

# **ULTRA-RUGGED FIELD PC**

Reference Guide





# 9

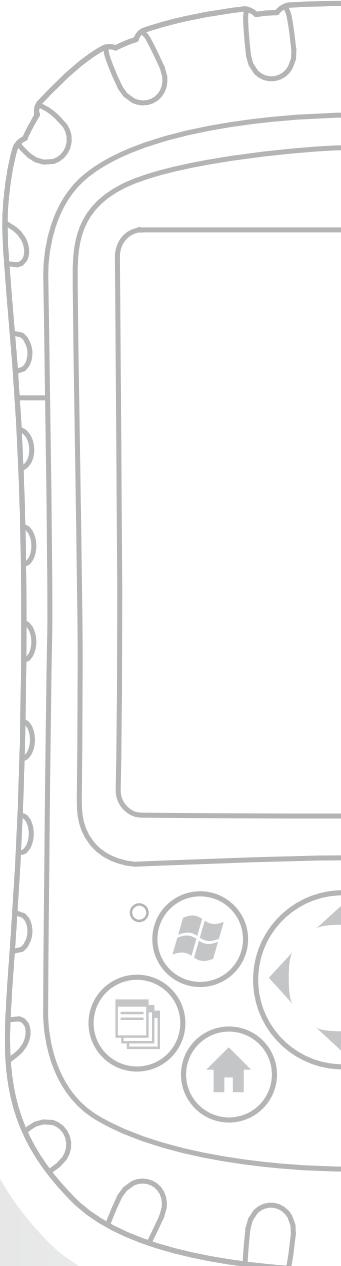
## Supported Bluetooth® **profiles**

Serial Port Profile

Dial-Up Networking (DUN) Profile

Human Interface Device (HID) Profile

Object Push Profile (OPP)



## Chapter 9

# Supported Bluetooth® Profiles

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This chapter describes the *Bluetooth®* profiles recognized by the Microsoft drivers installed on your Field PC. Drivers determine which devices your Field PC can communicate with. If you are using an external Bluetooth CF or SDIO card and you installed a new driver specific to this card (recommended), consult the documentation that came with the driver for instructions about its profiles.

*Note: Bluetooth cards are not recognized by modules with integrated Bluetooth. For general instructions about using an integrated Bluetooth module, see Chapter 8.*

This chapter is organized by Bluetooth profile, each of which is briefly described below. Instructions for using each profile to create Bluetooth partnerships follow.

- *Serial Port Profile (SPP)*. Similar to a serial cable, this profile acts as a liaison between two devices, such as the Field PC and a GPS receiver, using virtual ports. (These ports are described in the previous chapter.)
- *Dial-Up Networking (DUN)*. Lets you connect to a computer through a cell phone or a Bluetooth-enabled modem.
- *Human Interface Device (HID)*. Allows you to communicate between the Field PC and a Bluetooth keyboard or mouse.
- *Object Push Profile (OPP)*. This profile lets you exchange files like data, audio, business cards, appointments, and contacts. Similar to the well-known object exchange profile (OBEX).

# Serial Port Profile (SPP)

This section explains how to:

- Communicate with another device using the Serial Port Profile
- Configure ActiveSync® to synchronize through the Serial Port Profile
- Connect to a desktop computer that has a Bluetooth dongle
- Print from the Field PC to a Bluetooth printer using the Serial Port Profile

## Communicating with another device using the Serial Port Profile

Follow the instructions below to communicate with a device using the Serial Port Profile.

1. On the Field PC, tap on the Wireless Manager icon to make sure Bluetooth is on and that the Field PC is discoverable. (For instructions on doing this, see the previous chapter.)
2. In the Wireless Manager, tap *Menu > Bluetooth Settings > Device tab > New partnership.*
3. Select your target device and tap *Next* to create a Bluetooth partnership with the target device. *Note: After you have created a partnership with a device, the device automatically appears in the list of Bluetooth devices. You do not have to re-create a device partnership.*
4. Enter the passkey on the Field PC and on the device. (See the documentation for the device for details. If there is no passkey listed for the device, tap *Next*, then *No*.)
5. On the Field PC, select *Serial Port* and tap *Finish*.
6. The device appears on the list of partnerships.

7. Choose the COM Ports tab. Choose *New Outgoing Port* and tap *Next*. Select a COM port that is available.
8. **Important:** Deselect (clear) the *Secure Connection* checkbox. Deselecting this option ensures that the device disconnects the Bluetooth connection only when you tell it to.
9. Tap *Finish* to save the settings. Tap *OK* and *Done* to close the Wireless Manager application.

### **Configuring ActiveSync on a Bluetooth-enabled desktop computer to synchronize through the Serial Port Profile**

1. Make sure ActiveSync is set up properly on your desktop computer.
2. Make sure there are no current ActiveSync connections on your desktop. *Note: If another device is already connected to the desktop, serial ports do not appear available. To fix this, unplug the connected device, then tap Refresh on the Field PC.*
3. On the Today screen of the Field PC, tap on the Wireless Manager icon and make sure Bluetooth is on or discoverable.
4. Within Wireless Manager, select *Menu* then tap *Bluetooth Settings*.
5. Select the *Devices* tab.
6. Tap *New Partnership*.
7. Tap on the name of the desktop computer, then tap *Next*.
8. Enter a passkey on the Field PC.
9. Enter the same passkey on your desktop computer.
10. Select *ActiveSync* on the Field PC. If no ActiveSync option appears in the list of available services on the Field PC, check the ActiveSync configuration on your desktop.

11. Tap *Finish* to save the settings. Tap *OK > Done* to close the Wireless Manager application.
12. On the Field PC, tap *Start > Programs > ActiveSync*. Choose *Connect via Bluetooth*.

### Connecting to a desktop computer using a Bluetooth dongle

1. Make the Field PC discoverable.
2. Select the *COM Ports* tab.
3. Choose *New Outgoing Port*.
4. Select the device and tap *Next*.
5. Select an available COM Port.
6. **Important:** Deselect (clear) the *Secure connection* option. Deselecting this option ensures that the device disconnects its Bluetooth connection only when you tell it to.
7. Tap *Finish* to save your settings.
8. On your desktop PC, right-click the Bluetooth icon on your menu bar.
9. Select *Add Bluetooth device*.
10. Select *Let me choose passkey*.
11. Type in a passkey.
12. On the Field PC, type in the same passkey.
13. Tap *Next, OK, and Done*.

### Print from the Field PC to a Bluetooth printer using the Serial Port Profile

Currently, no built-in Windows Mobile 5.0 application supports printers. However, you can use third-party printing programs such as PrintBoy® to print data from the Field PC with a Bluetooth printer.

Before you set up a third-party print application, you need to first discover the Bluetooth printer. To do so, follow these steps:

1. On the Field PC, make sure Bluetooth is on and that the Field PC is discoverable. (See the previous chapter for instructions.)
2. In the Wireless Manager, tap *Menu* then *Bluetooth Settings*.
3. From the *Devices* tab, select *New partnership*.
4. When the printer appears on the list of devices, select it.
5. Tap *Next*.
6. Enter the passkey and tap *Next*.
7. Select *Serial Port*.
8. From the COM Ports tab, tap *New Outgoing port*.
9. Select the printer.
10. Tap *New COM port*.
11. Deselect the *Secure Connection* option.

You can now print using a third-party print application you install on the Field PC. For details about using the application to print, see the documentation that came with the application.

## Dial-Up Networking (DUN) Profile

This profile allows you to connect to the Internet using a cell phone dial-up connection or cordless modem. Instructions for partnering with both device types are described below.

### **Connecting to the Internet using a cell phone dial-up connection**

1. Make your cell phone discoverable. (See the user documentation that came with your cell phone for instructions.)

2. On the Field PC, tap on the Wireless Manager icon on the Today screen. (For more details, see the previous chapter.)
3. Tap *Menu > Bluetooth Settings*.
4. Select the *Turn on Bluetooth* checkbox and make sure *Make the device discoverable to other devices* is deselected.
5. In the Devices tab, choose *New Partnership*.
6. Select your cell phone from the list of devices and tap *Next*.
7. Enter any passkey on the Field PC.
8. Enter the same passkey and any other requested information on your cell phone.
9. On the Field PC, select *Dialup Networking*, then tap *Next*.
10. Tap *Start > Settings > Connections tab > Connections*.
11. Choose *Add a new modem connection*.
12. Enter a name for the connection and select *Bluetooth* as the modem.
13. Tap *Next*.
14. Select the name of your cell phone, then tap *Next*.
15. Enter the phone access number according to your phone carrier's specifications. Tap *Next*.
16. Enter a user name, password, and domain as specified by your network administrator.
17. Tap *Advanced*.
18. Fill in the remaining boxes as appropriate. Tap *OK* when you are done.
19. Tap *Finish*. Now you should be able to connect to the Internet on the Field PC through your phone's dialup connection.

