

VH10 VEHICLE-MOUNT COMPUTER USER GUIDE

for Windows Embedded CE 6.0

VH10 VEHICLE-MOUNT COMPUTER USER GUIDE

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Revision History

Changes to the original guide are listed below:

Change	Date	Description
-004 Rev A	12/2020	Replaced master/slave references with central/peripheral.
-003 Rev A	9/2018	Update ground lug installation.
-002 Rev A	3/2016	Add Caution for tightening connector thumbscrews (pages 1-3, 4-2 and 4-24)
-001 Rev A	04/2015	Zebra rebrand.

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ABOUT THIS GUIDE

About This Guide

This guide applies to the following model numbers:

- 8516
- 8516N

This user guide describes the configuration, operation, and maintenance of the VH10 Vehicle-Mount Computer.

Chapter : About This Guide. provides a basic overview of the VH10.

Chapter 1: Basic Operations. describes the steps required to get the VH10 ready for operation.

Chapter 2: Getting To Know Your VH10. describes VH10 features, including the keyboard features, the display, etc. This chapter also describes the Microsoft® Windows® Embedded CE 6.0 desktop, and how to change the appearance and actions of the desktop from Windows Classic Shell to the Kiosk Shell.

Chapter 3: Configuration. describes the programs and applications accessed through two main areas from the Desktop Start Menu: *Programs* and *Settings> Control Panel*. The software includes both Software Advantage and Microsoft programs, and details how to use them to configure the VH10, along with Power Properties, *Bluetooth*, etc. This chapter also details the Kiosk program, which enables you to customize your computer settings.

Chapter 4: Accessories. describes the peripherals and accessories available for your VH10 Vehicle-Mount Computer.



Appendix A: VH10 Specifications. lists the specifications for your VH10 computer, radios, and battery.

Appendix B: Port Pinouts. describes the VH10 pinouts.

Appendix C: Wireless Zero Config Settings. outlines the steps used to configure your radio using *Windows Zero Config*.

Appendix D: Narrowband Radio Configuration. describes setting up the RA1202 Narrowband radio.

Text Conventions

- ✓ **NOTE** Notes highlight additional helpful information.
-  **IMPORTANT** These statements provide particularly important instructions or additional information that is critical to the operation of the equipment.
-  **WARNING!** These statements provide critical information that may prevent physical injury, equipment damage or data loss.

Overview of the VH10 Vehicle-Mount Computer

The VH10 is a modular, industrial vehicle-mounted computer, running the Microsoft Windows Embedded CE 6.0 operating system. It is intended for use in commercial and industrial applications with a focus on real time wireless data transactions with options suiting materials handling applications in warehouses, manufacturing facilities, ports, and yards. A wide range of data input capabilities are supported through a variety of imager, RFID and barcode scanner options.

The optional VH10f freezer model includes heating hardware to be used in cold environments to prevent condensation from developing on or inside the VH10. The heaters keep the display clear of frost, the keyboard from freezing, and the ports dry. In addition, the heater clears fog from the display panel when the computer is moved in and out of cold environments. For details, see [Quick Defrost \(Heater Settings for VH10f\) on page 3-45](#).

- ✓ **NOTE** For product specifications, refer to [Appendix A: VH10 Specifications](#).

Processor and Memory

- Texas Instruments® OMAP3® Processor 800 MHz
- Flash ROM: 1 GB
- RAM: 512 MB

Operating System

- Microsoft® Windows® Embedded CE 6.0

Bundled Applications

- Internet Explorer® 6
- Windows Mobile Device Center
- WordPad®, ActiveSync®

Supported Applications*

- TekTerm Client - Terminal Emulation
- Wavelink TN - Terminal Emulation

* Note that Tekterm Client is the only application available when a Narrowband radio is installed in the unit.

Device Management and Provisioning

- Kiosk
- Total Recall, TweakIt, Dr. Debug – Utilities
- SOTI MobileControl – Mobile Device Management
 - Easy configuration management and provisioning platform.
 - Powerful remote control and troubleshooting functionality.
 - Integrated real time geofencing and location services.
 - Advanced device security, user authentication and lockdown features.

User Interface

- Colour/Touch Display 20.32 cm (8") diagonal
 - VGA (800 x 480) Transflective
 - High visibility option: superior sunlight visibility with 640 cd/m² brightness
- Touchscreen
 - Passive stylus or finger operation
 - Optional heater
- Keyboard
 - 67-key QWERTY and AZERTY available
 - 12 dedicated function keys
 - LED backlight
- Voice and Audio
 - High volume beeper: 93 dBA
 - Optional Push-to-Talk speaker/microphone

Wireless Connectivity

- 802.11a/b/g/n Standard Radio - with *Bluetooth*[®] coexistence (*Bluetooth* V2.0 + EDR)
- RA1202 Narrowband Radio
- CCX v4

VH10 Views

The following figures show the VH10 — for detailed illustrations, please see [VH10 Vehicle-Mount Computer Features on page 1-1](#).

Figure 1 VH10 Front View (standard unit)



Figure 2 VH10f Front View (freezer unit)



Figure 3 Bottom (Ports) View



CHAPTER 1 BASIC OPERATIONS

VH10 Vehicle-Mount Computer Features

Figure 1-1 Front View



Figure 1-2 Bottom View (cable bay cover in place)

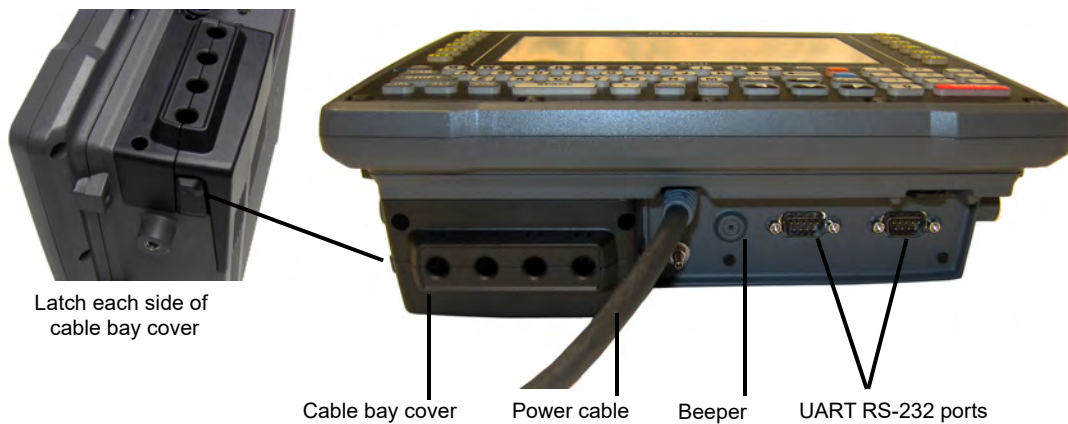
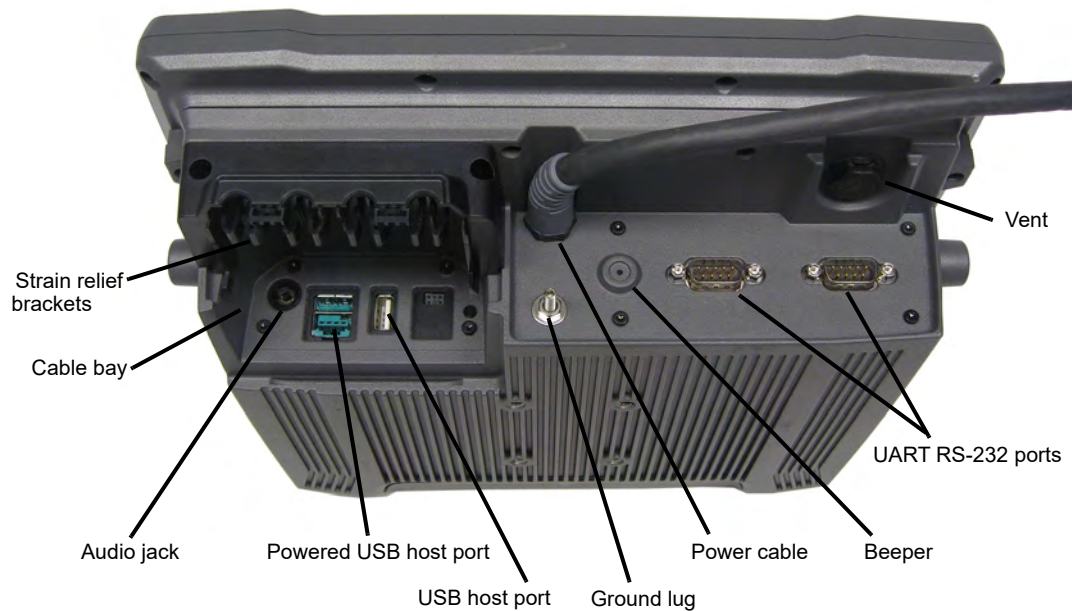


Figure 1-3 Bottom View (cable bay cover removed)



Documents Available

To see a current list of documents and download what you need, please go to the Knowledge Base on the IngenuityWorking community website:

<http://www.ingenuityworking.com/knowledge/w/knowledgebase/product-manuals.aspx>

Preparing the VH10 for Operation

Typically the VH10 Vehicle-Mount Computer is configured at the factory and arrives ready for use. Although the VH10 is equipped with a MicroSD card on the MLB, this card is not intended for user modification.

VH10 Safety Instructions



WARNING! IT IS CRITICAL that this information be reviewed and that any guidelines applicable to your VH10 be strictly followed.

- The cord should be installed in the vehicle so that it is not subjected to damage or stress.
- Use of a power cord that is not recommended or sold by the manufacturer may result in fire, electric shock, or personal injury.
- An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in fire or electric shock. If an extension cord must be used, make sure:
 - The plug pins on the extension cord are the same number, size, and shape as those on the adaptor.
 - The extension cord is properly wired and in good electrical condition and that the wire size is larger than 16 AWG.
- When the unit is connected to the vehicle or AC adaptor, the mains power cord shall comply with National safety regulations of the country where the equipment is to be used.
- Do not use the AC adaptor with a damaged cord or plug. Replace it immediately.
- Do not operate the AC adaptor if it has received a sharp blow, been dropped, or otherwise damaged in any way; it should be inspected by qualified service personnel.
- Do not disassemble the AC adaptor; it should be repaired by qualified service personnel. Incorrect reassembly may result in electric shock or fire.
- To reduce risk of electric shock, unplug the computer from the vehicle, or AC adaptor from the outlet, before attempting any maintenance or cleaning.
- Do not expose the vehicle DC adaptor cables or AC adaptor to rain or snow.
- Do not use tools to secure DB9 connector thumbscrews. Only tighten by hand.

The Internal Backup Battery

The VH10 Vehicle-Mount Computer is equipped with a supercapacitor that will provide emergency memory retention to the unit for up to five minutes in case of power disruption. While the VH10 will not be operational when external power is removed, the memory content is preserved during this period. It also provides up to one week of real-time clock backup.

An optional internal rechargeable UPS battery is available to support limited normal operation during a power loss or brown-out scenario. The optional UPS battery is not user-accessible and should be serviced by authorized personnel.



NOTE To maximize battery run time when the VH10 is on UPS Battery Power, the display backlight is automatically dimmed, the keyboard backlight is turned off, heaters are automatically switched off, and the powered external ports are limited to a total of 1A.

Please see the following sections for detailed battery information:

- Calibration and power settings: [Power Properties on page 3-35](#).
- Specifications: [Power Management on page A-2](#).

The optional UPS battery can provide one hour run time (typical) and 15 minutes run-time (minimum). UPS run-time will be dependent on radio usage and the peripherals connected to the VH10 external ports during UPS mode. The UPS battery run-time may reduce as operating temperature cools. Note that charging of the

UPS battery is fully controlled by the VH10, based on battery condition and environmental temperature. Charging will only occur when the temperature of the battery is between 0° C and 40° C.

- ✓ **NOTE** If a UPS battery is installed and a brown-out situation occurs, the VH10 will enter UPS mode in which the terminal will continue to run normally with limited functionality (e.g. display backlight dimmed, keyboard backlight and heaters turned off). The VH10 will switch back to normal mode when external power is restored.

Switching the VH10 On and Off

Pressing the Power button on the top left of the VH10 connects the unit to external power and boots the computer. Pressing the Power button again disconnects the unit from external power, and therefore draws no power from the vehicle.

When the VH10 is connected to external power and in Suspend state (Display Screen off, Power status LED colour is solid amber), holding down the **[ENTER]** key on the keyboard wakes the computer. Pressing the **[BLUE]** key then the **[ENTER]** key puts the unit into Suspend, which still allows it to draw power from the vehicle.

- ✓ **NOTE** When pressing the **[ENTER]** key to wake the unit from Suspend, the screen in which you were working before the computer entered suspend state is displayed.

Resetting the VH10

To perform a warm or cold reset, you can access the menu by going to the Windows menu *Start>Shutdown*. Alternatively you can use the keyboard shortcuts described below.

- ✓ **NOTE** If your Desktop is switched to the Kiosk Shell (refer to [The Kiosk Desktop Shell on page 2-16](#)), resetting the unit is done solely by use of the keyboard shortcuts.

Performing a Warm Reset

During a *warm reset*, running programs are halted. The contents of the file system, RAM Disk, Flash Disk, and the registry are preserved.

- Press and hold down the **[BLUE]** key and the **[ENTER]** key simultaneously for a minimum of six seconds.

- ✓ **NOTE** You need to reset your VH10 after configuring the radio by switching between Windows Zero Config and WiFi Config.

Performing a Cold Reset

A *cold reset* reinitializes all hardware. All RAM including the RAM Disk is erased. Non-volatile storage such as the Flash Disk is preserved, as is the file system.

To execute a cold reset:

- Press and hold down the **[ORANGE]** key, the **[BLUE]** key, and the **[ENTER]** key, simultaneously for a minimum of six seconds.

- ✓ **NOTE** As part of the normal Windows Embedded CE cold boot process, the screen may go blank for a few seconds after the splash screen loading bar reaches the end. The desktop is displayed after a few moments.

Performing a Clean Start

A *clean start* returns the VH10 to factory settings, flushes the registry keys, and deletes volatile storage and the file system. The Flash Disk is preserved.

- Press and hold down the **[BLUE]** key, the **[ENTER]** key, and the **[SPACE]** key simultaneously for a minimum of six seconds.

The VH10 displays the Boot to BooSt menu.

- Type `.clean.` (or `.25326`)

Boot to BooSt

If you choose Boot to BooSt, the BooSt menu is loaded.

- Press and hold down the **[BLUE]** key, the **[ENTER]** key, and the **[SPACE]** key for a minimum of six seconds.
- Press **[1]** to launch the OS.

Calibrating the Touchscreen



NOTE The touchscreen function can be turned off (see [Touch on page 3-58](#)).

The VH10 touchscreen feature is factory-calibrated and ready-to-go; however, over time the touchscreen operating parameters may change, and it may need to be recalibrated for correct operation. Refer to [Calibrating the Touchscreen on page 2-5](#) for details.

Connectivity

Data transfer options vary slightly depending on the type of operating system installed in your PC. Various options exist depending on whether you are using Windows XP or earlier, Windows Vista[®], Windows 7 or later. For information on connecting the VH10 to a PC, please refer to [Data Transfer between VH10 and a PC on page 3-18](#).

The VH10 contains an integrated 802.11a/b/g/n radio module. The *Wi-Fi Config* application is used to configure the radio for one or more wireless network profiles. To configure the radio, follow the steps outlined under the heading [Wi-Fi Config on page 3-67](#).

To configure your *Bluetooth* settings, please go to [Bluetooth[®] Setup on page 3-6](#).

To see the radio specifications, please go to [Wireless Radios on page A-3](#).

CHAPTER 2 GETTING TO KNOW YOUR VH10

Operating System

- Microsoft® Windows® Embedded CE 6.0

The Keyboard

The VH10 is available with an integrated keyboard in either QWERTY or AZERTY alphanumeric keyboard layout. It features 67 keys, 12 direct function keys, and an LED backlight.

Most of the keys on the keyboard operate much like a desktop computer. Where a key or key function is not consistent with the PC keyboard, those differences are described in the following sections.

There are a number of modifier keys that provide access to additional keys and system functions, as described in [Modifier Keys on page 2-3](#).

The [BLUE] modifier key provides access to additional keys and system functions. These functions are colour coded in blue print on the key caps.

Figure 2-1 Keyboard Layout



Regular Keys

The Arrow Keys

The [Arrow] keys are located near the bottom of the keyboard, and are represented on the keyboard as triangles pointing in different directions. The [Arrow] keys move the cursor around the screen in the direction of the arrow: up, down, left and right. The left arrow key should not be confused with the backspace [DEL] key which is depicted as a left arrow. The cursor is the flashing box or underline character that indicates where the next character you type will appear.

The [DEL] Key

The [DEL] key (represented on the keyboard as an arrow pointing left) is the backspace key that moves the cursor one character to the left, erasing the previous key stroke.

The [BLUE] + [DEL] keys erase the character at the current cursor position.

The [SHIFT] Key

The [SHIFT] key is used to display uppercase alpha characters. Pressing [BLUE][SHIFT] turns the [CAPS] key on so that all alpha characters are printed in uppercase until the [BLUE][SHIFT] sequence is pressed again.

The [CTRL] and [ALT] Keys

The [CTRL] and [ALT] keys modify the function of the next key pressed and are application dependent. Pressing either key twice locks it 'on' (it appears underlined on the Taskbar). Pressing the key once again unlocks it.

The [TAB] Key

Typically, the [TAB] key moves the cursor to the next field to the right or downward.

The [ESC] Key

Generally, this key is used as a keyboard shortcut to close the current menu, dialog box, or activity.

The [SPACE] Key

Pressing this key inserts a blank space between characters. In a Windows dialog box, pressing the [SPACE] key enables or disables a check box.

The [INS] Key

The [INS] key inserts a character at the cursor position.

Modifier Keys

The [SHIFT], [CTRL], [ALT], [BLUE] and [ORANGE] keys are modifier keys that change the function of the next key pressed. The functions related to the [BLUE] modifier key are colour-coded in blue print above the keyboard keys.

The [SHIFT], [CTRL], and [ALT] keys operate much like a desktop keyboard except that they are not chorded (two keys held down simultaneously). The modifier key must be pressed first followed by the key whose function you want modified.

Activating Modifier Keys

When a modifier key is pressed, it is shown in the softkey bar at the bottom of the screen, making it easier to determine whether a modifier key is active. For example, if the [CTRL] key is pressed, **Ctrl** is displayed at the bottom of the unit screen. Once the next key is pressed, the modifier key becomes inactive and disappears from the taskbar.

Locking Modifier Keys

When a modifier key is pressed twice, it is 'locked' on. A 'locked' modifier key is displayed underlined in the taskbar. For example, pressing the [BLUE] key twice locks it on — it is displayed as an underlined blue box in the taskbar at the bottom of the computer screen. The same is true of the [ORANGE] key, which is shown as an underlined orange box in the taskbar.

The locked modifier key will remain active until it is pressed a third time to unlock or turn it off. Once a modifier key is unlocked, the underline representation at the bottom of the screen is no longer displayed.



NOTE The locking function of the modifier keys can be changed so that pressing a key **once** will lock the key *on*.

If you disable the 'One Shot' function of the key, pressing it once will lock the key 'on'. Pressing the same key a second time will unlock or turn it 'off'. Refer to [One Shot Modes on page 3-26](#) for details.

Function Keys and Macro Keys

In addition to the standard keyboard functions (see [The Keyboard on page 2-1](#)), the VH10 supports function keys and macro keys.

All function keys and macro keys can be custom defined for each application. The TekTerm Client application utilizes these keys (for detailed information, see the *TekTerm Client Software User Manual*, PN 8000073).

Function Keys

Function keys perform special, custom-defined functions within an application. These keys are accessed by pressing one of the dedicated function keys on the keyboard, or through the appropriate [ORANGE] or [BLUE] key sequence.

To access the orange or blue function keys, first press the [ORANGE] or [BLUE] key followed by the appropriate function key.

Function keys [F1] through [F12] can be used with the Windows Embedded CE operating system or another application. The additional function keys, [F13] through [F30] along with the macros, are not used as part of the Windows Embedded CE operating system.

Macro Keys



IMPORTANT Refer to [Macro Keys on page 3-27](#) for details about creating macros.

The VH10 keyboard is equipped with a series of macro keys that can be programmed to replace frequently used keystrokes, along with the function of executable keys like the [ENTER] key, the [BACKSPACE] key, any function key, arrow key, etc.

The [SYM] Key

The Symbol key is represented on the keyboard by the characters [SYM] and provides access to commonly used symbolic characters. Pressing the key brings up the Symbol soft input panel (SIP) onscreen keyboard, with symbols mapped to each key. If you wish to adjust the settings for the pop-up screen, modify the file *softinputpanel.xml*, located in the Windows folder. Reboot the computer for the new settings to take effect.



The Keyboard Backlight

The intensity of the keyboard backlight and the conditions under which this backlight is activated can be configured by opening the *Keyboard* icon in the Windows Embedded CE *Control Panel*. The behaviour of the keyboard backlight is tailored in the *Keyboard Properties* dialog box. Refer to [Backlight on page 3-25](#) for details about this option.

✓ **NOTE** To maximize battery run time when the VH10 is on UPS Battery Power, the keyboard backlight automatically turns off. For details see [Power Saving Suspend on page 3-36](#).

The Display

The VH10 is equipped with display backlighting to improve character visibility in low light conditions. The backlight switches on when a key is pressed or the touchscreen is tapped.

Adjusting the Display Backlight

The behaviour of the display backlight and the intensity of the backlight can be specified in the *Display Properties* dialog box in the *Control Panel*.

✓ **NOTE** Refer to [Backlight on page 3-19](#) for details about the Display Properties dialog box.

Calibrating the Touchscreen

If you find that the stylus pointer is not accurate when you tap on an item on the VH10 screen, use the *Stylus Properties* dialog box in the *Control Panel* to recalibrate the screen.

- In the *Control Panel*, choose the **Stylus** icon to display the *Stylus Properties* window.



- Select the **Calibration** tab, and then choose the **Recalibrate** button.



- Follow the directions on the calibration screen to calibrate the screen.

Indicators

The VH10 uses LEDs (Light Emitting Diodes), onscreen messages, and audio tones as indicators.

LEDs

The VH10 is equipped with two coloured LEDs. This section outlines the conditions these LEDs indicate.

Figure 2-2 LED Status Indicators



Power Status LED

The Power LED indicates system notifications and operating system status. It is also available for user-loaded custom Windows Embedded CE applications.

Operating LED Behaviour	Function
OFF	The unit has no power (e.g. external power not available, central power switch turned off). In this state, pressing the [ENTER] key on the keyboard will not wake up the unit.
Solid Amber with Slow Flashing Green	The unit is ON, but operating from UPS battery.
Solid Green	The unit is ON, operating from external power.
Solid Amber with Slow “Blipping” Green (A 5 second period with 2% duty cycle: green is on for 0.1 sec, off for 4.9 sec)	The unit is in Suspend, operating from UPS battery, and cannot be turned on until external power is present.

Warning LED

The red Warning LED indicates a fault situation, as shown here:

Operating LED Behaviour	Function
OFF	No battery/charger faults.
Solid Red	Battery temperature is out of range for charging.
Blinking Red	Any other battery/charging fault, e.g. communication fault, charge timeout, defective battery pack.

Onscreen Indicators

The taskbar at the bottom of the screen displays a variety of system status indicators, including the Input Panel button if you have chosen to show that option in the *Taskbar and Start Menu* settings.

Figure 2-3 Taskbar



The taskbar changes dynamically, and only those icons that are applicable are displayed. For example, if a radio is not installed in your VH10, the radio signal icon is not displayed in the taskbar.



Windows® Start Menu

If you are using the touchscreen, you can either tap the Windows icon at the bottom left of the screen, or press the [BLUE] + [MENU] key combination to display the Start Menu, and then tap on the desired application.



Modifier Key Indicators

[SHIFT], [CTRL], [ALT], [BLUE], and [ORANGE] are modifier keys that have onscreen indicators to show when a key is active or locked. If a modifier key is pressed once to activate it, the key is displayed in the taskbar, for example, pressing the [BLUE] key once displays a solid blue box in the taskbar. If a modifier key is pressed twice, it is 'locked on' and the onscreen indicator is displayed with its icon underlined, for example, pressing

[BLUE] twice displays solid blue box with an underline in the taskbar. For detailed information on these keys and all the keyboard functions, please refer to [The Keyboard on page 2-1](#).



802.11 Radio Signal Quality

Increasing radio signal quality is represented by longer, filled bars within this icon.



Bluetooth Radio

This icon displayed in the taskbar represents the installed *Bluetooth* radio.



Input Panel

You can tap the Input Panel icon to activate the soft keyboard application.

Audio Indicators

The VH10 beeper emits a sound when a key is pressed, a keyboard character is rejected, scan input is accepted or rejected, an operator's entry does not match in a match field, etc. To adjust the volume, see [Volume Adjustments on page 3-66](#).

Scanners and Imagers



IMPORTANT It is critical that you review the "Laser Warnings" in the VH10 Vehicle-Mount Computer Regulatory & Warranty Guide (PN 8000279) before using any of the scanners described in this chapter.

The VH10 supports a wide range of scanner options to address a variety of user application requirements. Decoded scanners must be configured by scanning special configuration barcodes. In these cases, the scanner manufacturer provides programming manuals for configuration purposes. Refer to the following sections for detailed information:

- Supported Types: Handheld scanners and imagers connected via USB, RS-232, or *Bluetooth*, see [External Barcode Scanners on page A-3](#).
- Interface: FF UART RS-232 port or USB port, see [Appendix B: Port Pinouts](#).
- Configuration: [Scanners on page 3-48](#) and [Manage Triggers on page 3-32](#).
- [Scanning Techniques on page 2-7](#) below outlines the mechanics of a successful scan.
- [Troubleshooting on page 2-8](#) below provides some helpful suggestions should the scan fail.

Scanning Techniques

- Hold the scanner at an angle. Do not hold it perpendicular to the barcode.
- Do not hold the scanner directly over the barcode. In this position, light can reflect back into the scanner's exit window and prevent a successful decode.
- Scan the entire barcode. If you are using a 1D or PDF laser scanner, make certain that the scan beam crosses every bar and space on the barcode, including the margins on either end of the symbol.

- If you are using a 2D imaging scanner, make certain the red, oval shaped framing mark is centered within the barcode you want to scan.
- When using imaging scanners, do not move the scanner while decoding the barcode. Movement blurs the image.
- Hold the scanner farther away for larger barcodes.
- Hold the scanner closer for barcodes with bars that are close together.

Scan LED Indicators

External scanners have integrated LED indicators that are not controlled by the VH10.

Troubleshooting

If the scanner is not working, investigate the following:

- Is the VH10 on?
- Check that the scanner settings are correctly configured (see [Scanners on page 3-48](#)).
- Check the barcode to make sure it is not damaged. Try scanning a different barcode to verify that the problem is not with the barcode.
- Check that the barcode is within the proper range.
- Does the computer display the warning without scanning? This suggests a hardware problem in the VH10.
- Is the laser beam scanning across the barcode?
- Once the scan beam has stopped, check the scanner window for dirt or fogging.

Operating Two Dimensional (2D) Imagers

An imager scanner takes a snap shot of a single barcode or multiple barcodes (at one time). It can find a barcode regardless of its orientation — that is, even a barcode printed at a 45 degree angle to the scanner will be decoded successfully.

✓ **NOTE** When scanning **multiple** barcodes, ensure that all of the desired barcodes are within the field of view of the scanner. It is possible that even when all barcodes are within the field of view, not all of them will be decoded. Only successfully decoded barcodes are passed to the application program. The application program then issues a warning, asking that you scan the missing barcodes.

When scanning a **single** barcode, ensure that only the desired barcode is within the field of view of the scanner.

Because imager scanners generally have a shorter depth of field than laser scanners, some practise may be required to find the optimal distance from the types of barcodes being scanned. Although the imager includes illumination LEDs, ambient light will help the imager decode the barcodes, especially if the barcode is far from the scanner.



IMPORTANT Keep in mind that the imager scanner is a camera, and the LED illumination is a flash. Glare can be an issue on reflective media such as plastic coated barcodes, just as glare is an issue for photographers. When pointing at a shiny surface, either shift the barcode to the side or top, or angle the barcode so that the glare reflects away from the imager scanner.

Most imagers take several *snap shots* of the barcode in order to decode it. It is normal for the LEDs to flash two or three times. Hold the unit steady between flashes to improve decode performance.

- Turn the vehicle-mount computer on. Wait until the unit has booted up completely.
- Aim the scanner at the barcode and press the trigger. Hold the trigger until a successful or failed scan result is obtained.
- When the trigger is pressed, a red, oval shaped light (the framing marker) is displayed. Centre the framing marker in the field — either in the centre of the barcode you want to scan or in the centre of the area in which multiple barcodes are to be scanned.

The illumination LEDs will flash (typically several times) and a picture of the barcode is taken.

Windows Embedded CE 6.0

Navigating in Windows Embedded CE and Applications

Graphic user interfaces such as Windows Embedded CE for portable devices and desktop Windows (Windows Vista™, Windows 7, Windows 8, etc.) utilize 'point and click' navigation. An equivalent keyboard shortcut is also available for every 'point and click' action.

Windows Embedded CE supports the same 'point and click' user interface and keyboard shortcuts as desktop Windows with one difference — the 'point and click' action is accomplished using a touchscreen rather than a mouse. Actions can be performed using any combination of keyboard shortcuts or touchscreen tapping. In those applications that support it, you can also flick and pan your finger to scroll through screens.

Navigating Using a Touchscreen

- ✓ **NOTE** If the touchscreen is not registering your screen taps accurately, the touchscreen may need recalibration. Refer to [Calibrating the Touchscreen on page 2-5](#).

The VH10 comes equipped with a stylus — a pointing tool that looks like a pen. The stylus is used to select objects on the touchscreen. You can also use gestures with your fingers. You can use two gestures: pan and flick. Use left or right flicks to quickly move between tabs of a multi-tab control panel, or to scroll long lists of options. Use panning by touching and dragging a page that has scrollbars.

- ✓ **NOTE** To prevent damage to the touchscreen, use only a finger touch or the stylus (pen) supplied with your VH10.

To choose an icon, open a file, launch an applet or open a folder:

- Double-tap on the appropriate icon.

Navigating Using the Keyboard

If you would like to use keyed input to choose icons and to navigate dialog boxes in the desktop, you can refer to the table below. for a description of the navigation keys.

Operation	Key or Key Combination
Switch between active applications	[ALT] [TAB]
Open task manager	[ALT] [ESC]
Move the cursor	Arrow keys
Open file, folder or icon	[ENTER]
Exit & Save	[ENTER]
Close/Exit & Do Not Save	[ESC]
Navigate Dialog Boxes	[TAB] To move cursor up [SHIFT] [TAB] To display the contents of the next 'tab' in a dialog box [CTRL] [TAB]
Select Radio Button/Press Button	[SPACE]
Go to Start Menu	[BLUE][MENU]

Keep in mind that unlike a desktop computer, the VH10 does not support key chording (pressing two keys at the same time). You must press one key followed by the next in sequence.

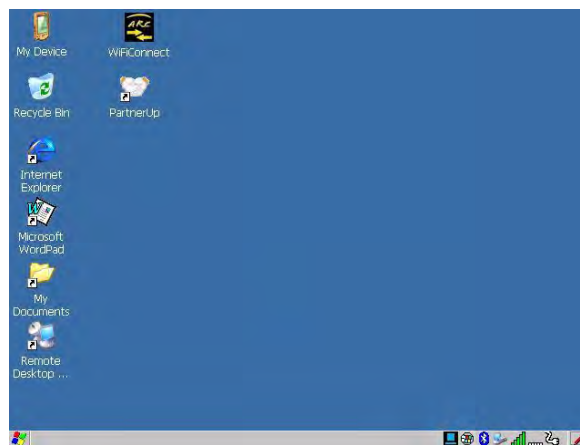
The Windows Classic Shell Startup Desktop

When the VH10 boots up, the default startup desktop (Windows Classic Shell) is displayed. Any applications stored in the Startup folder start up immediately.



NOTE The startup folder is located in \Windows\StartUp and \Flash Disk\StartUp.

Figure 2-4 VH10 Windows Classic Shell Startup Desktop



To access desktop icons:

- Double-tap on the icon to open a window or, in the case of an application icon, launch an application.

On the keyboard:

- Use the arrow keys to highlight the icon, and press **[ENTER]** to launch the highlighted icon.



NOTE If the arrow keys do not highlight the desktop icons, the desktop may not be selected. Press **[BLUE][MENU]** to display the Start Menu, and select Desktop. Now the desktop will be *in focus* and the arrow keys will highlight the icons.

The Taskbar



The VH10 is equipped with a taskbar at the bottom of the screen. It displays icons through which you can view the battery capacity and radio signal quality of your unit. In addition, the taskbar displays the application(s) currently running on your unit.

The taskbar also displays active modifier keys: [SHIFT], [ALT], [CTRL], [BLUE] and [ORANGE]. Keys that have been locked *on* are displayed with underlined letters. For example, if you have set the [CTRL] key lock to *on* in the Keyboard menu and you press the key, it is displayed as an underlined *Ctrl* in the taskbar. (For detailed information on modifier keys and keyboard options, see [The Keyboard on page 2-1](#)).

Using the Taskbar

A tooltip is displayed as each taskbar icon is highlighted. The tooltip provides the status of each icon.

If you're using the touchscreen:

- Tap and hold on an icon to display the icon's tooltip. Double-tap the icon to open Control Panel dialog box associated with the icon. For example, double-tap the battery icon to display a dialog box listing the current battery capacity information.

On the keyboard:

- Press **[BLUE][MENU]** to display the *Start Menu*.
- Choose **Shortcuts** from the *Start Menu*, and then press the **[RIGHT]** arrow key to display the sub-menu.
- Choose **System Tray** in the sub-menu.
- Use the arrow keys to highlight the icon in the taskbar about which you'd like more information.
- Press **[ENTER]** to display the appropriate dialog box.

Customizing the Taskbar

To customize the taskbar so that it displays only those icons you require:

- In the *Start Menu*, choose **Settings**, and then **Taskbar**.

If you're using the keyboard:

- Press **[BLUE][MENU]** to display the *Start Menu*.

- Highlight the **Settings** option, highlight **Taskbar** in the sub-menu, and press **[ENTER]**.

The *Taskbar and Start Menu* dialog box is displayed.



- Tap on the items you want to activate or deactivate. The check mark indicates active items.

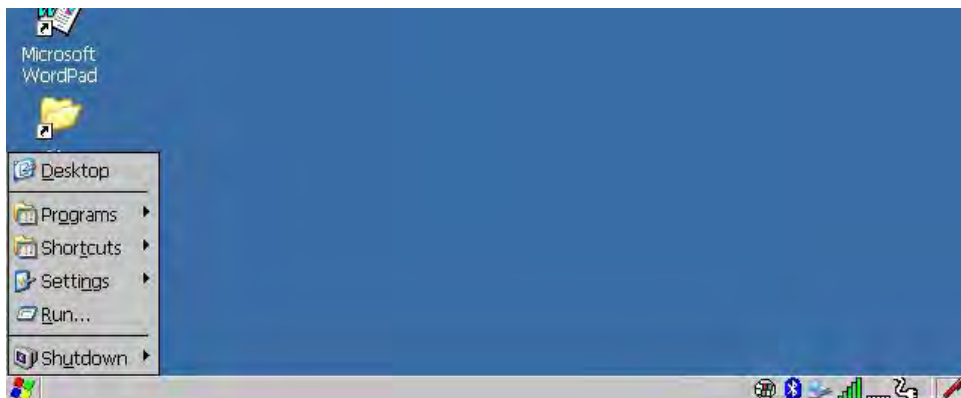
If you're using the keyboard:

- Highlight the options you want to activate, and press the **[SPACE]** key to select them. A check mark indicates active items.

The Start Menu

The *Start Menu* lists the operations you can access and work with. It is available from the startup desktop or from within any application.

- To display the menu, tap on the **Start Menu**.



NOTE Tap on the item in the menu with which you want to work.

