GETTING STARTED GUIDE

Trimble® TSC2™ Controller

Microsoft® Windows Mobile™ 5.0

Trimble.

Technical Assistance

If you have a problem and cannot find the information you need in the product documentation, contact your local Trimble Authorized Distribution Partner. Alternatively, go to the Trimble Support page at **www.trimble.com/support.html**, and then do one of the following:

- To browse the available online support resources for the Trimble TSC2 controller, click the Trimble TSC2 link.

- To request technical assistance from Trimble Support, click the submit an inquiry link, fill in the form, and then click Send.

Additional information is available from Windows Mobile:
www.microsoft.com/windowsmobile/default.mspx

Contents

Welcome

Congratulations on your purchase of one of the most advanced handheld computers available on the market today. The rugged design of your handheld allows you to work in harsh outdoor environments. You can operate your unit in blazing heat, subzero cold, driving rain or dusty job sites – places you could not take a consumer-grade handheld computer.

NOTE: Not all the features discussed in this manual will apply to every unit, as some of the features are offered as options. If the feature described does not apply to your unit, please disregard that section.

Device Hardware

Front Panel

Removable CF-Cap covers two CompactFlash slots and one SDIO slot

Stylus holder

Notification LED

Power

Back Panel

CF-Cap

Hand strap

PowerBoot Module

PowerBoot coin screws
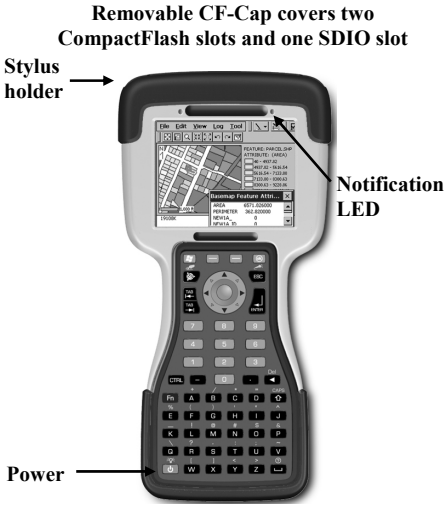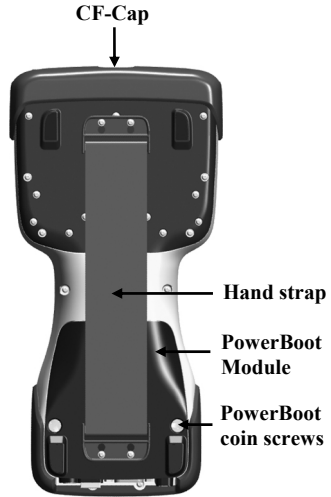
Top View- without Cap

CompactFlash and SDIO slots

CF slot #1 Type I

SDIO slot

CF slot #2 Type I & II

Bottom View

USB host

Serial port

USB client

External power
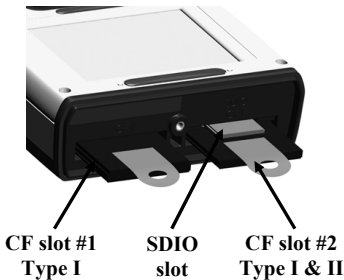
NOTE: Be sure to read the warranty and safety information in this manual prior to using your unit.

Unit Setup

1. Charge your PowerBoot Module

The PowerBoot Module™ that contains the batteries is shipped detached from the unit. Before you insert the PowerBoot into the unit, you should charge it. The AC charger that ships with your unit has adapters to fit almost every electrical outlet. Connect the appropriate outlet adapter to the AC charger. Plug the charger into an electrical outlet and plug the barrel end of the charger into the PowerBoot. Charge the PowerBoot Module for approximately 4.5 hours.

Warning! Be sure to always use the charger included with your unit. Use of other chargers will void warranty.

2. Attach the PowerBoot Module

Align the PowerBoot Module with the unit, with the contacts facing down. Insert the top end of the PowerBoot Module first as shown, and then drop the PowerBoot Module into the unit. Secure by firmly tightening the two screws with a coin or a screwdriver.

NOTE: The unit ships with the latest battery firmware and will automatically check the battery firmware version and may prompt if the battery firmware needs to be updated with files from your unit.

3. Attach the hand strap

Insert one end of the hand strap onto the two small bolts located on the back of the unit.

Stretch the strap and insert the other end onto the two bolts located near the bottom of the PowerBoot Module.

4. Turning your unit on and off

To turn your unit on, press and release the green **Power** key on the lower left hand corner of the keypad. To turn your unit off, press and release the **Power** key again.

One of the most convenient features of the unit is "instant on" and "instant off" (also known as "suspend/resume"). There is no waiting for the unit to boot up every time it is turned on. "Instant on" does not occur on the first boot-up.

When the unit first turns on, the message "Tap the screen to set up your Windows Mobile-based device" will appear.

Power

5. Align the touchscreen

The Align Screen message will display a series of targets to tap in sequence on the screen. Use the stylus to tap the targets firmly and accurately. Sometimes you need to repeat the alignment procedure more than once to provide a satisfactory alignment.

6. Location – Time Zone

Select your time zone location and tap **Next**.

7. Password – Lock (Optional)

You do not have to provide a password unless you are concerned about unauthorized use. To eliminate using a password, tap **Skip**.

If you opt for password protection the password must be entered every time you turn the unit on, or use the **Power** key to resume operation.

WARNING: BE CERTAIN TO REMEMBER THE PASSWORD. The only way to recover from a forgotten password is to return to a factory-default state and you will LOSE all application software, licenses, settings and data on your unit. See the section on page 11 on how to restore a factory default state.

8. Using the CF and SDIO expansion slots

Your unit contains two CompactFlash (CF) slots and one Secure Digital Input Output (SDIO) expansion slot. The SDIO slot is located within the walls of one of the CF slots.

To access the CF and SDIO expansion slots, remove the CF-Cap™. To do this, unscrew the screw on the top of the CF-Cap using a coin or a screwdriver and slide the cap off the main unit.

NOTE: When using smaller CF cards (such as memory or Bluetooth), it is **critical** that you attach a CF Card Pull Tab to the CF card before sliding the card into the slot. Pull Tabs allow you to easily remove the CF card from the slot. Pull Tabs are part of the accessories included with your unit.