## **Connecting to the Internet using a cordless modem**

To connect to the Internet using a cordless modem, follow the steps below:

1. Tap on the Bluetooth icon on the Today screen to open Wireless Manager. Make sure Bluetooth is on. (See the previous chapter for details.)
2. Tap *Menu > Bluetooth Settings*.
3. In the Mode tab, make sure *Turn on Bluetooth* is selected and that *Make the device discoverable to other devices* is deselected.
4. Open the Devices tab and choose *New Partnership*.
5. When the cordless modem device is found, tap on it.
6. Enter the passkey.
7. In the Partnership Settings screen, make sure *Serial Port* is not selected and that *Dialup Networking* is selected.
8. Tap *Save*.
9. Tap once on the device name to select it.
10. Tap *Start > Settings > Connections tab > Connections*.
11. Choose *Add a new modem connection*.
12. Enter a name.
13. Select *Bluetooth* as the modem.
14. Tap *Next*.
15. Select the name of the modem and tap *Next*.
16. Enter your ISP number as provided by your ISP provider and tap *Next*.
17. Type in a user name and password.
18. Choose *Advanced*.
19. Change the baud rate to 115200.
20. Fill in the remaining boxes as appropriate. Click *OK* when you're done.
21. Tap *Finish*.

Now that you have established a dial-up network connection, you can check email or look at a webpage using one of two methods. The first method is to let an application do the work. (This option is especially useful with cell phones.) The second method is to do the work yourself. Instructions for each method follow.

### *Method 1: Use an Internet browser or application*

1. Open Internet Explorer®.
2. Fill in the network login boxes.

### *Method 2: Do it yourself*

1. From the Today screen, tap *Start > Settings > Connections tab > Connections*.
2. Choose *Manage existing connections*.
3. Tap and hold on a connection and choose *Connect* from the menu that appears.

## Human Interface Device **(HID) Profile**

This profile allows you to connect with Human Interface Devices like Bluetooth keyboards and mice. To make a connection, follow these steps:

1. Make sure Bluetooth is on or discoverable. Create a Bluetooth partnership with the device. (See the previous chapter for instructions on how to do these tasks.)
2. Make sure the HID is ready for pairing and select *New Partnership* to search for a Bluetooth device.
3. Select the name of the HID and tap *Next*.
4. If the device has an assigned passkey or accepts a passkey you give it, enter the passkey on the Field PC and tap *Next*. If the device needs no passkey,

leave the Passkey field blank, tap *Next*, and choose *No* when you are asked whether you want the device to be added to the device list.

*Note: Saying No when you are asked whether you want to add the device to the device list allows you to proceed to the next screen; saying Yes returns you to the passkey screen.*

5. If appropriate, enter the same passkey on the HID to establish a partnership.
6. Select *Input Device*.
7. Tap *Finish*. You now have a partnership with the HID.  
*Note: If no partnership appears for the HID on the Devices tab screen, try resetting your Field PC.*

## **Object Push Profile (OPP) or beaming**

Your Field PC uses Object Exchange File (OBEX) protocol to transfer or “push” electronic objects such as business cards from one Bluetooth-enabled device to another. For instructions, read on.

### **Transferring data from a Bluetooth-enabled device**

To send data from a Bluetooth-enabled device to the Field PC, follow these steps:

1. Make sure the Field PC is discoverable. (See the previous chapter or the on-device help on the Field PC for instructions.)
2. On the Bluetooth-enabled device, tap and hold the stylus on the filename you want to beam. A menu appears.

## **Chapter 9: Supported Bluetooth Profiles**

3. Choose *Beam File*. The device finds the Field PC.
4. Send data from the device to the Field PC. The Field PC receives the data.

To send data from your Field PC to a Bluetooth device, follow these steps:

1. Make sure the device is discoverable. (For instructions, see the user documentation that came with your device.)
2. On the Field PC, make sure Bluetooth is on. (See the previous chapter for instructions.)
3. In File Explorer, tap and hold on the name of the file you want to transfer, then choose *Beam File* from the menu that appears.
4. When the name of the device becomes visible, tap on the name.
5. On the Bluetooth device, accept the file. The file is transferred.



# 10

## Caring for Your Field PC

Storing the Field PC and battery packs

Protecting the touchscreen

Protecting the Field PC against mechanical shock

Battery pack warnings

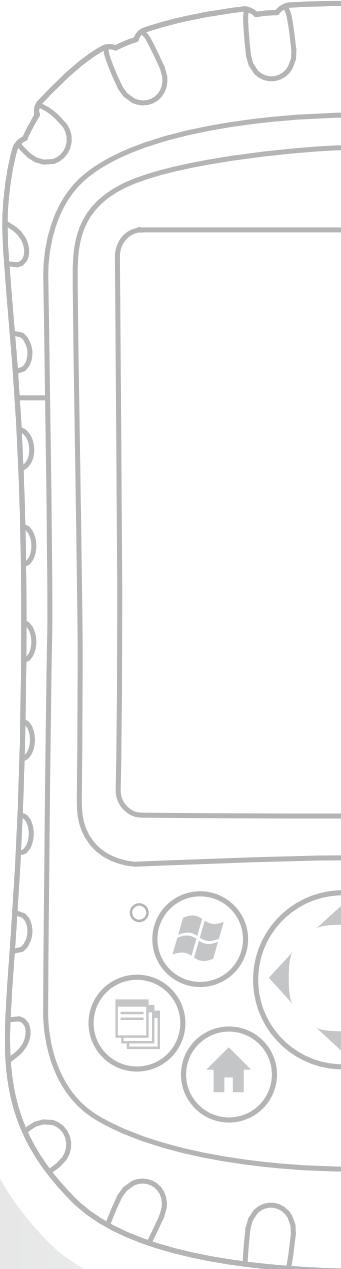
Equipment warnings

Using the Field PC in extreme temperatures

Cleaning the Field PC

Repairing the Field PC

Disposing of the Field PC and battery packs



## Chapter 10

# Caring for Your Field PC

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This chapter explains how to store, clean, and protect your Field PC and battery packs. Specifically, it provides guidelines for—

- storing your Field PC and battery packs
- protecting the touchscreen
- protecting the Field PC against mechanical shock
- battery pack warning
- equipment warnings
- using the Field PC in extreme temperatures
- cleaning the Field PC
- repairing the Field PC
- disposing of the Field PC and battery packs

## Storing your Field PC and battery packs

This section describes what you need to know about storing your device and battery packs, including

- the storage temperature range of the Field PC
- how to store the Field PC for less than two weeks
- how to store the device for more than two weeks
- how to take the Field PC out of extended storage

**Storage temperature range of the Field PC.** The Field PC can be stored at temperatures between -22° F and 140° F (-30° C to 60° C).

If possible, store your Field PC indoors. Doing so helps protect your device from extreme temperatures and helps your device run efficiently at startup.

**Storing the Field PC for less than two weeks.** If you plan to store your device for less than two weeks, suspend the device by following these steps:

1. As a precaution, back up your data onto a desktop computer or an external storage device such as a CF or SD card. (See *Chapter 3: Using the Hardware* for more instructions on backing up your data.)
2. Leave the battery pack in the device.
3. If you plan to store the device longer than a few days, it is a good idea to leave the device connected to the wall charger or to make sure the battery pack is fully charged.
4. Suspend the device.

**Storing the Field PC for more than two weeks.** To store the device safely for longer than two weeks, follow these steps:

1. Back up your data.
2. Tap the Applications Manager icon  to close all running application programs.
3. Charge the battery pack to full capacity (100%).
4. Unplug the wall charger.
5. Press the Power button until the Power Button menu appears.
6. Select *Power Off* from the menu, then tap *OK*.
7. Place the Field PC in a safe, dry place.



**Taking the Field PC out of extended storage.** The battery pack discharges slightly during extended storage periods. When you are ready to use your Field PC again, follow these steps so your battery pack runs efficiently:

1. Plug the Field PC into a charger.
2. Charge the battery pack. (To check the battery power status, tap on the battery icon at the top of the screen.) Only charge the battery pack in temperatures between 32°F and 104°F (0°C and 40°C). For best results, charge the battery pack at room temperature (68°F or 20°C).