If you're using the keyboard:

- Use the arrow keys to highlight a menu item, and press **[ENTER]**, or

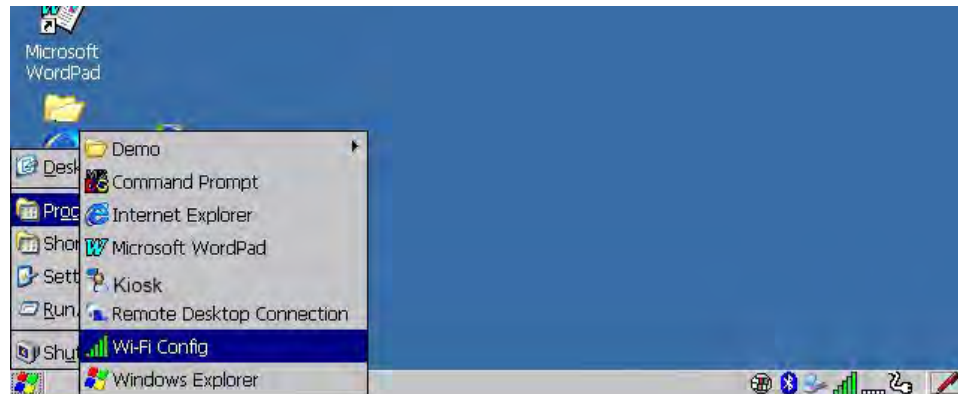
If the menu item has an underlined character:

- Type the underlined alpha character. For example, to display the *Run* dialog box, type the letter **r**.

Programs

- Choose **Programs** to display a sub-menu of options. The programs displayed will be those resident in the *Windows\Programs* folder of the computer.

Figure 2-5 *Programs Sub-Menu*



This sub-menu allows you to choose *Command Prompt*, *Internet Explorer*, installed applications (e.g., Microsoft WordPad), *Kiosk Access*, *Remote Desktop Connection*, *Wi-Fi Config*, or *Windows Explorer*.

Demo

This folder contains the *Scanner Demo*, *Demo Signature* and *Demo Sound* applications. *Scanner Demo* can be used to test how the Vehicle-Mount reads and writes barcodes. *Demo Signature* allows you to capture a signature written on the screen with your stylus and save it to a file. *Demo Sound* allows you to record and playback sound files. The 'Sample Rate' and the 'Bits Per Sample' are the rates at which the sound will be recorded. Sounds recorded at the higher sample rate or bits per sample will be higher quality sound but will require more file storage space. Lower sample rates and/or bits per sample produces a smaller file, but the sound quality suffers. The record and play buttons operate the same as any recording device. The X icon deletes the sound and the *diskette* icon allows you to save your sound.

Command Prompt

Command Prompt is used to access the DOS command prompt. At the prompt, you can type DOS commands such as *dir* to display all the directories in the drive.

Internet Explorer

The VH10 is equipped with Microsoft Internet Explorer for Windows Embedded CE. You can access the *Internet Options* icon through the *Start Menu* under *Settings>Control Panel* or by double-tapping on the desktop icon **My Device** and then, double-tapping on the **Control Panel** icon.

Microsoft WordPad

WordPad is a basic word processor used to create, edit, and print *.f*, *.doc*, and *.t* files.

Kiosk Access

Kiosk Access allows you to change the appearance and actions of the desktop from the default Windows Classic Shell to the Kiosk shell.

Remote Desktop Connection

Remote Desktop Connection is a VH10 application used to connect to a Windows Terminal Server so that you can run a “session” on the Server machine using the Vehicle-Mount (Windows Embedded CE device). [Remote Desktop Connection on page 3-48](#) provides a website with details about this option.

Wi-Fi Config

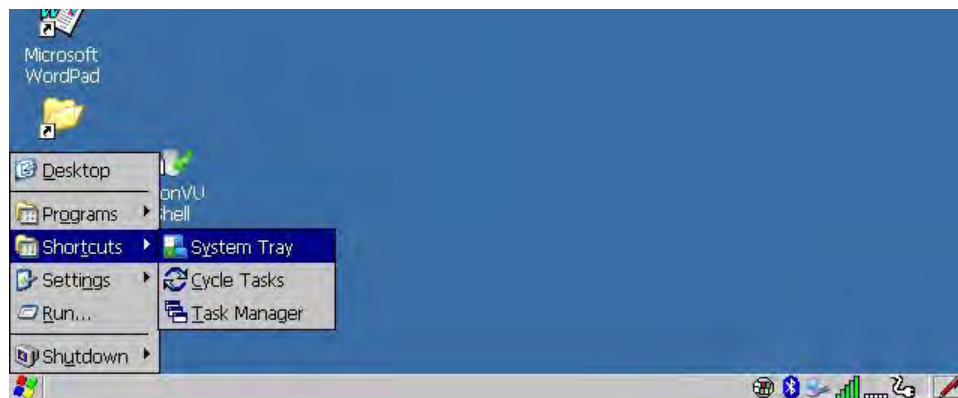
The *Wi-Fi Config* application is used to configure the VH10 radio for one or more wireless network profiles.

Windows Explorer

The Windows Explorer installed on your VH10 is consistent with all Windows Embedded CE devices.

Shortcuts

Figure 2-6 Shortcuts Sub-Menu



System Tray

If your touchscreen is not enabled, you can use the *System Tray* option to access the icons in the taskbar at the bottom of the screen. The taskbar displays indicators such as a radio signal icon. These indicators are attached to dialog boxes that provide additional information.

- Choose **Shortcuts>System Tray**.

When *System Tray* is chosen, the taskbar icons become accessible. To display the dialog box attached to an icon:

- Use the arrow keys to highlight an icon, for example, the *Bluetooth* icon.
- Press **[ENTER]** to display the *Bluetooth* menus.

Cycle Tasks

When *Cycle Tasks* is selected (and the Task Manager is not open), you can cycle through active applications.

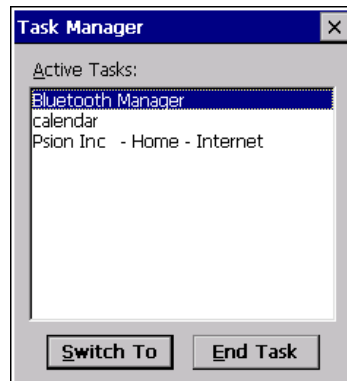
To cycle through your active applications:

- Choose **Shortcuts>Cycle Tasks**, or
- Press **[ALT] [TAB]**.

Task Manager

The *Task Manager* allows you to switch to another task or to end an active task. To display the task manager window:

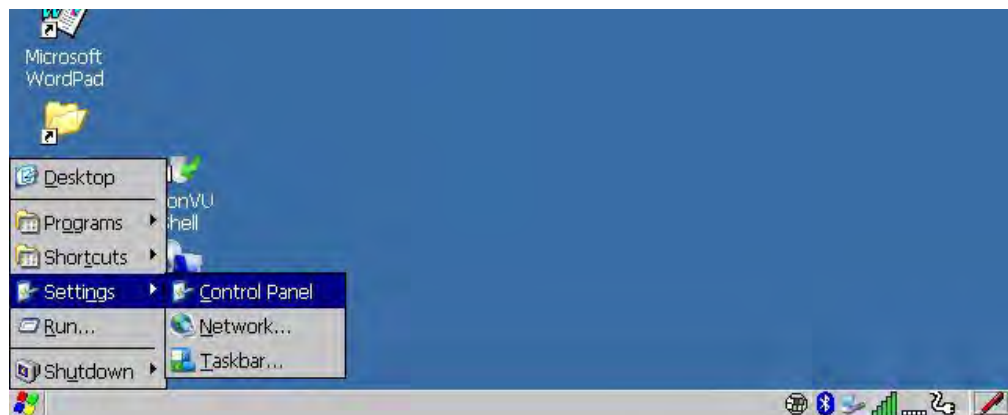
- Tap on **Shortcuts>Task Manager**, or
- Press **[ALT] [ESC]**.



Settings

The **Settings** sub-menu includes the following settings: *Control Panel*, *Network and Dial-up Connections* and *Taskbar and Start Menu*.

Figure 2-7 Settings Sub-Menu



Control Panel

The *Control Panel* contains applets used to configure hardware, the operating system and the shell. If your VH10 is running with the TekTerm application or another application, additional configuration applets may appear in the *Control Panel*.

Network and Dial-Up Connections

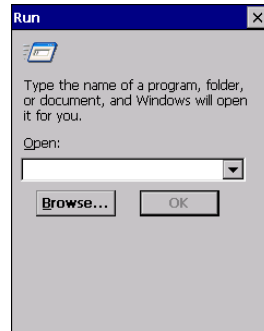
The *Network and Dial-up Connections* window allows you to configure the VH10 network interfaces or execute an existing configuration. Refer to [Connectivity on page 1-5](#) for radio setup details.

Taskbar and Start Menu

The *Taskbar and Start Menu* option displays a dialog box in which you can customize the taskbar, choosing which options will be displayed. Refer to [Customizing the Taskbar on page 2-11](#) for additional details about this option.

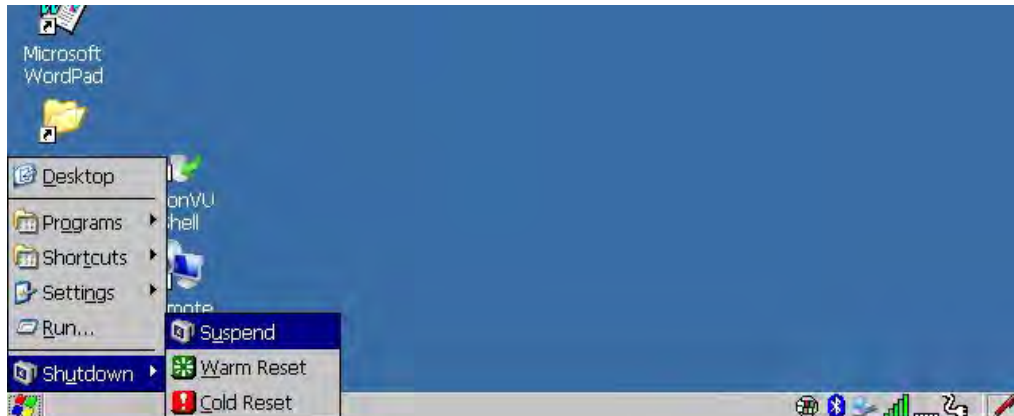
Run

Choosing the *Run* option from the *Start Menu* displays a dialog box in which you can enter the name of the program, folder or document you want to open or launch.



Shutdown

The *Shutdown* menu includes these options: *Suspend*, *Warm Reset* and *Cold Reset*. For details, see [Resetting the VH10 on page 1-4](#).



Suspend

The *Suspend* option suspends the VH10 immediately. This is equivalent to turning the Vehicle-Mount off.

Warm Reset

The *Warm Reset* option resets the Vehicle-Mount, leaving all saved files and registry settings intact. Any unsaved data is lost.

Cold Reset

The *Cold Reset* option resets the Vehicle-Mount. Any files not stored in permanent memory are lost; however, the registry settings are saved.

The Kiosk Desktop Shell

The appearance and actions of the desktop can be changed by tapping on the **Kiosk Shell** icon on your desktop, which activates the Kiosk shell.



NOTE The VH10 will be reset if you choose to switch shells.



Figure 2-8 Switch to Kiosk Shell

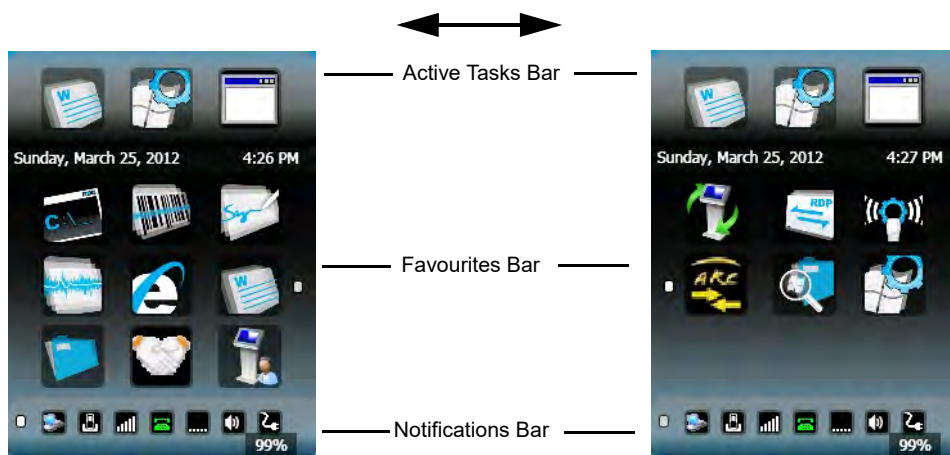


After resetting the VH10, the desktop appearance will be very different. The programs are accessed with finger (or stylus) taps and swipes. If there are more applications than shown on one screen, a white animated dot will be present on the side of the screen in the direction of the next set of icons. Swiping the screen to that direction will move the display to the next screen.



NOTE Although the Desktop appearance defaults to the “Ingenuity” theme, the theme is not changed using the **Kiosk Shell** icon. To change themes, open the Shell Settings>Advanced menu in **Kiosk Access** (see [Shell Settings on page 3-42](#)).

Hold the stylus or your finger on the Active Tasks, Favourites, or Notifications Bar, and swipe to the left or right to switch to the next screen.



A different program, *Kiosk Access*, enables you to customize your computer settings, remove or add shortcuts to the Favourites Bar and Control Panel, and limit access to various different components on the computer and the system tray icons for security. For details see [Kiosk Access on page 3-40](#). To change your Desktop background, refer to [Shell Settings on page 3-42](#).

Active Tasks Bar

Open applications are shown in the top bar — the most recently opened is the first icon on the left. Tapping once on a program icon will maximize the application. This feature replaces the Task Manager of the Windows Classic Shell.

Date/Time Bar

Tapping once on the date or time will open the *Date/Time Properties* settings to enable you to change your settings and time zone.

Favourites Bar

The *Favourites Bar* replaces the Windows Classic Shell's Desktop and Start Menu. These icons are the program shortcuts from your *Windows>Start Menu*. Tapping once will open the program. If you tap and hold on an icon, the application name is displayed.

Notifications Bar

This bar shows the run-time program notifications for *Battery, Volume, Wi-Fi, Phone* or *GPRS*, and other notifications for the programs you are running. This feature replaces the Taskbar of the Windows Classic Shell.

Desktop Minimized View

When an application is opened and maximized, the desktop view is minimized and the *Notifications Bar* is shown at the bottom of the screen. Tapping anywhere on the **Notifications Bar** (except on the SIP) will restore the Kiosk desktop.



NOTE In order to use the SIP, turn on the automatic settings in **Control Panel>Input Panel**.

Kiosk Access

The *Kiosk Access program* allows you to open a different program, *Kiosk*, which enables you to customize your computer settings, remove or add shortcuts to the Favourites Bar and Control Panel, and limit access to various different components on the computer and the system tray icons for security. For details see [Kiosk Access on page 3-40](#). To change your Desktop background, refer to [Shell Settings on page 3-42](#).

To open Kiosk:

- Tap on the **Kiosk Access** icon in the *Favourites Bar*.

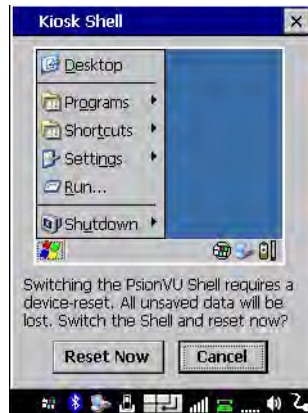


Restoring the Windows Classic Shell

The default Desktop appearance and actions can be restored by tapping on the **Kiosk Shell** icon in the *Favourites Bar*.



Figure 2-9 Shell Switch to Windows Classic Shell Desktop



NOTE The VH10 will be reset if you choose to switch shells.

General Maintenance

Caring for the Touchscreen

The touchscreen is covered with a thin, flexible polyester plastic sheet with a conductive coating on the inside. The polyester can be permanently damaged by harsh chemicals and is susceptible to abrasions and scratches. Using sharp objects on the touchscreen can scratch or cut the plastic, or crack the internal conductive coating. The chemicals listed below must not come into contact with the touchscreen:

- mustard
- ketchup
- sodium hydroxide
- concentrated caustic solutions
- benzyl alcohol
- concentrated acids

If the touchscreen is used in harsh environments, consider applying a disposable screen protector (VA6200). These covers reduce the clarity of the display slightly but will dramatically extend the useful life of the touchscreen. When they become scratched and abraded, they are easily removed and replaced.

Do not to expose the touchscreen to direct sunlight for prolonged periods of time. If this is unavoidable, use a UV screen protector to extend the life of the screen.

Cleaning the VH10



IMPORTANT Do not immerse the unit in water. Dampen a soft cloth with mild detergent to wipe the unit clean.

To prevent damage to the touchscreen, use only your finger or the stylus (pen) supplied with your VH10.

- Use only mild detergent or soapy water to clean the vehicle-mount.

- Avoid abrasive cleaners, solvents or strong chemicals for cleaning. The VH10 has a plastic case that is susceptible to harsh chemicals. The plastic is partially soluble in oils, mineral spirits and gasoline. The plastic slowly decomposes in strong alkaline solutions.
- Exposure to aircraft de-icing fluids can degrade the plastics on VH10. If the VH10 is used near aircraft de-icing environments, regular rinsing with water is recommended.
- To clean ink marks from the keyboard and touchscreen, use isopropyl alcohol.

CHAPTER 3 CONFIGURATION

Overview of Software

The VH10 programs and applications are accessed through two main areas from the Desktop Start Menu: *Programs* and *Settings>Control Panel*. This chapter details the configuration for the major software from both areas, listed alphabetically.

Software Advantage

Software Advantage is a collection of applications designed to support system administrators and end users. These tools enable enterprises to customize the product to meet their needs and to maximize productivity.

- App Launch Keys
- Kiosk
- Battery Health
- TweakIt
- Bluetooth Manager
- Scanners
- Dr. Debug
- Total Recall
- PartnerUp
- Manage Triggers
- WiFiConnect A.R.C.
- WiFi Config

Microsoft Software

Windows CE 6.0 R3 is a 32-bit, real-time, multitasking Operating System. The OS features a small footprint, with compatibility to port existing Win32 applications, and Touch & Gesture support.

Some of the major Windows CE 6.0 R3 components are:

- Control Panel, where both Software Advantage and Microsoft applications are listed
- Flash Lite
- Internet Explorer Embedded
- Microsoft WordPad
- Remote Desktop Connection
- Windows Explorer

Control Panel

The Windows Embedded CE *Control Panel* provides a group of applications through which you can set a variety of system-wide properties, such as power, keyboard sensitivity, network configuration, system backup, desktop appearance, and so on.

When the VH10 boots up, the startup desktop (Windows Classic Shell) is displayed, and any applications stored in the Startup folder start up immediately.

To access the *Control Panel*:

- Press **[BLUE][MENU]** to display the *Start Menu*.
- Tap on **Settings>Control Panel**.

If you're using the keyboard:

- Press **[BLUE][MENU]** to display the *Start Menu*.
- Highlight **Settings** in *Start Menu*, and press the **[RIGHT]** arrow key to highlight the *Control Panel*.
- Press the **[ENTER]** key.

The *Control Panel* folder contains icons used in the setup of your VH10.

Figure 3-1 *Control Panel Icons*



Control Panel Applications

The *Control Panel* provides a group of applications that allow you to customize and adjust settings on your VH10. This section shows the related icons in Control Panel and gives a brief description of each.

App Launch Keys

By mapping keys to applications using this program, you can then launch those applications from a single key-press.

Bluetooth

Opens the *Bluetooth Manager* which provides options for configuring various Bluetooth peripherals. It also provides the capability to use a *Bluetooth-enabled* cellular phone as a data modem to exchange information with other *Bluetooth* devices and provide network access.

Certificates

This program provides access to the Certificates Manager and Stores. The Certificates Manager displays the Certificates in the Windows Certificates Store, and allows you to import, delete, and view these certificates. [Certificates on page 3-17](#) directs you to the appropriate setup information.

Date/Time

Allows you to set the current Month, Date, Time, and Time Zone on your unit.

Dialing

Specifies dialing settings, including area code, country code, dial type and the code to disable call waiting. You can store multiple patterns — for example, 'Work', 'Home', and so on using this dialog box.

Display

Changes the display backlight and the appearance (colour scheme) on the unit desktop.

Dr. Debug

Provides both error diagnostic and troubleshooting tools.

Error Reporting

Allows you to enable or disable Microsoft error reporting prompts.

Input Panel

Provides the framework for a Microsoft Soft Input Panel (SIP) should you need to design your own SIP, or change some soft keyboard options.

Internet Options

Provides options to configure your Internet browser. You can determine items such as the default and search page that the browser applies when connecting to the Internet, the cache size, the Internet connection options, and the security level that is applied when browsing.

Keyboard

Toggles character repeat on and off and specifies delay and rate for repeated characters. It also allows you to adjust the keyboard backlight threshold and intensity, and many other functions.

Manage Triggers

This utility allows you to define buttons as triggers for different devices. For example you would use this utility to configure a button for the scanner, or RFID reader.

Microphone

Enables you to adjust the gain for the specific microphones associated with your Vehicle-Mount.

Network and Dial-up Connections

Displays network interfaces and allows new dial-up and VPN interfaces to be created. It also allows Windows configuration of the interface. Refer to [Connectivity on page 1-5](#) for details.

Owner

Provides fields in which you can specify owner information. A *Notes* tab allows additional information to be entered and displayed when the unit is powered up. *Network ID* tab information is used to access network resources. (This information should be provided by your System Administrator.)

PartnerUp

This app displays a number of pre-loaded applications. By tapping on an application in the list, you are taken to the associated web site and allowed to install the application.

Password

Allows you to assign a password to restrict access to elements of the unit. Once assigned, password access cannot be circumvented so it is important that you write down your password and keep it in a safe place.

PC Connection

Enables direct connection to a desktop computer (or through ActiveSync — see [Data Transfer between VH10 and a PC on page 3-18](#)). Selecting the *Change Connection* button allows you to change the type of direct connection to your PC.

Power

Displays the power status and configuring options, including Suspend, Power on/off with ignition, etc.

Kiosk

Kiosk enables you to customize your computer settings, remove or add shortcuts to the desktop and Control Panel, and lock down access to various different components on the computer and the system tray icons for security. With *Kiosk* and *Kiosk Shell* (see [The Kiosk Desktop Shell on page 2-16](#)) you can customize the entire look and feel of your User Experience.

Quick Defrost

The optional Heater Control feature for the VH10f is used in cold environments to prevent condensation from developing on or inside the VH10f. For details, see [Quick Defrost \(Heater Settings for VH10f\) on page 3-45](#).

Region and Language

Allows you to specify the local language that is to be displayed on the Vehicle-Mount screen along with the format of numbers, currency, time and date for your region.

Remove Programs

Lists the programs that can be removed from your unit. To remove a program, select it and then click on the **Remove** button.

Scanners

Provides dialog boxes in which you can tailor barcode options and change the VH10 scanner port settings.

Storage Manager

Allows you to view information about the storage devices that are present. For details, see [Storage Manager on page 3-54](#).

Stylus

Adjusts how Windows Embedded CE recognizes your double-tap (as slow or rapid successive taps). In the *Calibration* tab, you can recalibrate your touchscreen by tapping on the **Recalibrate** button and following the directions on the screen.

System

You can display the system and memory properties, as well as create your device name. In the *Memory* tab, you can allocate memory between storage memory and program memory.

System Properties

Identifies the computer's software and hardware components, indicating which components are installed, their version or part numbers, and whether they are enabled or disabled.

Total Recall

Provides access to a backup/restore and deployment utility to maintain applications and settings over cold reboots and for multiple devices.

TweakIt

Allows you to change Advanced System Settings (interface, network, and servers), User System Settings (display font size), and provides the Registry Editor.

Volume & Sounds

Allows you to adjust the volume of the sound emitted to indicate events like warnings, key clicks, and screen taps. You can also configure system (Windows) sounds and .wav files.

App Launch Keys

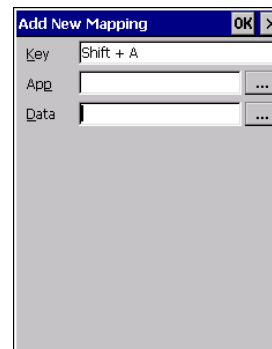
The *App Launch Keys* icon allows you to map a key to an application so that you can then launch the application from a single key-press.

- In the *Control Panel*, choose the **App Launch Keys** icon.



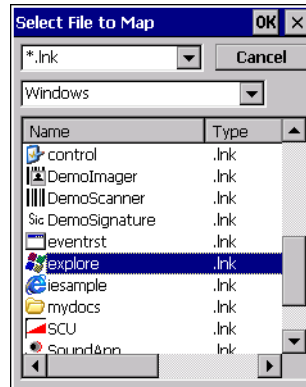
To assign an application key:

- Tap the **Add** button.



- Press the key you want to use to launch an application. (If an unsupported key is pressed, a message appears on this screen letting you know.)

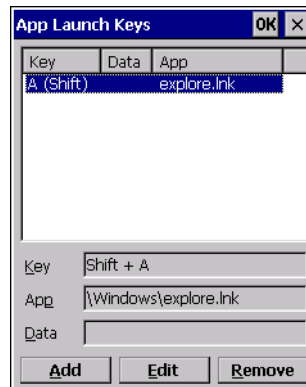
The cursor moves to the *App* field and a new screen is displayed where you can choose the application to which you want to assign the application key. If you need to, you can *Browse* through the information in your VH10 until you locate the application you want to launch.



- Once you've selected the file you want to map, tap on **OK**.

The cursor moves to the *Data* field. Use this field if you need to define command line parameters for your application. If you don't want to assign any parameters, you can leave the *Data* field blank. If, for example, you want to assign an application launch key to launch the *WordPad* application, you can leave this field blank. If you want to assign an application launch key that will open a specific document in the *WordPad* application, you need to browse to and choose that document while the cursor is in the *Data* field.

- Tap on **OK**.



- If you need to Edit, Remove or Add another *App Launch Key*, you can do it from this final screen. Otherwise, tap on **OK** to save your *Application Launch Key*.
- To launch the application you chose, press the application key you assigned.

Bluetooth® Setup

Bluetooth is a global standard for wireless connectivity for digital devices and is intended for Personal Area Networks (PAN). The technology is based on a short-range radio link that operates in the ISM band at 2.4 GHz. When two *Bluetooth*-equipped devices come within a 10 metre (32 ft.) range of each other, they can establish a connection. Because *Bluetooth* utilizes a radio-based link, it does not require a line-of-sight connection in order to communicate.

It is possible to communicate with a variety of *Bluetooth* peripherals, including GSM/GPRS handsets, scanners, printers, and so on.

Built-in support is provided for:

- GSM/GPRS universal handset
- *Bluetooth* printer
- *Bluetooth* headset

Keep in mind that *Bluetooth* and IEEE 802.11b/g/n radios both operate in the 2.4 GHz band. Although the VH10 includes features to minimize interference, performance of the system will not be optimal if you use both radios simultaneously. Typically, when both radios operate in the Vehicle-Mount at the same time, they cannot transmit simultaneously — this has a negative impact on overall system throughput. To minimize the impact on the backbone 802.11 network, we recommends using *Bluetooth* peripherals that have low transaction rates (such as printers and scanners).

Bluetooth peripherals are configured by the **Bluetooth** application in the *Control Panel*. In addition, review the manual shipped with your *Bluetooth* device to determine the method used to associate with the VH10.

✓ **NOTE** The **Bluetooth** radio uses an internal antenna. For further information on 802.11b/g/n + Bluetooth co-existence, please see [Antennas on page A-6](#).

- In the *Control Panel*, choose the **Bluetooth** icon to display the **Bluetooth Manager** screen.



The **Bluetooth Manager** allows users to search, pair and connect to other *Bluetooth* devices within their personal area network.

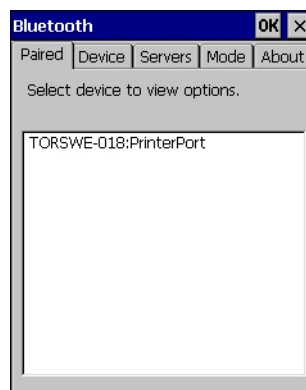
The *Bluetooth* radio is disabled by default. Before you begin the setup process:

- Tap on the **Mode** tab, and tap in the check box next to *Turn on Bluetooth*. Tap on **OK**.

When the radio is enabled, a *Bluetooth* icon appears on the taskbar at the bottom of the screen. It is ready for setup.

Paired

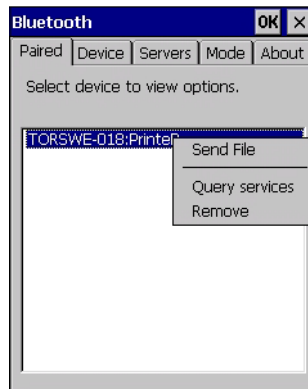
This tab lists all paired devices and their corresponding services. The format of the name is <Device Name>:<Service Name>. Additional information may appear in this screen such as the Port Numbers for Serial Profiles service.



To learn how to scan for devices to pair, review [Device on page 3-8](#).

✓ **NOTE** If a service is actively paired and connected, the device and its services are displayed in bold typeface in this list.

- Tap on an item in the *Paired* tab to display an associated pop-up menu.



The displayed menu depends on the type of the service chosen.

Query Services and Remove Commands

- *Query Services* displays a *Services* dialog box where a pairing service is chosen.
- *Remove* unpairs the highlighted service and deletes the entry from the tab.

OBEX OPP (Object Exchange-Object Push Profile) Commands

The *OPP* defines two roles — a *Push Server* and a *Push Client*. *Push Server* is the device that provides an object exchange server. *Push Client* is the device that pushes and pulls objects to and from the *Push Server*.

OBEX OPP contains the following unique menu option:

- *Send File* displays an *Open File* dialog box where the file to be sent can be selected. When the transmission begins, another dialog box tracks the progress of the file transmission.

HSP/HFP (Headset Profile/Hands-Free Profile) Service Commands

The *HSP (Headset Profile)* allows users to connect their device to *Bluetooth* enabled headsets and other audio devices.

HSP/HFP services provide the following unique menu options:

- *Connect Audio* establishes an audio connection to the *Bluetooth* headset.
- *Disconnect Audio* disconnects the audio connection from the *Bluetooth* headset.
- *Volume Control* displays a dialog box where the headset and microphone volume can be adjusted.

Device

In this tab, users can discover and display *Bluetooth* devices.



Discovering and Removing Devices

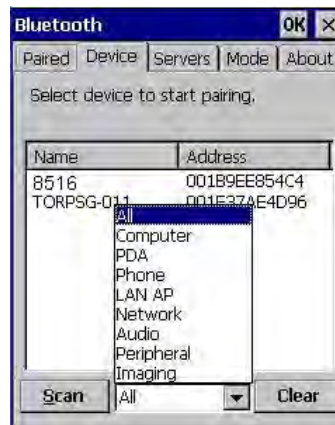
Scan discovers *Bluetooth* devices in range of the VH10 and lists them in this tab. Any existing devices previously discovered and listed will also be displayed.

Clear removes all *Bluetooth* devices listed except those with currently paired and connected services.



NOTE To limit the number of devices listed to a particular type of device, refer to [Filtering By Class of Device \(COD\)](#) on page 3-9, next section.

Filtering By Class of Device (COD)



This menu allows you to filter the displayed devices by their COD. If, for example, you choose **Computer** from this menu, only the devices that have the matching *Computer* COD value will be displayed. Choosing *All* lists all detected devices.

Device Pop-up Menu



The *Device* pop-up menu allows you to pair a device, update a device name or delete a device from the list.

Pair begins the pairing process by querying the services and profiles of the discovered device. An *authentication* dialog box is displayed the first time a *Bluetooth* device is paired.

Refresh Name repeats the device name inquiry, updating the name. This command is useful if a device is listed without a name (unknown), or if a device name has been changed remotely.

Delete removes this device from the list.

Pairing a Device

To pair devices:

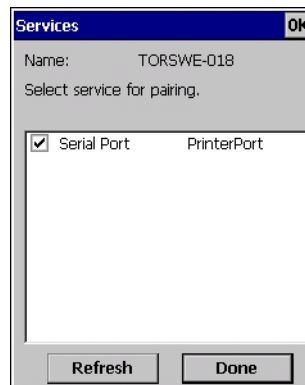
- Follow the manufacturer's instructions to place the remote device in pairing mode.
- Choose the **Devices** tab and **Scan** for devices in your area.
- When the scan is complete, tap on the **device** to which you want to pair.
- In the pop-up *Device* menu, tap on **Pair**.

An *Authentication* dialog box is displayed.



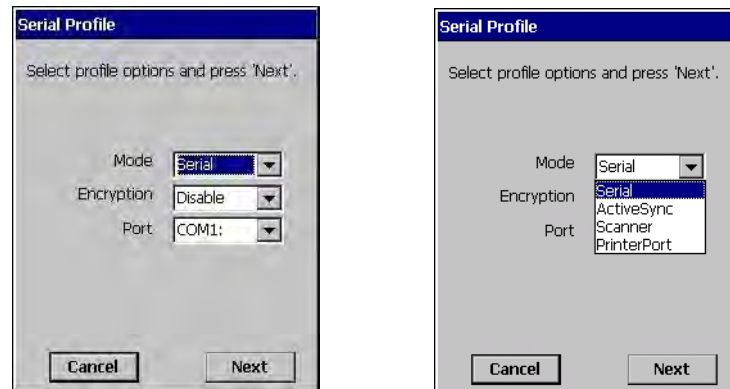
- If the remote device has authentication enabled, type the PIN in this dialog box.
- To proceed *without* authentication, tap on **Next**.

After entering the device *PIN*, the *Services* dialog appears with a list of services available for that device.



- Click in the check box to the left of the service to activate it.
- Click on **Done**.

Services that require more information present a configuration dialog box. *Serial Profile* is an example.



This dialog box offers a number of additional options such as enabling *Encryption* and selecting four different *Modes*: *Serial*, *ActiveSync*, *Scanner*, and *Printer Port*.

Serial is used for simple serial port communication.

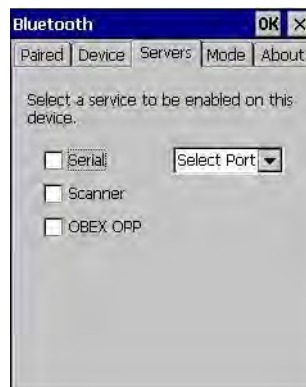
ActiveSync is for ActiveSync-over-Bluetooth.

Scanner is used to create a connection to a barcode scanner. A serial connection is created, then the *Scanner Services* is notified of the connection so that the incoming barcode scan will be forwarded to *Scanner Services* directly.

Printer Port must be chosen here if you want to communicate with a paired *Bluetooth* printer. For further details, see [Mode on page 3-12](#).

- Once you've completed the information, tap on **Next** and then in the *Services* screen, click on **Done**.

Servers



When a remote *Bluetooth* device initiates a *Bluetooth* connection to the VH10, the remote device is considered the '*Bluetooth* central' and the Vehicle-Mount, the '*Bluetooth* peripheral'. In order for the remote device to connect to the Vehicle-Mount, the VH10 must offer a service in the form of a server. The *Servers* tab allows these services to be enabled and configured. There are three server services available: *Serial*, *Scanner* and *OBEX OPP*.

Serial server enables the Serial Port Profile server; a Serial Port can be selected from the drop-down menu.

You can assign either a BSP or a COM prefix from the drop-down menu. BSP (*Bluetooth* Serial Port) was created by Microsoft to allow *Bluetooth* to have its own serial prefix in order to free up virtual COM prefixes as these are limited and are widely used.

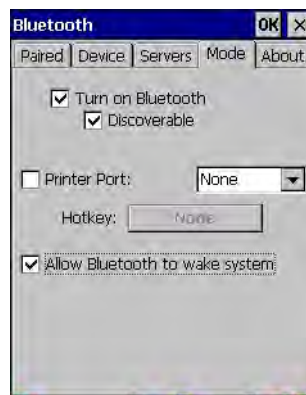
- ✓ **NOTE** Even after a Serial Port Profile server is created, an application must open the created port before a remote device can connect.

Scanner server enables a Serial Port Profile server and then relays it to the Scanner Service (SCS). This is used for *Bluetooth* barcode scanners that operate in client mode. SCS opens the server port and handles the scanner input.

OBEX OPP server enables the Object Push Profile server. A warm reset must be performed on the VH10 after a change is made to this option. The OPP Server allows other *Bluetooth* devices to send files to this device.

- Tap on the check box to activate the server.

Mode



Turn on Bluetooth activates the *Bluetooth* radio.

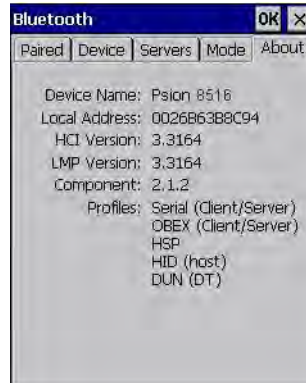
Discoverable determines whether the VH10 is visible or invisible to other devices.

