programming Guide.

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. For details, see the CP60 Programming Guide.

1.4.   BATTERY

The 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 that comes in two sizes, a standard 3.7V/3600mAh pack and a high capacity 3.7V/4400mAh pack. The standard battery will take around 4 hours to charge to full, while the high capacity battery pack will require approximately 6 hours charging to reach full battery level. The working time of the mobile computer varies by its working states. See Operating Time for details on how long the mobile computer will operate under different conditions.

See also Main Battery Setup for the assembly.

BACKUP BATTERY

The backup battery is settled on the main board inside the mobile computer. It is a 15 mAh rechargeable Ni-MH battery. When the main battery is absent or depleted, backup battery takes over to feed the mobile computer. Without 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 wireless modules are inactive).

The backup battery is rechargeable by the external power (through a power adapter) or main battery pack. It takes about 5 hours to charge it to full. See Backup Battery Level.

Note: 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. MAIN BATTERY SETUP

To secure main battery in place, the battery door is equipped with two latches, one on each side. After pressing the battery door in, turn the door latches inwards to lock the battery door in place.

Battery door latches
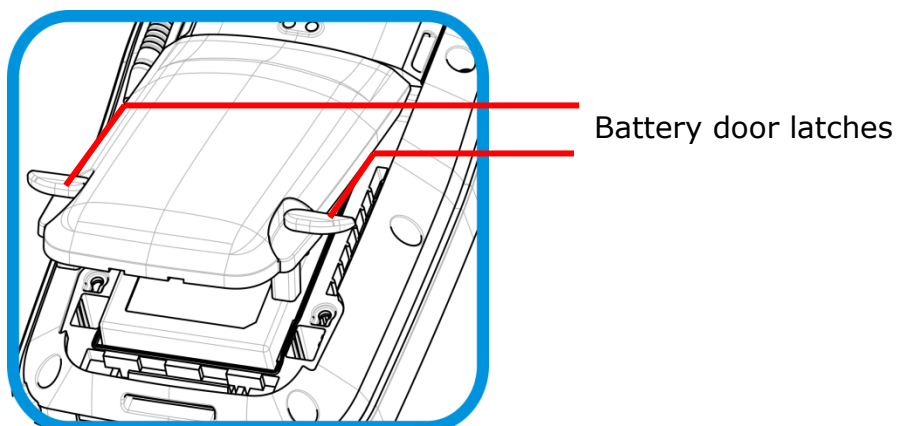
Figure 3: Battery Door Latches

To install the main battery pack, follow through the steps below by referencing to the illustrations:
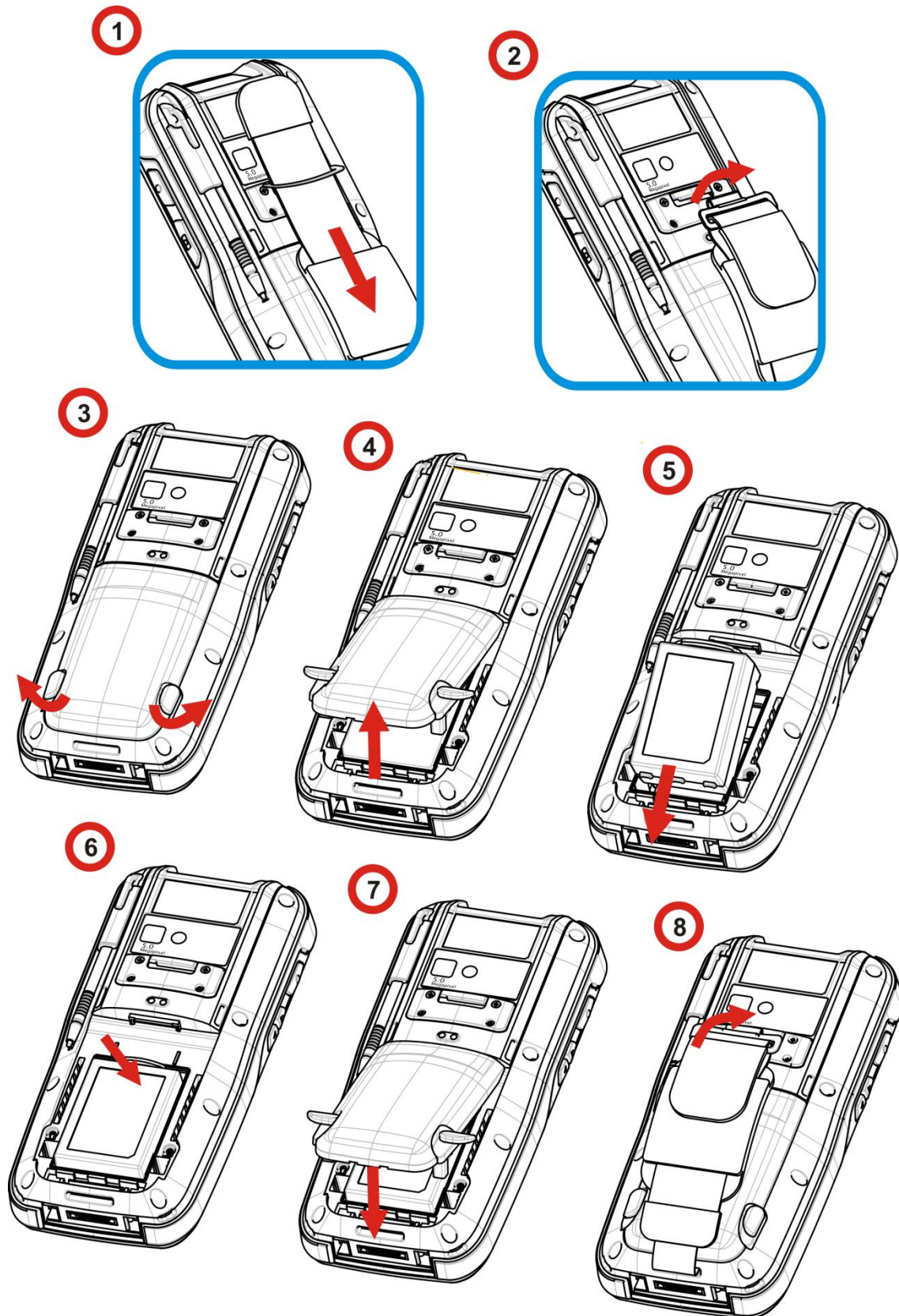
Figure 4: Main Battery Setup

1) Loosen the handstrap and pull it downwards so the metal hook is positioned at the lower edge of the Velcro band

2) Unhook the hand strap by pressing the square metal ring lightly in the middle and lifting it upwards in a single motion.

   Note: The lower end of the handstrap can be left as is without detaching. After the main battery is installed, the handstrap can be hooked back into place.

3) On the outer sides of the battery door are two door latches. Pull them outwards to unlock battery door.

4) Lift up the lower end of the battery door to remove it.

5) Position the main battery pack into the battery chamber with the contact pins facing down. Fix the bottom edge first.

6) Press the upper end of the main battery inwards until the clip at the top "clicks" into place.

7) Replace the battery door. Fix the upper edge first and then press the lower edge in. Push the door latches back to their original position.

8) Secure the handstrap hook back into its groove.

Note: (1) When main battery level drops to low level, charge it ASAP or replace it with a charged one.
(2) Always press the power key and select **Swap Battery** in the Power Menu before replacing the main battery pack. Otherwise, the mobile computer might function abnormally, and will require system reset as in Reset Mobile Computer.
(3) The battery door must be secured in place for the mobile computer to operate.
(4) 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 standard size main battery, and 6 hours to charge high capacity battery to full (via direct charging with power adapter). The battery charging LED above the touchscreen (the one to the right) lights red or orange during charging (depending on the battery level at the moment), and lights green when the mobile computer is nearly 100% charged.

▶ **Backup battery:** The backup battery is rechargeable by both main battery and power adapter. It takes about 5 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, mobile data (HSPA+), GPS) are active on battery power, main battery level drops 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 Main Battery Setup. 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 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.

When data transmission is required.
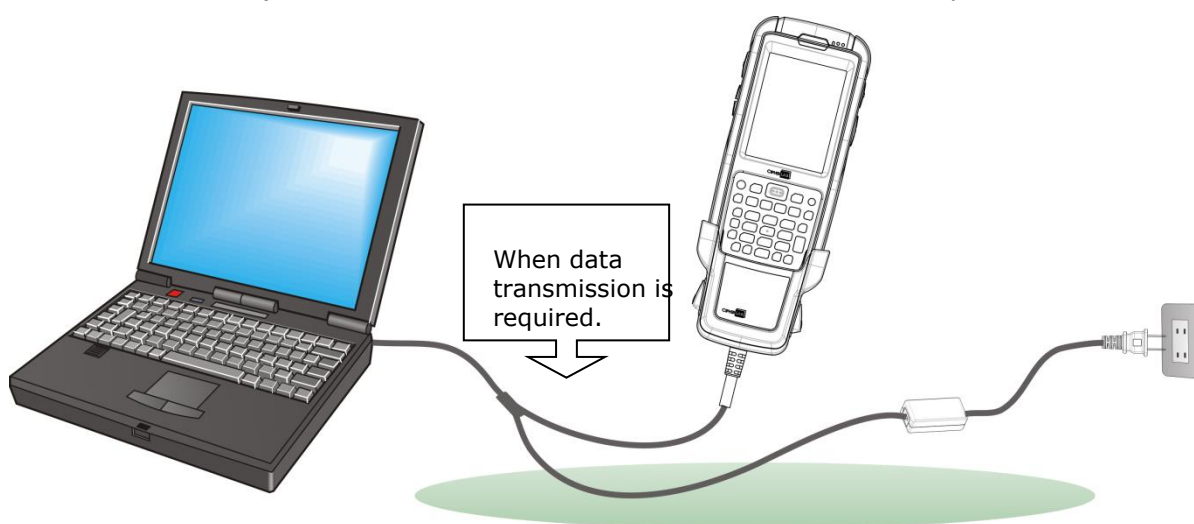
Figure 5: Direct Charging Using Snap-on Cable

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 Main Battery Setup. Then follow the steps below:

1) Seat the mobile computer into 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.

Only when data transmission is required.

Figure 6: Direct Charging Using Cradle

REPLACE MAIN BATTERY PACK

The 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 using the Cradle.

If the main battery level is running low and you decide to replace it with a fully charged one, follow the procedure in Power Menu to swap the battery.

Note: If the process for swapping batteries is not followed, you might need to Reset Mobile Computer for it to function normally.

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** tabbed 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 as "Main battery", meaning the mobile computer is on battery power, "Charging", meaning that the main battery is being charged by the adapter, or "External", meaning that the adapter is connected but the main battery is finished charging.

Power adapter is not connected.   Power is connected and main battery is being charged.
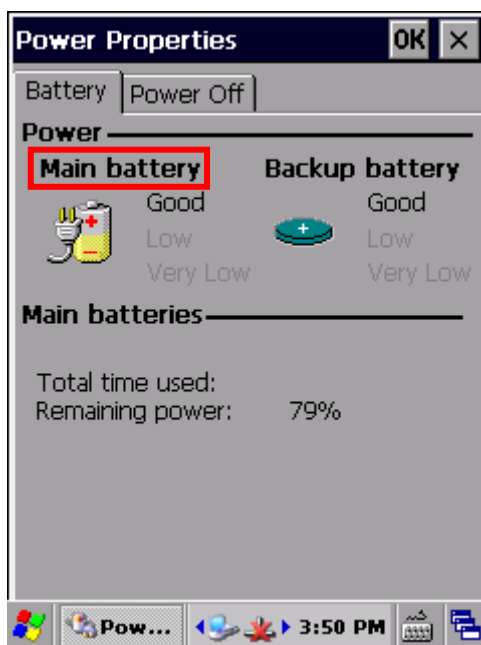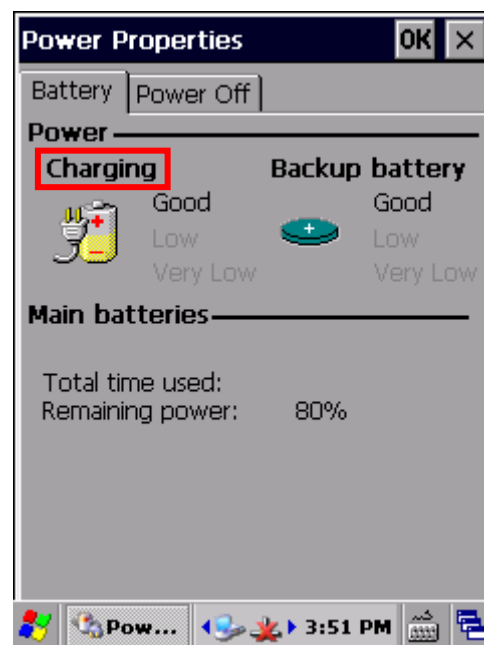
Main battery level descriptions are as follows:

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 charging icon
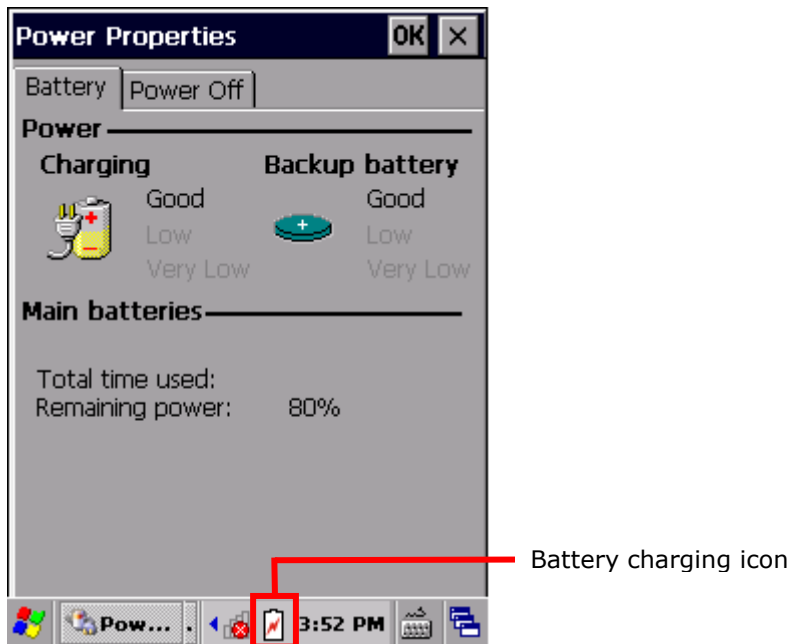
Battery level is illustrated by the following icons :

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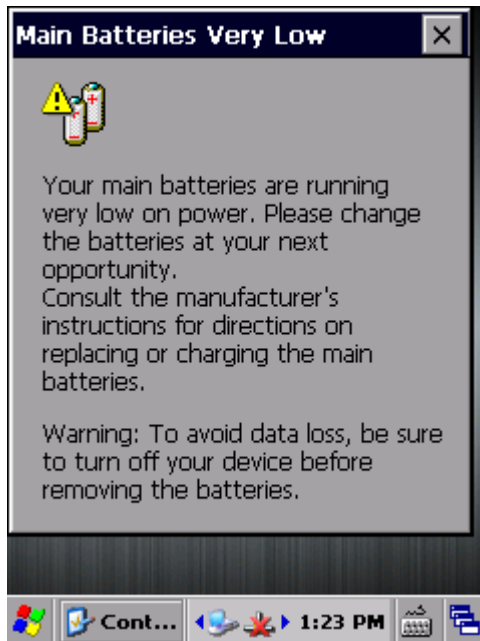
Low battery may incur shutdown to the mobile computer and cause DRAM data damage. Always save data before running short of power or keep a fully charged battery at hand for replacement.

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** tabbed page of **Power Properties** window, backup battery level is summarized as "Good", "Low" or "Very Low" under the **Power** label.
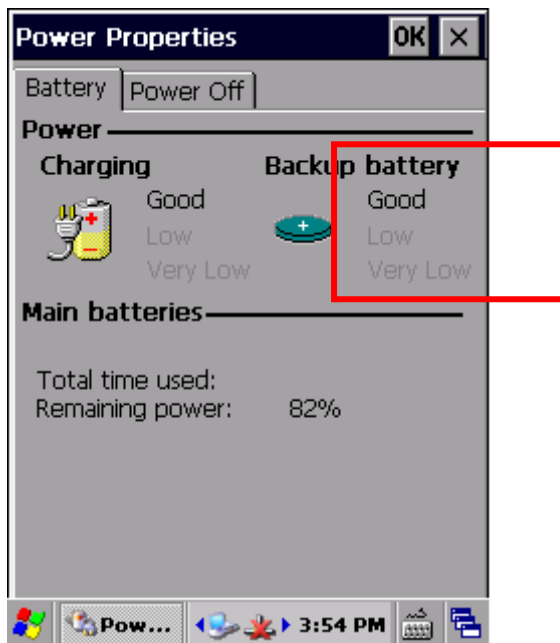
Backup battery level descriptions are as follows:

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.

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 or the power adapter. Low backup battery puts DRAM data in great danger. Always 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 Suspend & Reset Mobile Computer

▸ 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, Bluetooth, mobile data (HSPA+), or GPS isn't used, turn it off. See Radios

1.5.   KEYPAD

The mobile computer has a physical keypad and a touchscreen to receive user's input. Among the two, the touchscreen 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 touchscreen, see Touch Control.

1.5.1. PHYSICAL KEYPAD

The physical keypad on the front of the mobile computer bears much resemblance to laptop or PC keyboards. It is either a numeric type or a QWERTY one, each wedging a set of "enhanced keys" along the top and a set of character keys at the lower half. Both keypads support multi-key operation, which normally requires two keys hit simultaneously, one of which is a modifier key.

As for entering text, the numeric and QWERTY keypad are equally capable of entering numbers, letters, symbols and punctuations. Both also receive supplementary backlight along with the screen.

Figure 7: Numeric Keypad   *Figure 8: QWERTY Keypad*

ENHANCED KEYS

Enhanced keys are arranged along the top of the physical keypad, separate from the character keys. Use these "enhanced keys" to launch actions on the mobile computer and OS, operate the active application, or switch the physical keypad between input modes. Navigation keys are included also to move the caret in a text input field, and to select between applications on the desktop.

Figure 9: Enhanced Keys

Enhanced keys can be categorized into five groups and are explicated as follows:

Key Group	Description
ACTION KEYS	The Scan key is an action key which delivers the function below: | Key	Press | |---|---| | Scan Key	Reads barcodes | | Backlight Key	Turns on/off screen backlight |
OS KEYS	The following tabulates OS keys and their functions. Some of them are engraved in orange, which means Function key needs to be pressed beforehand in order for the keys to function properly.

For the ACTION KEYS inner table:

Key	Press
Scan Key	Reads barcodes
Backlight Key	Turns on/off screen backlight

For the OS KEYS inner table:

Key	Press
Windows	Opens <u>Start Menu</u>. (Requires <u>Function Key</u> pressed beforehand.)
OK	▸ Confirms input in an input field. (Requires <u>Function Key</u> pressed beforehand.) ▸ Delivers the same function as the "OK" button on the title bar of the active window. (Requires <u>Function Key</u> pressed beforehand.)
Send	Key available for function assignment in CipherLab utility Button Assignment.
End	Key available for function assignment in CipherLab utility Button Assignment.
Esc	▸ Opens the previous screen worked on. ▸ Closes a menu of an application, or an opened dialog.
Tab	▸ Navigates among the highlight items in some applications. ▸ Enters Tab character, which means it moves the caret to the next tab stop.

Key Group	Description
NAVIGATION KEYS	The buttons right below Scan key are the up/down/right/left navigation keys: They move the caret in an input field. In certain applications, they navigate vertically or horizontally among highlighted items.
FUNCTION KEY	Function key applies its action when used in conjunction with other keys. Together they make the OS take actions or produce functions F1 through F12 and more. Function key comes with an LED indicator beside it which behaves as follows: ▸ When Fn key is pressed once, the LED indicator lights up in orange, and the function engraved in orange on the keypad is delivered to the next pressed key. The LED goes off once another key is pressed. ▸ When Fn key is pressed twice, the LED indicator stays lit, and the function engraved in orange on the keypad is delivered to all pressed keys. This mode will continue until Fn key is pressed again. In addition to the LED light, the icons on the <u>Taskbar</u> will display once

Function mode is triggered.

Mode	Description
	Function is delivered to the next pressed key.
	Function is delivered to all pressed keys.

The Fn key is also effective by pressing and holding it and then pressing the desired key.

When other text input modes are activated at the moment, pressing the Fn key will alter the input mode and the icon on the Taskbar. See Numeric Keypad and QWERTY Keypad for details on other text input modes.

[ALPHA] KEY

[Alpha] key changes keypad input mode. When [Alpha] key is pressed once, [alpha] mode is activated temporarily, and the LED indicator next to the physical key lights up in blue accordingly. This mode will end after a single key has been pressed. Upon pressing any key, keypad input mode will resume back to default, and the LED indicator will turn off.

When [Alpha] key is pressed twice, [alpha] mode is activated permenantly, and the LED indicator next to the physical key stays lit. Press the key again to quit this mode and return to default.

With combined use of the Shift key ↑ , the [alpha] key delivers a maximum of six input modes to the physical keypad. Mode availability however depends on keypad type, numeric or QWERTY. On a numeric keypad, 6 text input modes are provided, while on a QWERTY keypad, 2 modes are available.

The icons on the Taskbar signify current input state.

▶ Numeric keypad input modes triggered by [Alpha] key:

Mode	Description
	Physical keypad enters an alphabetic character indicated in blue for the first key pressed.
	Physical keypad enters alphabetic character indicated in blue for all keys pressed.

▶ QWERTY keypad input modes triggered by [Alpha] key:

Mode	Description
	Physical keypad enters a number or symbol indicated in blue for the first key pressed.
	Physical keypad enters numbers or symbols indicated in blue for all keys pressed.

NUMERIC KEYPAD

Numeric keypad wedges a set of character keys at the lower half. They are laid out similar to a telephone keypad, and additionally featured are an **Esc** key, Tab key ⇥ , Enter key ↵ , Backspace key ←, and Shift key ↑ that enable more sophisticated text input. Numeric keypad enters numbers 0 through 9 by default. Symbols * through) and alphabetic characters can be entered by combined use of the [Alpha] key ⬜ and Shift key ↑ . See Keypad Modes for more details.

Key	Description
Esc	▶ Opens the previous screen worked on. ▶ Closes a menu of an application, or an opened dialog.
Tab ⇥	▶ Navigates among the highlight items in some applications. ▶ Enters Tab character, which means it moves the caret to the next tab stop.
Enter ↵	Executes a command or confirms input. For text input, it inserts a break between paragraphs.
Backspace ←	Erases the characters to the left of caret.
Space ⎵	Inserts a blank space where caret is. (Alpha key required beforehand.)
Shift ↑	Shift key ↑ changes keypad input mode of keys 0-9. When Shift key is pressed once, [Shift] mode is activated temporarily, and the LED indicator next to the physical key lights up in green accordingly. This mode will end after a single key has been pressed. Upon pressing any key, keypad input mode will resume back to default, and the LED indicator will turn off. When Shift key key is pressed twice, [Shift] mode is activated permenantly, and the LED indicator next to the physical key stays lit. Press the key again to quit this mode and return to default.

KEYPAD MODES

With combined use of the [Alpha] key ⬡ key and Shift key ↑ , enables eight input modes for keys 0-9 on the physical keypad. The icons ◺ ☐ ◪ ▲ ◼ ⬡ ▲ ◻ on Taskbar signify the current input state.

▶ Numeric keypad input modes:

Mode	Description (Keys 0-9)	Trigger and Withdrawal
No icon	Keypad enters numbers only.	Default mode.
		This mode remains until ⬡ or ↑ is pressed.
◺	Keypad enters the first typed key as a symbol.	Press ↑ once to enter this mode.
		Input mode returns to default once a key is pressed.
☐	Keypad enters all typed keys as symbols.	Press ↑ twice to enter this mode.
		Input mode returns to default by pressing ↑ again.

Mode	Description (Keys 2-9)	Trigger and Withdrawal
◪	Keypad enters the first typed key as an alphabetic letter.	Press ⬡ once to enter this mode.
		Input mode returns to default once a key is pressed.
▲	Keypad enters the first typed key as a capitalized alphabetic letter.	Press ⬡ and ↑ once to enter this mode.
		Input mode returns to default once a key is pressed.
◼	Keypad enters the first typed key as a capitalized alphabetic letter.	Press ⬡ once and ↑ twice to enter this mode.
		Input mode returns to default once a key is pressed.
◼	Keypad enters all typed keys as alphabetic letters.	Press ⬡ twice to enter this mode.
		Input mode returns to default by pressing ⬡ again.
▲	Keypad enters all typed keys as alphabetic	Press ⬡ twice and ↑ once to enter this mode.

	letters and capitalizes the first one.	Input mode returns to default by pressing ⬢ again. **OR** Jumps to ⬛ mode after a single key is pressed.
⬛	Keypad enters all typed keys as capitalized alphabetic letters.	Press both ⬢ and ↑ twice to enter this mode.
		Input mode returns to default by pressing ⬢ again.

Note:

(1) For details about ⬢ key, see [Alpha] Key.

(2) Only keys 2-9 are used for alphabetic input. The remaining keys "0" and "1" are used for entering symbols and/or spaces only. Refer to the blue writing engraved on the keypad to check the characters these two keys input under various [Alpha] modes.

TEXT INPUT

To enter text by numeric keypad:

▶ Numeric Input

The numeric keypad enters numbers 0-9 by default when neither ⬢ key nor Shift key ↑ is pressed.

▶ Literal Input

1) To enter a single letter, press ⬢ key once so ⬛ appears on the Taskbar. To enter the letter in uppercase, press Shift key ↑ additionally to trigger ⬛ mode.

To enter multiple letters, press ⬢ key twice so ⬛ appears on the Taskbar. Additionally, press Shift key ↑ once to activate ⬛ mode and enter the first letter in uppercase, or press it twice to activate ⬛ mode in which all letters are entered in uppercase.

2) Continuously press a key engraved with blue writing until the character you desire is entered.

▶ Symbols Input

1) To enter a single symbol, press Shift key ↑ once so ⬛ is seen on the Taskbar.

To enter multiple symbols, press Shift key ↑ twice to activate ⬛ mode.

2) Press one or more text input keys until the desired symbol is entered.

QWERTY KEYPAD

QWERTY keypad also arranges its character keys in the lower half and features them in a compact "QWERTY" layout as its name suggests.

QWERTY keypad is a pared down version of an average laptop's keyboard that bears also an Esc key, Tab key ⇥ , Enter key ↵ , Backspace key ←, Shift key ↑ , and space key ⊔ .

QWERTY keypad enters alphabetic characters by default. To enter numbers and some symbols, press [Alpha] ⬭ key. See [Alpha] Key for more details.

Key	Description
Backspace ←	Erases the characters to the left of caret.
Enter ↵	Executes a command or confirms input. For text input, it inserts a break between paragraphs.
Space ⊔	Inserts a blank space where the caret is.
Esc	▸ Opens the previous screen worked on. ▸ Closes a menu of an application, or an opened dialog.
Tab ⇥	▸ Navigates among the highlight items in some applications. ▸ Enters Tab character, which means it moves the caret to the next tab stop.
Shift ↑	Shift key ↑ changes keypad input mode. When Shift key is pressed once, [Shift] mode is activated temporarily, and the LED indicator next to the physical key lights up accordingly. This mode will end after a single key has been pressed. Upon pressing any key, keypad input mode will resume back to default, and the LED indicator will turn off. When Shift key key is pressed twice, [Shift] mode is activated permenantly, and the LED indicator next to the physical key stays lit. Press the key again to quit this mode and return to default.

KEYPAD MODES

With combined use of the ⬛ key, Shift key ↑ enables four input modes for the physical keypad. The icons 🔺 ⬜ ⬛ 🟦 on Taskbar signify current input state.

▶ QWERTY keypad input modes:

Mode	Description	Trigger and Withdrawal
No icon	Keypad enters lowercase letters.	Default mode.
		This mode remains until ⬛ or ↑ is pressed.
🔺	Keypad enters the first typed key as a capitalized letter.	Press ↑ once to enter this mode.
		Input mode returns to default once a key is pressed.
⬜	Keypad enters all typed keys as capitalized letters.	Press ↑ twice to enter this mode.
		Input mode returns to default by pressing ↑ again.
⬛	Keypad enters the first typed key as a number/symbol.	Press ⬛ once to enter this mode.
		Input mode returns to default once a key is pressed.
🟦	Keypad enters all typed keys as numbers/symbols.	Press 🟦 twice to enter this mode.
		Input mode returns to default by pressing 🟦 again.

Note:

(1) For details about ⬛ key, see [Alpha] Key.

(2) The following input modes are also available on the QWERTY keypad, however their functions overlap with those denoted above:

Mode	Description
🔺	Same input as ⬜ mode.
🟦	Same input as ⬛ mode.
🔺	Jumps to 🟦 mode after a single key is pressed.
🟦	Same input as 🟦 mode.

TEXT INPUT

To enter text using QWERTY keypad:

▸ Literal Input

1) The QWERTY keypad enters lowercase letters a-z by default when neither ⬢ key nor Shift key ↑ is pressed.

To enter a letter in uppercase, press Shift key ↑ so ◩ appears on the [Taskbar](#). To continuously type in uppercase, press Shift key ↑ twice to trigger ▢ mode.

2) Press keys to enter text as desired.

▸ Numeric or symbols Input

1) To enter a single number/symbol, press ⬢ key once so ▢ appears on the [Taskbar](#).

To enter multiple numbers/symbols, press ⬢ key twice to trigger ▢ mode.

2) Press a key engraved with blue-color character to enter number(s) and symbol(s) as desired.

1.5.2. ON-SCREEN KEYBOARD

The OS provides users with an on-screen keyboard. Compared to a physical keypad, the on-screen keyboard bears likeness to a laptop keyboard as it has modifiers keys arranged on the left edge and features a "QWERTY" layout. 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 while in others it doesn't unless you tap on a field that accepts input.

In case the on-screen keyboard doesn't open automatically, tap the keyboard icon ⌨ on the taskbar and select **Keyboard** to open it. On-screen keyboard opens and readies to enter lowercase letters, numbers, and a few frequently used symbols.
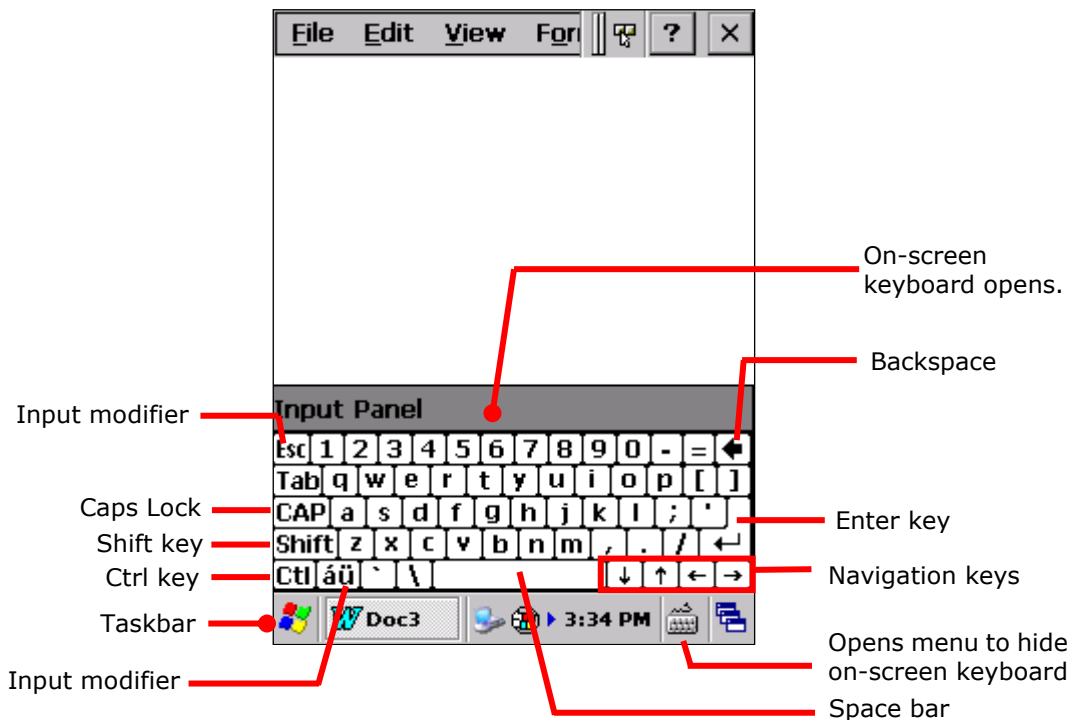
MODIFIER KEYS

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

On on-screen keyboard there are five modifier keys, which are seated at the left edge. These keys work as follows:
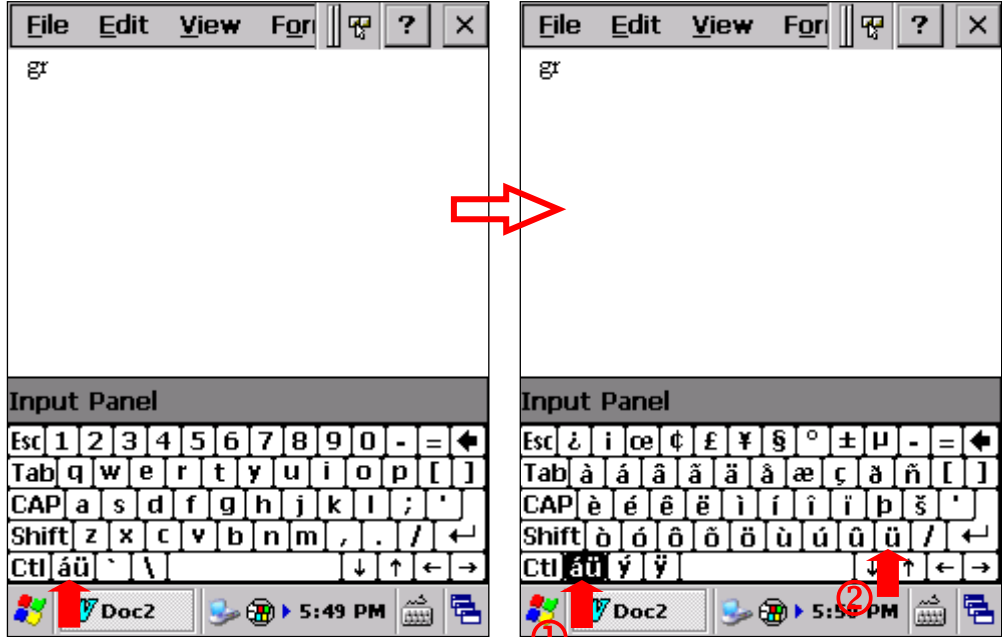
1) Press a modifier key on the on-screen keyboard.

    The on-screen keyboard enters modifier state.

2) Press the second key.

    The desired performance will be produced to the active application or screen at the moment.

Modifier keys are explicated as follows:

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 (one) 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.
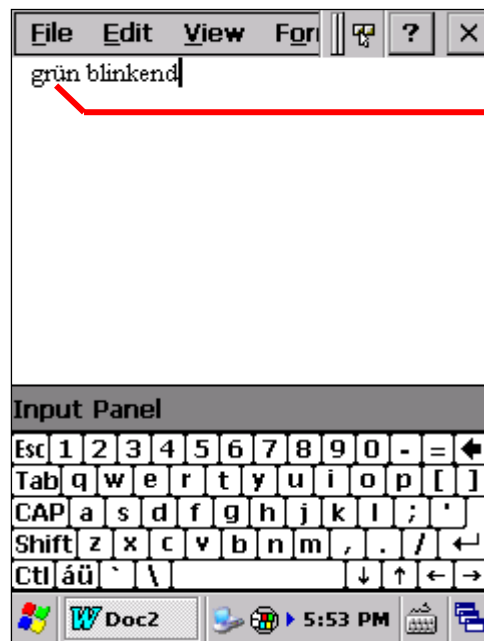
Letter variant "ü" is entered

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

Diacritical letters and letter variants are presented bother lowercase and uppercase.
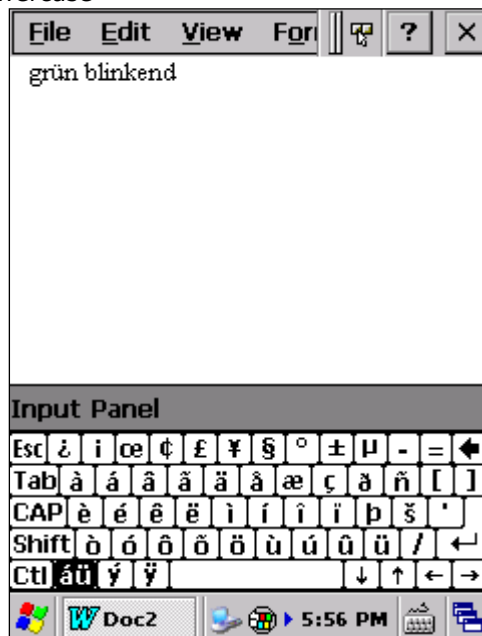
Lowercase   Uppercase
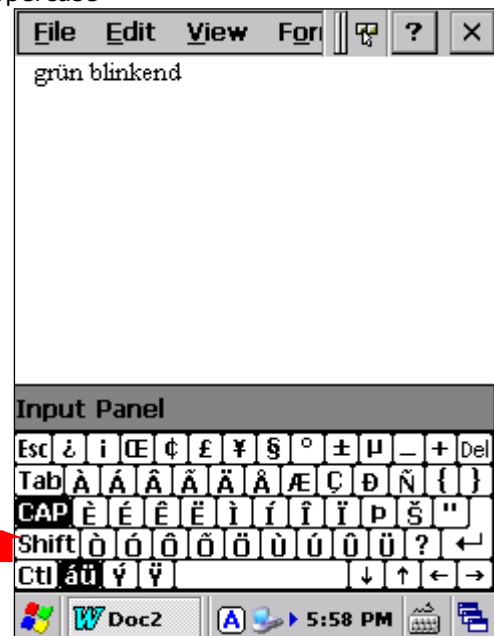
OTHER KEYS

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 the 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.
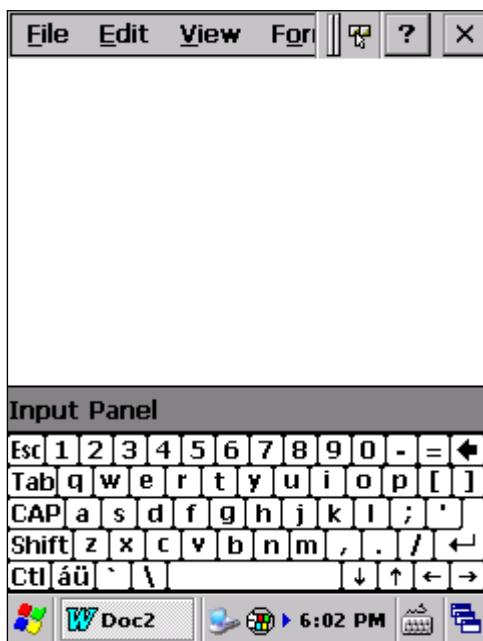
Upright (Portrait Mode)   Sideways (Landscape Mode)
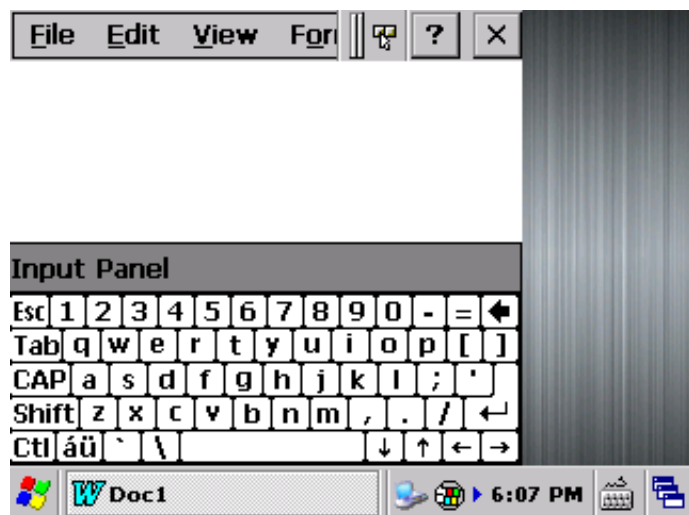
To disable automatic screen rotation, see Screen Orientation.

1.5.3. CHANGE ON-SCREEN INPUT METHOD

Aside from the on-screen keyboard, the CP60 mobile computer features another on-screen input method called Transcriber, which is a handwriting recognition software that can be used within any application. It supports text input on any part of the screen, and also recognizes entire words instead of individually written letters.

To enable Transcriber as the on-screen input method:

1) Tap the keyboard icon ⌨ on the taskbar.

A context menu pops up.
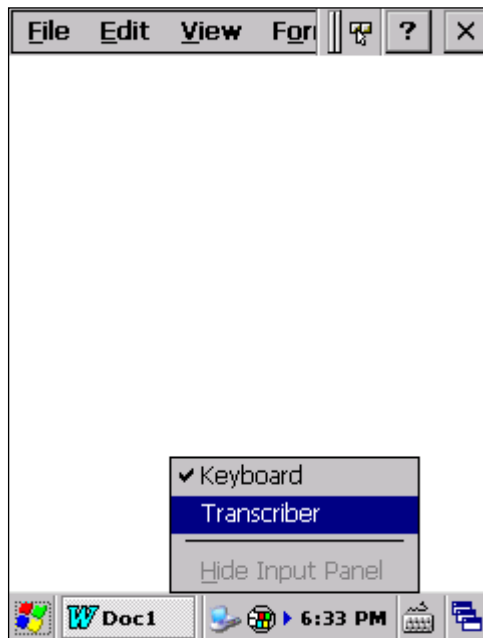
2) Select **Transcriber** for handwriting recognition. You may start to input text by handwriting.