## Protecting the touchscreen

Protect the touchscreen from impact, pressure, or abrasive substances that could damage it. To further protect the touchscreen, apply one of the adhesive screen protectors that came with your Field PC.



**CAUTION:** Be sure to replace the screen protector as often as the screen protector packaging directs.

To apply a screen protector, follow these steps:

1. Make sure the Field PC screen is free of oils and dirt. You can wipe it with a microfiber cloth.
2. Peel back the paper liner from the screen protector, exposing approximately one inch, as shown in the following image.



3. Align bottom corners of the screen protector with the Field PC screen, sticky side down.
4. Smooth the screen protector while peeling back the liner, working out air bubbles as you go. Continue smoothing until the paper liner is removed.

*Note: Some air bubbles may still be visible, but they fade away in a short time. You can use a credit card to gently push out any excess air.*

## Protecting the Field PC against mechanical shock

The Field PC is designed for protection from mechanical shock. It can be dropped from up to five feet (1.524m) onto concrete. Shock protection is guaranteed only when the top cap and body molding are securely in place.

# Battery warnings



**WARNING!** This device comes with a lithium ion rechargeable battery pack. To reduce the risk of fire or burns, do not disassemble, crush, puncture, short external contacts, or expose the battery pack to fire.

Follow these additional safety guidelines:

- Use only battery packs approved for use with this device.
- Do not store or leave your device or battery pack near a heat source such as a radiator, fireplace, stove, electric heater, or other heat-generating appliance, or otherwise expose it to temperatures in excess of 140° F (60° C).
- Do not try to open the battery pack.
- Do not carry a battery pack in your pocket, purse, or other container where metal objects (such as car keys or paper clips) could short-circuit the battery pack terminals.
- Keep the battery pack contacts clean. If they get dirty, wipe them off with a soft cloth.
- Dispose of the battery pack properly. See the section called Disposing of your Field PC and battery packs in this manual for instructions.
- Do not install the battery pack backwards so that the polarity is reversed.
- Do not connect the positive terminal and the negative terminal of the battery pack to each other with any metal object (such as wire).
- Do not solder directly onto the battery pack.
- Do not place the battery pack in direct sunshine.
- In the rare event that the battery pack leaks and fluid gets into the eye, do not rub the eye. Rinse well with

water and immediately seek medical care.

- Dispose of the battery pack properly. See the section below, *Disposing of your Field PC and battery packs* for instructions.

## Equipment warnings



**WARNING!** To reduce the risk of personal injury, electrical shock, fire or damage to the equipment:

- Plug the wall charger into an electrical outlet that is easily accessible at all times.
- Disconnect power from the equipment by unplugging the wall charger from the electrical outlet or unplugging the synchronization cable from the host computer.
- Do not place anything on the wall charger cord or any of the other cables. Arrange them so that no one may accidentally step on or trip over them.
- Do not pull on a cord or cable. When unplugging the wall charger from the electrical outlet, pull on the plug, not the cord.
- Use only wall chargers intended for the Field PC. Using any other external power source can damage your product and void your warranty.

## Using the Field PC in extreme temperatures

The Field PC operates in ranges from -22° F to 122° F (-30° C to 50° C). To help your device function properly, store the device indoors when possible.

### Other tips:

- If the Field PC is exposed to temperatures below 14°F (-10°C), the device may slow down or the display backlight may become dim to reduce the load on the battery power.
- Extremely low or high temperatures may prevent the battery pack from charging. Charge the battery pack in temperatures between 32°F and 104°F (0° C and 40° C). For best results, charge the battery pack at room temperature (68°F or 20°C)

## Cleaning the Field PC

This section explains how to clean

- the touchscreen
- the communications module (area housing the USB port, DC jack, and serial port)
- the speaker or microphone
- the stylus slot
- the display bezel



**CAUTION:** Always make sure the top cap is on and screws are fitted tightly before you begin cleaning your Field PC.

**Touchscreen.** To clean the touchscreen, follow these steps:

1. Press the power button briefly to suspend the device.
2. If you applied a protector to the touchscreen, carefully remove it.
3. Apply water or a mild cleaning solution such as *Windex*® or *409*® to a microfiber cloth and gently wipe off the touchscreen. Other approved cleaners include *Citrus Wonder*® and *Citrus All Purpose Cleaner*®.



**CAUTION:** Do not use tissues, paper towels, or harsh cleaning agents to clean the touchscreen.

3. If you used a cleaning solution, rinse the touchscreen with water and dry it with a microfiber cloth.
4. Press the power button to resume the device.



**CAUTION:** Long exposure to the following solutions may damage your device:

- pine oil
- oil based paint
- automotive brake cleaner
- isopropyl alcohol
- carburetor cleaner

In case the device is exposed to one of these solutions, wipe it off with a mild cleaning solution.

**Case overmolding.** Clean the rubber-like overmolding that surrounds the case with a cloth and a mild cleaning solution like 409 or *Citrus Wonder*. After you are done cleaning, rinse the device with water.

**Communications module (area housing the USB port, DC jack, serial port).** To clean the communications module, run it under a faucet. Use a soft toothbrush or toothpick to clean out any remaining dirt.

**Speaker and microphone.** If debris gets in the speaker or microphone, use a soft bristle brush to remove it. Do not insert any object into the speaker or microphone holes.

**Stylus slot.** Rinse the stylus slot with water.

**Display bezel.** If the edge under the bezel gets dirty, use a microfiber cloth to remove the debris. Do not remove the bezel.

# Repairing the Field PC

If the Field PC is in need of repair, call your service center for a Return Materials Authorization number (RMA).

**IMPORTANT:** Do not attempt to service the device yourself. This action voids the warranty.

## Disposing of the Field PC and battery packs

This product must not be disposed of with municipal waste. It is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. If you cannot find a location, contact the manufacturer for information about disposal.



The lithium-ion battery packs for your Field PC are recyclable. Avoid placing them in the trash or municipal waste system.

To find the nearest battery recycling center in the USA, visit the Rechargeable Battery Recycling Corporation's website at [www.rbrc.org/call2recycle/index.html](http://www.rbrc.org/call2recycle/index.html) or call 1-800-8-battery.

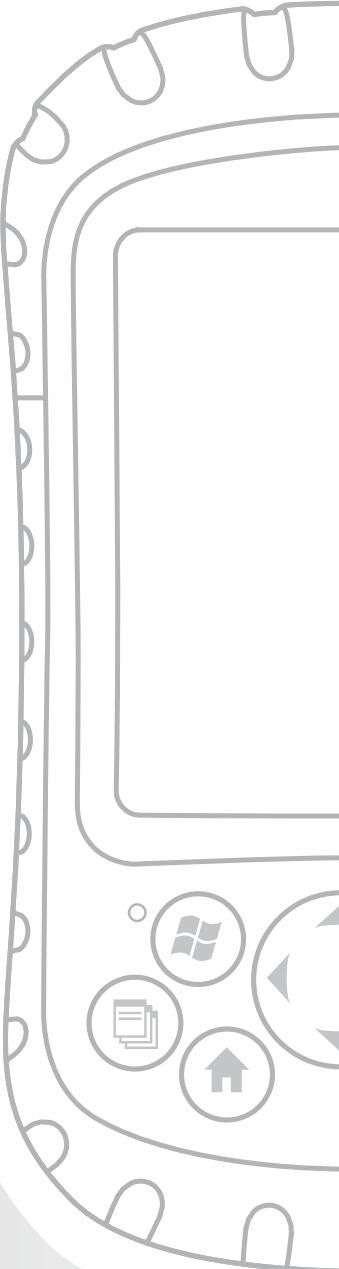
The Field PC contains no mercury or cadmium.

# 11

## Troubleshooting and Service Tips

Troubleshooting tips

Preparing for a service center call



## Chapter 11

# Troubleshooting and Service Tips

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This chapter includes some basic troubleshooting tips. It also explains what you need to do before you call your service center for a repair.

Answers to questions about Windows Mobile® may be available through the help files on your device or on the Windows Mobile website from Microsoft® at [www.Microsoft.com/mobile](http://www.Microsoft.com/mobile). If you cannot find answers to your questions through these methods, contact your service center. (See the section in this chapter called *Preparing for a service center call*.)

## Troubleshooting tips

This section provides solutions for the following issues:

1. The battery pack will not charge fully.
2. The touchscreen responds inaccurately to stylus taps.
3. The screen does not calibrate correctly or completely.
4. The Field PC runs slowly.
5. The Field PC drops its ActiveSync® connection.
6. The Field PC locks up.