Printer Port allows you to assign and enable a virtual outgoing COM port selected from the drop-down menu to communicate with a paired *Bluetooth* printer. Keep in mind that when a port is chosen, the printer must be on and connected to the chosen port for a remote device to be able to connect.

- Select a port within the *Printer Port* drop-down list, e.g. **BSP1**:
- Check the *Printer Port* check box.
- Open the *Device* tab and tap on **Scan**.
- Tap-and-hold each *Bluetooth* Printer device entry and then select **Pair**, key-in the Passcode (if needed) and then tap **Done**. DO NOT select any services!
- Close the *Bluetooth* Manager.
- Select the *Bluetooth* device to print to — you will need to key-in (or programmatically raise) the following key sequence [CTRL] [ALT] [F1].
- You can now select the *Bluetooth* device to which you wish to print.

Allow Bluetooth to wake system allows remote *Bluetooth* devices to wake the VH10 by requesting a *Bluetooth* service that requires host intervention. This feature can also be used when the VH10 is waking from suspend to significantly to reduce the initialization time of the *Bluetooth* system.

About



Device Name displays the broadcasted name of the Vehicle-Mount. The name can be changed in the *System Properties* applet: *Start>Settings>Control Panel>System icon>Device Name tab*.

Local Address displays the MAC address (BD_Addr) of the *Bluetooth* chip.

HCI Version & LMP Version display the version of the chip firmware.

Component indicates the version of the *Bluetooth* Subsystem (the manager, drivers, etc).

Profiles lists the supported profiles on this specific VH10.

Bluetooth Quick-Pairing

If you are using the DS3578 or LS3578 *Bluetooth* scanner, you can pair it with the VH10 quickly using the barcode label that is affixed above the VH10 keyboard on the right.



First-time Pairing

1. For the first time only, before you can use the quick-pairing feature, you must configure the scanner to be a *Bluetooth* Serial Central Device by scanning the barcode below.



Serial Port Profile (Central)

2. Next, configure your VH10 to be discoverable and to offer the scanner *Bluetooth* service.
 - a. Go to *Control Panel>Bluetooth*.
 - b. Open the *Mode* tab (see [Mode on page 3-12](#)) and enable both **Turn on Bluetooth** and **Discoverable**.

- c. Open the *Servers* tab (see [Servers on page 3-11](#)) and enable **Scanner**.
3. Scan the **PAIR** barcode label on the upper right side of the VH10 keyboard. The scanner will beep to indicate that it is successfully connected to the VH10.
4. Verify that the scanner is operating properly.
5. To disconnect your scanner from the VH10, scan the **UNPAIR** barcode label on the upper left side of the VH10.

Subsequent Pairings

1. Scan the **PAIR** barcode label on the upper right side of the VH10 keyboard. The scanner will beep to indicate that it is successfully connected to the VH10.
2. Verify that the scanner is operating properly.
3. To disconnect your scanner from the VH10, scan the **UNPAIR** barcode label on the upper left side of the VH10.

✓ **NOTE** If the scanner is out of range of the VH10, it may drop the connection. To pair the scanner again, scan the **PAIR** barcode on the front of the VH10.

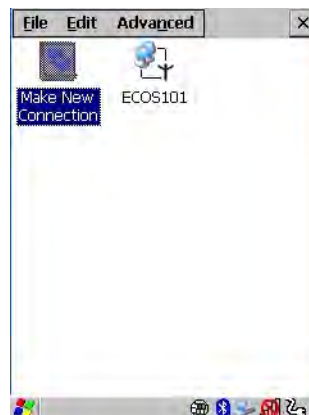
The Bluetooth GPRS WAN Connection

The following steps describe how to set up an Internet data connection using a GSM cellular telephone with *Bluetooth*. The VH10 communicates via *Bluetooth* to the cell phone, which then accesses a WAN (Wide Area Network) and transfers data using GPRS.

1. Enable the *Dial-Up Networking* service in the cell phone.
2. Make the phone *discoverable*.
3. Pair the phone service with the VH10 Dial-Up Networking service using the *Bluetooth Manager*. (For instructions on pairing devices, refer to [Pairing a Device on page 3-10](#).)
4. To set up the Internet parameters, go to *Control Panel>Network And Dial-up Connections*.



5. Tap on **Make New Connection**.



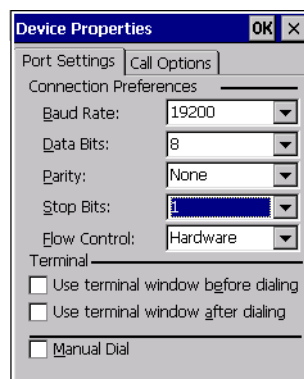
6. In the dialog box, choose **Dial-Up Connection**. Enter a name for your GPRS network connection.



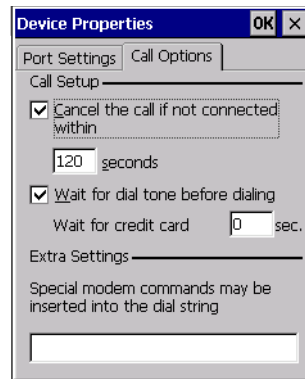
7. Choose the **Next** button to display the *Modem* dialog box.



8. In the drop-down menu labeled *Select a modem*, choose the name of the modem with which you want to connect, then choose the **Configure** button to display the *Device Properties* dialog box.
The VH10 communicates via *Bluetooth* to your *Bluetooth* equipped cellular telephone and retrieves the parameters for the *Device Properties* dialog box. VH10 then disconnects.



9. Under the *Call Options* tab, turn off **Cancel the call if not connected within**, and press **[ENTER]** to save your changes.



10. In the *Modem* dialog box, choose the **Next** button to display the *Phone Number* dialog box.



The phone number you enter is network carrier dependent. Once you've specified all the necessary information, choose the **Finish** button.

11. In the *Control Panel*, choose the **Dialing** icon.



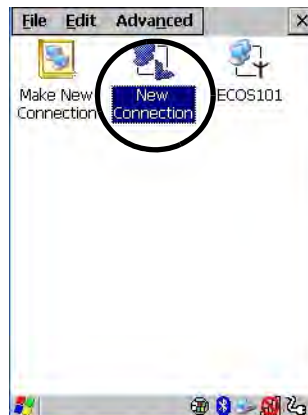
12. The values in the *Dialing Properties* dialog box need to be edited according to your network carrier specifications.



Once you've edited this dialog box to reflect your network carrier requirements, press **[ENTER]** to save your changes.

13. At this point, return to the *Control Panel*, and choose the **Network and Dial-up Connections** icon.

14. In the network connection window, the new network configuration — in this case, *New Connection* is displayed. Tap on the **new icon**.



When you tap on your new connection, an onscreen message indicates the status of your connection: *connected*, *disconnected*, *error messages*, and so on.

Certificates

This program provides access to the Certificates Manager and Stores. The Certificates Manager displays the certificates in the Windows Certificates Store, and allows you to import, delete, and view these certificates. VH10 checks that the certificate has been digitally signed by a certification authority that the VH10 explicitly trusts. This option is used in conjunction with 802.1x authentication to enhance VH10 security.

- In the *Control Panel*, choose the **Certificates** icon.



Certificates

Your VH10 has certificates preinstalled in the computer. *My Certificates* is the repository for the device's personal certificate store, *Other Authorities* is the repository for the intermediate certificate store, and *Trusted Authorities* is the repository for the Trusted Root certificate store.



You can import or remove certificates, and view certificate information for any listing, including names, dates, serial numbers, etc.

For a detailed description about Certificate setup for both the server and client-side devices (VH10 Vehicle-Mount Computers), refer to the following website:

<http://technet.microsoft.com/en-us/windowsserver/dd448615.aspx>

Data Transfer between VH10 and a PC

Data transfer options vary slightly depending on the type of operating system installed in your PC.

For Windows XP SP2 operating systems or earlier, Microsoft® ActiveSync® connectivity software can be used to connect your VH10 to PCs.

If the Windows Vista®, Windows 7 or later, operating system is installed in your PC, ActiveSync is not required to transfer data between your VH10 and your PC - you will need to download Windows Mobile Device Center (see below).

You can connect to a PC with a cable and:

- View VH10 files from Windows Explorer.
- Drag and drop files between the VH10 and the PC in the same way that you would between PC drives.
- Back up VH10 files to the PC, restore them from the PC to the Vehicle-Mount again, etc.

Using Microsoft ActiveSync

✓ **NOTE** If you use a serial port to connect devices like the VH10 to your desktop computer, the connection may not succeed because ActiveSync has trouble connecting at non-default baud rates.

To work around this problem, set the ActiveSync baud rate on the desktop to use the same baud rate as the device. You can set the baud rate by editing the registry on the desktop host computer.

To install ActiveSync, follow the step-by-step instructions provided with the program's setup wizard. For details, go to the following website and type the name into the search box:

<http://www.microsoft.com/downloads/en/default.aspx>

Using Windows Mobile Device Center

If you are running *Windows Vista*, *Windows 7*, or later, download *Windows Mobile Device Center*. For instructions, go to the following website and type the name into the search box:

<http://support.microsoft.com/kb/931937>

To transfer data between your PC and your Vehicle-Mount:

- Tap on **Start>Computer** to display the drives. The VH10 will be visible here.
- Open drives, files and folders as you would on your PC.

Display Properties

- In *Control Panel*, choose the **Display** icon.



Background

- In the *Display Properties* dialog box, open the **Background** tab. This dialog box allows you to customize your background image.



Appearance

- In the *Display Properties* dialog box, open the **Appearance** tab. This dialog box allows you to customize the display colour scheme.



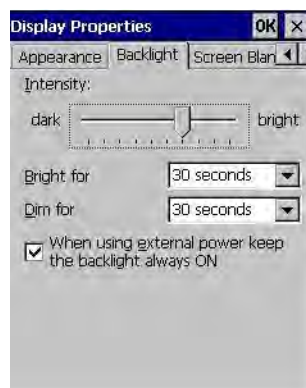
Backlight

The backlight is activated for a configurable amount of time. The *Display Properties* dialog box in the *Control Panel* allows you to specify the intensity of the backlight along with how long the backlight remains on when the unit is not in use (no key press, etc.).



NOTE Keep in mind that this option may be restricted to supervisory use only.

- In the *Display Properties* dialog box, open the **Backlight** tab.



✓ **NOTE** Backlight changes take effect immediately. You do not need to reset the unit.

To maximize battery run time, when the VH10 is not on vehicle or AC power, it enters into UPS Battery Power mode (see also [Power Saving Suspend on page 3-36](#)), and the backlight is automatically dimmed.

Intensity

This parameter is used to adjust the light intensity of the VH10 backlight. Sliding the bar to the left lowers the light intensity, and sliding it to the right raises the intensity.

Bright For

The value chosen from this drop-down menu determines the duration of time that the backlight stays on at the configured intensity after the last user action (e.g. keypress).

Dim For

The value chosen from this drop-down menu determines the duration of time that the backlight stays on at half the configured intensity (dimmed backlight) after expiration of the Bright For delay and as long as no user action takes place (e.g. keypress). At the expiration of the Dim For duration, the display backlight shuts off.

External Power check box

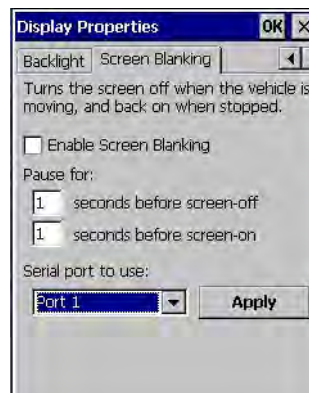
When you select the check box next to *When using external power keep the backlight always ON*, the backlight remains ON at the configured intensity when the VH10 is operating with external power (not battery power). If the VH10 is drawing power from its battery, this option is ignored and the other parameters defined in *Display Properties* dialog box take effect.

Screen Blanking

Screen Blanking turns the screen off when the vehicle is moving, and back on when the vehicle is stopped. The *Display Properties* dialog box in the *Control Panel* allows you to enable or disable this feature, and set a delay time for the screen to turn off and on.

✓ **NOTE** For this feature to be available, appropriated wiring must be installed. For detailed instructions for the electrical installation of the screen blanking option, see [Screen Blanking Option: Wiring on page 4-24](#)

- In the *Display Properties* dialog box, open the **Screen Blanking** tab.



Dr. Debug

Dr. Debug is an error diagnostic and troubleshooting tool.

- Tap on **Start>Settings>Control Panel**. Tap on the **Dr. Debug** icon.



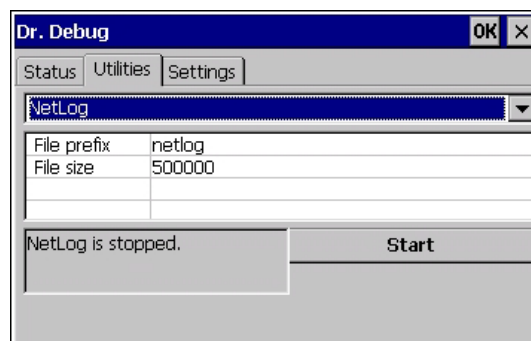
Status



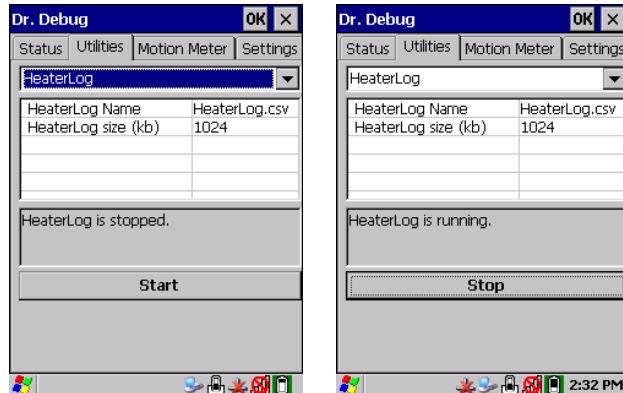
This tab indicates the status (on/off) of the debug engines. Tapping on **Browse logs** displays error logs for your review. The logs should be used as reference when working with Technical Support personnel.

Utilities

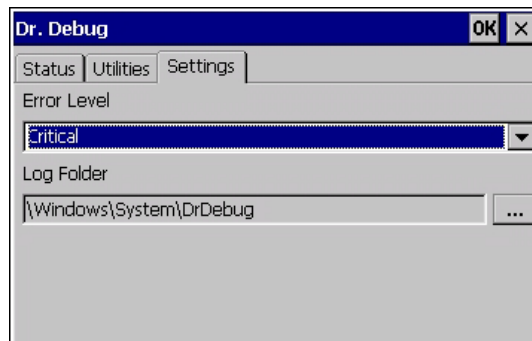
The *Utilities* tab can be used to log network traffic. When you tap on the **Start** button, debug data is collected so that, if necessary, it can be forwarded to a technician for evaluation.



The *Utilities* tab can also be used to log heater control logic board information.



Settings



- Choose an **Error Level** from the drop-down menu.
- To change the location where debug information will be stored, tap on the button to the right of the *Log Folder* option.

Error Reporting

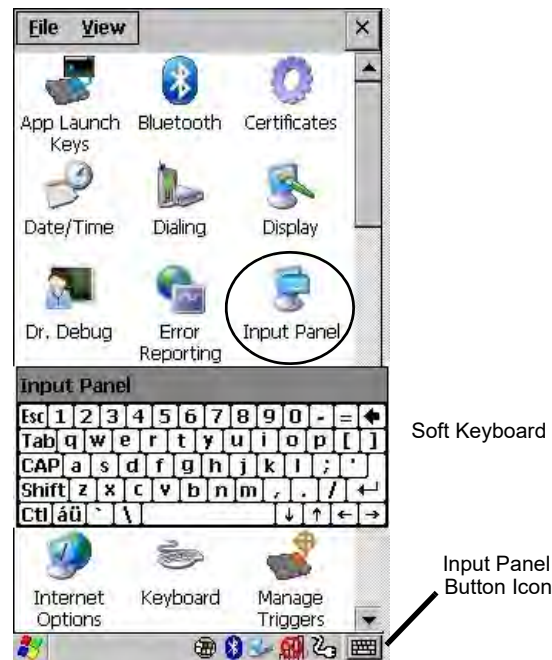
Error Reporting allows you to enable or disable Microsoft error reporting prompts.

- Tap on the **Error Reporting** icon in the *Control Panel*.



Input Panel

The VH10 is equipped with a Soft Input Panel (SIP). Shown below is the standard Microsoft SIP, accessed from Control Panel.



Tapping on the Input Panel button displays a soft input panel (soft keyboard) that can be customized using the Input Panel dialog box.

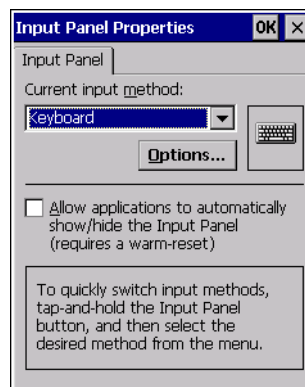


IMPORTANT If the Input Panel button icon is not visible in the taskbar, from the *Start menu*, tap on *Settings>Taskbar and Start Menu*. Tap the check box next to the *Show Input Panel Button*. To remove this icon from the taskbar, tap in the check box to erase the check mark.

To customize the appearance and behaviour of the soft keyboard:

Tap on the **Input Panel** icon in the *Control Panel*.

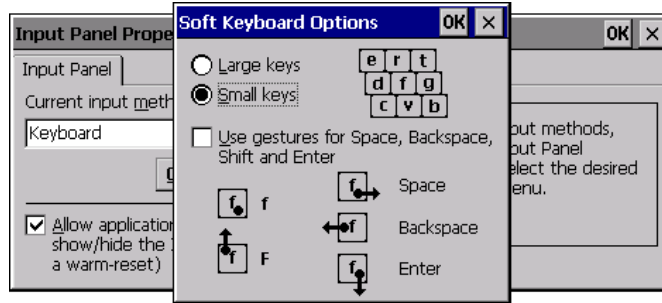
Figure 3-2 *Input Panel Properties*



- Tap on the **Options** button to change the appearance of the soft keyboard.

- ✓ **NOTE** You can also display this dialog box by double-tapping on the Input icon in the far-right corner of the taskbar.

Figure 3-3 Soft Keyboard Options



Keyboard Properties

This icon displays the *Keyboard Properties* dialog box in which you can adjust the repeat rate of the keys, the intensity of the keyboard backlight and the behaviour of the [BLUE] and [ORANGE] modifier keys. This dialog box also allows you to define macro keys and Unicode characters.

- In the *Control Panel*, choose the **Keyboard** icon.

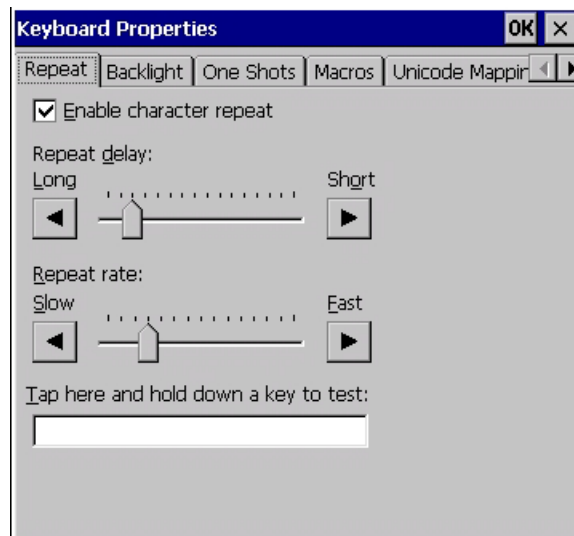


Keyboard

Key Repeat

- ✓ **NOTE** These settings apply when a key is held down continuously.

- In the *Keyboard Properties* dialog box, open the **Repeat** tab.



Enable Character Repeat

Tapping in the check box next to this option enables the key behaviour you specify in this dialog box.

Repeat Delay

The value assigned for this parameter determines the delay in milliseconds between repeat characters. Sliding the *Repeat Delay* bar to the left increases the delay between key repeats, and sliding the bar to the right shortens the repeat delay time.

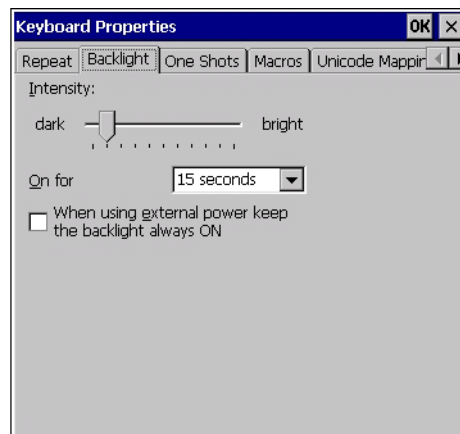
Repeat Rate

The value assigned for the *Repeat Rate* parameter determines how quickly the key you press repeats and is measured in characters per second (cps). Sliding the bar to the left slows the repeat rate, and sliding the bar to the right increases the repeat rate.

- ✓ **NOTE** Use the field at the bottom of this dialog box to test the repeat delay and rate settings you've chosen.

Backlight

- In the *Keyboard Properties* dialog box, open the **Backlight** tab.



Intensity

This parameter is used to adjust the light intensity of the VH10 keyboard backlight. Sliding the bar to the left lowers the keyboard backlight intensity, and sliding it to the right increases the intensity. The backlight automatically turns off when the computer is on UPS battery.

- ✓ **NOTE** The keyboard backlight maximum brightness will decrease over time as it ages. Use mid-range intensity settings when possible to extend the backlight lifespan. When the backlight starts to dim, use this parameter to make it brighter.

On For

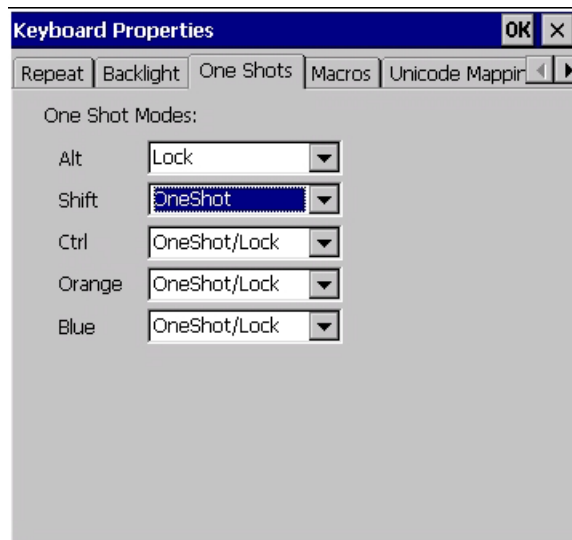
The value chosen from this drop-down menu determines the duration of time that the keyboard backlight stays on when a unit is not in use.

- ✓ **NOTE** Tapping in the check box next to '**When using external power, keep the backlight always ON**' forces the backlight to remain on when the unit is operating with external power.

To maximize battery run time when the VH10 is on UPS Battery Power, the keyboard backlight automatically turns off. For details see [Power Saving Suspend on page 3-36](#).

One Shot Modes

- In the *Keyboard Properties* dialog box, open the **One Shots** tab.



The options in this tab allow you to determine how modifier keys on your VH10 behave. For each modifier key — [ALT], [SHIFT], [CTRL], [ORANGE], and [BLUE] — you have the following options in the drop-down menu: *Lock*, *OneShot*, and *OneShot/Lock*.

- ✓ **NOTE** Keep in mind that checking the taskbar lets you know whether or not these keys are locked on. For example, if the [BLUE] key is locked 'on', the taskbar at the bottom of the screen displays the blue box underlined. If this key is displayed without the underline in the taskbar, you'll know that the key is not locked. It will become inactive following a key press.



- IMPORTANT** Once you've assigned a One Shot mode to a modifier key, you need to tap on the OK button at the top of the tab to activate your selection.

Lock

If you choose *Lock* from the drop-down menu, pressing a modifier key **once** locks it 'on' until you press the modifier key a second time to unlock or turn it off.

OneShot

If you choose *OneShot*, the modifier key remains active only until the next key is pressed.

OneShot/Lock

OneShot/Lock allows you to combine these functions. When you choose this option and you press the modifier key **once**, it remains active only until the next key is pressed.

If you press the modifier key **twice**, it is locked 'on', remaining active until the modifier key is pressed a third time to turn it 'off'.

Macro Keys

- In the *Keyboard Properties* dialog box, open the **Macros** tab.



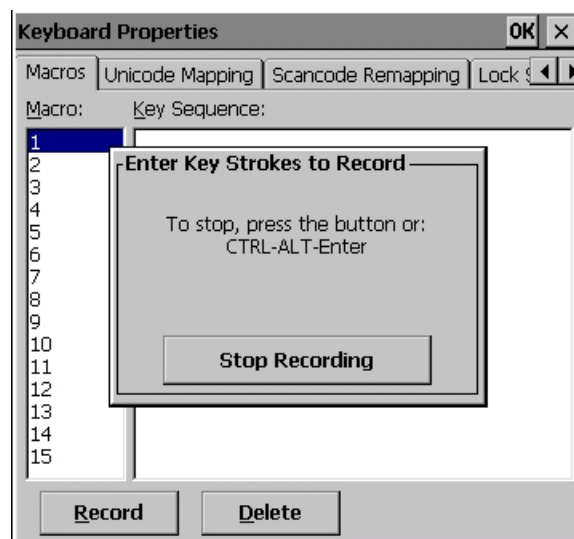
A macro has 200 programmable characters (or “positions”). The macro keys can be programmed to replace frequently used keystrokes, along with the function of executable keys including [ENTER], [BACKSPACE], [BLUE]+[BACKSPACE], function keys, and arrow keys.

Recording and Saving a Macro

You can program up to 15 physical macro keys. You can also increase the number of virtual macro keys using *Scancode Remapping* (for details, see [Scancode Remapping on page 3-29](#)).

- In the *Macro* menu highlight a macro key number, for example macro 1, to assign a macro to macro key [M1]. Select the **Record** button.

A message screen is displayed instructing you to *Enter Key Strokes to Record*.



- Type the macro sequence you want to assign to the Macro key. You can type text and numbers, and you can program the function of special keys into a macro.
- When you’ve finished recording your macro sequence, press the key sequence: **[CTRL] [ALT] [ENTER]**, or select the **Stop Recording** button.

A new screen ‘Verify Macro’ displays the macro sequence you created.

- Press **[ENTER]** to save your macro, or select CANCEL and press **[ENTER]** to discard it.

Executing a Macro

To execute a macro:

- Press the macro key to which you've assigned the macro.

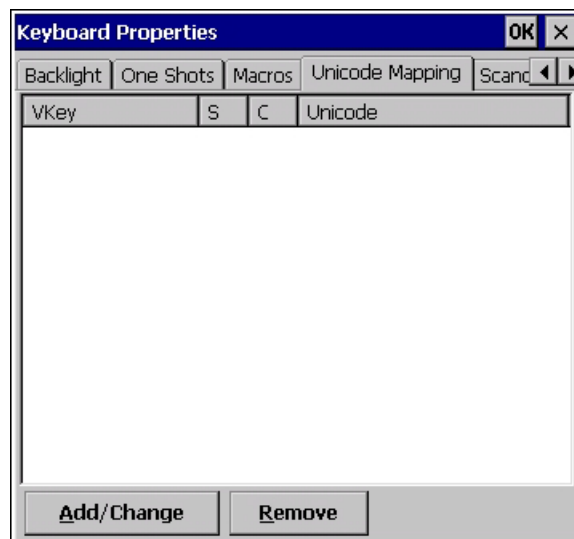
Deleting a Macro

To delete a macro:

- In the *Macros* tab, highlight the *macro number* you want to delete.
- Choose the **Delete** button.

Unicode Mapping

- In the *Keyboard Properties* dialog box, open the **Unicode Mapping** tab.



The *Unicode Mapping* tab is used to map combinations of virtual key values and [CTRL] and [SHIFT] states to Unicode™ values. This tab shows the configured Unicode character along with the Unicode value. For example, the sample screen above shows “a (U+0061)” indicating that the character “a” is represented by the Unicode value “0061”, and so on. Keep in mind that Unicode configurations are represented as hexadecimal rather than decimal values.

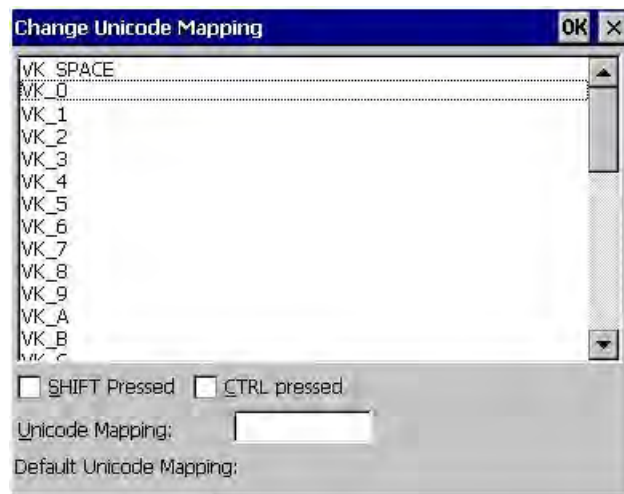
All user-defined Unicode mappings are listed in the *Unicode Mapping* tab in order of virtual key value, and then by order of the shift state. If a Unicode mapping is not listed, the Unicode mapping is mapped to the default Unicode value.

Adding and Changing Unicode Values



IMPORTANT Changes to Unicode mappings are not saved until you exit the Keyboard Properties dialog box.

- Choose the **Add/Change** button.



- Highlight a value in the Unicode mapping list. In the sample screen above, a value will be assigned to virtual key 0 (VK 0).
- Position the cursor in the *Unicode Mapping* field, and type a **Unicode value** for the highlighted key.



NOTE To add a shifted state, [SHIFT] and/or [CTRL], press **[TAB]** to position the cursor in the check box next to 'SHIFT Pressed' and/or 'CTRL Pressed'. Press **[SPACE]** to select the shift state you want to assign.

Removing Unicode Values

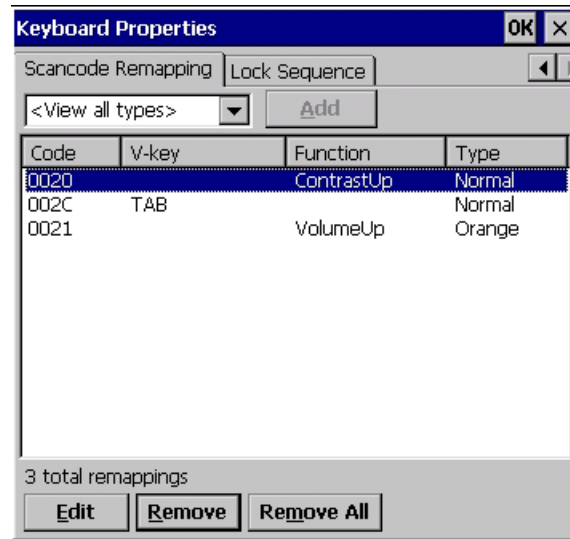
- In the *Unicode Mapping* tab, highlight the item you want to delete, and choose the **Remove** button.

Scancode Remapping

A scancode is a number that is associated with a physical key on a keyboard. Every key has a unique scancode that is mapped to a virtual key, a function or a macro. *Scancode Remapping* allows you to change the functionality of any key on the keyboard. A key can be remapped to send a virtual key (e.g. VK_F represents the 'F' key; VK_RETURN represents the [ENTER/POWER] key, etc.), perform a function (e.g. change volume), or run a macro.

There are three different tables of scancode mappings: the *Normal* table, the *BLUE* table and the *ORANGE* table.

The *Normal* table defines unmodified key presses; the *BLUE* table defines key presses that occur when the [BLUE] modifier is on; the *ORANGE* table defines key presses that occur when the [ORANGE] modifier is on. The default mappings of these scancodes can be overwritten for each of these three tables using the *Scancode Remapping* tab accessed from the *Keyboard Properties* dialog box.



The first column in the *Scancode Remapping* tab displays the scancodes in hexadecimal. If the scancode is remapped to a virtual key, that virtual key is displayed in the next column labelled 'V-Key'. A virtual key that is 'Shifted' or 'Unshifted' is displayed in the third column labelled 'Function'.

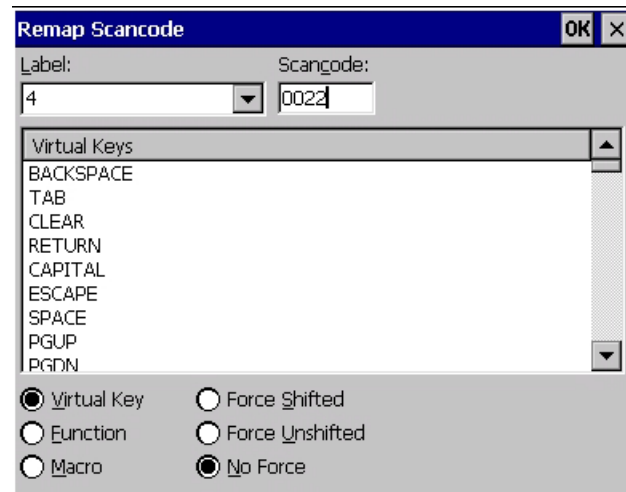
If the scancode is remapped to a function or a macro, the first and second columns remain blank while the third column contains the function name or macro key number (e.g., Macro 2).

Adding a Remap

To add a new remapping:

- Choose the **Add** button at the bottom of the dialog box.

The *Remap Scancode* dialog box is displayed.



- Type the scan code in hexadecimal in the field labelled *Scancode*.



NOTE The Label field displays the default function of the scancode you are remapping.

Virtual Key, Function and Macro

The radio buttons at the bottom of the dialog box allow you to define to what the scan code will be remapped: Virtual Key, Function or Macro.

When *Virtual Key* is selected, you can choose to force [SHIFT] to be *on* or *off* when the virtual key is sent. If *No Force* is selected, the shift state is dependent on whether the shift state is on or off at the time the virtual key is sent.

When *Function* is selected, a list of valid functions appears in the dialog box.

When *Macro* is selected, the macro keys available on your unit are listed in the dialog box.

- Choose **Virtual Key, Function** or **Macro**.
- Choose a function from the *Function* list in the dialog box, and tap on **OK**.

Editing a Scancode Remap

To edit a scancode:

- In the *Scancode Remapping* tab, tap on the remap you want to edit.
- Tap on the **Edit** button, and make the appropriate changes.
- Tap on **OK** to save your changes.

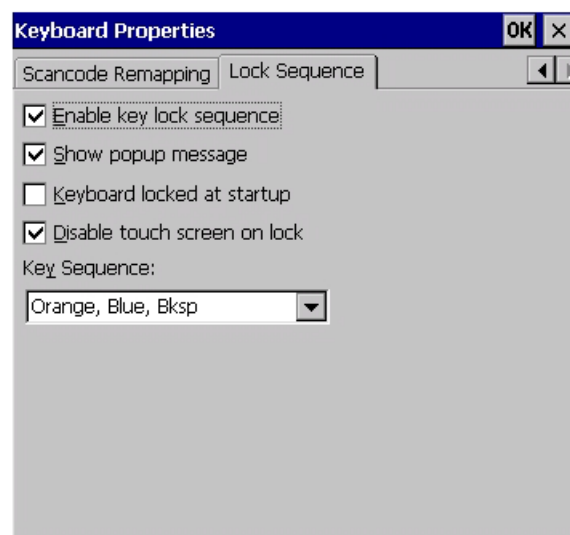
Removing a Remap

To delete a remap:

- In the *Scancode Remapping* tab, highlight the scancode you want to delete, and tap **Remove**.
- Tap on **OK**.

Lock Sequence

The *Lock Sequence* menu allows you to lock the keyboard to prevent keys from being pressed accidentally.



- To lock the keyboard, tap in the check box next to *Enable key lock sequence*.
- Tap in the check box next to *Keyboard locked at startup*.
- In the *Key Sequence* drop-down menu, choose the key sequence you need to unlock the keyboard.

- ✓ **NOTE** It is useful to leave the 'Show popup message' enabled (default) so that anyone attempting to use the keyboard will see the key sequence they will need to enter to unlock the keyboard displayed on the screen.

A *locked keyboard* icon is displayed in the softkey bar when the keyboard is locked.



- Type the key sequence to unlock the keyboard.

Manage Triggers

Allows you to configure how barcode scanners and other devices such as RFID readers are triggered. You can configure the trigger ID for each trigger button for both single- and double-click, and the double-click time.

- In the *Control Panel*, choose the **Manage Triggers** icon.



- In the *Manage Triggers* screen you'll see a list of trigger mappings.



Trigger Mappings

A trigger mapping is an association between a particular key on the keyboard and a driver or application - the module(s) of the trigger source. When the specified key is pressed, the owner (for example, a decoded scanner) is sent a message.