You may also access Transcriber Options to set handwriting direction and pen properties, and enable handwriting gestures for other functions. Note these options are accessible only when **Transcriber** is selected as the active input method on the taskbar.
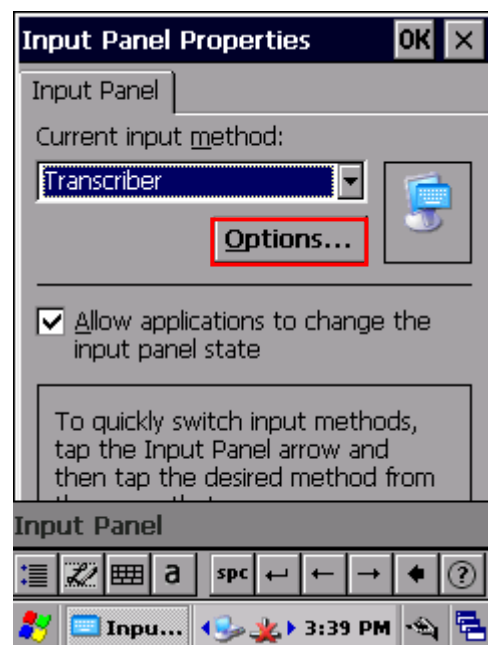
1.5.4. EDIT TEXT

On the mobile computer, you may 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 touchscreen. Since a resistive touchscreen 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 touchscreen.

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 TOUCHSCREEN

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

‣ **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:

I) 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.

Three screen orientation modes

Allows mobile computer to enter suspension when facing down
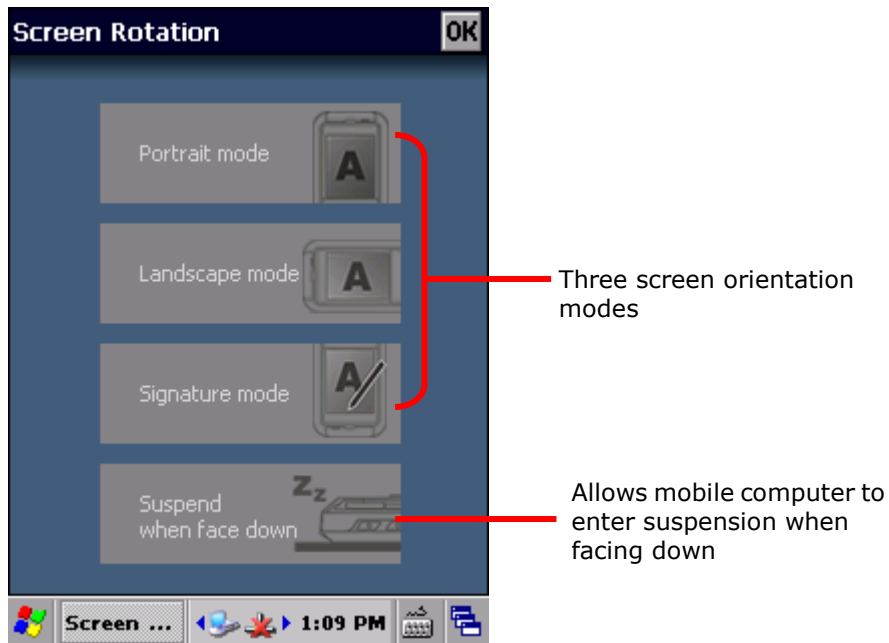
2) Tap the modes that you wish to enable. The tapped item will light up to indicate it is currently enabled.

Tapped items will light up
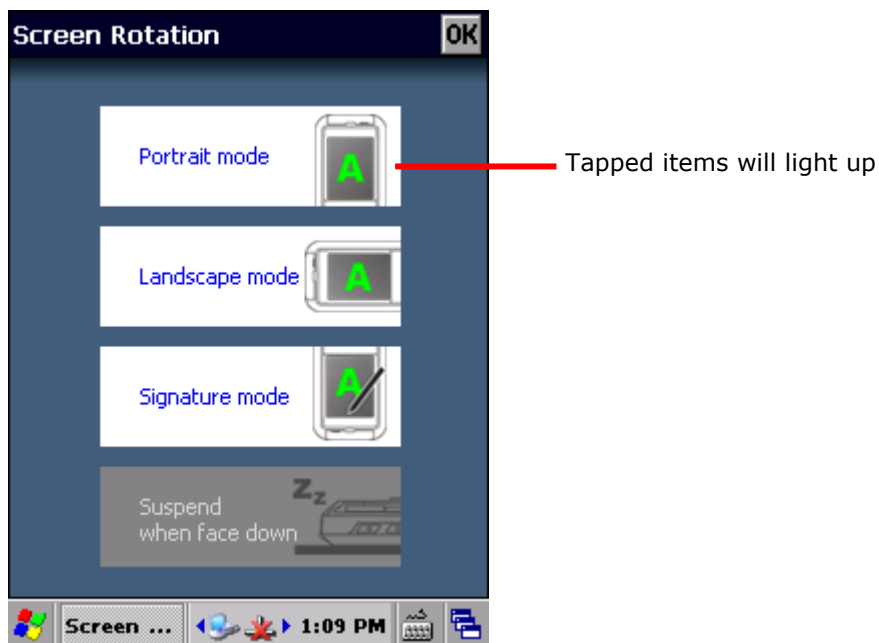
3) Tap **OK** on the title bar to apply the changes.

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 touchscreen will switch between upright and sideways view according to the user's holding position. However, if only **Portrait** (upright) mode is enabled, the touchscreen 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 touchscreen 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 tabbed page opens with a checkbox to enable manual backlight setting, and slidebars for setting screen and keypad backlight levels

By default, **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** tabbed page.

When **Manual backlight setting** is checked, screen and keypad backlights will stay at the set level and will not adjust automatically.

Brightness tabbed page

Select whether to enable manual backlight setting

Slide to set backlight level as desired
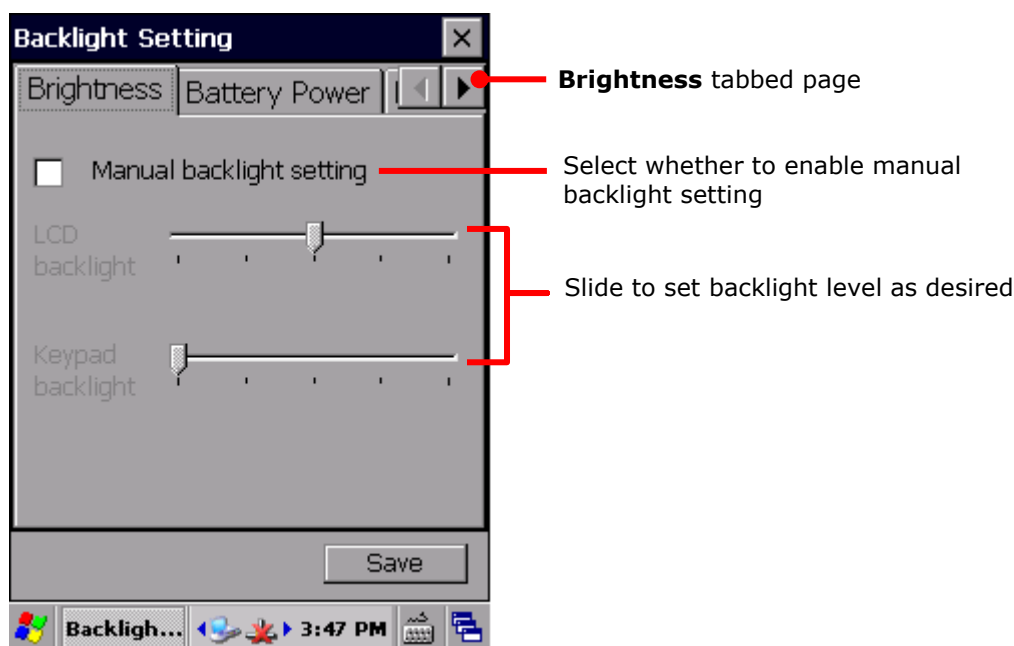
2) Tap **Save** in the lower right corner to apply the settings.

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** .

Brightness tabbed page opens.

2) Uncheck **Manual backlight setting** to enable profile function.

3) Switch to the **Profile** tabbed 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 slidebars 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.

Tap the drop-down box to select between different profiles

Tap to restore the backlight profile settings to default

Slide to set backlight level as desired
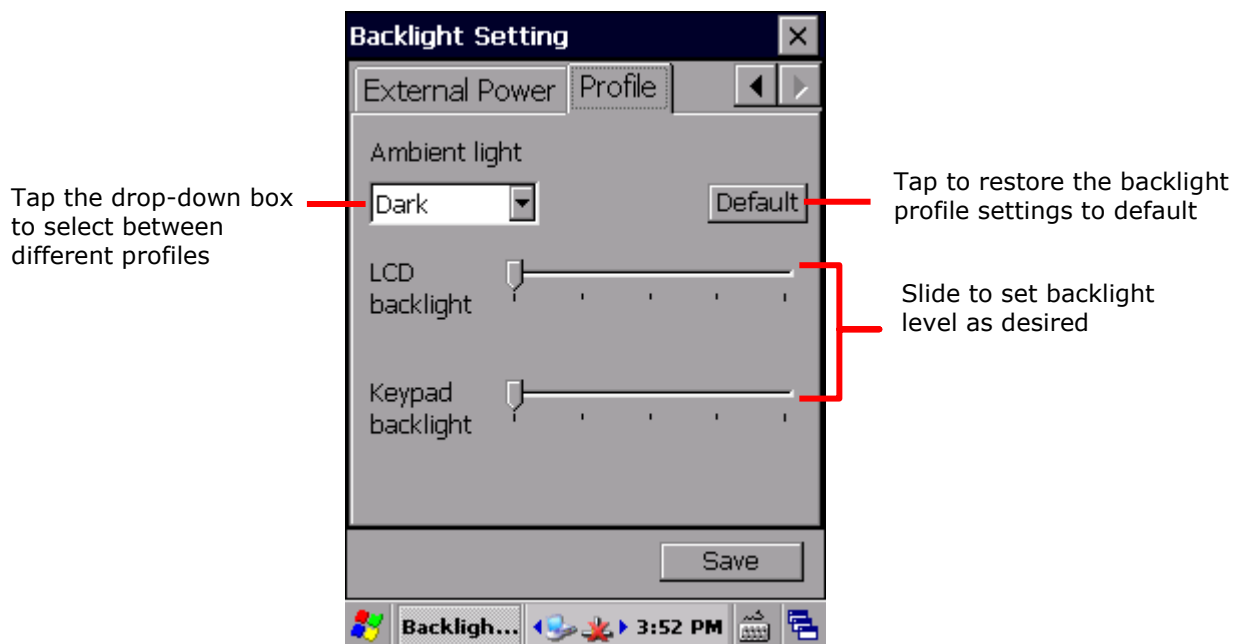
4) Tap **Save** in the lower right corner to apply the settings.

1.6.4. CALIBRATION

A resistive touchscreen 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 touchscreen:

1) Tap **Start** | **Settings** | **Control Panel** | **Stylus** .
2) Tap **Calilbration** tabbed page.

   Calibration tabbed page opens. Tap **Recalibrate** button to open the calibration screen.
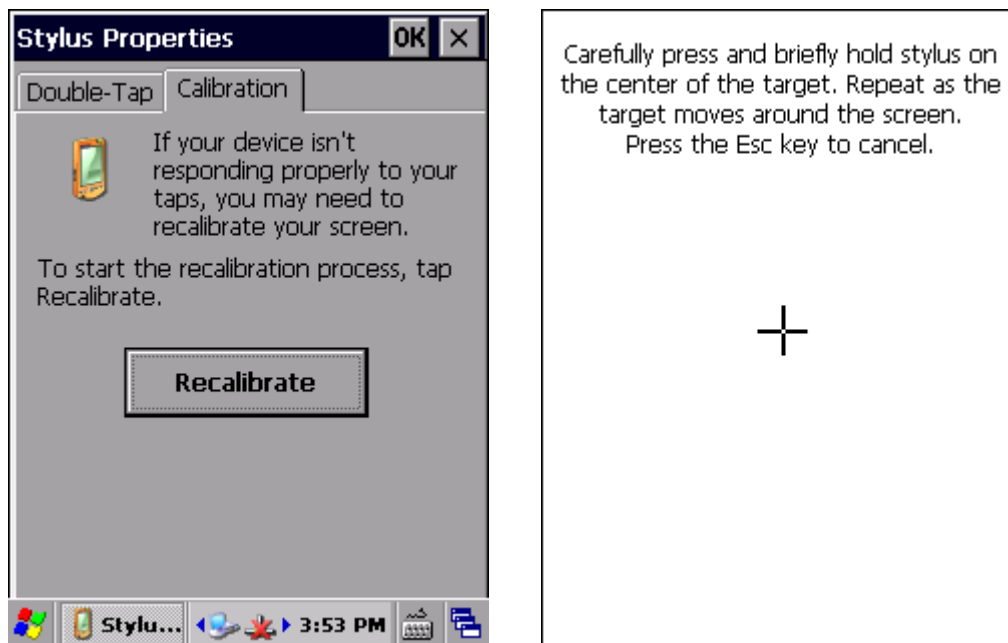
3) Using the stylus, tap firmly at the center of the cross that appears on-screen. Five crosses will appear in sequence.

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

1.7. MEMORY

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

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

512MB 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.

4 GB NAND flash memory is used to store the OS (Windows Embedded Compact 6.0), application files, settings, and user data.

▸ 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 memory size:

1) Tap **Start** | **Settings** | **Control Panel** | **System Information** . System information opens revealing information about the mobile computer's assemblage and hardware/firmware components, including device manufacturer, device ID, memory size, and firmware/software version. Both RAM and internal storage size are listed.

Expand to view information on memory size

43
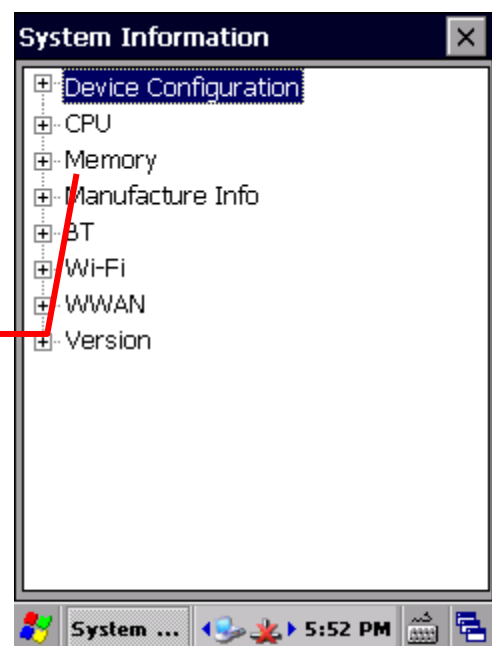
RAM

To check RAM usage on the mobile computer:

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

2) Tap **Memory** tabbed page.

This page delivers capacity and usage of the SDRAM onboard. Memory is divided into Storage memory and Program memory.

▸ Storage memory: RAM used for file storage, such as the OS, applications, files and data.
▸ Program memory: RAM used for running applications.

Memory tabbed page

RAM used for OS file storage

RAM used for running applications
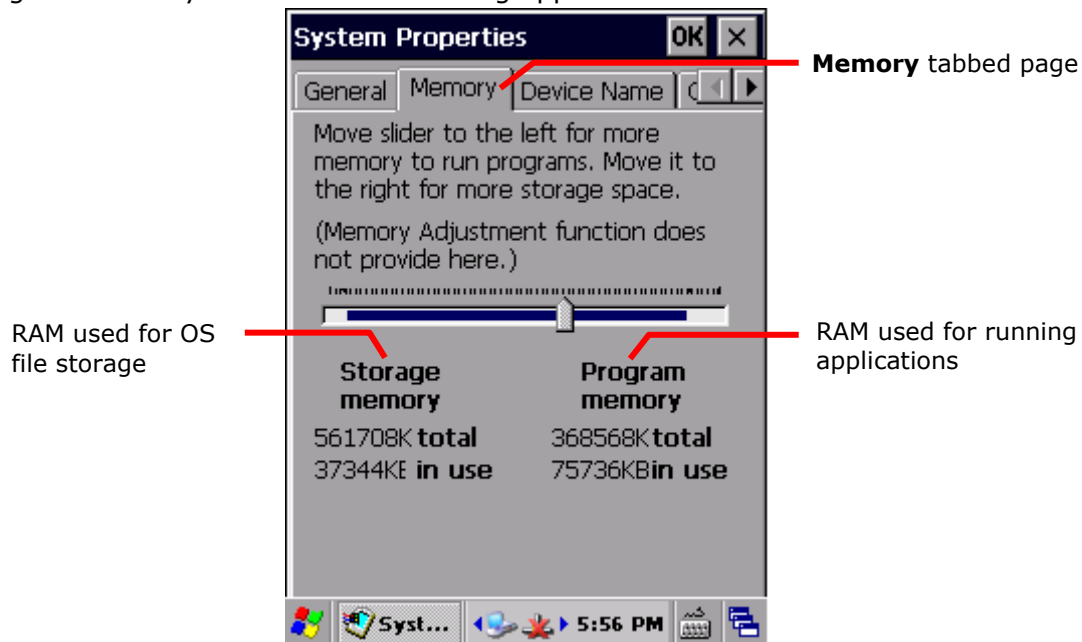
USER DATA

"User data" is a partition which stores data in the non-volatile flash memory of the mobile computer. Data or programs stored in this directory will not be erased even after hardware reset. To check the remaining storage capacity for user data, tap **Start** | **Settings** | **Control Panel** | **Storage Information** , and check the **USER_DATA** label.
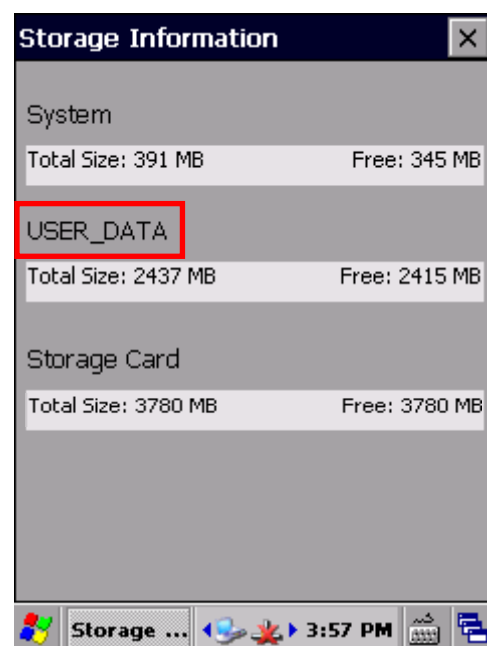
EXTERNAL STORAGE

For external storage, tap **Start** | **Settings** | **Control Panel** | **Storage Information** . The available space on the storage card is shown under the **Storage Card** label. (If no storage card is installed on the mobile computer, the available space will be shown as 0.)
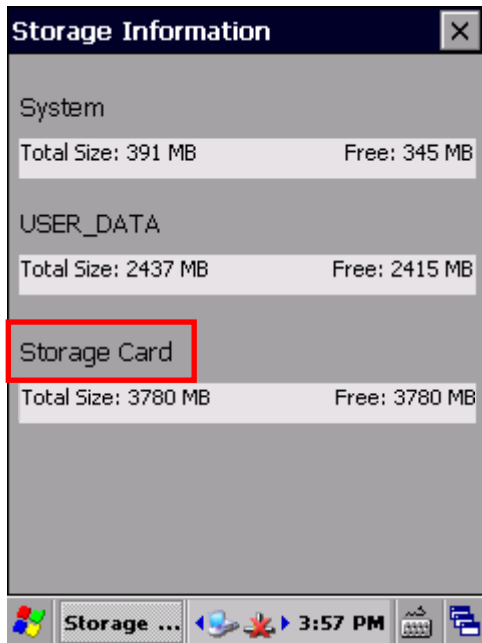
1.7.3. INSERT SD CARD

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) Remove the battery door and main battery pack as described in Main Battery Setup.

   Battery chamber is opened.

4) Using a screwdriver, remove the battery chamber back cover.
5) Locate the SD card socket inside battery chamber. (See Inside Battery Chamber.) The SD card socket is equipped with a hinged cover.
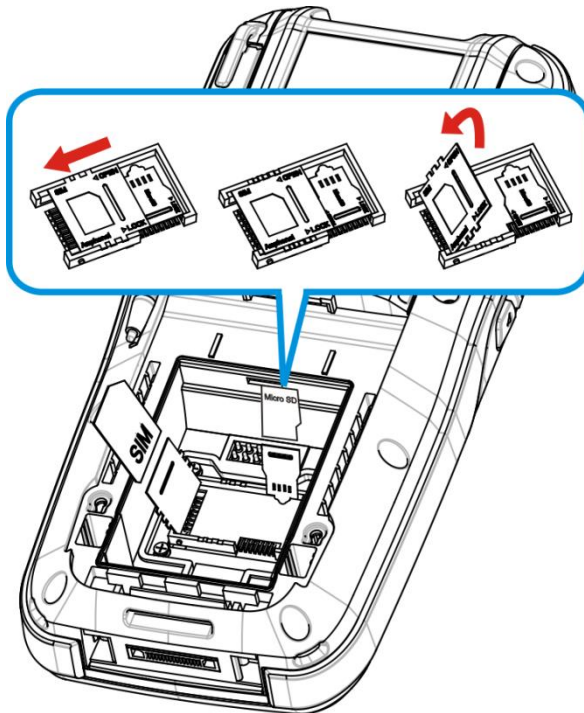
6) Push the hinged cover to the open position.
7) Swivel up the cover.
8) Insert SD card into the cover slot in the direction indicated. The metal contact pins should face down
9) Put down the hinged cover and lock it into place.
10) Restore the battery chamber back cover, main battery pack and the battery door.

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 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) On the mobile computer, tap **Start** | **Settings** | **Control Panel** | **USB Connection** .

3) To connect the mobile computer and PC via ActiveSync, select **ActiveSync Serial Mode**.

   To treat the mobile computer as an external storage device, select **Mass Storage – SD Card**.

4) Tap **OK** on the title bar to apply the settings.

   If one of the first two options are 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.

Figure 11: Direct Data Comminucation Using Cable

1.8.2. USE CRADLE

Direct data communication using a cradle:

1) Seat the mobile computer in a Charging and Communication Cradle (hereinafter "cradle").

2) Connect the cradle to your PC with a USB cable. Fix the cable to both sides.

   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 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 Windows 7	WMDC
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.

Hereafter in this manual, we will focus on ActiveSync only. For WMDC usage, see its documentation or help file.

1.8.4. SYNC PARTNERSHIP

Once a direct connection is established between the mobile computer and your PC as described in Use Cable or Use Cradle, 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. ▶ Alllows 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 ActiveSync Actions to Take for details about the mentioned services.

1.8.5. 1ST USB SYNC

This section will guide you through USB syncing. For Bluetooth syncing, see Bluetooth ActiveSync.

To connect ActiveSync using USB:

1) Download the right syncing tool as described in Syncing Tools and install it on your PC.

2) Connect the mobile computer and your PC as described in Use Cable or Use Cradle.

3) On your PC, run the syncing program.

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

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

   If you have pressed **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.
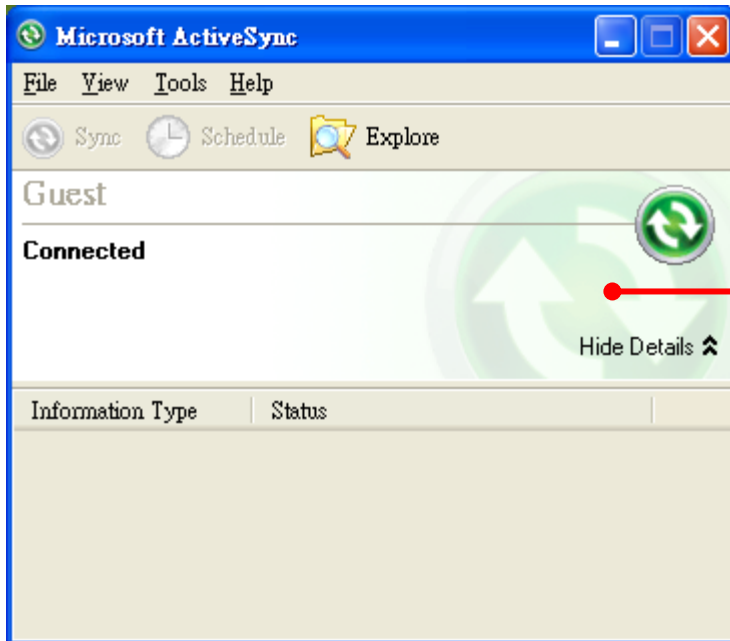
A "Temporary Relationship" is established between the mobile computer and the PC

Note: If you encounter trouble during USB ActiveSync connection, tap **Start** | **Settings** | **PC Connection** and make sure "Enable direct connections to the desktop computer" is selected. Tap **Change Connections** and check that **USB Serial** is selected as the connection method.

1.8.6. DISCONNECT USB ACTIVESYNC

To disconnect USB ActiveSync:

1) On your PC, open ActiveSync by double-clicking its icon in the notification area. ActiveSync opens.

2) From the menu bar, click **File** | **Connection Settings**.

    [**Connection Settings**] window opens.

3) Deselect **Allow USB connections**.

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

    This way when you plug your mobile computer the next time, ActiveSync won't attempt to connect to it.

1.8.7. ACTIVESYNC 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.

In summary, "Synchronization Relationship" outshines "Temporary Relationship" by being capable of syncing Microsoft Office Outlook data. However "Temporary Relationship" provides satisfactory file sharing if you don't want to synchronize information.

See the following to know what actions to take with ActiveSync:

ADD/REMOVE PROGRAMS

Note basically the applications to be installed to the mobile computer need to be installed on your PC first. So 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 know 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 Cable or Use Cradle.
2) Sync two computers as described in 1st USB Sync.
3) On the PC, from the menu bar of ActiveSync, select **Tools | Add/Remove Programs**.
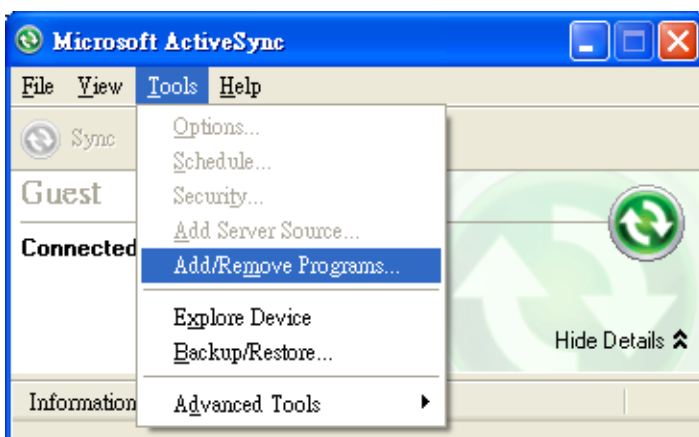
ActiveSync starts to search for the application programs installed on your PC and opens its [**Add/Remove Programs**] dialog which lists those found. Each entry comes with a check box on the left. An unchecked box means the program is yet to install to the mobile computer while a checked one means an installed program.
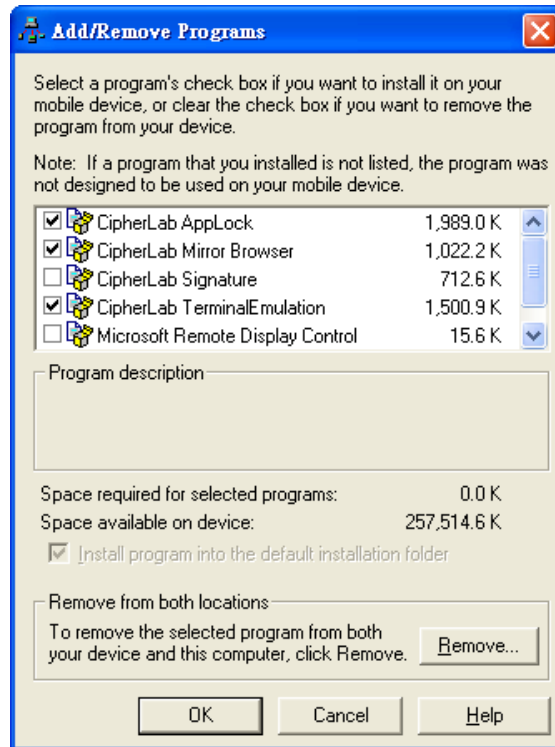
4) Select the application program(s) to install to the mobile computer, and deselect the application program(s) to uninstall from the mobile computer.

5) Press the **OK** button.

   ActiveSync 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

ActiveSync features "Explore" to add an application shortcut to Start menu where it is easier to launch the application.

To add an application shortcut to Start menu:

1) Connect two computers as described in Use Cable or Use Cradle.

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

3) On the PC, from ActiveSync's menu bar, select **Tools | Explore Device**, or from its toolbar, press **Explore** button.

The mobile computer's internal storage root directory "**Mobile Device**" opens presenting a few folders (and files).
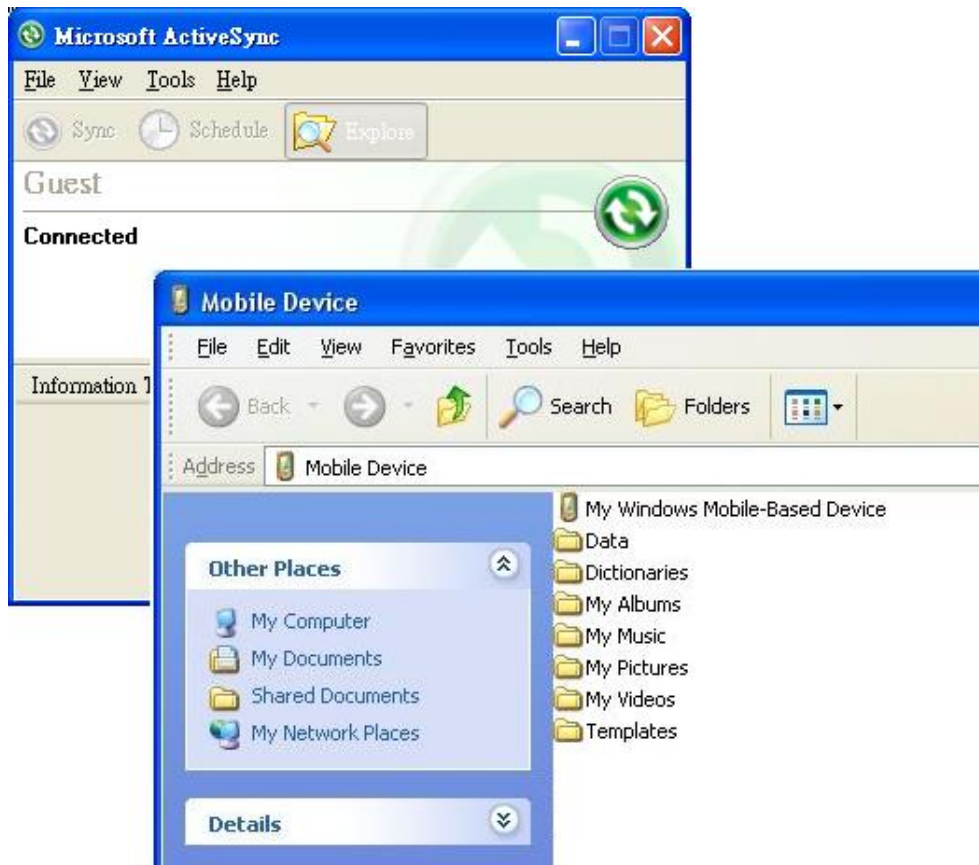
4) Add File Shortcuts to Desktop Double-click **My Windows Mobile-Based Device** .

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 Device\Windows\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 the mobile computer's Start menu.

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 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 Cable or Use Cradle.

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

3) On the PC, from ActiveSync menu bar, select **Tools | Explore Pocket PC**, or from its toolbar, press **Explore** button.

   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.

REMOVE ITEMS FROM START MENU

To remove an added shortcut from Start menu, simply use ActiveSync's **Explore** to 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.

CREATE NEW FOLDERS

To create a new folder on the mobile computer:

1) Connect two computers as described in Use Cable or Use Cradle.

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

   On the PC, from ActiveSync menu bar, select **Tools | Explore Device**, or from its toolbar, press **Explore** button.

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

3) Browse where you want to create a folder.

4) Right-click any vacant spot there.

   Context menu opens

5) 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) On your PC, from the menu bar of ActiveSync, select **File** | **Connection Settings**.

    [Connection Settings] window opens.

2) For **This computer is connected to**, select a network which your PC should connect to when passing through ActiveSync. 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) 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 Bluetooth headset for audio playback and hands-free telephone communication. See Use Bluetooth.

Note: Bluetooth headsets that communicate via A2DP are not supported.

1.9.2. VOLUME CONTROL

The mobile computer has two volume control facilities – the physical volume rocker perched on the left side of the mobile computer and the on-screen volume gauge featured by the OS.

Both the physical rocker and the on-screen gauge can be used to control the system volume, including event sounds, notifications and media playback.

PHYSICAL VOLUME ROCKER

Use the physical volume rocker to turn up and down system volume.

Volume changes made with the physical volume rocker will also be reflected on the On-screen Volume Gauge.

Turns up and down system volume
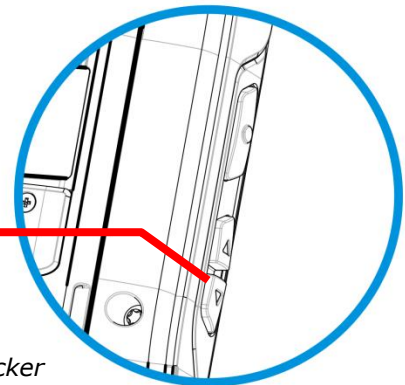
Figure 13:
Physical Volume Rocker

ON-SCREEN VOLUME GAUGE

The on-screen volume gauge can also be used to adjust system volume:

I) 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.

Slider bar and buttons to adjust system volume

Checkboxes to select when to play system sounds
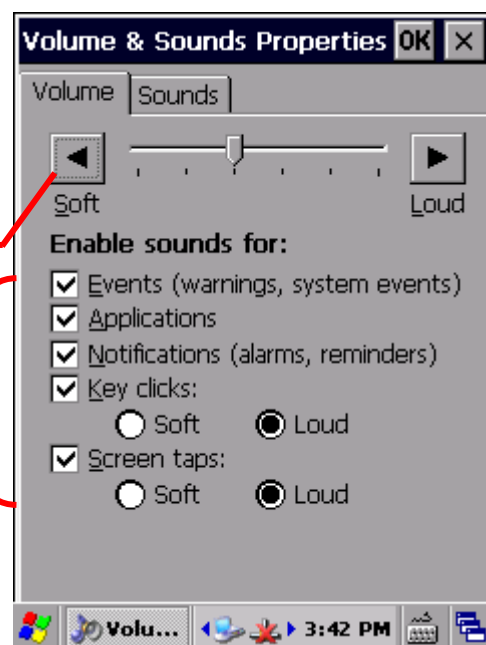
2) Adjust the settings to meet your needs.

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

Note: When using the physical volume rocker to adjust system volume, make sure **Volume & Sounds** window is not the active window on-screen.

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.

Note: The mobile computer allows three forms of data capturing, either by laser scanning, 2D imaging or capturing colored images via the digital camera. Laser scanning and imaging are described in this chapter. For digital camera usage, see Camera.

IN THIS CHAPTER

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**.

Opens scan test page for reading barcodes

Click to exit the application

Click to open option menu

Reader Config opens showing a main menu with three sections

Click to open Start menu
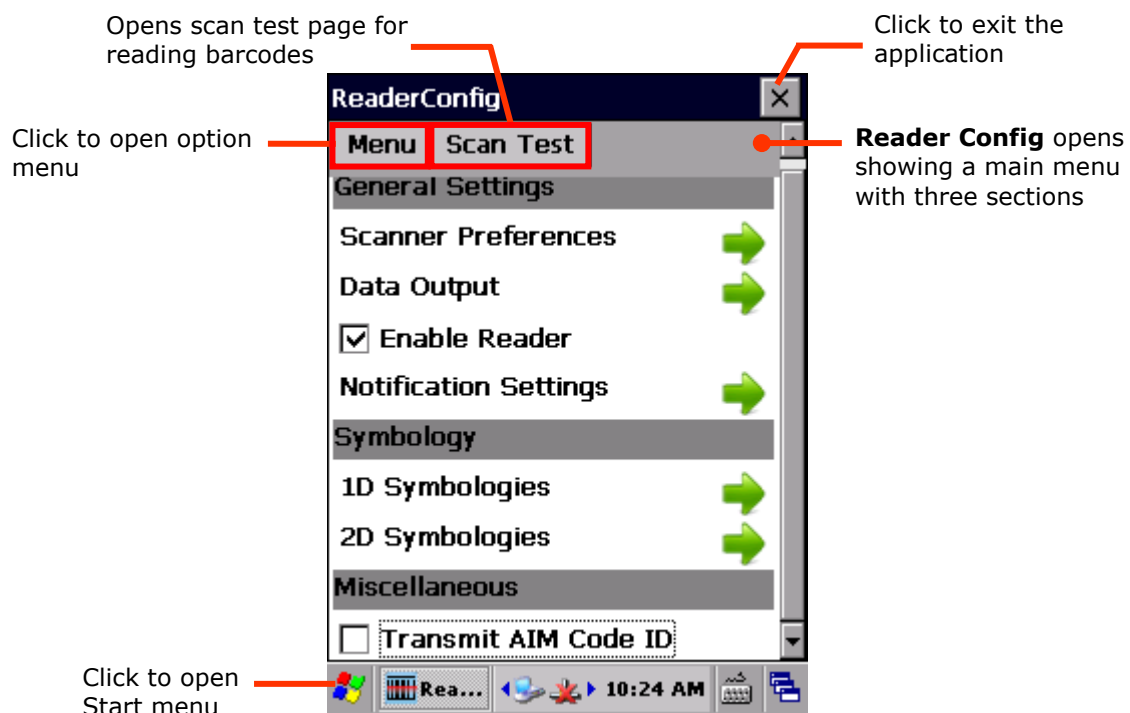
The following will guide to settings provided in each of the three sections.

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.
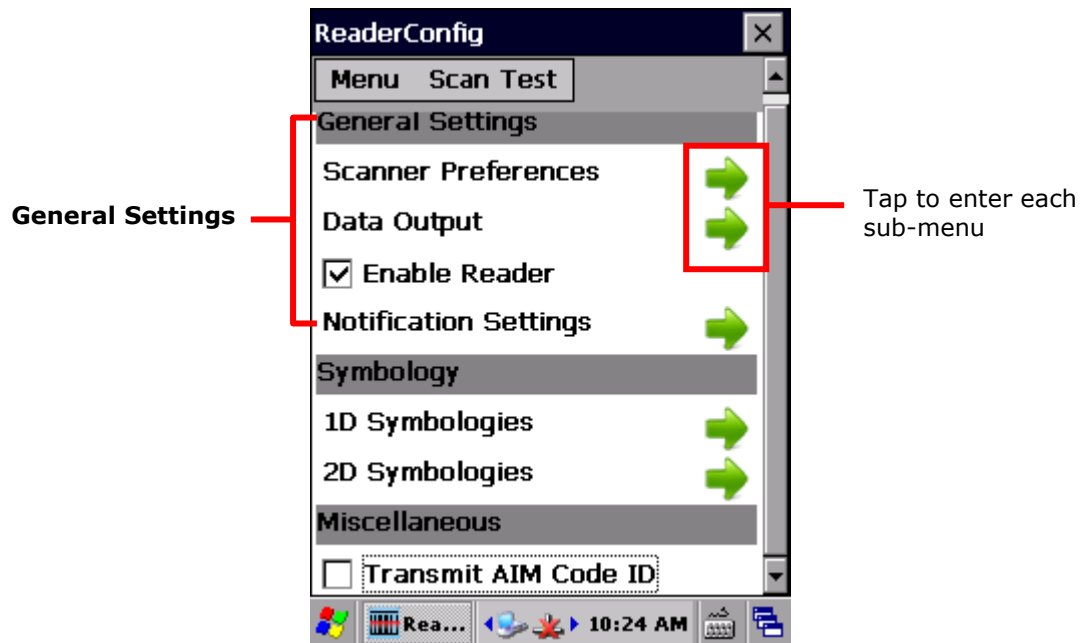
The functions under **General Settings** include:

▸ 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 <u>Launch Reader Config</u>.