**Issue 1:** The battery pack will not charge to 100% or to “0 mAh Consumed”.

**Solutions:** Try discharging the battery pack completely. You can turn off all auto-suspend and auto-backlight timers to drain the battery pack more quickly. Once the battery pack is fully discharged, try charging it again.

If the battery pack does not charge to full, try repeating the full discharge and charge cycle a few more times.

If the battery pack still does not charge to full, try using a different battery pack to confirm that the problem is specific to the original battery pack.

Only charge the battery pack in temperatures between 32°F and 104°F (0°C and 40°C). For best results, charge the battery pack at room temperature (68°F or 20°C).

**Issue 2:** The touchscreen does not respond accurately to stylus taps.

**Solutions:** Try recalibrating the touchscreen. (See the section in Chapter 3 called *Using the touchscreen*.)

If the device is not responding to stylus taps at all and you are on the Today screen, look to see if the device is locked. To unlock the device, press the *Unlock* soft key on the screen.

If the device is unlocked but the stylus continues to respond inaccurately, close all open programs and reset the device. (See Chapter 5 for instructions.)

**Issue 3:** During calibration, the screen does not respond to stylus strokes or does not complete the calibration process.

**Solutions:** Check to see if there is something stuck underneath the bezel. Use a microfiber cloth to remove any excess debris. Also check to see if there is damage or wear on any area of the touchscreen. In case of damage, contact your service center.

**Issue 4:** The Field PC runs slowly.

**Solutions:** It is possible that you have too many programs running. Try closing any programs you are not using. To view and close running programs, follow these steps:

1. Tap on the Applications Manager icon.  The Applications Manager window appears.
2. Tap on the Running Programs tab in the Applications Manager window.
3. Select a program and tap *Stop*. This closes the program.

**Issue 5:** My Field PC quickly drops its ActiveSync connection to my desktop computer.

**Solutions:** Firewall programs sometimes cause ActiveSync connection problems. In these cases, the firewall sees the Field PC as a strange and possibly hostile computer and prevents the device from connecting to the desktop computer.

To allow the mobile device to connect to your desktop computer, follow these steps:

1. Use the serial cable to connect your device to the desktop computer. Follow the ActiveSync wizard instructions.
2. If your firewall application brings up a warning message asking whether you want to allow a connection, check the option to allow the connection and click "Yes".

*Note: If the warning message above does not appear when you try to connect to the desktop computer but the device is still being dropped, contact your service center.*

**Issue 6:** The Field PC locks up.

**Solution:** To reset the device, press and hold the Power button for 10 seconds or until the screen goes dark. The device turns on again after a few seconds.

## Preparing for a service center call

When you contact a service center, you are asked to identify your device. Your device serial number and other identification information can be found by following these steps:

1. Tap *Start > Settings*. The Settings window appears.
2. Tap the System tab.
3. Choose *System Config*. The System Configuration window appears, listing the information you need for the service center.

The screenshot shows a mobile application window titled "System Config". At the top right are icons for signal strength, battery level, and time (2:59). A "ok" button is in the top right corner. Below the title is a section header "System Configuration". The main content is a table with two columns: "Item" and "Information". The table has two sections: "SPECIFICATIONS" and "VERSIONS".

Item	Information
<strong>SPECIFICATIONS</strong>	
Model Number	14802
Serial Number	12345
Max CPU Speed	520 MHz
Memory Size	64 MB
Storage Size	128 MB
<strong>VERSIONS</strong>	
Build Version	2.1.0
Build Number	7053.4.3
Hardware Revision	0.0.0



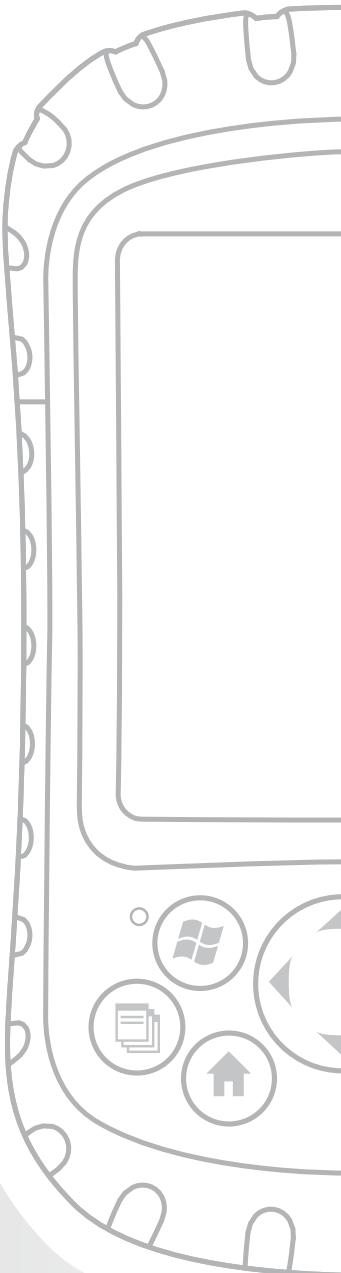
# 12

## Information for Software Developers

Programming documentation

Software Development Kit (SDK)

Software development tools



## Chapter 12

# Information for Software Developers

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## Programming documentation

Documentation for programming Microsoft Windows Mobile® can be found at:

<http://msdn.Microsoft.com/mobility/Windowsmobile/default.aspx>. This website from Microsoft is designed for software programmers.

## Software Development Kit (SDK)

Your Field PC uses the standard SDK Microsoft provides. More information about the Windows Mobile 5.0 SDK for Pocket PC devices can be found at:

<http://msdn2.microsoft.com/en-us/windowsmobile/default.aspx>

## Software development tools

Microsoft recommends Visual Studio® 2005 for Windows Mobile development. This tool gives users the ability to create “native” code so they can debug and test in a

close relationship with the device. Older development tools allow you to compile applications, but they do not offer device connectivity options for more complete development and verification tasks.

More information about Visual Studio 2005 and other tools from Microsoft can be found at:

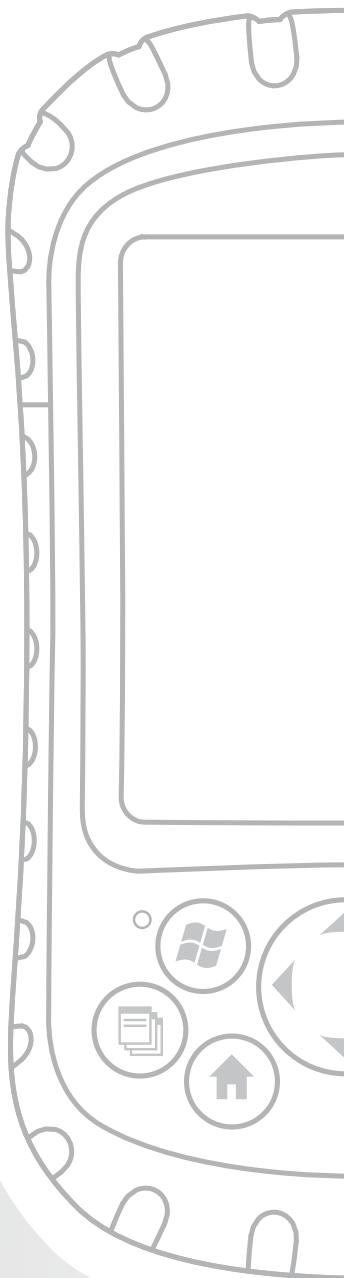
*<http://msdn.Microsoft.com/mobility/Windowsmobile/howto/Windowsmobile5/default.aspx>*



Appendix

# A

## Product **Specifications**



# Appendix A

# Product

# Specifications

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Features	Your Field PC
Operating System	Microsoft® Windows Mobile® 5.0
Processor	Intel® XScale® PXA270, 520 MHz
Memory	128 MB low-power RAM
Primary Storage	Internal solid-state 256 or 512 MB Flash
Secondary Storage	Internal solid-state 128 MB Flash (portion reserved for OS)
Display	3.5" (89 mm) QVGA active matrix color TFT transreflective LCD with LED backlight; 240 x 320 pixels
Touchscreen	Sealed, resistive, pressure sensitive
CF and SD Card Slots	Compact Flash (Type I or Type II), Secure Digital (SD or SDIO); each card slot provides 3.3 V; user accessible, sealed
Keyboard	Four-way directional button, standard key functions, LED backlit keys
Physical	6.5" length x 3.5" wide x 1.7" thick (165 x 89 x 43 mm), 17 oz (482 g); magnesium case with elastomer overmold

