Honeywell

Optimus™ 5900 RFID Mobile Computer

with Windows® CE 5.0

User's Guide

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Table of Contents

Chapter 5 - Using the UHF RFID Reader

Chapter 6 - Using the Image Engine

Chapter 7 - Communication

Chapter 8 - Bluetooth Handler

Chapter 9 - Optimus 5900 RFID eBase Device (Model: 5900-EHB)

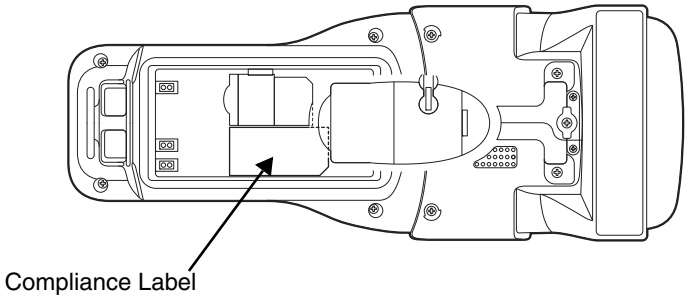
Chapter 10 - Customer Support

1

Agency Approvals

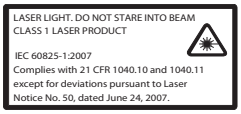
Label Locations

Optimus 5900 RFID mobile computers meet or exceed the requirements of all applicable standards organizations for safe operation. However, as with any electrical equipment, the best way to ensure safe operation is to operate them according to the agency guidelines that follow. Read these guidelines carefully before using your mobile computer.



Safety & RF Approvals by Country:

Country	Safety	RF (Radio)
U.S.A.	UL60950-1	FCC Part 15, Sub part B, Sub part C



Laser Safety Statement: This device has been tested in accordance with and complies with IEC 60825-1:2007 and 21 CFR 1040.10 and 1040.11, except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007. LASER LIGHT, DO NOT STARE INTO BEAM, CLASS 1 LASER PRODUCT.

Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

FCC RF Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

RF Terminal—802.11g and/or Bluetooth

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.

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.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet helpful: “Something About Interference.” This is available at FCC local regional offices. Our company is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by our company. The correction is the responsibility of the user. Use only shielded data cables with this system.

In accordance with FCC 15.21, changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

⚠ **This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. To maintain compliance with FCC RF exposure guidelines for body-worn operation, do not use accessories that contain metallic components.**

CAUTION! Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

2 Getting Started

Out of the Box

Verify that your carton contains the following items:

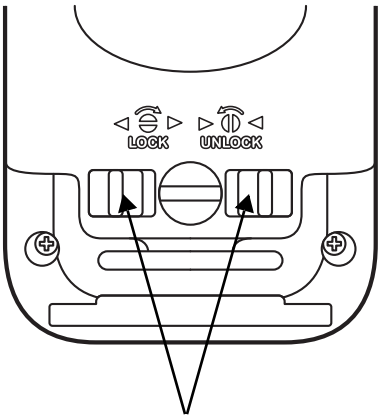
- Optimus 5900 RFID mobile computer (the terminal)
- Main battery pack (3.7v, Li-Ion)
- Stylus
- Single slot eBase
- USB cable
- AC power supply

Note: Be sure to keep the original packaging in case you need to return the Optimus 5900 RFID terminal for service; see Product Service and Repair on page 10-1.

Step 1. Install the Main Battery

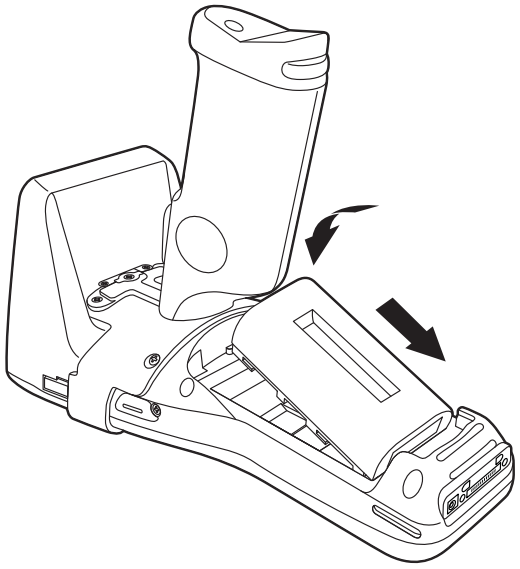
The Optimus 5900 RFID is shipped with the battery packaged separate from the unit. Follow the steps below to install the main battery.

1. Unlock the battery door by turning the screw counterclockwise until the slot is upright.

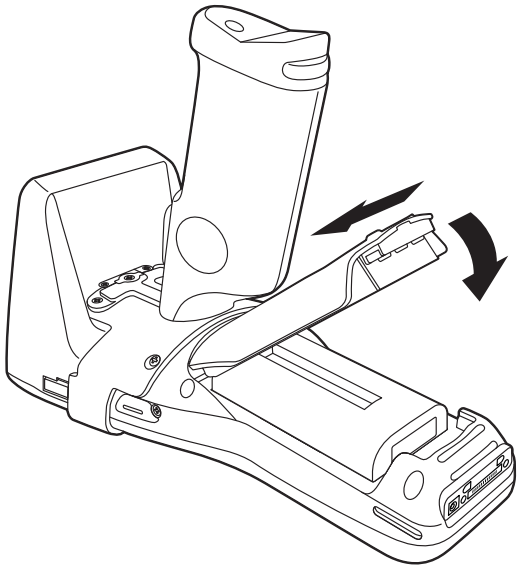


2. Push the lock releases toward the screw.

3. Insert the battery into the battery well with the contacts facing downward.



4. Replace the door with a hinging motion and turn the screw clockwise to lock the door.



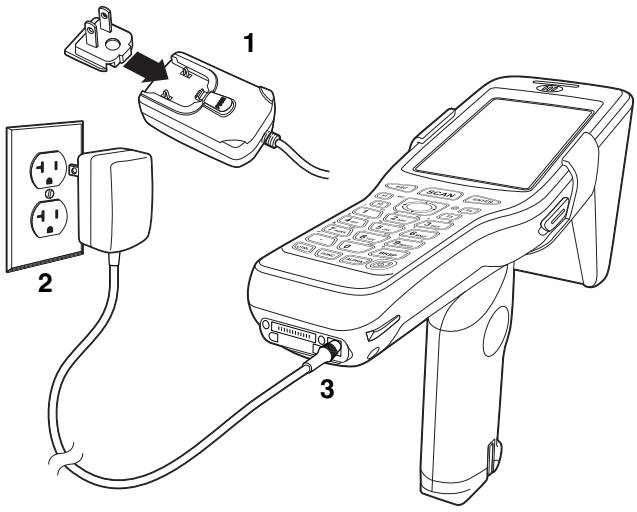
Note: The battery door must be installed prior to booting the unit.

We recommend use of Honeywell Li-Ion battery packs. Use of any non-Honeywell battery may result in damage not covered by the warranty.

Step 2. Charge the Batteries

Optimus 5900 RFID terminals ship with both the main battery pack and internal backup battery significantly discharged of power. Use the power supply cable to charge the main battery pack. The LED turns green (red while charging) when charging is complete. The average charge time for a fully depleted main battery is 7 hours. It takes less time if the battery has some charge.

1. Attach the plug adapter to the plug of the power supply cable (if not already attached).*
2. Insert the plug into the appropriate power source.
3. Plug the Optimus 5900 RFID power supply cable into the DC Power Jack (see page 3-10) on the bottom end of the unit.



Note: If you remove the battery pack or it completely discharges, there is a 30 minute window in which to insert a charged battery pack before the backup battery completely discharges. If your backup battery completely discharges, the contents of the RAM memory will be lost. If your backup battery is less than fully charged, there is a proportionally smaller window of time available.

LED Indicators

Red LED On	Charging
Green LED On	Battery is fully charged

*This power supply (charger) can also be used to power the Optimus 5900 RFID eBase Device (Model: 5900-EHB) (see page 9-1).

⚠ We recommend use of Honeywell peripherals, power cables, and power adapters. Use of any non-Honeywell peripherals, cables, or power adapters may cause damage not covered by the warranty. DO NOT attempt to charge damp/wet mobile computers or batteries. All components must be dry before connecting to an external power source.

Step 3. Boot the Terminal

The terminal begins booting as soon as power is applied and runs by itself. Do NOT press any keys or interrupt the boot process.

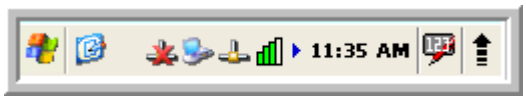
When the boot process is complete, the Desktop appears, and the terminal is ready for use.

Desktop

Note: You can access the Desktop any time by tapping the Change Views icon in the command bar and selecting Desktop on the popup menu.

Command Bar Icons

The command bar, located at the bottom of application screens, provides access to many system functions and programs. If there are more functions/programs that can display, select the left or right arrows to scroll through the additional icons.



Icon	Meaning
	Opens the Start menu.
	Tap to change views between open applications or to return to the desktop.
	Accesses the Bluetooth radio. Double tap this icon to open the Bluetooth Handler (see page 8-1).
	Shows signal strength of WiFi radio. (A red X indicates it is not currently associated to an AP.)
	Indicates Ethernet communications. When the terminal is undocked, no icon appears. When it is docked without a cable, the icon has a red X through it. When docked with a cable connected, this icon displays.
	Indicates that the USB communication cable is connected. Double tap to display USB status window.

Icon	Meaning
 	Indicates the status of battery power. Double tap to open the Power control panel setting. When this icon shows a red power plug, it indicates the device is using external power.
	Displays the current time. Double tap to change the time and date.
  	Indicates whether the keypad is standard alpha (uppercase and lowercase), all caps alpha, or in numeric mode. Press the **ALPHA** button on the keypad to switch modes.
	The up arrow allows you to turn the Wireless LAN and Bluetooth connection on or off. It also allows you to toggle between the Keyboard and Transcriber. When **Keyboard** is selected, a keyboard is displayed so you can tap text and number keys. **Transcriber** recognizes handwriting and symbols entered using the stylus.

Using the Stylus

The terminal comes with a stylus inserted in the handle. Use this stylus (or your finger) to select or enter information on the touch screen. The stylus functions as a mouse; generally, a tap is the same as a click.

Tap Tap the touch screen once or double tap to open menu items and select options.

Drag Hold the stylus on the screen and drag across the screen to select text and images.

Tap & hold Tap and hold the stylus on an item and a pop-up menu appears. On the pop-up menu, tap the action of the task you want to perform.

Use of objects, such as paper clips, pencils, or ink pens on the touch screen can damage the input panel and may cause damage not covered by the warranty.

For more information about the touch screen, see Touch Screen Display on page 3-2.

Selecting Programs

Tap **Start** > **Programs**. To open a program, tap the icon on the menu.

Pop-Up Menus

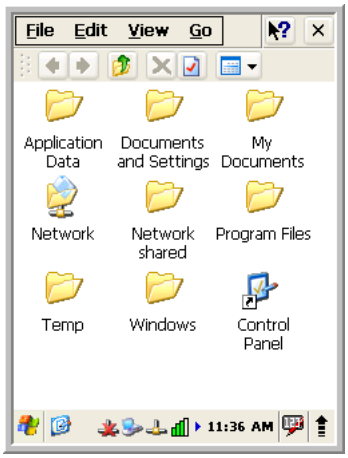
You can quickly choose an action for an item using the pop-up menus.

1. Tap and hold the stylus on the item name. The pop-up menu appears.
2. Lift the stylus and tap the action you want to perform.

The contents of pop-up menus change according to the program you are using.

Using Windows Explorer

Use Windows Explorer to navigate through the files on your system. On the desktop, double tap the **My Device** icon and Windows Explorer opens to the root level.



Move files by tapping and holding on the file, then tapping **Cut**, **Copy** or **Paste** on the pop-up menus that appear.

3 Terminal Hardware Overview

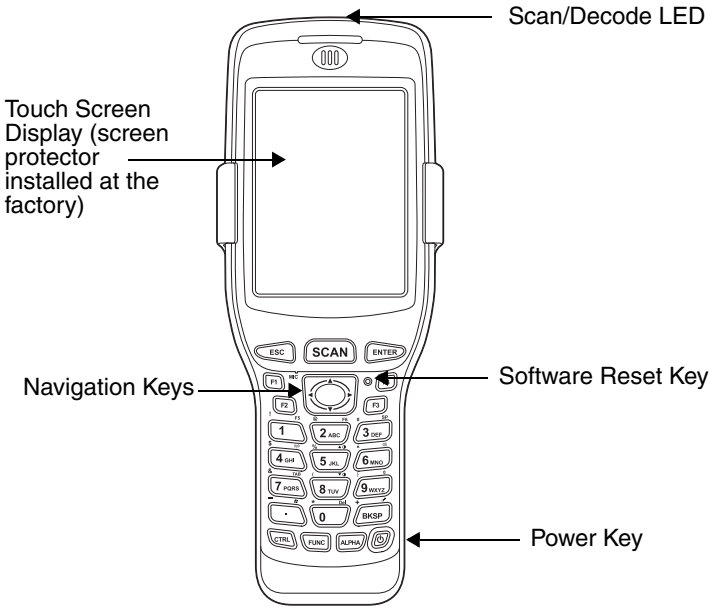
Optimus 5900 RFID terminals include a number of standard terminal configurations as well as charging and communication peripherals and accessories to maximize the efficiency of your application setting.