To insert a CF or SDIO card, gently insert the card into the slot. Do not force the card. The pins can be damaged if the card is not aligned correctly.

CF Slot #2   SDIO   CF Slot #1
Type I & II   Type I

- The CF slots are side by side. CF cards must be inserted with the front of the card facing toward the display side of the unit. CF slot #2 supports Type I & II cards. CF slot #1 supports Type I cards. Again, be sure to attach a Pull Tab to the smaller CF cards before sliding the cards into the slots.
- The SDIO slot can be seen inside CF slot #1. SDIO cards must be inserted with the front of the card facing **away** from the display.

When replacing the CF-Cap, first be sure it is oriented correctly. The stylus holder in the CF-Cap is toward the front of the unit. Replace the CF-Cap and tighten the screw to reseal. The cap should be securely tightened, but do not over-tighten the screw.

NOTE: Be sure to correctly orient the CF-Cap when you are reattaching it. The unit is NOT sealed when the cap is off or attached backwards. Water damage caused by improper installation of the CF-Cap is not covered by warranty.

Working with Your Unit

PowerBoot Module

The PowerBoot includes the batteries to power the unit, the power port used to charge the unit, and the I/O ports that are used to communicate with other devices using a USB or serial cable.

Battery life: Battery life is dependent upon the application and operating environment. Heavy usage of the 802.11 wireless, frequent backlight usage, high power consumption CF cards and cold temperatures can all significantly reduce the battery life.

Tips for extending the battery life:

- If your unit comes with embedded wireless capability (802.11 or Bluetooth) use ONLY when necessary. Turn off these features in the Wireless Manager when they are not needed.
- Use the backlight only when necessary. Use the **Fn** + **Power** keys to toggle the backlight on and off. Tap **Start / Settings / System / Backlight** to minimize the amount of time the backlight stays on when the unit is idle. Also, a brighter backlight uses more power than a dim setting.
- Use the most energy efficient CF and SDIO cards, and use them only when necessary to perform the desired tasks.
- When working in cold temperatures, keep the unit as warm as possible. If feasible, keep the unit inside your coat or in a vehicle when not in use.

Charging the PowerBoot: The PowerBoot can be charged when installed or separately from the main unit. Connect the appropriate outlet adapter to the AC charger. Plug the charger into an electrical outlet and plug the barrel end of the charger into the PowerBoot. The unit will be fully charged in approximately 4.5 hours. The acceptable temperature range for charging the battery is between +5°C and +35°C (+41°F and +95°F).

The PowerBoot Module also has an LED that provides an indication of charging status. The LED states are shown in the following table.

Normal usage:	
Off	No charger present or it is unplugged
Fast blink	Fast charge
Slow blink	Topoff charge
On	Charging complete
Error conditions:	
1 - 2 short flashes *	Temperature out of range for charging
3 short flashes	Wrong charger

*You can leave your unit connected to the charger even if the temperature is out of range. The battery firmware will prevent it from charging until the temperature enters the acceptable range.

NOTE: If the fully-charged unit is still connected to the charger, the status found in **Settings / System / Power** will report the battery power remaining as if the unit were still on battery power.

Swapping the PowerBoot Module: The PowerBoot is designed to be quickly swapped in the field (if you have purchased additional PowerBoot Modules). If the current PowerBoot Module runs low, replace it and continue with your work.

The unit saves enough power that if you swap the PowerBoot within a couple of minutes, it will not trigger a reset. If the saved power runs out before the new PowerBoot is connected, the unit will reset. This will not impact saved data, programs or configuration, however unsaved data will be lost and the time will need to be reset.

To change a PowerBoot Module, perform the following steps:

1. Remove the hand strap from the PowerBoot.
2. Ensure the unit is turned **on**. (The unit will automatically turn itself off when you loosen the screws in the next step.)
3. Use a screwdriver or a coin to unlock the two screws on the PowerBoot Module by turning them counter-clockwise until the PowerBoot can be removed. Unscrewing the screws turns the

unit off and puts it in a special state that prevents it from turning on for alarms and notifications.

4. Remove the PowerBoot Module by taking it out of the unit. Be careful to not press the Power key while the PowerBoot is detached.
5. Quickly insert the new PowerBoot onto the unit.
6. Fasten the PowerBoot securely into place by turning the two screws clockwise.
7. Replace the hand strap.
8. Turn the unit ON to resume operation.

NOTE: The screws MUST be tightened securely before turning the unit on or it will not turn on.

Using the stylus

The touchscreen on your unit works like a mouse on a PC. Use the stylus to navigate and select objects on the screen.

Tap: Tap the screen with the stylus to select or open an item. Tapping is equivalent to clicking the left mouse on your PC.

Touch and hold: When you touch and hold, a circle of dots appears around the stylus to indicate that a pop-up menu will soon appear. Touching and holding is equivalent to clicking the right button on the PC mouse.

Drag: Hold the stylus on the screen and drag across the screen to select text and images. Drag in a list to select multiple items.

Storage Memory

Unlike many handheld computers which can lose data if they lose power, all your data is always stored in non-volatile persistent storage memory. Losing power will not impact saved data or configurations other than the real time clock. This means that you do not have to use a RAM backup utility to protect your data. However, you can lose data by accidentally deleting or overwriting it. As with any computer system, we recommend that you backup your data to removable media or to a desktop PC on a regular basis.
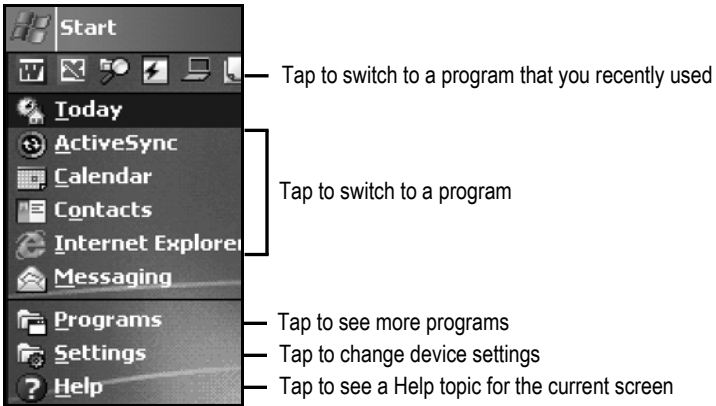
Accessing Storage Memory using File Explorer

File Explorer (**Start / Programs / File Explorer**) lets you browse the contents of folders on your unit. To easily delete, rename, or copy an item, touch and hold the item.