## **Appendix A: Product Specifications and Pinouts**

<b>Features</b>	<b>Your Field PC</b>
Operating Temperature for Devices without Internal Bluetooth	-22° to 122°F (-30° to 50°C)
Operating Temperature for Devices with Internal Bluetooth	-4° to 122°F (-20° to 50°C)
Storage Temperature	-22° to 140°F (-30° to 60°C)
Battery Charging Temperature	32° to 104°F (0° to 40°C)
IP67	Sealed rating, waterproof and dustproof
MIL-STD-810F	Water, humidity, sand and dust, vibration, altitude, shock, high temperature, low temperature, temperature shock
Shock Absorbency	Multiple drops onto concrete from 5 ft (1.5 m) through temperatures ranging from -22 to 122° F (-30 to 50° C)
Batteries	Intelligent, rechargeable Li-Ion battery pack, 14 W-hr (nom.)
Communications Module	Serial port 9-pin D-sub connector, USB Host (Mini A), USB Client (Mini B), 12 VDC jack for power input and battery charging

<b>Features</b>	<b>Your Field PC</b>
COM 1 Port	9-pin D-sub connector; full modem control signals, 5 V @ 200 mA available on DTR pin 4; controlled by DTR signal; conformal coated
Current Limits	CF card slot: 3.3 V; SD card slot: 3.3 V; USB Host: 5 V; 9-pin D-sub connector: 5 V on DTR line; recommended maximum combined output current: 500 mA; short circuit protected
Power	Voltage +12 VDC; Range +10 10-20 VDC; Current: Max 12 V @ 850 mA; reverse polarity protection; over voltage protection; auto shut off
Wireless Communication Options	Integrated Bluetooth or Bluetooth-supported with CF or SD Bluetooth card; Wi-Fi supported; wireless cellular modem
Internal Clock	Battery-backed real time clock
Development Environment	SDK for Windows Mobile® for Embedded Visual C++® version 4.0 and Visual Studio® 2005
Enunciators	External power/charge LED and notification LED; other enunciators on system tray
Certifications	FCC Class B, European CE Mark

### **9-pin serial port pinouts**

<b>Pin #</b>	<b>Description</b>
1	Data Carrier Detect (DCD) Input
2	Receive Data (RCD) Input
3	Transmit Data (TXD) Output
4	Data Terminal Ready (DTR) Output
5	Ground (GND)
6	Data Set Ready (DSR) Input
7	Request To Send (RTS) Output
8	Clear To Send (CTS) Input
9	Ring Indicator (RI) Input



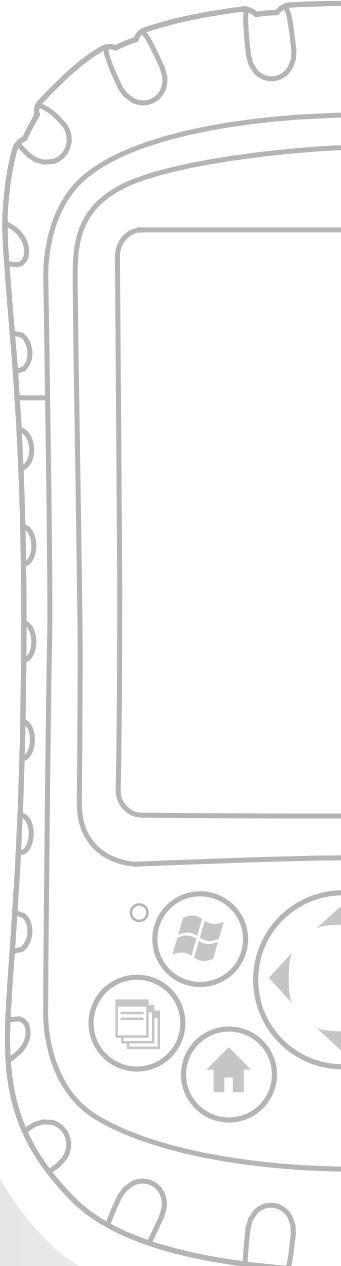
Appendix

# B

## Certifications and Regulatory Information

Regulatory Information

CE marking



## Appendix B

# Certifications and Regulatory Information

---

## Regulatory information

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 when the equipment is used in a commercial or residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not used in accordance with the reference guide, may cause harmful interference to radio communication. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

This device complies with Part 15 of the FCC Rules. Operation of this equipment is subject to the following two conditions:

1. The device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.



**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. Wall chargers approved for this product employ special provisions to avoid radio interference and should not be altered or substituted.



**CAUTION:** Changes or modifications to the Field PC that are not expressly approved by the manufacturer could void the user's authority to operate the equipment.

## CE marking

 Products bearing the CE marking comply with the EMC Directive (89/336/EEC), the R&TTE Directive (1999/5/EC), and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

CE compliance of this device is valid only if powered with/by a CE-marked wall charger provided by the manufacturer. Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN 55022 (CISPR 22)—Electromagnetic Interference
- EN 55024 (IEC 61000-4-2, 3, 4, 5, 6, 8, 11)—Electromagnetic Immunity

- EN 61000-3-2 (IEC 61000-3-2)—Power Line Harmonics
- EN 61000-3-3 (IEC 61000-3-3)—Power Line Flicker
- EN 60950 (IEC 60950)—Product Safety
- ETS 300 328-2—Technical Requirements for 2.4 GHz Radio Equipment
- EN 301 489-1, -17—General EMC Requirements for Radio Equipment



**CAUTION:** Although the radiated output power of this device is below the FCC radio frequency exposure limits, the device should be used in ways that minimize the potential for human contact during normal operation.

The possibility of exceeding the FCC radio frequency exposure limits can be avoided by minimizing operation of the device in close proximity to the human body. Metallic body accessories are not permitted and 1.5 cm spacing between the device and the body must be maintained to satisfy RF exposure.

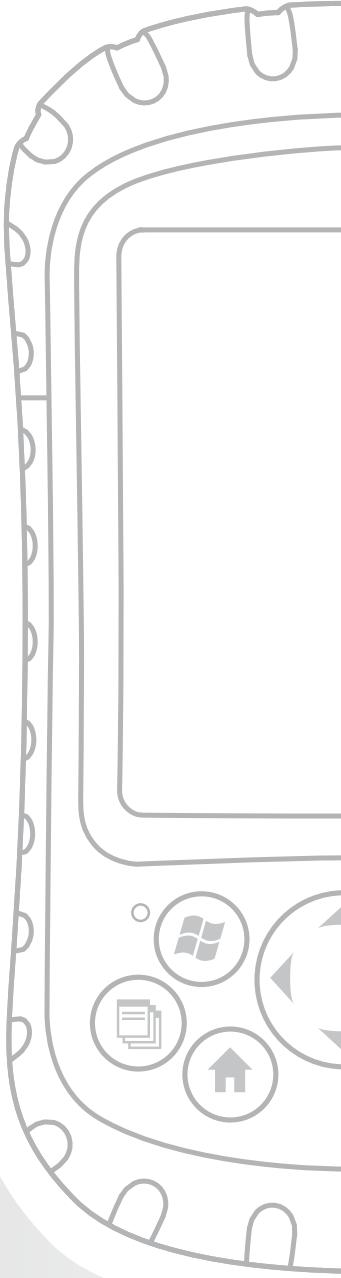
This device must not be co-located or operating in conjunction with any other antenna or transmitter.

The telecommunication functions of this device may be used in the following EU and EFTA countries: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovak Republic, Romania, Slovenia, Spain, Sweden, Switzerland, and United Kingdom

Appendix

# C

## Standard Warranty Terms and Conditions



## Appendix C

# Standard Warranty Terms and Conditions

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## Limited Product Warranty

Juniper Systems, Inc. ("JS") warrants that the Field PC/Field PCs shall be free from defects in materials and workmanship, under normal intended use, for a period of 12 months from the date of shipment. The Field PC can be warranted up to 5 years (including the standard warranty period) through the purchase of an extended warranty. JS warrants that the following items shall be free from defects in materials and workmanship, under normal intended use, for a period of ninety (90) days from the date of shipment:

- battery packs,
- media containing the Field PC programs,
- desktop computer programs,
- user documentation, and
- accessories.