Standard Terminal Configurations

There are two standard Optimus 5900 RFID configurations: WPAN only and WPAN/WLAN. Both configurations include the following options; however, the WPAN/WLAN configuration has both a Bluetooth radio and an 802.11g radio.

Optimus 5900 RFID WPAN and WPAN/WLAN
• Microsoft Windows CE 5.0 Professional • Marvell PXA 300 624MHz • 128MB RAM X 256MB (non-volatile) Memory • 26-key numeric keypad (alpha shifted) • 3.5” TFT transmissive, 65k color LCD display with backlight, QVGA (240 x 320) • Li-Ion battery: 3.7V / 5000mAh / 12.2 Wh • 5300SR image engine with laser aiming • (WPAN) - Bluetooth radio • (WPAN/WLAN) - Bluetooth and 802.11g radio • Optimus power cable (included with each Optimus 5900 RFID terminal)

Front Panel Features



Scan/Decode LED

The LED lights red when a scan fails.
The LED lights green when a scanned bar code is successfully decoded.
The LED lights red while the main battery is charging.
The LED lights green when the main battery charging is completed.
The LED lights blue when data is being downloaded.

Keypad

26-key numeric keypad (alpha shifted) (includes side scan buttons).

Microphone

The integrated microphone can be used for audio recording.

Touch Screen Display

The display is a 3.5” TFT transmissive, 65k color LCD display with a backlight, QVGA (240 x 320 resolution); see Display Backlight on page 3-3. The touch panel is a 4-wire analog resistive touch.

⚠ Optimus 5900 RFID terminals ship with a screen protector already installed over the touch screen lens to help prevent damage to the touch screen. Do NOT remove this screen protector before initial use. Honeywell recommends using screen protectors, especially for applications that require high volume interfacing with the touch screen. For more information, see Using Screen Protectors on page 3-3. You can purchase additional screen protectors by contacting your Honeywell sales representative.

For touch screen input, use the stylus included with the terminal or your finger. The method you choose depends on which one is most appropriate for your application. While there is a great deal of variation in different applications, you generally achieve greater accuracy with the stylus for buttons or icons that are close together.

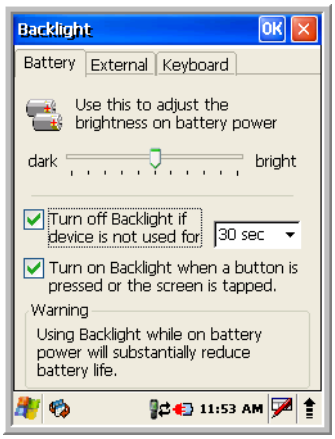
⚠ *Use of objects, such as paper clips, pencils, or ink pens on the touch screen can damage the input panel and may cause damage not covered by the warranty.*

Display Backlight

The intensity of the backlight of the touch screen display may be changed, and the backlight may be programmed to turn off after the terminal has been idle for a specified period of time.

To adjust the intensity of the backlight while on battery power, tap **Start** > **Settings** > **Control Panel** > double tap **Backlight**.

Screen Backlight - Battery/External Power



Move the slider to adjust the screen backlight while on battery power.

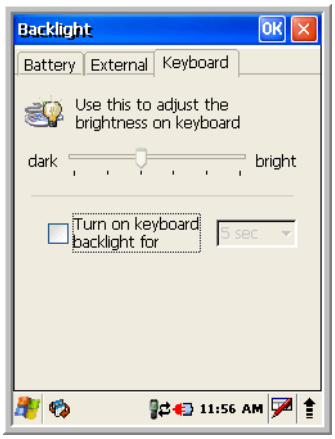
You may turn the screen backlight off if the device is not used for a designated period of time by checking the option and designating the desired time period.

You may also turn on the screen backlight when a button is pressed or the screen is tapped by selecting the appropriate checkbox.

Note: Using the backlight option while on battery power substantially reduces battery life.

You may make the same changes when on external power by tapping the **External** tab.

Keyboard Backlight



The intensity of the backlight of the keys on the keyboard may be changed and the backlight may be programmed to remain on for a specified period of time once a key is pressed.

To adjust the brightness of the keys, tap the **Keyboard** tab. Move the slider to adjust the backlight while on battery power.

To turn on the keyboard backlight, check the checkbox and change the duration of the backlight.

Using Screen Protectors

Honeywell defines proper use of the terminal touch panel display as using a screen protector and proper stylus. Screen protectors maintain the ongoing integrity (i.e., prevent scratching) of the touch panel, which is why their use is recommended for applications that require a high to medium level of interface with the touch panel.

Honeywell continues to advocate the use of screen protectors on all Optimus 5900 RFID terminals. We recommend implementing a screen protector replacement program to ensure that screen protectors are replaced periodically when signs of damage/wear are noticeable. For general use, we recommend replacing the screen protector every thirty (30) days. However, replacement cycles vary according to the average level of touch panel use in your application.

Replacement screen protectors can be purchased directly from Honeywell. Contact a Honeywell sales representative for details.

Honeywell also mandates use of a proper stylus, which is one that has a stylus tip radius of no less than 0.8mm. Use of the Honeywell stylus included with the terminal is recommended at all times.

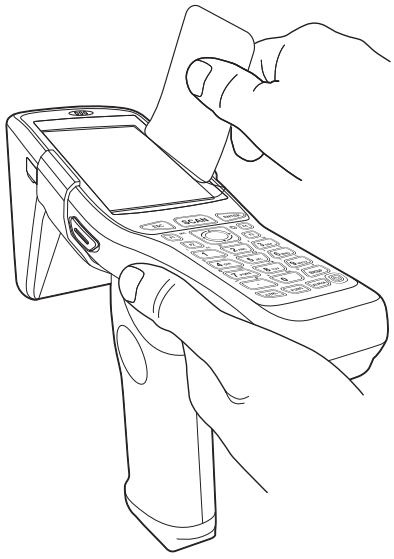
Honeywell's warranty policy covers wear on the touch panel for the first 12 months provided that a screen protector is applied and an approved stylus is used for the 12-month duration covered by the warranty.

Removing the Screen Protector

Optimus 5900 RFID terminals ship with a touch screen protector already installed. To replace the screen protector, you must remove the one already installed.

1. Press the red **Power** button to suspend the unit.
2. Using a strong, flat, plastic card (e.g., credit card) wedge the edge of the card under the existing screen protector. Catch the edge of the screen protector and pull it up and away from the touch panel.

Note: If you have one, you can also use the small plastic squeegees designed for touch panels.



3. Wipe the screen with a clean, non-abrasive, lint-free cloth.

Note: Use ionized air, if available, to blow additional dirt or particles off the touch panel.

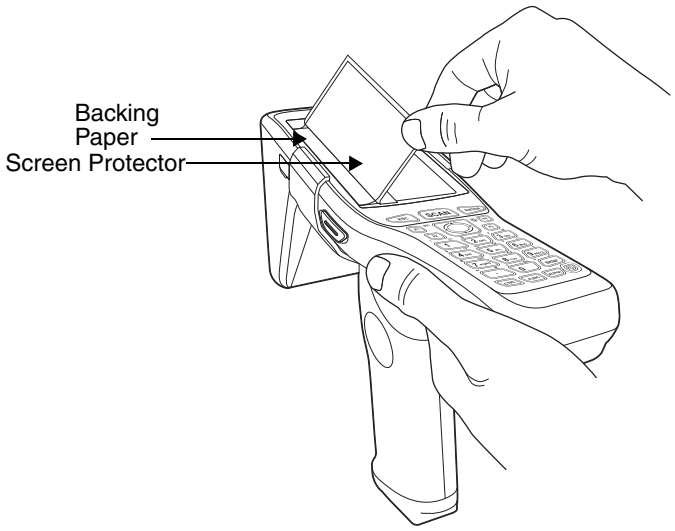
Installing Your Screen Protector

When installing a new screen protector, use a flat plastic card (e.g., credit card) to apply the screen protector smoothly and remove any air bubbles.

Note: If you have one, you can also use the small plastic squeegees designed for touch panels.

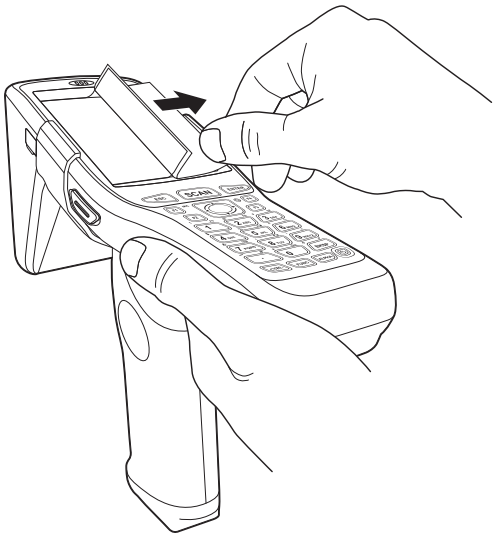
1. Press the orange **Power** button to put the terminal in Suspend Mode.
2. Clean the touch panel thoroughly with a clean, non-abrasive, lint-free cloth. Make sure nothing is on the touch panel.

3. Release the left edge of the backing paper on the screen protector and align the exposed edge of the screen protector along the left edge of the touch panel. Make sure that it lies flush with edges of the touch panel

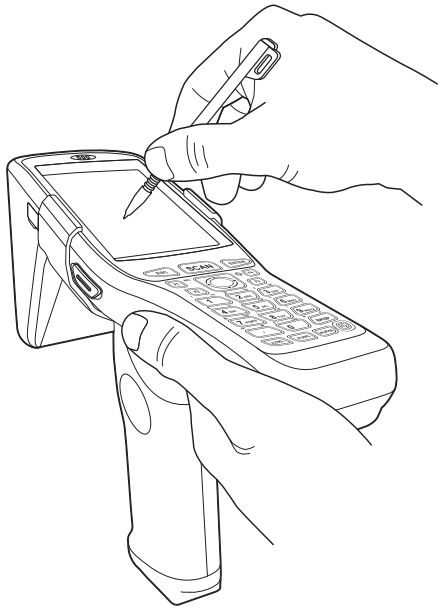


Note: To reposition the screen protector, lift up gently and reapply.

4. Pull smoothly and evenly from left to right until the screen protector is applied. Press gently but firmly. Use the card as necessary to smooth out any air pockets or bumps after application.

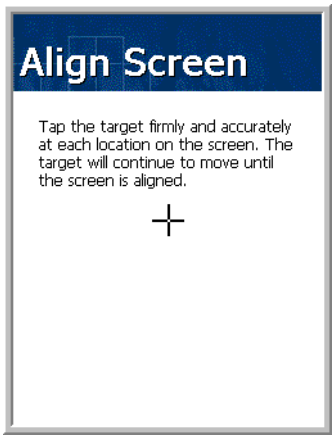


5. Press the **Power** key to wake the terminal and check the touch panel with the stylus.

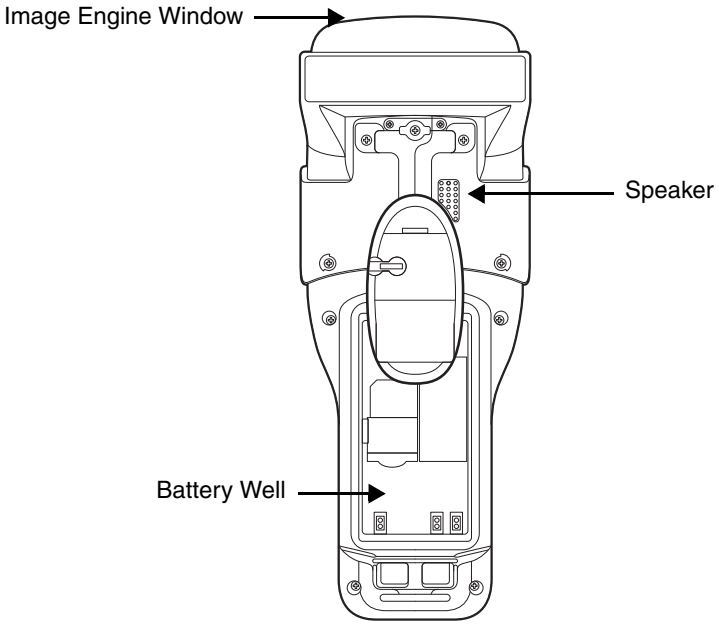


6. Verify that the screen accepts input from the stylus as usual. If not, re-apply the screen protector.
7. Press the orange **Power** button to put the terminal back in Suspend Mode.
8. Clean the surface of the screen protector with a clean, non-abrasive, lint-free cloth.
9. Press the **Power** key to wake the terminal again.
10. For maximum performance, recalibrate the screen. Tap **Start** > **Settings** > **Control Panel** > double tap **Stylus** > **Calibration** tab.

11. Tap **Recalibrate** and follow the instructions on the screen.



Back Panel Features



Battery Well

For information about installing the battery, see Changing the Main Battery Pack on page 3-12. For information about battery power, see Battery Power on page 3-11.

Speaker

The integrated speaker sounds audio signals as you scan bar code s and enter data, but emits no ambient noise on system activity (i.e., processor, memory access, radio traffic, etc.). The speaker can also be used for playing sounds (e.g., WAV or MP3 files).