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 and 2D imager:
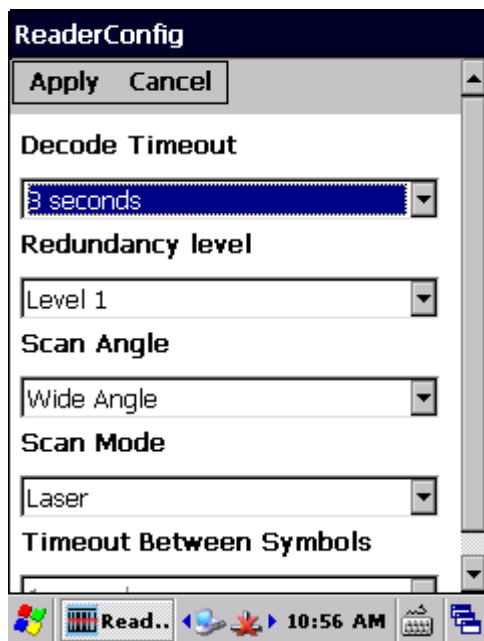
<table>
<tr><td>1D (laser) reader settings</td><td>2D imager settings</td></tr>
</table>

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: See table below.	Level 1
Scan Angle	Sets the scan angle for laser scan engine. Options to choose between are **Wide Angle** and **Narrow Angle**.	Wide Angle
Scan Mode	Sets the reader's scanning behavior. Options available are **Continuous** and **Laser** modes.	Laser
Timeout Between Symbols	Sets the time for the barcode reader to resurrect its ability to once more decode a barcode it just decoded. ▶ Only applied in **Continuous** mode	1 sec

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.

2D IMAGER 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.	Level 1
Security Level	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: **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 the decoder, a safer solution would be to improve the quality of the bar codes to read.	Level 0
Inter-Char Gap Size	Sets the intercharacter gap size for Code 39 and Codabar. Switch between **Normal** and **Large**.	Normal
Scan Mode	Sets the reader's scanning behavior. Options available are **Laser**, **Presentation Mode** and **Auto Aim**. ▸ Laser: Decoding process is activated by trigger event and continues until trigger event ends, a valid decode happens or decode session time-out is reached. ▸ Presentation Mode: The imager engine attempts to decode when an object appears in its field of view. Sleeping state is not entered when this mode is activated. ▸ Auto Aim: Red aiming pattern is turned on when the imager engine detects motion. A trigger event will then activate decoding. If 2 seconds go by without any activity, the aiming pattern goes off.	Laser
Decoding Illumination	Enables an LED light beam to aid barcode reading.	Selected (Enabled)
Decode Aiming Pattern	Projects a crosshair at the center of the laser light beam to facilitate barcode reading.	Selected (Enabled)
Picklist Mode	When selected, only barcodes aligned at the crosshair of the laser light beam will be decoded.	Deselected (Disabled)

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 <u>Launch Reader Config</u>.

Reader Config main menu opens.

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

Data Output settings page opens.
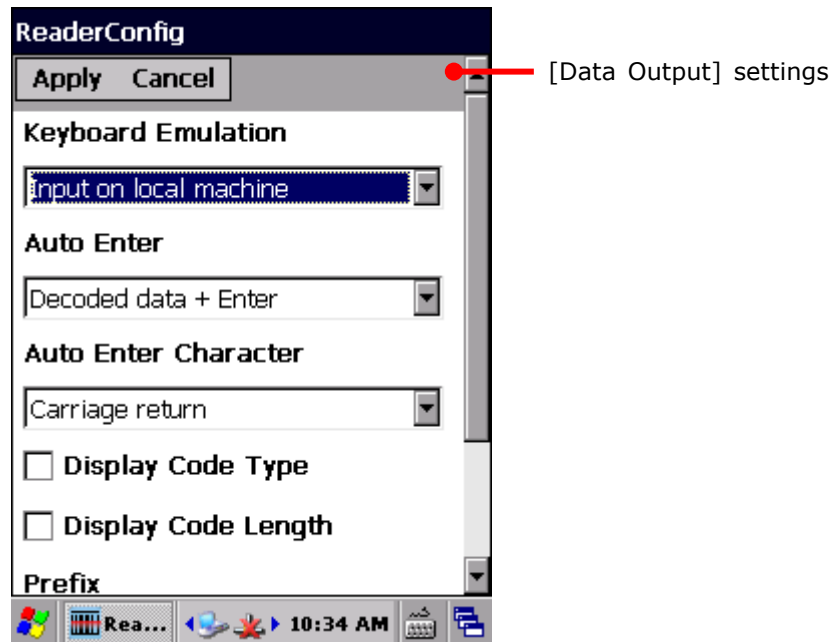
WHERE TO OUTPUT

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 scanning act. This function saves the trouble pressing [Enter] key to confirm each scan. Options are: ▶ Disable ▶ Decoded data + Enter ▶ Enter + Decoded data	Decoded data + Enter
Auto Enter character	Adds a key code before or after the decoded data. This setting is available only when [Auto Enter] is enabled. 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 <u>Launch Reader Config</u>.

Reader Config main menu opens.

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

Notification Settings page opens.

[Notification Settings]
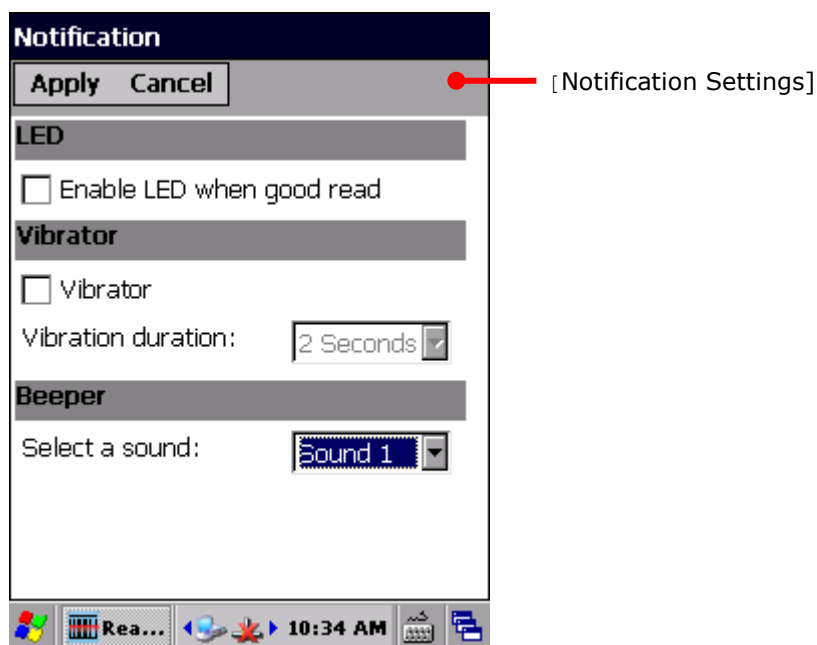
Setting		Description	Default
LED	Enable LED when good read	Selects to enable/disable LED light (left) for scanning good read. See <u>Status LED</u> for details.	Deselected (Disabled)
Vibrator	Vibrator	Enables/disables tactile feedback (vibration) for good read.	Deselected (Disabled)
	Vibration duration	Sets the duration for tactile feedback (vibration).	--
Beeper	Select a sound	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
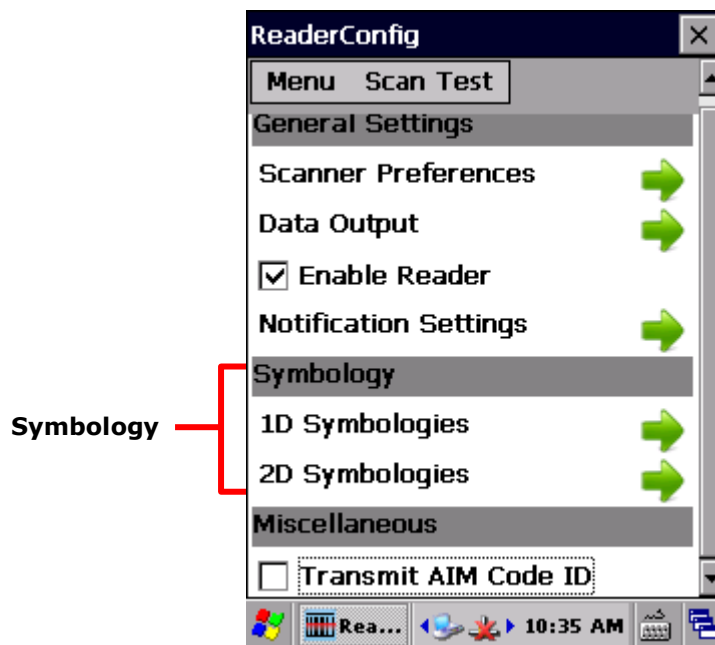

To open **Symbology** settings page:

I) Open **Reader Config** as described in <u>Launch Reader Config</u>.

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.
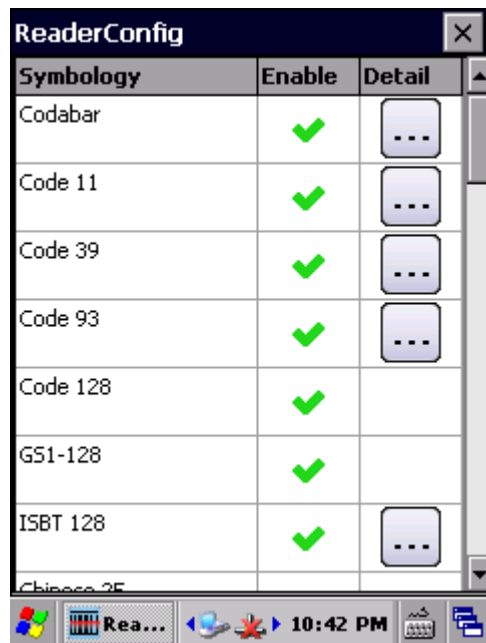
1D Symbologies   2D Symbologies
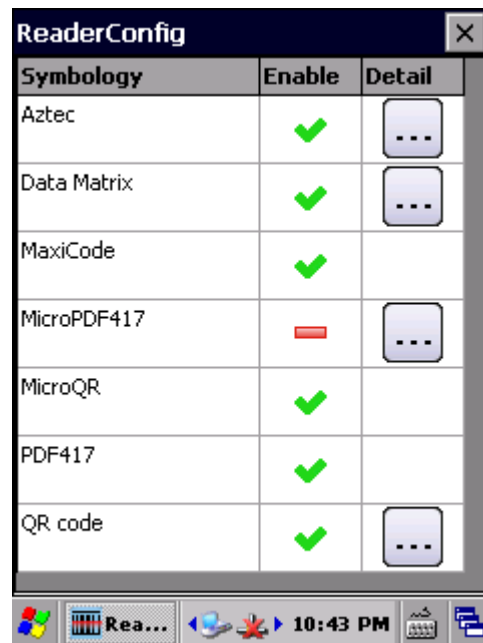
ENABLE/DISABLE SYMBOLOGY

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
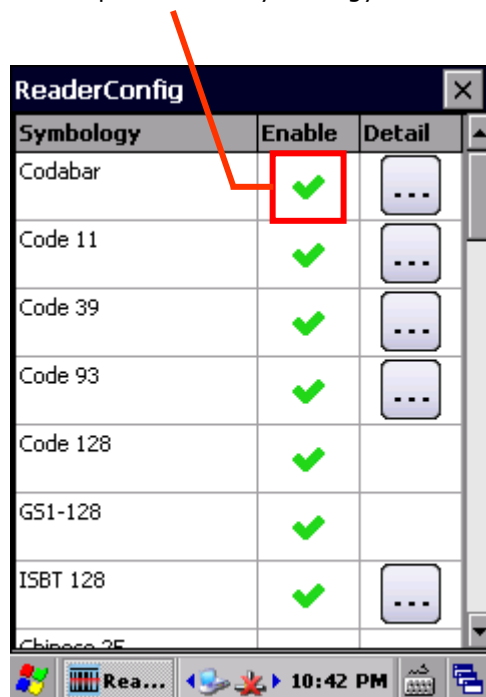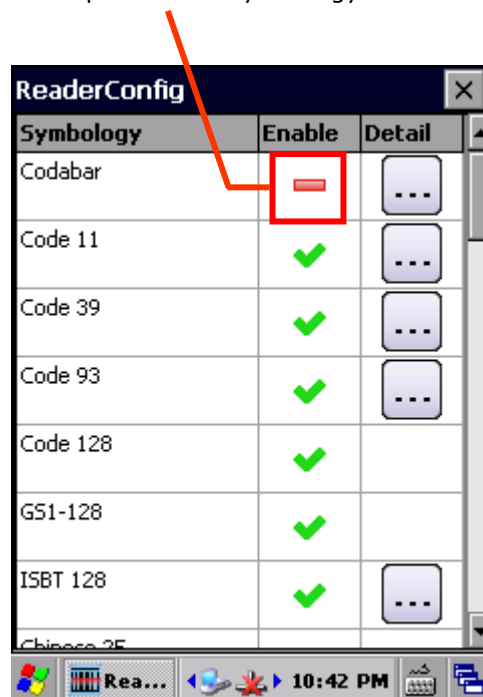
SYMBOLOGY SETTINGS

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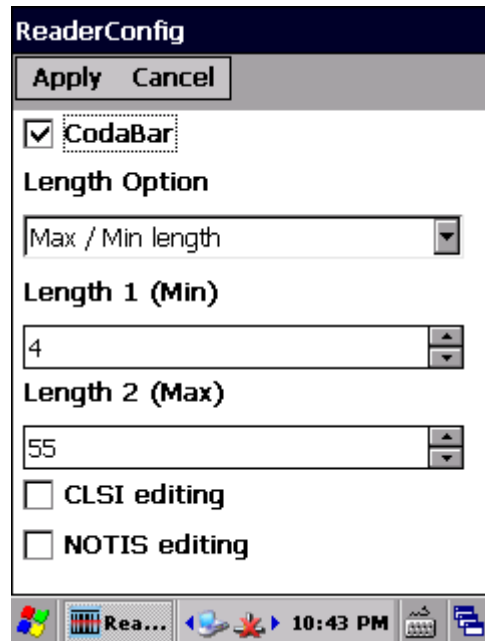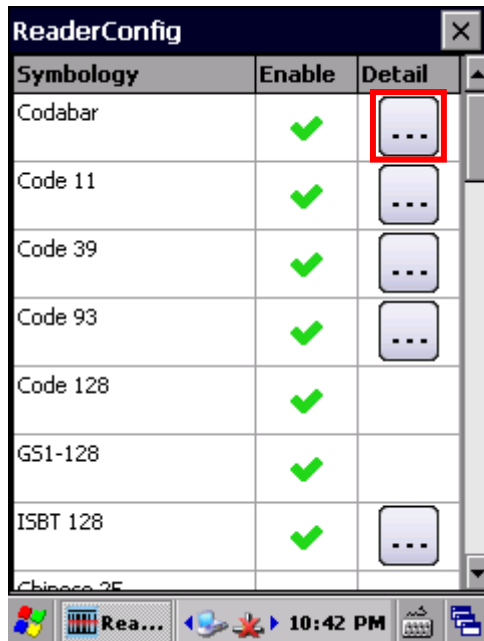
GENERAL PREFERENCES

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.
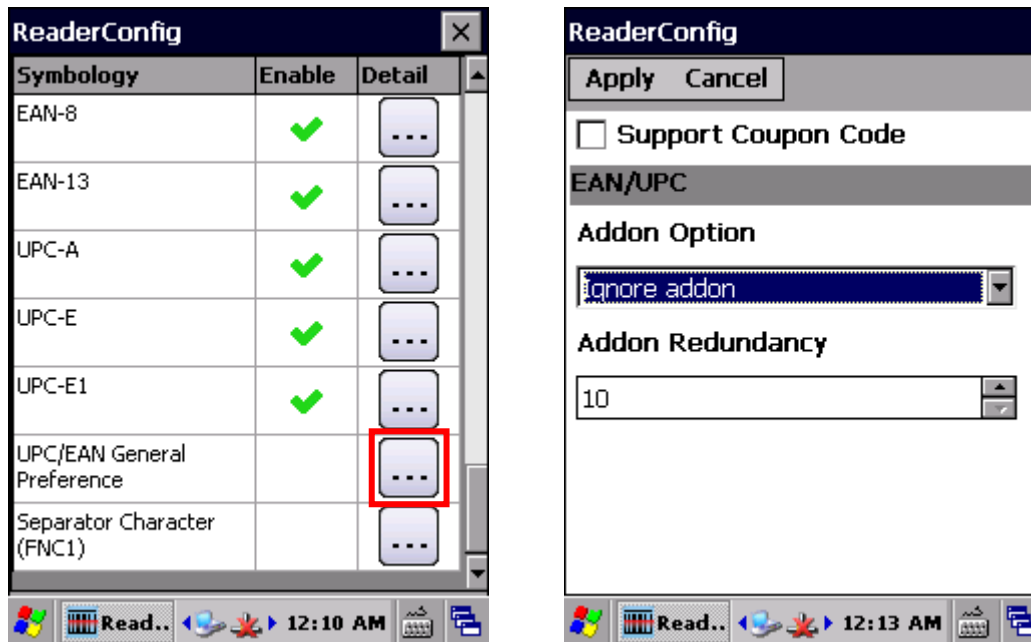
For details about the featured settings:

▸ See Appendix II: 1D Laser <u>Symbology Settings</u>.
▸ See Appendix III: 2D Imager <u>Symbology Settings</u>.

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.
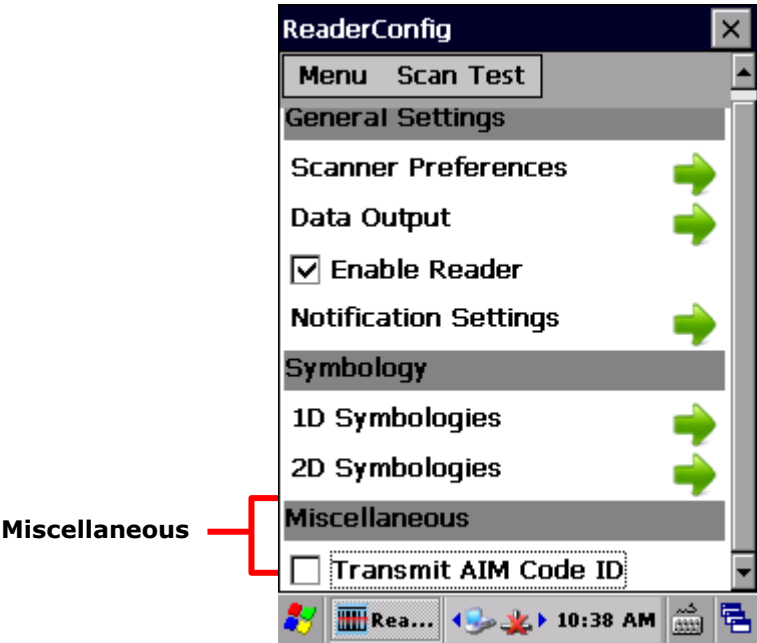
Setting	Description	Default
Transmit AIM Code ID	Sets whether to include AIM code ID character in the decoded data. For AIM code ID, see the following: ▶ Appendix II: 1D Laser Symbology Settings ▶ Appendix III: 2D Imager Symbology Settings	Deselected (Disabled)

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.
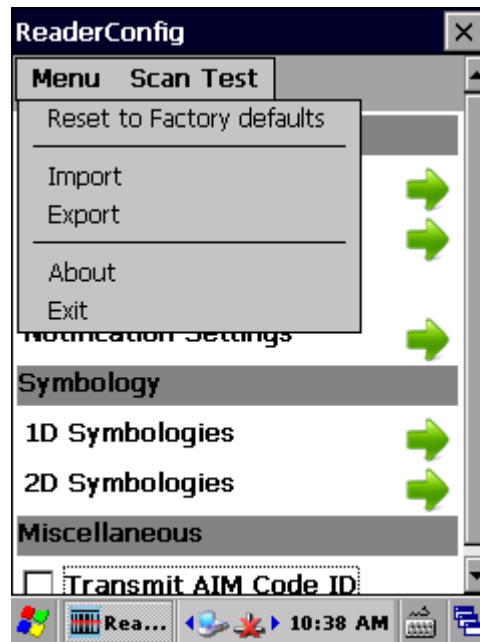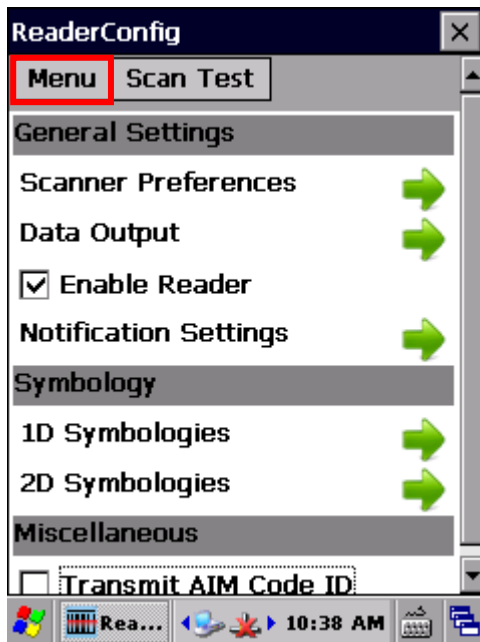
RESET TO FACTORY DEFAULTS

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

To enable Factory Reset:

1) Open **Reader Config** as described in <u>Launch Reader Config</u>.

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.

A warning dialog pops up to confirm if reset should be performed

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 <u>Launch Reader Config</u>.

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.

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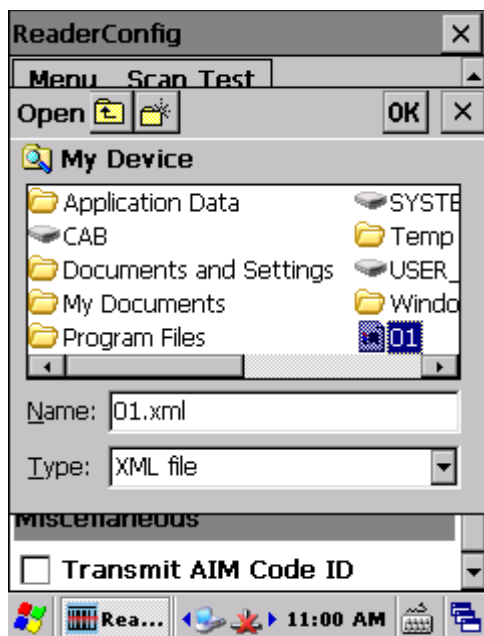
4) Select the profile you would like to apply and tap **OK**. In a few seconds a prompt will appear on the mobile computer to indicate settings have been imported successfully.

To export settings:

1) Open **Reader Config** as described in <u>Launch Reader Config</u>.

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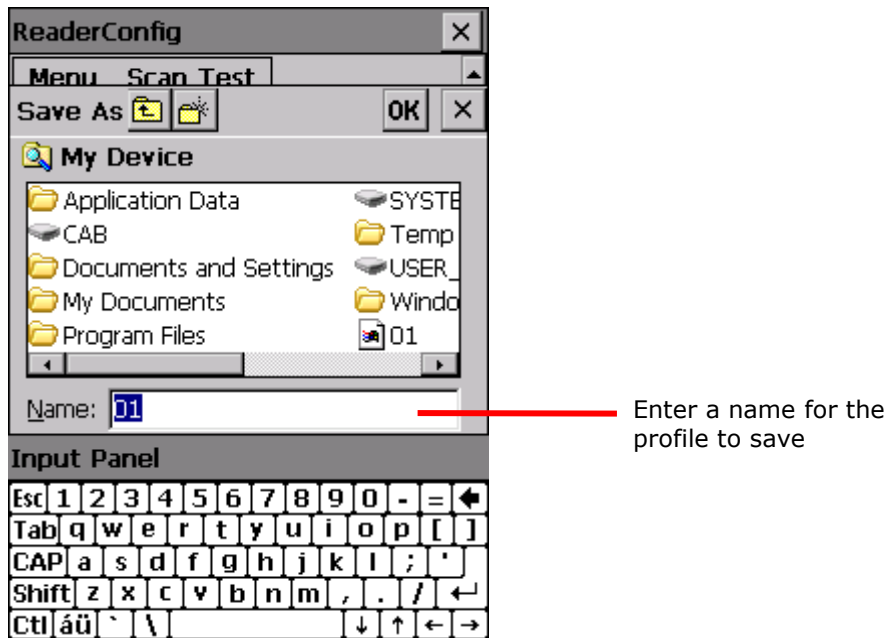
4) Enter file name, storage folder and location. Tap **OK** to export. A prompt will appear on-screen to notify that settings have been exported.
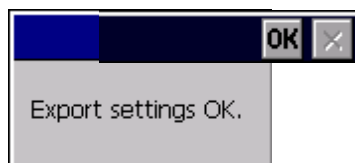
ABOUT

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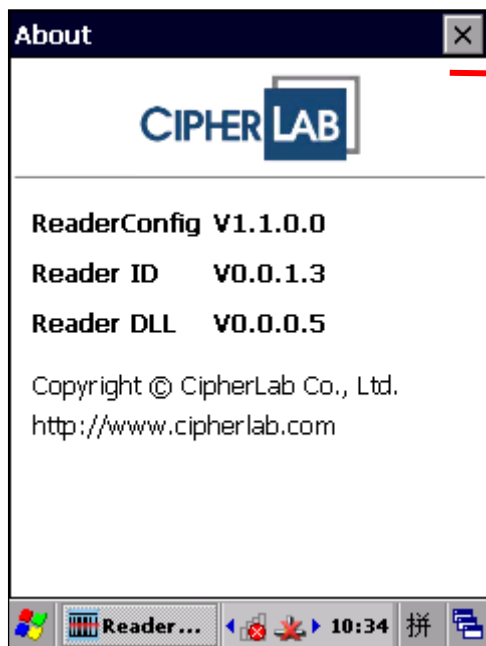
Information about the software

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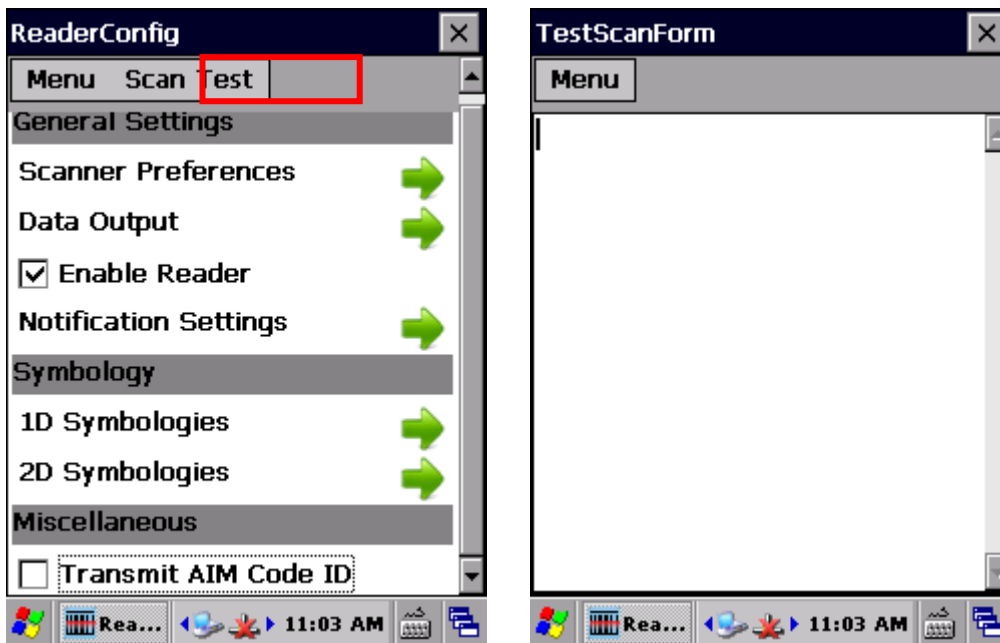
3) Aim the scanning window at the printed barcode to read and press the scan key (or any of the two side triggers).

    The scanning light beams to read the printed barcodes.

    The scanning light goes off once data is decoded, or decoding timeout is reached.
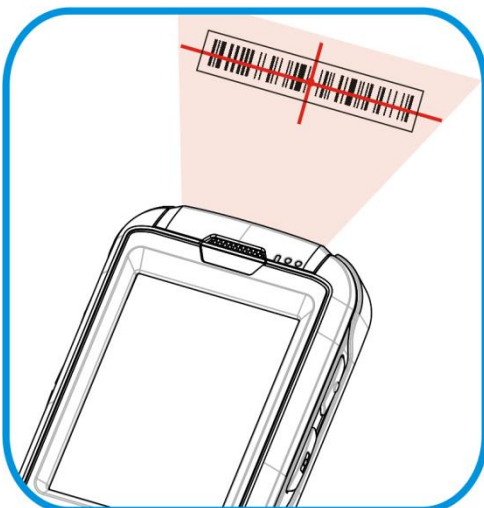
Figure 14: Read printed barcodes

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

Tap to exit the test scan page
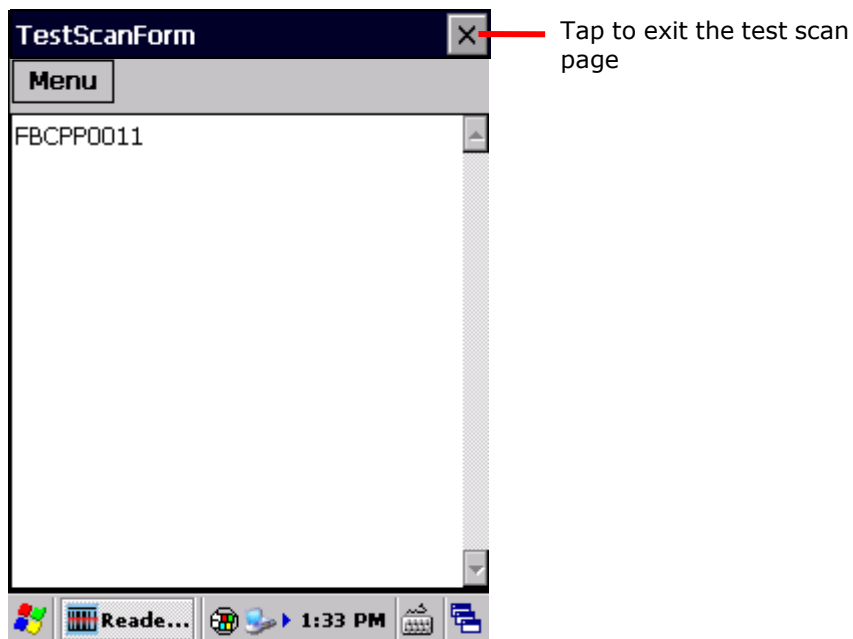
To display more information such as barcode type and length, configure the reader as in Data Output.

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.

Tap to save the decoded data as a .txt file

Tap to clear all the data onscreen

Tap to exit Test Scan

Chapter 3
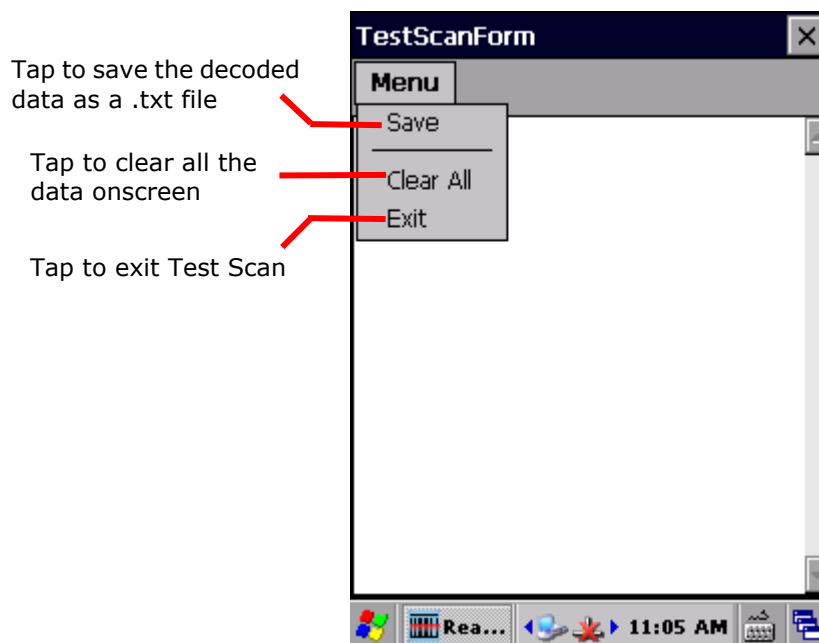
CAMERA

The mobile computer is equipped with a 5.0 mega-pixel camera. The OS also has an integrated camera application for taking pictures and storing them on the mobile computer's storage where they can be viewed, edited and output.

The camera application provides users with customization that allows better image documentation.

This chapter will guide you to use the camera.

Note: When the camera is active, the 2D imager will be temporarily out of service. To re-launch the reader module, close the camera application.

IN THIS CHAPTER

3.1.   LAUNCH CAMERA

To launch the camera:

1) Tap **Start** | **Programs** | **Camera Capture** .

Camera application opens and is ready to take pictures.

3.1.1. CAMERA SCREEN

Camera opens showing a subject area on the screen, and a toolbar at the top.

Toolbar

Exits camera
application

Camera screen
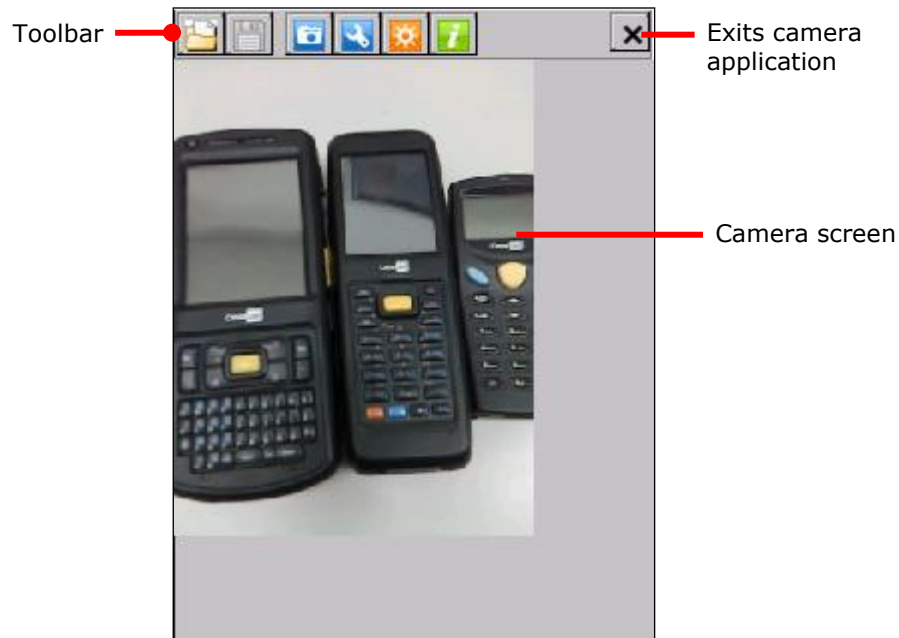
3.1.2. CAMERA TOOLBAR

The camera toolbar allows users to take and save pictures, view saved images, adjust camera settings, enable camera flash light and view information of the application.

Button	Description
	Views pictures saved on the mobile computer's internal storage. Supported file formats include .bmp and .jpg files.
	Saves the picture taken (or the image opened) to the mobile computer's internal storage.
	Triggers camera shutter button to take a picture.
	Opens Camera Settings.
	Enables/disables camera flash light. ▸ Flash light default settings can be adjusted in Camera Settings.
	Opens a dialog that delivers application version information.

3.2.   TAKE PICTURES

To take a picture:

1) Open camera as described in Launch Camera.
2) Enable/disable camera flash and adjust picture quality or other settings according to your preferences. See Camera Settings.
3) Frame your object on the screen.
4) Press the Enter button on the keypad to take the picture.

   After the picture is taken, a preview of it will appear briefly on the screen.

▸ To save the taken picture, tap the settings button 🔧 on the toolbar. By default, pictures taken will be stored under **My Device\Windows\CameraCapture\Image** in .jpg format. To change the default storage path, see Camera Settings.

▸ To discard the taken picture, tap the exit button ✕ at the top right corner of the preview screen.

Tap to close the application

Tap to close the preview screen

Preview of picture taken
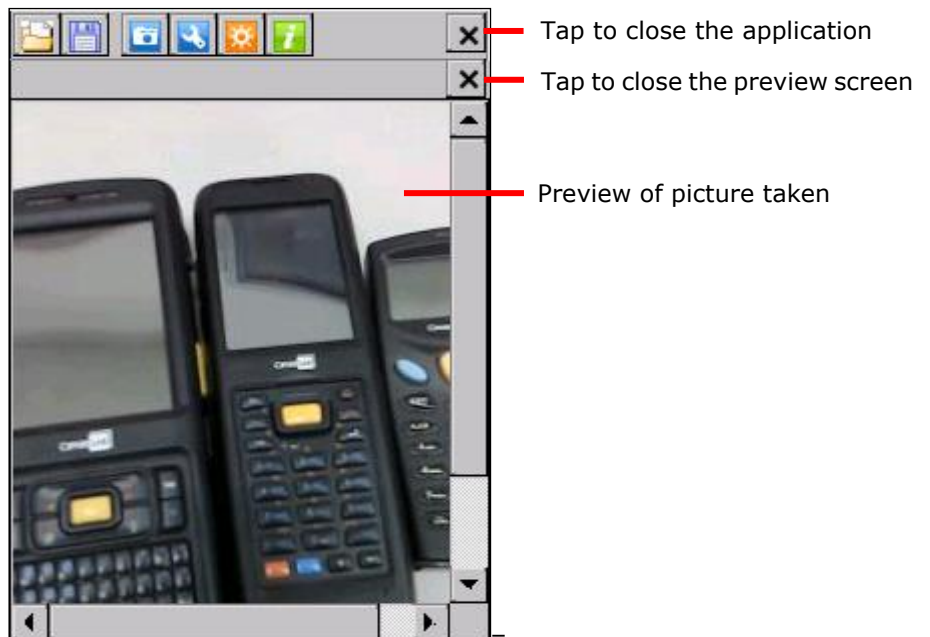
3.2.1. CAMERA SETTINGS

The camera supports changing resolution, flash light mode, camera effect, brightness, and default file storage format and location.

To access camera settings:

1) Open camera as described in Launch Camera.

2) Tap the ![icon] button in the toolbar.

A dialog appears on-screen showing various option settings.
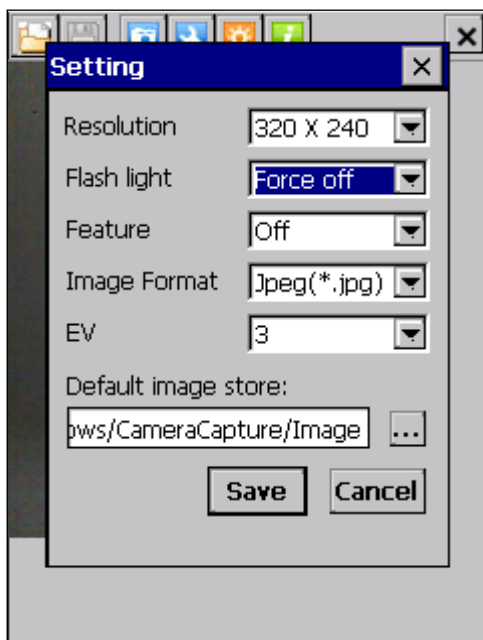
Available settings are detailed as below:

Item	Description
Resolution	The mobile computer supports the following resolutions: 240x320, 480x640, 960x1280, 1200x1600, 1536x2048, 1944x2592.
Flash light	Sets the default flash light setting as Off, On or Auto. Flash light can also be controlled using the Camera Toolbar.
Feature	Sets camera effect between Mono, Sepia, Negative, or Off.
Image Format	Sets the format of the saved picture as .jpg or .bmp.
EV	Sets exposure value between 1 and 5 in increments of 1.
Default image store	Changes the default path to store the pictures taken.

3.3.   VIEW PICTURES

To view a taken picture or an image stored on the mobile computer:

1) Tap the ![icon] button on the toolbar.

2) Browse to the desired path and select the file to view.

    The picture will be displayed in the preview screen below.

3) When finished viewing, tap the exit button ![icon] at the top right corner of the preview screen.

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

4.1. DESKTOP

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

Basic operations on the desktop:

▸ Tap the Start button [icon] to open the Start menu.
▸ Double-tap an application icon to open it.
▸ Customize the desktop by changing the background and the items to display. See Customize Desktop and Start Menu for more details.

Take a look around the desktop:

Application icon

Taskbar
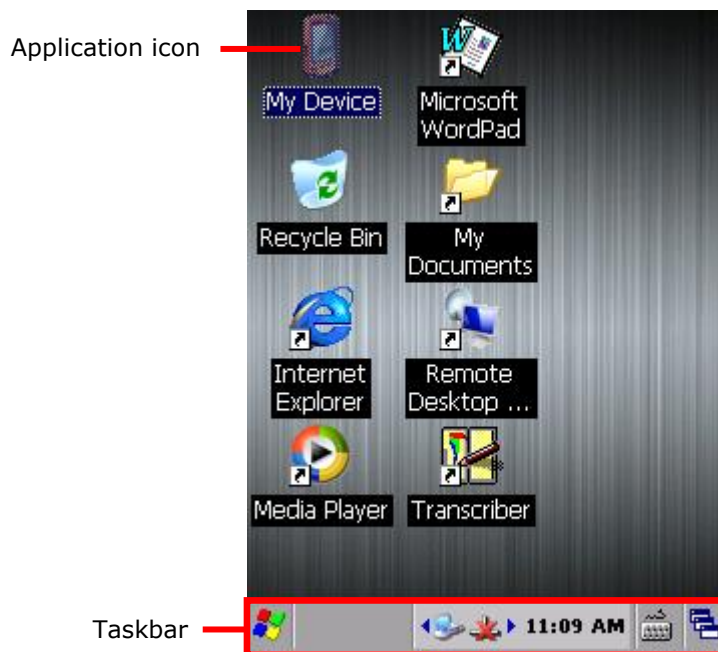
Items on the desktop include:

Icon	Description
[icon]	File explorer for the mobile computer's internal storage.
[icon]	Recycle bin.
[icon]	Shortcut for Internet Explorer.
[icon]	Shortcut for Windows Media Player.
[icon]	Shortcut for Microsoft WordPad.
[icon]	Shortcut which opens **\My Device\My Documents** directory.
[icon]	Shortcut for Remote Desktop Connection.
[icon]	Shortcut which enables Transcriber as the active input mode.