Extended warranties apply only to the Field PC, not battery packs, media containing the Field PC programs, desktop computer programs, user documentation, and accessories. Parts that are excessively worn are not covered under the extended warranty plan. These may include, but are not limited to, the keyboard elastomer and switch matrix, hand straps, touchscreens, and connector modules.

### **Warranty exclusions**

This warranty shall not apply if:

- (i) the product has been set up improperly or has been improperly installed or calibrated,
- (ii) the product is operated in a manner that is not in accordance with the user documentation,
- (iii) the product is used for a purpose other than for which it was designed,
- (iv) the product has been used in environmental conditions outside of those specified for the product,
- (v) the product has been subject to any modification, alteration, or change by or on behalf of customer (except and unless modified, changed or altered by JS or under direct supervision of JS),
- (vi) the defect or malfunction results from misuse or accident,
- (vii) the serial number on the product has been tampered with or removed, or
- (viii) the product has been opened or tampered with in any way.

This warranty is exclusive and JS will not assume and hereby expressly disclaims any further warranties, whether express or implied, including, without limitation, any warranty as to merchantability, fitness for a particular purpose, non-infringement or any warranties arising from the course of performance, dealing, or usage of trade. JS specifically makes no warranties as to the suitability of its products for any particular application. JS makes no warranties that

- its products will meet your requirements or will work in combination with any hardware or applications software products provided by third parties,

- the operation of its products will be uninterrupted or error free, or
- all defects in the product will be corrected.

JS shall not be responsible for software, firmware, information, or memory data contained in, stored on, or integrated with any products returned to JS for repair, whether under warranty or not.

### **Remedy**

In the event a defect in materials or workmanship is discovered and reported to JS within the specified warranty period, JS will, at its option, repair the defect or replace the defective part or product. Replacement products may be new or reconditioned. JS warrants any replaced or repaired product for a period of ninety (90) days from the date of return shipment, or through the end of the original warranty period, whichever is longer.

### **Limitation of Liability**

To the fullest extent allowed by law, the obligation of JS shall be limited to the repair or replacement of the product. JS shall in no event be liable for special, incidental, or consequential, indirect, special or punitive damages of any kind, or for loss of revenue or profits, loss of business, loss of information or data, or other financial loss arising out of or in connection with the sale, installation, maintenance, use, performance, failure, or interruption of any product. Any responsibility and/or liability of JS shall, in connection with a warranted product, be limited in the maximum amount to the original purchase price.

## **Warranty Repairs**

To obtain repair or service on the Field PC, contact your authorized repair center within the applicable warranty period to receive a Return Material Authorization (RMA) number. Repairs returned without proper authorization may acquire an additional handling fee and/or delay in the repair. The customer is responsible to prepay all shipping costs when sending equipment to a repair center. JS will return the repaired equipment by the same method it was received with costs of shipping prepaid.

## **Governing Law**

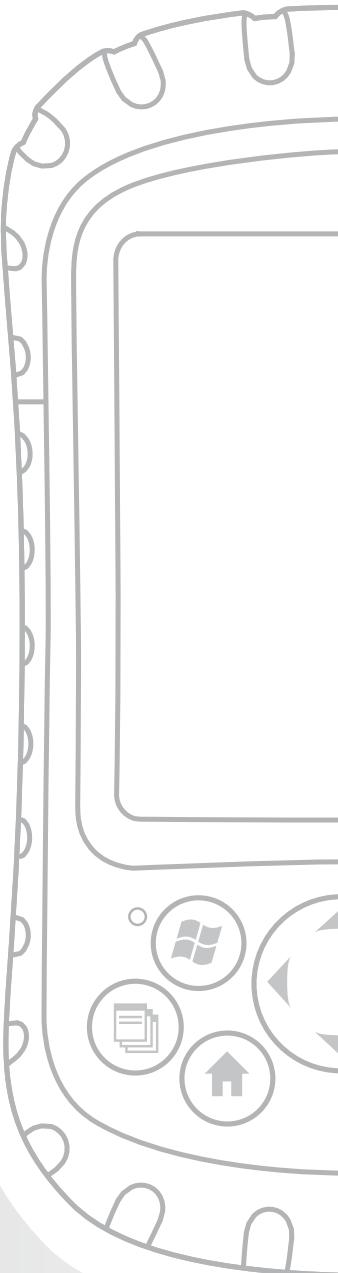
This warranty is governed by the laws of Utah, and excludes the United Nations Convention on Contracts for the International Sale of Goods. The courts of Utah shall have exclusive personal jurisdiction in case of any disputes arising out of or in connection with this warranty.

## **Services and Materials Provided Under Warranty**

- Analysis of problem by service technician
- Labor and materials required to fix defective parts
- Functional analysis performed after repair
- Repair turnaround within 10 working days of receipt unless special circumstances exist
- Shipping costs to return device to customer



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# Installation Instructions

## Ultra-Rugged Field PC Extended Caps

Our extended caps maintain the full ruggedness of the Field PC while allowing you to use CF or SD peripheral devices. This booklet explains how to install each cap and also how to mount an external device like a GPS receiver on your Field PC.

### Before You Begin

- Maximum card lengths for each cap are listed on page 3. To avoid damaging your Field PC, refer to them before inserting a card.
- See the Table of Contents to find instructions for installing your specific extended cap.

## Package Contents

### **Communication Cap:**

- Foam pads in different sizes

### **Universal, Optical, and Data Acquisition**

### **(DAQ) Caps:**

- Foam pads in different sizes
- Seal adapter plate and screws
- Card pull tabs
- Clear CF card spacer

## Required Tools

- #1 Phillips screwdriver
- If you are mounting an external device, you need a razor blade or sharp knife

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## Maximum Card Lengths

The maximum total card length for each cap is listed below.

**CAUTION:** *Using cards that exceed the maximum lengths listed above may damage your Field PC and void the warranty.*

Communication Cap	2.75 inches (70 mm)
Universal Cap	3.8 inches (96.5 mm)
Optical Cap	3.5 inches (89 mm)
Data Acquisition Cap	1.43 inches (36.4 mm)

## Communication Cap

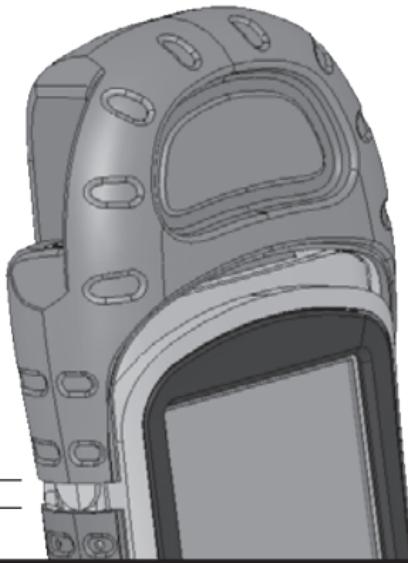
This section explains how to install the Communication Cap. For instructions on installing the Universal, Optical, and Data Acquisition (DAQ) caps, see the next section.

1. Use a #1 Phillips screwdriver to loosen the captured top screws on the Field PC. Remove the standard cap.



- 2.** Insert your card. To keep your card securely in its slot, cushion it by placing small or medium-sized foam pieces inside the top of the cap. Insert enough foam into the cap so that when you slide the cap back onto the Field PC with little pressure, a  $\frac{1}{4}$  inch (6 mm) gap remains between the cap and the Field PC, as shown.

$\frac{1}{4}$  in. (6 mm) gap



- 3.** Tighten the Communication Cap screws until they are firmly in place. To properly seal the cap, apply an extra  $\frac{1}{4}$  to  $\frac{1}{2}$  turn after the screws become hard to turn.

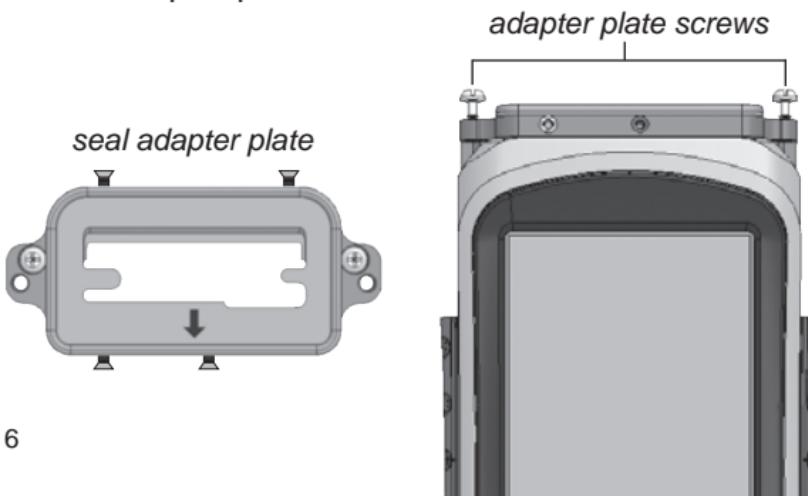


## Universal, Optical, and DAQ Caps

1. Use a #1 Phillips screwdriver to loosen the captured top screws on the Field PC. Remove the standard cap.



2. Place the seal adapter plate onto the Field PC with the arrow pointing towards the display. Tighten the two adapter plate screws.