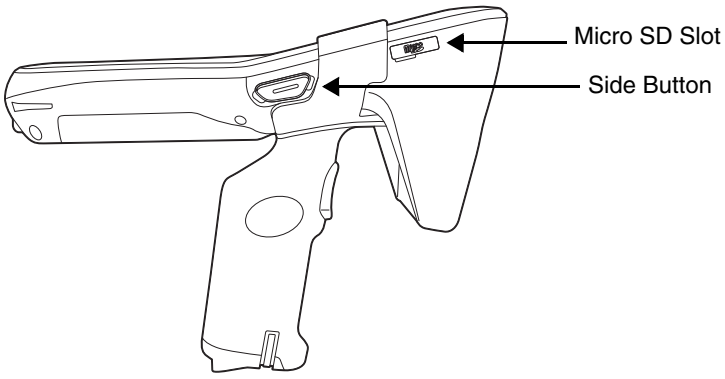
The speaker meets the following SPL levels at 40cm:

- 500Hz–67db
- 1KHz–72db
- 4KHz–72db

Stylus

Optimus 5900 RFID terminals ship with a stylus inserted in handle. Store the stylus in the handle when you are not using it; see Using the Stylus on page 2-5.

Right Side Panel Features



Side Button

There is a button like this on both side panels. You can use the Programs Buttons option in the Control Panel to change the functionality of the side buttons.

Side Door

The rubber door on the left side panel provides access to the Micro SD slot.

When closed, the side door seals the terminal from moisture and particle intrusion thus preserving the terminal's environmental rating.

Installing Memory Cards

The Optimus 5900 RFID supports Micro Secure Digital High Digital (SD) memory cards up to 32GB.

To install an SD card

1. Press the **Power** key to put the terminal in Suspend Mode; see Suspend Mode on page 3-15.
2. Open the access door on the left side.
3. Insert the SD card with the label facing upward.

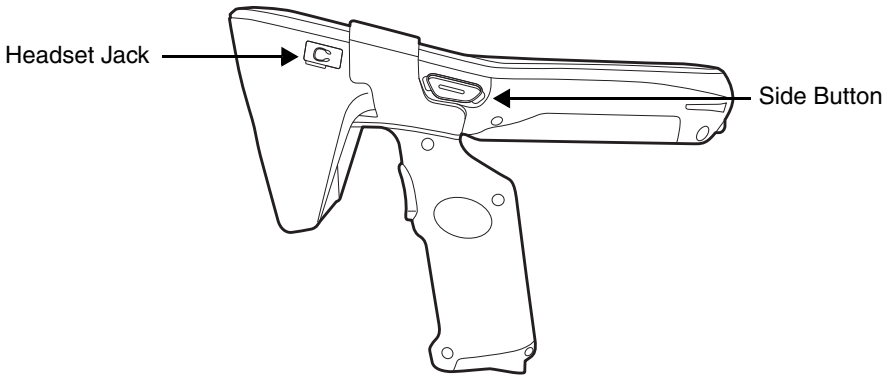
Note: To remove an installed SD card while the access door is open, tap on the edge lightly to unlock the card; the card will pop out just enough for you to grab its edge and pull it out.

4. Replace the access door.
   The rubber door is required for 1) proper functioning of the SD card and 2) preserving the environmental rating for water sealing. Do not remove the rubber door.

Note: Do not use the terminal when the access door is open. When this door is fastened securely and properly, the memory interface is sealed against moisture and particle intrusion, read/write data is stored securely, and the terminal's environmental rating is preserved.

5. Tap the **Power** key to resume operation.
6. To verify that the operating system recognizes the new memory card, open Windows Explorer and navigate to My Device\Storage Card.

Left Side Panel Features



Side Button

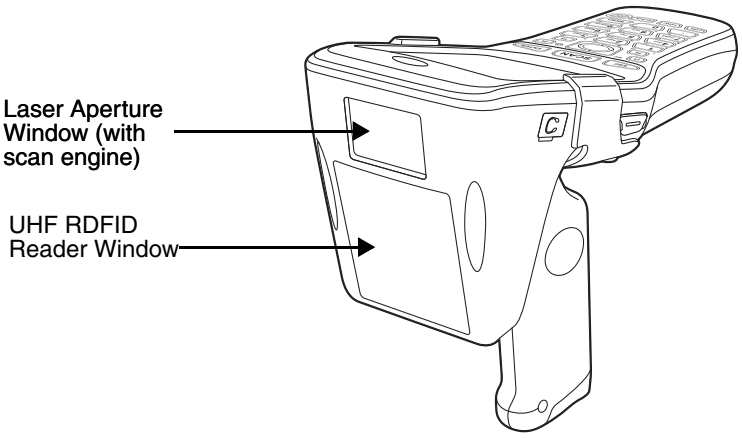
There is a button like this on both side panels. You can use the Programs Buttons option in the Control Panel to change the functionality of the side buttons.

Headset Jack

The rubber door on the left side panel provides access to the headset jack. This is a 2.5mm audio jack that supports a headset with a mono speaker and microphone.

When closed, the side door seals the terminal from moisture and particle intrusion thus preserving the terminal's environmental rating.

Top Panel Features



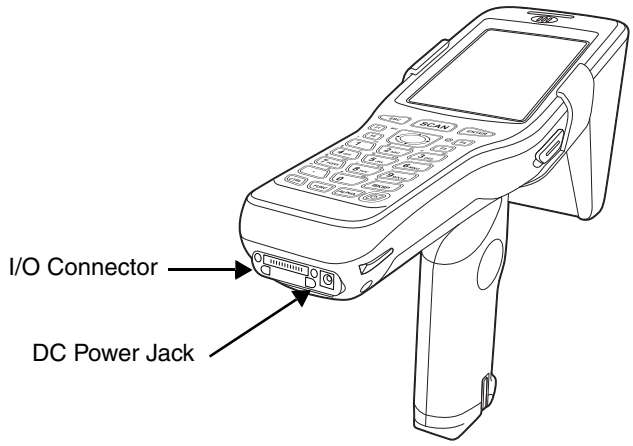
Laser Aperture Window

The angled image engine reads and decodes most popular bar code symbologies and takes images like a digital camera. For more information, see Using the Image Engine on page 6-1.

UHF RFID Reader Window

The angled RF reader reads and decodes tags. For more information, see Using the Image Engine on page 6-1.

Bottom Panel Features



DC Power Jack

The DC power jack receives external power from the Optimus 5900 RFID terminal's power cable that is included in the box with the terminal. When connected to the power cable, the terminal is powered and the main battery pack is charging.

I/O Connector

The I/O mechanical connector is designed to work exclusively with Optimus 5900 RFID peripherals and cables. This connector powers the terminal, charges the main battery, and facilitates communication. This connector supports full speed USB 1.1 communication (up to 12 Mbps) and RS-232 communications with a maximum speed of 115Kbps and seven baud rate settings.

Through this connector, you can communicate with a host workstation via Microsoft ActiveSync; see ActiveSync Communication on page 7-1.

The I/O connector supports the following signals:

- DC IN
- Transmitted Data
- Request To Send
- USB Host +5V
- USB Host D+
- USB Host D-
- USB Host Detect
- Clear To Send
- Received Data
- GND
- RS-232 Shutdown
- USB Client D+
- USB Client D-
- USB Client +5V

Note: Signals referenced are for a DTE device.

Peripherals/Accessories for the Optimus 5900 RFID Terminal

The following items are sold separately and enhance your Optimus 5900 RFID terminal's capabilities.

Optimus eBase™ Device

The Optimus 5900 RFID eBase is used to charge the main battery, to power the battery charging system in the terminal, and can be used to communicate data from the terminal to a PC/laptop via the Ethernet/ USB/RS-232 serial port.

A spare battery may also be charged in the battery charging well behind the terminal.

For more information, see Optimus 5900 RFID eBase Device (Model: 5900-EHB) on page 9-1.

Li-Ion Battery Packs

The Li-Ion battery pack provides the main power supply for the terminal. For more information, see Battery Power on page 3-11.

For information on how to purchase these items, contact a Honeywell sales representative.

Battery Power

The intelligent battery technology inside the terminal features two types of battery power:

- The main battery pack on the back panel (see Main Battery Pack on page 3-11)
- The backup battery located inside the terminal (see Internal Backup Battery on page 3-14)

Both batteries work together to prevent data loss when the terminal is used over long periods of time.

Both batteries must be charged to full capacity before using the Optimus 5900 RFID for the first time! Charge the main battery pack with the power supply cable until the LED turns green (red while charging). The average charge time for a fully depleted main battery is 7 hours. It takes less time if the battery has some charge.

Main Battery Pack

We recommend use of Honeywell Li-Ion battery packs. Use of any non-Honeywell battery may result in damage not covered by the warranty.

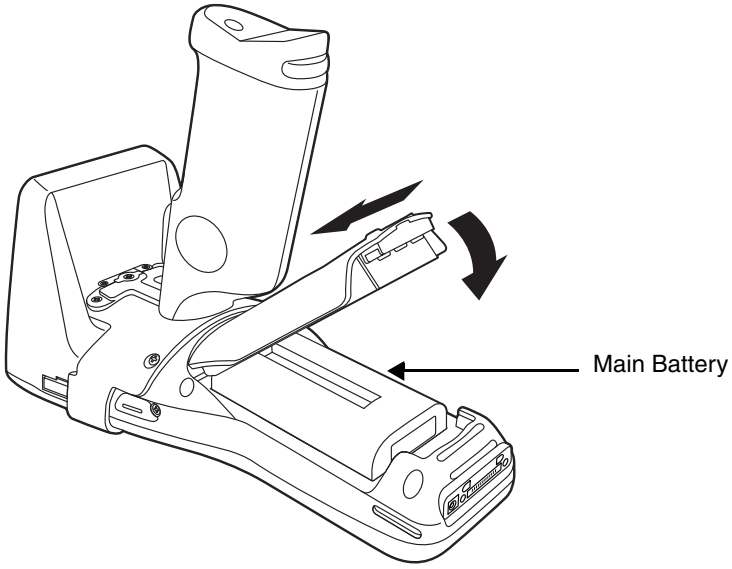
The Optimus 5900 RFID has a Li-Ion 3.7V/5000 mAh/12.2 Wh battery pack.

The Li-Ion battery pack is the primary power source for the Optimus 5900 RFID terminal as well as the internal backup battery.

Changing the Main Battery Pack

Before installing a battery pack, press the **Power** button to put the terminal in Suspend Mode (see page 3-15) so that operations are suspended before removing the main power source. The Optimus 5900 RFID terminal is shipped with the battery separate from the unit. You will need to remove the battery door, insert the battery, and replace the battery door. Refer to the instructions included in Installing the Main Battery section (page 2-1).

Note: The battery door must be installed prior to booting the unit.



Charging

When the battery is installed in the terminal, you may charge the device by either using the USB cable or by placing the terminal in the Optimus 5900 RFID eBase Device (Model: 5900-EHB) (see page 9-1).

To fully charge the Li-Ion battery before installing it in the terminal insert the battery in the spare battery charging well in the back of Optimus 5900 RFID eBase.

Charging Time

The 5000mAh battery pack charges to full capacity in an average of 7 hours for a fully depleted battery. It takes less time if the battery has some charge.

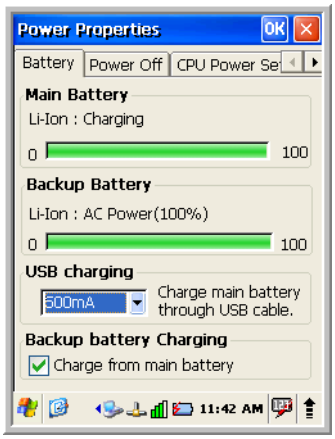
Managing Main Battery Power

Data and files saved on the Optimus 5900 RFID terminal may be stored in RAM memory; therefore, maintain a continuous power supply to the terminal to help prevent data loss. When you remove a battery pack, insert another charged battery pack into the Optimus 5900 RFID terminal. If the main battery pack is low, insert the terminal into a charging peripheral to power the terminal and begin recharging the battery.

*Note: If the main battery is low and the terminal is in Suspend Mode, pressing the **Power** button does* **not** *wake the Optimus 5900 RFID terminal; you must first replace the discharged battery with a fully charged battery or apply A/C power to the terminal.*

Checking Battery Power

Power icons appear in the command bar at the bottom of the window. Double tap on the battery icon to open the Power Properties. The Battery tab opens displaying the charge status of both the main and backup batteries.



Note: You can also check battery power by tapping ***Start*** *>* ***Settings*** *>* ***Control Panel*** *> double tap* ***Power****.*

Storage Guidelines

To maintain optimal battery performance, follow these storage guidelines:

- Avoid storing batteries outside the specified range of -4 to 140° F (-20 to 40°C) or in extremely high humidity.
- For prolonged storage, it is recommended that the battery be at a 40% - 50% charge level, be removed from the device, and stored in a controlled temperature environment. Following these recommendations will maximize battery life.

Guidelines for Battery Pack Use and Disposal

The following are general guidelines for the safe use and disposal of batteries:

- We recommend use of Honeywell Li-Ion battery packs. Use of any non-Honeywell battery may pose a personal hazard to the user.
- DO NOT attempt to charge damp/wet mobile computers or batteries. All components must be dry before connecting to an external power source.
- Replace defective batteries immediately; using a defective battery could damage the Optimus 5900 RFID terminal.
- Never throw a used battery in the trash. It contains heavy metals and should be recycled according to local guidelines.
- Don't use a battery in any other manner outside its intended use in Optimus 5900 RFID terminals and peripherals.
- Don't short-circuit a battery or throw it into a fire; it can explode and cause severe personal injury.
- Excessive discharge damages a battery. Recharge the battery when your terminal indicates low battery power.
- If you observe that the Honeywell battery supplied is physically damaged in some way, send it to Honeywell International Inc. or an authorized service center for inspection. Refer to the Product Service and Repair (page 10-1) section of this guide.
- Although your battery can be recharged many times, it will eventually be depleted. Replace it after the battery is unable to hold an adequate charge.
- If you are not sure the battery or charger is working properly, send it to Honeywell International or an authorized service center for inspection.