4.1.1. 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 minimized window button of the current application or task 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
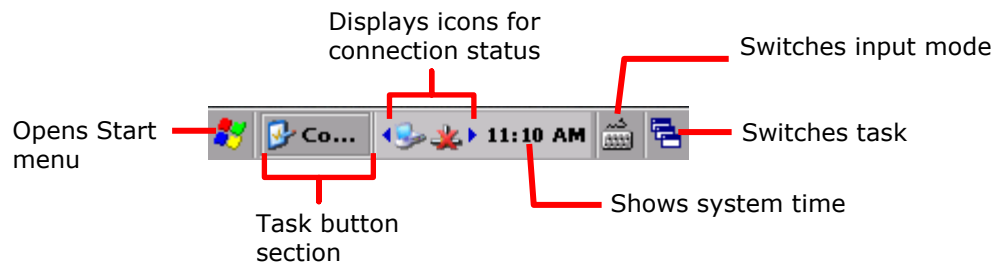
STATUS ICONS

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

Icon	Description
	External power source connected and charging.
	External power source connected, but battery level is full.
	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.
	Numeric keypad enters symbols; QWERTY keypad enters uppercase letters. ▸ These input mode icons display only when Shift key is pressed.
	Numeric keypad enters alphabetic letters; QWERTY keypad enters numbers/symbols. ▸ These input mode icons display only when Alpha key is pressed.
	Keypad Function mode is on. ▸ These input mode icons display only when Function key is pressed.
	PC connection icon that appears when ActiveSync 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 ▸ WWAN

▶ Ethernet

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

▶ WWAN connection

▶ Ethernet

Indicates the Wi-Fi module is enabled. The more the green bars, the stronger the signal. Yellow or red bars indicate poor signal, and a cross indicates no connection is made.

Indicates the status of cellular data connection. See [Cellular Data Status Icons](#) for details on the status of cellular data connection.

4.1.2. START MENU

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

Start menu
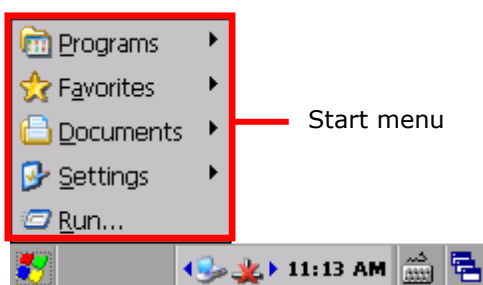
Options	Description
Programs	Accesses programs stored in the directory **My Device\Windows\Programs**.
Favorites	Accesses favorite links to webpages that are stored under the directory **My Device\Windows\Favorites**.
Documents	Accesses recently opened documents stored under the directory **My Device\Windows\Recent**.
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.

4.1.3. 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 tabbed pages for changing desktop background and OS appearance.

3) Tap **Browse** button on the **Background** tabbed page.
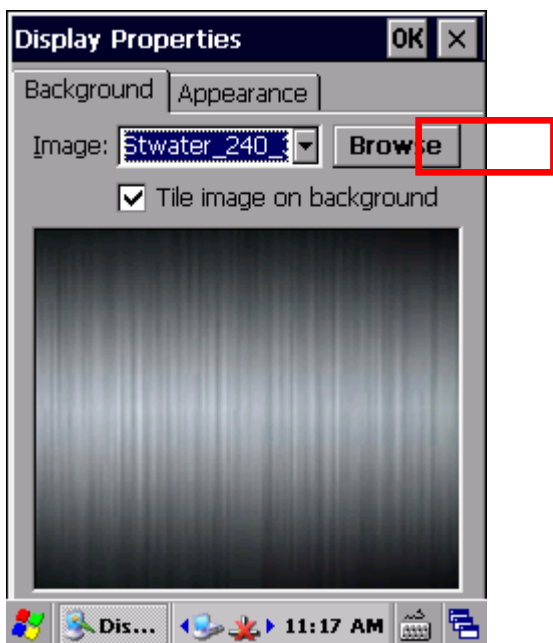
4) In the Browse window that pops up, select the image file you would like to apply as the desktop background.

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.
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 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   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.

4.2.   MANAGING PROGRAMS

4.2.1. 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.
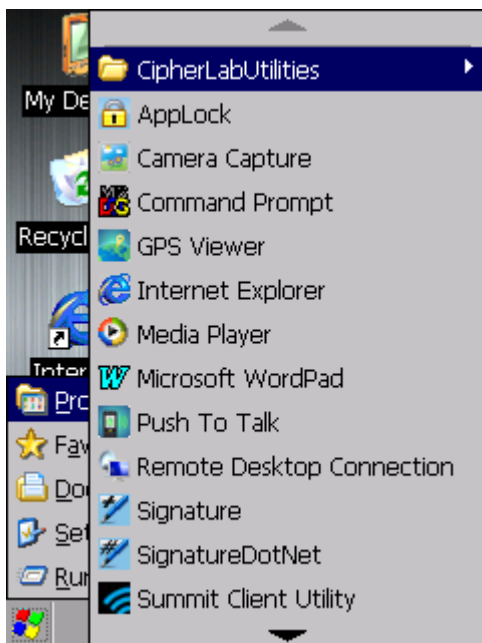
The programs pre-installed on the mobile computer include:

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.
	CAMERA CAPTURE
	Camera application which also serves as an image viewer.
	COMMAND PROMPT
	Command line interpreter program which can be used to execute commands.
	GPS VIEWER
	Program for viewing GPS positioning results and streamed GPS data.
	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 CP60 C++ Programming Guide for details.

SIGNATUREDOTNET

Signature application which is available for .NET programming via API deployment. See the CP60 .NET Programming Guide for details.

SUMMIT CLIENT UTILITY

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

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.

4.2.2. 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.

4.2.3. 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 〖OK〗 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.

4.2.4. INSTALL APPLICATIONS

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

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 via ActiveSync.

2) On the mobile computer, use **My Device** (**File Explorer**) to browse to the installation file.
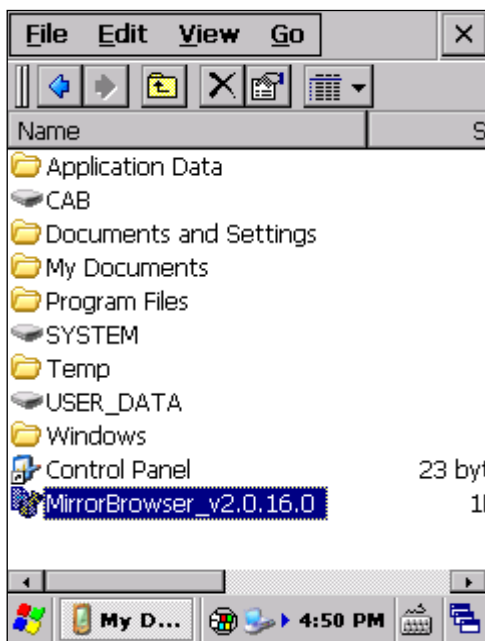
3) Tap the file to begin the installation process. Confirm the location to install the program. The program proceeds to install to the specified location.
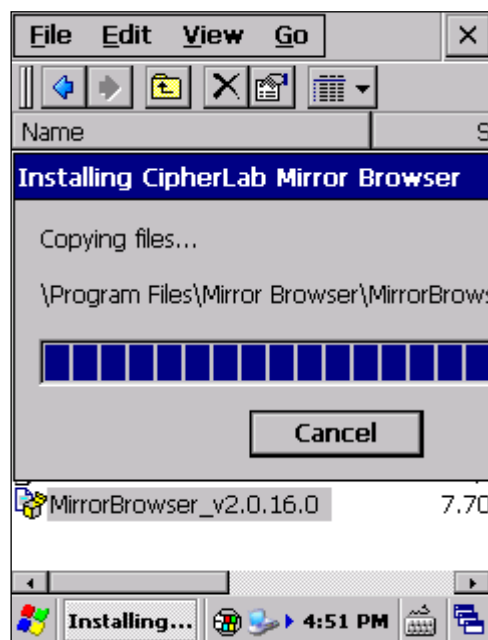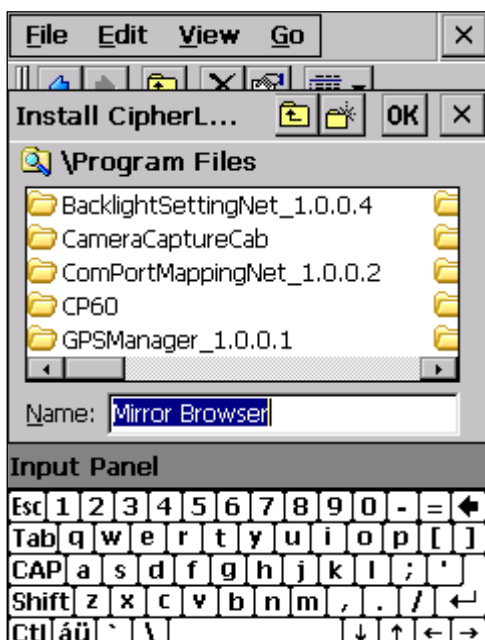
4) When installation is finished, launch it by tapping **Start** | **Programs** and locating it in the Programs menu.
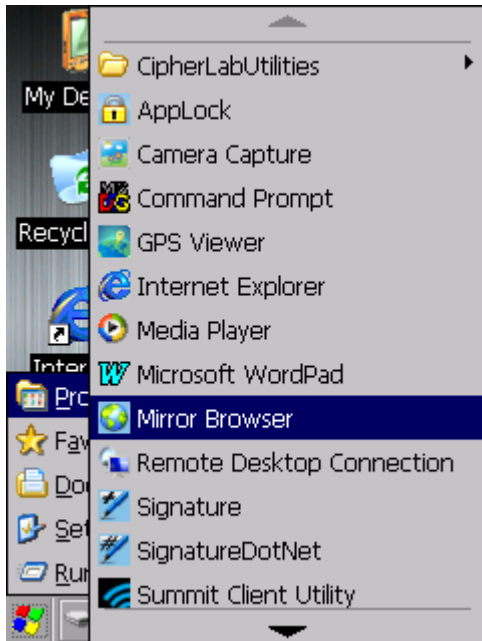
Alternatively, you may download an application to install from the Internet. See Use Wi-Fi or USB Pass-through Networking for how to connect the mobile computer to the Internet.

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 page 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.
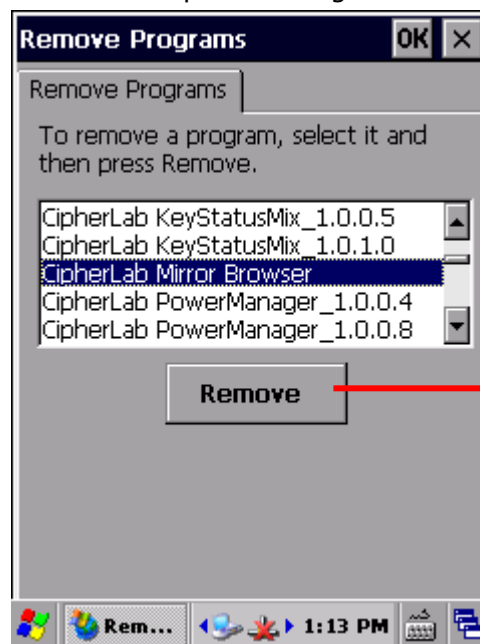
Tap to remove the selected application

4.3.   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.

4.3.1. SUSPEND MOBILE COMPUTER

The mobile computer is suspendable both manually and automatically. See also Wake Up Mobile Computer.

MANUAL SUSPENSION

1) Press the power button without holding it.

    Power Menu opens.

2) Tap **Suspend** in the power menu.

The mobile computer enters suspension.

> **OR**
>
> After pressing the power button, take no actions and let the mobile computer enter suspension automatically after the five-second countdown.

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** ![icon] | **Power Off** tabbed page

2) Set a time limit to suspend the mobile computer as long as it has been in idle state for the indicated period of time. Power plans are available for both battery power and external power.

3) Tap ![OK] to save the settings and close the application, or ![X] to exit the application directly.

Note the following cases also suspend the mobile computer:

▸ Battery door isn't in place
▸ Battery fails
▸ When the touchscreen of the mobile computer is facing down

To get the most from the battery power, see Power Management.
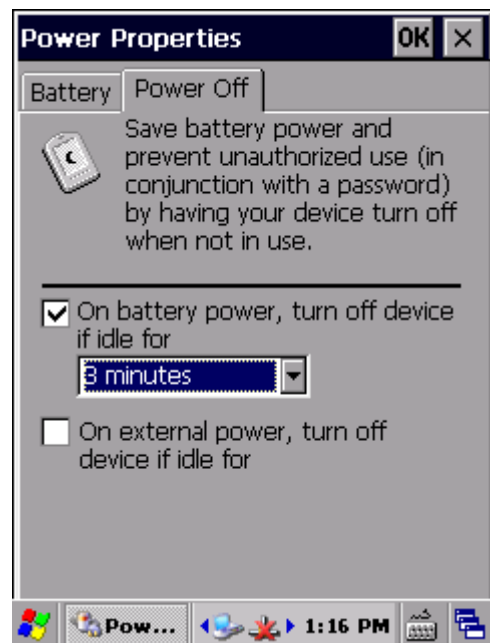
4.3.2. WAKE UP MOBILE COMPUTER

"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
▸ WWAN ringing signal occurs
▸ RTC alarm occurs

Note: There are certain cases when the mobile computer cannot be awoken:
(1) When battery door isn't installed in place.
(2) Imperfect contact exists between main battery and battery chamber contact pins.

4.3.3. RESET MOBILE COMPUTER

The mobile computer features two reset mechanisms, warm boot and cold boot. Performing these two resetting acts helps resolve certain problems within the OS and applications. These two actions can be performed by combined use of the power button and the reset button located on the mobile computer's keypad.

[1] Power button

[2] Reset button
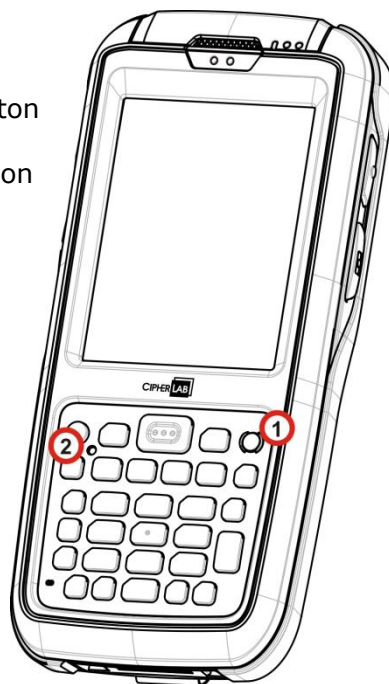
Figure 15: Reset

WARM BOOT (SOFT RESET)

"Warm boot" is also known as "soft reset". When the mobile computer runs slower than normal or when one or more active applications crash, perform warm boot to close all active applications and restart the mobile computer without turning off power supply to hardware.

After warm boot, all flash memory, system settings and clock/calendar time are kept, and all saved data are preserved. However unsaved data is gone after warm boot if the warm boot is performed when the application in question is still running.

To perform "warm boot":

▸ Poke the reset button using the stylus.

COLD BOOT (HARD RESET)

"Cold boot" is also known as "hard reset". In case one or more applications are misbehaving and the mobile computer doesn't cooperate, perform cold boot as the final act.

"Cold boot" restarts the mobile computer by turning power off and then powering on again. As "Cold boot" initializes DRAM, all data cached in DRAM is gone after cold boot. However all flash memory, system settings and clock/calendar time are preserved.

To perform "cold boot":

▸ Press and hold the physical Power button and poke the reset button.

   Note Power button should be held down and not released until the mobile computer powers on again.

Chapter 5

RADIOS

The mobile computer is a versatile networker. It integrates Wi-Fi and Bluetooth for wireless data, and optionally an HSPA+ (3.8G) module for mobile data. It also includes a GPS receiver which can detect your locations on earth with street-level accuracy. 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

5.1.   ACCESS CELLULAR WAN

When you insert a SIM card in the mobile computer and power on the phone module, the mobile computer will connect to your mobile carrier's cellular wide area networks (WAN) for data transmission.

Different locations may have different mobile networks available. The mobile computer auto-connects to the fastest mobile network available for wireless data. See Use Wi-Fi.

5.1.1. INSTALL SIM CARD

To use the mobile computer's phone, first obtain a SIM card from your mobile carrier. Activate the SIM card and assemble it to the mobile computer.

To insert a SIM card, follow the steps below:

1)   Power off the mobile computer. Unhook the hand strap and remove the battery door and main battery.

2)   Using a screwdriver, remove the back cover located at the bottom of the battery chamber.

3)   Locate the SIM card socket inside the battery chamber. (See also Inside Battery Chamber.)

      SIM card socket has a hinged cover.

4)   Push back the hinged cover to unlock it.

5)   Swivel up the hinged cover.

6)   Insert SIM card into the cover slot in the direction indicated ⬚ . The metal contact pins should face down.

7)   Put down the hinged cover and lock it into place.

8)   Restore the battery chamber back cover, battery, battery door, and hand strap.
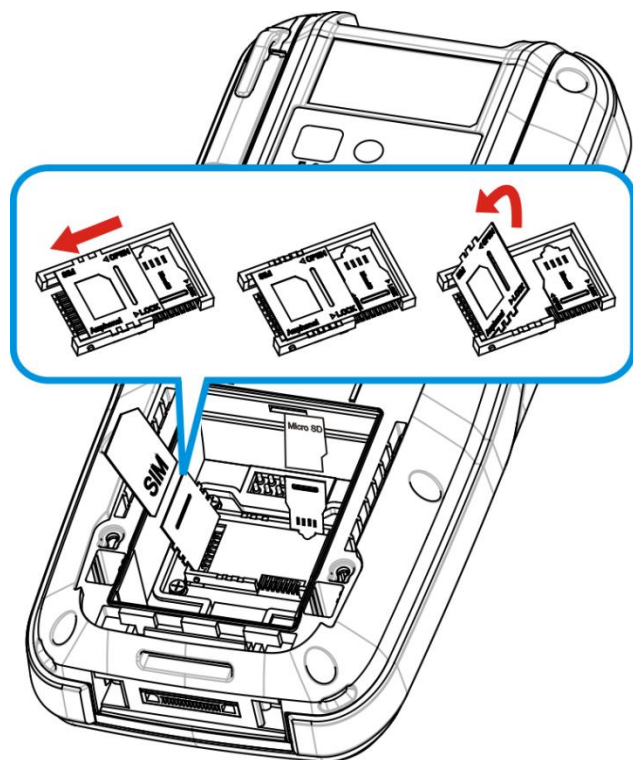
Figure 16: Inserting SIM Card

5.1.2. TURN ON CELLULAR DATA

Before establishing a WWAN connection, turn on cellular data in Wireless Manager.

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

2) By default, the Cellular Data label is turned "off".

Tap the "Off" icon to switch on cellular data transmission.

The cellular data module will begin to initialize and check for the SIM card. The icon will change to shortly to indicate cellular data is activated.

You may change WWAN connection settings in GPRS Manager.
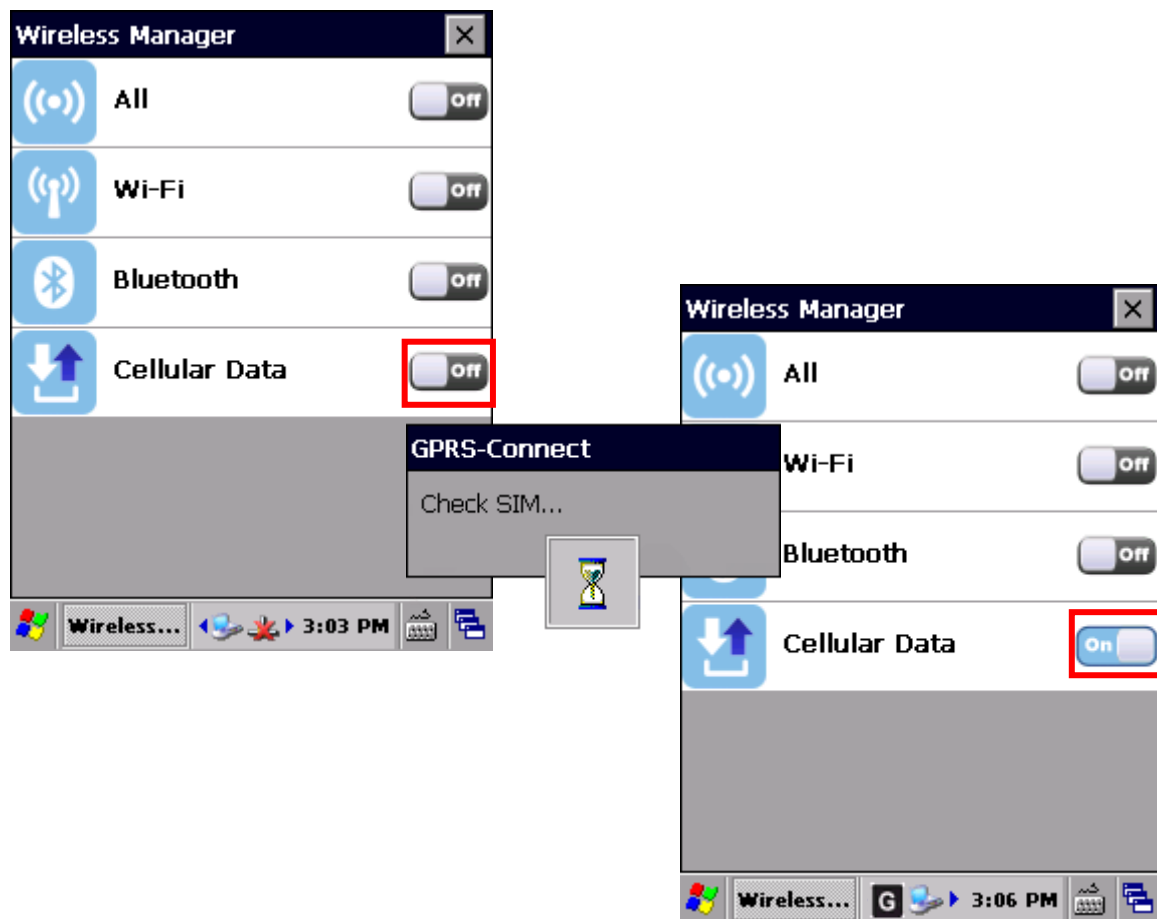
CELLULAR DATA STATUS ICONS

After cellular data is enabled, an icon will appear on the taskbar to show the connection status.
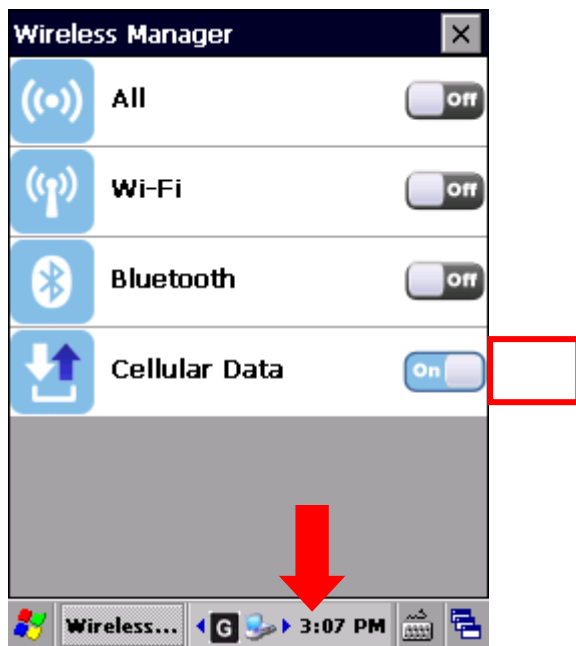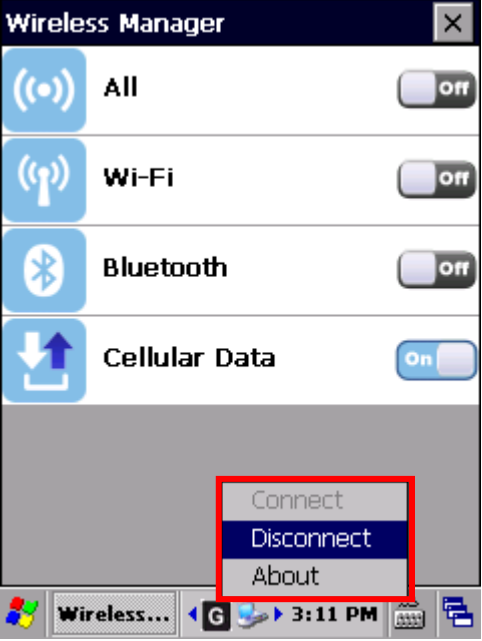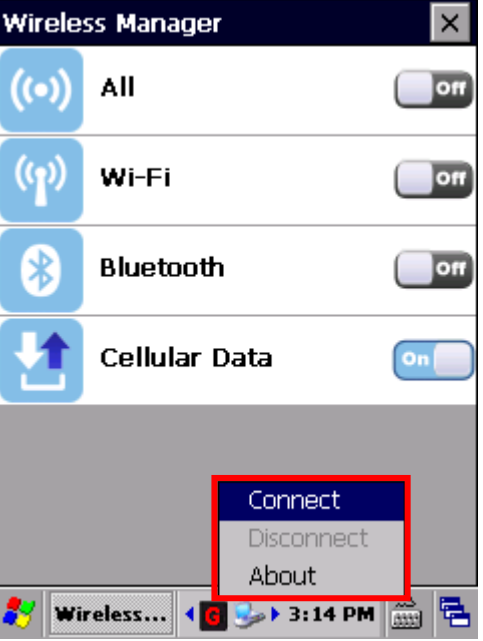
The icons available for cellular data connection status are as follows:

Icon	Indication
G (red)	▶ Initializing the cellular data module ▶ Cellular data is disconnected
G (yellow)	Connecting to cellular data
G (gray)	Cellular data connection has been established successfully

Note: Cellular Data settings under Wireless Manager will be kept through suspension and warm boot/cold boot. After the mobile computer resumes from suspension or restarts, the power status for cellular data will be maintained and the mobile computer will attempt to reconnect to the previous connection.

CONNECT/DISCONNECT CELLULAR DATA

Tap the icon **G** to access the menu that allows you to choose to connect/disconnect cellular data. The icon on the taskbar will reflect the current status (disconnected, connecting, or connected).

Disconnect a current WWAN connection	Connect to a WWAN network

5.1.3. GPRS MANAGER

GPRS Manager allows you to configure WWAN settings, change the PIN code of your SIM card, and select whether to retry connection after a previous attempt to connect has failed.

To open **GPRS Manager**, tap **Start** | **Settings** | **Control Panel** | **GPRS Manager** .

OR

Tap the Cellular Data icon on the Wireless Manager settings page.
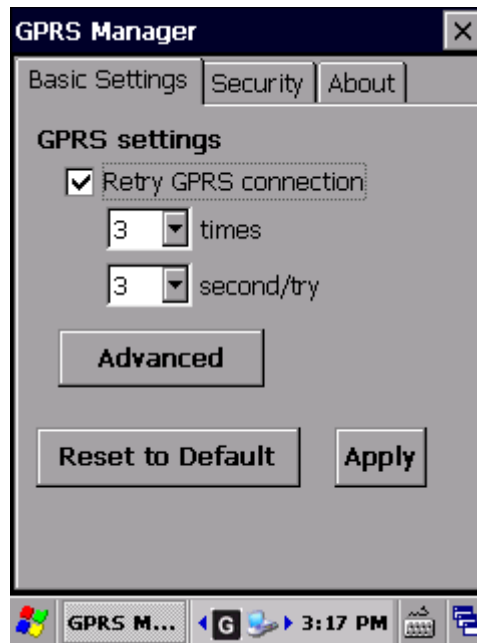
Note:

(1) After configuring the settings in **GPRS Manager**, make sure the power for cellular data is turned off and restarted again as in Turn On Cellular Data. Changes made to the settings will not take effect until cellular data has gone through a power cycle.

(2) The settings in **GPRS Manager** are maintained after the mobile computer is resumed from suspension, or goes through a warm boot or cold boot.

BASIC SETTINGS TABBED PAGE

The **Basic Settings** tabbed page sets whether to allow reconnection to the previously connected WWAN network, and the number of times and interval for this reconnection attempt. It also features buttons for opening an **Advanced** settings page and resetting the values to default.

Options	Description
Retry GPRS Connection	Decide whether to automatically try to re-establish cellular data connection when a previous attempt to connect has failed. ▶ Set the number of attempts to perform cellular data reconnection ▶ Set the time interval between each retry attempt
Advanced	Tap to open Advanced Settings.
Reset to Default	Tap to reset the settings to default.
Apply	Tap to apply the changed settings.

ADVANCED SETTINGS

If you need to change the dial-up settings, tap the **Advanced** button and configure the following items in the GPRS Properties dialog box. Tap **OK** to save the settings.

Setting	Description
AP Name	Specify the AP name for the mobile computer to connect to.
User Name	Type the user name to log onto a WWAN network.
Password	Type the user password to log onto a WWAN network.
Phone Number	Change the dial-up phone number for WWAN connection if necessary.

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

RESET TO DEFAULT

To restore the Basic Settings tabbed page back to default, tap **Reset to Default** button.
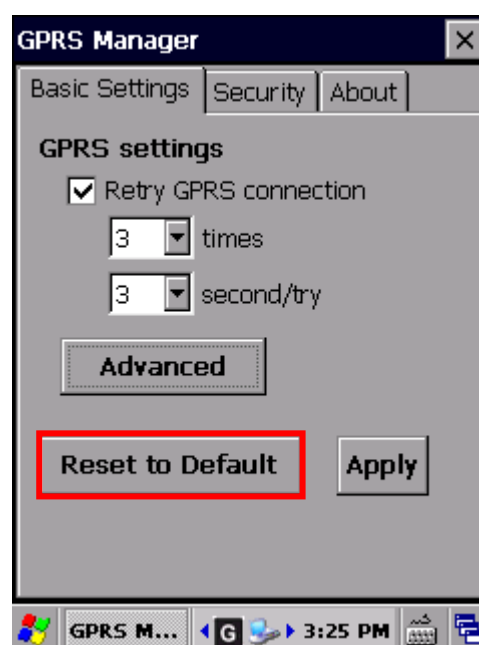
SECURITY TABBED PAGE

The **Security** tabbed page is only available when a SIM card is installed and cellular data has been enabled. Use this tabbed page to enable PIN code verification for the SIM card, or change the PIN code if necessary.
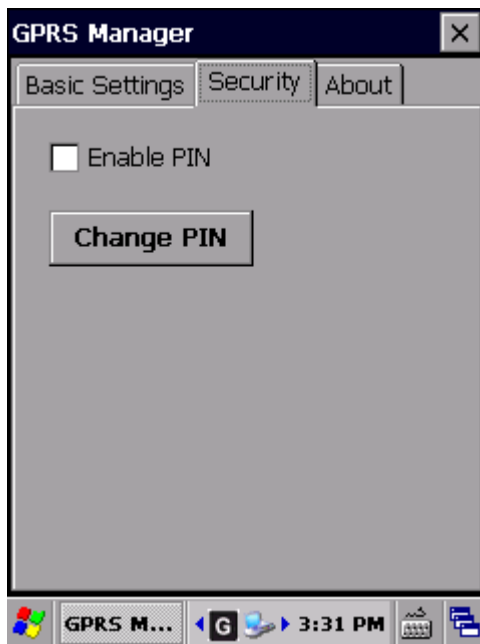
Note: After changing PIN code settings, restart power for cellular data for the changes to take effect.

ENABLE PIN CODE

Select the **Enable PIN** checkbox to enable PIN code protection against unauthorized use. Tap **Change PIN** to open a dialog box for inputting the PIN code. After entering the PIN code, tap ☐ OK ☐ to save.
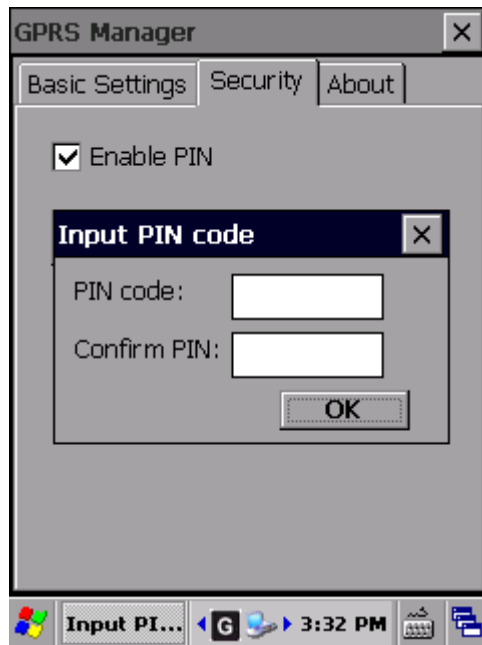
When disabling the **Enable PIN** checkbox, a dialog box will appear asking you to enter the PIN code first as confirmation to make adjustments.

CHANGE PIN CODE

When a PIN code is enabled and you would like to change it, tap **Change PIN** to open the dialog box. Enter the current PIN code first, input a new PIN code, and confirm it once more. Tap OK to save.

Note: PIN verification allows three attempts for entering the correct PIN code. If you fail three times, the SIM card will be blocked. Contact your network operator to unblock the SIM card.

ABOUT TABBED PAGE

To check information about the software, tap the **About** tabbed page.

5.2.   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 Turn On/Off Wi-Fi Module.

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.summitdata.com/documentation.html
http://www.summitdata.com/Documents/summit_users_guide_3_03.html
http://www.summitdata.com/Documents/summit_quick_start_v3_03.html

5.2.1.   POWER ON 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 will become switched on in a few seconds.
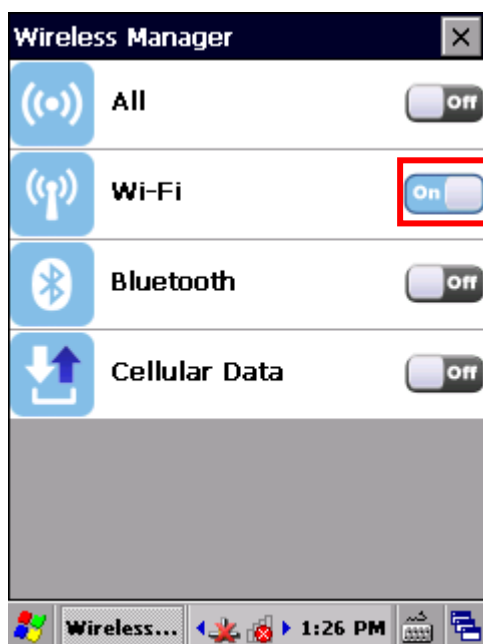
Note: Wi-Fi power settings under Wireless Manager will be kept through suspension and warm boot/cold boot. After the mobile computer resumes from suspension or restarts, Wi-Fi power status will be maintained and the mobile computer will attempt to reconnect the previous connection.

SYSTEM TRAY ICON

The taskbar features a system tray icon to show Wi-Fi status.
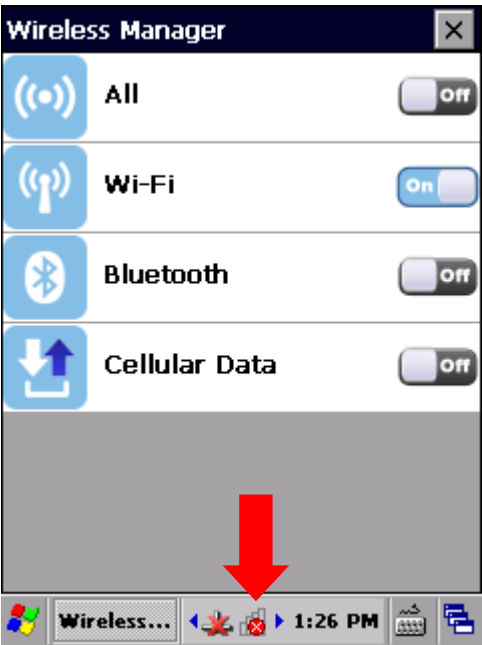
The icons available for Wi-Fi connection are as follows:

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).

5.2.2. LAUNCH SCU

Wi-Fi settings can be adjusted with Summit Client Utility. Within this application are three tabbed 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.
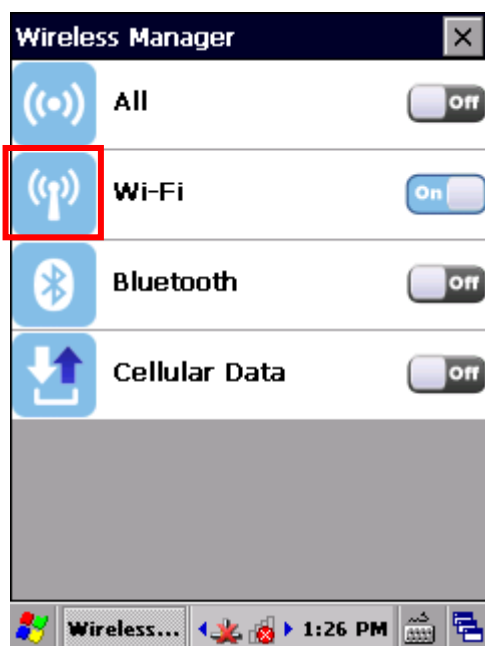
SCU opens showing three tabbed pages: **Status**, **Configuration** and **Diagnostics**.

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

5.2.3. STATUS TABBED PAGE

The **Status** tabbed page provides basic information on WLAN connection and Bluetooth status. Wi-Fi settings can be configured on Configuration Tabbed Page.
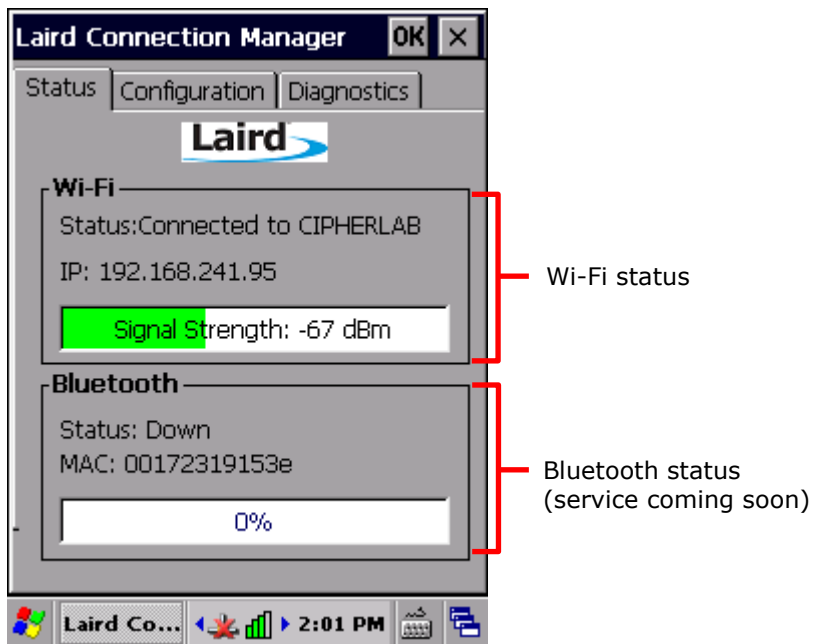
Note: SCU does not currently support viewing or configuring Bluetooth settings.

5.2.4. CONFIGURATION TABBED PAGE

TURN ON/OFF WI-FI MODULE

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

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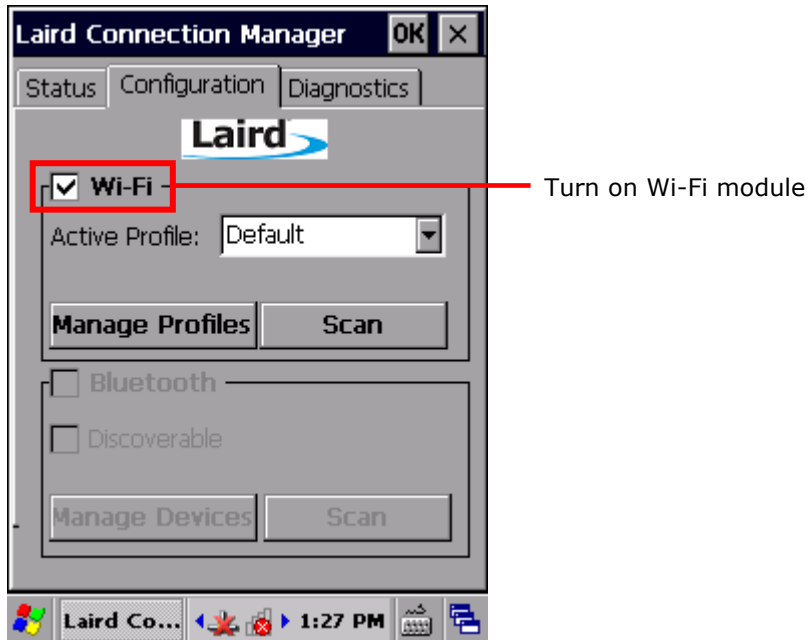
Note: SCU does not allow configuration of Bluetooth settings. To establish and manage Bluetooth connections, tap **Start** | **Settings** | **Control Panel** | **BT Manager** .