NOTE: Unlike desktop PCs, Windows Mobile® 5.0 does not support a Recycle Bin. Once a file is deleted, it cannot be recovered.
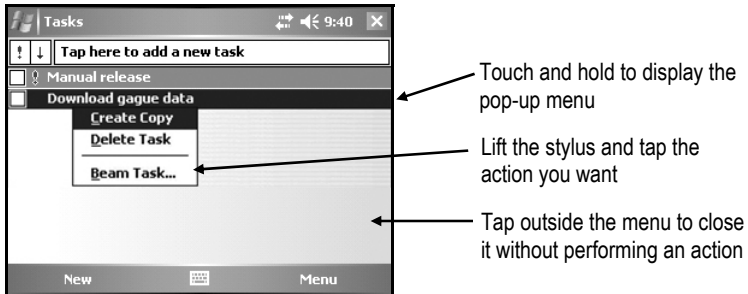
The Start menu

From the Start Menu, select **Programs**, **Settings**, and **Help** topics. To display the Start Menu, from the top of any screen, tap **Start**.

Tap to switch to a program that you recently used

Tap to switch to a program

Tap to see more programs

Tap to change device settings

Tap to see a Help topic for the current screen

Pop-up menus

You can use pop-up menus to quickly select an action for an item. To access a pop-up menu, tap and hold the stylus on an item name.

Touch and hold to display the pop-up menu

Lift the stylus and tap the action you want

Tap outside the menu to close it without performing an action
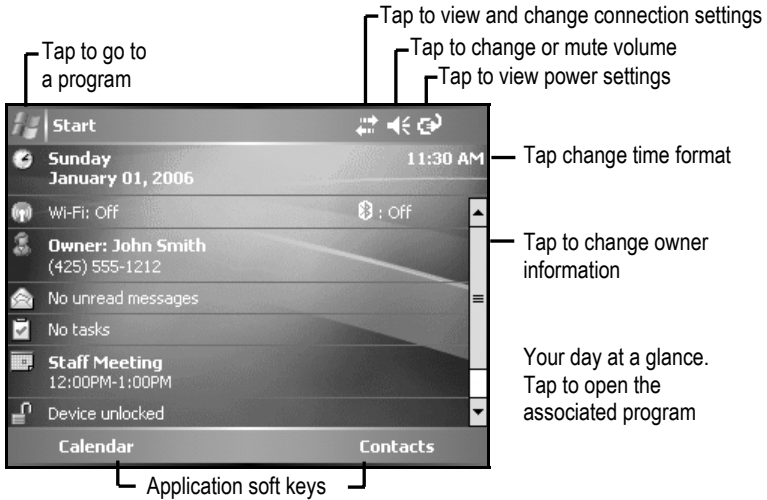
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The Today screen

You can view the Today screen by tapping **Start / Today**. It will also display when you turn on your unit for the first time each day or after a configurable time of inactivity. (When some external applications are running, the Today screen will not automatically be redisplayed.)

At the top of the screen are status icons. Tap an icon to view details or change options. (These icons appear at the top of every screen on your unit, not only the Today screen.)

The center of the Today screen provides information that you need for the day. Tap an item to view or edit details. To customize which items are shown on the Today screen, tap **Start / Settings / Today / Items**.

Tap to view and change connection settings
Tap to change or mute volume
Tap to view power settings
Tap to go to a program
Tap change time format
Tap to change owner information
Your day at a glance. Tap to open the associated program
Application soft keys

The bottom of the screen shows the function of the two application softkeys in the top row of the keypad. Their function conforms to the needs of the program that is running.

Power key features

The **Power** key turns the unit on and off and performs a number of additional functions.

Turn backlight on/off: To toggle the backlight on or off, press **Fn** and then the **Power** key. Once toggled off, the backlight will stay off until it is toggled back on. Screen taps and key presses will not cause it to turn on.

Power menu: Hold down the **Power** key for about 3 seconds to display a countdown. Continuing to press the **Power** key will cause a reset when the countdown reaches zero. If you release the **Power** key while the countdown is proceeding, you access the following menu. Tap an option or **OK** to exit.
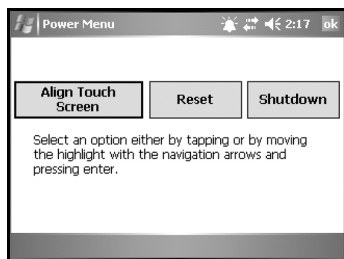
Align Touch Screen: A series of targets is displayed. Use a stylus to tap each target to align the touchscreen.

Reset: Restarts a running program that has become unresponsive. No file system data is lost, only open or unsaved files will be lost. All registry settings, control panel, personal information and databases are preserved.

Shutdown: Closes all running applications and puts the device in its lowest power mode. No file system data is lost, only open or unsaved files will be lost. All registry settings, control panel, personal information and databases are preserved.

Restore Factory Default State

WARNING: All application software, licenses, settings and data will be lost if you perform this function.

Hold down the **Power** key to display a countdown. Continue to hold down the Power key until it counts down to zero and beeps three times. Then immediately hold down the **Fn, F, and D** keys simultaneously. After a few seconds, a screen will come up warning that if you continue, this operation will clear the persistent store including all user data, applications and settings. Follow the instructions on the screen ONLY if you want to completely clear your unit.

Speaker and microphone

Your unit comes with an integrated speaker and a microphone. The speaker will allow you to hear a variety of media.

To use the microphone, press and hold the **Fn** key and then press and hold the **ESC** key. The unit will record until **Stop** is pressed. The ideal speaking distance for recording from the microphone is from 20 to 30 cm (8 to 12 inches). Speak clearly and loudly, but do not shout. The recorded file will be saved in the Notes folder. To change the directory where recorded files will be saved, tap the folder icon and navigate to the desired folder.

To play the recorded file, tap the desired file from the Notes program and it will begin to play. To begin another recording, press **Fn** and **ESC** again or tap the record symbol on the screen. You cannot play and record simultaneously; playback will be disabled during recording. To change the volume, tap the speaker icon at the top of the display. You can either change the volume or mute all sounds coming from the unit.