Internal Backup Battery

Located inside the terminal, the backup battery is a 3.7V Lithium Polymer battery.

The internal backup battery prevents the terminal from being reset when you remove the main battery pack. This backup battery retains RAM data and allows the real-time clock to remain operational for at least 30 minutes. If the terminal is left without the main battery pack for more than 30 minutes, the internal backup battery discharges and needs to be recharged to function according to specifications.

Note: Even if the internal backup battery fails, data and programs stored in Flash memory or on an optional SD card are not lost. However, the terminal automatically cold boots when you install a fully charged battery pack and you will need to reset the real-time clock.

Charging

The internal backup battery charges off the main battery pack and requires 2 hours charge time to backup RAM data for 30 minutes. You can begin using the Optimus 5900 RFID terminal after charging the main battery for an average of 7 hours for a fully depleted battery; however, the internal backup battery will continue to charge off the main battery. It takes less time to charge the main battery if the battery has some charge.

To ensure that the internal backup battery functions properly, maintain a consistent power supply for the first eight hours of terminal operation. This power supply can be external power (using a charging peripheral) or an installed, charged battery pack or a combination of both.

Charging Guidelines

Follow these guidelines to maximize the life of the Optimus 5900 RFID terminal's internal backup battery under normal usage conditions:

- Keep a charged Li-Ion battery pack in the Optimus 5900 RFID terminal.
- Keep the Optimus 5900 RFID terminal connected to a power source when the terminal is not in use.

Resetting the Terminal

Soft Reset: Using the stylus, press the **Reset** button. The screen turns white and the decode/scan LED flashes blue for approximately 10 seconds.

Hard Reset: Press and hold the **Power** button and then using the stylus, press the **Reset** button. The screen turns white and the decode/scan LED flashes blue for approximately 18 seconds.

Soft Reset (Warm Boot)

A soft reset re-boots the terminal without losing RAM data, terminates all running applications, reloads the OS, and launches Autoinstall, which installs any CAB or REG files in the **\AutoInstall\Cabfile** folder.

You would perform a soft reset 1) when the terminal fails to respond, 2) after installing software applications that require a reboot, 3) after making changes to certain system settings, or 4) to install new CAB or REG files.

The desktop appears when the Soft Reset is complete.

Hard Reset (Cold Boot)

⚠ *A hard reset erases all of the data and applications stored in RAM memory, reloads the OS, resets the Real Time Clock (RTC), and launches Autoinstall, which installs any CAB or REG files in the* **\AutoInstall\Cabfile** *folder.*

Hard resets automatically launch a soft reset as part of the boot process if there are CAB files present.

You would perform a Hard Reset (instead of a Soft Reset) when you want to ensure the RAM memory is also cleared. RAM memory stores settings for Internet Explorer, Outlook, and other Microsoft applications.

Note: Set the time and date after each hard reset to ensure that the system clock is accurate. Double-click the date on the command bar to open the Clock setting and set the time and date.

Suspend Mode

Suspend Mode suspends terminal operation. The terminal appears to be "off" when in Suspend Mode. The terminal is programmed to go into Suspend Mode automatically when inactive for a specified period of time. You can set this time period in the Power setting.

To suspend operation, press the orange **Power** button to put the terminal in Suspend Mode. To wake the device, press the **Power** button. You may also press the front or rear scan keys to wake a suspended device.

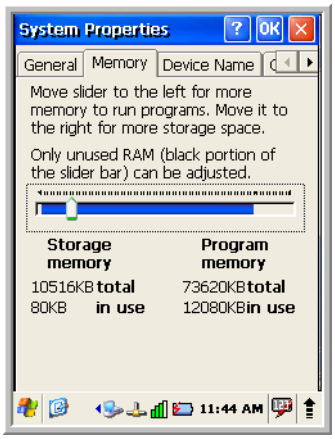
Troubleshooting Suspend/Resume

If the terminal does not wake when you press the **Power** button, the main battery might be too low to resume operation. To check, remove the battery and install a fully charged battery or connect the terminal to a Optimus 5900 RFID charging peripheral.

Changing the Memory Allocation

You can adjust file storage versus program memory in System Properties.

1. Tap **Start** > **Settings** > **Control Panel** > **System** > **Memory** tab.



2. Move the slider to adjust the memory allocation and tap **OK**. The changes take effect immediately.

Care and Cleaning of the Optimus 5900 RFID Terminal

When needed, clean the image engine window and the LCD display with a clean, non-abrasive, lint-free cloth. The terminal can be cleaned with a damp cloth.

Optimus 5900 RFID Technical Specifications

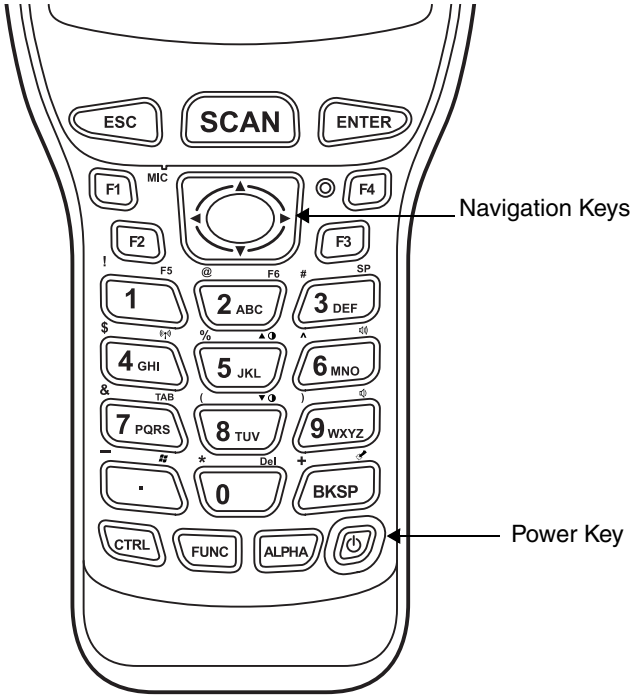
Operating System	Microsoft Windows CE 5.0 Professional
Development Environment	UHF Reader Module Library Reference
Processor	PXA300 624MHz
Memory	128MB RAM X 256MB Flash
Expansion Memory	User accessible Micro SD Card (high capacity up to 32GByte).
Display	3.5 in. TFT Transmissive 65K color LCD with backlight, QVGA (240 x 320)
Backlight	LED
Image Engine	5300SR 2D imager with laser aimer.
Keypad	26-key shifted alpha numeric keypad (including side scan buttons) with backlit keys
Vibrator	Built-in vibrator
Audio	Built-in microphone and speaker, stereo headset jack
Communication Interface	Full speed USB 1.1 (12Mbps) from cradle (or I/O cable); RS232 (115 Kbps) from cradle
Main Battery	Li-Ion rechargeable battery 3.7V / 5000 mAh
Backup Battery	140mAh Li-Polymer Ion
Expected Hours of Operation	5000mAh battery pack: 15.5 hours (with scan every 2 seconds) Battery life varies with application and use case.
Charging	via DC plug on terminal or eBase
Expected Charge Time	5000mAh - 7 hours for a fully depleted battery
Charging Peripherals	Plug adapter and Power Supply Charger (PSA15R-050) eBase–single-bay terminal charge/communicate (via Ethernet/USB/RS-232 serial connection)
WPAN (standard)	Bluetooth Class II (10 m) v2.0 Enhanced Data Rate (EDR) with on-board antenna. BQB certified
WLAN (optional)	Dual Mode 802.11g (11 Mbps/54 Mbps) with internal antenna
RFID Frequency	902-928 MHZ
RFID Power	Max 1 Watt
WLAN Security	WEP, 802.1x, LEAP, TKIP, MD5, EAP-TLS, EAP-TTLS, WPA-PSK, WPA v2.0, and PEAP

Operating Temperature	14° to122°F (-10° to 50°C)
Charging Temperature	32° to 113°F (0° to 45°C)
Storage Temperature	-4° to 158°F (-20° to 70°C)
Humidity	95% humidity, non-condensing
Construction	High impact resistant PC/ABS housings Magnesium alloy internal chassis with component shock mounts
Drop	4 ft. (1.2m) multiple drops to concrete, all axis, across operating temperature range
Tumble	250 3.3 ft (1.0m) tumbles per IEC 600068-2-32
ESD	**Air:** ± 15k Vdc **Direct:** ± 8k Vdc
Environmental Sealing	IP54 rating
Dimensions	200 mm long x 83 mm wide x 42 mm deep (7.87” x 3.27” x 1.65”)
Weight	595 g (21 oz) with standard battery
Scanner / Decode Capabilities	5300SR 2D Imager with Adaptus Technology and Laser Aimer. Decodes all standard 1D, 2D, Postal, and OCR codes.
Regulatory and Compliance	**Safety:** UL60950-1, cUL 60950

4 Using the Keypad

Overview

The keypad is as follows:



Navigation Keys

The navigation keys enable you to move the cursor up and down lines and from character to character.

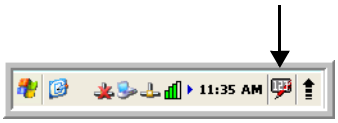
Basic Keys

Name	Function
ESC (Escape)	Cancels an action. For example, if you press the **UP** arrow on the command bar and then press the **ESC** key, the pop-up window disappears.
SCAN	Activates the image engine to scan a bar code or take an image.
ENTER	Performs the same function as the Enter key on a workstation.
CTRL (Control)	Modifies the next key pressed to type specific characters (e.g., pressing **CTRL** and a "2", types an "@" sign on the keypad.
FUNC (Function)	Used in conjunction with the number keys to perform operation indicated in blue above the key. For example, pressing FUNC and then the 3 key, inserts a space after the cursor.
ALPHA	Toggles the keyboard between alpha (upper and lowercase) and numeric modes on the keypad. The "ABC"/"abc" indicator on the command bar changes accordingly.
Backspace (BKSP)	Backspace moves the cursor back one space. If you are typing text, a character is deleted each time you press the backspace key.
Power	**Power** key suspends and resumes the terminal.

Alpha/Numeric Modes

The keypad defaults to numeric mode. Use the **ALPHA** key to toggle between numeric and alpha modes. Pressing the **ALPHA** key locks the keypad in numeric mode, alpha mode (lowercase), or alpha mode (uppercase).

The command bar on the screen displays an icon that indicates the alpha/numeric status of the keypad.



Alpha Indicators on the Number Keys

Each number key displays the characters typed when you press that key in alpha mode.

Note that when typing in alpha mode, you must use the same multi-press method you would use when typing letters on an older style phone keypad. Each key press types the next letter in the sequence as displayed by the alpha indicator.

Function Key Combinations

The FUNC (Function) key modifies the next key pressed to perform specific functions.

Key Combination	Function
FUNC + 1	F5
FUNC + 2	F6
FUNC + 3	Space
FUNC + 4	Toggle the wireless radio on and off
FUNC + 5	Increase screen brightness
FUNC + 6	Increase volume
FUNC + 7	Tab
FUNC + 8	Decrease screen brightness
FUNC + 9	Decrease volume
FUNC + .	Start menu
FUNC + 0	Delete
FUNC + ALPHA	Align the screen (Press ESC to exit)

CTRL Key Combinations

Hold down the Control key (**CTRL**) and then press a key with the red characters above it to type the desired character.

Key Combination	Function
CTRL + 1	!
CTRL + 2	@
CTRL + 3	#
CTRL + 4	$
CTRL + 5	%
CTRL + 6	^
CTRL + 7	&
CTRL + 8	(
CTRL + 9	)
CTRL + .	- (minus)

Key Combination	Function
CTRL + 0	*
CTRL + SP	+ (plus)

Program Buttons

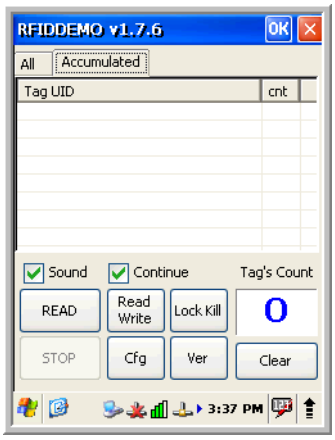
F1-F4 buttons can be programmed to execute different functions using the Program Button program in the Control Panel.

5 Using the UHF RFID Reader

Overview

The Optimus 5900 RFID terminal houses a UHF RFID reader that allows you to read multiple/single RFID tags and read/write/lock/kill the memory of single tags

From the Today screen, select **Programs** > **Demos** > **RFID Demo**. The following screen appears in approximately 2 seconds.