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** tabbed 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 <u>Launch SCU</u>.

2) Tap the **Configuration** tab to show the Configuration tabbed 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.
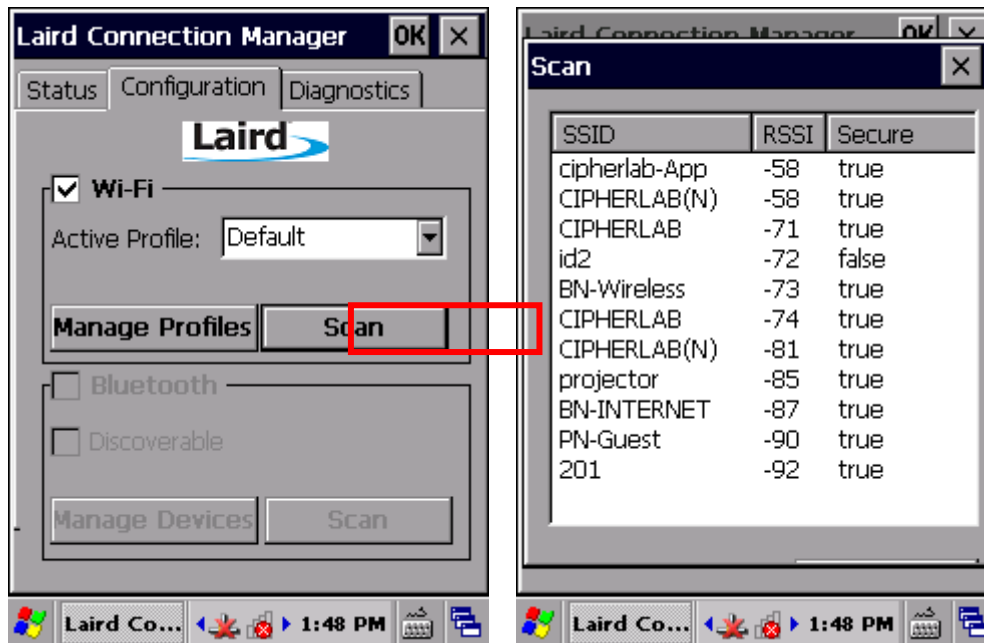
Item	Description
SSID	Service Set Identifier (SSID)
RSSI	Received Signal Strength Indication (RSSI)
Secure	Indicates whether data encryption is enabled: true or false

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.
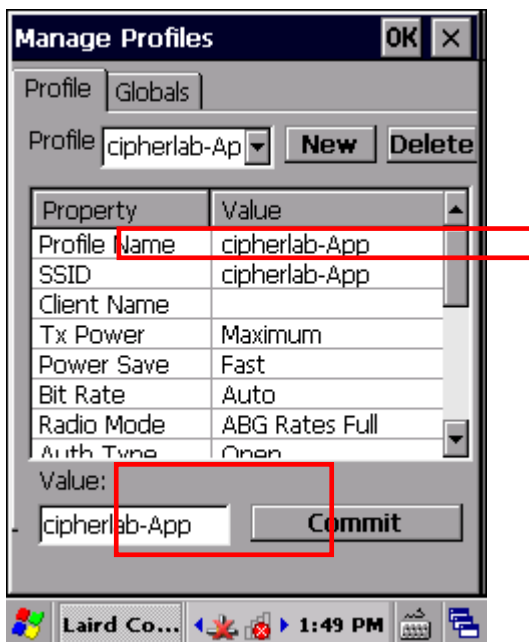
6) When finished fine-tuning all settings, tap **Commit** to save the profile.

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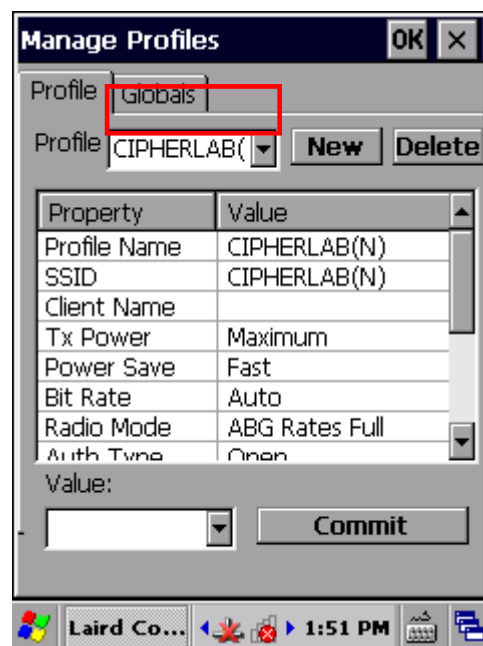
New	Tap **New** and enter a unique name for the profile. Configure the Radio settings, Encryption, EAP Type, and other settings for this new profile. ▸ The name for each profile must be unique ▸ You can define up to 20 profiles
Delete	Select a profile from the drop-down menu and tap **Delete**. ▸ You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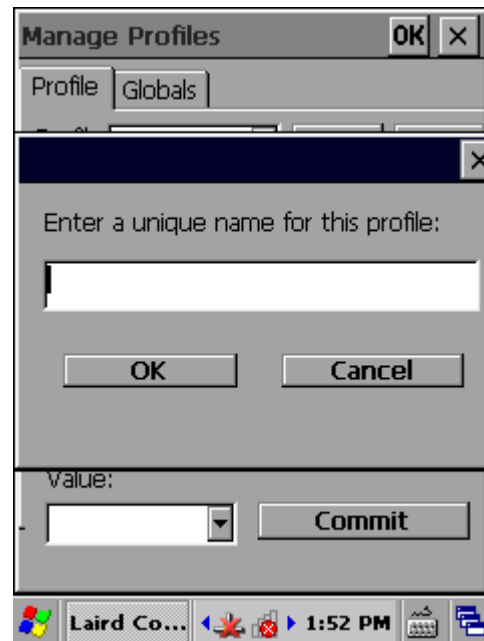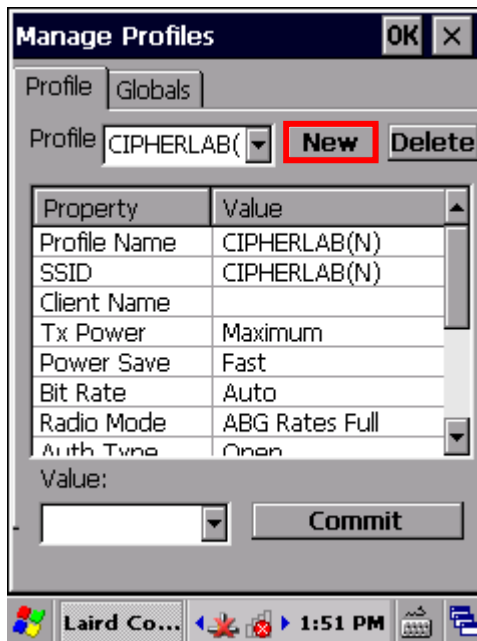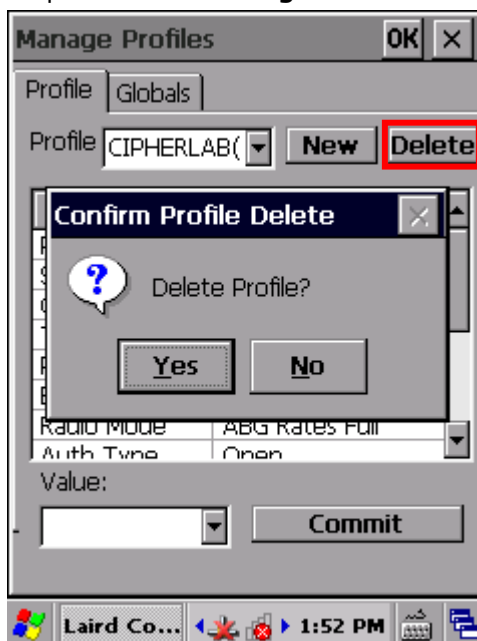
Radio Settings	After selecting a profile in the **Profile** drop-down bar, configure radio settings in the scrollable menu below.

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 Certificates. ▸ 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. Value: CIPHERLAB(N) Commit Laird Co... 1:53 PM	

Commit	After making any changes on the **Profile** tabbed 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 tabbed page as described in <u>Create Wi-Fi Profile</u>.
2) Tap **Manage Profiles** to open the Profile settings page.
3) Tap the **Globals** tab to open the Global settings page.

Manage Profiles	OK	×

Property	Value
Roam Trigger	-70 dBm
Roam Delta	10 dBm
Roam Period	10 sec
BG Channel Set	Full
DFS Channels	Off
DFS Scan Time	120
Ad Hoc Channel	1
Aggressive Scan	On
CCX features	Off
WMM	On

Value: On   Commit

Laird Co...   ◀ ⚹ 🔌 ▶ 1:53 PM ⌨ 🗔

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	Description
Full	All channels
1, 6, 11	The most commonly used 2.4 GHz channels	

	1, 7, 13	For ETSI and TELEC radios only
	Custom	Indicates the system registry has been edited to include a value other than those available in the drop-down value

▶ Default: Full

DFS Channels	Indicates whether to support 5 GHz (802.11a) channels where dynamic frequency selection (DFS) is required. ▶ Value: On, Off ▶ Default: Off
DFS Scan Time	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.
Ad Hoc Channel	The channel to be used for an ad hoc connection if the active profile has a Radio Mode value of "Ad Hoc". ▶ Value: | 1~14	One of the 2.4 GHz channels
36, 40, 44, 48	UNII-1 channels | ▶ Default: 1 ▶ If a channel that is not supported is selected, then SCU will automatically apply the default channel setting (1).
Aggressive Scan	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
CCX features	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.
WMM	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.

Auth Server	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
TTLS Inner Method	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
PMK Caching	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
TX Diversity	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
RX Diversity	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
Frag Thresh	When packet size exceeds the set threshold, it becomes fragmented.
	▶ Value: 256 ~ 2346
	▶ Default: 2346 (bytes)
RTS Thresh	When packet size exceeds the set threshold, RTS/CTS is required on link.
	▶ Value: 0 ~ 2347
	▶ Default: 2347 (bytes)
LED	Indicates whether or not an LED is used.
	▶ Value: On, Off
	▶ Default: Off
Tray Icon	Whether to enable the system tray icon or not.
	▶ Value: On, Off
	▶ Default: On

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.

5.2.5. DIAGNOSTICS TABBED 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.

Wi-Fi diagnostics status

Bluetooth diagnostics status (service not available now)

ADVANCED DIAGNOSTICS

To access Advanced diagnostics settings:

1) Open Diagnostics Tabbed 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
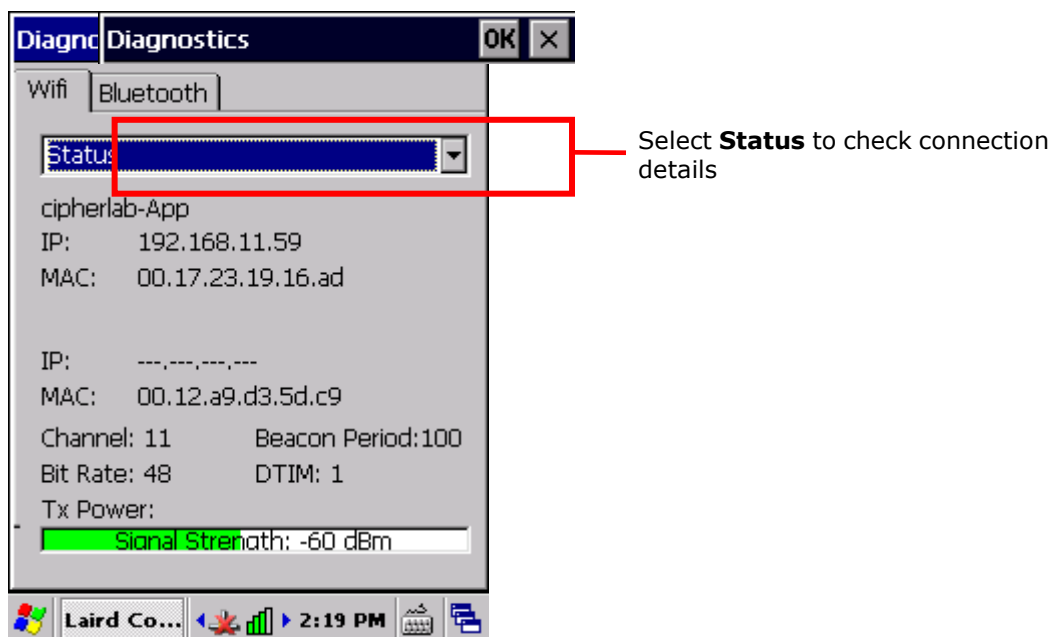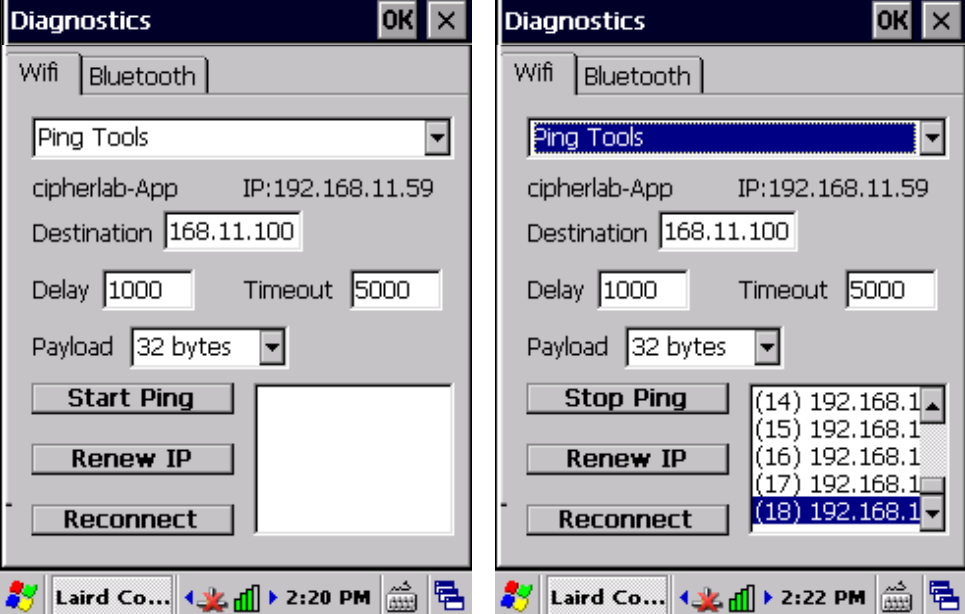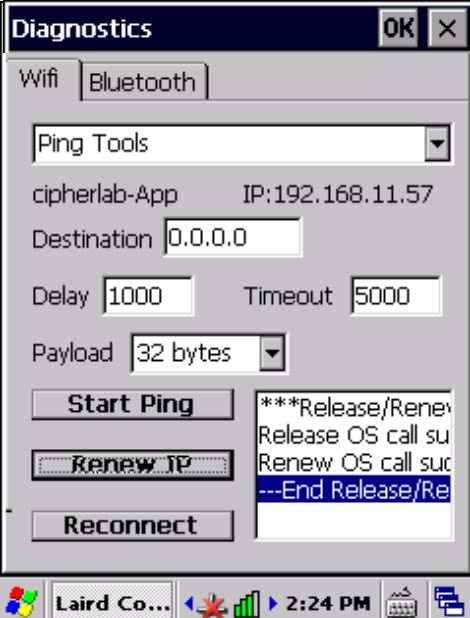
USE PING TOOLS

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

Select **Ping Tools** to diagnose the connection

Device IP address

AP Name
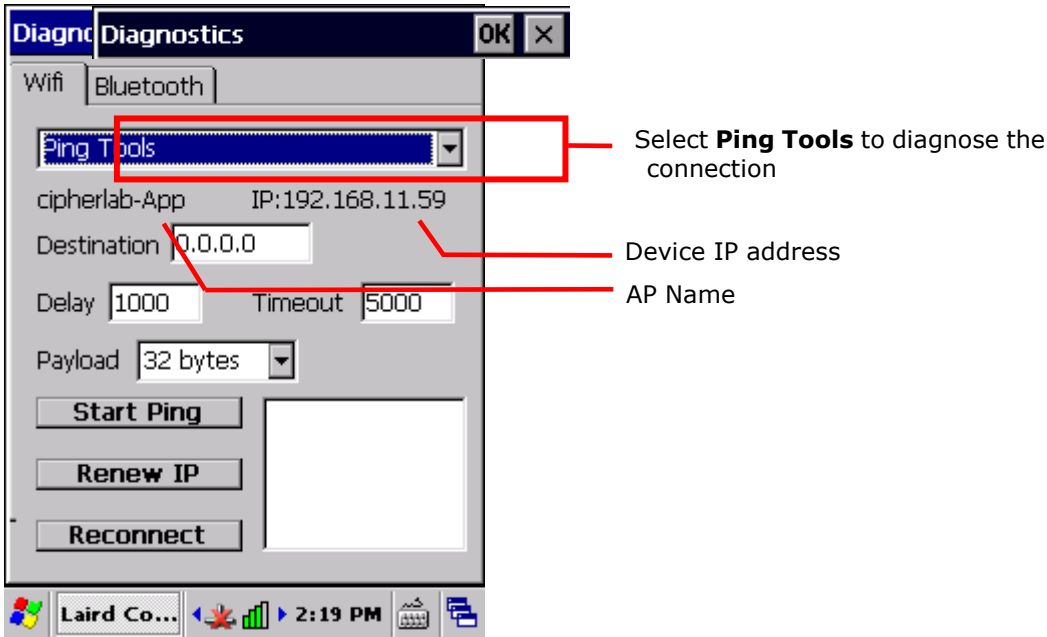
Item	Description
Destination	Enter the address to ping.
Ping Payload	The amount of data to be transmitted on a ping. ▸ Value: 32, 64, 128, 256, 512, 1024 ▸ Default: 32 (bytes)
Ping Delay	The amount of time that elapses between successive ping requests. ▸ Value: 0~7200000 ▸ Default: 1000 (milliseconds)
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.

Start Ping	
	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.

(Re)connect	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.
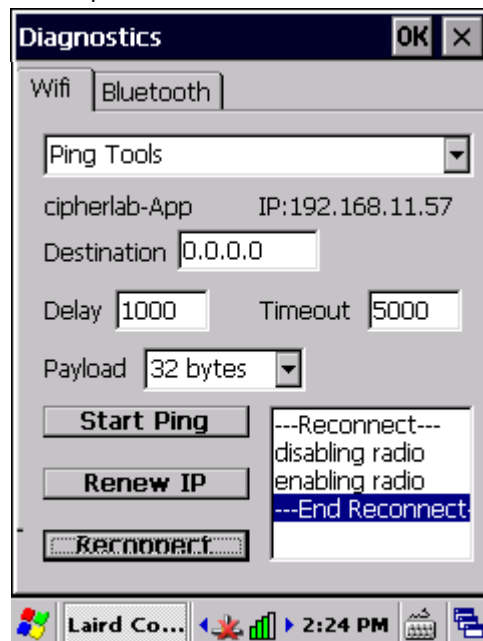
USE DEBUG TOOLS

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 Tabbed Page.

2) Tap the **About** button to view information about SCU version, device driver, and software developer.
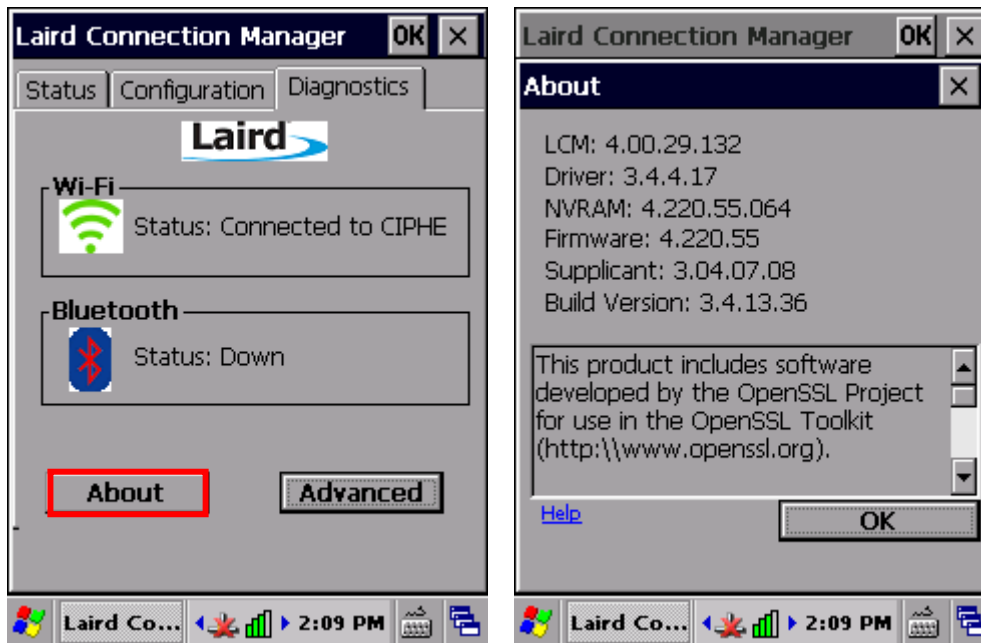
5.3. USE BLUETOOTH

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.

5.3.1. 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
Dial-Up Networking Profile	(DUN)	supports Client only
Personal Area Networking Profile	(PAN)	
Human Interface Device Profile	(HID)	supports keyboard and mouse without cursor
Headset Profile	(HSP)	
Hands-Free Profile	(HFP)	

5.3.2. 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** tabbed page.

2) Tap **Device Name** tab.

Device ID tabbed page opens.
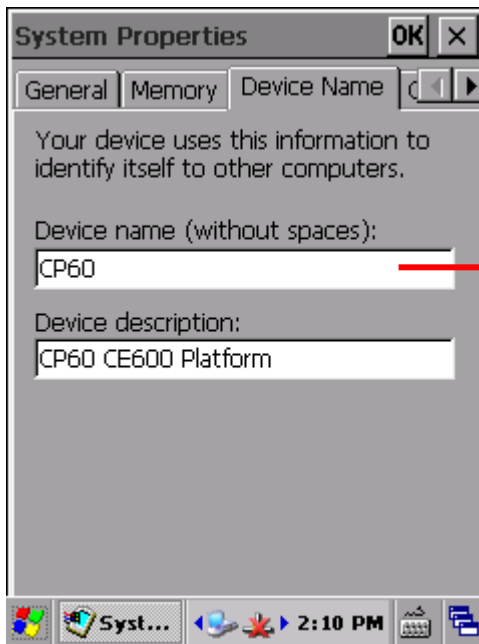
Change device name to make the mobile computer more recognizable.

3) Enter a name of your choice.

4) Tap **OK** on the title bar to apply the change.

5.3.3. 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.
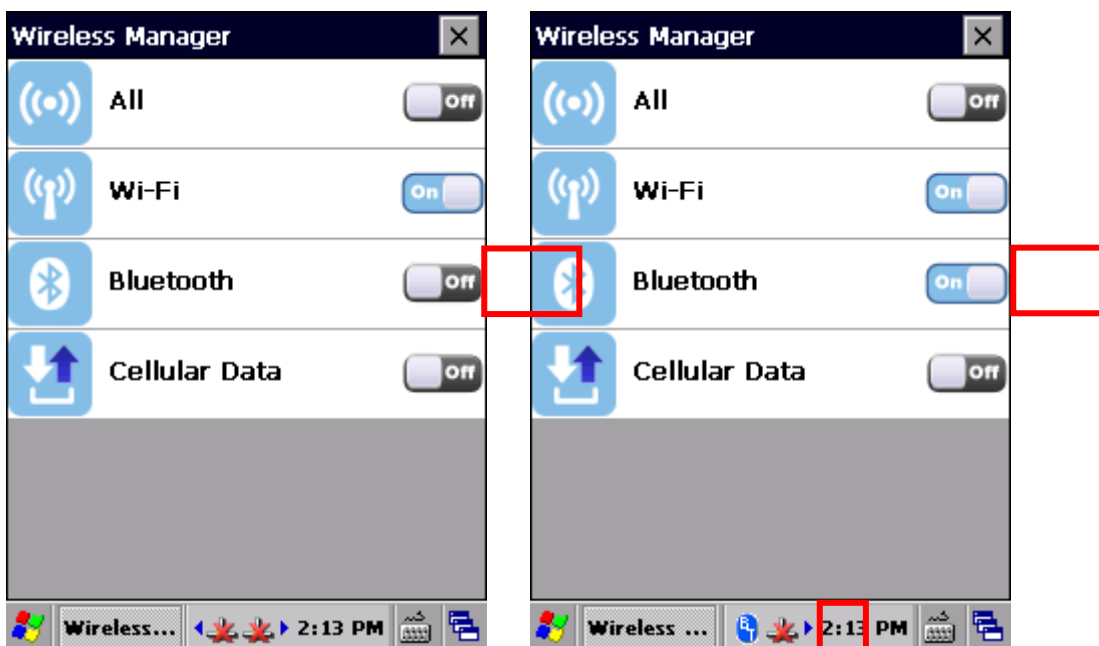
3) To turn off Bluetooth, tap the "on" icon to have it disabled. Once Bluetooth is disabled, the icon will disappear from the taskbar.

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

5.3.4. 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.

5.3.5. 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.
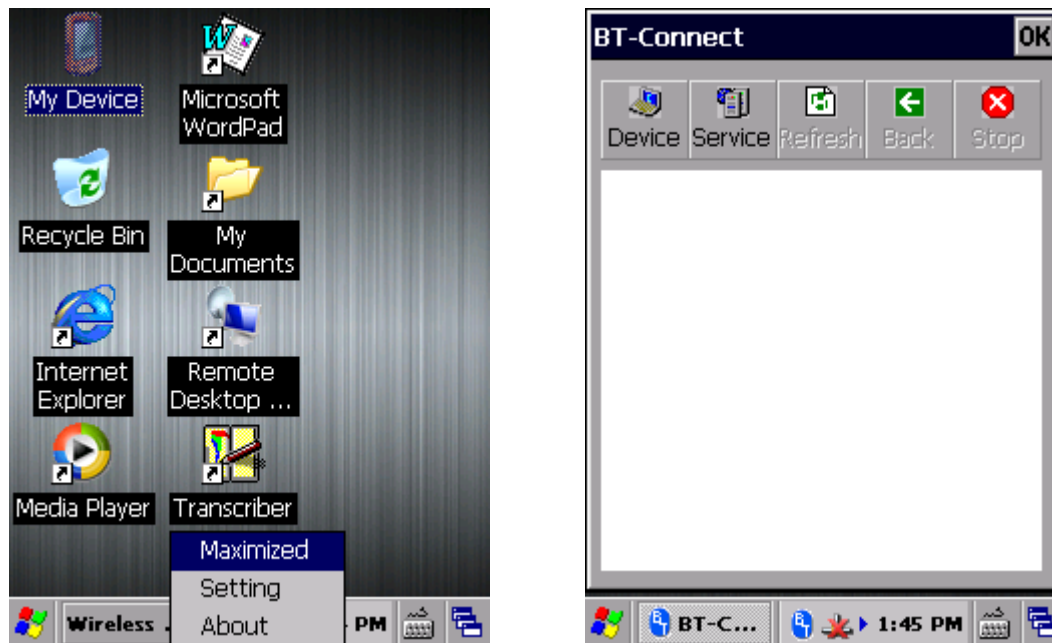
See below for a description of menu bar items and their functions:

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. <table><tr><td>Local path</td><td>Description</td></tr><tr><td>▸ \Temp\Ftp</td><td>▸ File Transfer (FTP)</td></tr><tr><td>▸ \My Documents\DefaultInbox</td><td>▸ Object Push (OPP)</td></tr></table>
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.

5.3.6. SEARCH FOR BLUETOOTH DEVICES

To search for a Bluetooth device to connect to:

1) Tap **Device** [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** [Refresh] to search for the device again.

5.3.7. PAIR BLUETOOTH DEVICES

IDENTIFY BLUETOOTH DEVICE

To check the identity of a Bluetooth device:

1) Open **BT-Connect** page as described in <u>Launch BT Connect</u>.
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.

2) Enter a pin code in the pop-up window that appears.
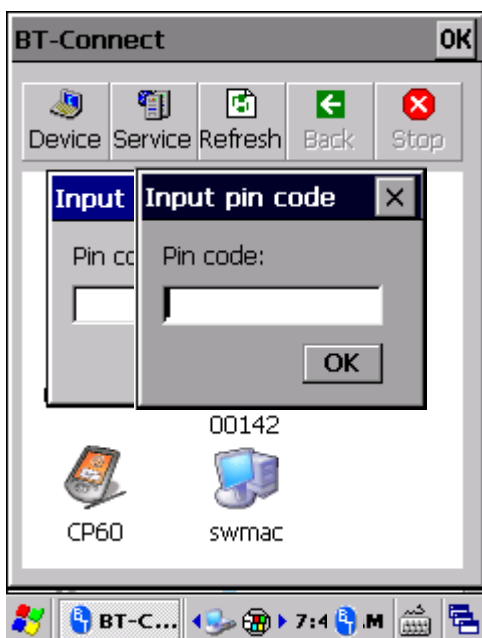
3) On the remote Bluetooth device, a prompt will show requesting you to enter the pin code. Enter it in order to confirm the Bluetooth partnership.

Once the mobile computer and the remote Bluetooth device are paired, a lock icon will be displayed next to the device.
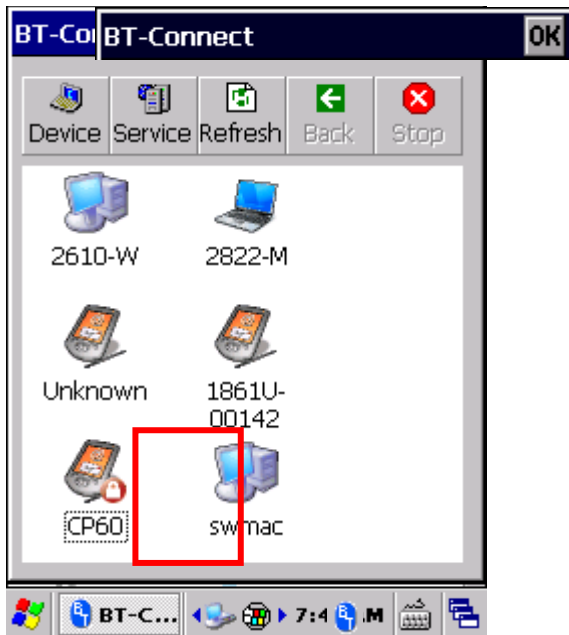
4) Double-tap the device to find out which Bluetooth services are available.

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.

5.3.8. 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.
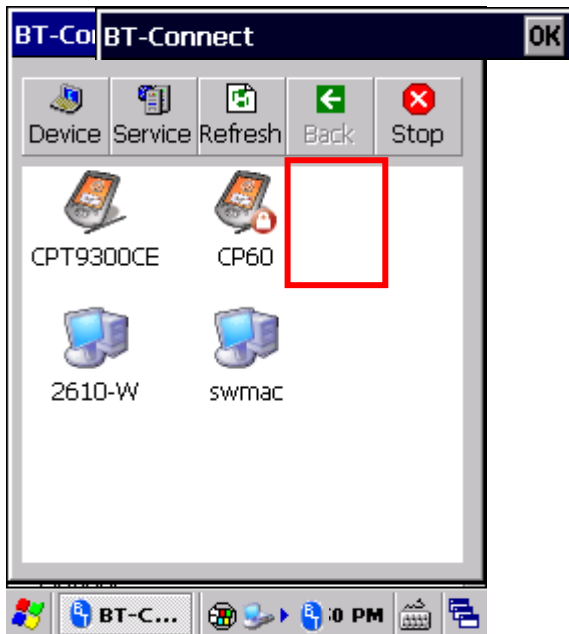
2) Tap and hold **FTP Transfer** and select **Open** in the pop-up menu.
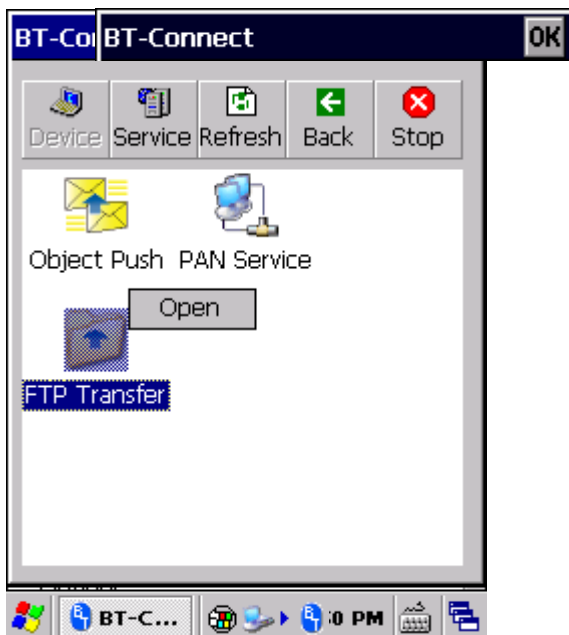
3) Tap and hold a blank spot on the page and select **Put File** in the pop-up menu.

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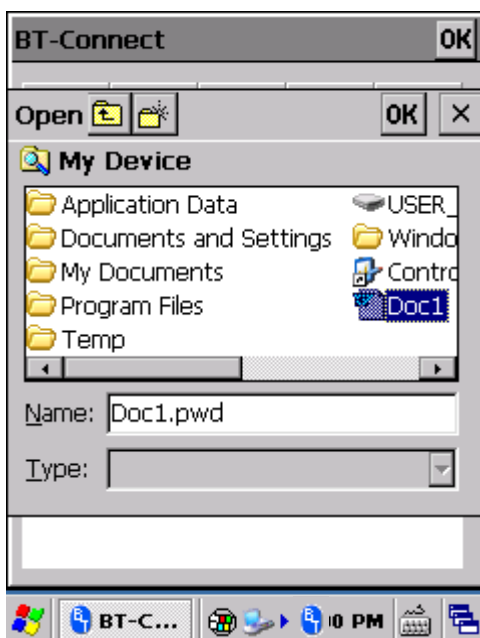
5) To store a transferred file to the specified local path on the mobile computer, tap and hold a file and select **Get File** in the pop-up menu.
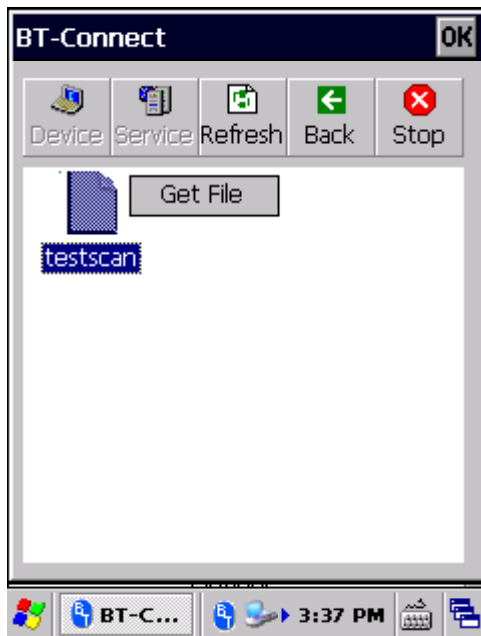
OBJECT PUSH

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.
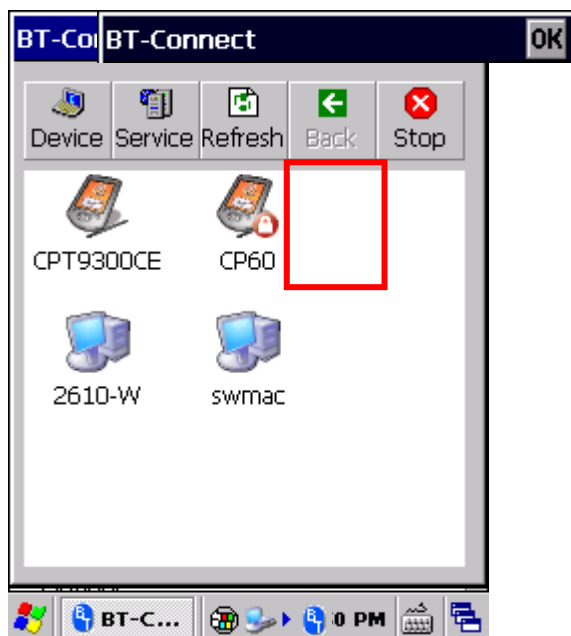
2) Tap and hold **Object Push** and select **Push File** in the pop-up menu.
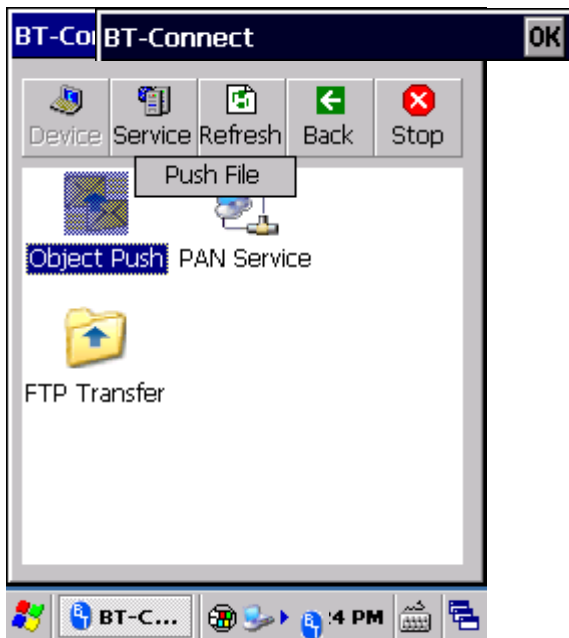
3) Select an object to transfer to the paired Bluetooth device. Wait for a few moments while the file transfers to the remote Bluetooth device.
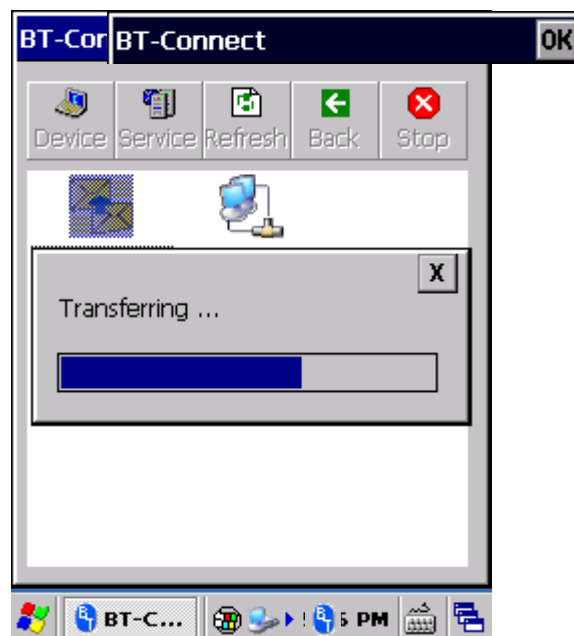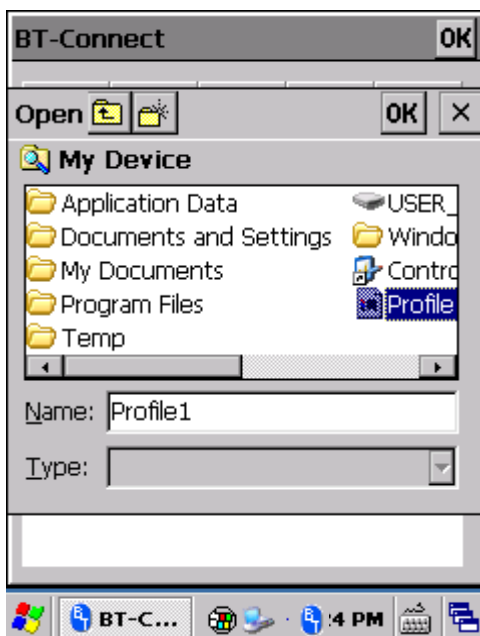
4) On the remote Bluetooth device, the object will be stored under the directory specified on **Service** page | **Object Push** | **Change Local Path**.

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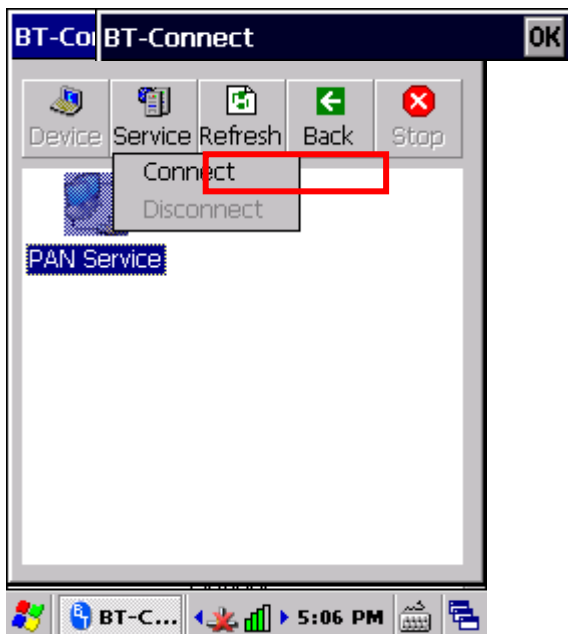
3) The paired Bluetooth device is then connected to mobile computer through PAN network.