- IMPORTANT** It is not possible to have two or more identical mappings — for example [F1] cannot be mapped to the Decoded Scanner twice — even if the trigger type is different.

A keyboard key that is used as a trigger source will no longer generate key data, or perform its normal function. For example, if the space button is used as a trigger source, it will not be able to send space characters to applications.

Double-Click

When a key is pressed and released, then pressed again within the configured time (between 0 to 1000 msec), a double-click occurs. See also [Trigger-Press Type on page 3-34](#).

Show All Modules

By default, the trigger mapping list only shows active mappings. Mappings for drivers or applications that are not currently active are not normally displayed. By checking this check box, all mappings, both active and inactive, are displayed.

Add

Tapping this button brings up the *Add Mapping* dialog (see [Add and Edit Trigger Mapping on page 3-33](#)), so that you can add new trigger mappings.

Edit

Tapping this button brings up the *Edit Mapping* dialog (see [Add and Edit Trigger Mapping on page 3-33](#)), so that you can edit existing trigger mappings.

Remove

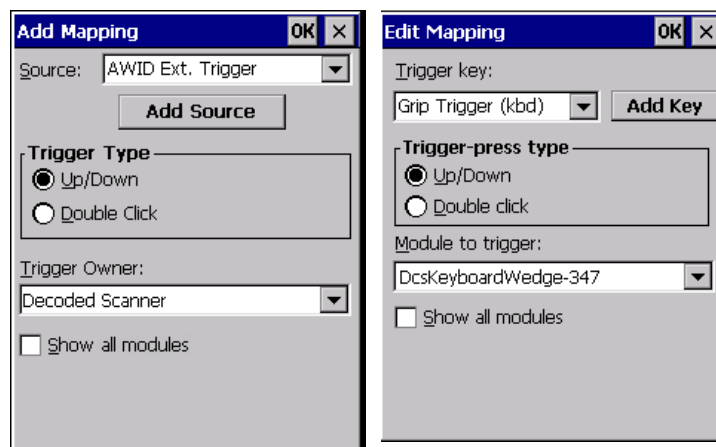
Tapping this button removes an existing mapping.

OK

The *OK* button in the top right of the *Manage Triggers* screen saves all changes made. If the cancel button **X** is tapped instead, or the [ESC] key is pressed, all changes will be discarded.

Add and Edit Trigger Mapping

These dialogs allow you to add and edit trigger mappings.

**Trigger Key**

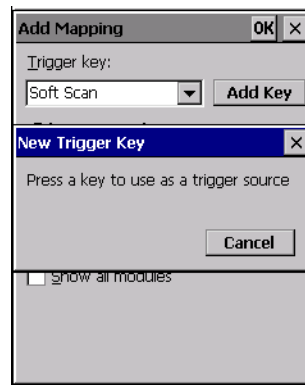
This drop-down list allows you to specify the source of the trigger events, such as the *Scan*, etc., for the trigger module selected.

- ✓ **NOTE** It is possible to map the same source to different modules — for example, to both the Imager and Decoded Scanner. If so, both devices/operations will occur simultaneously. This is not recommended in most cases, especially with devices such as Imagers or RFID Readers.

It is also possible to map different sources to the same module — for example, two different trigger keys can be mapped to the RFID File System.

Add Key

Only existing trigger sources are shown in the Source combo-box. To add a new source to this list, tap on the **Add Key** button. A dialog will pop up and allow you to select the keyboard key to use as a trigger source.



Trigger-Press Type

You can enable either an *Up/Down* or *Double Click* response to a trigger press. Normally, when a trigger (keyboard key, etc.) is pressed and released, a “trigger down” event is sent to the “owner” — that is, the application receiving the trigger press information — followed by a “trigger up”. If *Double Click* is chosen in this menu, when the trigger is pressed, released, and then pressed again, a “double-click” event will have occurred. If a mapping with the type *Up/Down* has also been configured for the same source, it will only receive the first set of trigger events.

Module to Trigger

This identifies the driver or application receiving the trigger presses.

Show All Modules

By default, inactive owners are not shown. By checking this check box, all owners, both active and inactive, are displayed.

Microphone

- In the *Control Panel*, choose the **Microphone** icon. Use this dialog box to adjust the gain for the specific microphones associated with your Vehicle-Mount.



- Tap on the drop-down menu, and choose the microphone for which you want to adjust the gain.
- Slide the microphone tab to the left to decrease the gain and to the right to increase the gain.

Tapping on the *Default* button sets the current microphone you've chosen to the default gain. Tapping on *Default All* sets *all* microphones listed to their default gain.

TekTerm Client

TekTerm Client is a powerful emulation application ideally suited for real time data transaction applications associated with mainframes and servers. The VH10 includes unique features that support TekTerm Client, an application that has the ability to maintain multiple simultaneous sessions with a variety of host computers. For detailed information, please refer to the *TekTerm Client Software User Manual*, PN 8000073.

PartnerUp

This app displays a number of pre-loaded applications. Tapping on an app in the list takes you to an associated web site.

The operator can then install the application. If a license is required, it can be obtained by sending an e-mail to the software license mailbox or by contacting a Sales Representative from the contact web page.

www.zebra.com/US-EN/Pages/Contact_Us/?WT.mc_id=psion_us_about_contact_psiion-offices

Additional pieces of software such as a server must be obtained through us.



Tapping on a preloaded client in this screen displays a drop-down menu from which the operator can choose from an array of related options.

Power Properties

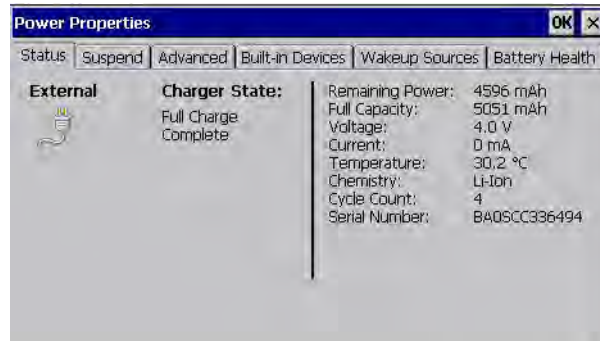
This application provides *Power Properties* menus to view power status and configure power options.

- In the *Control Panel*, choose the **Power** icon.



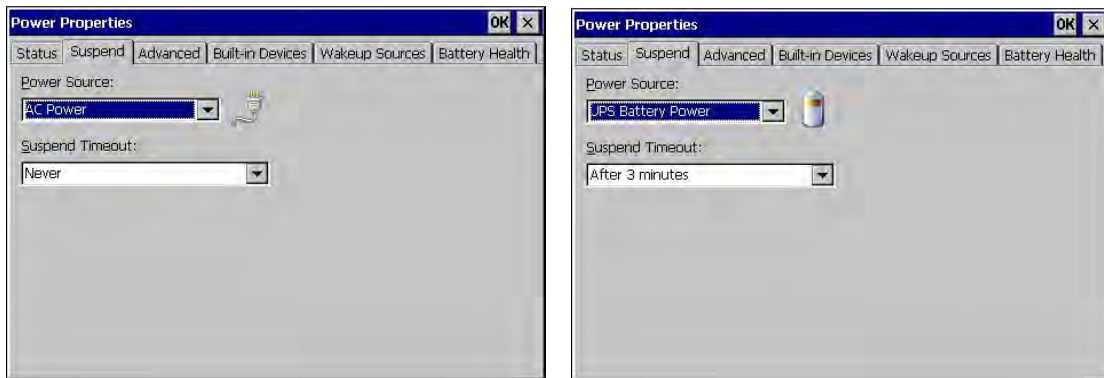
Status

- In the *Power Properties* dialog box, open the **Status** tab to view battery details.



Power Saving Suspend

- In the *Power Properties* dialog box, open the **Suspend** tab. The VH10 runs mainly on vehicle power; however, when the unit is running on the optional UPS Battery power source, you have the option to set a Suspend Timeout to conserve power.



Power Source

This drop-down menu allows you to specify the Suspend Timeout for both power modes: *AC Power* and *UPS Battery Power*.

- ✓ **NOTE** To maximize battery run time when the VH10 is on UPS Battery Power, the display backlight is automatically dimmed, the keyboard backlight is turned off, heaters are automatically switched off, and the powered external ports are limited to a total of 1A.

Suspend Timeout



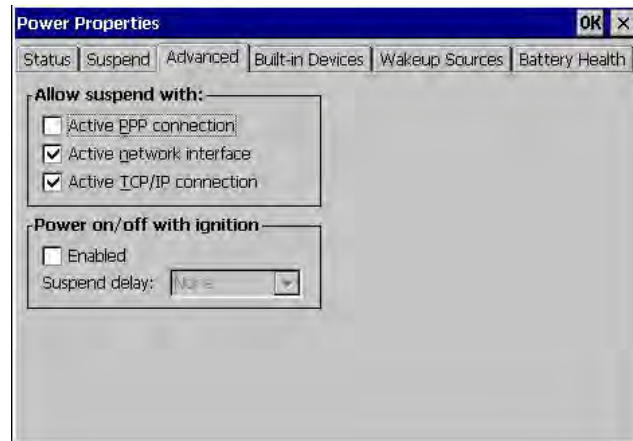
- IMPORTANT** The Suspend default time is 3 minutes. To further reduce power consumption, carefully consider the duration of time that the display backlight is 'on' (see [Backlight on page 3-19](#)).

When the VH10 is idle — not receiving any user input (a key touch, a scan, and so on) or system activity (serial data, an activity initiated by an application, and so on) — the Vehicle-Mount uses the value assigned in the *Suspend Timeout* field to determine when the unit will go to sleep (appear to be off).

When the time in the *Suspend Timeout* field elapses without any activity, the unit enters *suspend* state. In suspend state, the VH10 CPU enters a sleep state, and wireless communication is shut off. The state of the device (RAM contents) is preserved. Pressing **[ENTER]** wakes the system from suspend state.

Advanced

- In the *Power Properties* dialog box, open the **Advanced** tab.



Allow Suspend With

This menu allows you to specify whether or not your unit will enter Suspend Mode while it is operating with an active PPP connection, network interface or active TCP/IP connection.

Power On/Off With Ignition Option

- ✓ **NOTE** For this feature to be available, appropriated wiring must be installed. For detailed instructions for the electrical installation of the screen blanking option, see [Screen Blanking Option: Wiring on page 4-24](#)

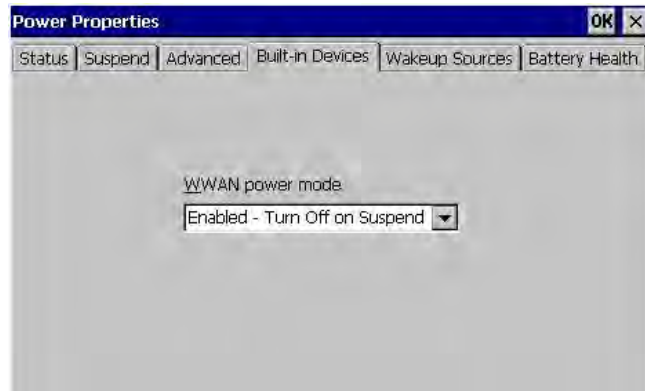
This optional feature puts the VH10 in Suspend when the vehicle ignition is turned off, and powers the VH10 on when the ignition is on. You can enable this feature and set a delay time for the VH10 to go into Suspend. When a delay time is specified, a window appears on-screen at the time of ignition off. This window shows the time countdown, and contains power-off-now and cancel buttons. The window is shown on top of any running application, attached to the right side of the screen, and may be repositioned by dragging it up and down as desired.

- ✓ **NOTE** This feature does not interfere with other methods of turning the computer off and on.

Built-in Devices

The Built-in Devices menu controls the power mode of internal devices. If no such device is installed, such as the WWAN radio in the example below, this menu tab will not appear.

- In the *Power Properties* dialog box, open the **Built-in Devices** tab.



Example Device: WWAN Power Mode

This menu allows you to enable power to your WWAN radio, and whether or not the radio will turn off when the VH10 enters Suspend Mode.

Wakeup Sources

This feature allows you to wake up the VH10 from Suspend with a screen tap.



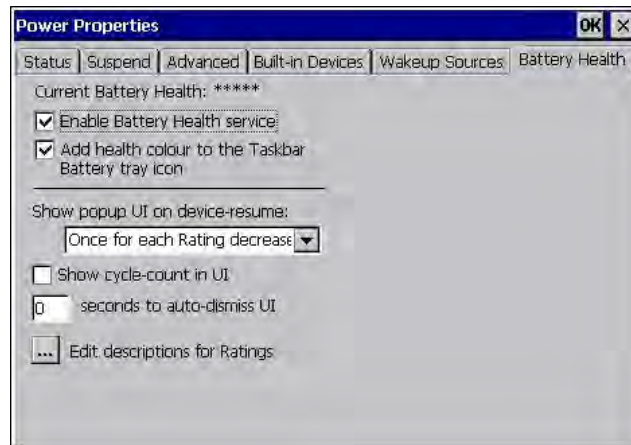
Battery Health

If the optional internal 5000 mAh rechargeable battery is installed, the Battery Health service provides an estimate of battery health based on a number of different measurements, beyond just capacity. The Battery Health menu displays detailed battery information, including actual battery capacity, whereas the battery icon in the taskbar and the Battery Health pop-up screen (see [Current Battery Health Meter on page 3-39](#)) show the status of the *useable* battery capacity (see Note below).

✓ **NOTE** The useable battery capacity is less than the actual battery capacity; this is to maximize the life of the battery in the VH10, while still providing a typical UPS run time of one hour when fully charged.

⚠ **IMPORTANT** Battery Health is an estimate and should not be depended on to provide a 100% account of battery condition.

- In the *Power Properties* dialog box, open the **Battery Health** tab.



Current Battery Health Meter

The Current Battery Health Meter default values are shown here as ***** (Excellent), *** (Used), and * (Battery should be replaced). If you tap on the battery icon in the taskbar, a pop-up screen will show the status of the battery. The image below shows the default *Excellent* status screen.



Enable Battery Health Service

This option allows you to enable the service. To access the menus after enabling the service, you will need to either restart the VH10 or wait until a resume from Suspend.

Add Health Colour to the Taskbar Battery Tray Icon

Enabling this option changes the background colour for the battery icon in the Taskbar, based on battery condition: *Green* (excellent), *Yellow* (used), and *Red* (battery should be replaced).

Show Popup UI on Device-Resume

You can decide when the battery status pop-up user interface (UI) will appear, for how many seconds, and whether the battery cycle count is displayed (**off** by default).

Edit – Changing Rating Descriptions

You can customize the ratings text with the *Edit* option. By enclosing your text within the HTML tag used for **Bold** (or removing the tag to unbold the text), you can change the text that will appear in the pop-up battery status screen. For example, the default text “**Excellent**” can be changed to: “Battery is excellent”.



Kiosk Access

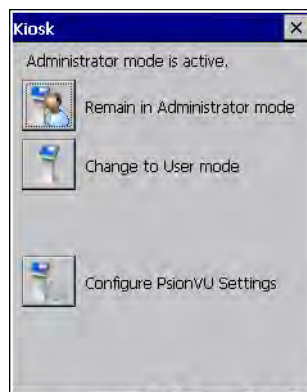
Kiosk Access enables you to customize your computer settings, remove or add shortcuts to the desktop and Control Panel, and limit access to various different components on the computer and the system tray icons for security.

✓ **NOTE** The Desktop theme can be changed from the default Windows Classic Shell to the Kiosk Shell either in the **Kiosk Access** settings (see [Other Shell Themes on page 3-43](#)) or by tapping on the Desktop icon **Kiosk Shell** (see [The Kiosk Desktop Shell on page 2-16](#)).

- In the *Control Panel*, choose the **Kiosk** icon.



When opening the *Kiosk* application, the *Kiosk Access* dialog will come up that enables you to either proceed to the *Kiosk Settings* menus, or change from you current Access mode to the other (Administrator or User). The computer must be reset following a change, and a confirmation will appear to enable you to continue or dismiss the change.



When opening the *Kiosk Settings* option, the following menu will be available:

Figure 3-4 Kiosk Settings



Administrator Password

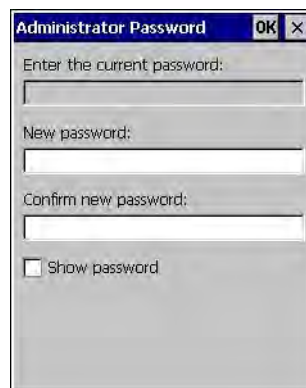
By setting an Administrator Password, you can limit access to various different components on the computer and the system tray icons for security. The default security setting allows User access to all options, therefore restrictions and settings can be configured without setting a password.



NOTE If a setting or restriction is configured without setting an Administrator password, the following message is displayed: *Administrator password is currently not set.* Once a password has been set, the message will disappear.

When an administrator password is set, the restricted options are accessed using a key combination. If a password has been set, the user would be prompted for the password.

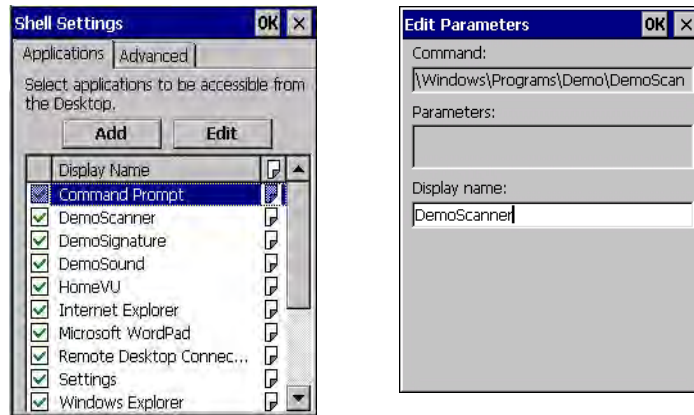
The option *Show Password* changes the displayed password from hidden (***) to readable.



Shell Settings

The Shell Settings application has two menus: *Applications* and *Advanced*.

Applications



The Applications menu lists all the applications installed on the computer, alphabetically. The items checked in this view are shown on the Desktop.

The *Add* and *Edit* buttons allow you to search for and add an application to the list of items in the selection window. You can add a maximum of 18 applications, after which the Add option will be greyed out and the following message is displayed: “!Maximum 18 entries reached.”

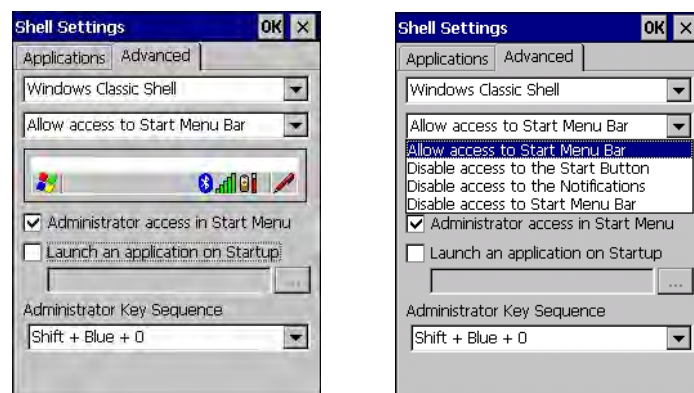
When you select an application and tap on *Edit*, you will see fields for *Command*, *Parameters*, and *Display Name*.

- **Command:** The *Command* field is prefilled with the path and name of the executable (.exe) or corresponding link (.lnk). If the selected file can't be found (e.g. external memory card has been removed, files have been deleted), a message will be displayed at the bottom of the screen: “These files cannot be found.”
- **Parameters:** The *Parameters* option provides the option of adding extra parameters to the application (for .exe files only, not .lnk). For example, if the Command field is running “pword.exe” (Microsoft WordPad), the Parameters field could specify a document to open.
- **Display name:** This is an editable field which is prefilled with the name of the application.

Advanced

The Applications menu allows you to enable or disable some device functions.

Windows Classic Shell



The following options can be enabled or disabled in the Windows Classic Shell Desktop theme:

- **Start Menu Bar:** If disabled, access to both Start Menu and Notifications are disabled. The Notification tooltips will still display. Any changes made will occur after a device reset.
- **Start Button:** If disabled, access to the Start Button and Notifications are disabled. The Notification tooltips will still display.



NOTE If “Disable access to the Start Button” is selected, but the *Kiosk Access by Key Sequence* remains unchecked, you will see the following status-message *A Key Sequence is required when the Start Button is disabled.*, the check box will be auto-checked, and the focus will be set to the key-sequence selection.

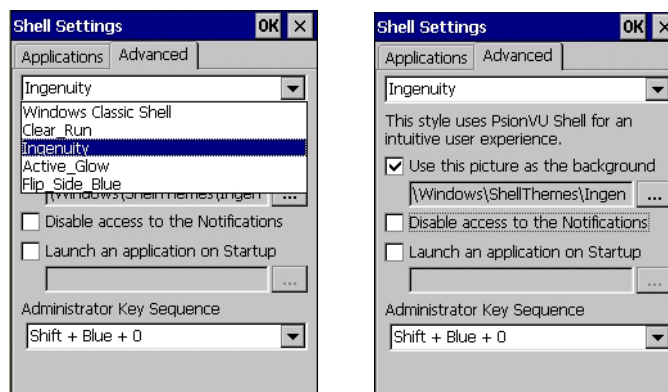
Notifications: If disabled, the Notifications tooltips will still display.

Administrator Access in Start Menu: When this box is checked, the *Kiosk Access* program will be shown in the *Start Menu>Programs* list.

The following item is not optional:

- **Administrator Key Sequence:** Sets the key sequence to open *Kiosk Access*.

Other Shell Themes



The following options can be enabled or disabled in the Kiosk Shell Desktop themes (shown in the drop-down list as *Windows Classic Shell*, *Clear_Run*, *Ingenuity*, *Active_Glow*, and *Flip_Side_Blue*):



NOTE The Desktop theme can be changed from the default Windows Classic Shell to one of the Kiosk themes shown here — but by tapping on the Desktop icon **Kiosk Shell** (see [The Kiosk Desktop Shell on page 2-16](#)), the “Ingenuity” theme is automatically loaded. The computer must be reset in order for the shell to change.

- **Use this picture as the background:** You can select a picture as the Desktop background.
- **Notifications:** If disabled, the Notifications tooltips will still display.
- **Launch an application Startup:** A window is displayed listing all of the installed and added applications. Any applications selected will startup after a reboot.

The following item is not optional:

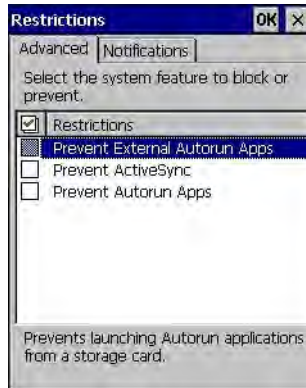
- **Administrator Key Sequence:** Sets the key sequence to open *Kiosk Access*.

Restrictions

This section deals with items that are by default available to users but can be restricted by an administrator.

Advanced

The Advanced menu lists the system features you can restrict or block.



Notifications

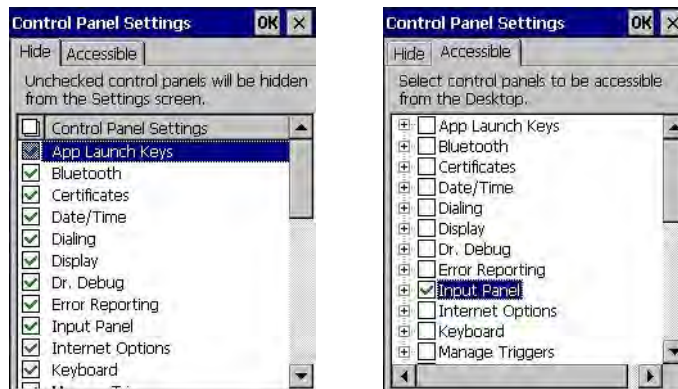
The Notifications menu allows you to block or disable notifications.



Control Panel Settings

In these menus you can set which applets and tabs you want to *Hide* in Control Panel, and which applets and tabs will be *Accessible* as a shortcut icon from the Desktop.

- You have the option of setting the entire applet or specific tabs within the applet as hidden or accessible. Any applet that can't be set is greyed out.



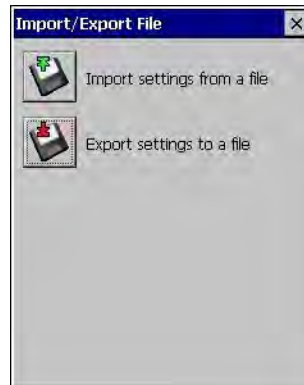
- You can add a maximum of 18 applications, after which the following message is displayed: *!Maximum 18 entries reached.*

Import/Export to File

This option enables you to *Export* your settings file (.xml), and save it in the location of your choice. In addition, an Administrator has the option to *import* these settings from one device to multiple devices *of the same operating system*.



IMPORTANT A copy of this file should also be saved in a central repository for all .xml files with a pre-defined name so that other utilities can locate it.



Tapping on the **Export** button will display a “Save As” Export Settings dialog, with the default name *Kiosk_Settings.xml*, which the Administrator can change even after it has been saved.

The .xml file contains all of the Kiosk configured settings, including the *Administrator Password*. When the file is imported to a device, the new password is applied immediately.

- Whether choosing to Import or Export files, the same file location options under *My Device* will be listed. Following the action, a message stating the success of the operation and the location of the file will be displayed.
- With the exception of the password, changes made to settings will take effect only after a warm reset. If further changes to the configuration are made, they will overwrite the changes caused by the import operation. After importing a file, a dialog will appear to enable you to reset now or later.



Quick Defrost (Heater Settings for VH10f)

The model VH10f Vehicle-Mount Computer has several heaters that can be used in cold environments to prevent condensation from developing on or inside the VH10. The “Quick Defrost” heaters keep the display clear of frost, the keyboard from freezing, and the ports (serial and USB) dry. In addition, the heater clears fog from the display panel when the computer is moved in and out of cold environments. For environmental specifications for this computer, see [Environmental on page A-2](#).

To ensure the computer works properly, the temperature of the internal components of the unit must be increased to a temperature at which condensation doesn't occur. There are individual heaters for the modules: Display Panel, Keyboard, External Connector, and the Main Interface Board.

The Quick Defrost feature has two profiles that function automatically: *Defog Profile* and *Sustaining Profile*.

Defog Profile

The heaters enter into the Defog Profile when there is a sudden change in ambient temperature registered by the display panel sensor. This happens automatically when the computer moves between hot and cold environments.

A change in the ambient temperature of 2° C during a three minute duration is an early indication that the computer is moving into or out of a freezer environment. This rapid change in ambient temperature is used as a trigger to enable the display panel and keyboard heaters to turn on to prevent condensation build up on those modules.

The Defog Profile lasts approximately 15 minutes. The other heaters (Main Interface Board, External Connector) are powered OFF. When the Defog Profile completes, the heaters switch to *Sustaining Profile*.

Sustaining Profile

In Sustaining Profile all heaters are powered ON or OFF based on the ambient temperature sensed. There are two temperature settings used to decide whether each individual module heater turns on or off. These settings are not user-configurable.

- Turn ON temperature: If the module's temperature sensor registers below or equal to the "Turn ON" temperature measured, the heater is turned ON.
- Turn OFF temperature: If the module's temperature sensor registers above or equal to the "Turn OFF" temperature, the heater is turned OFF.

Sustaining Profile will be active only once the Defog Profile is completed or if the computer moved into a stable temperature environment.

The display panel heater is turned OFF only when its sensor reaches 45° C.

Quick Defrost Settings

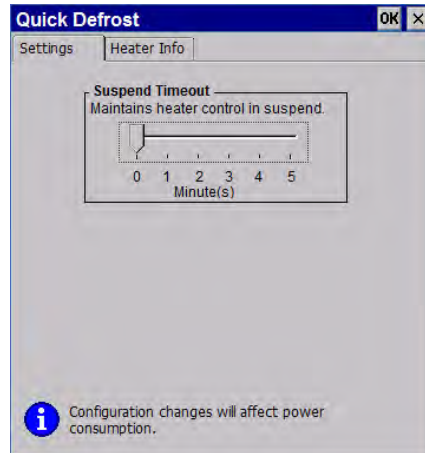
The individual heaters for the computer modules can be monitored, and the duration of time for them to remain on during Suspend mode can be configured.

- In the *Control Panel*, choose the **Quick Defrost** icon.



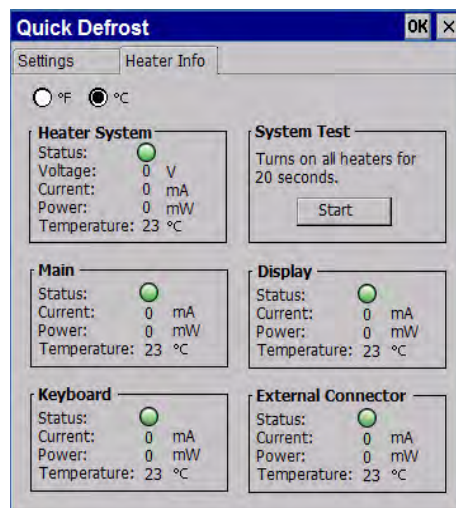
Settings

- The Quick Defrost application opens in the *Settings* tab. This option allows you to maintain heat for a limited time when the computer enters Suspend mode. Once the timeout expires, the heater will stay off while the computer is in suspend.



Heater Info

- In the *Quick Defrost* dialog box, open the **Heater Info** tab. This dialog box allows you to monitor the status of each heater and test the entire system.



Status (Heater System)

The LED state for this parameter indicates whether the communication with the Quick Defrost hardware is successful (green) or unsuccessful (grey).

Status (Individual Heaters)

The LED state for this parameter indicates whether the connection with the Quick Defrost hardware is successful (green), in *Defog Profile* (blue), or off (grey).

Defog Profile: The Quick Defrost will go into this mode when the consistent change in temperature measured by the sensor is more than 2° C over any three minute duration.

Sustaining Profile: The Quick Defrost will go into this mode when the heaters are switched on or off based on the temperatures of the respective modules. There are two conditions that will prompt the heaters to enter into this mode:

- After completing the Defog Profile mode following a temperature transition.

- Entering a stable temperature environment where no temperature change of 2° C is registered during a three minute duration.

Voltage (Heater System)

This indicates the voltage applied to the heater system.

Current

For the individual heaters, this indicates the average current drawn at the moment. For the *Heater System*, it shows the total consumption of all the heaters at the moment.

Power

For individual heaters, this indicates the power used at the moment for each heater. For the Heater System, it represents the total power used for all the heaters.

Temperature

Shows the temperature measured for that module.

System Test

Allows you to turn on all the heaters for 20 seconds to be able to check their operating status.

Remote Desktop Connection

Remote Desktop Connection, located in **Start>Programs**, is a VH10 application used to connect to a Windows Terminal Server so that you can run a “session” on the Server machine, using the VH10 (Windows Embedded CE device).

Refer to the following website for step-by-step information about setting up this connection:

<http://www.microsoft.com>

Type Remote Desktop Connection in the search box to find step-by-step instructions.

Or contact support services. Locate the office closest to you at:

www.zebra.com/US-EN/Support/Psion+Services+and+Support?WT.mc_id=psion__support_

Scanners

The *Scanners Settings* application in the *Control Panel* provides dialog boxes in which you can tailor barcode options and change the port settings.

- In the *Control Panel*, choose the **Scanners** icon.



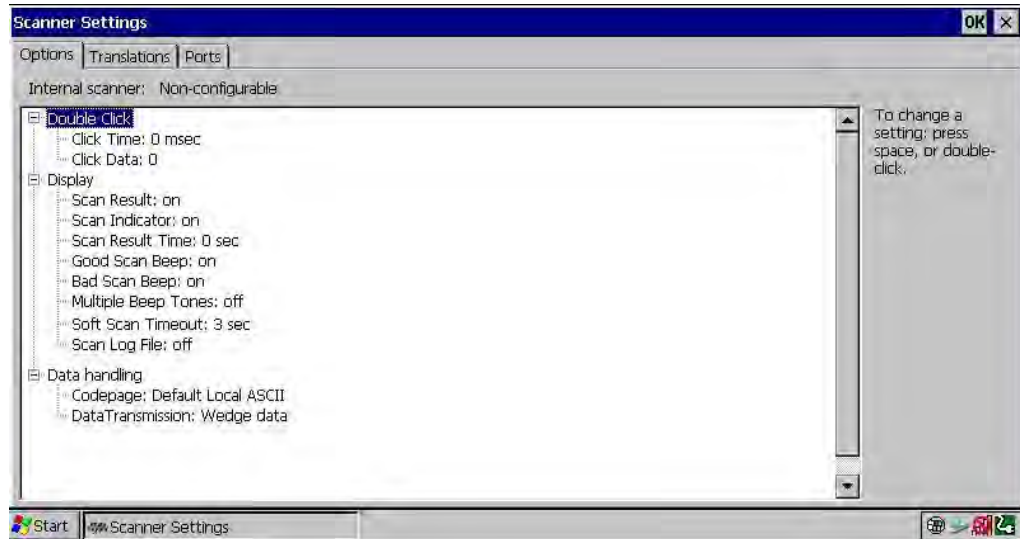
Decoded Scanners

External decoded scanners must be configured by scanning special configuration barcodes. For configuration purposes, please refer to the programming manuals provided by the scanner manufacturer.

✓ **NOTE** For port setup information, refer to [Ports on page 3-52](#).

Options

This tab allows you to tailor the double-click parameters, display, and data handling options associated with your scanner.



Double Click Parameters

Click Time (msec)

This parameter controls the maximum gap time (in milliseconds) for a double-click. If the time between the first and second clicks of the scanner trigger is within this time, it is considered a double-click. The allowable range is 0 to 1000. A value of zero disables this feature.

A double-click produces different results depending on whether or not a value is assigned in the “Click Data” parameter. When a value is not assigned for the “Click Data”, double-clicking the scanner trigger overrides the target dot delay set in the “Dot Time” parameter and initiates a normal scan sweep. If a value is assigned for the “Click Data” parameter, double-clicking the scanner trigger inserts the “Click Data” value rather than initiating a scan.

Click Data

This parameter determines which character is sent to the application installed in your VH10 following a double-click. A dialog box appears, asking that you press the key you want to insert. The ASCII/Unicode key value of the keypress is displayed.

Pressing the **[ESC]** key in this dialog box resets the data to zero.

Display Parameters

Scan Result

When this parameter is enabled, the type of barcode and the result of the scan appear on the screen. Note that this information is only displayed after a successful decode and is visible only while the scanner trigger is pressed. When the trigger is released, this information is cleared from the screen.

Scan Indicator

When this parameter is enabled, the laser warning logo appears on the display whenever the scanner is activated.

Scan Result Time (sec)

The value assigned to the *Scan Result Time* parameter determines how long the scan results of a successful scan are displayed on the screen. Time is measured in seconds, and a value of 0 (zero) disables the parameter. When you choose this option, a dialog box appears where you can enter a value.



NOTE To remove the scan result from the screen before the “Result Time” has expired, point the scanner away from the barcode and press the trigger.

Good Scan Beep and Bad Scan Beep

These parameters determine whether or not the VH10 emits an audible scanner ‘beep’ when a good (successful) scan or a bad (unsuccessful) scan is performed. Set these parameters to either **on** to enable the beeper or **off** to disable it.

Multiple Beep Tones

You can set the audible scanner ‘beep’ to emit a series of three beeps instead of one. Set this parameter to **on** to enable the multiple beep tones.

Soft Scan Timeout

This parameter is used by the SDK “Scan” function (soft-scan: starting a scan session via the SDK function, instead of a physical user trigger press). The value assigned to this parameter determines the soft-scan timeout from 1 to 10 sec (default is 3 sec).

Scan Log File

If this parameter is enabled, the input barcode and the modified/translated output barcode are logged in the file *Flash Disk\ScanLog.txt*. Keep in mind that if *Scan Log File* is enabled, there is a slight performance reduction when performing multiple scans since the log file is written to persistent storage.

Data Handling

Codepage

If you are encountering a scan failure because there is an unrecognized language character in the barcode, the Codepage option may correct the problem by allowing the *ISO-8859-1 Latin 1* codepage to be used. The default value is *Default Local ASCII*.



IMPORTANT Do not change this parameter from the default setting unless you are certain that it will correct your scan problem.