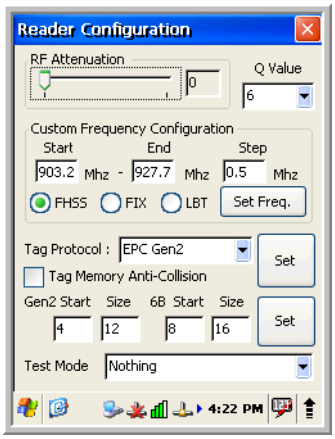


All	Tags that are read are displayed in the order in which they are read. The last read tag displays at the top of the list. A maximum of 128 tags display at a time. The same tag's UID may appear several times.
Accumulated	Tags display on the basis of their UID. If the UID of the tag does not exist, a new registration is carried out. The tag's UID appears only once. The order of the tags appears in the non-increasing order.
Sound	The terminal beeps whenever a tag is read. Adjust the volume of the beep by changing the setting in **Control Panel** > **Volume & Sounds**.
Continue	If the Accumulated tab is selected, you may check the Continue box. If the box is not checked, sound is generated only when a new tag is read except UID tags in the existing list; thereby increasing the tag count.
Read	Selecting **Read** causes the terminal to read tags. This action is the same as pressing and holding the trigger.
Read/Write	Selecting Read/Write opens the Read/Write Memory window. (See Reading Tags on page 5-3.)
Lock/Kill	Lock prevents reading of or writing to a tag. Kill makes a tag permanently undetectable. (See Tag Lock/Kill on page 5-5.)
Tag's count	If All is selected, the tag count is the number of tags with different UIDs. If Accumulated is selected, the tag count equals the number of tags in the list.
Stop	Stops the terminal from reading RFID tags.

Cfg	Cfg sets output of a terminal or frequency of Q value. (See Configuring the RFID Output on page 5-2.)
Ver	Displays the firmware version of the UHF RFID reader module.
Clear	Selecting Clear, deletes all of the tags displayed

Configuring the RFID Output

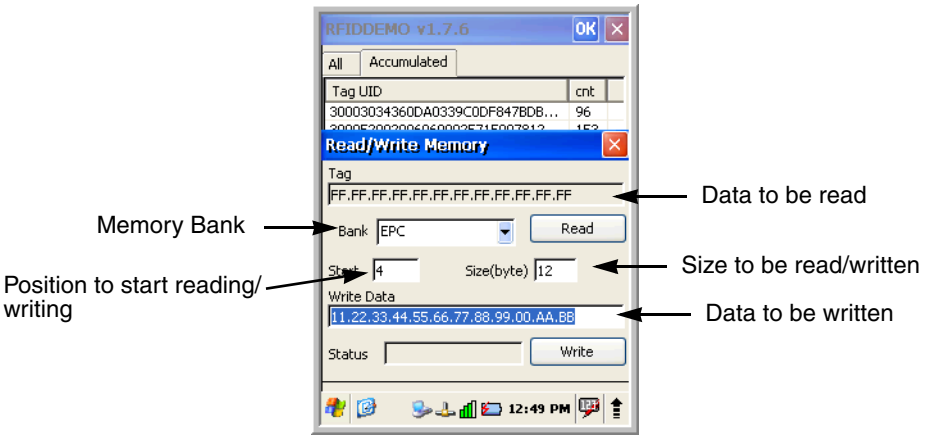
In the Reader Configuration screen, you can change the settings for output of the reader, Q value, the operating frequency and the reader RF test. Select **Cfg** on the main RFID demo screen.



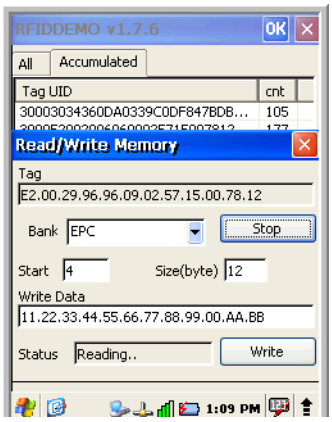
RF Attenuation	Adjusts the attenuation of the reader output. 0 equals no attenuation at output. The range is -30 to +30. The slider moves in 1 unit increments, which are equal to approximately 1dBm. Increasing the attenuation value reduces the output, which decreases the tag reading performance.
Q Value	The Q Value sets the field of detection when multiple tags are read. Setting a Q value of 0 limits the field of detection to tags very close to the reader. Setting a Q value of 9 allows the terminal to detect tags anywhere within the general vicinity of the terminal.
Custom Frequency Configuration	FHSS : Frequency hopping occurs in intervals defined by the user in the "Step" box. You can define the range of frequencies in the "Start" and "End" boxes. The frequency hopping method is pseudo-random hopping. FIX : The tag is read by continuously using only the frequency designated by the user in the "Start" box. To set the frequency, highlight the number in the "Start" box by dragging the stylus over it. Then use the keypad to select a new frequency and click the [Set Freq.] button. Listen Before Talk (LBT): LBT motion is executed in intervals designated by the user in the "Step" box from the frequency designated in the "Start" box to the frequency designated by the user in the "End" box.

Test Mode	TEST MODE is necessary for various certifications. Its use is prohibited except by a certification engineer. You select a necessary menu and click the [Set] button. No Modulation ON causes only a carrier signal to be transmitted with no data modulated. The frequency of the carrier is selected in the Start box and kept constant by selecting FIX. Modulation ON/OFF: Data are transmitted, namely, modulated output is transmitted. All of FIX and FHSS are possible. Fix Modulation ON/OFF: The continuously modulated output is transmitted. Only FIX is possible.

Reading Tags

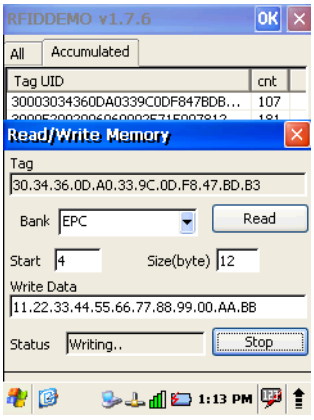


1. EPC Gen2 Tags have four kinds of Banks (Reserved, EPC, TID, USER). Select the Bank that you want to read in the Bank field.
2. Input a memory starting position (in bytes) from where you want to read in the Start box and the desired size (in bytes) from a starting position to the window.
3. Click the **Read** button.
4. The Reading status is displayed and the **Read** button changes to **Stop** once the tag is read. The status is continuously maintained until reading is successful or until you stop the reading by selecting **Stop**. If reading is complete, data read at **Tag Memory** is displayed (hexadecimal number), and the Status displays **Read OK**. If no tag is in the vicinity of the terminal, the terminal continues to read until you move the terminal or until you stop the reading process.



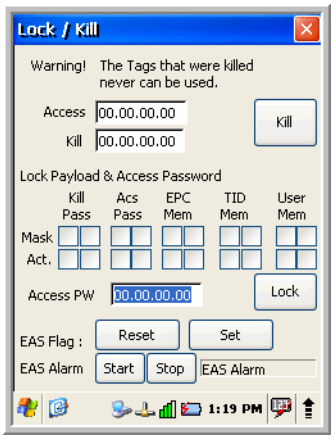
Tag Writing

1. EPC Gen2 Tags have four kinds of Banks (Reserved, EPC, TID, USER). Select the Bank that you want to write in the Bank field.
2. Input a memory starting position (in bytes) from where you want to write in the Start box and the desired size (in bytes) from a starting position to the window. Data that you want to write displays in the Write Data field as hexadecimal number. The data is separated with a period, which does not affect the input.
3. Click the **Write** button. **Writing** is displayed in the Status field, and the status is continuously maintained until writing is successful or until you stop the writing by selecting Stop. If writing succeeds, the Status displays **Write OK**. If no tag is in the vicinity of the terminal, the terminal continues to try to write until you move the terminal or until you stop the writing process.



Tag Lock/Kill

EPC Gen2 Tags allow the locking and killing tags. Lock prevents reading of or writing to a tag. Kill makes a tag permanently undetectable.



Kill

The Access and Kill passwords represented by hexadecimal numbers other than 00H are required to Kill a tag.

If you know the passwords, enter them into the Access Password and Kill password fields. Then click the Kill button.

Lock

The Access Password represented by hexadecimal numbers other than 00H are required to lock a tag. If you know the password, enter it into the Access Password field and click the Lock button.

6 Using the Image Engine

Overview

The Optimus 5900 RFID terminal houses a compact image engine using Adaptus™ Imaging Technology that instantly reads all popular 1D and 2D bar codes and supports omni-directional aiming and decoding. The image engine can also capture digital images, such as signatures and pictures.

Available Image Engines

Optimus 5900 RFID terminals are equipped with 5300 Standard Range (5300SR) image engines.

Depth of Field

5300 Standard Range (5300SR)

	8.3 mil Linear	10 mil PDF417	13 mil UPC	15 mil Data Matrix	15 mil QR	35 mil MaxiCode
Working Range*:	(.020cm)	(.025cm)	(.033cm)	(.038cm)	(.038cm)	(.089cm)
Near	3.5 in. (8.9cm)	3.1 in. (7.9cm)	2.1 in. (5.3cm)	2.3 in. 5.8cm)	3.1 in. (7.9cm)	2.0 in. (5.1cm)
Far	7.6 in. (19.3cm)	9 in. (22.9cm)	13.2 in. (33.5cm)	10.2 in. (25.9cm)	8.8 in. (22.4cm)	13.0 in. (33cm)

*Data characterized at 23°C and 0 lux ambient light.

Supported Bar Code Symbologies

Symbology Type	Symbology Name	
1D Symbologies	Codabar Code 3 of 9 Code 11 Code 32 Pharmaceutical (PARAF) Code 93 Code 128 EAN with Add-On EAN with Extended Coupon Code EAN-13 GS1 Databar	Interleaved 2 or 5 Matrix 2 of 5 Plessey PosiCode Straight 2 of 5 IATA Straight 2 of 5 Industrial Telepen Trioptic Code GS1-128 UPC and UPC-A
2D Symbologies	Aztec Code 16K Composite Data Matrix Grid Matrix GS1 Databar Han Xin MaxiCode OCR PDF417 QR Code	
Composite Codes	Aztec Mesa Codablock F EAN·UCC GS1 Databar-14	
OCR	OCR-A OCR-B OCR-US Money Font	
Postal Codes	Postnet and most international 4 state codes Australian Post British Post Canadian Post China Post Japanese Post KIX (Netherlands) Post Korea Post Planet Code	

Activating the Engine

When a scanning application is open, press the **Scan** key to activate the image engine.

Using Demos

Optimus 5900 RFID Demos are software utilities loaded on all Optimus 5900 RFID terminals that demonstrate the advanced features of the terminal. There are two demos that feature the image engine: Image Demo and Scan Demo.

To access these demos, tap **Start** > **Programs** > **Demos**.

- Select **Scan Demo** to verify decoding, or
- Select **Image Demo** to verify imaging.

Decoding

The Optimus 5900 RFID terminal supports two types of image decoding: full-area imaging and Advanced Linear Decoding (ALD).

Full-area Imaging

Full-area imaging means that the Optimus 5900 RFID terminal supports omni-directional aiming, meaning that a positive read can be obtained from many positions. For details, see Omni-Directional Scanning Positions on page 5-4.

ALD

ALD provides fast reading of linear (1D) and stacked linear bar codes (PDF417). For the best read, the aiming pattern should be centered horizontally across the bar code. When ALD is enabled, the reader does not read matrix or postal codes.

To Decode a Bar Code

1. Tap **Start** > **Programs** > **Demos** > **Scan Demo**.
2. Position the Optimus 5900 RFID terminal over one of the sample bar codes on page 6-3. A range of 4-10 inches (10-25 cm) from the bar code is recommended.
3. Project the aiming brackets by pressing and holding the Scan key. The Scan LED lights red.
4. Center the aimer crosshair over the bar code. The aiming beam should be oriented in line with the bar code to achieve optimal decoding; Omni-Directional Scanning Positions, page 6-4
5. When the bar code is successfully decoded, the decode LED lights green and the terminal beeps.

Sample Bar Codes

You can use the following bar codes to verify decoding:

Sample 128

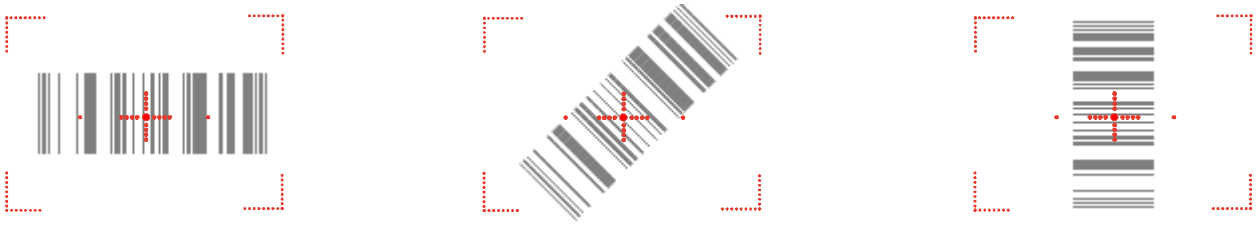
Code 128

Sample PDF417

PDF417 Test Message

Omni-Directional Scanning Positions

The high-vis aiming pattern frames the bar code to provide you with the best scanning performance.



Note: To achieve the best read, the aiming beam should be centered horizontally across the bar code.

The aiming pattern is smaller when the terminal is held closer to the code and larger when the terminal is held farther from the code. Symbologies with smaller bars or elements (mil size) should be read closer to the unit whereas larger bars or elements (mil size) should be read farther from the unit.

Capturing Images

The image-capture process is an intuitive, split-second operation for experienced users. By following basic guidelines, however, new users can easily develop their own technique and, with practice, quickly learn to adapt to different application environments.

Image Preview

When the imaging process is initiated, the touch screen displays a preview of the object. This is a live video image of what the imager is currently viewing and has a slightly degraded appearance compared to the captured image. This is normal; the captured image has a higher resolution.