Additional key functions

Several screen functions can be initiated from the keypad. Press the first key indicated followed by the second key to initiate the action. The following are some of the most commonly used:

Backlight toggle	Fn + ⏻
Caps lock	Fn + ⇧ (CAPS)
Delete	Fn + ◄ (Del)
Disable touch	Fn + 🖊
Start recording	Fn + 🎤
Windows Start	⊞

Settings on Your Unit

Tap **Start / Settings**. Tap any of the icons on the **Personal**, **System** or **Connections** tabs to customize the unit settings to your own preferences. Tap **X** on the touchscreen or press **OK** on the keypad to exit the settings. Some of the most useful settings are described below.

Buttons

Tap **Personal / Buttons**. The Buttons (Keys) setting allows you to assign one keypad button to your favorite program. The assignable key is on the left hand side of the screen with the program that is assigned by default on the right. Choose the desired program or action from the pull-down list in section 2.

Input

Tap **Personal / Input**. You can change settings related to character input, word completion and capitalization.

Lock (password)

You do not have to provide a password unless you are concerned about unauthorized use.

If you opt for password protection, tap **Personal / Lock**. The password must be entered every time you turn the unit on or use the **Power** key to resume operation.

WARNING: BE CERTAIN TO REMEMBER THE PASSWORD. The only way to recover from a forgotten password is to return to a factory-default state and you will LOSE all application software, licenses, settings and data on your unit. See the section above on how to restore factory default state.

Sounds and Notifications

Tap **Personal / Sounds & Notifications**. You can change sound settings related to event notifications, buttons and screen taps. For example, a chime will sound to remind you of any scheduled appointments as well as trigger the Notification LED above the touchscreen. If you wish to disable the sound and use the LED only, remove the check mark from the **Events** box.

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To change the volume, tap the speaker icon in the status bar of the Today screen. You can either change the volume or mute all sounds coming from the unit.

Screen

Tap **System / Screen**. The orientation can be changed to portrait for some programs that are not screen aware. To change the size of the text on the screen, tap **Text Size** to see more content or increase the readability in many programs.

Backlight

Tap **System / Backlight**. Choose the settings in the **Battery Power**, **External Power** and **Brightness** tabs as needed for your use of the unit. The display backlight has significant impact on battery life.

Memory

Tap **System / Memory** to see how much Storage memory (Flash) and Program memory (RAM) is available. Closing programs still leaves them resident in RAM. As more programs are started, available RAM decreases. If RAM resources become low, you can stop programs and remove them from RAM. First, ensure you have saved all your data. To stop a program, tap the tab **Running Programs**. You can stop individual programs or tap **Stop All**.

Power

Tap **System / Power**. This allows you to view the approximate battery power remaining. Note that both the Main battery and Backup battery levels are shown, but only the Main battery level is significant. Tap the **Advanced** tab and choose the settings for automatically putting the unit into suspend mode when not in use.

System Information

Tap **System / System Information**. Unit information can be found here including firmware version, serial number, processor speed, RAM and Flash size, as well as the wireless configurations.

Connecting to Your PC

I/O ports

The unit has a USB host port, a USB client port, and a 9-pin serial port. Connections via the USB client port to a PC require an A-B USB cable (included with the unit). Use the USB host port to connect to a USB client device. See note below. Serial connections require a 9-pin null-modem serial cable (not included with unit). You may also increase your connectivity options with CF and SDIO cards.
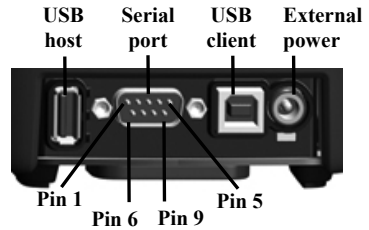
Note: Many USB peripheral devices that are supported on personal computers are **not** supported by this handheld computer. There are two classes of USB devices that have native support in the OS: USB Human Interface Devices (HID) and USB Mass-Storage devices. Examples of USB HID devices include keyboards, mice and some barcode scanners. Examples of USB mass-storage devices include memory-keys, hard disks, some digital cameras, and some memory card readers. Many USB devices fall into these classes and will work in your unit without additional software. Before purchasing a USB peripheral, check with the manufacturer to ensure that it will operate with one of these natively supported USB classes. Otherwise you must ensure that a device driver and/or application is supplied with a product that is compatible with Windows Mobile 5.0. Further, some devices have no applicability in Windows Mobile. For example, mice do not make sense to use with your unit because there is no cursor available in the Windows Mobile user interface since, unlike a PC, it is designed to be touchscreen operated.

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Communication

The unit is equipped with multiple ways to communicate with other devices. Many of these are described in the following sections. Where noted, your unit may not have that particular feature.

Connecting to a Desktop

Connecting your unit to a PC is done using **Microsoft ActiveSync 4.1 or higher**. It allows you to synchronize information and copy files between your PC and your unit. ActiveSync is pre-installed on your handheld unit. Before connecting your unit to your PC, install ActiveSync on your PC from the Companion CD or as a free download from the web site: www.microsoft.com/windowsmobile/default.mspx.

IMPORTANT: Do not connect the unit to the USB port on your PC until **after** you install ActiveSync. If you prematurely connect the unit to your PC, your PC USB drivers may get into a confused state and ActiveSync will not connect. If you suspect that something like this has happened, uninstall your PC's ActiveSync, reboot your PC, reinstall ActiveSync and reconnect the unit.

Use the Setup Wizard on the Companion CD to install ActiveSync onto the PC.

The **Get Connected** dialog box will automatically appear on the PC. To connect your unit to the PC:
1) Connect the USB cable to the PC.
2) Turn on your unit.
3) Connect the USB to your unit. ActiveSync should automatically detect your unit. If not, click **Next**.
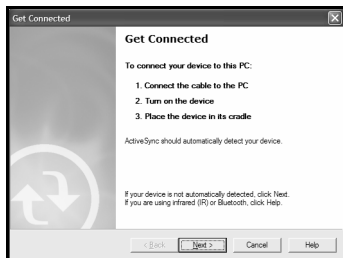
Once your unit connects with your PC, you will be presented with the **Synchronization Setup Wizard** window.
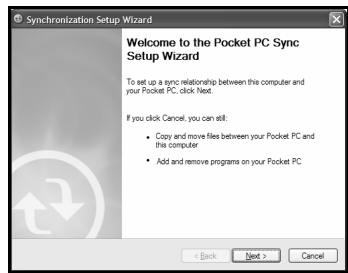
If you are simply interested in installing software on your unit, or in transferring files between your unit and your PC, click **Cancel**.