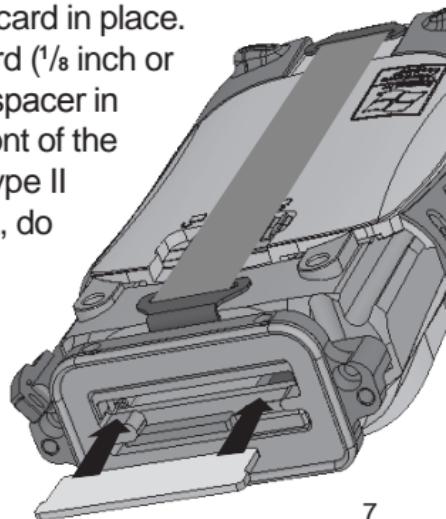
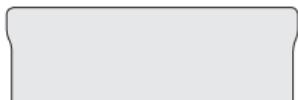
This section tells you how to insert your card(s) properly. For memory cards, see step 3. For medium or large CF cards, see step 4. For any other card types, insert your card(s) and skip to step 5.

**CAUTION:** Before inserting a card, make sure the four side screws on the seal adapter plate are backed out  $\frac{1}{8}$  inch as shown in the first image in step 2.

3. If you are inserting an SD or CF memory card, make it easier to remove by first placing a card pull tab onto the card. Insert the card.

4. A Type I CF card is thinner than a Type II card, so it needs a spacer to keep the card in place. Before you insert a Type I CF card ( $\frac{1}{8}$  inch or 3 mm thick), first insert the card spacer in the CF card slot closest to the front of the Field PC. If you are inserting a Type II CF card ( $\frac{1}{4}$  inch or 5.5 mm thick), do not insert the spacer card. Insert the card.

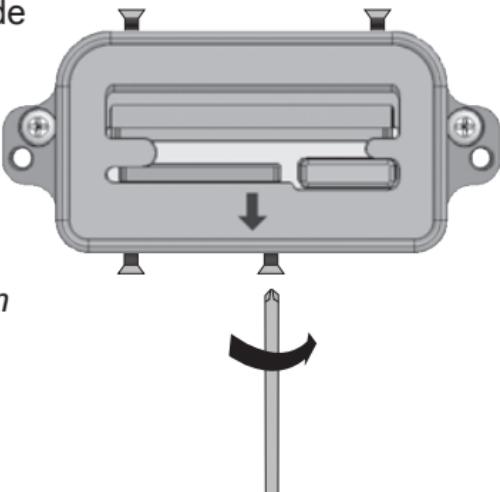
Type I CF card spacer



- Once you have inserted your card(s), tighten the four small side screws until the top of each screw is flush with the outside of the gasket piece.

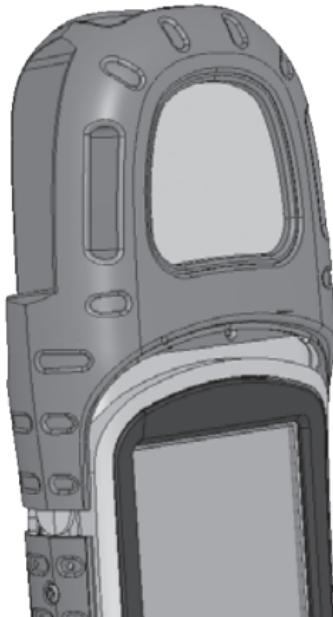
**CAUTION:**

*Before removing an inserted card, loosen the four small side screws by  $\frac{1}{8}$  inch (3 mm).*

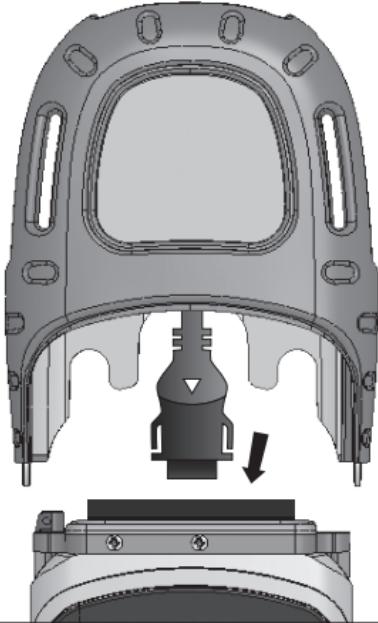


- If you inserted a camera SD card, insert large foam pieces inside the top of the cap to keep the camera in place. Stack enough foam in the top of the cap so that when you slide the cap into place with little pressure, a  $\frac{1}{4}$  inch (6 mm) gap remains between the cap and the Field PC. This gap closes when you secure the cap in step 8.

$\frac{1}{4}$  inch (6 mm) gap



7. If you are using the Data Acquisition (DAQ) Cap, plug the wiring harness into the inserted Data Acquisition CF card.



8. Tighten the cap screws until they are firmly in place. If you inserted foam into the cap in step 6, first press down on the cap so the screws engage. To properly seal the cap, apply an extra  $\frac{1}{4}$  or  $\frac{1}{2}$  turn after the screws become hard to turn.

**Note:** Even if a small gap remains between the extended cap and the body molding, the Field PC is fully sealed.



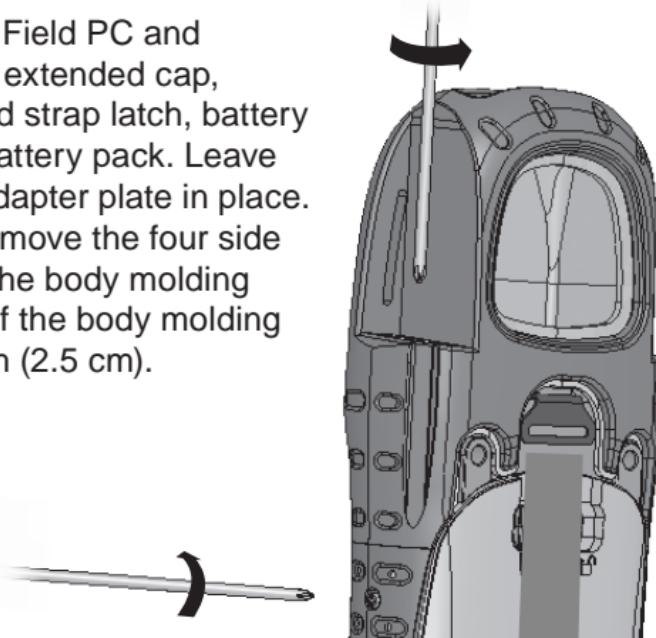
# Mounting an External Device

## Overview

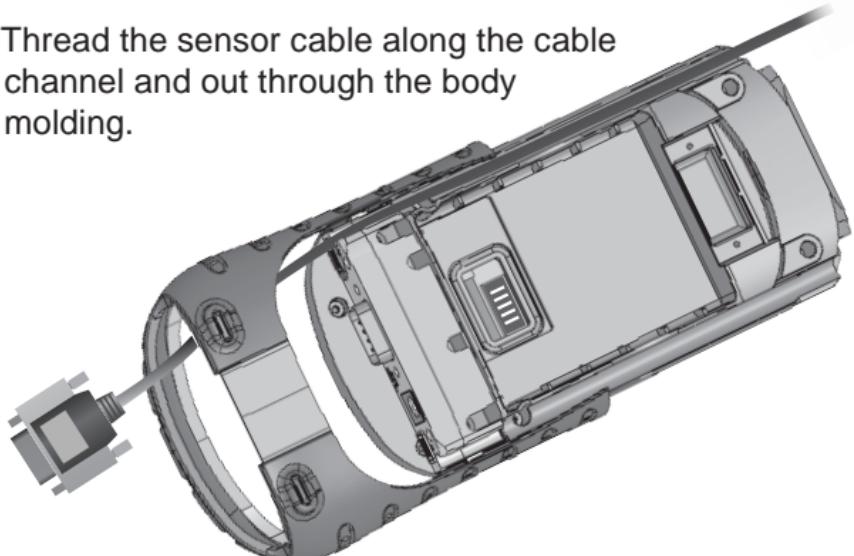
The Field PC features a convenient cable channel that hides cables attached to an external device you mount on the Universal, Optical, or Data Acquisition Caps. External devices might include an external RS-232 sensor (such as a GPS receiver) or a USB device.