File Formats

The Optimus 5900 RFID terminal is capable of saving images in a number of industry-standard file formats (BMP, JPG and PNG). The default file format for images is a grayscale BMP.

File Size

Digital images have a maximum image size of 640 x 480 pixels and may have up to a 256 grayscale image definition. The image quality and related file size are determined by the data compression method used by the software application used to take the image. The average size of the image file is approximately 4-8K. However, the size of the image depends on image content; the more complex the content, the larger the file size.

Taking an Image

1. Tap **Start** > **Programs** > **Demos** > **Image Demo**.
2. Point the Optimus 5900 RFID terminal at the object.
3. Press the Scan key to activate the engine. The touch screen displays a preview of the object.
4. Adjust the terminal's position until the preview on the screen is as you want it to appear in the image.
5. Hold the terminal still and release the Scan key.
   The touch screen flashes, and the captured image appears on the screen.
6. By default, the image is saved to the My Documents folder in My Device.
   To save the image to another location, tap **File** > **Save As**.

High-Vis Aiming Pattern

If your Optimus 5900 RFID terminal is configured with the 5300SR imager, you can enable the aiming pattern for imaging in the Image Demo application.

1. Tap **Start** > **Programs** > **Demos** > **Image Demo**.
2. Check the Aimer box in the Image Demo window.
3. The aiming pattern is now enabled for imaging.

Uploading Images

Image files can be transmitted to a host workstation via

- Microsoft ActiveSync and a Optimus 5900 RFID communication peripheral
- Wireless radio: 802.11g and/or Bluetooth

7 Communication

Communication Options

Optimus 5900 RFID terminals offer several communication options including Microsoft ActiveSync and wireless radios.

I/O Connector (Wired Communication)

The mechanical connector on the bottom panel (see DC Power Jack on page 3-10) connects the terminal to the Optimus 5900 RFID eBase peripheral that connects to a host workstation via USB (1.1 or higher), thus enabling ActiveSync communication.

For more information, see ActiveSync Communication on page 7-1.

Wireless Radios (Wireless Communication)

Optimus 5900 RFID terminals can be equipped with 802.11g and Bluetooth radios or just a Bluetooth radio.

For more information, see Wireless Radios on page 7-5.

Installing Additional Software

Optimus 5900 RFID terminals ship with the operating system and radio drivers already installed. These are the default programs that install when your terminal first boots up. You can install additional software programs on the terminal provided that the following parameters are met:

- the software program was created for a Windows CE device.
- the terminal has enough memory to store and run the program.
- the program has an EXE, CAB, or DLL extension.

When selecting programs, verify that the program and version of the program are designed for the Windows CE 5.0 and the terminal's processor. You can verify your processor by tapping **Start** > **Settings** > **Control Panel** > **System** > **General** tab. Make a note of the information in the **Processor** field.

To install additional software, you can use the communication options described in this chapter.

- Adding Programs via ActiveSync, page 7-4.
- Adding Programs from the Internet, page 7-8.

ActiveSync Communication

To synchronize, ActiveSync 4.1 or higher must be installed and configured for the appropriate communication type on the host workstation and the Optimus 5900 RFID terminal. Optimus 5900 RFID terminals ship with ActiveSync already installed. Therefore, if ActiveSync is already installed on the host workstation, you just need to connect the Optimus 5900 RFID terminal to the host workstation (via Optimus 5900 RFID peripheral) to initiate communication.

Note: You can download the most current version of ActiveSync from www.microsoft.com.

⚠ *When communicating via ActiveSync, your terminal is designed to be connected to the host workstation with a Honeywell communication peripheral. We recommend use of Honeywell peripherals, power cables, and power adapters. Use of any non-Honeywell peripherals, cables, or power adapters may cause damage not covered by the warranty.*

Communication Type

The Optimus 5900 RFID terminal supports the following type of communication via ActiveSync through its DC Power Jack (see page 3-10) on the bottom panel:

USB The USB cable and hardware peripherals allow the Optimus 5900 RFID terminal to communicate with a workstation through a USB port or to a network through a USB hub. The Optimus 5900 RFID terminal supports full-speed USB communication (USB 1.1); maximum data transfer rate is 12 Mbps. The Optimus 5900 RFID terminal defaults to USB communication out of the box.

Hardware Requirements for Setup

- Optimus 5900 RFID eBase
- USB Cable (for USB communication)
- ActiveSync v4.1 or higher installed on the host workstation
- Windows 98 Second Edition, Windows Me, Windows 2000, Windows NT (4.0 SP6 or higher) or Windows XP computer.

Software Requirements for Communication

To sync successfully, ActiveSync must be configured for the same communication type on both the host workstation and the Optimus 5900 RFID terminal. ActiveSync must be setup on your workstation *before* you initiate synchronization from the terminal for the first time.

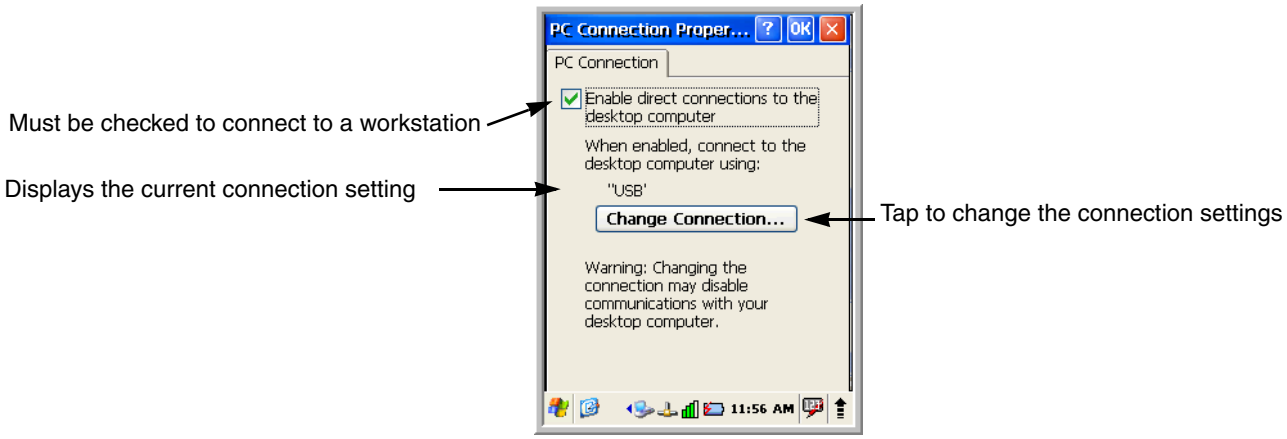
Setting Up the Host Workstation

Verify that ActiveSync is configured to use the appropriate communication type by clicking **File** > **Connection Settings**.

For USB communication, check **Allow USB connections**.

Setting Up the Optimus 5900 RFID Terminal

The Optimus 5900 RFID terminal defaults to USB communication out of the box. To verify and/or change the default setting, tap **Start** > **Settings** > **Control Panel** > **PC Connection**.



Tap **Change Connection** to change the current settings.

Connection Options	Select this option to …
'USB	Establish a USB connection.

Communicating with the Optimus 5900 RFID Terminal

After setting up both the workstation and the terminal, ActiveSync connection should be automatic.

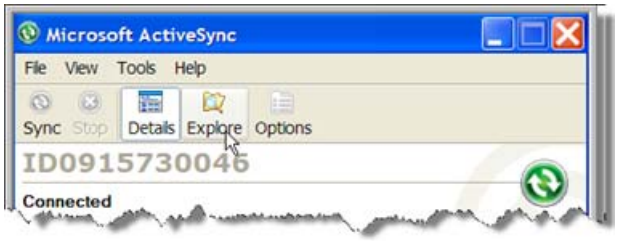
1. Connect the Optimus 5900 RFID terminal to a communication peripheral, such as the Optimus 5900 RFID eBase.
2. The Optimus 5900 RFID terminal automatically opens ActiveSync to establish a connection.

Synchronizing with the Host Workstation

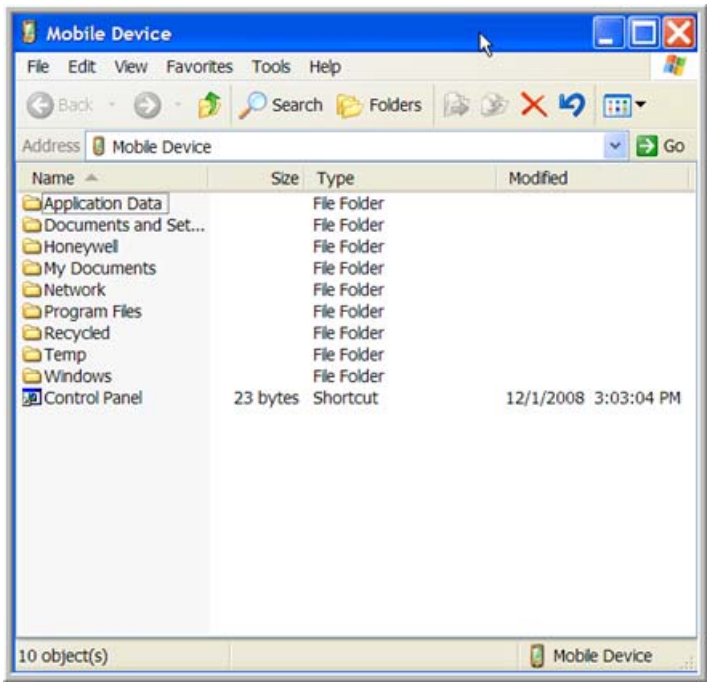
After setup, synchronization begins automatically whenever the terminal's mechanical connector connects to a Optimus 5900 RFID peripheral that is connected to a host workstation with ActiveSync installed.

Exploring the Terminal from the Workstation

When the terminal and desktop computer are connected, open the main ActiveSync window (on the desktop), and click **Explore**.



The Mobile Device folder opens in Windows Explorer.



The Optimus 5900 RFID terminal is now treated as a mass storage device, and transferring files is as simple as dragging and dropping or copying and pasting as you would for moving files between folders on your hard drive.

Adding Programs via ActiveSync

When selecting programs, verify that the program and version of the program are designed for the Windows CE 5.0 and the terminal's processor. You can verify your processor by tapping Start > Settings > Control Panel > System > General tab. Make a note of the information in the Processor field.

Generally, software for Windows CE devices must be installed to the host workstation first, then transferred to the Optimus 5900 RFID terminal.

1. Download the program to the workstation from either the Internet or the install CD. You may see a single *.exe or setup.exe file, a *.cab file, or *.dll. (There may also be several versions of files for different device types and processors.)
2. Read any installation instructions, Read Me files, or documentation that comes with the program. Many programs provide special installation instructions.
3. Connect the terminal to the workstation via a Optimus 5900 RFID communication peripheral.

If the File is an Installer

An installer program is one that installs to the workstation and the terminal simultaneously; one process installs to both devices.

1. On the workstation, double-click the *.exe or *.setup.exe file. The installation wizard begins.
2. Follow the directions on the workstation screen.
   The installation process includes transferring the software to the terminal via ActiveSync.

If the File is Not an Installer

Some programs cannot be installed on workstations because they are designed exclusively for Windows CE devices. In these cases, the appropriate files must be stored on the host workstation and transferred to the terminal via ActiveSync Explore.

Note: The Optimus 5900 is based on a ROM file system. The installed program will be persistent through any resets, except a factory reset.

Manual Installation

1. If you cannot find any installation instructions for the program in the Read Me file or documentation, open **ActiveSync** on the workstation and click **Explore**.
2. On the workstation, navigate to the workstation folder containing the program file(s) and copy them to the **Program Files** folder on the terminal.
3. On the terminal Desktop, tap **My Device** and, in Windows Explorer, navigate to the folder where the program is located.
4. Double tap on the program file to install it.
5. After installation is complete, access the program by tapping **Start** > **Programs**, and the program appears on the Programs screen. Tap the icon to open the program.

Semi-Auto Installation

Note: The program file should a Cab file type and auto installable.

1. If you cannot find any installation instructions for the program in the Read Me file or documentation, open **ActiveSync** on the workstation and click **Explore**.
2. On the workstation, navigate to the workstation folder containing the program file(s) and copy them to the **Cabfile** folder on the terminal (**\AutoInstall\Cabfile**).
3. On the terminal Desktop, perform a warm reset to start the installation procedure.
4. Double tap on the program file to install it.
5. After installation is complete, another warm reset performs. Access the program by tapping **Start** > **Programs**, and the program appears on the Programs screen. Tap the icon to open the program.

Wireless Radios

There are two radio options: 802.11g and Bluetooth.

1. **802.11g** (WPAN/WLAN configuration)**:** see WLAN (802.11g Radio), below.
2. **Bluetooth** (WPAN configuration): see Bluetooth Handler on page 8-1.

Connecting the Terminal to a Wireless Network

You connect the terminal to a wireless network through the on-board radio (802.11g and/or Bluetooth). Each radio has its own configuration program and requires specific information about the wireless network to connect. Successful connection depends on your network infrastructure about which you will need specific information from your network administrator.