SERIAL PORT SERVICE

To use Serial Port Service:

1) On the **Service** ![Service icon] page, check if the Bluetooth virtual COM port is occupied by the local SPP service (i.e. whether a green connection icon ![icon] is present). If so, tap and hold the service and select **Unload** in the pop-up menu.
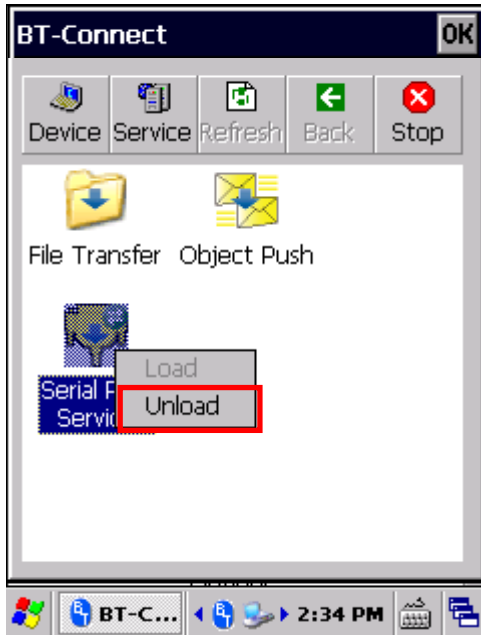
Note: The mobile computer provides one virtual COM port as the output or input port for Bluetooth. Before using the COM port for outgoing serial port (SPP) service, be sure to unload the local SPP service so the COM port is available for outgoing communication.

2) On the **Device** tab, double-tap the paired device to open a page showing the available services for that device.
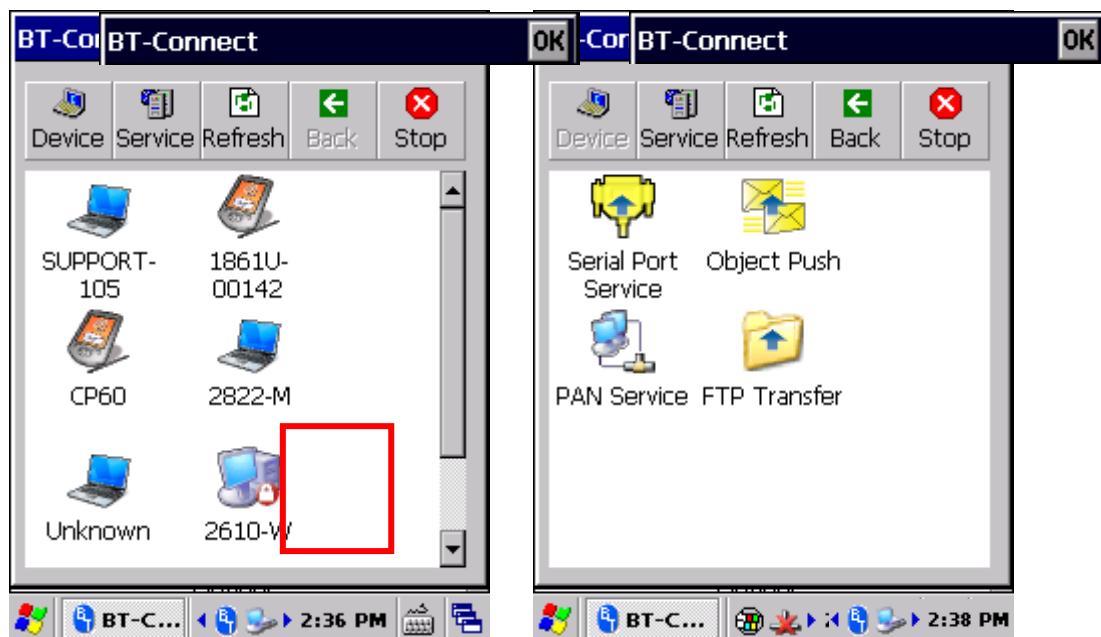
3) Tap and hold **Serial Port Service** and select **Connect** in the pop-up menu.
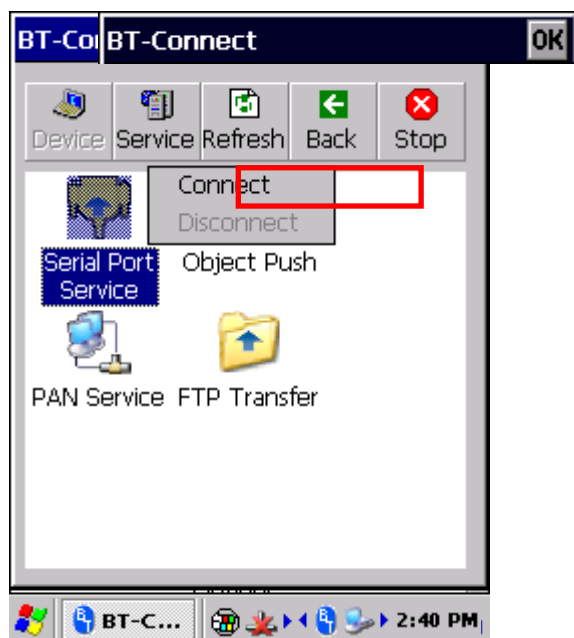
4) By default, the mobile computer uses COM6 as the Bluetooth SPP COM port. Tap **OK** in the pop-up window to confirm.
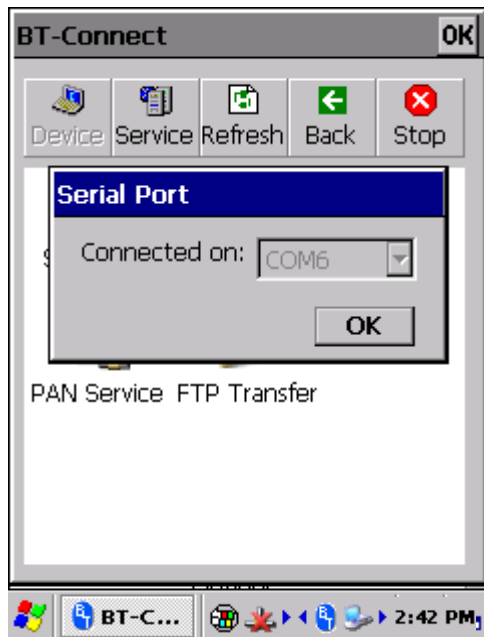
5) A connection icon appears to indicate that serial port service is now active.
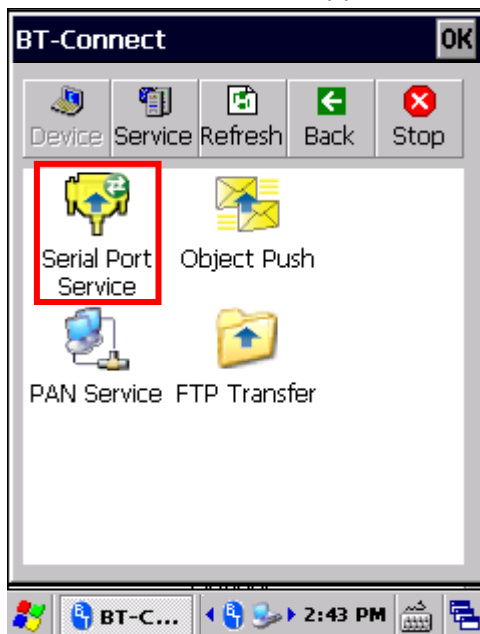
BLUETOOTH ACTIVESYNC

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.
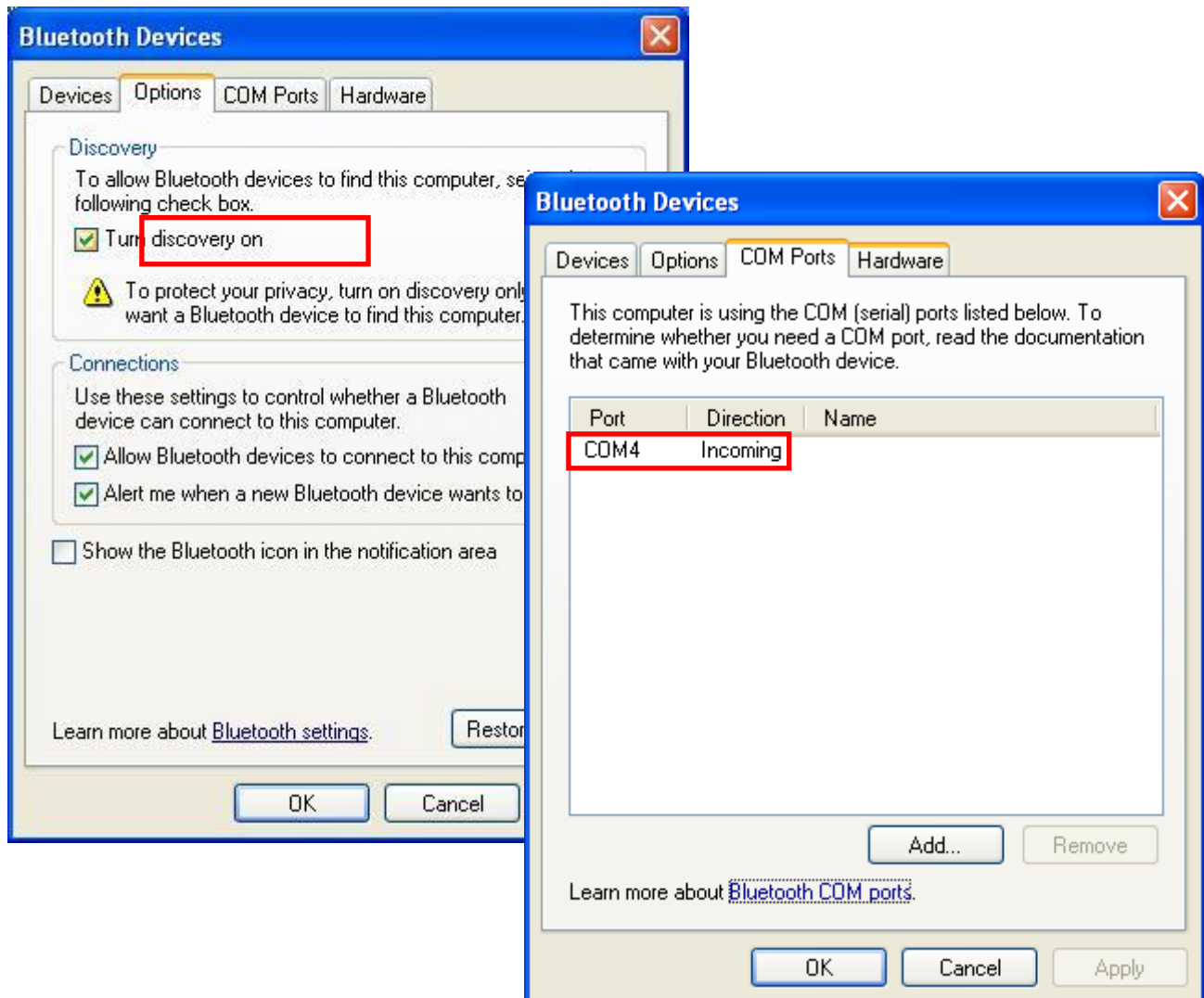
2) On the PC, open **ActiveSync** | **File** | **Connection Settings** and specify the COM port for incoming connection.
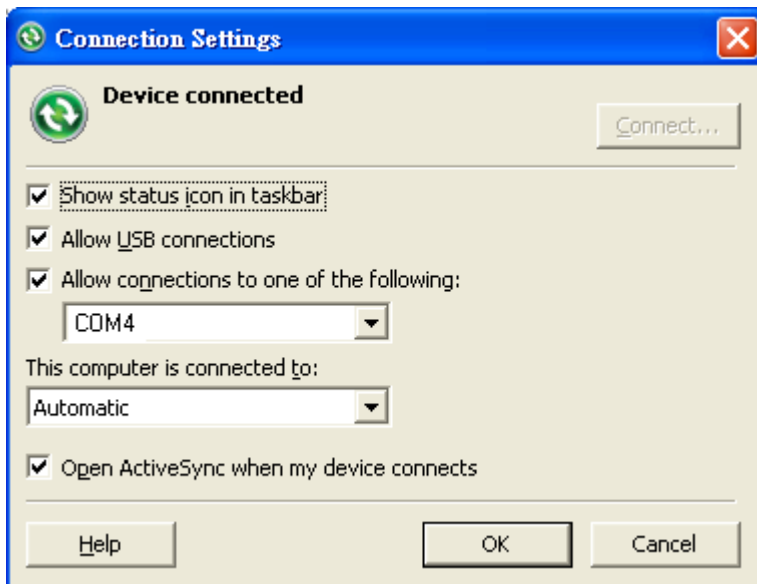
3) On the mobile computer, make sure <u>Serial Port Service</u> is enabled in **BT Manager**.
4) On the **Device** page, double-tap your PC to view its available services.
5) Tap and hold **Serial Port Services** and select **ActiveSync via BT** in the pop-up menu.

The mobile computer then connects to your PC via ActiveSync.
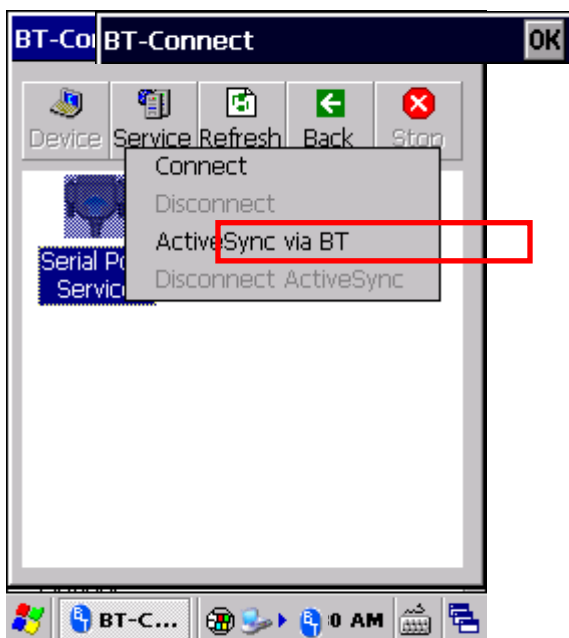
5.3.9. RE-CONNECTION

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** tabbed 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** tabbed 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 via 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.

5.3.10. PREFERRED SERVICES

On the **Device** tabbed 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.

5.3.11. 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.

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

An active service will have a connection icon [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.
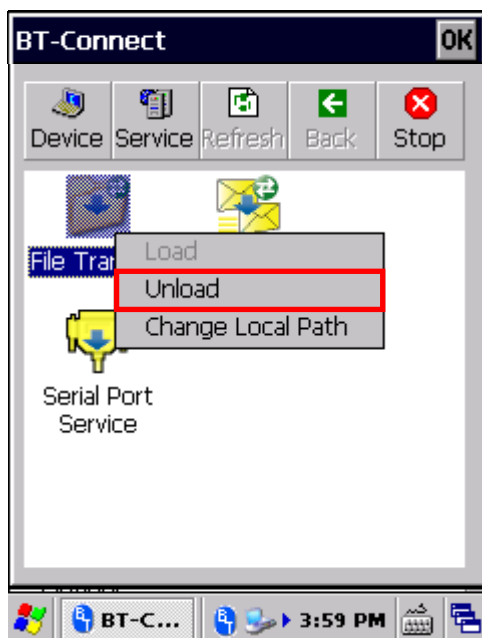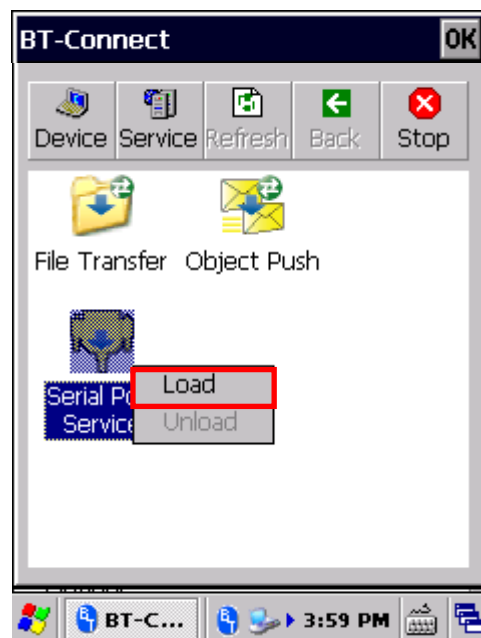
CHANGE LOCAL PATH

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

1) On the **Service** [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.
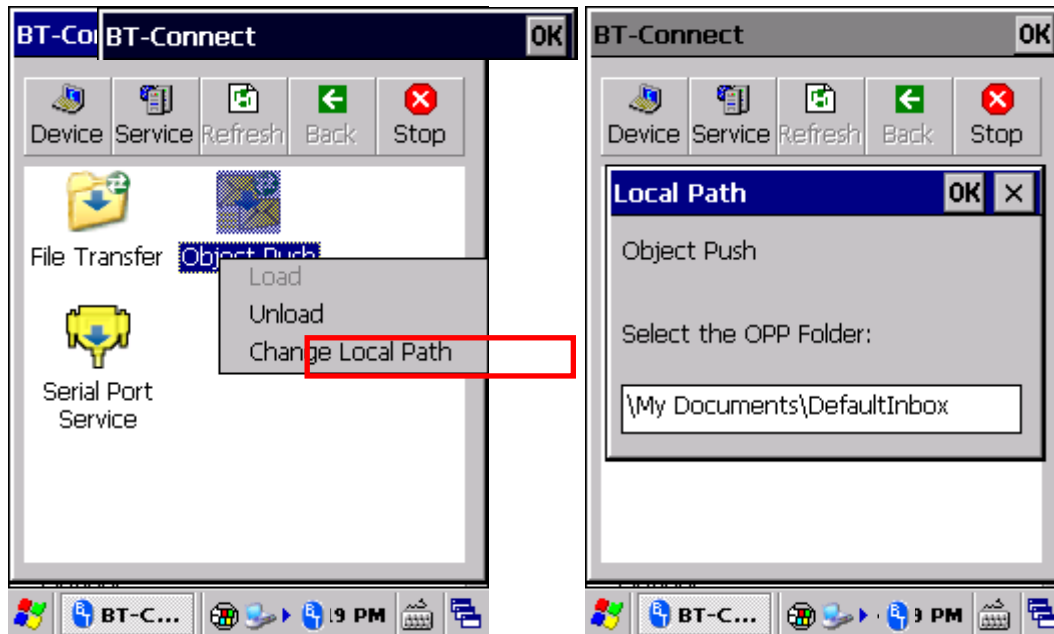
2) Tap **OK** to confirm the change.

5.3.12. 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.
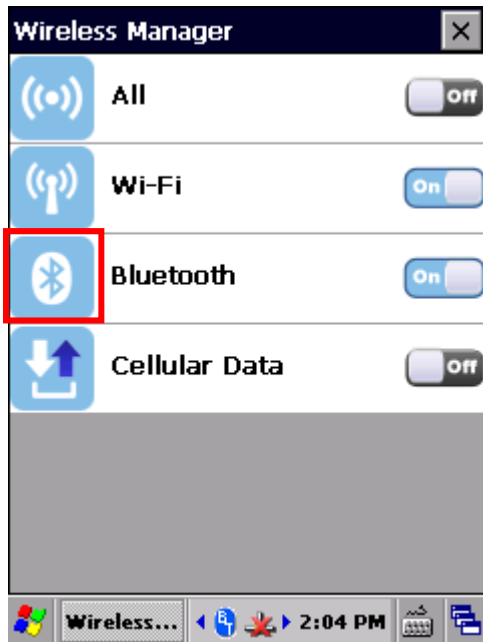
BT Manager window will open showing four tabbed pages: **General**, **Preference**, **BT-Connect** and **About**.
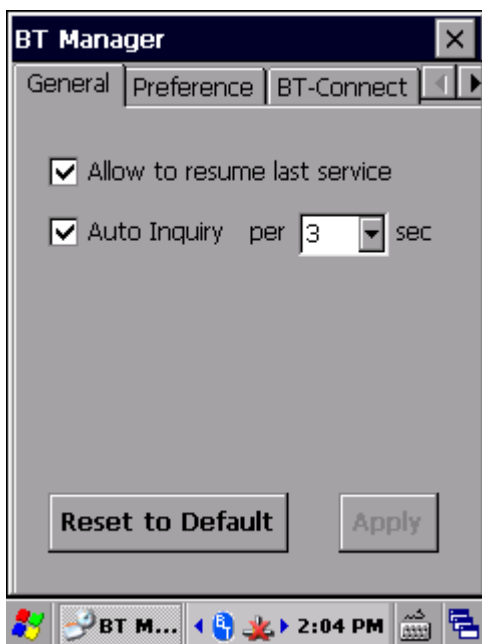
GENERAL TAB

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

Tap to restore default settings

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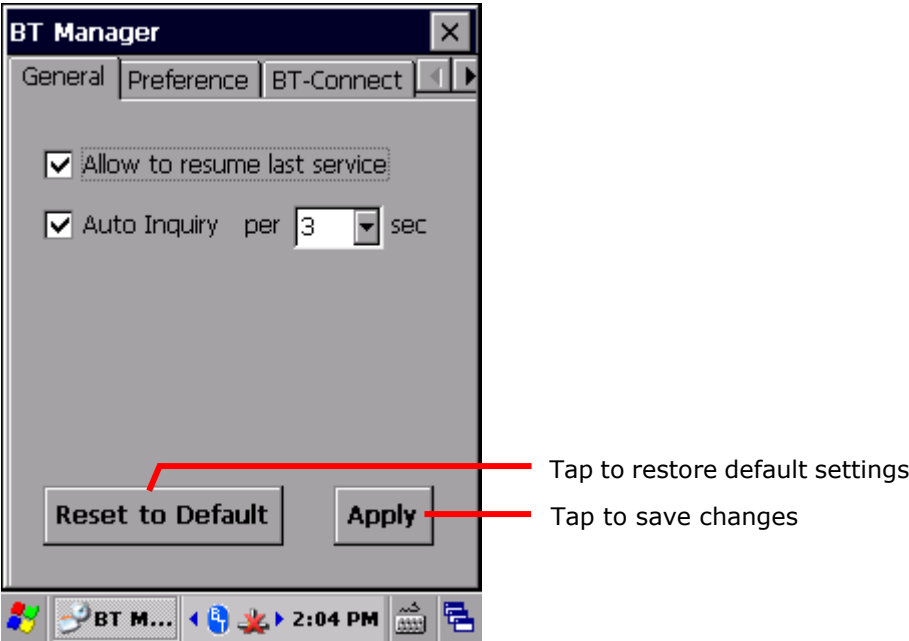
Setting	Description
Allow to resume last service	Select to automatically re-connect to all previous Bluetooth services after the mobile computer resumes from warm boot/cold boot, or goes through a Bluetooth power cycle.
Auto Inquiry per [ ] sec	Select to perform an inquiry on a remote device at a regular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

▶ Use Preference tabbed 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
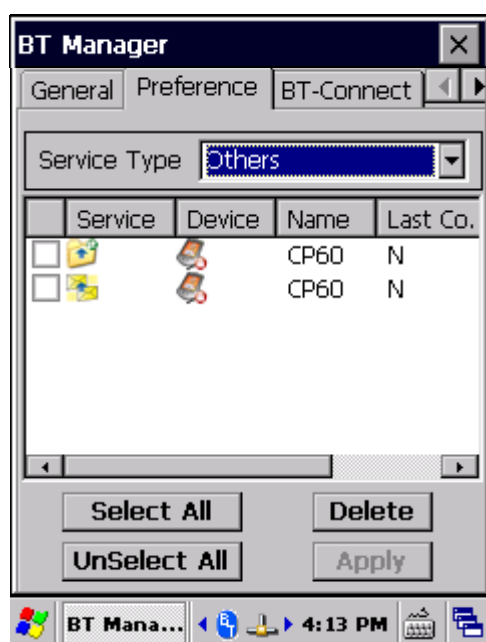
A grayed out icon indicates the service is currently unavailable
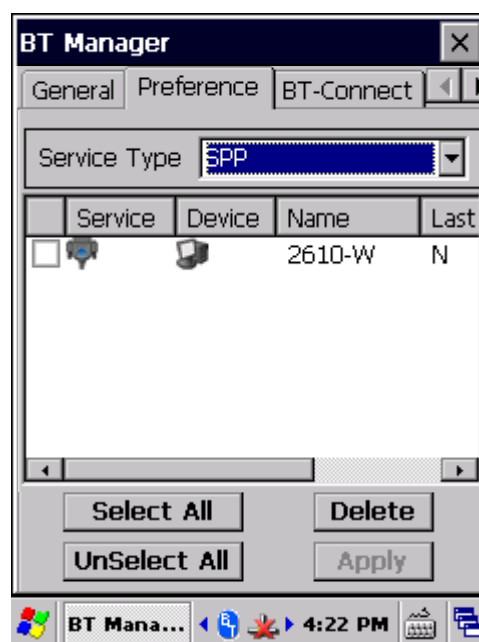
Setting	Description
Select All	Tap to select all the listed service(s).
Unselect All	Tap to deselect all the listed service(s).
Delete	Tap to delete the selected service(s). ‣ If a service is currently active, it cannot be deleted.
Apply	Tap to save any made changes.

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.
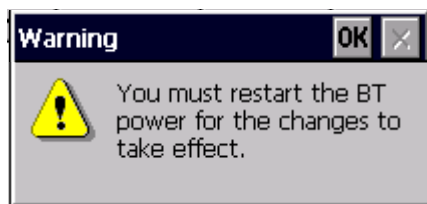
BT-CONNECT TAB

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

Tap to restore default settings

Tap to save changes
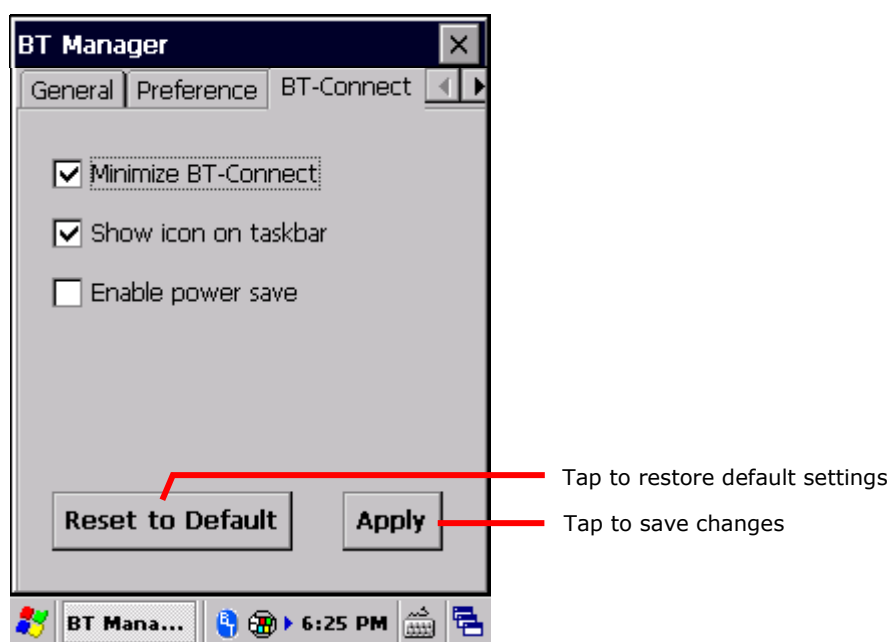
Setting	Description
Minimize BT-Connect	Select to have the **BT Connect** window minimized on the taskbar after it is launched to continue providing Bluetooth services.
Show icon on taskbar	Select whether to display the Bluetooth icon on the taskbar when **BT Connect** is running.
Enable power save	Select 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.

5.4. USE GPS

Adorned with a GPS module, the mobile computer is capable of finding your location on earth. GPS relies on the satellites covering the sky around the world to pinpoint your whereabouts.

A location-aware application is necessary, such as CipherLab's GPS Viewer for NMEA-based location discovery. There are other applications downloadable from Internet. Download ".cab"-suffixed programs that confirm the compatibility with Windows Embedded Compact 6.0. Note always download programs from trusted sources.

As GPS is a big power consumer, close GPS application when you are not using it.

5.4.1. LAUNCH GPS

The OS doesn't feature any facility to turn on/off GPS module but a GPS intermediate driver (hereinafter "GPSID"), a software layer between GPS hardware and GPS software to stream GPS data from hardware to software without parsing NMEA syntax and in the meanwhile enable multiple applications to simultaneously access GPS data.

Hence the approach to turn on the GPS module is to launch a GPS software or a location-aware application on the mobile computer, as the software COM port for GPS turns on when the application is open.

ADD **1**   **A**DD   **A**DD

Software (GPD1)

Multiple GPS applications can obtain GPS data captured by the GPS hardware through the same default COM port.

GPS Software

GPS Intermediate Driver

GPS Hardware

Hardware COM port unknown (needs manual setup)

Hardware (COM 9)

External GPS receiver
To use an external GPS receiver, a hardware COM port must be set up for it.

Built-in GPS receiver
COM 9 is the default COM port for the built-in GPS receiver.

For usage of GPS software, see CipherLab provided GPS Viewer.
For location discovery with the assistance of an external GPS receiver, see Use Bluetooth for establishing partnership with a Bluetooth device.

MORE APPLICATIONS

Aside from the dedicated Reader Configuration which empowers the mobile computer's with a specialty in data capture as mentioned in <u>Data Capture</u>, 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.
GPS Viewer	Discovers locations.
Signature Utility	Captures, views, edits signatures.
Push to Talk	Transmits real-time audio content through wireless connection.

IN THIS CHAPTER

6.1.   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 (which can be entered by pressing the Function Key) can also be re-defined.

6.1.1. LAUNCH BUTTON ASSIGNMENT

To launch button assignment:

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

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

The Normal Mode tabbed 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.
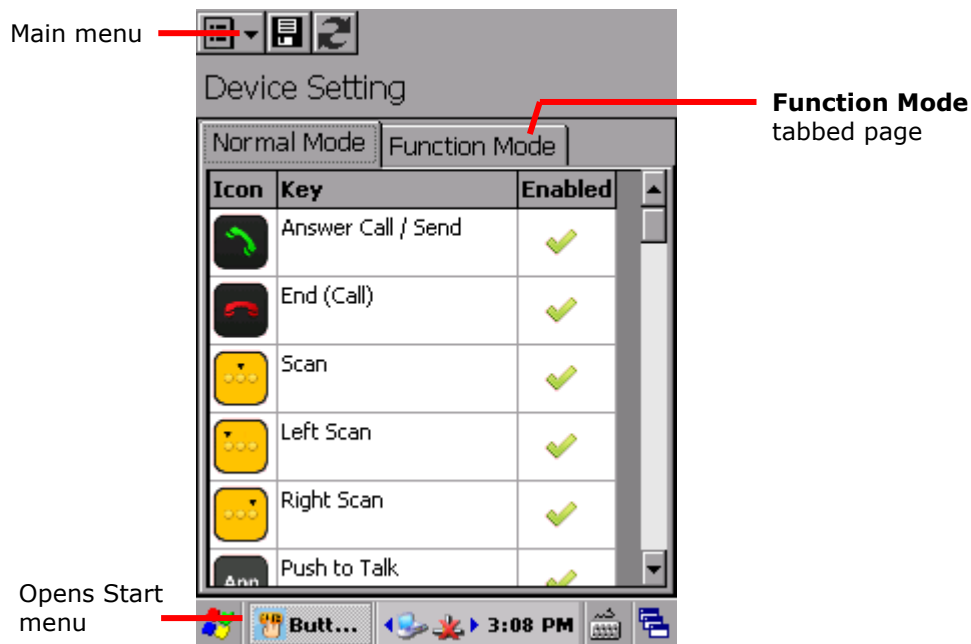
TOOLBAR

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.

6.1.2. 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.

Tap to discard the changes

Tap to save the changes

Default setting for a key

Assign a new function to the key

Launch an application by pressing the key

Send a Windows event by pressing the key

Opens onscreen keypad
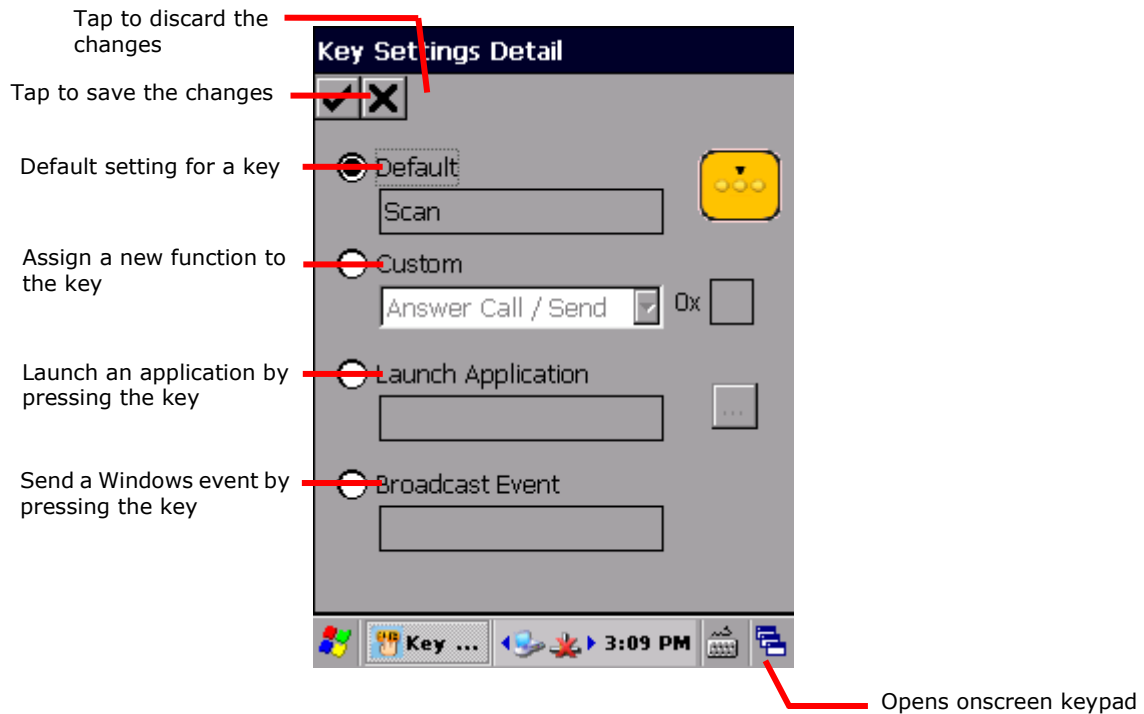
Item	Value
Default	Sets the key function back to factory default.
Custom	Provides a drop-down list to select the preferred function for the specific key. (Options available differ with the key.) Either select a pre-defined function, or select ""User define" and enter a valid ASCII key code (0x00~0xFF) 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 .
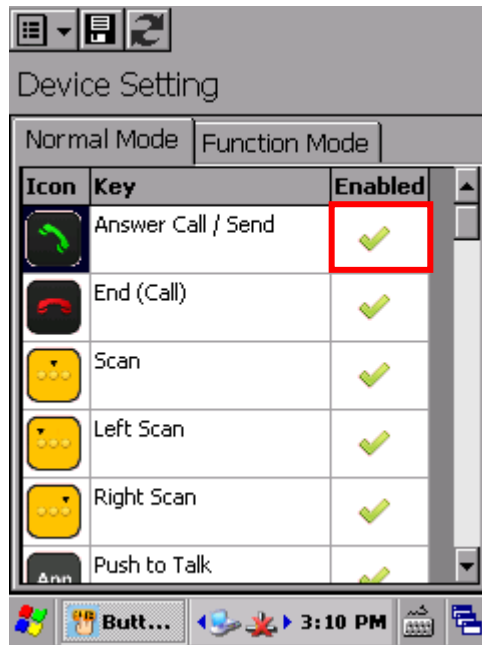
Tap the "Enabled" column to enable or disable the indicated function.
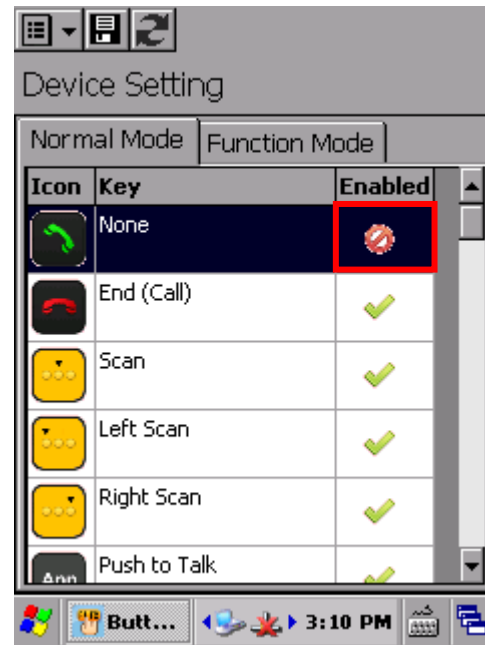
Once keys are disabled, the icon changes and the function for that key will appear as "None".

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.

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6.1.3. 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.

Browse to the profile and tap to have it imported
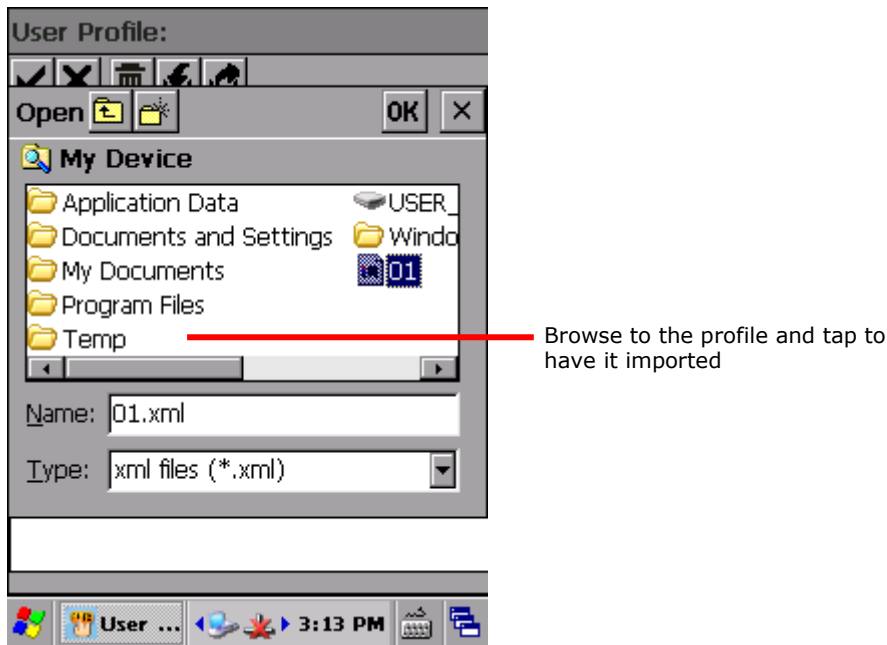
OR

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

Specify the location and file type for the profile to export

Enter a name for the profile to export
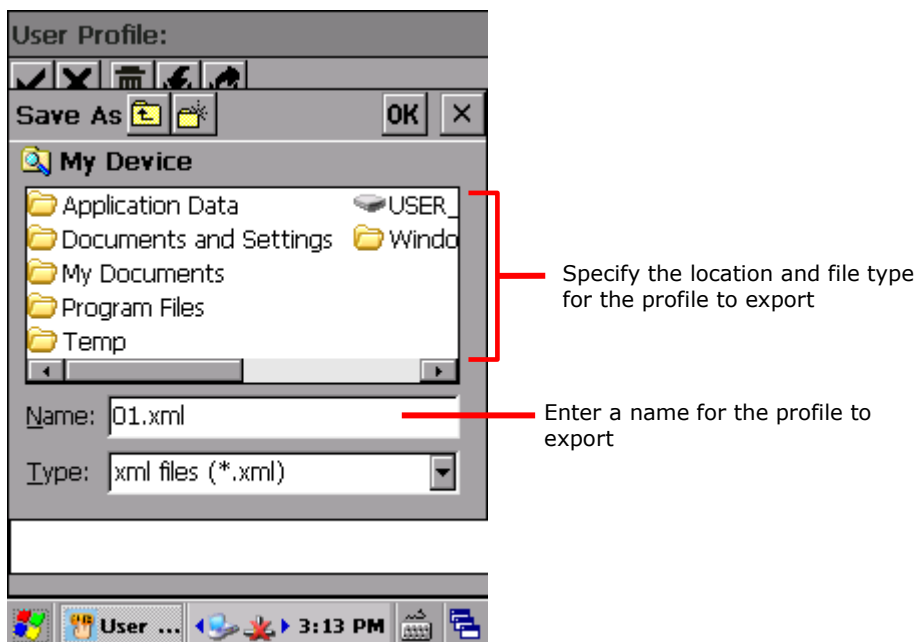
Note: The **All Folders** directory refers to all folders under **My Device\My Documents**. If no subfolder is selected upon export, the exported file will be stored directly under this directory.