If you want to synchronize the information in Microsoft Outlook (such as e-mail, contacts, calendar, and time) between your computer and your PC or/and Exchange server, click **Next**.

You will be presented with the **Select Synchronization Settings** window. Select the types of information that you want to synchronize and click **Next**. Wait a few moments while ActiveSync synchronizes the selected information types with the unit.

Once connected over ActiveSync, you will see this window on your PC. Click the **Explore** icon to view the file structure on the unit.
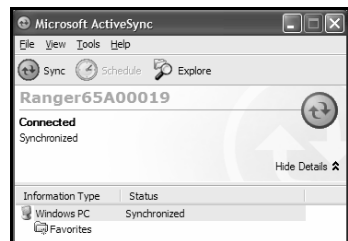
Troubleshooting ActiveSync connection problems

1. Confirm the unit is configured to communicate with the PC. Tap **Start / Programs / ActiveSync / Menu / Connections.** Confirm the box **Synchronize all PCs using this connection** is checked and **USB** is selected from the dropdown list.

2. Try disabling any personal firewall software running on the PC. ActiveSync needs certain TCP/IP ports to be open.

3. Reset the unit and reboot the PC. To reset the unit, hold down the Power button until **Booting - - - ->** appears on the screen.

4. If you have more than one unit, PC and/or cable, testing different combinations of equipment can help isolate the cause of the problem.

5. As noted earlier, if you suspect that the unit may have been connected to the PC USB port before ActiveSync was installed, uninstall ActiveSync, reboot the PC, and reinstall ActiveSync.

6. Confirm that the version of ActiveSync used on your PC is the same as or later than the one on the Companion CD.

7. Tap **Start/ Settings / Connections / USB to PC** and try changing the check box **Enable advanced network functionality**.

802.11 (Wireless LAN)

If your unit comes with embedded Wireless LAN (wLAN) capability, also known as 802.11 or Wi-Fi, your unit has the ability to wirelessly connect to the Internet and other data networks by connecting to available access points or hot spots. Once connected, you can browse the Internet or file shares on the local network.

To find out if you have built-in 802.11 available in your unit, tap **Start / Settings / System / System Information / Wireless**.

The 802.11 is off by default and reverts to OFF after every reset. To toggle 802.11 on or off, tap **Wi-Fi** from the **Today** screen or tap **Start / Settings / Connections / Wireless Manager** and tap **Wi-Fi**. Turn it off when not in use to save battery power and possibly speed up other processes.

The unit will detect wireless networks or hot spots. (There can be a slight delay before it updates.) To add new connections from within the Wireless Manager, tap **Menu / Wi-Fi Settings / Add New**. Type in the Network name and select connection to **Internet** or **Work**, and tap **ok**. Configuring the **Work** option is usually best left to network administrators. The **Internet** option is simpler and serves most needs. Depending upon the configuration of the wireless network, you may be prompted to enter a Wireless Encryption Protocol (WEP) key or an Internet login for authentication purposes. Obtain the WEP key from your network administrator.
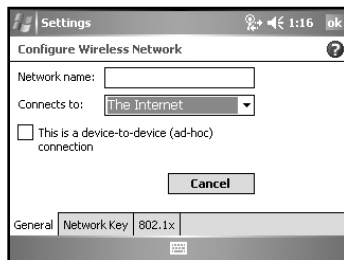
NOTE: The **Internet** connection is one in which Virtual Private Network (VPN) services are not involved and proxy servers may or may not be utilized. This can include a typical **Internet** connection through a corporate wireless network. A **Work** connection allows you to view file shares on a corporate network.

If you choose to create an **Internet** connection, open Internet Explorer Mobile on the unit (**Start / Internet Explorer**) to browse the Internet. Some features supported by desktop PC browsers are not supported by Internet Explorer Mobile. For instance, there are no pop-up windows, some sites may not be accessible and you may be unable to send e-mail with file attachments.

If you choose to create a **Work** connection, open File Explorer on your unit. Tap **Menu / Open Path / New Path** to open a window, allowing you to enter the name of a computer on the network on which you want to view file shares. Tap **OK**.
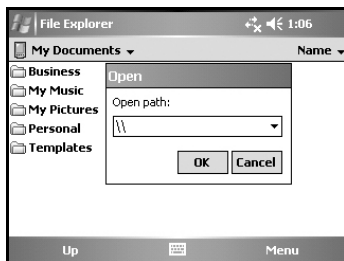
From here, you can browse the network file shares and copy and paste files between PCs on the network and the unit.

Exchange ActiveSync

Exchange ActiveSync, a component of Exchange Server 2003, facilitates data synchronization between your unit and an Exchange server. This synchronization can occur over 802.11, allowing you to update calendars, contacts, tasks and the Inbox on your unit without directly connecting it to a PC. The server must be running Exchange Server 2003 SP2 or later.

To use Exchange ActiveSync, confirm with your system administrator that an Exchange Server 2003 server is available for synchronization. The administrator will also provide you with a login name, password, server name, and domain name. To configure Exchange ActiveSync on the device, tap **Start / Programs / ActiveSync / Menu / Add Server Source.** Enter the server address and confirm with your administrator whether the Exchange server requires an encrypted (SSL) connection. Tap **Next**. Enter the login name, password and domain in the next window. Tap **Next** Choose the data types you want to synchronize and tap **Finish**.

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Troubleshooting 802.11 connection problems

1. Confirm that the unit has an appropriate IP address. Tap **Start / Settings / Connections / Network Cards / Network Adapters / Wireless B Network Driver** to view the unit's IP address. Confirm that the IP address is appropriate for the network to which you are trying to connect (for instance, 10.0.x.x or 192.168.x.x). Consult with your network administrator to confirm what appropriate IP addresses look like for your network. By default, the unit obtains an IP address from a DHCP server. If your network uses static IP addresses, enable the **Use specific IP address** and enter the appropriate IP address.