WLAN (802.11g Radio)

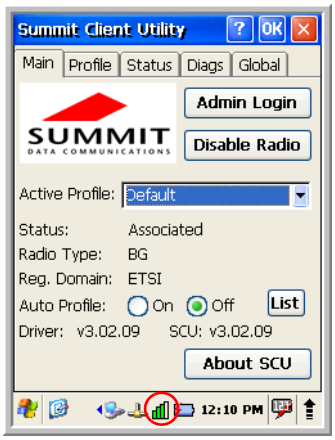
Optimus 5900 RFID terminals can have a 2.4 GHz 802.11g WLAN (Wireless Local Area Network) radio that uses Direct Sequence Spread Spectrum (DSSS) technology. The radio is interoperable with other 802.11g, Wi-Fi-compliant products including access points (APs), workstations via PC card adapters, and other wireless portable devices.

By default, the 802.11g radio is powered off (i.e., disabled) “out of the box.” To power it on (i.e., enable), press the vertical arrow (bottom, right corner of screen) and select **Turn Wireless LAN On**. The enable/disable state of the radio will survive subsequent soft and hard resets. The next step is to configure the connection parameters of the radio to connect to a wireless network.

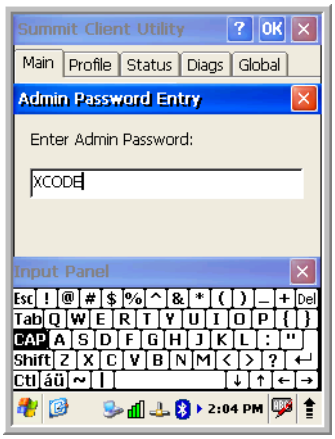
Configuring the WLAN Radio

The WLAN radio is configured in the Summit Client Utility, which you access by tapping the Up Arrow icon in the command bar.

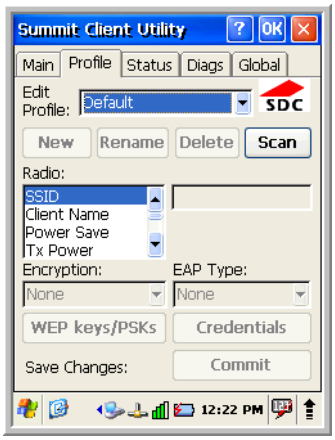
1. Select the Up Arrow and select **Turn Wireless LAN On**.
2. To connect with a wireless network, double click the WiFi icon on the command bar. The Summit screen appears.



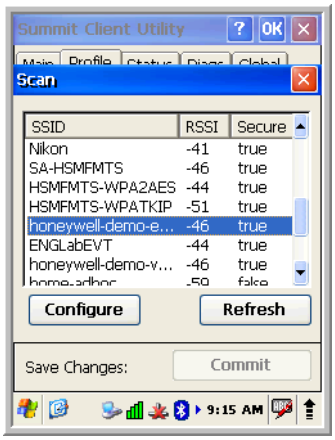
3. Select **Admin Logout** and in the Enter Admin Password: field type **XCODE** (all capital letters).



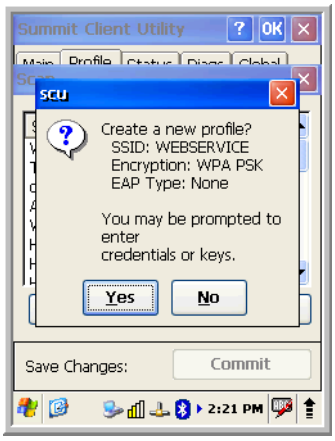
4. Select the Profile tab and press **Scan**.



5. Select the appropriate SSID and select **Configure**. If the Active Profile does not appear, perform the scan again by pressing **Refresh**.



6. Press **Yes** in response to “Create a new profile?.” The method used for inputting the network key differs according to the encryption of the Active Profile to be set.



7. Once the Profile installation is complete, select **Yes** in response to “Commit changes?” prior to selecting the Main tab.

8. If you change the Active Profile from the Main tab to the Active Profile just set, it is connected automatically and the Status field indicates “Associated.”

Setting the Auto Profile

Follow the steps below to change to a different Active Profile.

1. Select **List** from the Main tab. The current Active Profile list appears.
2. Select the Profile to be set and press **OK**.
3. Select the Auto Profile **On** radio button.

Turning Off the Wireless LAN

1. After selecting the Up Arrow on the task bar, select, **Turn Wireless LAN Off**.

If the power of the wireless LAN is turned off when the Network is connected and then the power is turned on again, the Profile value set previously is maintained.

The wireless LAN cannot be turned on if the battery power is very low. However, if the wireless LAN is on and the battery power becomes low, it does not turn off.

Adding Programs from the Internet

When you have established a network connection (whether via Wireless LAN, Bluetooth, or ActiveSync, you can access the Internet and download additional software programs.

When selecting programs, verify that the program and version of the program are designed for Windows CE 5.0 and the terminal's processor. You can verify your processor by tapping Start > Settings > Control Panel > System > General tab. Make a note of the information in the Processor field.

1. Open Internet Explorer and navigate to the program's location. You may see a single *.exe or setup.exe file, or several versions of files for different device types and processors.
2. Select the program version that matches your Optimus 5900 RFID terminal and processor.
3. Read any installation instructions, Read Me files, or documentation that comes with the program. Many programs provide special installation instructions.
4. Download the program to the terminal directly from the Internet.
   You would normally store the program in the **`\Program Files`** folder unless another location is required by the program.
5. On the terminal, double tap the installer file; e.g., the *.exe file.
6. The installation wizard for the program begins.
7. Follow the directions on the screen to complete installation.

8 Bluetooth Handler

Bluetooth wireless technology is a short-range communications technology to connect portable and/or fixed devices while maintaining high levels of security.

Enabling the Bluetooth Radio

1. Select the **UP** arrow in the lower, right portion of the display.
2. Tap **Turn Bluetooth On**.

The Bluetooth icon appears in the task bar.

Connecting to Other Devices

Before connecting to another device, make sure that the Bluetooth connection on the other device is enabled.

1. Double tap on the Bluetooth icon in the task bar.

The Bluetooth Handler appears on the screen.

2. Tap **Scan Device**.

The available services of all devices / profiles in range display in the Bluetooth Handler.

Pairing Bluetooth Devices

Connecting Bluetooth devices usually requires that they be paired; the same passkey must be entered for each device. If you want to connect the Optimus 5900 RIFD terminal to a device without any input method (e.g., printers, headsets), refer to the user documentation that accompanied the device for pairing information.

1. Tap on the desired device / profile in the Bluetooth Handler.
2. Select **Trusted** from the drop down menu.

Once asked if you need to authenticate the device,

3. Tap on the **Yes** button.
4. Enter 4 random digits and tap **Yes**.
5. Enter the same digits on the other device when prompted.
6. After pairing, double tap on the selected device / profile and select **Active**.

Setting Up a Bluetooth Printer

1. Make sure that the Bluetooth printer is on and activated.
2. If not done so already, turn Bluetooth On (by selecting the vertical arrow on the Command Bar).
3. Tap **Serial** tab.
4. Tap **Scan Device**, which runs a Bluetooth Inquiry, then SDP Query.
5. If you see your Bluetooth printer device displayed, you can tap **Cancel** to stop the search.

OR

Wait until all Bluetooth devices in range have been scanned. Then the **Scan Dialog** window appears.

6. Scroll through the list until your Bluetooth printer device is found. You may single tap any device in the list to display its MAC address.
7. Highlight the Bluetooth printer device and tap the **Select** button.
8. When the COM port selection appears, select **COM7** and tap **OK**.
9. If successful, the COM port and MAC address of the device appears under the list of **Registered Bluetooth Virtual COM ports**.
10. Tap **OK** to exit the Bluetooth Handler.
11. One of the ways to test the connection to the printer is to follow the steps below:
    a. Select **Start > Programs > Demos > Print Demo**.
    b. Tap **Zebra (BT) Barcodes Print**.
    c. If successful, the bar code prints.

Setting Up a Connection to a Mobile Phone

You can use a GSM mobile phone as a modem to connect to the Internet using GPRS (General Packet Radio Service) data connection.

Prior to connecting the Optimus 5900 RFID terminal to a mobile phone, contact your mobile phone service provider about the GPRS configuration, coverage, and fees. Also consult the user documentation for your mobile phone to determine if your phone supports GPRS data transfer and if it has an available Bluetooth connection. If your phone supports 3G data transfer, you should be able to connect the Optimus 5900 RFID terminal to your phone.

1. Determine if your phone is configured and connected to GPRS.
2. Activate your mobile phone's Bluetooth feature.
3. Select **Start > Settings > Network and Dial-up Connections**.
4. Double tap on **Make New Connections**.
5. Choose **Dial-up Connection** and select **Next**.
6. Select **Bluetooth**.
7. Select and activate the data modem service for your phone (refer to Pairing Bluetooth Devices (page 8-1) and press **OK**.
8. Select the data modem service from step 7 from the **Select a Modem:** drop down menu.
9. Enter a dial-up phone number. (Contact you mobile network services provider for additional information about connecting the Internet using your mobile phone.)
10. Tap **Finish**.

9 Optimus 5900 RFID eBase Device (Model: 5900-EHB)

Overview

The Ethernet Base (eBase) enables a single O5900 terminal to communicate with a host device over an USB, serial RS-232, or Ethernet network.

The 5900-EHB charger is designed for use with battery pack models BP08-000640 (standard Li-poly 3.7 V, 5000 mAh) manufactured for Honeywell International Inc. and to be used with Optimus 5900 model terminals.

Communication

The eBase can communicate via USB, serial RS-232, or Ethernet network. Data transmission for USB is up to 12 Mbps. Data transmission for serial RS-232 is up to 115 Kbps.

These bases cannot be physically connected to each other–sometimes referred to as “daisy-chaining”–but can be networked together via serial or USB hubs.

Battery Charging

The base completes a full charge of a fully depleted main battery pack in an average of 7 1/2 hours. It takes less time if the battery has some charge.

In addition to charging, the base powers the terminal’s intelligent battery charging system, which protects the battery from being damaged by overcharging. The terminal senses when a battery pack is fully charged and automatically turns off the charger. If the battery voltage drops below the charge threshold, the charger turns on again to maintain the battery at full capacity. As a result, Optimus 5900 RFID terminals may be stored in the base indefinitely without damage to the terminals, battery packs, or peripherals. For prolonged storage, see Storage Guidelines on page 3-13. The base can also charge a second battery while the terminal is positioned in the base. See Charging a Spare Battery on page 9-4.

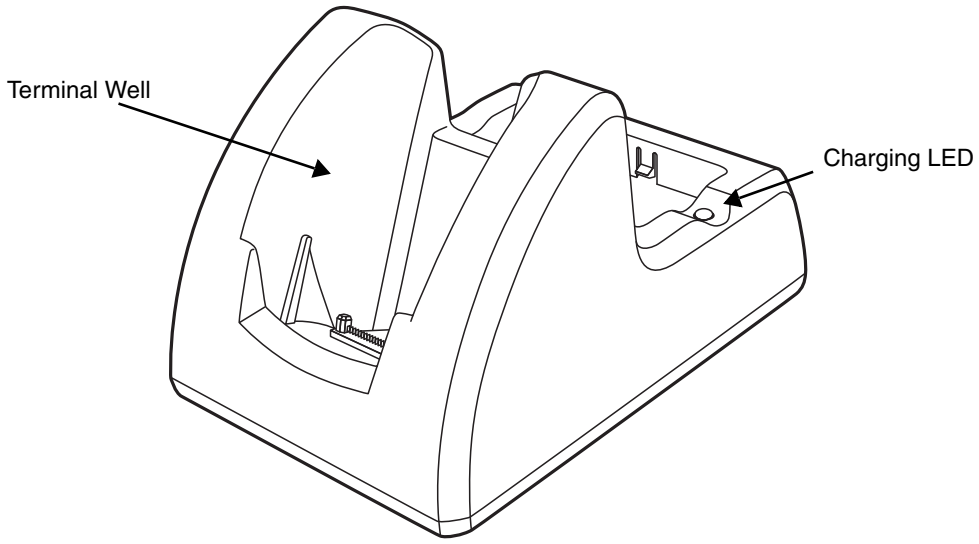
Power Supply

The power cable that ships with each terminal also powers the base.

⚠ *We recommend use of Honeywell peripherals, power cables, and power adapters. Use of any non-Honeywell peripherals, cables, or power adapters may cause damage not covered by the warranty.*

⚠ *We recommend use of Honeywell Li-Ion battery packs. Use of any non-Honeywell battery may result in damage not covered by the warranty. DO NOT attempt to charge damp/wet mobile computers or batteries. All components must be dry before connecting to an external power source.*

Front Panel



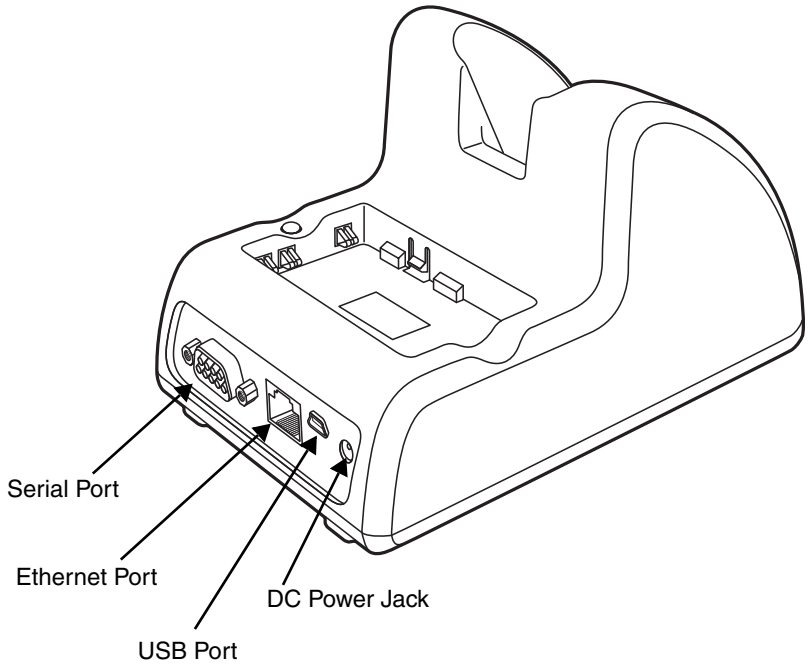
Terminal Well

Place the Optimus 5900 RFID terminal in the terminal well to communicate with a host device, power the terminal, and charge the terminal's battery. Make sure that the device is securely seated.