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.
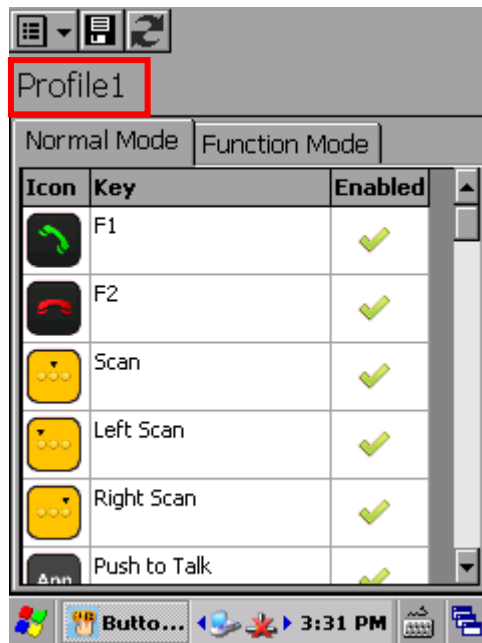
When a new profile is created and saved, the profile name will appear at the top left of the page.
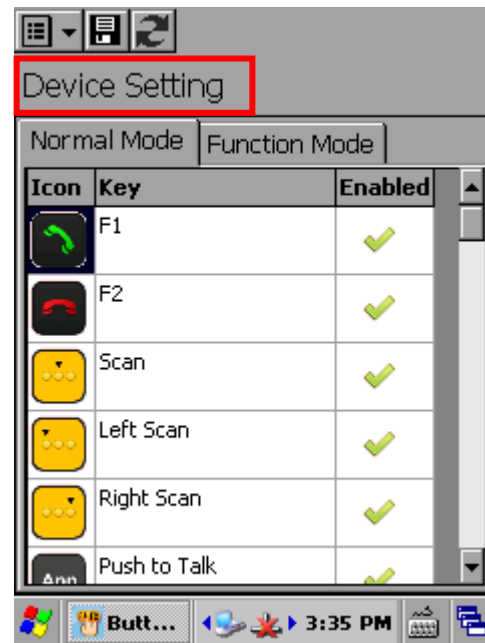
After the profile is "written to the device", the profile name will be replaced with "Device Setting" the next time the application is opened, or when **Read from device** is tapped.

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 ▦.

6.1.4. KEYPAD MODES

Both the numeric and QWERTY keypad provide two different modes, normal mode and function mode. To enable the function mode, simply press the Function key . For behaviors of the Function key, see Function Key.

NUMERIC KEYPAD

Button	Normal mode	Function mode	General options	Special options (Normal mode only)
(Send key)	Answer Call / Send	Start Menu	Answer Call / Send	
(End key)	End (Call)	OK	End (Call) Start Menu OK	
(Scan)	Scan	N/A	Home End Left	Camera Push to Talk User define
(Left Scan)	Left Scan	N/A	Right Up Down	Camera Push to Talk User define
(Right Scan)	Right Scan	N/A	Page Up Page Down Volume Down	Camera Push to Talk User define
App	Application	N/A	Volume Up Increase Backlight Brightness	Camera Push to Talk
Volume Up	Volume Up	N/A	Decrease Backlight Brightness	
Volume Down	Volume Down	N/A	Backspace Enter	
<	Left	Home	Esc Tab	
>	Right	End	Shift -	
^	Up	Page Up	. *	
v	Down	Page Down	# ! @	
←	Backspace	Lock	$ %	
↵	Enter	Enter	^ &	
ESC	Esc	Esc	( )	
tab	Tab	Tab	1, 2, 3.....9, 0	
*/-	[*] Asterisk key	Increase Backlight		

		Brightness	F1-24	
	[-] Hyphen key	N/A	User Define	
	[.] Period key	N/A		
	[#] Number key	Decrease Backlight Brightness		
	Keys 1, 2, 3…..9, 0	--		
	--	F1-12		

QWERTY KEYPAD

Button	Normal mode	Function mode	General options	Special options (Normal mode only)
(Answer/Send)	Answer Call / Send	Start Menu	Answer Call / Send End (Call) Start Menu 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	
(End)	End (Call)	OK		
(Scan)	Scan	N/A		Camera Push to Talk User define
(Left Scan)	Left Scan	N/A		Camera Push to Talk User define
(Right Scan)	Right Scan	N/A		Camera Push to Talk User define
App	Application	N/A		Camera Push to Talk
Volume Up	Volume Up	N/A		
Volume Down	Volume Down	N/A		
<	Left	Home		
>	Right	End		
^	Up	Page Up		
v	Down	Page Down		
Backspace	Backspace	Lock		
Enter	Enter	Enter		
ESC	Esc	Esc		
Tab	Tab	Tab		
Space	Space	Space		
&0	[&] Ampersand key	--		
.	[.] Period key	Increase Backlight Brightness		

	[.] Comma key	Decrease Backlight Brightness	

Keys A-Z   --

--   F1-24

Note: (1) Direct keys (scan key, side trigger keys, volume up/down keys, Application key) on the mobile computer are available for re-assigning only under normal mode.

(2) Several of the direct keys provide special functions under normal mode. These special functions include Camera and User Define.

6.2. GPS VIEWER

The mobile computer includes a GPS module (GPS hardware). This module communicates with the Global Positioning System and discovers your location on earth if it has a piece of GPS software to work with. The GPS module turns on automatically once GPS software launches on the mobile computer.

GPS Viewer is preinstalled GPS software that streams NMEA-based data from the GPS hardware through GPSID. Any GPS software on the mobile computer receives data from GPS hardware through COM port GPD1. Therefore, when GPS viewer is launched, GPD1 opens and readies to stream data on the mobile computer.

6.2.1. LAUNCH GPS VIEWER

To launch GPS Viewer:

1) Tap **Start** | **Programs** | **GPS Viewer** .

   GPS Viewer opens showing **Status** tabbed page. GPS module turns on.

   If there is a clear view of the sky, the built-in GPS module auto-searches for available satellites and gets the mobile computer's current location. When finished, time, location, signal-to-noise ratio (SNR) and other positioning information then display on-screen.
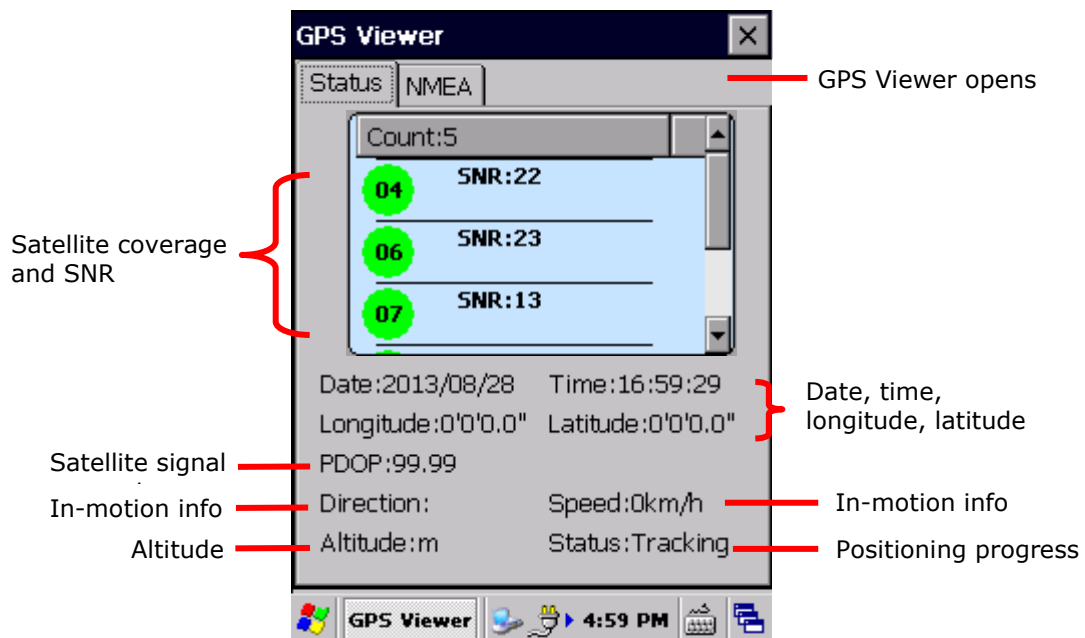
- ▸ Red for no signal   (< 9 dB)
- ▸ Green for fair signal strength   (10 ~ 29 dB)
- ▸ Blue for strong signal strength   (30 ~ 50 dB)

Item	Description
Date, Time	Current date and time.
Longitude, Latitude, Altitude	Together they deliver the user's location on earth.
PDOP	Positional (3D) Dilution of Precision, an indicator about the relationship between the error in user position and the error in satellite position. ▸ Small PDOP value indicates good positioning. Values greater than 7 are considered poor
Direction	Direction when user is in motion.
Speed	Relative speed when user is in motion.
Status	Delivers positioning progress. ▸ Depending on the number of visible satellites, the status changes from "Tracking" to "2D Fix" to "3D Fix". Under 3D Fix, latitude, longitude and altitude information are all obtained.

Note: (1) To use an external Bluetooth GPS receiver with GPS Viewer, see Use Bluetooth.
(2) To speed up initial startup, download the ephemeris. See GPS Manager for details.

6.2.2. VIEW NMEA-BASED DATA

The data standard for GPS communication is NMEA. NMEA uses a simple serial protocol to define data syntax. GPS Viewer enables viewing such NMEA data streamed from GPS hardware to software (the application layer). To view NMEA data:

1) Launch GPS Viewer as described in <u>Launch GPS Viewer</u>.

   GPS Viewer opens showing **Status** tabbed page.

2) Tap **NMEA View** tab.

NMEA View tabbed page opens.
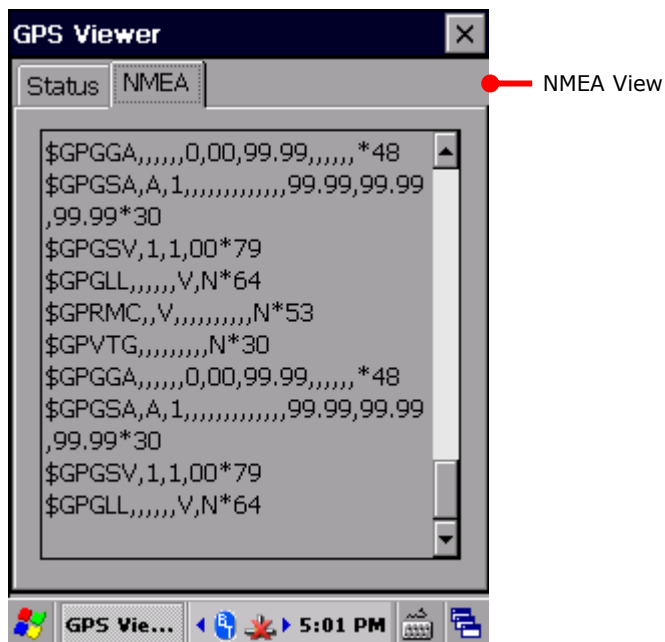
6.3.   SIGNATURE UTILITY

Signature utility captures, views and edits signature files.

6.3.1. 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.
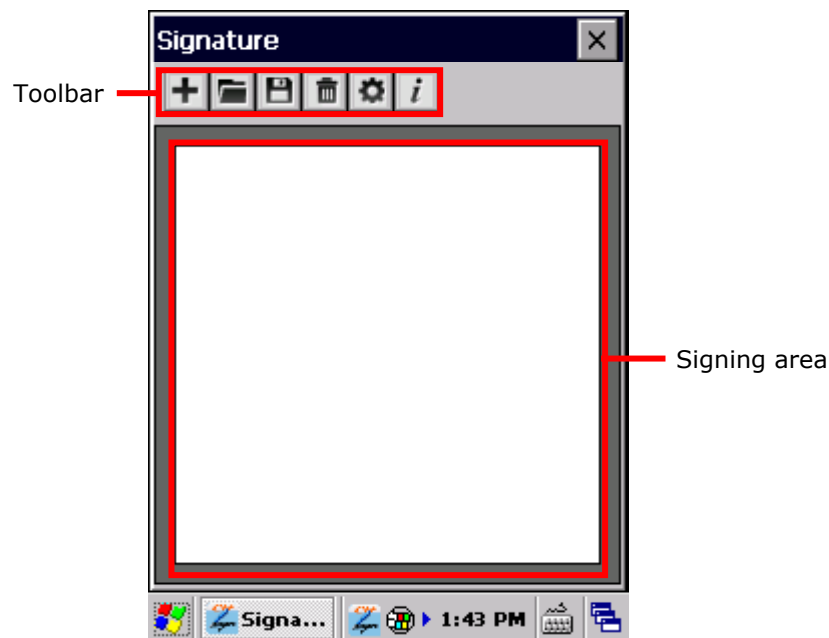
TOOLBAR & SIGNING AREA

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.

6.3.2. CAPTURE SIGNATURE

To capture a signature:

1) Launch Signature utility as described in <u>Launch Signature Utility</u>.

   Signature utility launches.

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

Put your name in the signing area
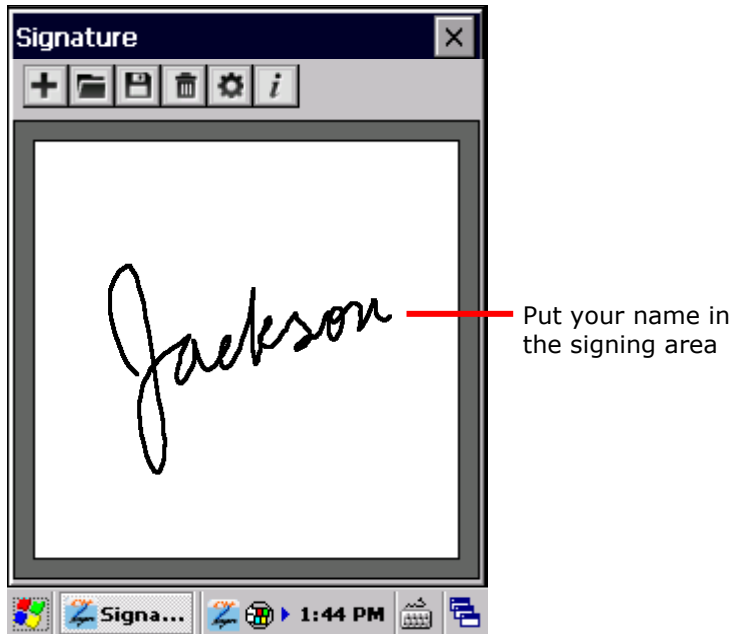
3) Tap 💾 icon to save the signature as an image in BMP, JPG or Locus format.

OR

   Tap 🗑 icon to discard the signature and sign again.

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

6.3.3. 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 <u>Launch Signature Utility</u>.

   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:

(1) 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.

(2) The **All Folders** directory refers to all folders under **My Device\My Documents**.

6.3.4. 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 <u>Launch Signature Utility</u>.

   Signature utility launches.

2) Tap ⚙ icon on toolbar.

   Preferences settings open showing **Pen Width** tabbed page.
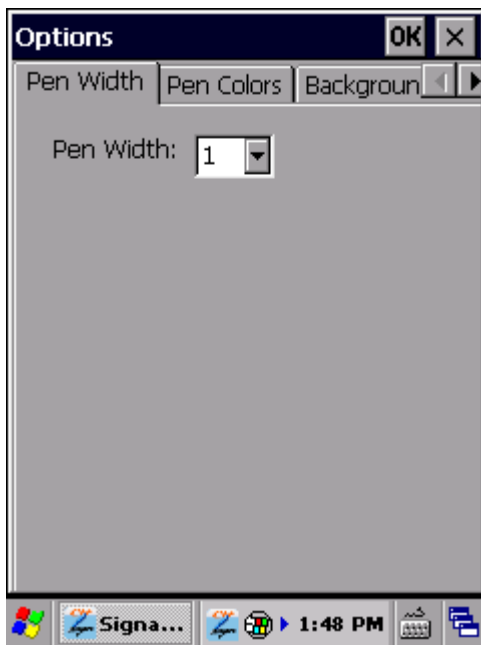
3) Select between **Pen Width**, **Pen Colors** and **Background Colors** tabs to customize signing preferences.

4) Tap the "OK" command to save changes, or tap **CANCEL** label to quit settings without saving changes.

6.4.   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.

6.4.1. 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.

Menu bar

Push button; press to start transmitting
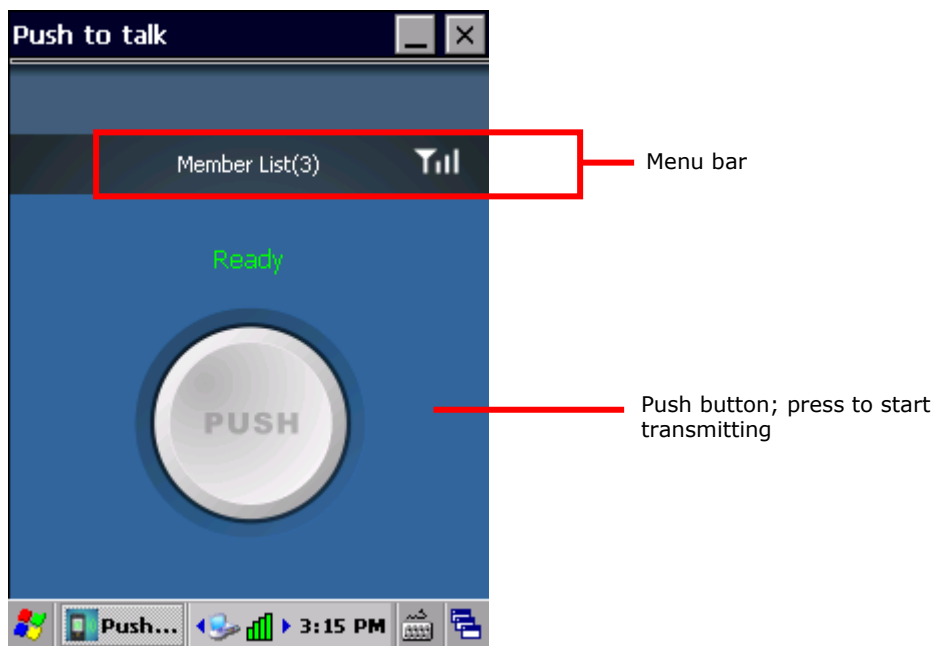
OPERATION MODE

According to the operation mode selected in PTT Configuration, 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.

6.4.2. 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 <u>Use Wi-Fi</u>. Make sure these access points belong to the same subnet.

2) On all of the devices, launch Push to Talk as described in <u>Launch Push to Talk</u>.

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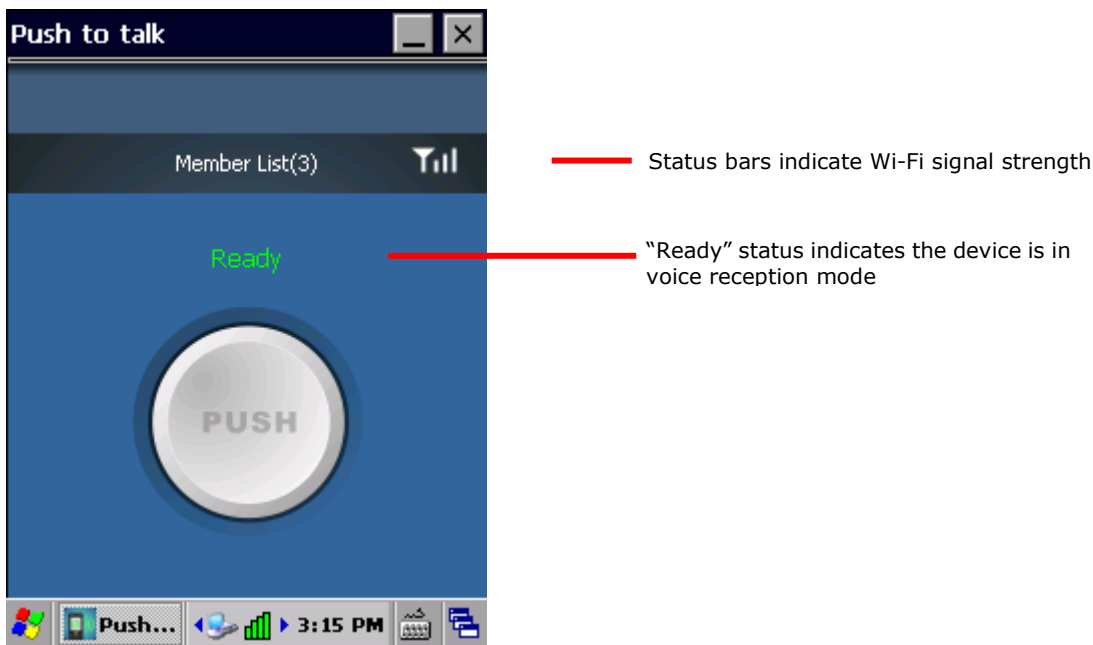
3) Tap and hold the **PUSH** button. The button will turn red to indicate the device is ready for transmission. You can start talking into the receiver to transmit your message to all other devices in the group.

"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.
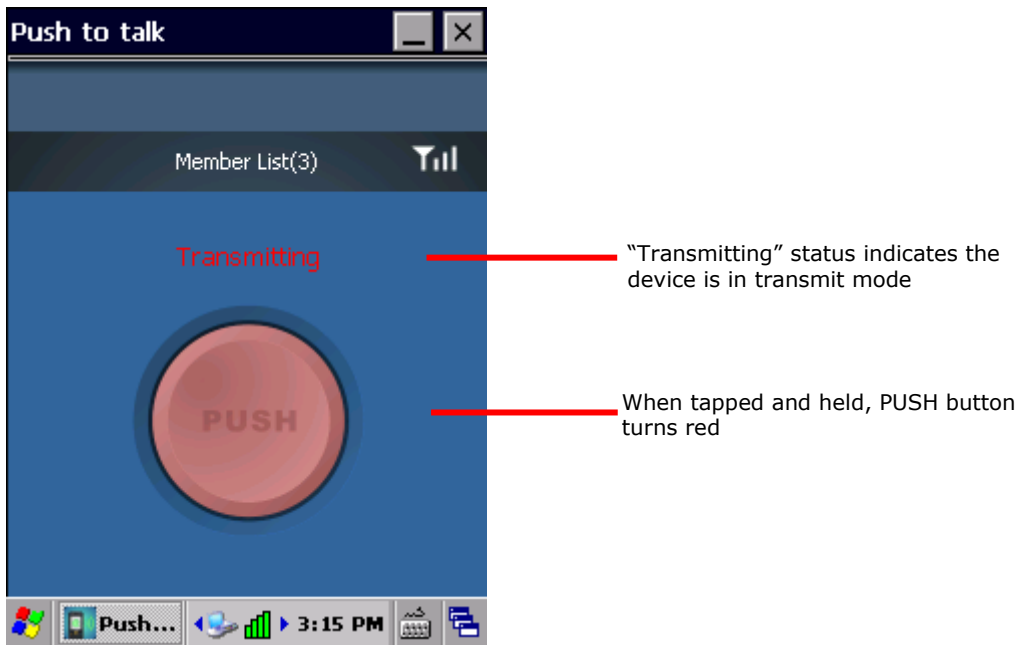
RECEIVING AUDIO CONTENT

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.

The device sending out audio content shows on-screen

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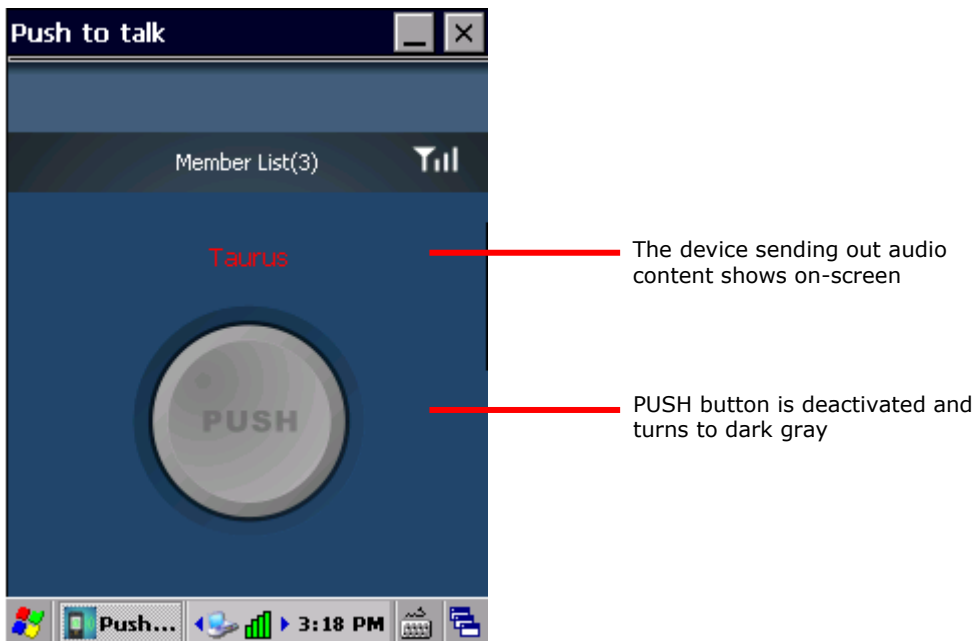
3) As long as Push to Talk is running on the system, it is still open to receive audio messages from other devices even if it is not the active application on-screen. If you are working on other tasks or applications, the mobile computer will still receive audio messages once they are transmitted.

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 to open Member List

Shows all other devices in the current group
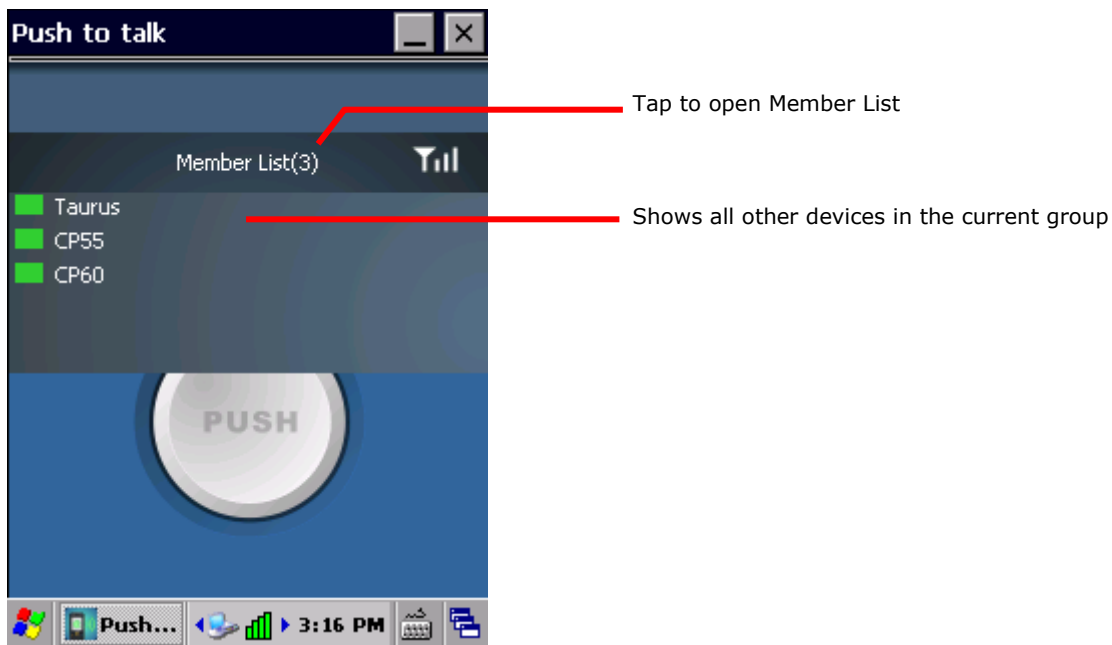
Tap **Member List** again to close the list.

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
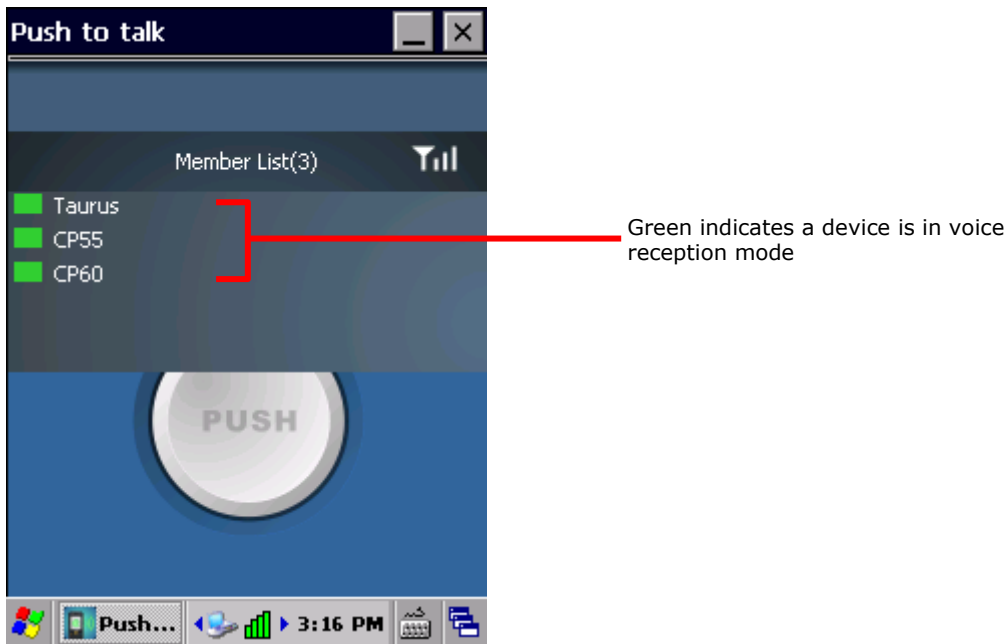
ACTIVE AND PASSIVE TRANSMIT MODES

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
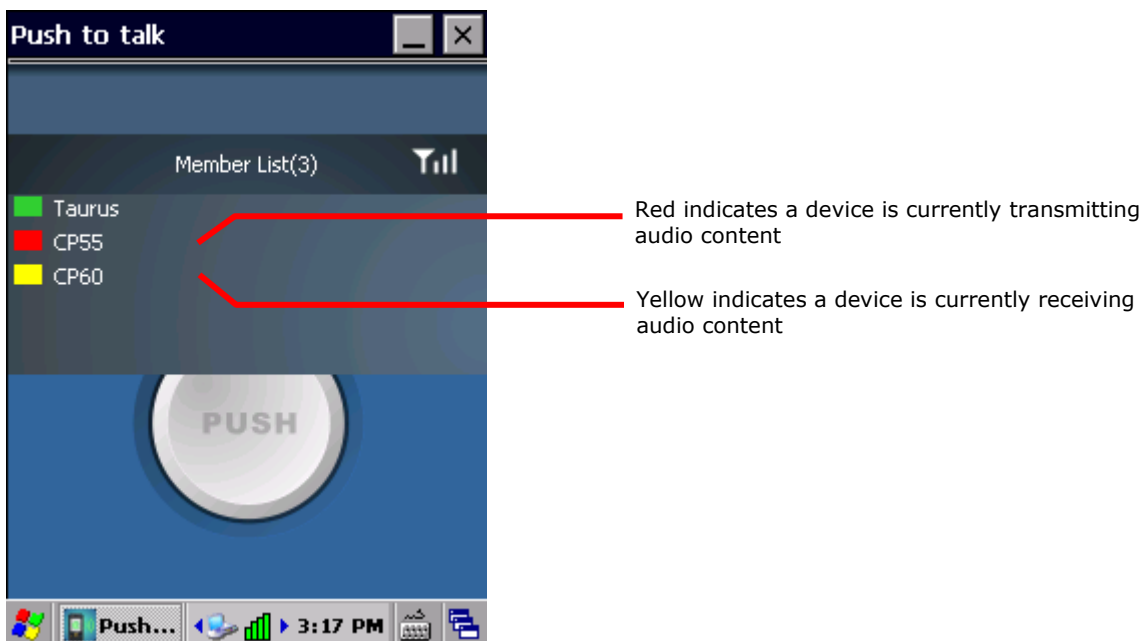
DEVICE DISCONNECTED

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.

The number of connected devices changes on the **Member List** label

Gray indicates a device is disconnected
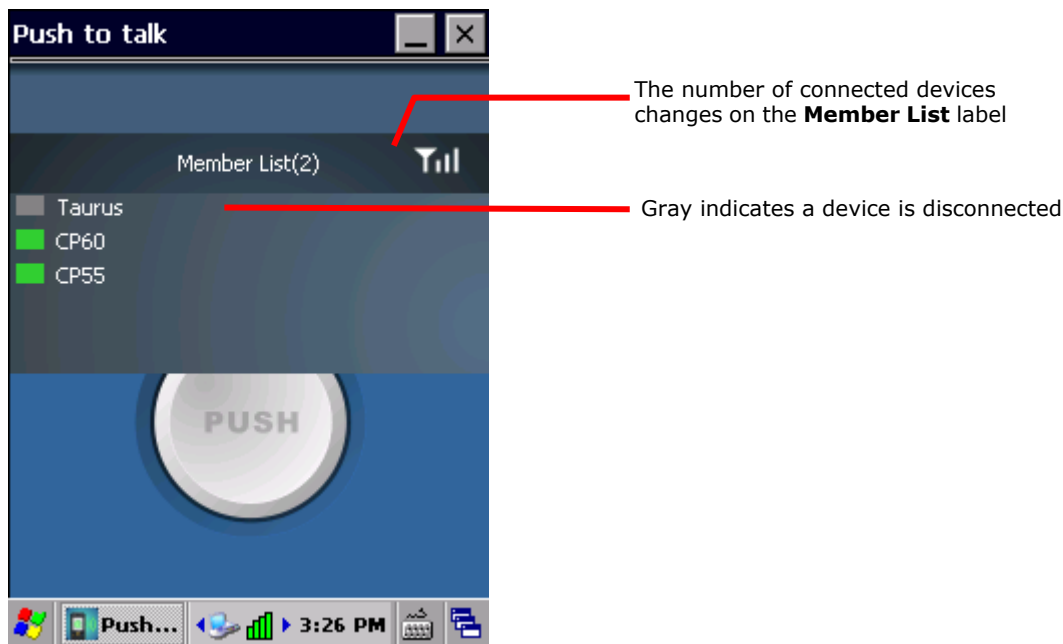
CHANGING DEVICE NAME

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 7

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.

7.1.　UPDATE OS IMAGE

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

7.1.1.　OS UPDATE VIA MOBILE DEPLOYMENT SYSTEM

The CipherLab **Mobile Deployment System** will load the selected OS image and the hidden partition files 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 the OS 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.

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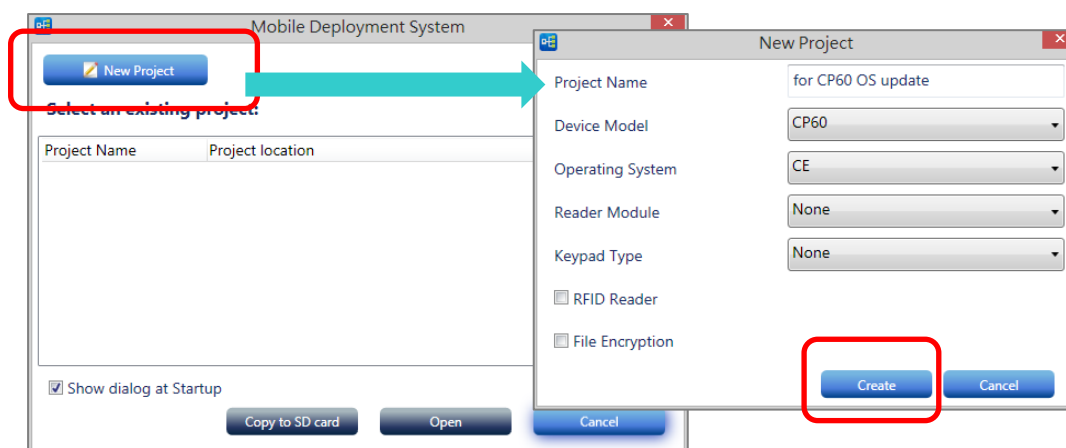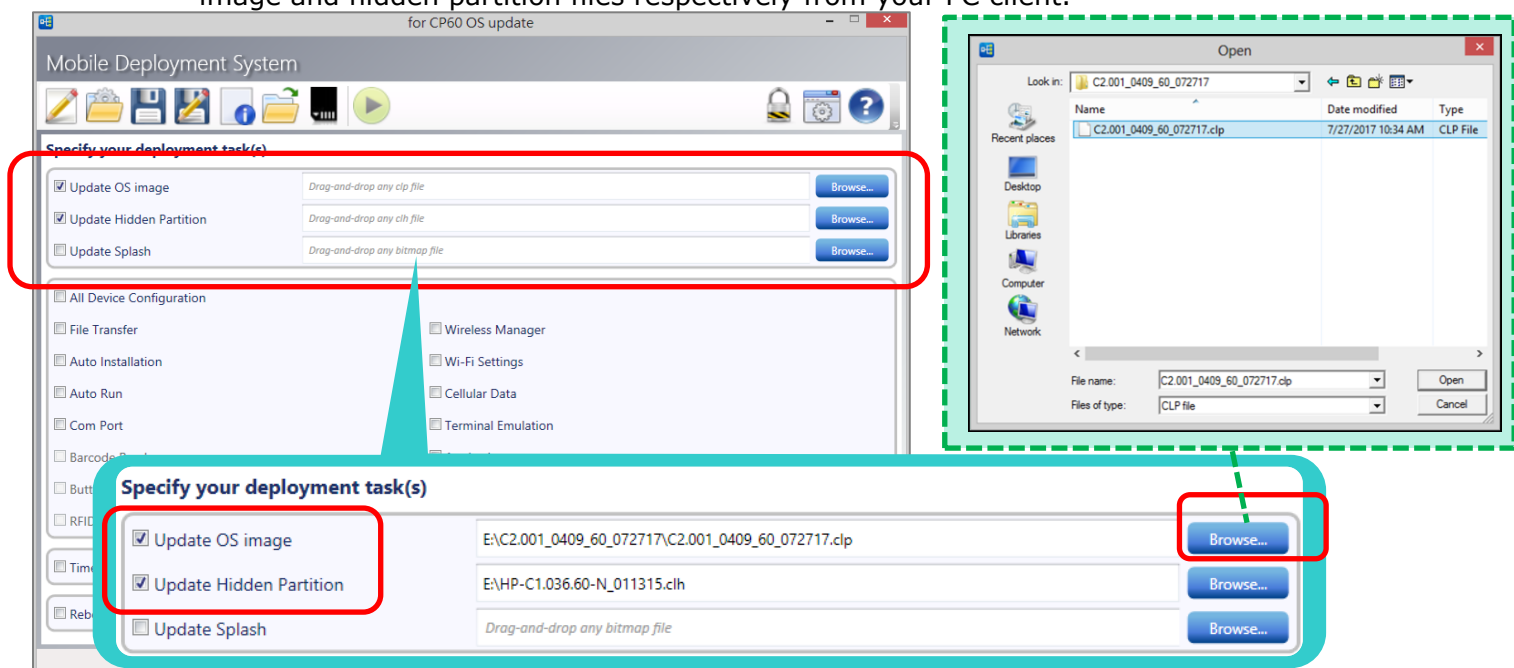
4) Power on the mobile computer and connect it to your PC through a Snap-on Cable or Cradle. Once "**Deploy**" button on the taskbar changes from ▶ to ▶ , the device is successfully connected.
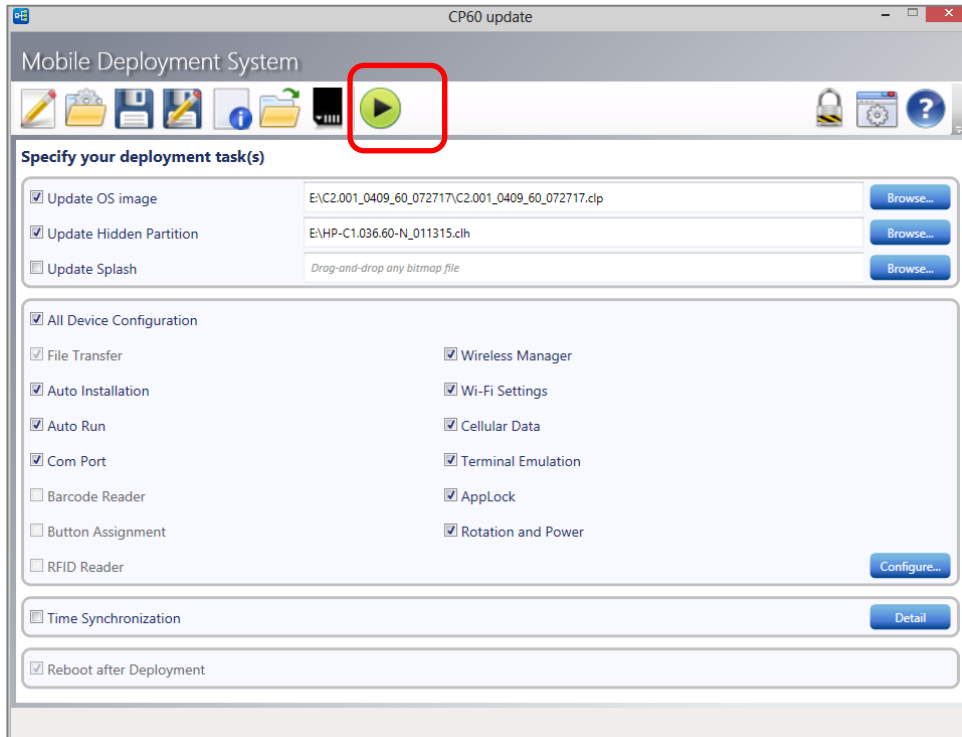
5) Tap the "**Deploy**" button ▶ to proceed OS image upgrade.