2. If the unit seems to be connected to the network, but you are having difficulty using the network connection, tap **Start / Settings / Connections / Network Cards / Network Adapters**, and confirm that the connection is appropriately configured as either a **Work** or **Internet** connection.

Bluetooth

If your unit comes with embedded Bluetooth capability—a short-range radio technology—your unit can communicate with other Bluetooth-enabled devices without using cables. To find out if you have built-in Bluetooth available in your unit, tap **Start / Settings / System / System Information / Wireless**.

Bluetooth on the unit is disabled by default and reverts to OFF after every reset. To enable Bluetooth on the unit, tap **Start / Settings / Connections / Bluetooth**. Check the box **Turn on Bluetooth**. If you want other Bluetooth devices to be able to find your unit, also check the box **Make this device discoverable to other devices**.

The details of configuring Bluetooth connections vary depending upon how the other Bluetooth device works.

Bluetooth file transfer between two units

It is possible to transfer files from one unit to another over a Bluetooth connection. Tap **Start / Settings / Connections / Bluetooth,** and confirm that Bluetooth is enabled on both units. Confirm that the unit that will receive the file is set to **Make this device discoverable to other devices**.

Tap **Start / Programs / File Explorer** on the unit that will send the file. Browse to the file to be sent, and touch and hold on it. Tap **Beam File** from the menu that appears. Wait for several moments while the sending unit searches for Bluetooth devices in the vicinity.

Select the receiving unit from the list, and tap **Tap to send**. Wait for a few moments while the file is transferred. The receiving unit will open a window asking whether you want to accept the file. Tap **Yes**. The file will be saved in the My Documents folder on the unit.

ActiveSync over Bluetooth

If your PC is Bluetooth-enabled, it is possible to establish a Bluetooth ActiveSync connection between your unit and the PC. Confirm that ActiveSync 4.1 or higher is installed on the PC, and that Bluetooth on the PC is enabled and configured to be discoverable.

On your unit, confirm that Bluetooth is enabled, and tap **Start / Programs / ActiveSync / Menu / Connect via Bluetooth**. When the Bluetooth settings window opens, tap **New Partnership**. Wait a few moments while your unit searches for Bluetooth devices in the vicinity. Select the PC from the list and tap **Next**. Enter any passkey on the device and tap **Next**; enter the same passkey when prompted by the PC. On your unit, confirm that the ActiveSync service is available and selected, and tap **Finish**.

Once the Bluetooth partnership has been created, you can establish a Bluetooth ActiveSync connection by tapping **Start / Programs / ActiveSync / Menu / Connect via Bluetooth**.

If you have difficulty connecting over Bluetooth ActiveSync, open ActiveSync on the PC and confirm that serial connections are enabled (they are disabled by default in ActiveSync 4.1). Confirm that the serial port being used by ActiveSync is the serial port which corresponds to the Bluetooth serial port connection profile on the PC.

Troubleshooting Bluetooth connection problems

If your unit cannot find another Bluetooth device, confirm that the device is within range (less than 10 meters / 30 feet) of other Bluetooth-enabled devices. Also confirm that the device is turned on and has been configured to be discoverable. Bluetooth devices such as printers and cell phones are typically not discoverable by default.

Additional connectivity

The unit supports several additional kinds of connections. If you do not have embedded Bluetooth or 802.11, you can purchase a CF or SDIO card to add the functionality. The following types of additional connectivity are also possible:

Modem: The unit supports dial-up connections to an Internet Service Provider and sending and receiving e-mail with file attachments. You will need to purchase an external modem, CF modem, or SDIO modem.

Web-enabled cell phones: The unit can connect to the Internet via Bluetooth and Web-enabled cell phones that are compatible with Windows Mobile 5.0 devices. USB phone connections are not supported. Refer to your phone service provider for more information on establishing Internet connections via your cell phone.

VPN: The unit includes support for Virtual Private Network (VPN) connections. Used together with a connection to the Internet, a VPN connection allows you to browse network files from a remote site and also supports remote synchronization with your PC via ActiveSync. Note that the network you access must be configured to allow VPN connections.

For more information on creating these connections, see the web site listed under reference materials on the cover of this manual.

Installing additional software on your unit

The unit can run third-party software designed for Microsoft Windows Mobile 5.0. However, not all Windows Mobile third-party programs are screen-rotation-aware and therefore may not run properly in a landscape environment. To allow these programs to run correctly, the screen orientation can be changed in **Settings / System / Screen**.

Most third-party software is installed by running a setup program on the PC while the unit is connected with ActiveSync. Follow the setup instructions that came with your software. If prompted by the installation wizard, perform a reset to complete the installation.

Caring for Your Unit

Cleaning the unit

Clean the unit with a soft cloth dampened with either water or a diluted mild detergent. **Do not use any chemical cleaners and do not put the unit in the dishwasher.**

Care of the touchscreen

Use only the included stylus or other devices specifically designed for use with touchscreens. The use of ballpoint pens, nails or other sharp objects to operate the touchscreen will scratch and/or damage the unit. Abrasives may scratch touchscreens. Keep the touchscreen clean by gently wiping the display, using a soft cloth dampened either with clean water or glass cleaner. **Do not apply any cleaner directly to the display. Do not use any abrasive cleaners.**

Use the screen protectors included with the unit to keep the touchscreen clean and protected. To apply a screen protector, first clean the display thoroughly. Peel the backing from the screen protector. Align the edge, and then drop the remainder onto the display. Use a credit card, if necessary, to squeeze the air from underneath the screen protector.

Mechanical shock

The unit is designed to resist damage for drops up to 1.22 meters (4.0 ft). However, you should protect the display from impact, pressure, or abrasive substances that can scratch it or crack it. The unit should not be dropped unnecessarily.

Care of the PowerBoot Module

The PowerBoot Module contains rechargeable Lithium-Ion (Li-Ion) cells that power the unit.

Charging guidelines:

- It is not possible to overcharge the batteries. They are self-regulated. You may leave them on charge indefinitely with no adverse consequences to their service life.