Data Transmission

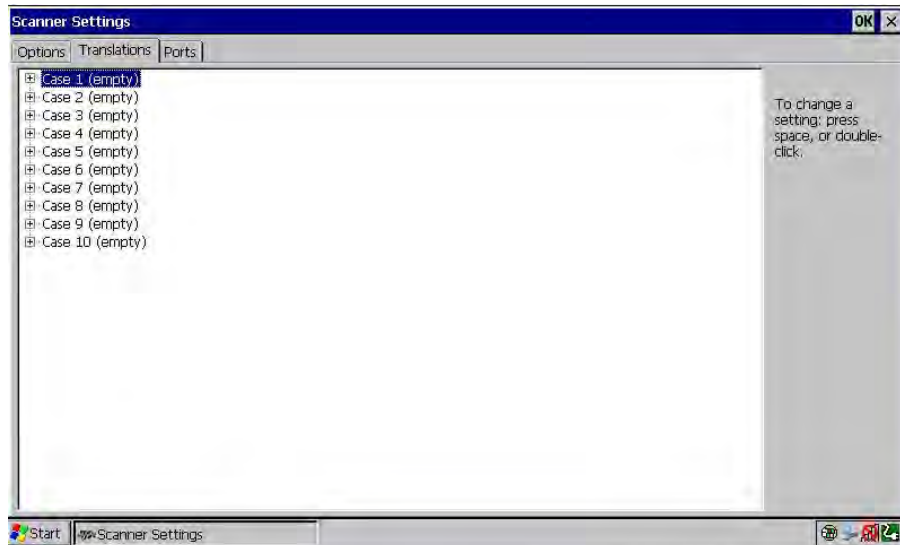
There are two methods of data transmission between the scanner and VH10: *Wedge data* and *Paste data*. If *Wedge data* is chosen, each character that composes the barcode data is turned into a keyboard sequence that is transmitted to the cursor location of the current application – that is, to the application, it looks like the barcode data was typed on the keyboard. If *Paste data* is enabled, the barcode output is copied to the system clipboard and then automatically pasted to an application. The default value is *Wedge data*.



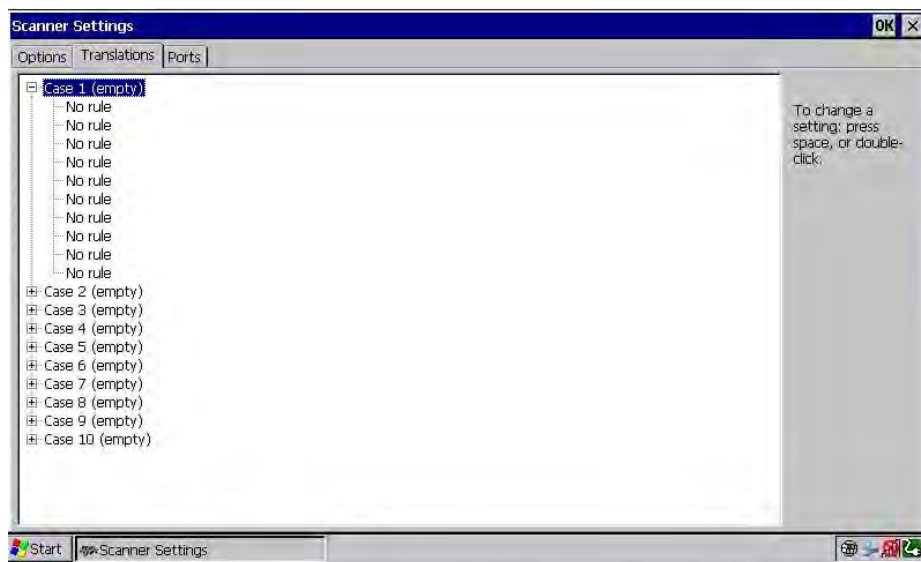
NOTE Although the **Paste data** option is a faster method of data transmission, it does not support as many characters as the **Wedge data** method.

Translations

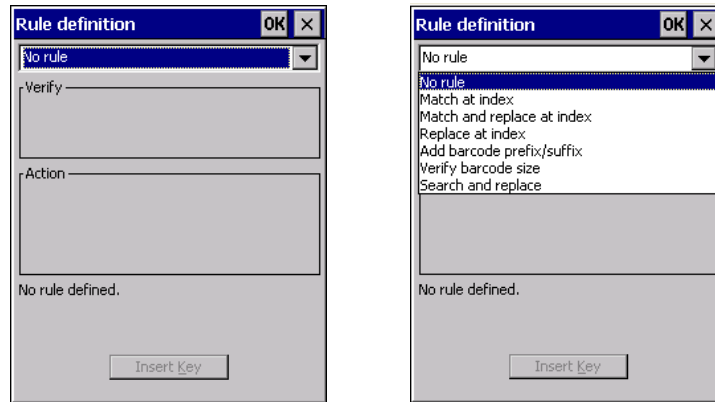
The *Translations* menu allows you to define up to 10 cases, each consisting of up to 10 rules in sequential order. Only one case will be applied to a barcode and a case will only be applied if all rules specified in the case are successful — if a rule within a case fails, the entire case fails.



- In the *Translation* menu, tap on the **Case #** to create rules.



- Tap on the **No rule** drop-down menu to display the rules.



When you choose a rule, an associated screen is displayed in which you can define the rule.



Case Rules

The case rules are defined as follows:

- **No rule** — ignored.
- **Search and replace** — replaces all instances of the match string. (Note that this rule cannot fail.)
- **Match at index** — matches the match string at a specified index.
- **Match and replace at index** — matches the match string at a specified index and replaces/changes it.
- **Replace at index** — replaces/changes unspecified data in a given range.
- **Add barcode prefix/suffix** — adds a global prefix or suffix.
- **Verify barcode size** — verifies the barcode size. This rule should generally be assigned first, before creating subsequent rules.

✓ **NOTE** Keep in mind that the effects of previously applied rules must be taken into account when creating subsequent rules. For example, if the barcode size is important, it should be checked before any rules that might change the size are applied.

Translation information about the status of each case/rule is displayed in the scan log file (see [Scan Log File on page 3-50](#)) when enabled. This is useful if a case fails, and you are trying to determine why a rule is failing.

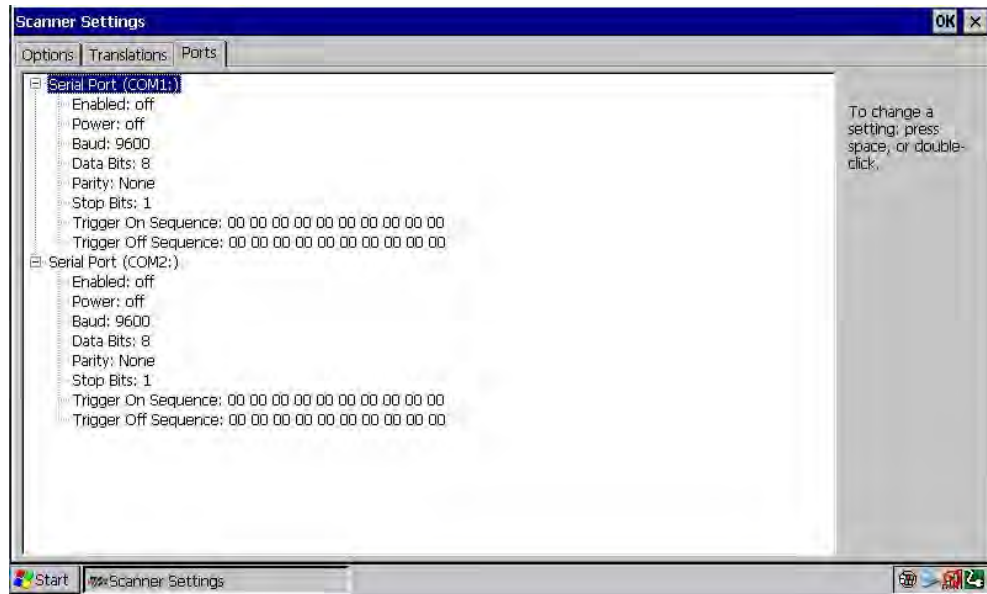
Ports

While you cannot configure the scanner, you can configure communications with a serial decoded scanner using the options in this tab.

Use these settings to ensure that the communication ports on the VH10 match the settings of the serial devices to which they are connected. If the settings do not match exactly, the devices may not function. Note that some devices can auto-detect serial port settings (such as baud rate), and in this case the VH10 will dictate the settings. Baud rates often have a direct impact on performance — they should be set as high as possible while still ensuring reliable communication.

Ports

The two serial ports (COM1 and COM2) are standard RS-232 DB-9 ports.



Enabled

This parameter must be set to ON in order for the VH10 to recognize the device connected to the serial port.

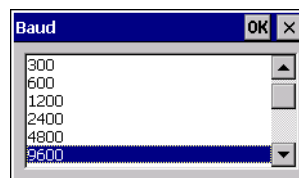
Power

Double-tapping on this parameter displays a dialog box in which you can choose to disable (turn off) this port, or you can assign 5V power to the port.

Baud

Double-tapping on this parameter displays a pop-up window in which you can choose an appropriate rate of data transfer.

Figure 3-5 Port Baud Rates

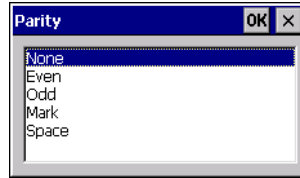


Data Bits

This parameter determines the number of data bits included in each asynchronous data byte. Most devices use 8-bit data bytes. Double-tapping on this option displays a pop-up window in which you can choose either 7 or 8 data bits.

Parity

This parameter determines the type of parity checking used on the data going through the port replicator port. Double-tapping on this option displays a pop-up window in which you can choose the appropriate parity.

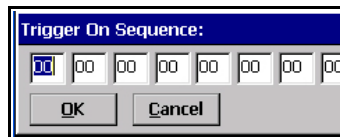


Stop Bits

This parameter specifies the number of stop bits — 1, 1.5 or 2 — used for asynchronous communication.

Trigger On Sequence And Trigger Off Sequence

If a SICK scanner connected to an VH10 computer port requires a serial stream of data bytes to trigger the scanner *on* and another to trigger the scanner *off*, the *Trigger On Sequence* and *Trigger Off Sequence* parameters allow you to define these serial streams.



Double-tapping on *Trigger On Sequence* or *Trigger Off Sequence* displays a screen with a hex array of 10 elements.

These parameters work in conjunction with *Manage Triggers* sending on and off data streams to the trigger module you assigned. For example, suppose you launch *Manage Triggers* and choose *Decoded Scanner* as the 'module to trigger'. Next, you assign a 'trigger key' — for this example, . (period). To define the serial stream of data bytes to control the *on* and *off* function of the 'trigger key', enter a hex value in the *Trigger On Sequence* and the *Trigger Off Sequence* fields. When you press the trigger key, the *Trigger On Sequence* is sent and when you release the trigger key, the *Trigger Off Sequence* is sent, turning the trigger key *on* and *off*.

Storage Manager

The Storage Manager allows you to view information about the storage devices that are present in the VH10.

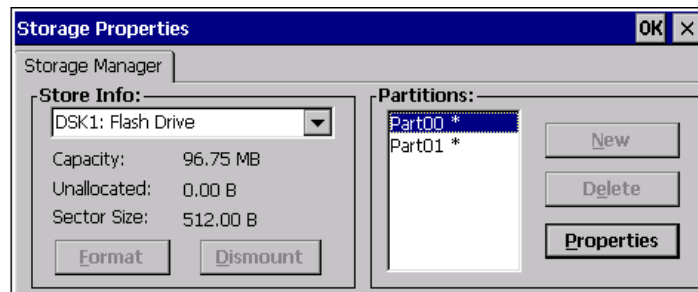


Formatting a Memory Card

Formatting a memory card bulk-erases it. Once a card is erased, partitions may be created in it, similarly to those on a hard drive. Memory-card devices are normally 'mounted' (made available to the system) automatically when they are inserted. They must be dismounted before they can be formatted.

To format an entire memory card:

1. Select **Start> Settings>Control Panel**.
2. In Control Panel, double-click on the **Storage Manager** icon. The Storage Manager menu opens:



3. Select the memory card from the drop-down list.
4. Press the **Dismount** button to dismount the memory card. All partitions on the card will be dismounted.
5. Press the **Format** button to format the memory card.

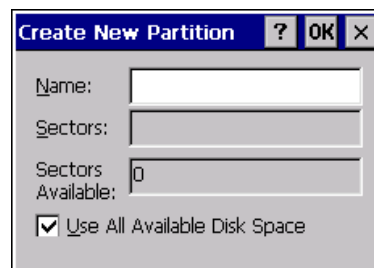
All partitions and information on the card will be erased during the formatting process.

Creating Partitions

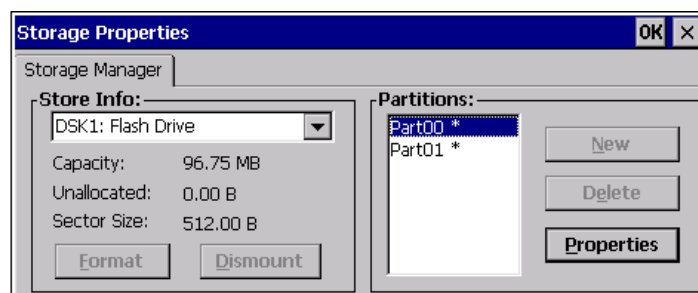
Once the card is formatted, new partitions can be created in it. The default is to create one partition that occupies the whole card, but a card can be divided into more than one partition if desired. Each partition appears as a separate folder in Windows Explorer.

To create new partitions:

1. Press the **New** button next to the *Partitions* list box. The Create New Partition dialog box appears:



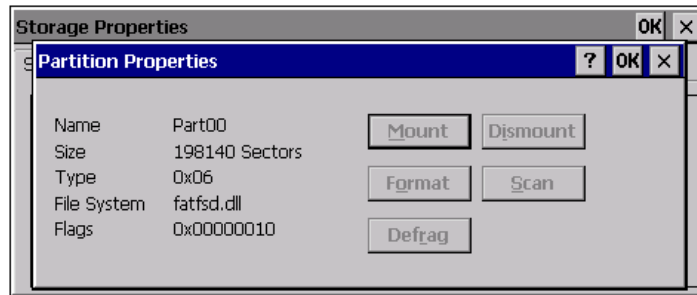
2. Type a name for the partition.
3. If more than one partition is desired, uncheck the *Use All Available Diskspace* check box, then specify the desired number of sectors to be used by the partition.
4. Press **OK**. The new partition appears in the *Partitions* list.



The new partition is automatically mounted. This is indicated by an asterisk (*) next to its name in the partition list. Any unallocated space on the card is indicated at the left, and additional partitions can be created in it.

Partition Management

Partitions can be individually dismounted, mounted, deleted, or formatted as well. These and additional tasks are available from the *Partition Properties* dialog:



To dismount a partition:

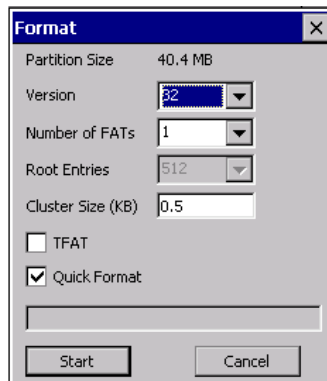
1. Choose the desired partition.
2. Tap the **Properties** button. The *Partition Properties* dialog appears.
3. Tap the **Dismount** button. The partition is dismounted. The asterisk disappears next to its name in the partitions list.

To delete a partition:

1. Select the desired partition.
2. Tap the **Delete** button. A warning dialog appears.
3. Tap the **OK** button. The partition is deleted.

To format a partition:

1. Choose the desired partition.
2. Tap the **Properties** button. The *Partition Properties* dialog appears.
3. Tap the **Dismount** button. The partition is dismounted. The asterisk disappears next to its name in the partitions list.
4. Tap the **Format** button. The *Format* dialog appears:



5. Choose your format options. These options include:
 - Version of file system (FAT-16, for devices holding up to 4 GB; or FAT-32, for devices containing up to 32 GB).
 - Number of FATs (File-Allocation Tables).
 - Number of entries allowed in the root directory.
 - Cluster size (.5 KB to 64 KB).

There are also two check boxes, which govern:

- Whether to use the transaction-safe FAT file system (TFAT). This file system keeps multiple copies of the file-allocation table, changing one while maintaining another as a backup.
- Whether to perform a quick format. Quick formatting removes all reference to data in the partition without erasing the actual partition. The partition will be treated as empty, and new data will overwrite it.

6. Tap **Start**. The partition is formatted.

To mount a partition:

1. Choose the desired partition.
2. Tap the **Properties** button. The *Partition Properties* dialog appears.
3. Tap the **Mount** button. The partition is mounted. The asterisk appears next to its name in the partitions list.

The Partition Properties dialog has buttons for additional functions. Partitions can be defragmented, and their file structure can be scanned.

Stylus Properties



NOTE Touchscreen calibration may not be enabled on your unit. If your screen appears to require recalibration, contact your supervisor.

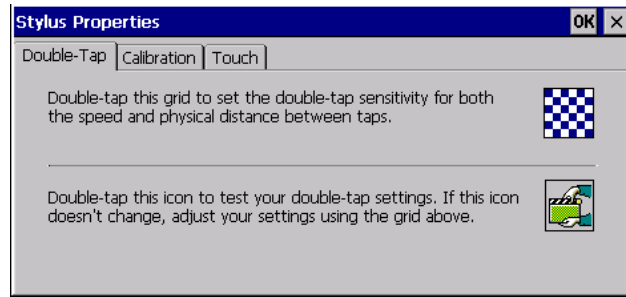
- In the *Control Panel*, choose the **Stylus** icon.



Stylus

Double-Tap

- In the *Double-Tap* menu, follow the directions to tailor the sensitivity of the stylus when you tap on the touchscreen.



Calibration

Touchscreens rarely require recalibration. However, if your touchscreen has never been calibrated or if you find that the stylus pointer is not accurate when you tap on an item, follow the directions below.

1. Choose the **Calibration** tab, and then tap on the **Recalibrate** button.



2. Follow the directions in the *Calibration* tab to recalibrate the screen. You will be prompted to save the calibration data.



IMPORTANT If you do not receive a prompt to save your data, there could be a problem with your touchscreen hardware. Contact your representative.

Touch

This tab allows you to disable the touchscreen.

- Choose the **Touch** tab. Select the check box next to *Disable the touch panel*.

System Properties

This program identifies the computer's software and hardware components, indicating which components are installed, their identification, version or part numbers, and whether they are enabled or disabled.

- In the *Control Panel*, choose the **System Properties** icon.





- By choosing the *Export* button, you can create a log (*SystemProperties.xml*) of your current components, which will be placed in the *My Device* folder in Windows Explorer.
- Instead of expanding each section of items individually, you can also choose to open all the lists at once by choosing the *Expand* button, which will then change to a *Collapse* button to enable you to collapse all the sections as well.

Total Recall

Total Recall is a custom utility developed to maintain applications and settings during a cold boot, as well as clone settings to other devices. This utility creates a restore point of a device at a known state. This can be used as a backup of the device (the administrator can clean the terminal and restore the profile at any time), or a clone (the administrator can store different configurations for different uses to clone to other Vehicle-Mount computers).



NOTE Total Recall works differently (e.g. restore on cold boot or on clean boot) on different OS platforms and versions (e.g. Windows CE 5.0, 6.0, Windows Mobile, Windows Embedded Vehicle-Mount). For detailed information and other updates on Total Recall information, please go to the IngenuityWorking website at:

<http://www.ingenuityworking.com/knowledge/w/knowledgebase/total-recall.aspx>

- In the *Control Panel*, choose the **Total Recall** icon.



In the startup up screen, you can choose from four options: *Create Backup*, *Create Clone*, *Manage Profile*, and *Delete Profile*.

Creating a Backup

- Tap on the **Create Backup** button to begin the process.



This dialog box displays the Profile Name and the storage destination for the profile file.

- In the *Profile Name* field, type a name for a profile.
- If you want to choose another location for your backup file (optional), tap on the [...] button to the right of the *Profile Location* field and choose one of a number of folders.



IMPORTANT Store profiles on a persistent drive since profiles not stored in persistent memory (Flash Disk, external USB drive) will be erased during a clean boot.

When performing an autorestore, the program only searches for the profile located in the \\Flash Disk\\TotalRecall folder. If you store your profile anywhere else it will not be restored. Only one profile can reside in that folder.

- Tap on **Start**. A backup of the current settings will be created and saved to the specified location. The unit will then reboot.

To view profiles and choose restore options, refer to [Managing Profiles on page 3-61](#).

Creating a Clone

Cloning allows you to copy settings or configurations from one computer to another. There are two types of clones to choose from: a *Full Clone* and a *Settings Only Clone*.

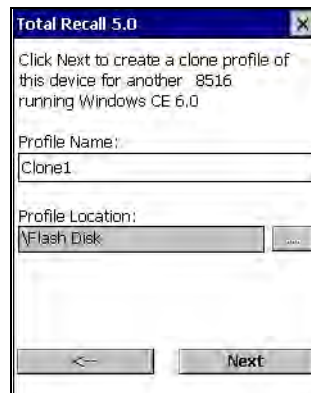
A *Full Clone* contains all files, most of the registry, and the settings files.



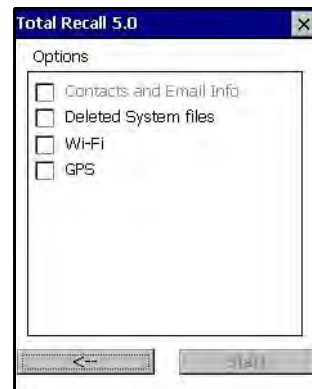
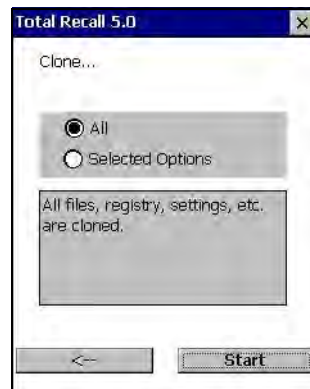
IMPORTANT The target device for a Full Clone **MUST** have the same model type and OS build as the source, otherwise problems can occur. For example, if the target device has a newer build of the OS, the new build may have a different set of registry keys that may conflict with the source.

A *Settings Only Clone* can be copied to a wider array of devices, but it should not be used as an autorestore profile.

- Tap on the **Create Clone** button to begin the process. Your VH10 model type and OS will be identified in the cloning statement to ensure that you target devices of the same type. Give the clone profile a name and location, then tap on **Next**.



- In this menu, select **All** for a *Full Clone*, or **Selected Options** for a *Settings Only Clone*. If you choose *Selected Options*, a menu will open to enable you to decide which options you want cloned.

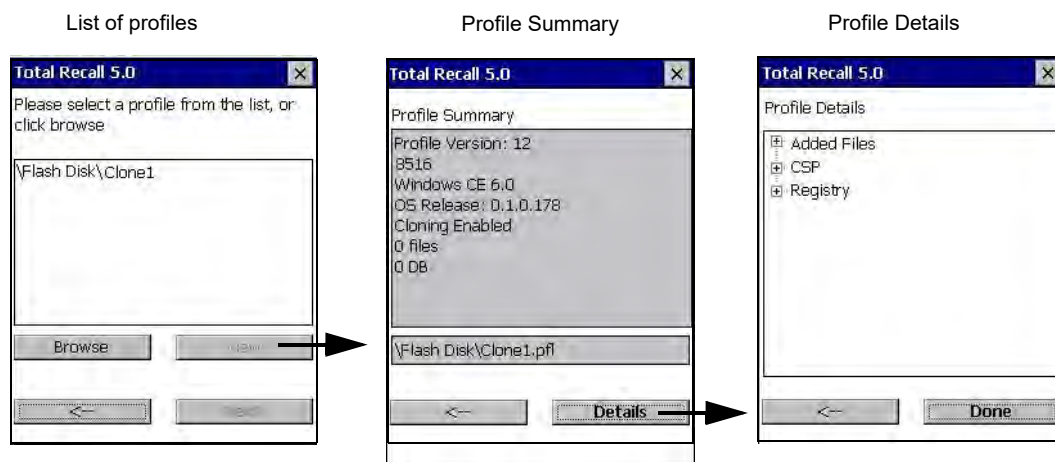


Managing Profiles

You can view profiles and choose profile options from the menus in this section.

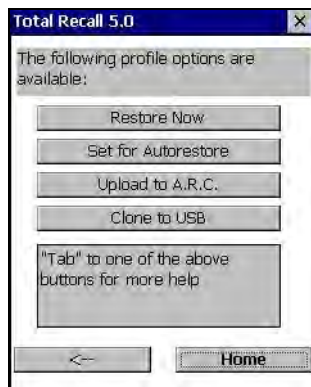
Viewing a Profile

- Tap on the **Manage Profile** button to see your list of profiles. Highlight a profile, and then you can choose to **View** the Profile Summary and go on to the next menu, Profile Details.



Profile Options

- Tap on the **Manage Profile** button to see your list of profiles, as shown above. Highlight a profile, and tap on the **Next** button to choose from options to restore or clone the profile. You can choose from four profile options: *Restore Now*, *Set for Autorestore*, *Upload to A.R.C.*, and *Clone to USB*.



- Next, tap on the option button you want to use:
- **Restore Now** – restores the profile immediately. If you are restoring a profile that is a backup or Full Clone, the computer will clean reset first; if the profile is a Settings Only Clone, it will not.
- **Set for AutoRestore** – creates a profile that is automatically restored following a cold reset or a clean start. The profile is stored in the *\Flash Disk\TotalRecall* folder.

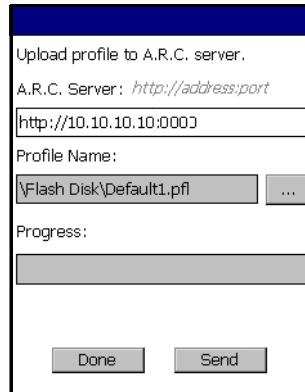


IMPORTANT After setting an autorestore profile, that profile will overwrite any other profile already placed in the *\Flash Disk\TotalRecall* folder.

In an autorestore, Total Recall only restores the profile located in the *\Flash Disk\TotalRecall* folder. If you store your profile anywhere else it will not be restored.



- Upload to A.R.C** – uploads the profile to the Active Remote Configuration server. After you tap on **Send**, a message will come up either confirming that the upload was complete or that the connection to the server failed.

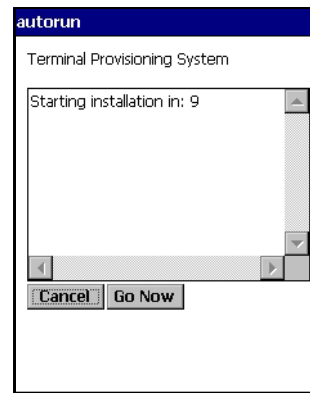


- Clone to USB** – writes a clone of the profile to the USB drive. After you tap on the button, a message will come up either confirming that the USB drive is ready for deployment, or that it is not available.
- When you are ready to install the profile on another unit, turn on the next computer to be cloned and insert the USB key. The profile will be automatically installed to the computer's *Flash Disk\TotalRecall* folder. There is a short delay in deployment so that you can cancel the process if needed.

USB drive prepared for cloning



Autorun installation on next VH10



Deleting a Profile

- In the *Total Recall* home screen, tap on **Delete Profile**.
- In the next screen, locate your backup file, and tap on **OK**.



A warning pop-up screen appears asking if you're certain that you want to delete this file.

- Tap on **Yes** to delete the file.

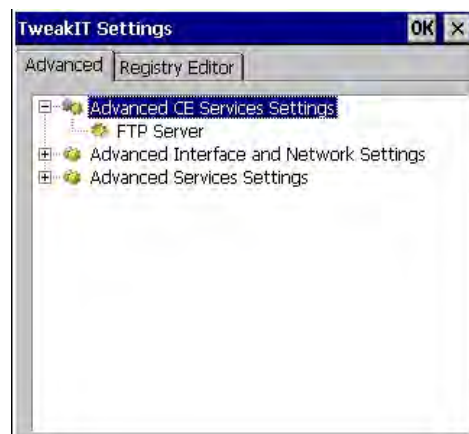
TweakIt



This utility allows you to 'tweak' or adjust *Advanced* system settings (interface, network, servers, driver, and radio) and provides a *Registry Editor*.

Advanced

Advanced CE Services Settings

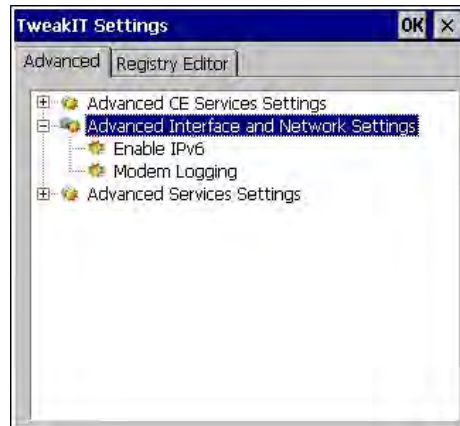


FTP Server

This option is enabled by default to allow file transfers. Keep in mind that data transfer in either direction is restricted to the Temp folder — that is, data are always loaded from the *FTP Server* to the *Temp* folder and from the *Temp* folder to the *FTP Server*.

If this option is disabled, a warm reset must be performed to accept the change.

Advanced Interface and Network Settings



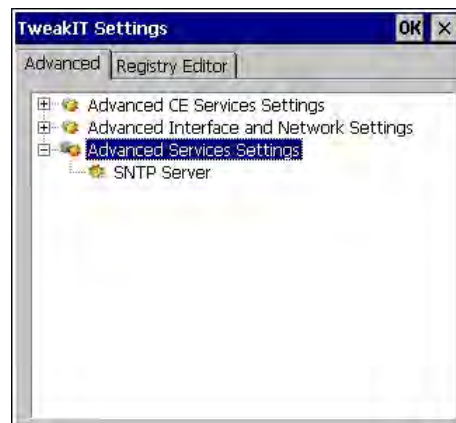
Enable IPv6

This option allows you to enable Internet Protocol specification, version 6, that has been published to enable 128-bit IP addresses (replacing version 4).

Modem Logging

When this option is enabled, the VH10 logs AT commands (e.g., dial-out information, password string, etc.) that the administrator can monitor for debugging purposes. Modem commands are stored in: \MdmLog.t.

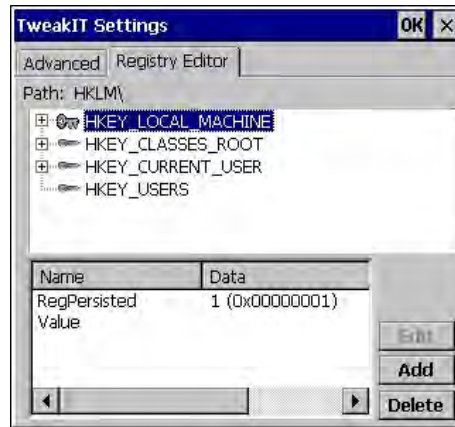
Advanced Services Settings



SNTP (Simple Network Time Protocol) Server

The *SNTP Server Name* typed in this dialog box is used to synchronize VH10 time with the server time. A warm reset must be performed once the server name has been entered.

Registry Editor



This option is reserved for senior administrators who have a strong understanding of registry keys and values.



WARNING! Careless registry editing can cause irreversible damage to the VH10.

Volume & Sounds Properties

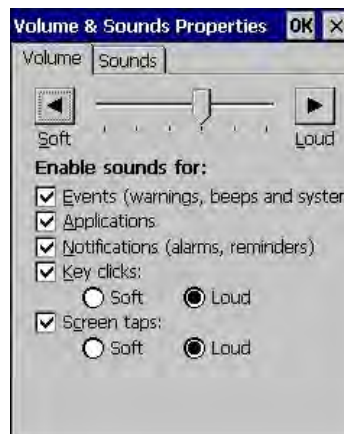
The VH10 has a beeper that is used for the standard sounds: key clicks, screen taps, and scanning.

✓ **NOTE** Sounds (wave files) cannot be played on VH10 units. The conditions under which the VH10 emits sounds are tailored from within the application installed on your unit. Therefore the options in the Sounds menu are not available.

- In the *Control Panel*, choose the **Volume & Sounds** icon.



Volume Adjustments



- Slide the volume button to the left to lower the volume or to the right to increase the volume.

- Under the heading *Enable sounds for*, enable the conditions under which you want the Vehicle-Mount to emit a sound.

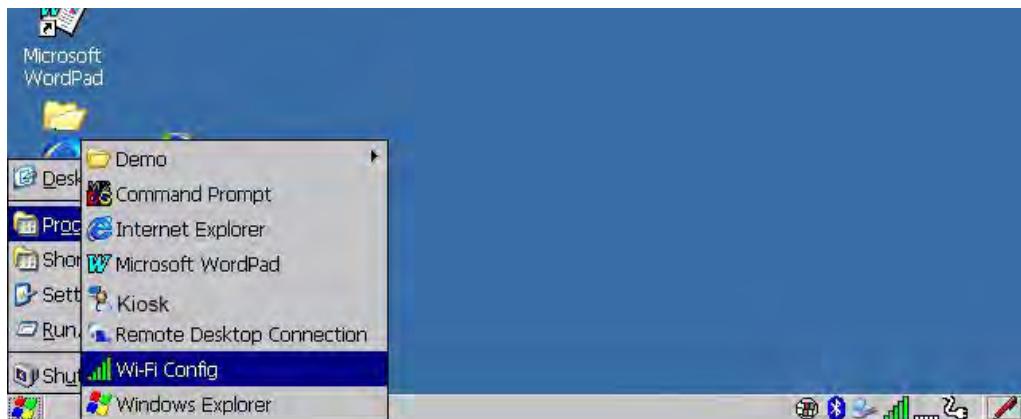
Wi-Fi Config

The *Wi-Fi Config* application is used to configure the VH10 802.11a/b/g/n radio for one or more wireless network profiles. A network profile contains settings for SSID (Service Set Identifier) and security options.

- ✓ **NOTE** In most situations, the configuration of your 802.11 radio will require parameter setting and access keys from a network administrator.

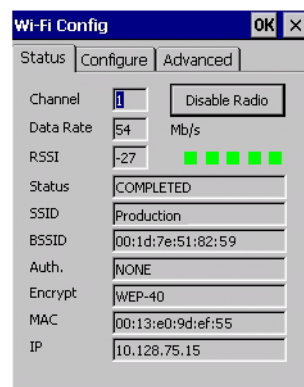
To launch the *Wi-Fi Config* application:

- Tap on **Start>Programs>Wi-Fi Config**. The *Wi-Fi Config* screen is displayed.



Wi-Fi Config: Status

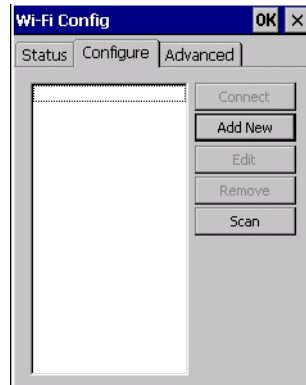
The *Status* tab displays information about the wireless network to which the VH10 connects. When there are no network profiles configured, this tab is not populated.



Disable/Enable Radio: This button toggles between *Disable Radio* and *Enable Radio* depending on whether the radio is turned off or on.

Wi-Fi Config: Configure

- To configure the radio for a wireless network, tap on the **Configure** tab.



Connect: Used to connect to an already existing wireless network configuration.

Add New: Used to create a new wireless network configuration.

Edit: Used to change values in an already existing wireless network configuration.

Remove: Used to delete a wireless network configuration.

Scan: There are two methods available when configuring a radio network — you can either scan for an existing network or manually create a network. If you tap on the **Scan** button, a list of networks detected by the radio is displayed. Highlighting one of the listed networks and tapping on the *Add New* button creates a new profile that is completed based on the security capabilities detected by the radio. You may need to add additional information, depending on your network requirements.

Manually Creating a Network

If you tap on the **Add New** button rather than the *Scan* button, you can create a network manually.



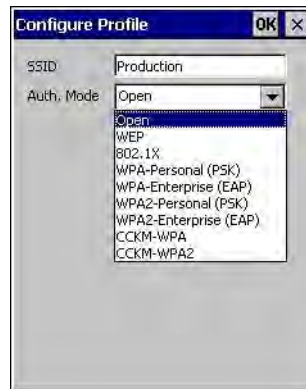
IMPORTANT The steps below describe how to manually create a network. Keep in mind that this is intended only as an example and may vary from your own network requirements. If, for example, you are using a different type of security for your network, the fields you complete may not match those described here.

- Enter the **SSID** (Service Set Identifier) for your network.



Authentication Mode

The VH10 supports several classes of authentication — *Open*, *WEP*, *WPA/WPA2 (Personal PSK, Enterprise, CCKM-WPA, CCKM-WPA2)*, and *802.1x with EAP*. Tapping on the *Auth. Mode* menu displays your authentication options.