Rubber Feet

The bottom panel has four rubber feet to stabilize the unit on a flat surface. You can set the base on a dry, stable surface, such as a desktop or workbench near an electrical outlet.

Back Panel



DC Power Jack

Connect the power cable to this power jack; see Powering the Optimus 5900 RFID eBase Device on page 9-4.

USB Port

The USB port is full-speed (v1.1). Using the USB cable, you can connect the base to a USB-compliant device to facilitate USB communication to and from the terminal. USB communication occurs through Microsoft ActiveSync (v.4.1 or higher). For more information about ActiveSync setup, see ActiveSync Communication on page 7-1.

Serial Port

The serial port supports serial communication between the terminal and another device. Note that the connector is a DB9 Male connector, requiring a female connector on the serial cable. The following four signals are supported:

- Transmitted Data
- Received Data
- Request to Send
- Clear to Send

Note: ActiveSync is not supported over the serial port.

Ethernet Port

Using a standard CAT-5 Ethernet cable, you can connect the eBase to an Ethernet-compliant device to facilitate Ethernet communication to and from the terminal. This equipment is for indoor use only. The communication wiring is limited to the inside of a building.

Powering the Optimus 5900 RFID eBase Device

The terminal requires 5 volts DC input for communication and battery charging; the power adapter on the power cable converts the voltage from the power source to 5 volts DC. Only power adapter cables from Honeywell convert the voltage appropriately.

1. Attach the plug adapter to the power adapter (if not already attached).
2. Plug the power cable into the power source.
3. Plug the connector into the DC power jack on the back panel. The base is now powered.

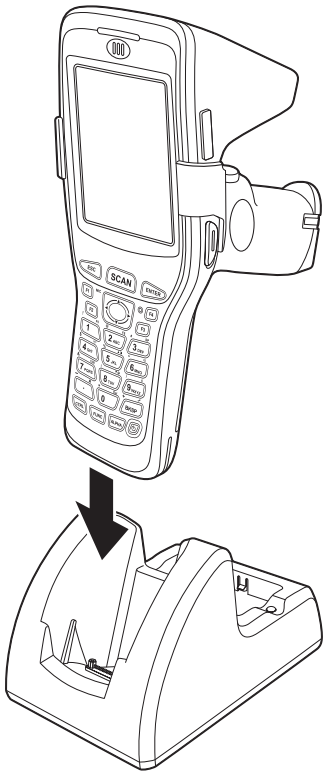
When a terminal is properly seated, the base powers the terminal, charges the terminal's main battery pack, and launches ActiveSync (see ActiveSync Communication on page 7-1).

Honeywell recommends that you leave the base connected to its power source at all times, so that it is always ready to use.

Charging the Main Battery

The base powers the terminal and fully charges its main battery pack in an average of 7 1/2 hours for a fully depleted battery. It takes less time if the battery has some charge.

As battery packs charge, the charging circuitry follows the two-step charging process (CC-CV) that is recommended for Li-Ion batteries. The process monitors changes in temperature, current, and voltage.



Inserting a Terminal

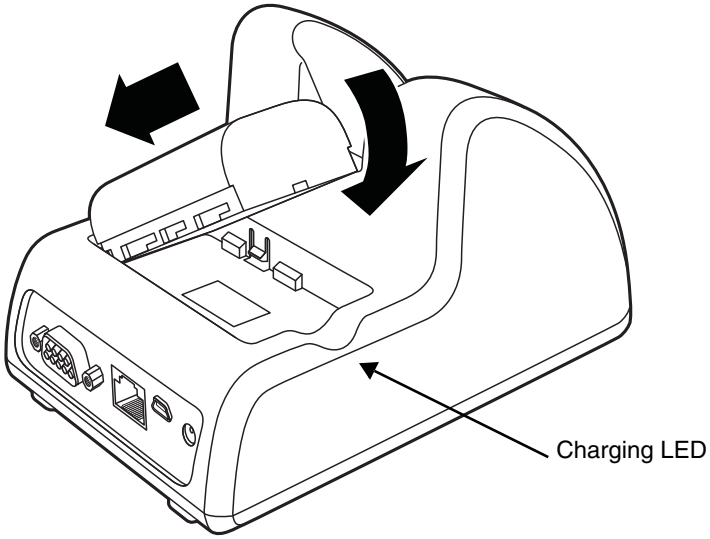
1. Install the battery pack in the terminal; see Install the Main Battery on page 2-1.
2. Power the base; see Powering the Optimus 5900 RFID eBase Device on page 9-4.
3. Slide the terminal into the terminal well making certain that the terminal is seated properly.
4. The battery pack begins charging.

⚠ Make sure the terminal is dry before placing it in the base.
Do NOT place a wet terminal in the base! Doing so may cause damage not covered by the warranty.

Charging a Spare Battery

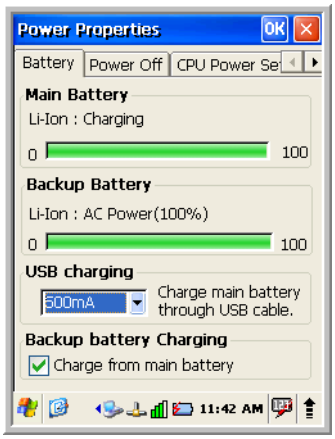
The 5900-EHB charger is designed for use with battery pack models BP08-000640 (standard Li-poly 3.7 V, 5000 mAh) manufactured for Honeywell International Inc. and to be used with Optimus 5900 model terminals.

The base can also charge a second battery while the terminal is positioned in the base. The second battery can be inserted in the battery charging well in back of the terminal connection. Place the battery in the well with the label facing up and toward the back of the unit. Angle the battery as shown. Once the connectors engage, the LED lights. If the LED is red, the unit is charging; if it is green, the charge is complete.



Checking Battery Power

To check battery power while the terminal is operating, tap **Start** > **Settings** > **Control Panel** > double tap **Power**.



Establishing Ethernet Communication

Connecting the Optimus 5900 RFID Terminal to the eBase

By default, the Optimus 5900 RFID terminal is configured to obtain IP addresses automatically via DHCP server. This means that in most cases you would simply plug-and-play the unit.

1. Verify the base has power. If the Power/Dock LED is not illuminated, see Connecting Power to the eBase on page 13-5.

2. Plug the CAT-5 Ethernet cable into the RJ45 connector on the back of the eBase.
3. Plug the Ethernet cable into the network.
4. Insert the Optimus 5900 RFID terminal into the terminal well.

Note: Instead of using the default for DHCP assigned IP addresses, the Optimus 5900 RFID terminal can use a statically assigned IP address. See standard Microsoft Windows Mobile documentation for how to assign a static IP address to a network adapter. In this case, set a static IP address for the adapter named "SMC95001 USB2.0 FAST Ethernet Drive".

Establishing USB Communication

Optimus 5900 RFID terminal's support USB communication out of the box. The eBase also supports USB communi-cations using the USB port located on the back panel of the eBase. The eBase acts as a USB device by interfacing the USB signals of the Optimus 5900 RFID terminal to the USB of the host workstation. Using a standard USB cable, the ebase's USB interface allows the Optimus 5900 RFID terminal to communicate with a host workstation.

eBase Technical Specifications

Structural	
Dimensions	3.74in. high x 4.13in. width x 6.14in. depth (9.5cm x 10.5cm x 15.6cm)
Weight	Optimus 5900 RFID eBase - 12.4 oz (350g)
Material	Polycarbonate
Color	Black
Environmental	
Operating Temperature	14° to 122°F (-10° to +50°C)
Storage Temperature	-4° to 158°F (-20° to +70°C)
Charging Temperature	32° to 113°F (0° to 45°C)
Electrical Static Discharge	**Air**: ± 15k Vdc **Direct:** ± 8k Vdc
Humidity	95% relative humidity (non-condensing)
Power Supply	
Input (Universal) (from the power source)	100–240 Volts, 0.8 A 50–60Hz Included with Optimus 5900 RFID terminal
Output (to the base)	5 Volts DC, 4.0 A
Charging	
Standard Charge	5000mAh - 7 1/2 hours for a fully depleted battery
Max Charging Current	860mA Max
Standby Current	<100mA
Status LED	**Green:** charged **Red:** charging
Communication	
Interface	USB Mini-B Male connector supports data transmission of up to 12 Mbps RS232: Standard DB9 serial connector supports data transmission up to 115 Kbps. Ethernet: 10Mbps/100Mbps
Agency Approvals	
Power Supply:	UL listed TUV licensed Power Supply compliant to FCC part 15, Class B
Charging:	CE Marking (EMC) CISPR Pub 22
Fire Retardant:	UL 94-VO

10 Customer Support

Technical Assistance

If you need assistance installing or troubleshooting your device, please contact us by using one of the methods below:

Knowledge Base: www.hsmknowledgebase.com

Our Knowledge Base provides thousands of immediate solutions. If the Knowledge Base cannot help, our Technical Support Portal (see below) provides an easy way to report your problem or ask your question.

Technical Support Portal: www.hsmsupportportal.com

The Technical Support Portal not only allows you to report your problem, but it also provides immediate solutions to your technical issues by searching our Knowledge Base. With the Portal, you can submit and track your questions online and send and receive attachments.

Web form: www.hsmcontactsupport.com

You can contact our technical support team directly by filling out our online support form. Enter your contact details and the description of the question/problem.

Telephone: www.honeywellaidc.com/locations

For our latest contact information, please check our website at the link above.

Product Service and Repair

Honeywell International Inc. provides service for all of its products through service centers throughout the world. To obtain warranty or non-warranty service, please visit www.honeywellaidc.com and select **Support > Contact Service and Repair** to see your region's instructions on how to obtain a Return Material Authorization number (RMA #). You should do this prior to returning the product.

Limited Warranty

Honeywell International Inc. ("HII") warrants its products and optional accessories to be free from defects in materials and workmanship and to conform to HII's published specifications applicable to the products purchased at the time of shipment. This warranty does not cover any HII product which is (i) improperly installed or used; (ii) damaged by accident or negligence, including failure to follow the proper maintenance, service, and cleaning schedule; or (iii) damaged as a result of (A) modification or alteration by the purchaser or other party, (B) excessive voltage or current supplied to or drawn from the interface connections, (C) static electricity or electro-static discharge, (D) operation under conditions beyond the specified operating parameters, or (E) repair or service of the product by anyone other than HII or its authorized representatives.

This warranty shall extend from the time of shipment for the duration published by HII for the product at the time of purchase ("Warranty Period"). Any defective product must be returned (at purchaser's expense) during the Warranty Period to HII factory or authorized service center for inspection. No product will be accepted by HII without a Return Materials Authorization, which may be obtained by contacting HII. In the event that the product is returned to HII or its authorized service center within the Warranty Period and HII determines to its satisfaction that the product is defective due to defects in materials or workmanship, HII, at its sole option, will either repair or replace the product without charge, except for return shipping to HII.

EXCEPT AS MAY BE OTHERWISE PROVIDED BY APPLICABLE LAW, THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER COVENANTS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, ORAL OR WRITTEN, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

HII'S RESPONSIBILITY AND PURCHASER'S EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT WITH NEW OR REFURBISHED PARTS. IN NO EVENT SHALL HII BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, AND, IN NO EVENT, SHALL ANY LIABILITY OF HII ARISING IN CONNECTION WITH ANY PRODUCT SOLD HEREUNDER (WHETHER SUCH LIABILITY ARISES FROM A CLAIM BASED ON CONTRACT, WARRANTY, TORT, OR OTHERWISE) EXCEED THE ACTUAL AMOUNT PAID TO HII FOR THE PRODUCT. THESE LIMITATIONS ON LIABILITY SHALL REMAIN IN FULL FORCE AND EFFECT EVEN WHEN HII MAY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH INJURIES, LOSSES, OR DAMAGES. SOME STATES, PROVINCES, OR COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

All provisions of this Limited Warranty are separate and severable, which means that if any provision is held invalid and unenforceable, such determination shall not affect the validity of enforceability of the other provisions hereof. Use of any peripherals not provided by the manufacturer may result in damage not covered by this warranty. This includes but is not limited to: cables, power supplies, cradles, and docking stations. HII extends these warranties only to the first end-users of the products. These warranties are non-transferable.

Limited Warranty Duration

- The duration of the limited warranty for terminals with an integrated imager is one year.
- The duration of the limited warranty for touch screens is one year.
- The duration of the limited warranty for Optimus eBase is one year.
- The duration of the limited warranty for batteries is one year.
  Use of any battery from a source other than Honeywell may result in damage not covered by the warranty. Batteries returned to Honeywell International Inc. in a reduced state may or may not be replaced under this warranty. Battery life will be greatly increased when following the battery instructions in this user's guide.

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5900-UG Rev B
8/12