- Use only the charger supplied with your unit. Use of other chargers may void your warranty.
- The acceptable temperature range for charging the battery is between +5°C and +35°C (+41°F and +95°F). This is based on the internal battery temperature that may be different than the ambient temperature. If the battery detects a temperature too high or too low for charging, the LED will flash a warning sequence. The PowerBoot Module will defer charging until it detects appropriate temperatures.

Storage guidelines:

- If you have a spare PowerBoot Module that is not in use, do not store it in a place where temperatures exceed room temperature for long periods (like the glove box of a vehicle in warm climates). Long-term storage at very warm temperatures (over +35°C / +95°F) will reduce service life and will accelerate the normally very slow loss of charge capacity.
- For prolonged storage situations, store the PowerBoot Module at approximately 50% charge level.
- Do not store the PowerBoot Module with loose metal parts (like keys in your pocket) that might short the terminals. This could result in high currents and dangerously high temperatures.

Environmental Considerations

The unit's rugged design allows you to run your applications in harsh outdoor environments. Here are some considerations that will help you get the most out of your unit when working in very wet, hot or cold conditions.

Water

This unit is designed to withstand accidental immersion. To maintain the unit's water resistant seal, it is important to ensure that the CF-Cap is correctly oriented with the stylus holder facing the front of the unit, and that the screw on the CF-Cap is tightened but not over-tightened. Failure to reattach the CF-Cap screw could cause leakage and will void your warranty.

Because the PowerBoot is designed to easily disconnect from the unit, water can occasionally find its way onto the metal contacts between the battery and the unit. After working in very wet conditions remove the battery and check the contacts to see if they are wet. If so, dry the contacts on both the unit and the battery with a paper towel or clean cloth before storing for overnight or longer.

Temperature range

The operational temperature range is from -30°C to +60°C (-22°F to +140° F). In addition, the unit can be stored at temperatures from -40°C to +70°C (-40°F to +158°F). Although the unit is designed to be rugged, do not leave it in direct sunlight or in a parked vehicle in the sunlight for extended periods.

Batteries perform best at room temperatures. The battery also has a very stable capacity as temperatures rise above the human comfort level. However, cold temperatures cause battery life to drop, and the colder the temperature the greater the reduction in available battery life. Under very cold conditions (-20°C / -4°F and below), you can expect your battery life to be shortened between 30 to 70 percent. When working in very cold conditions, consider carrying a fully charged, spare battery in a warm place. The unit is designed so that battery replacement can be easily done. The battery performance

will improve by keeping the unit and the spare battery warm (for instance, keeping them inside your coat).

At moderate temperatures, you can expect your battery to last about 300 full charge/discharge cycles before its performance begins to noticeably but gradually decline.

Hardware Specifications

|	
OS	Windows Mobile 5.0
CPU	Intel® PXA 270 XScale CPU
RAM (VOLATILE)	64 or 128 MB SDRAM
FLASH STORAGE MEMORY (NONVOLATILE)	256 or 512 MB of NAND Flash
DISPLAY	Landscape 3.8" Color ¼ VGA display, sunlight readable, backlit
BATTERY LIFE	30 hours continuous room temperature operation with default settings and no backlight
BATTERY CHARGING	~4.5 hours to full charge; 80% charge in 2 hours
BATTERY CAPACITY	6600 mAh Lithium-Ion
I/O PORTS	Power, RS-232 serial (9-pin), USB client, and USB host
SOUND	Integrated sealed speaker and microphone
EXPANSION PORTS	2 CF slots 1xType I and 1xType II, 1 SDIO slot
ENVIRONMENTAL	Submersible, drop-resistant, dust-proof (see Environmental section)
INTEGRATED CAPABILITIES	Optional Integrated Bluetooth and 802.11g (Wireless LAN) capability

Environmental Specifications

TEMPERATURE	Operation: -30°C to +60°C (-22°F to +140°F)
	Storage: -40°C to +70°C (-40°F to +158°F)
WATER	Submersible to 1 meter for 30 minutes, IP67, MIL-STD 810F, Method 512.4, Procedure 1
DROP	1.22 m (4.0 ft.) onto concrete
SAND AND DUST	Sealed against dust, IP67, MIL-STD 810F, Method 510.4, Procedures I and II
VIBRATION	Mil-STD 810F Method 514.5
ALTITUDE	To 4572 m (15,000 ft) at a nominal temperature of +23°C (+73°F)
	Mil-STD 810F Method 500.4, Procedures I, II, & III
EMI	Meets FCC class B requirements

Safe Use of Your Unit

Carrying the unit

Due to radio frequency emissions, it is unsafe to operate the radio with the unit in a holster, dangling from a lanyard, or with any method that keeps the powered unit in very close proximity to the head or torso. For safe operation, carry the unit in your hand with the antennas located at least 20 cm (~8 inches) from the head or torso. See the following illustration for the correct and incorrect way to operate the unit.

Correct   **Incorrect**
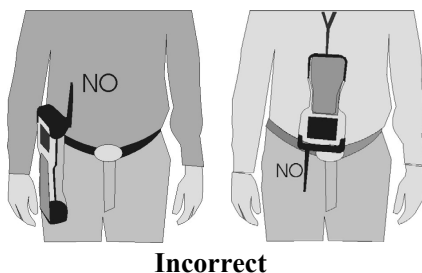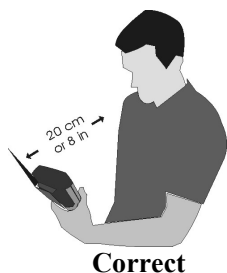
Repair

Do not attempt to dismantle the unit for repair. There are no user-serviceable parts inside. For service, use the contact details listed on the cover of this manual or your local dealer.

Battery safety

- Use only the battery supplied with your unit to power the unit. Use of other power sources could damage the unit, void your warranty and pose safety hazards.
- **Caution**: Do not expose to temperatures above 70 C (158 °F) Do not short external contacts. Do not disassemble or mistreat the battery. Failure to follow those instructions may present risk of explosion, fire or high temperatures. There are no user-serviceable parts in the battery pack. If it is defective, return it to the manufacturer for service.

- Handle a damaged or leaking battery with extreme care. If the electrolyte comes in contact with your skin, wash the exposed area with soap and water. If it comes in contact with the eye, flush the eye with water for 15 minutes and seek medical attention.
- Lithium-Ion batteries are classified by the U. S. Federal Government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials and are accepted for recycling.