NOTE Each Auth. Mode has a unique *Configure Profile* screen attached to it with fields appropriate to the authorization mode you've chosen.

Open Authentication

Open authentication does not provide security. When this option is chosen, the VH10 will connect to wireless networks which do not use authentication or encryption.

WEP (Wired Equivalent Privacy)

WEP provides static security to prevent others from accidentally accessing your network. If you choose this option, you can specify the type of WEP authentication — *Open* or *Shared*, the WEP security key length — *64 bit* or *128 bit*, and the key type — *ASCII* or *Hex*. WEP Key fields are also provided where you can specify a 5 or 13 ASCII character sequence or an equivalent 10 or 26 Hexadecimal digit sequence that matches the active WEP key on the access point.

WPA & WPA2 Personal PSK (Pre-Shared Key)

When PSK is selected, either *WPA Personal PSK* or *WPA2 Personal PSK* — a shared key must be configured on both the access point and the Vehicle-Mount computer. One of the following can be chosen from the *Encryption* drop-down menu: *TKIP*, *AES* or *TKIP+AES*.

802.1X, WPA & WPA2 Enterprise, CCKM-WPA & CCKM-WPA2

These authentication modes use *802.1X* with *EAP* authentication. When *802.1X* is selected, the VH10 uses *WEP* encryption with automatic (as opposed to static) keying. For the others, the user may choose *TKIP*, *AES* or *TKIP+AES* encryption.

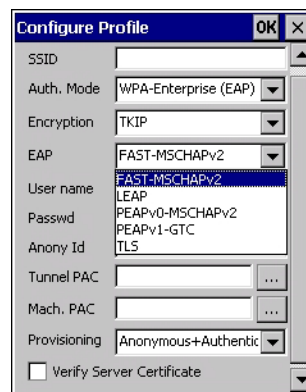
Encryption

The *Encryption* menu allows you to choose the type of encryption that will be used to protect transmitted data. Choose an *Encryption* method valid for your network from the drop-down menu. Only the *Encryption* options that are compatible with the type of *Auth. Mode* you've chosen will be listed. In fact, in some cases, this menu will not be available at all.



EAP

This menu allows you to choose the *EAP* (Extensible Authentication Protocol) type used for 802.1x authentication to an access point.



The following EAP types are supported by *Wi-Fi Config*:

- **TLS:** Provides strong security by the use of client certificates for user authentication.
- **PEAPv0-MSCHAPv2:** Provides secure user authentication by using a TLS tunnel to encrypt EAP traffic. *MSCHAPv2* is used as the inner authentication method. This is appropriate for use against Windows Active Directory and domains.
- **PEAPv1-GTC:** PEAP authentication using GTC as the inner method which utilizes one time passwords (OTPs) for authentication against OTP data bases such as SecureID.
- **LEAP:** Is an authentication method for use with Cisco WLAN access points. LEAP does not require the use of server or client certificates. LEAP supports Windows Active Directory and domains but requires the use of strong passwords to avoid vulnerability to off-line dictionary attacks.
- **FAST-MSCHAPv2:** Is a successor to LEAP and does not require strong passwords to protect against off-line dictionary attacks. Like LEAP, EAP-FAST does not require the use of server or client certificates and supports Windows Active Directory and domains.
- Complete the fields in the **Configure Profile** screen. If you're uncertain about some of the options, your system administrator will be able to provide the correct information for your wireless network.
- Once you've completed the necessary fields, tap on **OK**.

Verify Server Certificate

When the *Verify Server Certificate* box is checked, the VH10 will verify the certificate provided by the authentication server during the authentication process. This requires that an appropriate certificate be manually installed on the VH10 for the verification.

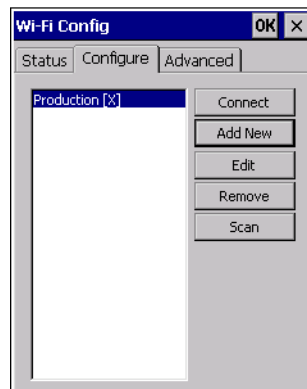
Enable OPMK

When used with compatible wireless infrastructure, Opportunistic Key Caching (OPMK) reduces the number of full authentications required when roaming. Only available with WPA2-Enterprise (EAP) authentication mode.



Connecting the Wireless Network

Your configured network is listed in the *Configure* tab. An [X] next to a network indicates that this is the network to which the VH10 will connect.



- Tap on the **Connect** button to activate your network.

The *Status* tab is displayed. The *Status* field displays *ASSOCIATING* while the 802.11a/b/g/n radio attempts to connect to the network. Once the association is complete, the *Status* tab is populated with the appropriate information about your network.



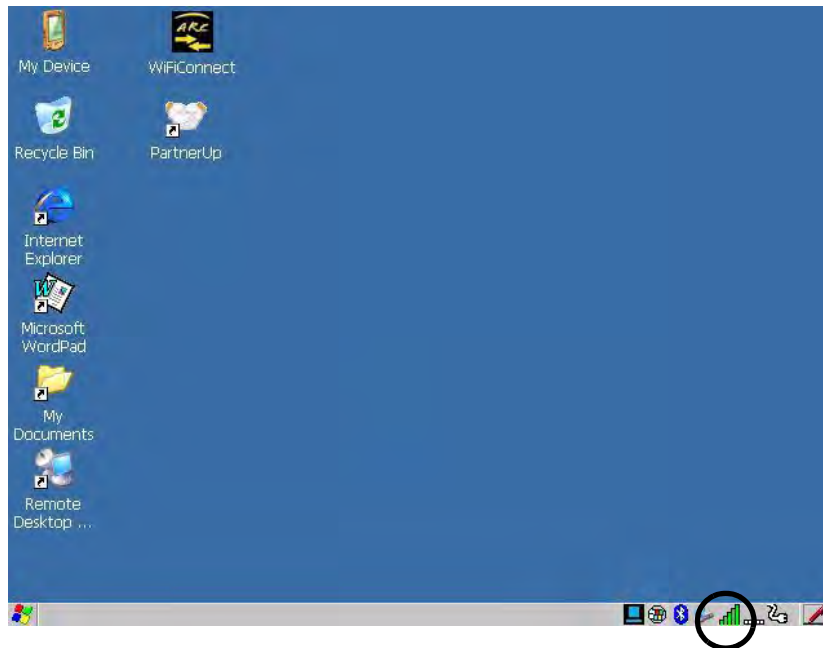
Configuring TCP/IP

If your network is not using a DHCP server, you will need to assign an IP address.

IP Address

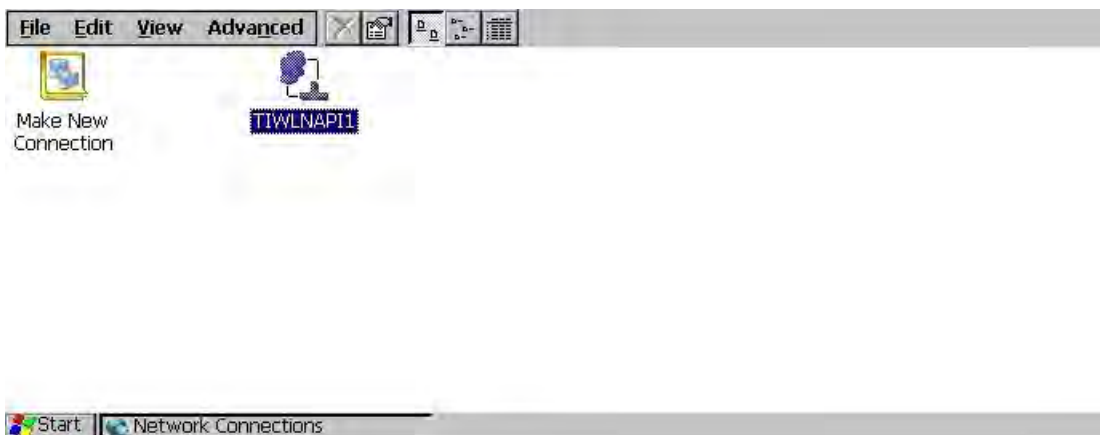
To assign an *IP address* for your VH10:

- Tap on the **radio icon** in the taskbar,



or

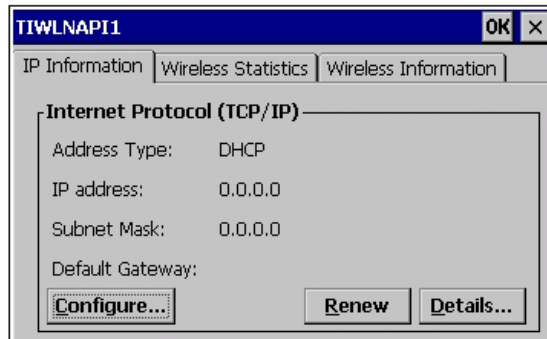
Tap on **Start>Settings>Network and Dial-up Connections**. Tap on the **radio icon** for which you want to assign an IP address — in the sample screen below, the icon is labelled *TIWLNAPI1*.



The *Wireless Statistics* screen is displayed.

- Tap on the **IP Information** tab.

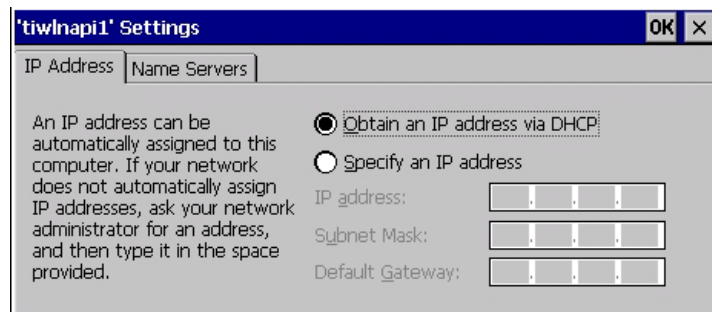
Figure 3-6 *TIWLNAPI1 IP Information*



NOTE When DHCP is enabled, tapping the **Renew** button forces the VH10 to renew or find a new IP address. This is useful if, for example, you are out of communication range for a longer period of time and your Vehicle-Mount is dropped from the network.

To define a static IP address:

- Tap on the **Configure** button.



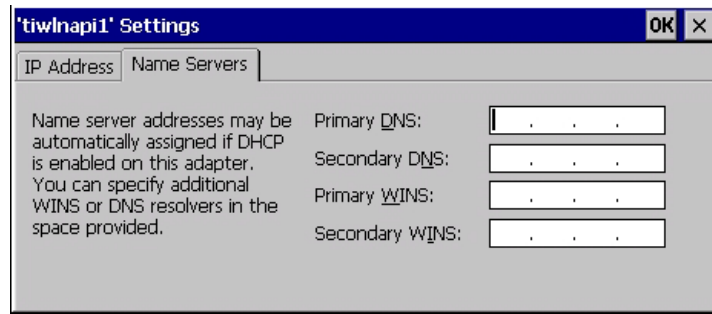
- Tap on the radio button next to **Specify an IP address** to select it.
- Type an **IP**, **Subnet Mask** and **Default Gateway** address in the appropriate fields. Press **[ENTER]** to save your information.

Name Servers



NOTE If DHCP is enabled, name server addresses are assigned automatically.

- In the *TIWLNAPI1 IP Information* tab (see [Figure 3-6 TIWLNAPI1 IP Information](#)), tap on the **Configure** button.
- Tap on the **Name Servers** tab.



The DNS and WINS fields in the *Name Servers* tab allow you to specify additional WINS and DNS resolvers. The format for these fields is ###.###.###.###.

Wi-Fi Config: Advanced

Country Options



IMPORTANT 802.11d is enabled by default for auto-country detection. If you are having difficulty associating with your access point, you may need to disable 802.11d and choose your country.

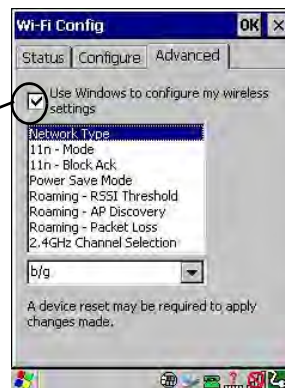
In the *Wi-Fi Config>Advanced* tab, choose **Country Option**. In the drop-down menu, choose your **country**.

Use Windows to configure my wireless settings (Wireless Zero Config)

If you prefer to use *Wireless Zero Config*, the Windows native supplicant, to configure the radio:

- Tap on the check box to the left of **Use Windows to configure my wireless settings** to enable this option.

Tap here to add a checkmark to activate the Windows radio configuration.



Network Type

This option allows you to select the full set or a sub-set of the IEEE 802.11 wireless network protocols. You can choose from the following:

- **b only**: forces the radio to operate in the 2.4 GHz band only. The computer will only associate with an Access Point (AP) that supports the DSSS data rates 1, 2, 5.5 & 11 Mbps. This mode has the lowest data rate but yields the longest range.
- **b/g**: forces the radio to operate in the 2.4 GHz band only. The VH10 will only associate with an AP that supports the DSSS data rates 1, 2, 5.5 & 11 Mbps and OFDM data rates: 6, 9, 12, 18, 24, 36, 48, 54Mbps. This mode offers the same range as *b only* mode but with higher data rate of 54 Mbps when possible.

- **a only:** forces the radio to operate in the 5 GHz band only. The computer will only associate with an AP that supports the OFDM data rates: 6, 9, 12, 18, 24, 36, 48, 54 Mbps.
- **a/b/g:** forces the radio to operate in the 2.4 and 5 GHz bands, and will associate with an AP that supports the data rates for DSSS and OFDM.

11n Mode

This radio supports MIMO data rates in both 2.4 GHz and 5 GHz band (although it only supports single stream operation (SISO)). This increases the maximum data rate to 65 Mbps.

- **Enabled:** If this option is enabled, it is activated for the band or bands that were selected in *Network type*. For example, if *Network Type = b only*, 11n is only switched on for the 2.4GHz band.

11n – Block Ack

When **11n – Block Ack** is enabled, the VH10 will not send an ACK for every packet received, but it will send an ACK after a block of data is received. The duration of time before sending an ACK is negotiated with the access point.

Power Save Mode

If **Power Save Mode** is *disabled*, the radio remains on continuously, able to respond instantly to TCP/IP traffic. The disadvantage of disabling this option is increased power consumption.

When this option is *enabled*, the radio will go to sleep, and wake up periodically to check for queued messages from the access point.

Roaming - RSSI Threshold

This sets the RSSI threshold value, below which the radio will start scanning for new access points when roaming. Values range from -60 to -80 dBm.

Roaming - AP Discovery

This parameter controls how aggressively the device scans for new access points, normal or fast.

Roaming - Packet Loss

This parameter controls how many packet failures will trigger a roaming event. Leaving the value at **Normal** is the standard default baseline that works well in most cases. Changing the value to **Aggressive** will cause the roaming attempts to be more aggressive — fewer packet losses will trigger the roam attempt.

2.4GHz Channel Selection

This limits the number of channels that the radio will scan for the selected WLAN network SSID. By limiting the number of channels that the radio has to scan, response time is improved during roaming.

Concluding the Wi-Fi Configuration

If you've made changes in the Advanced menus, you will need to warm reset your VH10.

- Choose **Start>Shutdown>Warm Reset**.
- A dialog box is displayed letting you know that you will lose all unsaved data. Tap on **OK**.

Once the reset is complete, if you checked the box next to **Use Windows to configure my wireless settings**, the *Wireless Zero Config* screen is displayed on the computer. Refer to [Appendix C: Wireless Zero Config Settings](#) for details.

Monitoring the Network Connection

The radio signal icon in the taskbar indicates the strength of the communication link with an 802.11 access point.

To access the radio signal icon:

- Tap on the radio icon in the taskbar to display the wireless statistics dialog box.

To access the radio signal icon using the keyboard:

- Press the **[BLUE][MENU]** key to display the *Start Menu*.
- Highlight **Shortcuts** and then choose **System Tray** from the sub-menu.
- Use the **[LEFT]** and **[RIGHT]** arrow keys to highlight the **radio signal** icon in the taskbar.
- Press **[ENTER]** to display the *Wireless Statistics* dialog box.



NOTE Moving in and out of the radio coverage area can have varying effects on a network session. At times, you may need to renew your connection by logging in again.

WiFi Connect A.R.C.

The WiFiConnectARC utility on the desktop provides a quick method to configure a device for use on a private network, primarily for use with Active Remote Configuration (A.R.C.).

When you click on this icon, WiFiConnect A.R.C. configures the default WiFi interface. The WEP key is set to **PsionPsion123**. The SSID is set to **Psion**. The default interface becomes the active interface. Keep in mind that you must configure the access point and the Vehicle-Mount(s) to use the same settings.

Refer to the *Active Remote Configuration (A.R.C.) Administrators Guide*, PN 8000252, for details about updating devices on your network. This manual is available at:

<http://www.ingenuityworking.com/knowledge/w/knowledgebase/1189.a-r-c-active-remote-configuration.aspx>



CHAPTER 4 ACCESSORIES

Accessories

There are several VH10 accessories to help you work effectively, safely, and comfortably.

Antennas

Accessory	Model Number
Antenna, dual band, 802.11 a/b/g/n, 2 dBi, reverse polarity SMA connector, magnetic mount, 2.9m	AN2010
Antenna, 2.4GHz, 802.11 b/g, 5 dBi, reverse polarity SMA connector, magnetic mount, 2.9m	AN2020
Whip antenna (stubby), dual band, 802.11 a/b/g/n, 2.4GHz 2dBi, 5GHz 3.7 dBi, reverse polarity SMA connector	AN2030
Right Angle SMA reverse polarity plug-jack adaptor	AR1000
Magnetic mount, SMA plug (cable) to SMA jack (antenna)	9009792
403-512 MHz quarter wave whip SMA female used with SMA magnetic mount	9009801

Mounts

Accessory	Model Number
Quick release mount	MT4200
Mounting plate for the MT4200 quick release mount	MT4205
Adaptor bracket kit for 82XX quick release mount	MT4210*
RAM rectangular base with 2.25" rubber ball	MT4510

Accessory	Model Number
RAM mount, 4" arm	MT4301
RAM mount, 12" arm	MT4302
VESA base (for 4" or 12" RAM arm)	MT3501
Circular base (for 4" or 12" RAM arm)	MT3502
Clamp base (for 4" or 12" RAM arm), 2" max. width	MT3505
Clamp base (for 4" or 12" RAM arm), 3" max. width	MT3507
Rail base (for 4" or 12" RAM arm), 1-1/4" to 1-7/8"	MT3509
Rail base (for 4" or 12" RAM arm), 2" to 2 1/2"	MT3510
Cantilever mount	MT1002
Heavy duty mount kit	MT3410

- ✓ If using the MT4210 Quick Release Adaptor, the VH10 Shock and Vibration specification is reduced from IEC 60721-3-5M3 to IEC 60721-3-5-5M2.

Power Supplies and Cables

Accessory	Model Number
100/240 VAC Power Supply	PS1450
Power cable adaptor CPC connector to 100/240 VAC power supply (for PS1450)	CA4000
Pre-Regulator, 24 - 90 VDC in, 15 VDC out, 90 W	PS1370
Power Extension Cable, DC, 6', waterproof	CA1210
Power Extension cable for pre-regulator	CA1230
Power Extension Cable, DC, 180 cm, with ignition sense	CA1220
Screen blanking cable (DB9 to open wires)	CA1300

Miscellaneous Accessories

Accessory	Model Number
Speaker/Mic with push-to-talk function	M1000
Screen Protector Pack	VA6200
USB-Ethernet Adaptor	WA4070

External Barcode Readers



CAUTION

Do not use tools to secure connector thumbscrews. Only tighten by hand.

The VH10 supports external hand-held decoded scanners and imagers connected via USB, RS-232, or Bluetooth.

Please refer to the scanner-specific programming manual provided by the manufacturer before you begin.

Entering Data with the Barcode Reader

✓ **NOTE** For helpful scanning tips, refer to [Scanning Techniques on page 2-7](#).

When a label is scanned successfully, the VH10 will beep if configured appropriately and the scan icon will be displayed on the screen. Occasionally, the barcode labels are poorly printed or damaged and cannot be read properly. In this case, use the keyboard to enter data from the label.

Bluetooth Peripherals

All VH10 Vehicle-Mount Computers are equipped with *Bluetooth* radios, making it is possible to communicate with a variety of *Bluetooth* peripherals, including scanners, printers, etc. The range of the *Bluetooth* radio in the VH10 is limited to between 2 – 5 meters.

Keep in mind that *Bluetooth* and IEEE 802.11a/b/g/n radios both operate in the 2.4GHz band. Although the VH10 includes features to minimize interference, performance of the system will not be optimal if you use both radios simultaneously. Typically, when both radios operate in the VH10 at the same time, they cannot transmit simultaneously — this has a negative impact on overall system throughput. To minimize the impact on the backbone 802.11a/b/g/n network, we recommends using *Bluetooth* peripherals that have low transaction rates (such as printers and scanners).

Bluetooth peripherals are configured using the *Bluetooth* Control Panel application. Refer to *Bluetooth*[®] [Setup on page 3-6](#) for information about setting up your *Bluetooth* devices for communication. In addition, review the manual shipped with your *Bluetooth* device to determine the method used to associate with the VH10 host.

Antennas

The currently available antenna options are illustrated in [Figure 4-1 VH10 Top Views: Possible Antenna Configurations on page 4-4](#). Antenna hardware is listed in [Figure 4-3 Antenna Hardware on page 4-5](#). For further information on 802.11b/g/n + *Bluetooth* co-existence, please see [Antennas on page A-6](#). To determine which option is best for your location, please discuss the details with your representative.

Possible VH10 Antenna Locations

Figure Notes

The Standard Radio is the WiFi a/b/g/n + *Bluetooth* v2.1 radio on the Moby MLB. No diversity. One antenna is used for 802.11b/g/n+*Bluetooth*, the other one is for 802.11a/n.



IMPORTANT If a magnetic mount antenna is used, it must be placed in a location that will balance the need for the VH10 to talk to the access points and also to the local **Bluetooth** peripheral being used.

Figure 4-1 VH10 Top Views: Possible Antenna Configurations

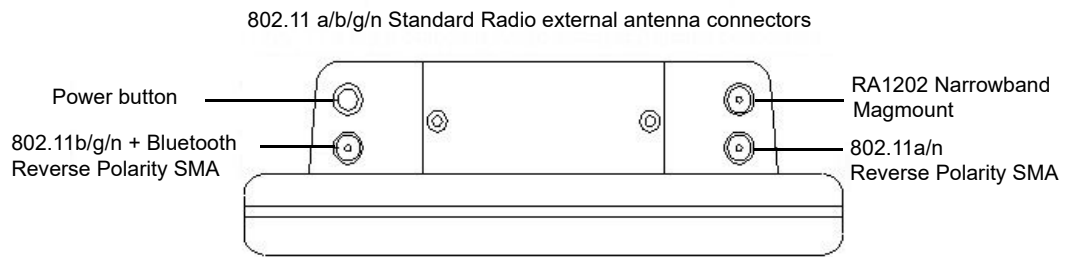


Figure 4-2 RA1202 Narrowband Antenna Hardware

Magnetic mount, SMA plug (cable) to SMA jack (antenna)
(PN 9009792)



*Note: It is recommended that a Magnetic Mount be used with the Narrowband radio.

403-512 MHz quarter wave whip SMA female used with SMA Magnetic Mount
(PN 9009801)



Figure 4-3 Antenna Hardware

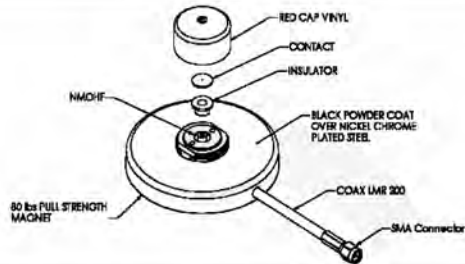
AN2010
Dual band WiFi antenna
(NMO male connector)



Magnetic base, part of
AN2010 and AN2020

(NMO female connector -
2.9m RPSMA plug pig tail)

(for use with NMO WiFi antenna)



Dual band WiFi
articulated whip antenna
(RPSMA plug connector)



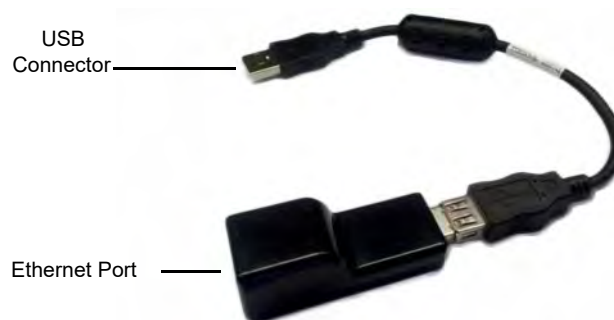
AN2020
2.4GHz 5dBi WiFi antenna
(shown installed on magnetic
mount base with 2.9m RPSMA plug pig tail)



Linking a VH10 to an Ethernet Network

A USB-Ethernet adaptor cable (Model WA4070) is used to connect the VH10 to an Ethernet network.

Figure 4-4 USB-Ethernet adaptor Cable



- Insert the adaptor USB connector into the Host USB port on the VH10.
- Connect your network Ethernet cable to the Ethernet port on the adaptor cable.

Network Access

The VH10 automatically loads the appropriate drivers to communicate with the USB-Ethernet converters.

Network Addressing

The host application uses standard TCP/IP protocol to name, locate, and communicate with a specific VH10 on the network.

If a link is established between a VH10 and a host, the application on the host and on the computer must have a recovery mechanism in the event that the VH10 is disconnected, interrupting the link.

VH10 Mounting Accessories



WARNING!

Failure to install the mount correctly, or modifications to the mount, may result in serious injury or damage to property. Contact Technical Support or your representative if you have problems installing this mount. To ensure operator safety, you must use a calibrated torque wrench and the supplied mounting hardware when fastening the computer and mount. Use of this mount in vehicles driven on public roads or highways is prohibited. Contact us for further details.

Before mounting a VH10 in a vehicle, there are a number of operator safety issues that require careful attention. When mounting a VH10 use only approved mounting hardware and mounting parts which are specific to the VH10 model purchased. An improperly mounted VH10 or use of non-approved parts may result in one or more of the following: operator injury, property damage, operator visibility obstruction, operator distraction, and/or poor ease of egress for the operator. We strongly recommend that you seek professional mounting advice from the vehicle manufacturer.

If it is necessary to mount the VH10 overhead, or in any position that could cause injury to the operator should the unit fall, it is critical that a secondary tether or other failsafe device be installed.

The following restrictions must be strictly enforced:

Do not use the mount and/or the VH10 as a hand-hold. Using the mount in this manner may cause the person to fall or dislodge the mounting hardware and/or mounts.

Do not add weight or attach any other items to the mount or VH10. Additional elements may fall causing injury, or may increase the chance of failure and/or damage in mounting hardware and/or mounts.

Mounts used in industrial or vibration generating environments may be subjected to fatigue, stress, and/or part wear. A periodic inspection of the mounting hardware and mounts should be performed to ensure parts are retightened to the correct torque, free of fractures, excessive wear, and/or other environmental damage. Any parts found to be unsafe should be removed and replaced immediately. After inspection or replacement of parts, readjust the mount as outlined in the pertinent sections below.

Cable routing within a vehicle cab also requires careful consideration, especially for separately connected scanners and other devices with loose cables. If you are unable to obtain suitable advice, contact us for assistance. Note also that for better protection, the equipment should be mounted inside the vehicle roll cage.

When charging the vehicle battery, the VH10 must be either disconnected from the battery or it must be determined that the maximum allowed input voltage of the VH10 is not exceeded.

**IMPORTANT** Safeguards:

To avoid possible injury, this device must be properly secured when in a moving vehicle.

Keep this device away from magnetic fields.

Do not place the computer near a television or radio receiver.

Do not disassemble your VH10 computer — there are no user-serviceable parts inside.

**IMPORTANT** VH10f Freezer Model Installation

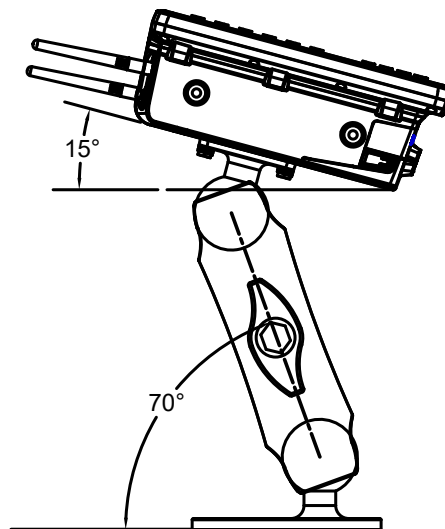
In order for sufficient drainage of the VH10f, the unit should sit at an angle of at least 30 degrees.

The MT43XX RAM Mount Kit

The VH10 may be installed using an articulating RAM Mount (Model MT43XX – 4 in. or 12 in. arm) secured to either a Vesa or circular base.

The RAM articulating mount can be installed in a variety of orientations (see [Figure 4-5 Orientation Of Vehicle-Mount Assembly on page 4-7](#)). Select the best orientation for your specific application. Preferred orientations maintain the centre of mass of the computer assembly, directly over the centre of the base.

Figure 4-5 *Orientation Of Vehicle-Mount Assembly*



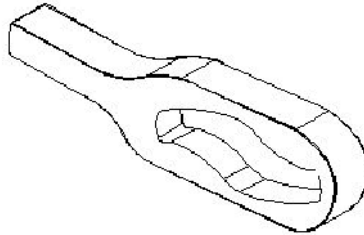
IMPORTANT The tilt and rotation of the computer can be easily adjusted by the operator. Make sure that neither the operator or any equipment will be damaged if the hand screw is loosened and the computer slips. Also note that under extreme vibration, the mount may slowly 'settle', requiring readjustment and tightening of the hand screw. A tightening tool is available (PN 9000594) that can be used to minimize settling.



IMPORTANT VH10f Freezer Model Installation

In order for sufficient drainage of the VH10f, the unit should sit at an angle of at least 30 degrees.

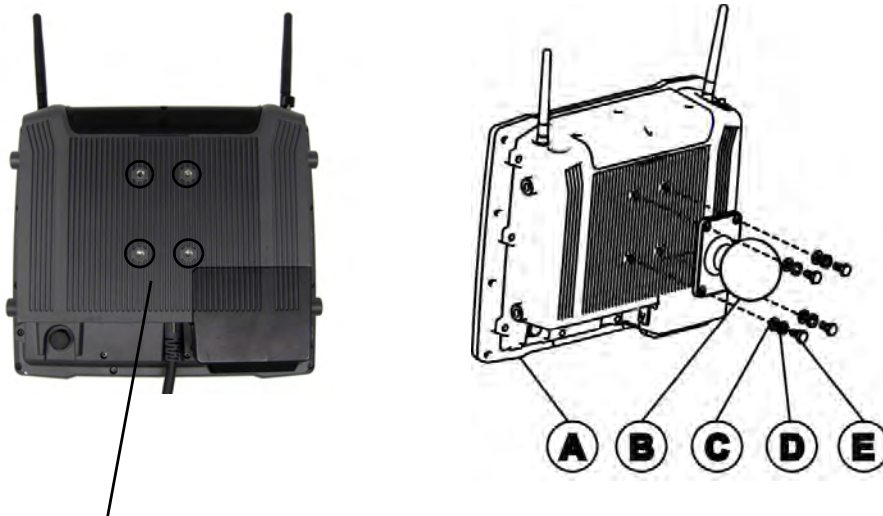
Figure 4-6 Tightening Tool P/N 9000594



The mounting platform on which you secure the computer must be strong enough to support 25 kg. Never attach the mount to a plastic dash or a wooden platform without the appropriate backing plate and bracing. When selecting a mounting location, you must provide the operator access at the top, bottom, and sides.

Installation

Figure 4-7 VH10 Vehicle-Mount Computer With RAM Base



Back of VH10 showing location of screw holes.

Figure Legend	Description	Part Number
A	VH10 Vehicle-Mount Computer	
B	RAM Base for D-size ball	1917729
C	Washer Flat	9010212

Attaching the RAM Base to the Computer

Figure 4-7 [VH10 Vehicle-Mount Computer With RAM Base](#) on page 4-8 and the associated table provide a diagram and a legend to help you attach the RAM base to the computer. The kit provides four screws and washers that are used to secure the base to the computer. To do this:

1. Apply Loctite[®] 243 to the screw threads (Note: Loctite is not supplied by us). Match the four screw holes on the back of the VH10 with the appropriate pairs of holes on the base, then attach them by inserting the Screw (E) through the Washers (C, D) and the RAM Base (B).
2. Torque to 26 in-lbs.

Securing the RAM Vesa or Circular Base to the Local Platform and Attaching the RAM Standard Arm

Use the supplied bolt hole pattern to drill the required holes in the local platform. Hole diameters must not exceed 10mm [13/32 inches]. Using appropriate hardware for your chosen location, secure the RAM Vesa or Circular Base to the local platform. All fasteners must use a suitable locking mechanism to ensure that they do not loosen under shock and Base vibration.

- If you are assembling with the RAM Vesa Base, see [RAM Vesa Base on page 4-9](#).
- If you are assembling with the RAM Circular Base, see [RAM Circular Base on page 4-9](#).

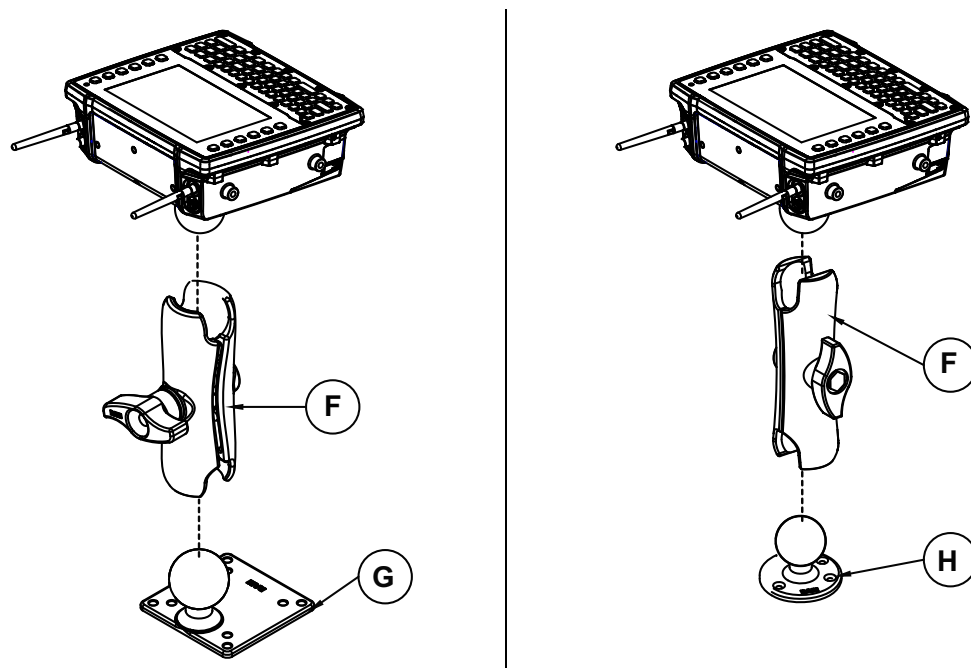
RAM Vesa Base

Refer to [Figure 4-8 RAM Vesa Base and RAM Circular Base](#) on page 4-9. In four places, secure the RAM Vesa Base (G) to the local platform with the appropriate hardware. Secure the RAM Standard Arm (F) by inserting the RAM Balls into both ends of the arm sockets.

RAM Circular Base

Refer to [Figure 4-8 RAM Vesa Base and RAM Circular Base](#) on page 4-9. In four places, secure the RAM Circular Base (H) to the local platform with the appropriate hardware. Secure the RAM Standard Arm (F) by inserting the RAM Balls into both ends of the arm sockets.

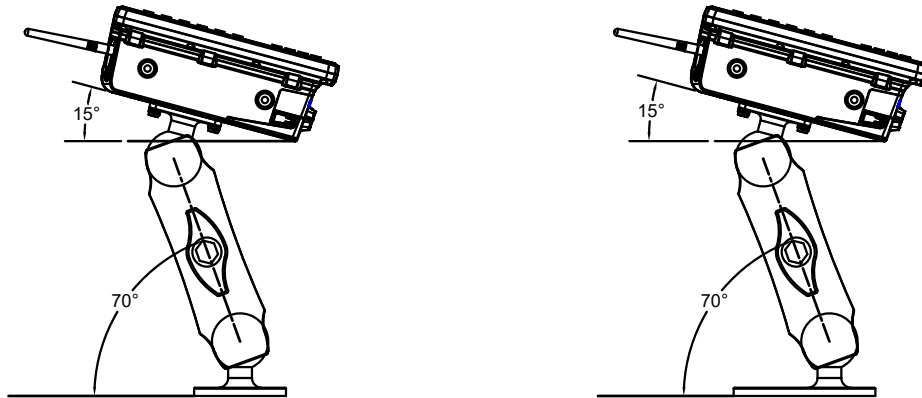
Figure 4-8 *RAM Vesa Base and RAM Circular Base*



Positioning the VH10

Place the VH10 into the position best corresponding to the RAM hardware used (see [Figure 4-9 Circular Base and Vesa Base Mount Orientations](#) on page 4-10) and tighten by hand until secure. Refer to [VH10 Mounting Accessories](#) on page 4-6 for warnings and proper tightening technique. Mount orientations shown in [Figure 4-9 Circular Base and Vesa Base Mount Orientations](#) on page 4-10 are considered the preferred configurations for the Circular Base to Platform and the Vesa Base to Platform.