This section explains how to insert a cable in the cable channel and how to mount the external device onto the extended cap. These instructions assume you have already installed your extended cap onto the Field PC.

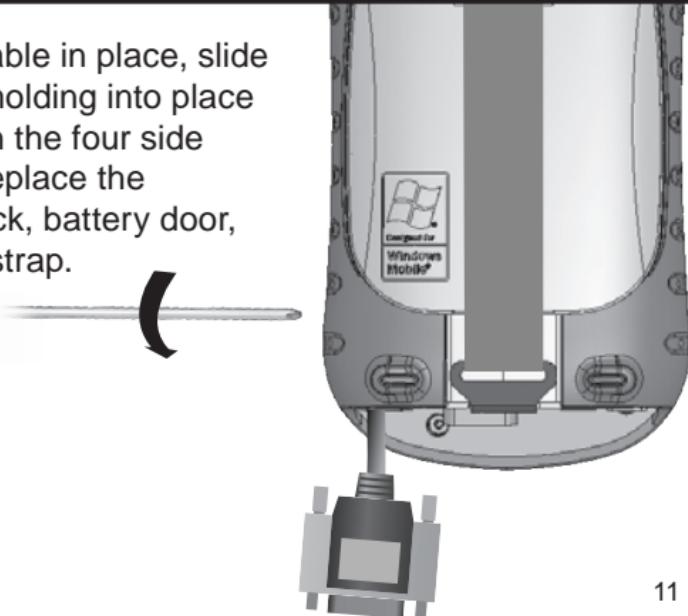
1. Turn off the Field PC and remove the extended cap, bottom hand strap latch, battery door, and battery pack. Leave the serial adapter plate in place. Carefully remove the four side screws on the body molding and slide off the body molding about 1 inch (2.5 cm).



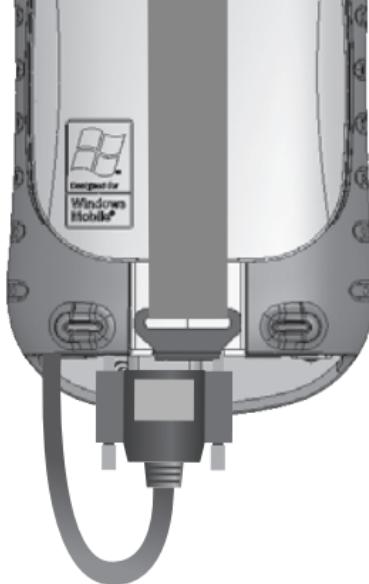
- 2.** Thread the sensor cable along the cable channel and out through the body molding.



- 3.** With the cable in place, slide the body molding into place and tighten the four side screws. Replace the battery pack, battery door, and hand strap.



4. Connect the sensor connector to the 9-pin serial port or USB host port.

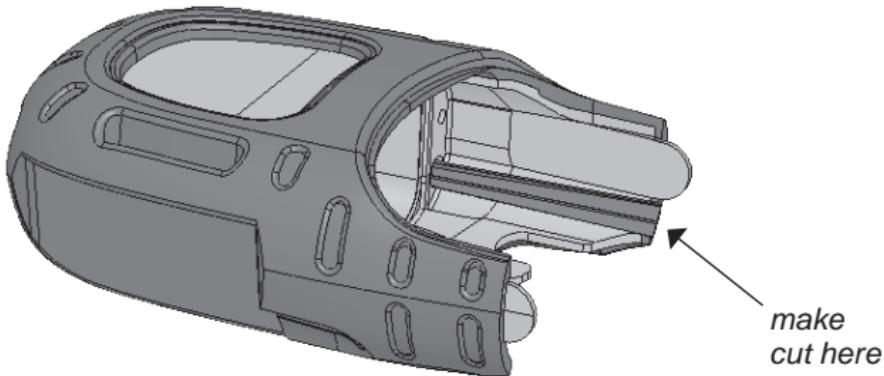


5. Make sure the seal adapter plate is properly installed.

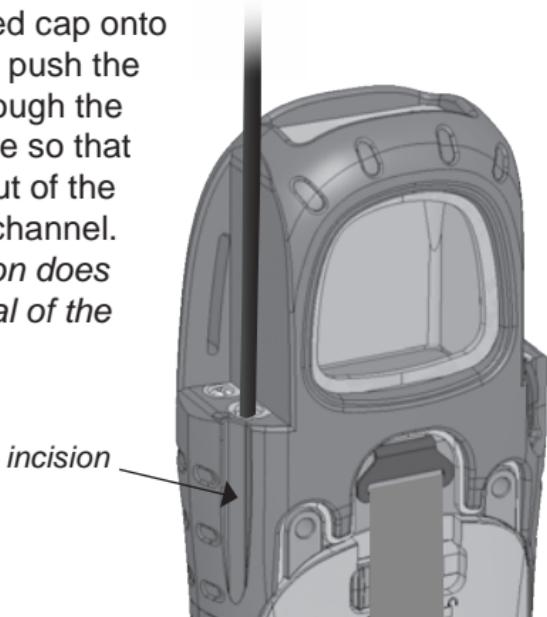
**CAUTION:** *The seal adapter plate must be installed to seal the Field PC.*

If you have not already installed the seal adapter plate onto your Field PC, see steps 2–4 of the previous section for instructions.

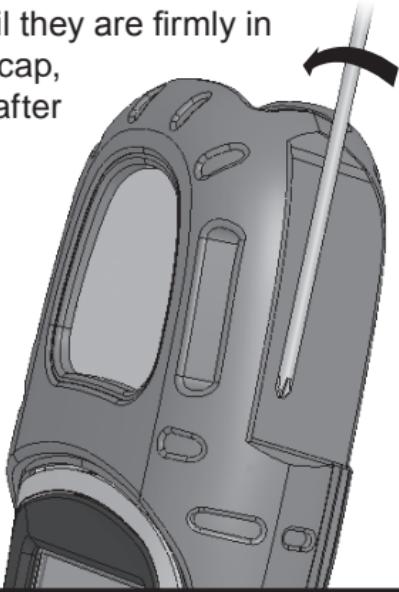
6. To give the cable an exit through the extended cap, cut the thin rubber overmolding on the extended cap along the entire scribe line using a razor blade or sharp knife.



7. Slide the extended cap onto the Field PC and push the sensor cable through the incision you made so that the cable exits out of the top of the cable channel.  
**Note:** *The incision does not affect the seal of the Field PC.*

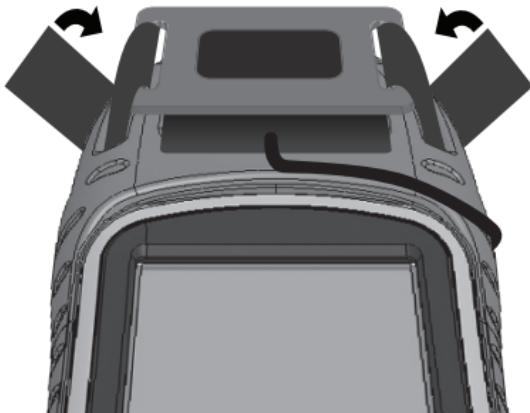


8. Tighten the cap screws until they are firmly in place. To properly seal the cap, apply an extra  $\frac{1}{4}$  to  $\frac{1}{2}$  turn after the screws become hard to turn.



9. Mount the sensor on the front of the extended cap and secure it with a strap. **Note:** An optional sensor mounting strap is available for purchase.

*The figure here shows a GPS antenna mounted on the Universal Cap and secured with the sensor mounting strap.*





# Selection Chart

CF & SDIO cards

	COMMUNICATION	UNIVERSAL	OPTICAL	DATA ACQUISITION
Wi-Fi	X	X	X	
Cellular Modem	X	X	X	
Bluetooth (Class 1 or 2)	X	X	X	
Digital Camera		X	X	
GPS Receiver		X		
Bar Code Scanner			X	
RFID Scanner		X	X	
NI CF-6004				X
CF Memory Card	X	X	X	
SDIO Memory Card	X	X	X	X

P/N 15147-01

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