Environmental hazards

The unit contains no mercury or cadmium. This product is RoHS compliant.

AC charger safety

- Use only AC and vehicle chargers intended for the unit. Other external power sources may damage your product and may void the warranty.
- Make certain the input voltage on the charger matches the voltage in your location.
- Make certain the charger has prongs compatible with your outlets.
- AC chargers are designed for **indoor use only**. Avoid using the AC charger in wet areas.
- Unplug the AC charger from power when not in use.
- Do not short the output connector.
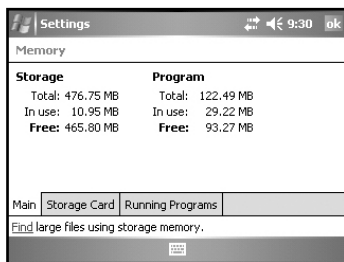
Troubleshooting

How do I delete files?

Open File Explorer and browse to the file to be deleted. Touch and hold on the file, and tap **Delete** from the menu that appears. **Unlike desktop PCs, Windows Mobile does not support a Recycle Bin. Once you delete a file, it cannot be recovered.**

How can I make the display more viewable?

The default backlight brightness is set to about 65 percent of the maximum brightness. Tap **Start / Settings / System / Backlight / Brightness**, and adjust the slider to increase display brightness; however, doing this will reduce battery life. You can also change to the High-Contrast theme found under **Start / Settings / Personal / Today.** Also, confirm that you have one – and only one! – screen protector in place.

How can I tell how much memory is available?

Tap **Start / Settings / System / Memory** to view available free storage and program memory. The screen shot shows 93 MB of program memory is available for applications and 466 MB of storage is available for files.

If a CF or SD memory card is installed, tap **Storage Card** to view available memory. If there is more than one card installed, tap on the dropdown arrow to select the different cards.

When I work outside in the sunshine with sunglasses, the screen is very dark and hard to see. What can I do?

If your sunglasses are polarized, they may be polarized at an angle incompatible with the display. Try using non-polarized sunglasses or sunglasses that have a different polarization orientation.

I am worried that my battery isn't performing as well as it should. Is there any way that I can test it to see whether it's ok?

The operating system includes a Battery Logger utility to help evaluate battery performance.

1. Connect the AC charger to the unit and charge the unit fully.
2. Configure the unit to never go to sleep. Tap **Start / Settings / System / Power / Advanced** and uncheck the box under **On battery power**. Tap **OK**.
3. Run the Battery Logger utility by tapping **Start / Programs / Battery Logger**. Enter a file name and file location (or use the default) and tap **Save**.
4. Tap **Tools / Start Battery Logging**. This utility creates a file that records the battery voltage at intervals.
5. Disconnect external power and allow the program to run until the battery is exhausted and the unit shuts down.
6. Reapply AC power and reset the unit to close the power logging utility.
7. Open the battery logger file and check the time of the first and last entry to determine how many hours elapsed before the unit turned off. A healthy battery should run about 30 hours if the 802.11 and backlight are off.

It is critically important that my battery doesn't fail during a job. Do you have any suggestions?

Consider carrying a fully charged spare battery in the field. The unit is designed so that battery replacement can be easily done.

Can I use my SDIO device with my unit?

SDIO devices will work as long as they are supported with the proper drivers. Check with the device manufacturer to see if the device is supported under Microsoft Windows Mobile Version 5.0 software for Pocket PCs.

How can I enable caps lock?

Press **Fn** key (to the left of the "A" button), and then the **up arrow** key (to the right of the "D" button) to toggle caps lock.

How can I see file extensions or file attributes?

The File Explorer included in Windows Mobile does not have any support for viewing file extensions or attributes like the Windows Explorer program on a desktop PC.

There are two ways to get around this limitation. You can connect the unit over ActiveSync and browse from the PC to view file extensions and attributes. (Refer to the **Communication** section for ActiveSync details.) Alternatively, third-party file management programs are available for Windows Mobile devices that may support a Recycle Bin as well as viewing file extensions, file attributes, zip archives and more.

Can I work with Microsoft Office files in Word Mobile and Excel Mobile?

Office Mobile applications are trimmed down versions of the PC Microsoft Office applications. Office Mobile applications allow you to view simple documents and to make simple changes on your unit. However, they do not support all of the formatting and other features (such as macros) that are supported by the PC applications.

Can I use my USB memory stick (or mouse, keyboard, cell phone or other USB device) with my unit?

Memory sticks and many other USB devices will work. Other USB devices may require special drivers that must come from the device manufacturer. Check with the device manufacturer to see if the device is supported under Microsoft Windows Mobile Version 5.0 software for Pocket PCs.

Regulatory Information

U.S.A.

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.

Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Declaration of Conformity

Europe

According to ISO / IEC Guide 22 and EN 450 14

Manufacturer's Name: Tripod Data Systems, Inc.
Manufacturer's Address: 345 SW Avery Ave.
Corvallis, OR 97333 USA

Declares, under our sole responsibility, that the product:
Product Name: Field Data Collector
Model Number: Ranger X
Product Options: ALL
conforms to the following Product Specifications:

Safety: EN60950-1:2001
EMC: EN 55022: 1994 +A1, A2: 1997 EN 55022: 1998 +A1:2000
EN 61000-3-2, 1995+A1+A2: 1998
EN 61000-3-2:2000   EN 61000-3-3:1995
EN 61000-3-3:1995+A1:2001 CFR 47, Part 15, Subpart B
EN 55024:1998*   EN 55024:1998+A1:2001*

R&TTE Directive 1999/5/EC:
EN 300 328 V1.6.1
EN 301 489-1 V1.4.1
EN 301 489-17 V1.2.1

Supplementary Information:
In addition to meeting the above EMC requirements during system test, the AC Charger provided with this product has been certified to IEC 60950 +A1, A2, A3, A4, A11.
  * Product is battery powered.

Corvallis, OR USA

CAUTION:

Only approved accessories may be used with this equipment. In general, all cables must be high quality, shielded, correctly terminated, and normally restricted to two meters in length. AC chargers approved for this product employ special provisions to avoid radio interference and should not be altered or substituted.

Unapproved modifications or operations beyond or in conflict with these instructions for use may void authorization by the authorities to operate the equipment.   052606

Trimble

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