Figure 4-9 *Circular Base and Vesa Base Mount Orientations*



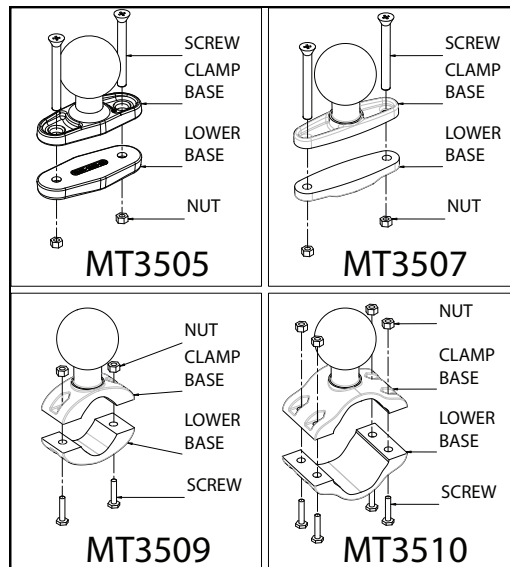
Optional Mount Kits

One of the mounting kits shown in [Figure 4-10 Optional Mount Kits](#) on page 4-10 may be substituted for the Vesa Base (G) or the circular base (H) when mounting to a post or forklift roll cage.

To Install:

Mount the Clamp Base and Lower Base around the shaft. Place the Screw through the Clamp and the Lower Base, and affix with the Nut. Torque to 26 in-lbs. Secure the RAM Standard Arm (F) by inserting the RAM Balls into both ends of the arm sockets.

Figure 4-10 *Optional Mount Kits*





IMPORTANT Plate bases are not recommended for forklift mounting solutions. If a plate rather than a clamp base is used, you will need to penetrate into the structure of the vehicle, a process requiring additional hardware. The following plate bases are available:

- VESA Plate - MT3501
- Circular Plate - MT3502

The MT3410 Heavy Duty Mount Kit

The VH10 may be attached to the MT3410 Heavy Duty Mount Kit and can be angled in three positions, as needed (see [Figure 4-15 Heavy Duty Mount Angles](#) on page 4-14).

The mounting platform on which you secure the computer must be strong enough to support 25 kg. Never attach the mount to a plastic dash or a wooden platform without the appropriate backing plate and bracing. When selecting a mounting location, you must provide the operator access at the top, bottom, and sides.

Mount Assembly

To assemble the Heavy Duty Mount, refer to the three figures that follow and the associated table:

- [Figure 4-11 Heavy Duty Mount with Blanking Plate and Bolts Assembly](#) on page 4-12.
- [Figure 4-12 Heavy Duty Mount with Blanking Plate and U-Bolts Assembly](#) on page 4-12.
- [Figure 4-13 Heavy Duty Mount Bracket Final Assembly](#) on page 4-13.

Figure Legend	Description	Part Number
A	Bolt 3/8-16 X 5"	9008853
B	Washer 3/8 Split Lock	9008835
C	Mounting Plate 1/4" Thick	31705-001
D	Heavy Duty Mounting Bracket	1008813
E	Nut 3/8-16	9008834
F	U-Bolt 5/16-18	31706 (Kit 31707)
G	Nut 5/16-18 Flanged Loc-nut	98036 (Kit 31707)
H	Screw M5X12 Hex Head	9012030
J	Washer M5 Flat	9012029
K	MT4210 Adaptor Bracket Kit for 82XX quick release mounts (must be ordered separately)	1918317
L	Nut M5 Lock	9012028
M	Washer M6 Flat, Stainless Steel	9010212
N	Washer M6 Split Lock, Stainless Steel	9010213
P	Screw M6X16 Hex Head, Stainless Steel	9013203

Figure 4-11 Heavy Duty Mount with Blanking Plate and Bolts Assembly

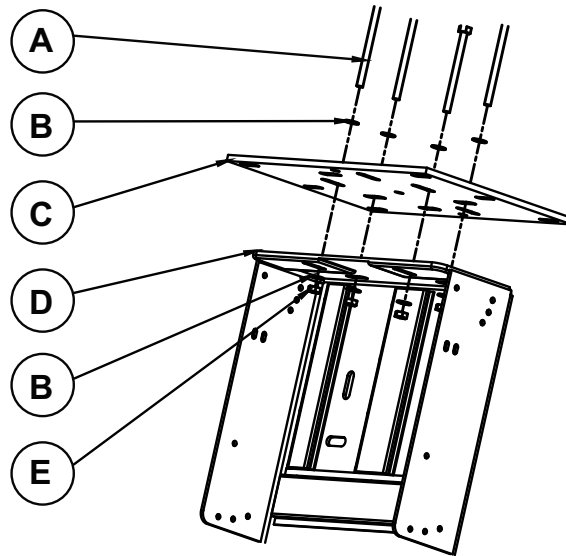


Figure 4-12 Heavy Duty Mount with Blanking Plate and U-Bolts Assembly

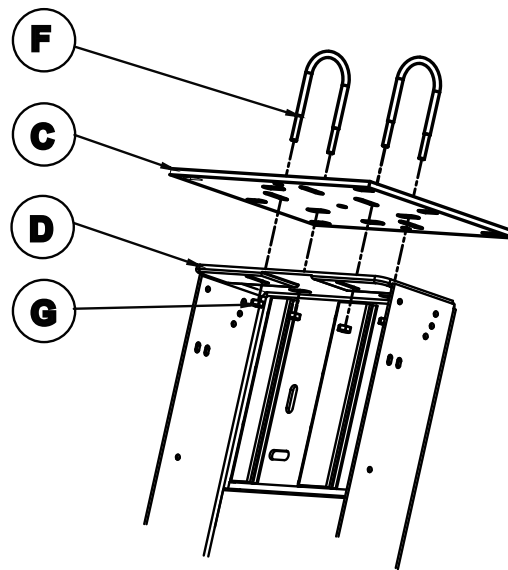
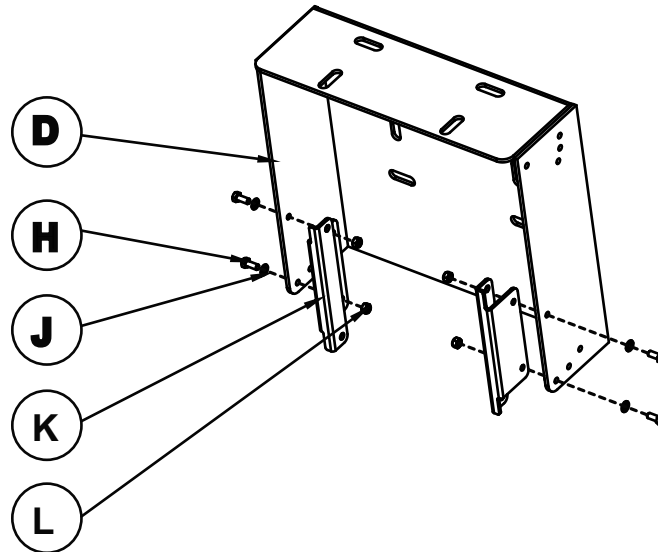


Figure 4-13 Heavy Duty Mount Bracket Final Assembly



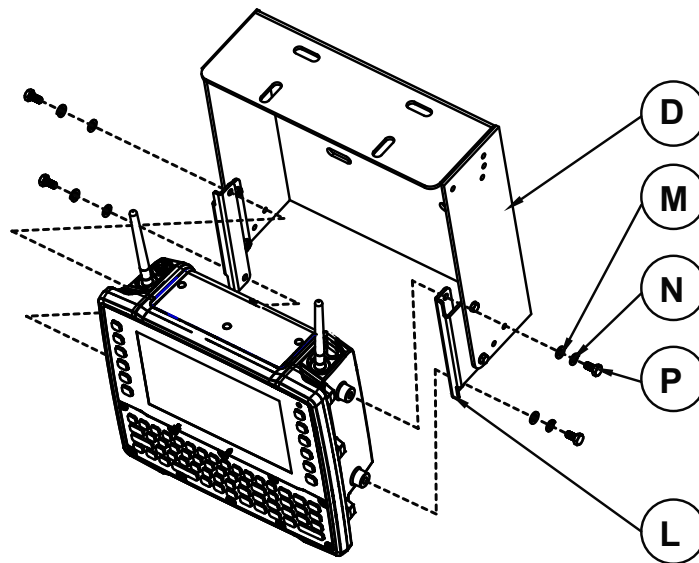
Attaching the VH10 to the Heavy Duty Mount

The kit provides four screws and washers that are used to secure the computer to the Heavy Duty Mount (see [Figure 4-14 Attaching VH10 to the Heavy Duty Mount](#) on page 4-14. Note that this requires the MT4210 Adaptor Bracket Kit for 82XX quick release mounts, as shown in [Figure 4-13 Heavy Duty Mount Bracket Final Assembly](#) (for the kit description, see [The MT4210 Adaptor Bracket Kit](#) on page 4-16).

To attach the Heavy Duty Mount:

1. Apply Loctite[®] 243 to the screw threads (Note: Loctite is not supplied by us). Match the two screw holes on each side of the VH10 with the appropriate pairs of holes on the bracket and screw them together by placing the Screw (P) through the Washers (M,N) and the Heavy Duty Mount (D), and then affixing it to the VH10.
2. Torque to 26 in-lbs.

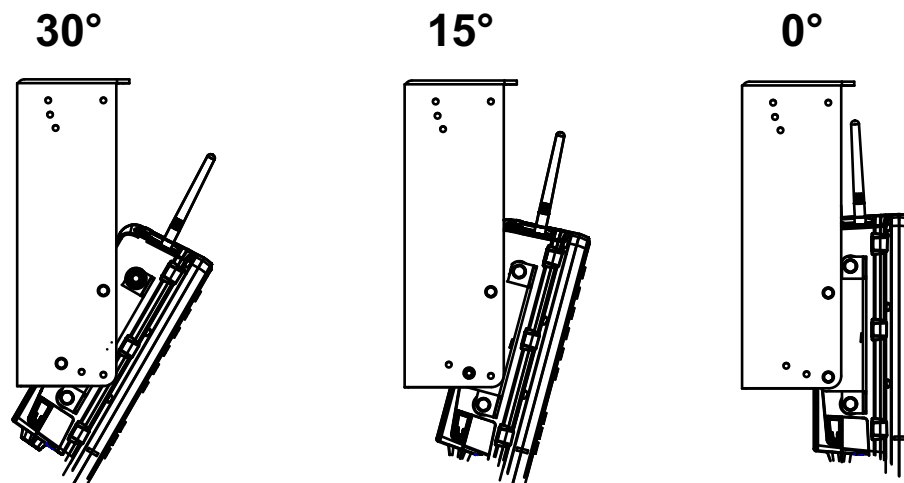
Figure 4-14 Attaching VH10 to the Heavy Duty Mount



Positioning the VH10

Place the VH10 with mount into the location and position required (see [Figure 4-15 Heavy Duty Mount Angles on page 4-14](#)) and tighten until secure. Refer to [VH10 Mounting Accessories on page 4-6](#) for warnings.

Figure 4-15 Heavy Duty Mount Angles



The MT4200 Quick Release Mount

The MT4200 Quick Release Mount allows a dismount without the need for tools. It can be used alone or in combination with the Cantilever mount (see [Cantilever Mount with Quick Release Mount on page 4-19](#)).

To assemble the MT4200 Quick Release Mount, refer to the legend in the associated table below and the figures that follow:

- [Figure 4-16 VH10 and MT4200 Assembly on page 4-15](#).
- [Figure 4-17 MT4200 Quick Release Mount Installation on page 4-15](#).

Figure Legend	Description	Part Number
A	Screw M6X12 Hex Head	9008783
B	Washer Spring Lock	9010213
C	Washer Flat	9010212
D	Mounting for VH10	1918481
E	Base plate for quick release mount	1918313

Figure 4-16 VH10 and MT4200 Assembly

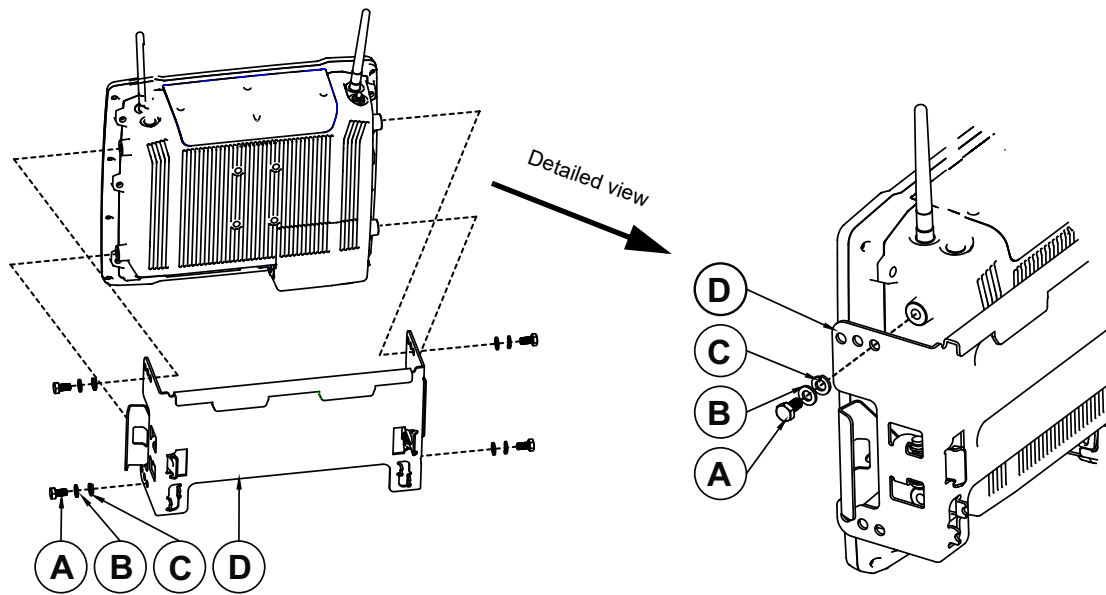
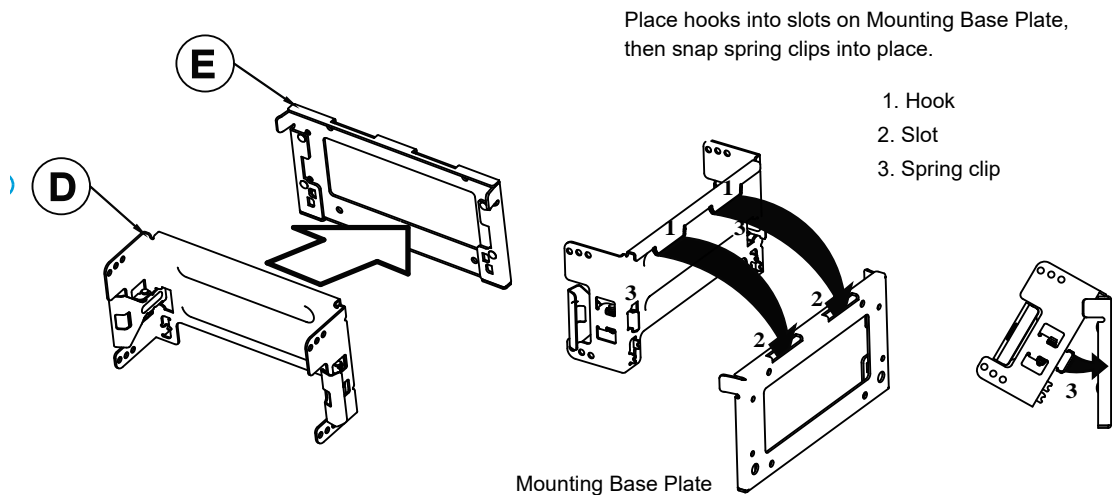


Figure 4-17 MT4200 Quick Release Mount Installation



The MT4205 Mounting Plate for MT4200 Quick Release Mount

Description	Part Number
Base plate for quick release mount	1918313

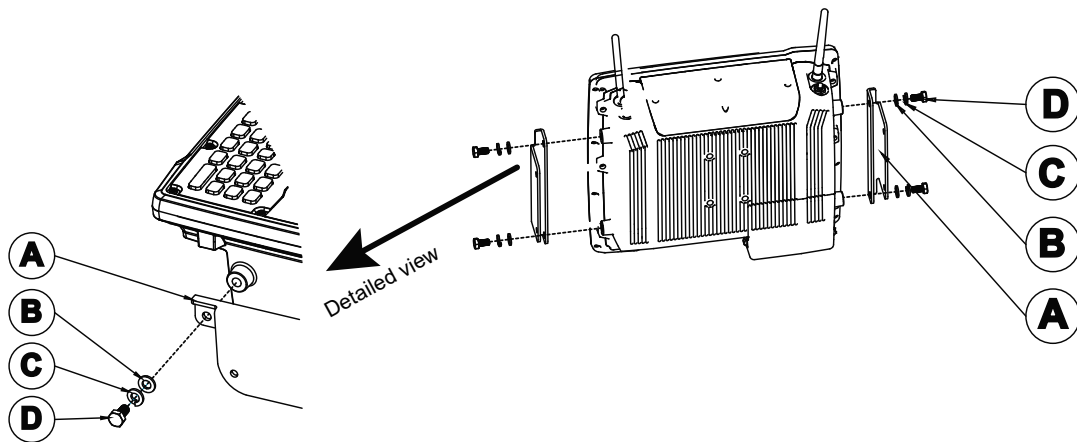
The MT4210 Adaptor Bracket Kit

The MT4210 Adaptor Bracket Kit is for use with old mounts, such as the 82XX Quick Release Mount.

To assemble the Adaptor Bracket Kit, refer to [Figure 4-18 VH10 and MT4210 Adaptor Bracket Kit Assembly on page 4-16](#) and the associated legend below.

Figure Legend	Description	Part Number
A	Metal Adaptor Bracket	1918317
B	Washer Flat	9010212
C	Washer Spring Lock	9010213
D	Screw M6X12 Hex Head	9008783

Figure 4-18 VH10 and MT4210 Adaptor Bracket Kit Assembly



The MT1002 Cantilever Mount Kit

The VH10 may be installed using the MT1002 Cantilever Mount Kit with various bracket options so that it can be adjusted in angle, height, or easily released from the mount, as needed (see [Mount Assembly on page 4-11](#)).

The mounting platform on which you secure the computer must be strong enough to support 25 kg. Never attach the mount to a plastic dash or a wooden platform without the appropriate backing plate and bracing. When selecting a mounting location, you must provide the operator access at the top, bottom, and sides.

Mount Assemblies

To assemble the Cantilever Mount and the variety of bracket options, refer to the legend associated with and the sections that follow:

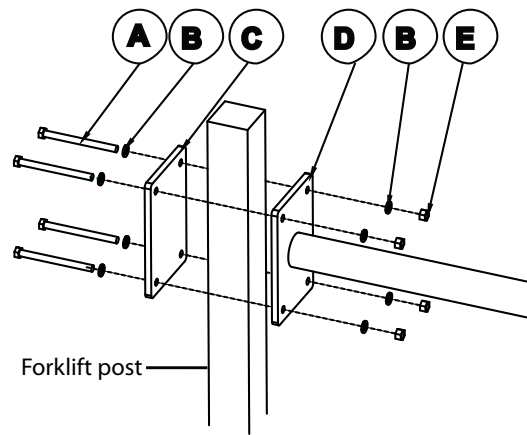
- [Cantilever Mount Assembly on page 4-17.](#)
- [Cantilever Mount with RAM Mount on page 4-18.](#)
- [Cantilever Mount with Quick Release Mount on page 4-19.](#)

Figure Legend	Description	Part Number
A	Bolt 3/8-16 X 5"	9008853
B	Washer 3/8 Split Lock	9008835
C	Cantilever Backing Plate 3/8" Thick	17291-301
D	Cantilever Mounting Cylinder	17292-301
E	Nut 3/8-16	9008834
F	Screw M8X25 Pan Head Philips Driver, Black Oxide	9004518
G	Mount RAM Vesa Plate for D-size Ball	9001934
H	Mounting Plate	17279-305
J	Washer Internal Tooth, Black Oxide	9008800
K	Nut M8 X 1.25 Hex, Black Oxide	9008801
L	U-Bolt 5/16" - 18 X 3" Long, Zinc	9010660 Kit
M	Saddle For U-Bolt, Zinc	9010660 Kit
N	Nut 5/16" Zinc Flanged Loc-nut	9010660 Kit
P	RAM Standard Arm for D-size Ball	9001805
R	Metal Cradle Mount Plate 80XX	17529
S	Mounting For VH10	1918311
T	Washer 1/4" Flat, Stainless Steel	9008787
X	Washer 1/4" Split Lock, Stainless Steel	9008777
Y	Screw 1/4-20X0.75 Pan Head, Philips Driver, Stainless Steel	9008793

Cantilever Mount Assembly

1. Install the Cantilever Mount to the Forklift Post: In four places insert the Screw (A) through the Split/Lock Washer (B), Backing Plate (C), Cantilever Cylinder (D), through the Split/Lock Washer (B), then affix with Nut (E).
2. Torque to 20 lbf-ft. +/- 2.0 lbf-ft.

Figure 4-19 Cantilever Mount Assembly



Cantilever Mount with RAM Mount

Figure 4-20 Cantilever Mount with RAM Vesa Base Assembly

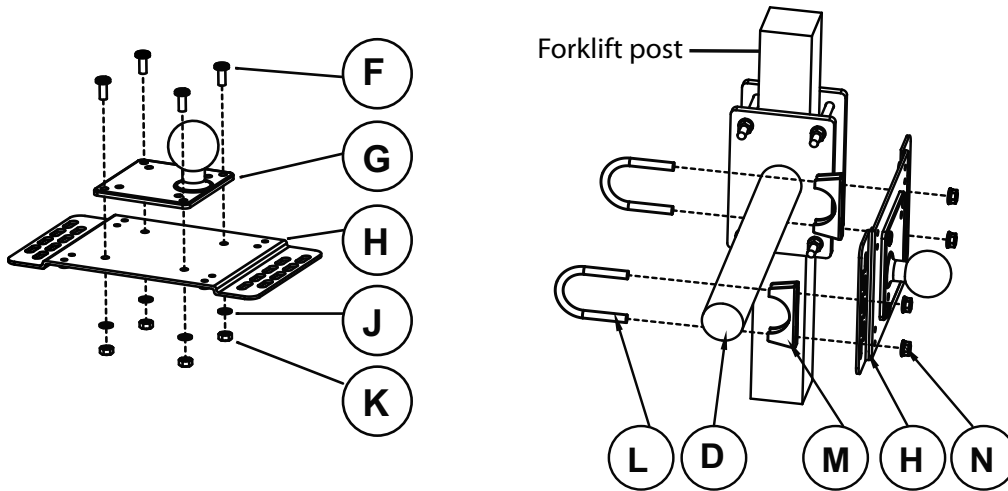
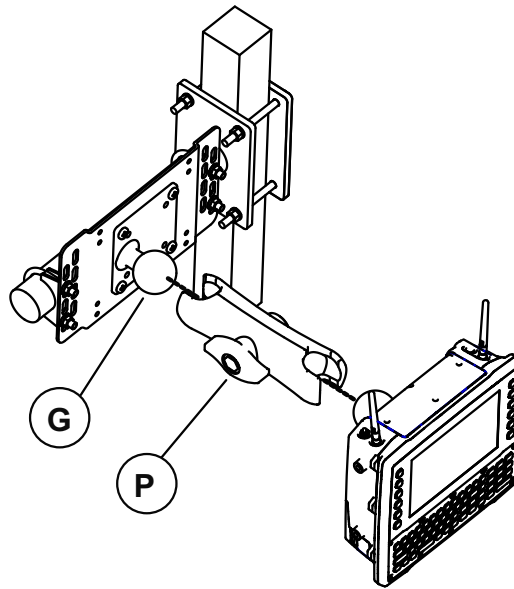
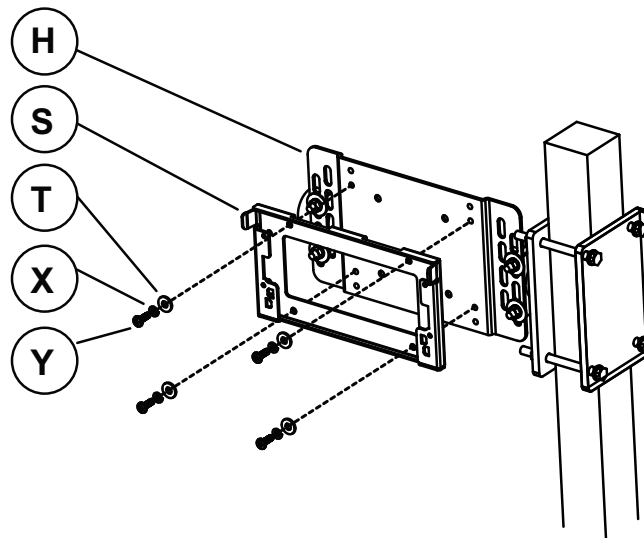


Figure 4-21 *Cantilever Mount with RAM Mount Kit and VH10*



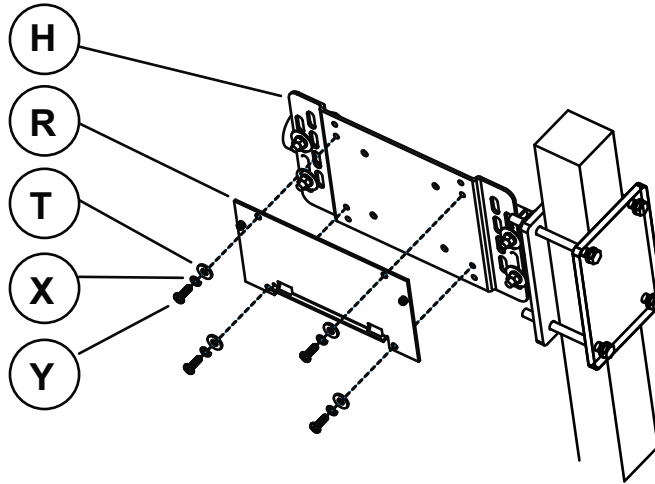
Cantilever Mount with Quick Release Mount

Figure 4-22 *Cantilever Mount with Quick Release Mount*



Cantilever Mount with Quick Release Adaptor

Figure 4-23 Cantilever Mount with Quick Release Adaptor



VH10 Vehicle Installation



IMPORTANT Do not carry the vehicle-mount computer by the power input cable.

Wiring Guidelines

The metal chassis of the VH10 is equipped with a ground lug (located on the underside adjacent to the power cable) to provide additional ground to the vehicle if required, according to vehicle manufacturer instructions. If required, the ground strap can be used to connect the ground stud on the vehicle-mount to a solid, reliable contact point on the main portion of the vehicle chassis. It must not be connected to battery negative or terminal block.

As with other vehicle cables, the routing of the ground strap should be carefully considered to ensure it does not pose a hazard to the operator or the safe operation of the vehicle. If necessary, secure the ground strap with cable ties or some other mechanical means to prevent loops or loose lengths of wire from catching on stationary items when the vehicle is in motion.

Before installing the cables between the mount and other devices, consider the following:

- Ensure that drilling holes will not damage the vehicle or its wiring.
- Protect cable runs from pinching, overheating and physical damage.
- Use grommets to protect cables that pass through metal.
- Use plastic straps and tie-downs to secure cables and connectors in their desired location, away from areas where they may get snagged or pulled.
- Keep cables away from heat sources, grease, battery acid and other potential hazards.
- Keep cables away from control pedals and other moving parts that may damage the cables or interfere with the operation of the vehicle.



IMPORTANT Make sure the cables run inside the roll cage of the vehicle.

Non-Vehicle Installations

Using AC power, the VH10 Vehicle-Mount Computer can be mounted at fixed locations adjacent to cross-dock doors, manufacturing stations, or in offices.

The 100/240VAC Power Supply Model PS1450 should be used to power the computer from an AC source.



IMPORTANT The AC/DC power supply is only intended for use at the room temperature of a typical office environment.

Wiring Vehicle Power to the VH10



WARNING! The VH10 accepts DC power sources between a minimum of 10VDC nominal and a maximum of 48VDC nominal. A Power Pre-regulator is required for voltages above 48VDC.

Applying a voltage above 48VDC without the pre-regulator or reversing polarity may result in permanent damage to the VH10 and will void the product warranty.

A 1.8 meter (6 ft.) power extension cable (Model CA1210) is supplied with your VH10. This cable should be wired to a filtered, fused (maximum 10A) accessory supply on the vehicle. When connecting a power pre-regulator to a vehicle, please follow the instructions in the installation sheet supplied with the extension cable.



IMPORTANT Do not use the optional diode/choke assembly that maybe included in the extension cable package. The VH10 does not require the diode/choke assembly. It is only intended for older vehicle-mount computers that draw less than a 6A current (e.g. 82xx, 8525/8530).

If you are using a truck already wired for an older vehicle-mount computer, check for and REMOVE any diode/choke assembly before installing the VH10.

The VH10 draws no more than 10A (less if the accessory supply is greater than 12V). Any additional wiring (minimum 18 gauge), connectors or disconnects used should be rated for at least 90 VDC, 10A.

The red lead of the power cable (protected by a cable conduit) attaches to the positive vehicle supply. The black lead connects to the negative supply — this should be connected to a proper terminal block and not to the vehicle body. The VH10 is fully isolated and can be used with both negative and positive chassis vehicles.

You may have the option of connecting power before or after the 'key' switch. It is preferable to wire the VH10 after the key switch — that is, the VH10 cannot be switched on without turning the vehicle key on.

Installing the Power Pre-regulator

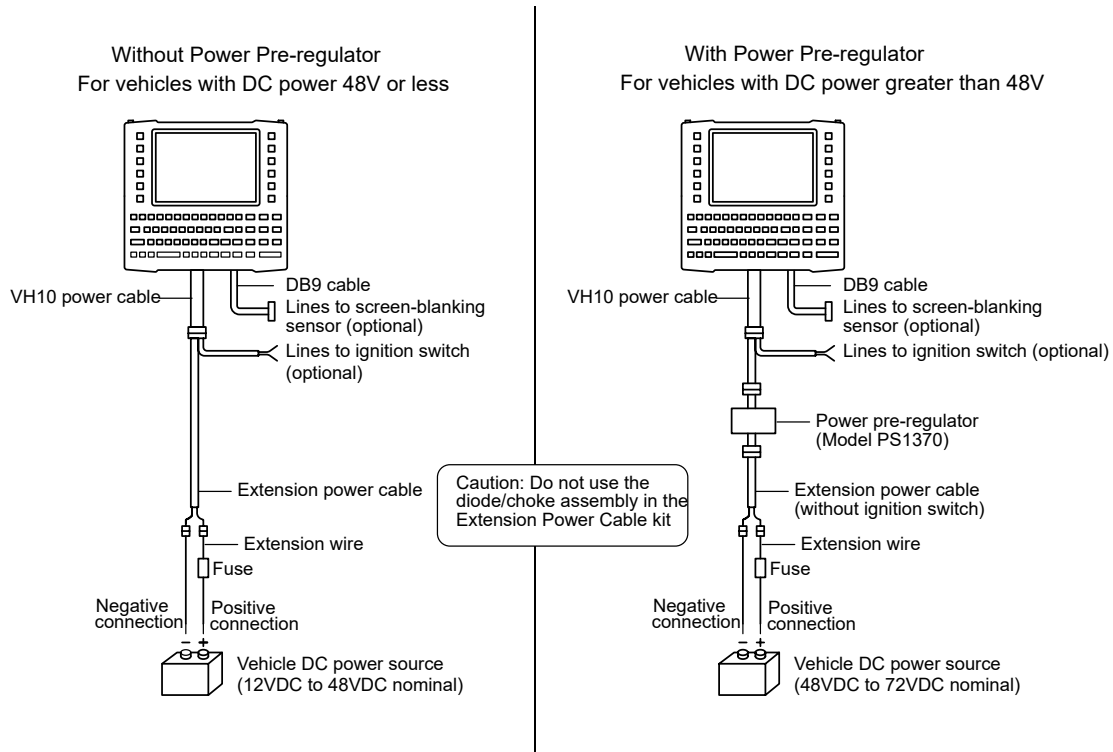


IMPORTANT The power extension cable Model CA1210 positive lead is red and the negative lead is black.

It is recommended that all connections be secured with electrical tape or heat shrink to prevent contaminants from degrading the connection.

1. Attach the pre-regulator cable with male connector to the power extension cable Model CA1210, which has been installed on the vehicle.
2. Next, connect the pre-regulator cable with female connector either directly to the VH10 power cable, or to the power extension cable Model CA1220 (see [Figure 4-24 Connections To Vehicle DC Supply](#) on page 4-22).

Figure 4-24 Connections To Vehicle DC Supply



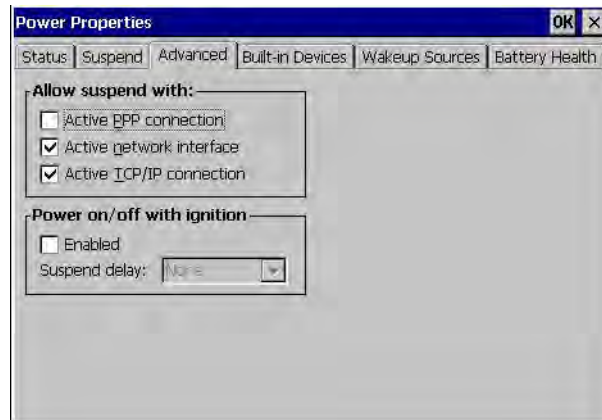
Power On/Off with Ignition Option: Wiring

This ignition detection application puts the VH10 into Suspend when the vehicle ignition is turned off, and powers the VH10 on when the ignition is turned on. You can enable this feature and set a delay time for the VH10 to go into Suspend. When a delay time is specified, a window appears on-screen at the time of ignition off. This window shows the time countdown, and contains power-off-now and cancel buttons. The window is shown on top of any running application, attached to the right side of the screen, and may be repositioned by dragging it up and down as desired.



NOTE This feature does not interfere with other methods of turning the computer off and on.

- In the *Control Panel*>*Power Properties* dialog box, open the **Advanced** tab.



For Ignition Detect to be available, appropriate wiring must be installed (see [Figure 4-24 Connections To Vehicle DC Supply](#) on page 4-22). The Ignition Detect application receives the ignition signal from a vehicle.

The Ignition Detect signal is transmitted through the existing 4-conductor CPC power cable. On detection of the ignition signal, the vehicle-mount computer resumes or boots up and goes into suspend when the signal is dropped.



IMPORTANT If your vehicle was wired for a previous generation vehicle-mount computer and was using the screen blanking feature, please ensure that you are no longer feeding the screen blanking signals to the VH10's main CPC power cable since these two signals are now being used for Ignition Detect.

Unlike the screen blanking cable, the two ignition detect input terminals are not shorted to signal the ignition state. Instead, a positive voltage should be applied to the Ignition Detect Input (+) terminal. The voltage of the signal can be as high as the allowed external DC input voltage (between 12VDC to 48VDC nominal). In addition, you must connect the Ignition Detect Input (-) to the corresponding ground reference.