6) After update is complete, the mobile computer will restart to show the calibration screen. Complete the calibration steps to display the desktop.
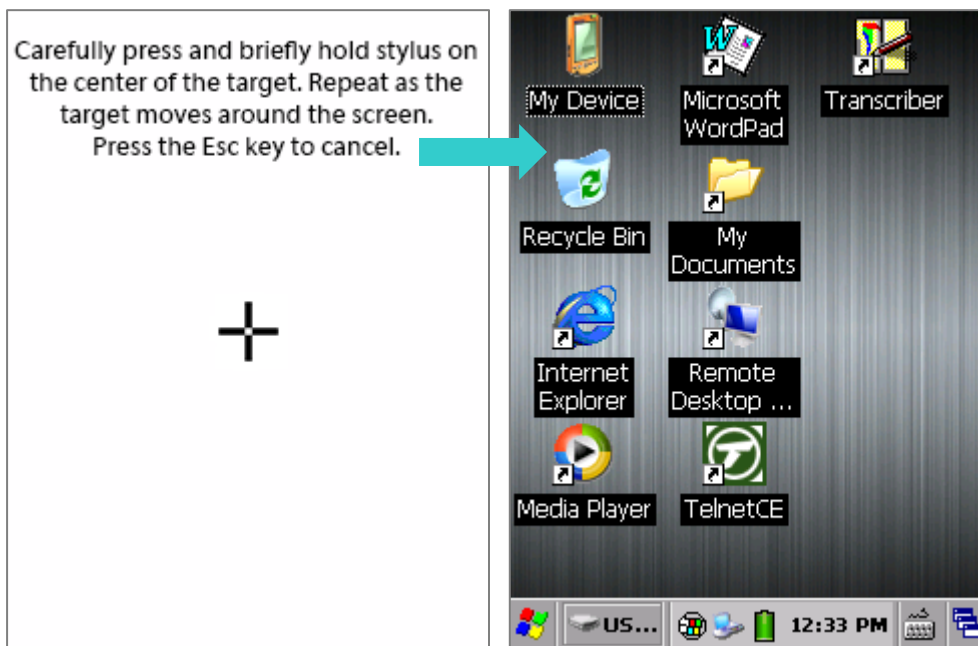
7.1.2. OS UPDATE WITH MEMORY CARD

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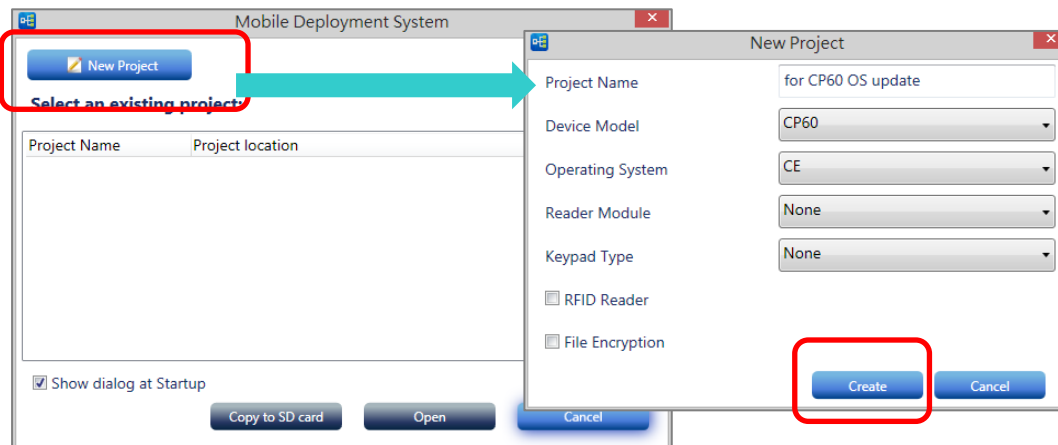
3) On the main menu, tick "**Update OS image**" and "**Update Hidden Partition**" under "**Specify your deployment task(s)**" and click "**Browse**" buttons to select the OS image and hidden partition files respectively from your PC client.

4) Tap "**Save current project to SD card**" button to save the files to the microSD card.
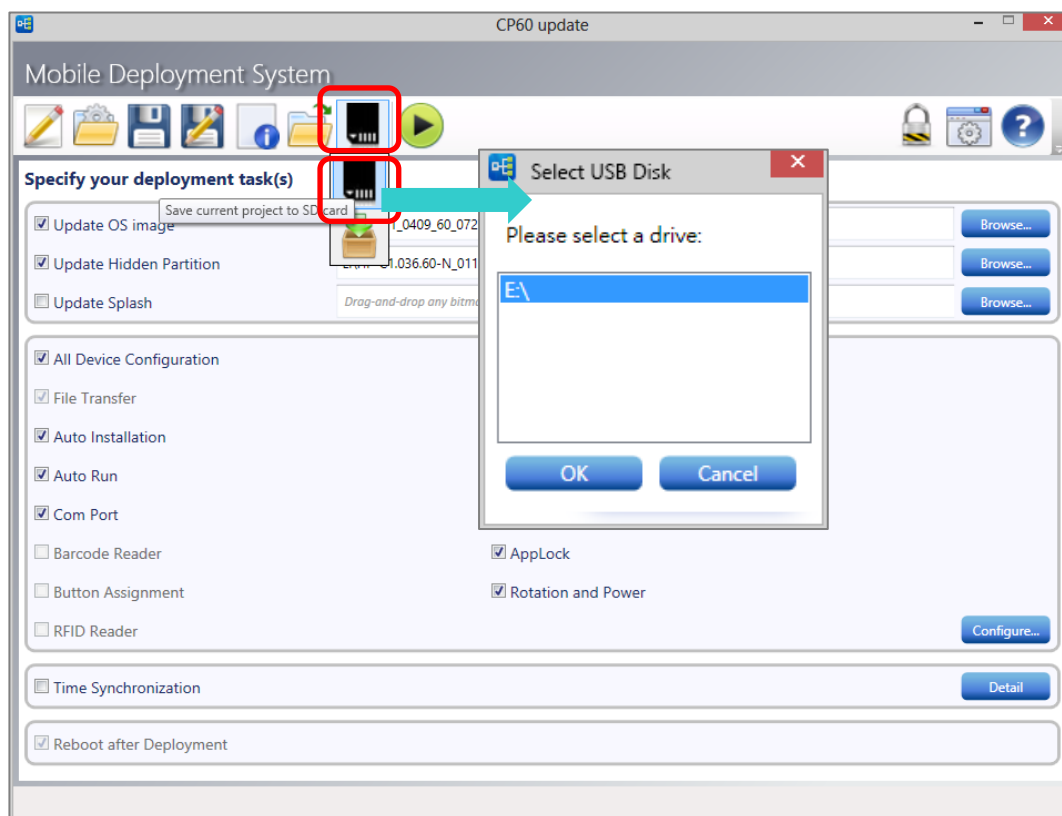
5) Eject the microSD card from the PC, and insert it into the card slot as described in Insert SD Card.

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.
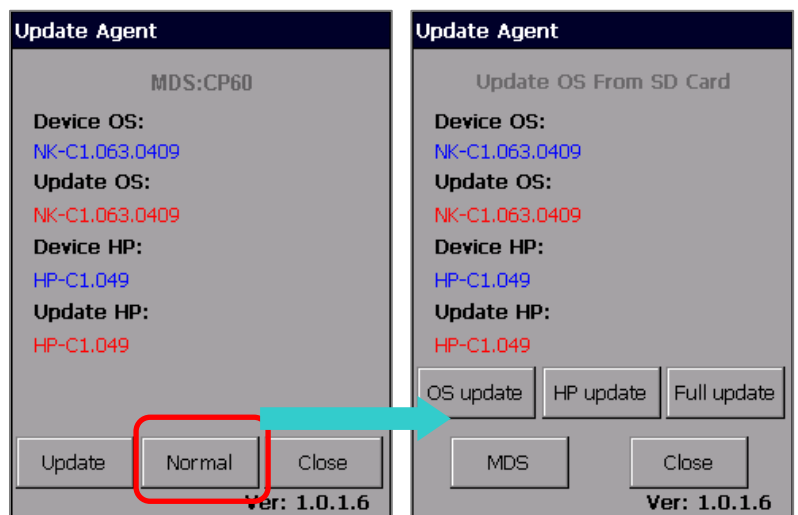
8) Once the update progress is completed, the mobile computer will restart to show the calibration screen. Complete the calibration steps to display the desktop.
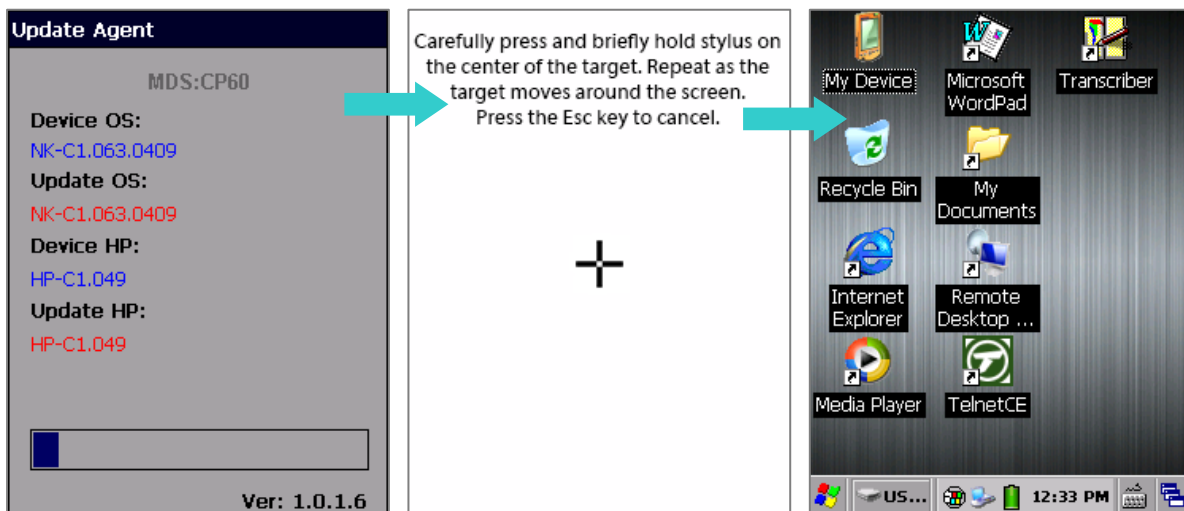
7.2.   CONTROL PANEL

To access control panel settings:

▸ Tap **Start** | **Settings** | **Control Panel** to display a window listing all the programs installed on the mobile computer.
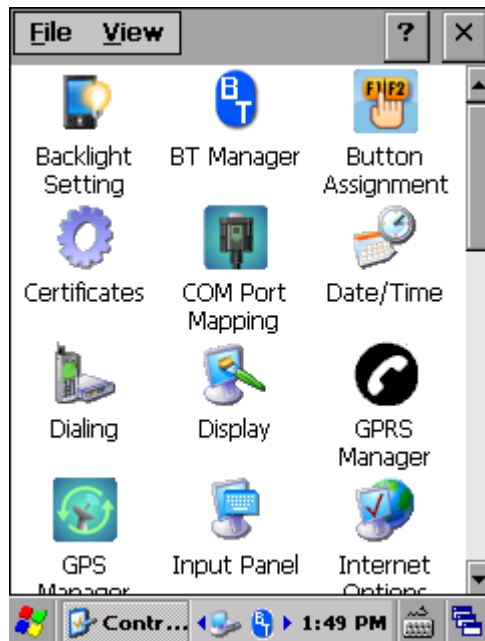
Icon	Description
	BACKLIGHT SETTING

Sets screen and keypad timeout and brightness. Four tabs are featured – **Brightness**, **Battery Power**, **External Power**, and **Profile**. See also Power for setting up power plans to save battery consumption.

Tabbed Page	Description
Brightness	Selects whether to allow manual adjustment of the screen and keypad backlights.
	▸ Adjust the screen to the dimmest comfortable brightness to save power. See also Adjust Backlight.
Battery Power	Sets the screen backlight timeout on battery power and whether to trigger screen/keypad light-up upon pressing a key.

Option	Default Settings
Turn off LCD backlight if device is not used for:	Checked; 5 min
Turn off keypad backlight if device is not used for:	Checked; 10 sec
Turn on LCD backlight when a button is pressed or the screen is tapped	Checked
Turn on keypad backlight when a button is pressed	Checked

External Power	Sets the screen backlight timeout on external power and whether to trigger screen/keypad light up upon pressing a key.
	Option | **Default Settings**
	Turn off LCD backlight if device is not used for: | Checked; 10 min
	Turn off keypad backlight if device is not used for: | Unchecked
	Turn on LCD backlight when a button is pressed or the screen is tapped | Checked
	Turn on keypad backlight when a button is pressed | Checked
Profile	Sets backlight profiles or restores them back to default.

BT MANAGER

Bluetooth settings tool that allows you to select whether to enable device re-connection and auto-inquiry, as well as set preference for re-connection of each service. See Use Bluetooth.

BUTTON ASSIGNMENT

Redefines key functions under keypad's normal and function mode. See Button Assignment for more details.

CERTIFICATES

Imports either your personal digital certificates, certificates from trusted authorities, or intermediate certificates in order to access certain secured networks. Once imported, you may view or remove the installed certificates.

COM PORT MAPPING

Changes the function each COM port serves. COM ports 1 to 9 are re-assignable. Default settings are as follows:

COM port	Default Settings
COM1	Scanner (Laser or 2D)
COM2	Bluetooth hardware port
COM3	EXTUART
COM4~8	N/A
COM9	GPS hardware port

Warning: By default, COM1~3 and COM9 are assigned to inherent functions on the mobile computer. If the settings of any of these COM ports are changed to N/A, the original function will be disabled!

‣ **Default** button restores all COM port settings back to factory default.
‣ Upon system reboot, the mobile computer checks whether there is a registry entry for Bluetooth Serial Port Profile (SPP) or Dial-up Profile (DUN). These profiles (if existent) are assigned to fixed ports and cannot be re-assigned.
‣ Check if any COM ports are occupied by Bluetooth SPP before editing COM port

settings.

▸ After editing COM port settings, tap ⊠ in the upper right corner. A prompt will appear warning that the system needs to reboot in order to apply settings. Tap **OK** to reboot, or **Cancel** to discard changes.

▸ If two ports are assigned the same function, a pop up dialog appears when **OK** is tapped to warn that one of these ports must be changed.

DATE/TIME

Sets RTC time, calendar and time zone.

Note: RTC time can be reserved for approximately 60 days on the mobile computer after the main battery pack has been removed.

DIALING

Dials up the connection and configure settings for modem communication. (Not available for now).

DISPLAY

Changes the desktop background image and system appearance (color of desktop, windows, title bars, dialogs, menus, selected items, etc.).

GPRS MANAGER

Manages cellular data connection and settings. See GPRS Manager for details.

GPS MANAGER

Downloads or updates ephemeris data, which is valid for 14 days according to system date and time.

▸ The download page shows validity information and a progress bar to indicate download status.

▸ Correct time must be set before downloading the ephemeris to ensure data is accurate.

▸ After downloading for the first time, the expiration date and time will appear on the screen.

▸ If **Automatic Download** is selected, the system will check every 24 hours for validity of the ephemeris.

INPUT PANEL

▸ Select an input method and tap **Options** to make further adjustments.

▸ Set whether to allow applications change input panel state.

INTERNET OPTIONS

Configures how the mobile computer connects to the Internet.

KEYBOARD

Enables and sets character repeat delay and rate.

MOUSE

Tests the double-click sensitivity of the stylus. See also Stylus.

NETWORK AND DIAL-UP CONNECTIONS

Configures whether the mobile computer connects to a network directly or through a modem. Same as tapping **Start** | **Settings** | **Control Panel** | **Network and Dial-up**

Connections.

Available connection types include:

▸ USB connection (option shows only when connected by ActiveSync via USB cable)

▸ SDCSD40N1 (via 802.11 a/b/g/n; option shows only when Wi-Fi power is enabled in **RF Manager**)

▸ BTPAN1 (via Bluetooth; option shows only when Bluetooth power is enabled in **RF Manager**)

▸ AX88772 (via Ethernet; option shows when the mobile computer is seated onto the 4-slot Terminal Cradle)

OWNER

Records information about the mobile computer's owner, owner notes, and network ID.

PASSWORD

Sets a password to secure the mobile computer upon power up or awake from suspension.

▸ When password protection is enabled, access to Control Panel settings and Password settings is also protected.

PC CONNECTION

Enables/disables direct connection between the mobile computer and a PC.

▸ By default, the mobile computer is allowed to directly connect to a PC via ActiveSync connection. Alternatively, you may Tap **Start** | **Settings** | **Network and Dial-up Connections** and select USB connection.

▸ You may change to Bluetooth if ActiveSync via Bluetooth is enabled in **BT Manager**.

POWER

Displays battery level and sets up power plans. Two tabs are featured – **Battery** and **Power Off**.

Tabbed Page	Description
Battery	Delivers a summary of battery level for main & backup batteries, and also denotes the main battery level percentage.
Power Off	Sets the screen power off time when on battery power and external power. See also Monitor Battery Level. <table><tr><th>Option</th><th>Default Settings</th></tr><tr><td>On battery power, turn off device if idle for</td><td>Unchecked</td></tr><tr><td>On external power, turn off device if idle for</td><td>Unchecked</td></tr></table>

PTT CONFIGURATION

PTT Configuration sets the operation mode of the Push to Talk utility.

▸ **Normal Mode**: Under this mode, Push to Talk appears on-screen when launched and stays on-screen.

▸ **Auto-hide**: Under this mode, Push to Talk is minimized directly when it is launched. The application opens on-screen when the physical Push button is pressed, and is automatically minimized once more when the Push button is

released. Minimization of the utility does not affect voice receiving. When another device in the group initiates a transmission session, you will still receive it on your device as long as Push to Talk is running.

▸ **Always Hide**: Under this mode, Push to Talk is minimized directly when it is launched, and operates in the background at all times. Press the physical Push button to initiate a voice transmission session. Voice receiving also functions normally; when another device in the group initiates a transmission session, you will still receive it on your device as long as Push to Talk is running.

If **Auto-hide** or **Always Hide** is selected, use Button Assignment to assign a physical key as the Push to Talk button.

READER CONFIGURATION

Allows users to set scanner preferences, data output format and destination, symbologies settings, and perform test scanning of barcodes. See Configure Reader and Read Printed Barcodes.

REGIONAL SETTINGS

Controls how to display date, time and numbers, currency as well as interface and input language on the mobile computer. Featured tabs are – **Region**, **Language** and **Input**.

Note: Default interface language and input language are bound to the OS and cannot be changed.

REMOVE PROGRAMS

Views and removes non-inherent applications installed on the mobile computer. See also Uninstall Applications.

SCREEN ROTATION

Selects the modes to enable for screen orientation, and whether to suspend the mobile computer when it is facing down.

Tap each of the following labels to enable/disable the given screen rotation mode.

▸ Portrait mode
▸ Landscape mode
▸ Signature mode

Tap the following label to enable/disable suspension of the mobile computer when it is turned over and the screen is facing downwards.

▸ Suspend when face down

SCU

Summit Client Utility (SCU) allows changing Wi-Fi settings on the mobile computer, including radio type, access point, Wi-Fi security and more. Settings are displayed among three tabs:

Tabbed Page	Description
Status	Displays AP information, device IP, connection status and signal strength.
Configuration	Disables/Enables radio and switches the active profile. Also opens profile settings and global settings.
Diagnostics	Performs diagnostic tests to check connection, and shows information about SCU version.

SENSOR CALIBRATION

Calibrates the G-sensor, E-compass and Gyroscope.

Tabbed Page	Description
G-Sensor	Shows a round ball which fixes at the center of a set of circles when the mobile computer is on a level surface, and dislocates when the mobile computer is tilted. The round ball changes from grey to blue once calibration is finished. ▸ The mobile computer must be placed on a flat surface before calibration.
E-Compass	Performs calibration of the mobile computer in three directions. Rotate the mobile computer along the three axes as prompted to complete calibration.
Gyroscope	Shows a round ball inside a series of circles which expand from inside out during calibration. The round ball changes from grey to blue once calibration is finished. ▸ The mobile computer must be placed on a flat surface before calibration.

STORAGE INFORMATION

Provides storage status of the internal storage (which is divided into System files and User data) and external storage on the mobile computer.

Label	Description
System	Shows total size and available size of storage under the System directory.
USER_DATA	Shows total size and available size of storage under the USER_DATA directory.
Storage Card	Shows total size and available size of storage under the Storage Card directory.

STORAGE MANAGER

Delivers storage information of the mobile computer's internal storage and storage card. You may also format or dismount each of the storage spaces, or change or resize its partitions.

STYLUS

▸ **Double-tap** tab: Configures and tests double-tap sensitivity.
▸ **Calibration** tab: Recalibrates the touch screen when it is no longer responding

correctly to stylus movement.

SYSTEM

‣ **General** tab: Displays OS and system hardware information.
‣ **Memory** tab: Shows SDRAM allocation. See Internal Storage.
‣ **Device Name** tab: Enter a name and description for the mobile computer.
‣ **Copyrights** tab: Views copyright statements.

SYSTEM INFORMATION

Displays some of the mobile computer's info such as manufacturer, firmware version, MAC address, memory capacity and so on. Tap each node to expand the tree structure list and view data about the given items.

This page also displays the mobile computer's **Device Config**, a sequence of digits that deliver information about the hardware integrated on the mobile computer. Coding rule is tabulated as below:
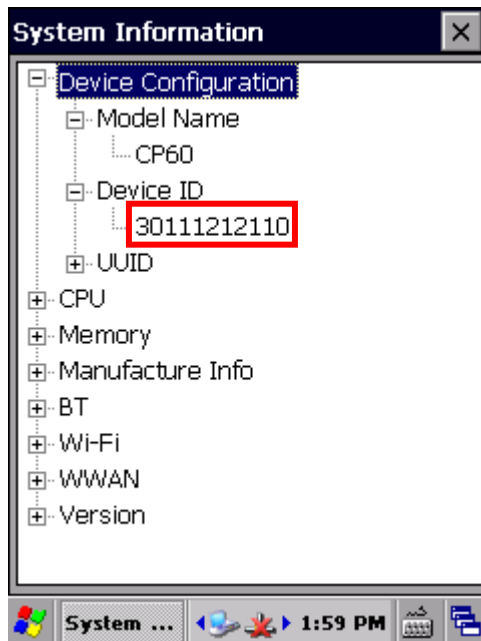
Digit Pair	Hardware	Code
1st	Barcode Reader	0: None 1: Laser – Class 1 2: Laser – Class 2 3: 2D 4: Long range laser
2nd	RFID Reader	0: None 1: RFID
3rd	Bluetooth	0: None 1: Bluetooth
4th	Wi-Fi	0: None 1: Wi-Fi
5th	Camera	0: None 1: Camera
6th	Keypad	0: None 1: 29 Keys 2: QWERTY
7th	LCD	0: None 1: (Reserved) 2: VGA
8th	WWAN	0: None 1: WWAN module 2: WWAN module
9th	GPS	0: None 1: GPS
10th	Touch panel	0: None 1: 3.5" Touch panel
11th	Others	0: None (ExtUART) 1: IrDA 2: CIR 3: FIR

TERMINAL SERVER CLIENT

Logs onto a Windows Terminal Server or a remote computer through remote desktop connection. You may then access all programs, files and network resources on the remote host or terminal server.

TIME SYNC

Provides two tabs, **SNTP** and **GPS**.

▸ **SNTP** tabbed page: Synchronizes the mobile computer's time with an NTP server either automatically or manually. Users can also select the time period for auto-synchronization. Synchronized time will be written to RTC and system time will be updated.

Check Internet connection status if the following synchronization status shows: "Cannot get time information through SNTP".

Note: For auto-synchronization to function properly, Time Synchronization application should be shut down. Close the application when you are finished adjusting the settings.

▸ **GPS** tabbed page: Gets time information through GPS data packet.

USB CONNECTION

Sets the type of USB connection without re-plugging the USB cable.

▸ **ActiveSync Serial Mode**: Sets up ActiveSync connection with PC through serial protocol.
▸ **Mass Storage – SD Card**: Presents the mobile computer with an SD card installed as a storage device. If no SD card is installed, the directory on the PC will be blank.

Note: Selection of ActiveSync Advanced Network Mode or ActiveSync Serial Mode will be synchronized with settings under **Start** | **Settings** | **Control Panel** | **USB to PC**.

VERSION VIEWER

Lists version information of the applications, services and drivers installed on the mobile computer.

VOLUME & SOUNDS

▸ **Volume** tab: Adjusts system sounds and volume for events, applications, notifications and stylus movements.
▸ **Sounds** tab: Changes event sounds to meet your preferences and save them as schemes.

WIRELESS MANAGER

Enables/disables power status for Bluetooth, Wi-Fi and cellular data.

▸ **All**: Turns on/off all the wireless connections on the mobile computer.
▸ **Wi-Fi**: Turns on/off Wi-Fi. Check Use Wi-Fi to configure Wi-Fi settings.
▸ **Bluetooth**: Turns on/off Bluetooth. Check Use Bluetooth to configure Bluetooth settings.
▸ **Cellular Data**: Turns on/off cellular data. Check Access Cellular WAN to configure mobile data settings.

7.3.   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 CONNECTIONS 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.
	USB CABLE Sets USB networking with the PC through RNDIS. This appears automatically when the mobile computer is connected to a PC via the Snap-on Cable or Cradle, and the icon disappears when the mobile computer is disconnected from the PC.

WWAN

Refers to connection via wireless wide area network (WWAN). To enable this function, enable cellular data in **Start | Settings | Control Panel | Wireless Manager** .

- ▸ An icon is located on the taskbar.

- ▸ When connected to WWAN, the icon will change to .

- ▸ When disconnected, the icon will return to .

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.

AX88772

Refers to Ethernet connection via the 4-slot Terminal Cradle. This function is not available until the mobile computer is placed on the 4-slot Terminal Cradle.

- ▸ When available to establish a connection, an icon will appear on the taskbar.

- ▸ When connected to Ethernet, the icon will change to .

- ▸ When disconnected, the icon will return to .
- ▸ When the mobile computer is removed from the 4-Slot Terminal Cradle, 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.

Connect
Set as Default
Desktop Shortcut
Delete
Rename
Properties

7.4.   TASKBAR AND START MENU SETTINGS

To access taskbar and Start Menu settings:

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

Tabbed 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 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 Control Panel items in an expanded menu.

SPECIFICATIONS

PLATFORM, PROCESSOR & MEMORY

Operating System & CPU

OS Version	Microsoft Windows Embedded Compact 6.0
CPU	TI DM3730 1GHz Processor

Memory

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

COMMUNICATIONS & DATA CAPTURE

Communications

USB Host/Client	USB 1.1 / USB 2.0
WPAN	Built-in module for Bluetooth version 2.1 + EDR Class II connectivity
WLAN	Built-in module for 802.11 a/b/g/n networking
WWAN	Ordering Option - built-in module for GSM/HSPA+ (Data only)
GPS	Built in GPS module

Data & Image Capture

Digital Camera	5 mega-pixel with auto focus and photoflash	
Barcode Reader	Ordering options include	▸ Laser (Symbol SE955)
		▸ Long Range Laser (Symbol SE965HP)
		▸ 2D (Symbol SE4500DL)

ELECTRICAL CHARACTERISTICS

Batteries

Main Battery Pack	Standard: 3.7V, 3600 mAh
	High Capacity: 3.7V, 4400 mAh
	Rechargeable Li-ion battery
	Charging time: approximately 4 hours for Standard battery and 6 hours for High Capacity battery
Backup Battery	3.6V, 15 mAh
	Rechargeable Ni-MH battery
	Data retention for 30 minutes
	Charging time: 5 hours

Power Adapter

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

Operating Time

Standard Battery (1 scan per 20 seconds; 50% backlight, 25°C)

Laser	Wi-Fi mode	Approximately 16 hours
	3G mode	Approximately 9.5 hours
	3G+GPS	Approximately 6 hours
HP Laser	Wi-Fi mode	Approximately 15 hours
	3G mode	Approximately 8 hours
2D	Wi-Fi mode	Approximately 15 hours
	3G mode	Approximately 11 hours

High Capacity Battery (1 scan per 20 seconds; 50% backlight, 25°C)

Laser	Wi-Fi mode	Approximately 18.5 hours
	3G mode	Approximately 10.5 hours
	3G+GPS	Approximately 8 hours
HP Laser	Wi-Fi mode	Approximately 17 hours
	3G mode	Approximately 10 hours
2D	Wi-Fi mode	Approximately 18 hours
	3G mode	Approximately 12 hours

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 or QWERTY keypad
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 ▸ Bluetooth headset supported

Sensors

Built-in Sensors	G-sensor, E-compass, Gyroscope, Light Sensor, Proximity Sensor

Enclosures

Materials	Plastic & metal
Dimensions	182 mm (L) x 83 mm (W) x 44 mm (H) with standard battery 182 mm (L) x 83 mm (W) x 47 mm (H) with high capacity battery
Weight	516g (with standard battery) / 535g (with high capacity battery)

ENVIRONMENTAL CHARACTERISTICS

Temperature

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

Humidity

Operating	5% to 95%, non-condensing
Storage	20% to 95%, non-condensing

Resistance

Impact Resistance	Multiple 2.4 m (7.8 ft.) drops to concrete on all six sides
Tumble Test	1,000 tumbles (2,000 drops) at 1 m (3.3 ft.) per applicable IEC 60068-2-31 repeated free fall specs
Splash/Dust Resistance	IP65/67 per applicable IEC 60529 sealing specs
Electrostatic Discharge	± 15 kV air discharge, ± 8 kV 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 Configuration ▶ Button Assignment ▶ Signature Capture ▶ GPS Viewer ▶ SPB SmartShell (optional) ▶ AppLock ▶ MIRROR Browser for web application ▶ Terminal Emulation
Third-party software	▶ SOTI MobiControl for remote device control (downloadable from website) ▶ Naurtech CETerm – Terminal emulator (3270, 5250, VT) and industrial web browser ▶ SYSDEV Kalipso

ACCESSORIES

Accessory Options

- ▶ Snap-on Charging and Communication Cable (USB or RS-232)
- ▶ Charging & Communication Cradle
- ▶ Pistol Grip
- ▶ Belt Holster for CP60 with Pistol Grip
- ▶ Belt Holster with Shoulder Strap for CP60 without Pistol Grip
- ▶ 4-slot Battery Charger
- ▶ Snap-On Car Charging Kit
- ▶ 4-slot Terminal Cradle
- ▶ Vehicle Mount Cradle

SCAN ENGINE SETTINGS   Appendix I

The CipherLab developed utility **Reader Configuration** configures the following reader types:

▸ 1D Laser (SE955)
▸ 1D Long Range Laser (SE965HP)
▸ 2D Imager (SE4500DL)

The reader integrated on the mobile computer is either a 1D or 2D scan engine. When the physical scan key or side trigger is pressed, the mobile computer will read a printed barcode in position. See Read Printed Barcodes for information on capturing the decoded data.

Note:

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

(2) Run only one reader-controlling utility or application at a time. For example, while running Reader Configuration, avoid running MIRROR Browser, Terminal Emulation, or any other application that uses ReaderDLL.

IN THIS CHAPTER

SYMBOLOGIES SUPPORTED

Depending on the scan engine integrated on the mobile computer, supported symbologies will differ as listed below. For details on configuring associated settings, refer to Appendix II and III.

		Laser	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	✘	✔
	Compostie 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)	✔	✔
	UCC Coupon Extended Code	✔	✔
	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	✘	✔

LASER (SE955 & SE965HP)

The tables below list the symbology settings for 1D laser scan engine (SE955) and 1D long range laser scan engine (SE965HP).

SYMBOLOGY SETTINGS

Symbology	Description	Default
CODABAR		
CodaBar		
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	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	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		
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		
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 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 128

Code 128		
Enable Code 128	Checkbox to enable Code 128 decoding.	Enable
ISBT 128		
Enable ISBT 128	Checkbox to enable ISBT 128 decoding.	Enable
GS1-128		
Enable GS1-128	Checkbox to enable GS1-128 decoding.	Enable

CODE 2 OF 5

Chinese 25		
Enable Chinese 25	Checkbox to enable Chinese 25 decoding.	Enable
Discrete 25		
Discrete 25	Checkbox to enable Discrete 25 decoding.	Enable

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)
Interleaved 25		
Interleaved 25	Checkbox to enable Interleaved 2 of 5 decoding.	Enable
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)
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-14	Checkbox to enable GS1 DataBar-14 decoding.	Enable
GS1 DataBar Limited		
Enable GS1 DataBar Limited	Checkbox to enable GS1 DataBar Limited decoding.	Enable
GS1 DataBar Expanded		
Enable GS1 DataBar Expanded	Checkbox to enable GS1 DataBar Expanded decoding.	Enable
Convert to UPC/EAN		

Convert to UPC/EAN	This only applies to GS1 DataBar-14 and GS1 DataBar Limited barcodes not decoded as part of a Composite barcode.	Disable
	Convert to EAN-13	
	Strips the leading "010" from barcodes. ▸ The barcode must be composed of a leading "01" as the application identifier (AI) and a first digit of zero.	
	Convert to UPC-A	
	Strips the leading "0100" from barcodes. ▸ The barcode must be composed of a leading "01" as the application identifier (AI) and two or more zeros (but not six zeros).	

MSI

MSI		
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		
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		
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		
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		
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		
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
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

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
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 Addon Option	Decide whether to decode UPC-E0, UPC-E1, UPC-A with addons (including Addon 2 and 5). ▶ Ignore Addon ▶ Decode only with addons ▶ Auto-discriminate	Ignore Addon
UPC 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 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: <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 scan engine, it'd be better to improve the barcode's print quality if this level should be needed.</td></tr></table>	Level 0

MISCELLANEOUS

Laser Engine	Description	Default
Miscellaneous Options		
AIM Code ID character	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 `]e00110012345678902`.	

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

EAN.UCC Composites (RSS, EAN-128, 2D portion of UPC composite)	Native mode transmission	
	0	Standard data packet
	1	Data packet containing the data following an encoded symbol separator character.
	2	Data packet containing the data following an escape mechanism character. The data packet does not support the ECI protocol.
	3	Data packet containing the data following an escape mechanism character. The data packet supports the ECI protocol.
	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]L2ABCD.
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.
Maxicode	0	Mode 4 or 5
	1	Mode 2 or 3
	2	Mode 4 or 5, ECI protocol implemented.
	3	Mode 2 or 3, ECI protocol implemented in secondary message.
QR Code	0	Model 1
	1	Model 2 / 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

2D IMAGER (SE4500DL)

The tables below list the symbology settings for 2D imager (SE4500DL).

SYMBOLOGY SETTINGS

1D SYMBOLOGIES

Symbology	Description	Default
CODABAR		
CodaBar		
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	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	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		
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		
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 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 128

Code 128		
Enable Code 128	Checkbox to enable Code 128 decoding.	Enable
GS1-128		
Enable GS1-128	Checkbox to enable GS1-128 decoding.	Enable
ISBT-128		
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
Redundancy	Sets redundancy between 2-20.	10
CODE 2 OF 5		
Chinese 25		
Enable Chinese 25	Checkbox to enable Chinese 25 decoding.	Enable
Discrete 25		
Discrete 25	Checkbox to enable Discrete 25 decoding.	Enable
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)
Interleaved 25		
Interleaved 25	Checkbox to enable Interleaved 2 of 5 decoding.	Enable
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)
Verify Check Digit	▸ 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		
Matrix 25	Checkbox to enable Matrix 2 of 5 decoding.	Enable
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)
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		
Enable Composite CC-A/B	Checkbox to enable Composite CC-A/B decoding.	Disable
Composite CC-C		
Enable Composite CC-C	Checkbox to enable Composite CC-C decoding.	Enable
Composite TLC 39		
Enable TLC 39	Checkbox to enable TLC 39 decoding.	Disable
General Preference		
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-14	Checkbox to enable GS1 DataBar-14 decoding.	Enable
GS1 DataBar Limited		
Enable GS1 DataBar-Limited	Checkbox to enable GS1 DataBar-Limited decoding.	Enable
GS1 DataBar Expanded		
Enable GS1 DataBar-Expanded	Checkbox to enable GS1 DataBar-Expanded decoding.	Enable
Convert to UPC/EAN		

Convert to UPC/EAN	This only applies to GS1 DataBar-14 and GS1 DataBar Limited barcodes not decoded as part of a Composite barcode.	Disable
	Convert to EAN-13	
	Strips the leading "010" from barcodes.	
	▶ The barcode must be composed of a leading "01" as the application identifier (AI) and a first digit of zero.	
	Convert to UPC-A	
	Strips the leading "0100" from barcodes.	
	▶ The barcode must be composed of a leading "01" as the application identifier (AI) and two or more zeros (but not six zeros).	

INVERSE

Inverse		
Enable Inverse	Checkbox to enable Inverse 1D decoding.	Disable

KOREAN 3 OF 5

Korean 3 of 5		
Enable Korean 3 of 5	Checkbox to enable Korean 3 of 5 decoding.	Disable

MSI

MSI		
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 Australian Postal	Checkbox to enable Australian Postal decoding.	Enable
Japan Postal		

Enable Japan Postal	Checkbox to enable Japan Postal decoding.	Enable
Netherlands KIX Code		
Enable Netherlands KIX Code	Checkbox to enable Netherlands KIX Code decoding.	Enable
US Postnet		
Enable US Postnet	Checkbox to enable US Postnet decoding.	Enable
US Planet		
Enable US Planet	Checkbox to enable US Planet decoding.	Enable
UK Postal		
Enable UK Postal	Checkbox to enable UK Postal decoding.	Enable
General Preference		
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		
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		
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		
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		
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		
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
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
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
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 Addon Option	Decide whether to decode UPC-E0, UPC-E1, UPC-A with addons (including Addon 2 and 5). ▶ Ignore Addon ▶ Decode only with addons ▶ Auto-discriminate	Ignore Addon

| UPC 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 |

2D SYMBOLOGIES

Symbology	Description	Default
Aztec		
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		
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 Images	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		

MicroPDF417		
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		
PDF417		
QR Code		
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		
AIM Code ID character	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

PHYSICAL KEYPAD REFERENCE TABLE

NUMERIC KEYPAD

Numeric keypad layout:

USING ALPHA, SHIFT & FN KEYS

Key	Normal Mode			Alpha Mode (Lowercase)				Alpha Mode (Uppercase)			
	Key only	Fn+Key	Shift+Key	1st press	2nd press	3rd press	4th press	1st press	2nd press	3rd press	4th press
1	1	F1	Shift+1	@	;	:		@	;	:	
2	2	F2	Shift+2	a	b	c		A	B	C	
3	3	F3	Shift+3	d	e	f		D	E	F	
4	4	F4	Shift+4	g	h	i		G	H	I	
5	5	F5	Shift+5	j	k	l		J	K	L	
6	6	F6	Shift+6	m	n	o		M	N	O	
7	7	F7	Shift+7	p	q	r	s	P	Q	R	S
8	8	F8	Shift+8	t	u	v		T	U	V	
9	9	F9	Shift+9	w	x	y	z	W	X	Y	Z
0	0	F11	Shift+0	Space				Space			
*	*	Back Light +	*	/	-			/	-		
#	#	Back Light -	#	%	,			%	,		
Up	Up	Page Up	Up	Up				Up			
Down	Down	Page Down	Down	Down				Down			
Left	Left	Home	Left	Left				Left			
Right	Right	End	Right	Right				Right			
Enter	Enter	Enter	Enter	Enter				Enter			

Tab	Tab	Tab	Tab	Tab				Tab			
Back Space	Back Space	Keypad Lock	Back Space	Back Space				Back Space			
Back Light	Back Light	Back Light	Back Light	Back Light				Back Light			
Send	Send	Start	Send	Send				Send			
End	End	OK	End	End				End			
ESC	ESC	ESC	ESC	ESC				ESC			
-	-	F10	-	+	$						
.	.	F12	.	.							

QWERTY KEYPAD

QWERTY keypad layout:

USING ALPHA, SHIFT & FN KEYS

Key	Normal	Shift+Key	Fn (Orange)+Key	Alpha (Blue)+Key
Q	q	Q	F1	#
W	w	W	F2	1
E	e	E	F3	2
R	r	R	F4	3
T	t	T	F5	(
Y	y	Y	F6	)
U	u	U	F7	/
I	i	I	F8	*
O	o	O	F9	-
P	p	P	F10	+
A	a	A	F11	!
S	s	S	F12	4
D	d	D	F13	5
F	f	F	F14	6
G	g	G	F15	<
H	h	H	F16	>
J	j	J	F17	\
K	k	K	F18	^
L	l	L	F19	%
Z	z	Z	F20	7
X	x	X	F21	8
C	c	C	F22	9
V	v	V	F23	?
B	b	B	F24	:
N	n	N	N/A	;
M	m	M	N/A	=
@	@	@	N/A	"
Backspace	Backspace	Backspace	Keypad Lock	Backspace

&	&	&	N/A	&
Space	Space	Space	Space	Space
Enter	Enter	Enter	Enter	Enter
Tab	Tab	Tab	Tab	Tab
Up	Up	HilightUp	Page Up	Up
Down	Down	HilightDown	Page Down	Down
Left	Left	HilightLeft	Home	Left
Right	Right	HilightRight	End	Right
Backlight	Backlight	Backlight	Backlight	Backlight
Send	Send	Send	Start	Send
End	End	End	OK	End
ESC	ESC	ESC	ESC	ESC
.	.	.	Backlight+	.
,	,	,	Backlight -	_