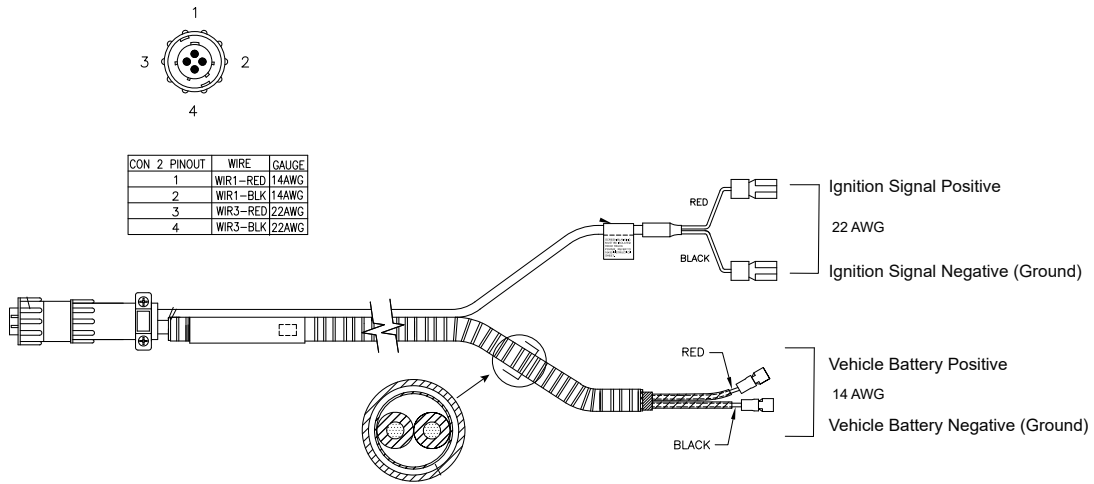
The diagram in [Figure 4-25 Extension Cable Kit \(PN 13985-301\)](#) on page 4-24 shows the extension cable kit (P/N 13985-301) with the two smaller wires used to connect to the vehicle ignition. The red and black leads of the two wires connect to the key switch of the ignition and the ground, respectively. Once these wires are connected, the VH10 will be switched on or off depending on the state of the vehicle ignition key.



IMPORTANT When connecting to an ignition switch using the extension cable (PN 13985-301), make sure the wires of different polarities are reliably secured away from each other, or are separated with reliably secured certified insulation. A minimum distance of 2.8mm (or 0.4mm distance through insulation) is required for the separation.

It is recommended that the ignition connecting cables be protected by a fuse of the following type: 5x20mm T 125mA L/250V, for example, a Wickmann 195-125mA/ 250 V fuse.

Figure 4-25 Extension Cable Kit (PN 13985-301)



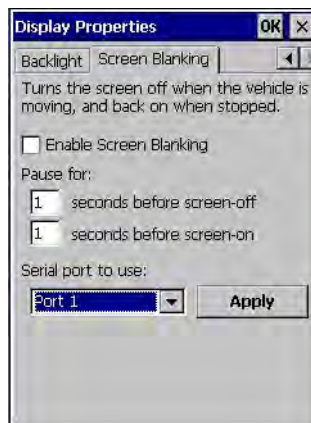
Screen Blanking Option: Wiring



CAUTION Do not use tools to secure connector thumbscrews. Only tighten by hand.

The optional Screen Blanking program turns the screen off when the vehicle is moving, and back on when the vehicle is stopped. The *Display Properties* dialog box in the *Control Panel* allows you to enable or disable this feature, and set a delay time for the screen to turn off and on.

- In the *Display Properties* dialog box, open the **Screen Blanking** tab.



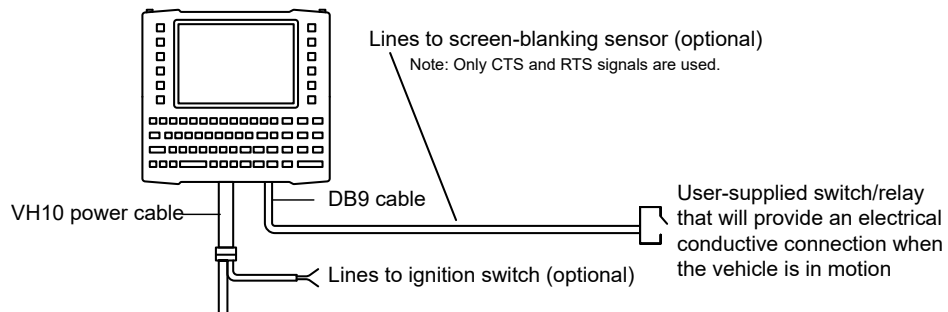
To be able to use Screen Blanking, you must connect one of the two DB9 serial ports on the VH10 to a user-supplied switch or relay. This switch/relay may be activated electrically (e.g. motion sensor, GPS) or mechanically (e.g. pedal switch) when the vehicle is in motion.



IMPORTANT For customers migrating to the VH10 from a previous generation of vehicle-mount computer (e.g. 8515, 8525/35) or a hand-held computer cradle:

If the screen blanking feature was being used previously, please ensure that you are no longer feeding the screen blanking signals to the VH10 main CPC power cable. The screen blanking inputs should be rewired to the DB-9 serial port through the DB-9 screen blanking cable. In previous generations of vehicle-mount computers, the screen blanking signals were fed in to the terminal through 2 of the 4 wires in the CPC power cable (through the use of two spare lines in the cable kit PN 13985-301).

Figure 4-26 Connecting the Switch or Relay to the DB9 Cable

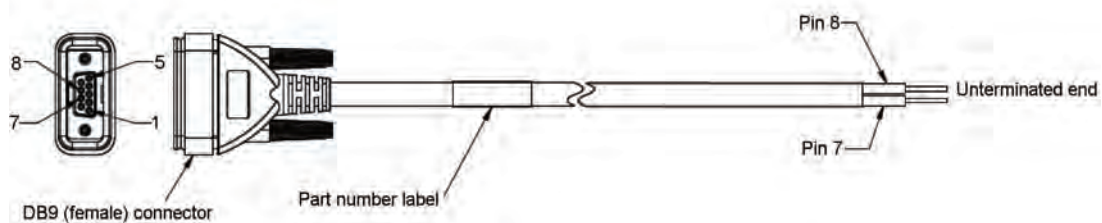


Screen Blanking is implemented by using a DB9 port to monitor the electrical relay closure. When enabled, the CTS/RTS pins of the DB9 port are continuously monitored by the screen-blanking application. To see the pin configuration, see [Figure 4-27 Screen Blanking DB9 Pin Configuration](#) on page 4-25 below.

When the vehicle is in motion, the switch/relay will close the circuit, allowing data packets to be sent or received through the RTS and CTS pins. The computer knows the circuit is closed and will turn off the screen.

When the vehicle is not in motion, the switch/relay will open the circuit, preventing data packets from being sent or received. The computer knows the circuit is open and will turn on the screen.

Figure 4-27 Screen Blanking DB9 Pin Configuration



APPENDIX A VH10 SPECIFICATIONS

The VH10 Vehicle-Mount Computer



NOTE Performance specifications are nominal and subject to change without notice.

Hardware

Physical Dimensions

- 276 mm W x 238 mm H x 90 mm D (10.87"x 9.37" x 3.54").

Weight

- 3.66 kg (8.1 lbs), includes optional integrated battery.

Processor and Memory

- Texas Instruments® OMAP3® Processor 800 MHz.
- RAM: 512 MB.
- Flash ROM: 1 GB.

Operating System

- Microsoft Windows® Embedded CE 6.0

User Interface

Colour Display

- Size: 20.32 cm (8") diagonal
- Resolution: 800 x 480 pixels
- Brightness: 640 cd/m²
- Touchscreen:
 - Rugged 5-wire technology
 - Passive stylus or finger operation

Optional heater*

- ✓ **NOTE** To maximize battery run time when the VH10 is not on vehicle or AC power, it enters into UPS Battery Power mode (see also [Power Saving Suspend on page 3-36](#)), and the heater is automatically switched off.

Indicators

- Power LED
- Warning LED

Keyboard

- Alphanumeric keyboard: 67-key QWERTY and AZERTY available
- Function Keys: 12 dedicated function keys
- Key Illumination: LED backlight

Voice and Audio

- High volume 93 dBA beeper
- Optional push-to-talk speaker/microphone

Communication Ports

- VH10 bottom:
 - 2 x full function UART RS-232 with 5V / 1000mA for external devices
 - 1 x USB host port
 - 1 x powered USB host port with 12V / 1.5 A
 - 1 x 3.5mm audio jack

- ✓ **NOTE** To maximize battery run time, when the VH10 is not on vehicle or AC power, it enters into UPS Battery Power mode which limits the powered external ports to a total of 1A (see also [Power Saving Suspend on page 3-36](#)).

Power Management

- Internal power supply 12-48V Nominal, designed for forklift power.
- Standard 5 min. super capacitor backup.
- One week real-time clock backup.
- Optional internal 5000 mAh rechargeable battery for operation during power loss / brown out. Not user accessible.

Environmental

Standard (VH10)

- Operating Temperature: -20° C to 50° C (-4° F to 122° F)
- Storage Temperature: -30° C to 60° C (-22° F to 140° F)
- Humidity (operating): 5% to 95% RH non-condensing
- Rain/Dust: IEC 529, classification IP66
- Shock and Vibration: IEC 60721-3-5M3

Freezer (VH10f)

- Operating Temperature: -30° C to 50° C (-22° F to 122° F)
- Storage Temperature: -30° C to 60° C (-22° F to 140° F)
- Humidity (operating): 5% to 95% RH condensing with internal heating
- Heater Control heaters.
- Rain/Dust: IEC 529, classification IP66
- Shock and Vibration: IEC 60721-3-5M3



IMPORTANT VH10f Freezer Model Installation

In order for sufficient drainage of the VH10f, the unit should sit at an angle of at least 30 degrees.

Regulatory Approvals

- Worldwide Safety, EMC, RF
- CE Mark
- RoHS compliant
- WEEE compliant
- REACH compliant

External Barcode Scanners

- Supported Types: Hand-held scanners and imagers connected via USB, RS-232, or Bluetooth.
- Interface: Via FF UART RS-232 port or USB port.
- Decoded Codes Supported: Dependent on external scanner choice.
- Code Discrimination: Automatic for all selected codes. Decoded input is external scanner dependent.
- Specifications: Refer to the scanner-specific programming manual provided by the manufacturer.

Wireless Radios

802.11a/b/g/n Standard Radio

Parameter	Sub-parameter	Specification
Manufacturer		Murata, LBEH1Z9PFC
Form Factor		Embedded surface mount module, 11.4 x 9.4 mm. *This is a combo module containing both Wi-Fi 802.11a/b/g/n and <i>Bluetooth</i> V2.1+EDR radio.

A - 4 VH10 Vehicle-Mount Computer User Guide

Parameter	Sub-parameter	Specification
Antenna Port	802.11b/g/n	U.FL jack. Non-diversity. Multiplexed between 802.11b/g/n (2.4GHz) and <i>Bluetooth</i> radio.
	802.11a/n	U.FL jack. Non-diversity.
RF Power Rating North America (USA, Canada, and countries that follow FCC rules)	Radio Type and Operating Band WLAN (2412-2462MHz) WLAN U-NII 1 (5180-5240MHz) WLAN U-NII 2 (5260-5320MHz) WLAN U-NII 2e (5500-5700MHz) WLAN (5745-5828MHz)	IEEE802.11 Power Rating Instantaneous Peak Power Max +18dBm +21.3dBm +12dBm +13.7dBm +12dBm +19.6dBm +12dBm +18.9dBm +12dBm +18.8dBm
RF Power Rating Europe	Radio Type and Operating Band WLAN (2401-2483MHz) WLAN U-NII (5180-5240MHz & 5260-5320 MHz) WLAN U-NII (5500-5700MHz)	IEEE802.11 Power Rating EIRP +16dBm +19.3dBm +12dBm -2.6 to +19.8dBm +12dBm -3.2 to +18.3dBm
Frequency Range	802.11b/g/n	2400—2483.5 MHz
	802.11a/n	5150—5350 MHz, 5480—5720 MHz and 5725—5845 MHz
Channels	802.11b/g/n	1 to 13. Up to 13 channels (depending on country). Only 3 channels are non-overlapping.
	802.11a/n	36, 40, 44, 48, 52, 56, 60, 64 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140 149, 153, 157, 161, 165 Up to 24 channels (depending on country). All channels are non-overlapping.

Parameter	Sub-parameter	Specification
RX Sensitivity	802.11b	-78 dBm @ 11 Mbps
	802.11g	-67 dBm @ 54 Mbps
	802.11a	-67 dBm @ 54 Mbps
	802.11n (2.4 GHz)	-66 dBm @ 65 Mbps
	802.11n (5 GHz)	-66 dBm @ 65 Mbps
Data Rates	802.11b	1, 2, 5.5, 11 Mbp
	802.11a/g	6, 9, 12, 18, 24, 36, 48, 54 Mbps
	802.11n	6.5, 13, 19.5, 26, 39, 52, 58.5, 65 Mbps
EVM	802.11b	32% max
	802.11g	-26 dB max
	802.11a	-26 dB max
	802.11n (2.4 GHz)	-29 dB max
	802.11n (5 GHz)	-29 dB max
*Bluetooth Coexistence		TI Wilink6 proprietary WiFi-BT co-existent scheme.

Bluetooth Radio

Parameter	Specification
Manufacturer	Murata, Model LBEH1Z9PFC
Form Factor	Embedded surface mount module, 11.4 x 9.4 mm. * This is a combo module containing both Wi-Fi 802.11a/b/g/n and Bluetooth V2.1+EDR radio.
Antenna Port	U.FL jack (shared with Wi-Fi 802.11b/g/n radio)
Frequency Range	2.400—2.4835 GHz
Channels	79
RX Sensitivity	-90 dBm typical, -70 dBm max
Data Rates	V1.2=732.2 kbps and 57.6 kbps asymmetric, 433.9 kbps symmetric V2.0=2 & 3 Mbps
*802.11 Coexistence	TI Wilink6 proprietary WiFi-BT co-existent scheme.

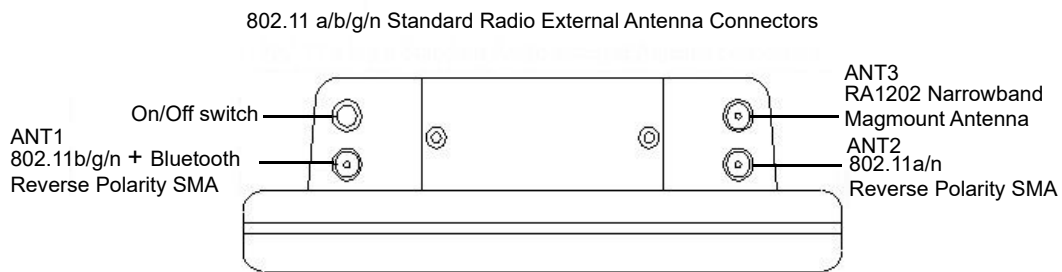
RF Power Rating	Radio Type and Operating Band	Bluetooth Power Rating Max Instantaneous Peak Power
North America (USA, Canada, and countries that follow FCC rules)	Bluetooth (2402-2480 MHz)	+4dBm +4 dBm

RF Power Rating	Radio Type and Operating Band	Bluetooth Power Rating EIRP
Europe	Bluetooth (2402-2481 MHz)	+4 dBm +4 dBm

Antennas

Possible Antenna Configurations

Figure A-1 VH10 Top View: Location of External Antenna Connectors



Connector Name	Radio Type
	802.11a/b/g/n Standard Radio
ANT1	802.11b/g/n + Bluetooth In this configuration the Bluetooth and WiFi 2.4GHz radios share the same port. See Antenna — Bluetooth on page A-7
ANT2	802.11a/n
ANT3	RA1202 Narrowband Radio

Antenna — WiFi

Parameter	Sub-parameter	Specification
Internal Antenna	Antenna Type	PCB substrate patch antenna.
	Frequency Range	2400—2485 MHz @ <2:1 VSWR 5150—5850 MHz @ <3:1 VSWR
	Gain	(i) 1.9 dBi @ 2.4—2.5 GHz (ii) 1.9 dBi @ 5.15—5.85 GHz

Parameter	Sub-parameter	Specification
External Antenna	Antenna Type	3 options available: (i) Articulated dual-band stubby AN2030. (ii) Low gain magnetic mount dual band AN2010. (iii) High gain magnetic mount wide band AN2020.
	Frequency Range	(i) 2400—2485 MHz @ <2:1 VSWR, and 5150—5850 MHz @ <2:1 VSWR (ii) 2400—2485 MHz @ <2:1 VSWR, and 5150—5850 MHz @ <2:1 VSWR (iii) 2400—2485 MHz @ <2:1 VSWR
	Gain	(i) 2 dBi @ 2.4—2.5 GHz, 3.7 dBi @ 5.15—5.85 GHz (ii) 2 dBi @ 2.4—2.5 GHz, 2 dBi @ 5.15—5.85 GHz (iii) 5 dBi @ 2.4—2.5 GHz

Antenna — Bluetooth

The *Bluetooth* radio shares an antenna with the 802.11 a/b/g/n Standard WiFi Radio. When the Standard external antenna option is selected, the left external antenna carries the 802.11b/g/n+*Bluetooth* signal. If the VH10 is intended to be used with a *Bluetooth* peripheral located next to it, ensure that the left external mag mount antenna is placed in a location where it can still communicate with the *Bluetooth* peripheral.

Parameter	Sub-parameter	Specifications
Internal Antenna	Antenna Type	PCB substrate patch antenna
	Frequency Range	2400—2485 MHz @ <2:1 VSWR
	Gain	1.9 dBi @ 2.4—2.5 GHz
External Antenna	Antenna Type	Bluetooth will use the external antenna only when the 802.11a/b/g/n external antenna option is selected. Otherwise it will use the internal antenna.
	Frequency Range	Refer to specification of selected WiFi antenna.
	Gain	Refer to specification of selected WiFi antenna.



IMPORTANT

When the 802.11a/b/g/n Standard Radio with external antenna is used, the left antenna port carries the 802.11b/g/n+Bluetooth signal. If the VH10 is intended to be used with a Bluetooth peripheral located next to it, ensure that the left external mag mount antenna is placed in a location that it can still communicate with the Bluetooth peripheral.

RA1202 Narrowband Radio

General Specifications	Description
Radio Type	Half-duplex data only
FCC Compliance and Approval	FCC CFR47 Part 90 and Part 15, Industry Canada RSS-119
ETSI Compliance and Approvals	ETSI EN 300-113
Frequency	UHF Band I and II (403-435MHz, 435-470 MHz)
Power	3.2V-4.2V, 2.1A typ. during transmit
RF Antenna Interface	U.FL connector 50 ohms
RX Sensitivity	-90 dBm typical, -70 dBm max
Power and Data Interface	54-Pin Samtec ASP-176298-02

Transmitter	Description
Frequencies	403-435 MHz (non-Canada), 435-470 MHz
Channel Spacing	25 kHz (non-US), 20 kHz (non-US and Canada), 12.5 kHz
Frequency Stability	+/- 1 ppm at operating temperatures
Power Output	Low: 0.5W (non-US and Canada), High: 1W
Conducted / Radiated Emissions	Comply with EN 55022 Class B, FCC Part 15B Class B
Adjacent Channel Power	< -60 dBc
Digital Protocol	Psion proprietary protocol
Transmitter Intermodulation Attenuation	> 40 dB
Transmitter Attack Time	Less than 25 ms
Transmitter Release Time	Less than 20 ms

Receiver	Description
Frequencies	403-435 MHz (non-Canada), 435-470 MHz
Channel Spacing	25 kHz (non-US), 20 kHz (non-US and Canada), 12.5 kHz
Frequency Stability	+/- 1 ppm at all operating temperatures
Digital Sensitivity	1% BER: -110 dBm

Receiver	Description
Intermodulation Response Rejection	-42 dBm
Adjacent Channel Selectivity	70 dB @ 20 and 25 kHz 60 dB @ 12.5 kHz
Spurious Rejection	> 73 dBI
Conducted Spurious Emissions (ETSI)	- 57 dBm in standby
Co-channel Rejection 1	2 - 0 dB for 12.5 kHz @ 4800 and 9600 bps 8 - 0 dB for 20-25 kHz @ 9600 bps 12 - 0 dB for 20-25 kHz @ 19200 bps

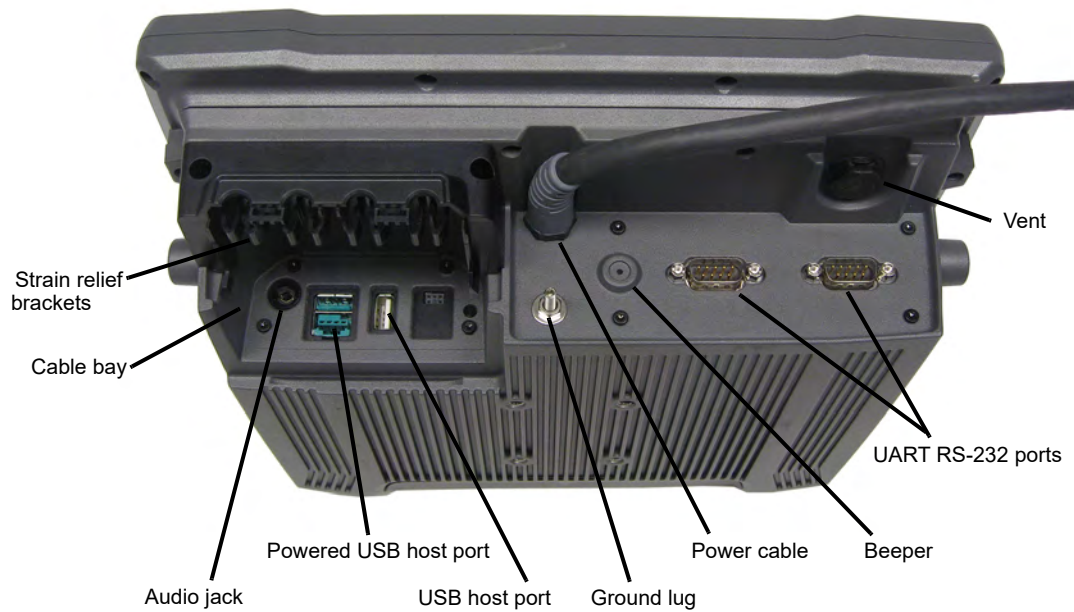
APPENDIX B PORT PINOUTS

Ports Diagram



WARNING! To maximize battery run time, when the VH10 is not on vehicle or AC power, it enters into UPS Battery Power mode which limits the powered external ports to a total of 1A (see also [Power Saving Suspend on page 3-36](#)).

Figure B-2 VH10 Bottom View (cable bay cover off)



Serial Ports Interface Pinout (UART RS-232)

Signal #	Function	Signal	Type	Notes
1	RS-232 Serial Port Data Carrier Detect	DCD	RS-232D	
2	RS-232 Serial Receive Data	RXD	RS-232D	
3	RS-232 Serial Port Transmit Data	TXD	RS-232D	
4	RS-232 Serial Port Data Terminal Ready	DTR	RS-232D	
5	Ground	GND	Power	
6	RS-232 Serial Port Data Set Ready	DSR	RS-232D	
7	RS-232 Serial Port Ready to Send	RTS	RS-232D	Loopback for screen-blanking
8	RS-232 Serial Port Clear to Send	CTS	RS-232D	Loopback for screen-blanking
9	Power Output		Power	Switched 5V @ 1000mA max (**see Warning following this table)

* Signal definitions are with respect to the VH10 Vehicle-Mount Computer side.



WARNING! ** If enabled (software configurable), 5V power will appear on this line, which may be the Ring Indicator line on some devices such as modems.

This port may provide up to 1A in normal mode (i.e. when the VH10 is powered by external vehicle battery or AC/DC adaptor). The maximum current available may be reduced in UPS mode (i.e. when the VH10 is powered by the internal UPS battery).

Enhanced USB1 Port Interface Pinout

Signal #	Function	Signal	Type	Notes
1	USB- VBUS	DCD	USB	Switched 5V @ 1A max
2	USB- D-	RXD	USB	Standard or enhanced USB port
3	USB- D+	TXD	USB	Standard or enhanced USB port
4	Ground	DTR	USB	

* Signal definitions are with respect to the VH10 Vehicle-Mount Computer side.



WARNING! This port may provide up to 1A in normal mode (i.e. when the VH10 is powered by external vehicle battery or AC/DC adaptor). The maximum current available may be reduced in UPS mode (i.e. when the VH10 is powered by the internal UPS battery).

Enhanced Powered USB2 Port Interface Pinout

Signal #	Function	Signal	Type	Notes
1	USB- VBUS	DCD	USB	Switched 5V @ 1A max
2	USB- D-	RXD	USB	Standard or enhanced USB port
3	USB- D+	TXD	USB	Standard or enhanced USB port
4	Ground	DTR	USB	
5	Ground	GND	Custom	Ground for Custom peripheral
6	12VDC	12VDC	Custom	12VDC for Custom peripheral (**see Note below)
7	12VDC	12VDC	Custom	12VDC for Custom peripheral (**see Note below)
8	Ground	GND	Custom	Ground for Custom peripheral

* Signal definitions are with respect to the VH10 Vehicle-Mount Computer side.



NOTE *The 12VDC output is software configurable and is rated for 1.5A max @ 12V. This 12VDC power may be present when the VH10 is powered from an external power source (e.g. vehicle battery, AC/DC adaptor).



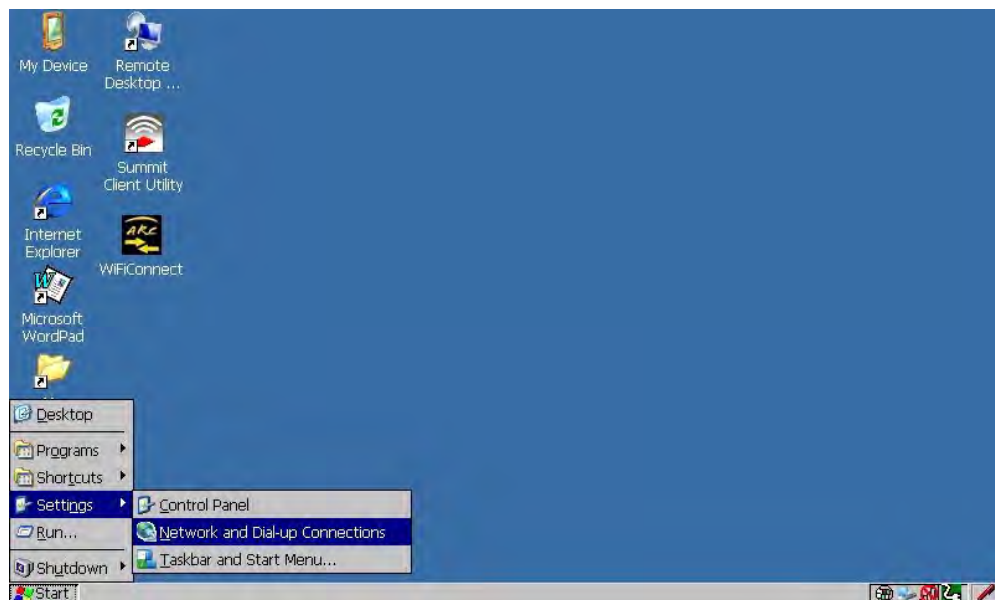
WARNING! This port may provide up to 1A in normal mode (i.e. when the VH10 is powered by external vehicle battery or AC/DC adaptor). The maximum current available may be reduced in UPS mode (i.e. when the VH10 is powered by the internal UPS battery).

APPENDIX C WIRELESS ZERO CONFIG SETTINGS

Wireless Information

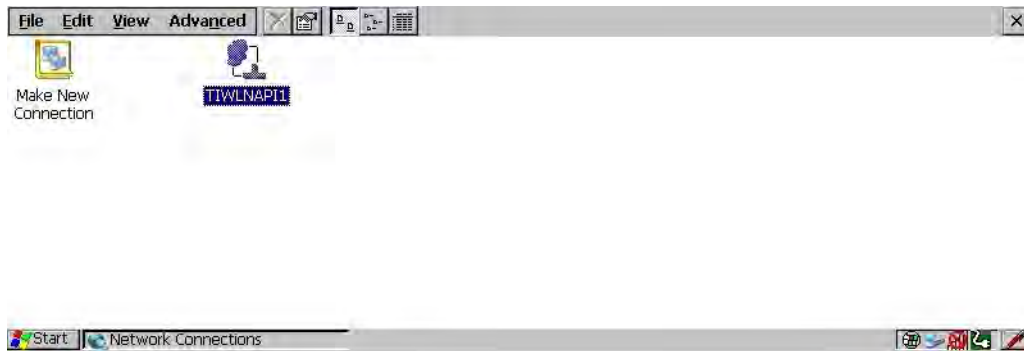
Wireless Zero Config, the Windows native supplicant, can be used to configure the radio. To ensure that *Wireless Zero Config* is activated, refer to [Wi-Fi Config: Advanced on page 3-74](#).

- Tap on **Start>Settings>Network and Dial-up Connections**.



- Choose the **radio icon** representing the radio you want to set up — in the sample screen in [Figure C-3 802.11 Wireless LAN Settings Window on page C-2](#), this is labelled as *TIWLNAPI1*.

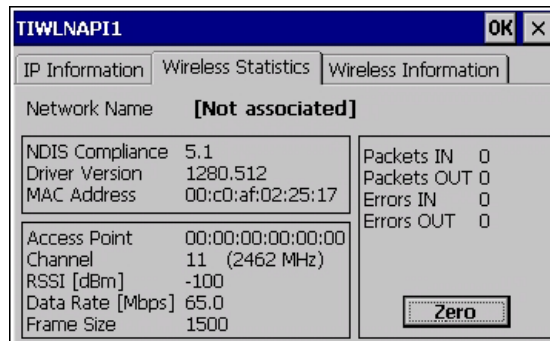
Figure C-3 802.11 Wireless LAN Settings Window



Wireless Statistics

When you choose the **Wireless LAN** icon, an **802.11 Wireless LAN Settings** window is displayed. This tab lists your radio statistics. Choosing the **Zero** button resets the statistics of the last four items — Packets IN, Packets OUT, IN errors and OUT errors.

Figure C-4 Wireless Statistics

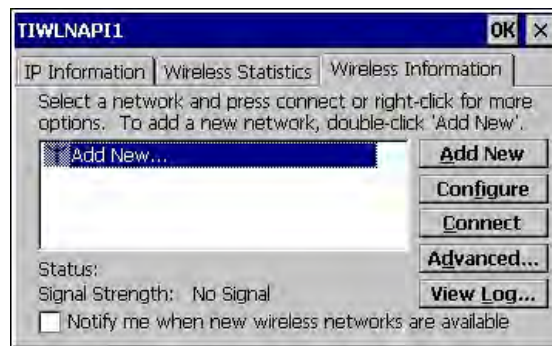


Wireless Information

This tab displays existing networks to which you can connect, and it allows you to add a new network or modify the settings for an existing network.

- **Configure** button: To change the settings in an existing network, highlight the network you want to modify, and tap on the Configure button to display the Wireless Properties dialog box.
- **Connect** button: To force connection to a specific, existing network, highlight the network to which you want the VH10 to connect, and tap on the **Connect** button.

Figure C-5 Wireless Information



This tab lists available networks — any access points that are broadcasting an SSID, and it lists preferred networks — networks that you have configured. Since access points are generally secure, they will most likely not be listed here. By default, the VH10 attempts to connect to preferred networks. This behaviour can be changed by enabling *Automatically connect to non-preferred networks* in the *Advanced* dialog box (see [Figure C-8 Advanced Wireless Settings on page C-5](#)).

- To add a new configuration, tap on the **Add New** button. A blank *Wireless Properties* dialog box is displayed.

Wireless Properties

Figure C-6 Wireless Properties



- Type the appropriate SSID (Service Set Identifier) in the **Network name (SSID):** dialog box. The *Network name* field can contain a maximum of 32 characters. The name assigned here is listed as a preferred network.



IMPORTANT Keep in mind that the VH10 will only communicate with access points that are configured with the same SSID.

- **Ad Hoc And Infrastructure:** If you are using an *Infrastructure* network — one in which the Vehicle-Mounts must pass data through an access point — leave the check box next to *This is an ad hoc network* blank.

If you are using an *Ad Hoc* network — a network in which the Vehicle-Mounts pass data directly to other Ad Hoc devices without an access point — add a checkmark in the check box next to *This is an ad hoc network* to enable Ad Hoc.

- **Encryption:** *WEP* (Wired-Equivalent Privacy) encryption prevents others from accidentally accessing your network. If you are not using encryption, you can choose *Disabled* from the drop-down encryption menu. Otherwise, leave this field as is.

AES (Advanced Encryption Standard) is a standard for protecting data through encryption. *AES* supposes key sizes of 128 bits, 192 bits and 256 bits and will serve as a replacement for the Data Encryption Standard (*DES*), which has a key size of 56 bits. In addition to the increased security that comes with larger key sizes, the *AES* algorithm is a symmetrical block cipher that can encrypt (encipher) and decrypt (decipher) information.

- **Authentication:** 802.11 supposes several subtypes of network authentication services: *Open*, *Shared*, *WPA*, and *WPA-PSK*. Under *Open* authentication, any wireless station can request authentication. The station that needs to authenticate with another wireless station sends an authentication management frame that contains the identity of the sending station. The receiving station then sends back a frame that indicates whether it recognizes the identity of the sending station.

Under *Shared* authentication, each wireless station is assumed to have received a secret shared key over a secure channel that is independent from the 802.11 wireless network communications channel.

Under *WPA* and *WPA-PSK* authentication, the use of 802.1x authentication is required. For wireless networks *without* a Remote Authentication Dial-In User Service (*RADIUS*) infrastructure, *WPA* supposes the use of a preshared key. For wireless networks *with* a *RADIUS* infrastructure, Extensible Authentication Protocol (*EAP*) and *RADIUS* is supposed.

- **Network Key:** This text box is used to specify a 5 or 13 ASCII character sequence or an equivalent 10 or 26 Hexadecimal digit sequence that matches the active *WEP* key on the access point.

To assign a *Network key*, highlight **The key is provided automatically**, and *uncheck* the check box to disable this option.

Figure C-7 *Network Key and Key Index*



- **Key Index:** This field is used to identify the *WEP* key. Enter a value from 1 to 4.
- **Enable 802.1x authentication:** 802.1X is the IEEE standard that offers additional security for local area networks. It provides authentication for user devices attached to an Ethernet network, whether wired or wireless. A security protocol packet such as *TLS* or *MD5* encapsulated in an *EAP* is used in conjunction with the 802.1X standard to authenticate users at the *MAC* layer. Available *EAP*s are listed in the drop-down menu next to the *EAP* option.

To activate 802.1X, highlight **802.1x authentication**, and check the check box.

- **EAP Type (Extensible Authentication Protocol):** This drop-down menu lists the EAP types available on your system. The items in this drop-down menu will vary depending on your network setup. Keep in mind also that some authentication protocols require that you select a Certificate. By selecting the *Properties* button, you will be able to select a *Certificate*. [Certificates on page 3-17](#) provides a website that outlines how to create certificates for your network.
- **Saving and exiting the radio setup:** Once you've completed the configuration, press **[ENTER]**, or tap on **OK**.

The connection you created will be listed in the *Wireless Information* tab as a preferred network. The radio will search for the SSID and compare the WEP and authentication information you specified. If there is a match between the Vehicle-Mount settings and the access point settings, the Vehicle-Mount will communicate on the network through the access point.

Assigning An IP Address

If your network is not using a DHCP server, you will need to assign an IP address. Refer to [IP Address on page 3-72](#) for details about assigning an IP address.

Name Server

Refer to [Name Servers on page 3-73](#) for details about this option.

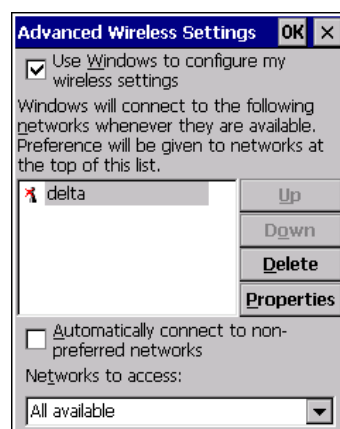
Advanced Features

To display the *Advanced Wireless Settings* dialog box:

- Tap on the **Advanced** button in the *Wireless Information* tab. (Refer to [Figure C-5 Wireless Information on page C-3](#).)

This window lists the available preferred networks.

Figure C-8 *Advanced Wireless Settings*



Rearranging Preferred Networks

The VH10 attempts to connect with the networks listed in this dialog box in sequence, beginning at the top of the list. If you need to rearrange this list of networks — move networks up and down in the list:

- Tap in the *Networks List*, and highlight the **network** that you want to move up or down in the list.

- To move the highlighted item in the list upward or downward, tap on the **Up** or **Down** button.

Deleting a Preferred Network

To delete a network from this list:

- In the *preferred networks* list, highlight the **network** you want to remove.
- Tap on the **Delete** button.

Changing Network Properties

To change the properties of an existing preferred network:

- Highlight the **network** that you want to modify.
- Tap on the **Properties** button.
- Make any necessary changes in the *Wireless Properties* dialog box, and press **[ENTER]** to save the changes.

APPENDIX D NARROWBAND RADIO CONFIGURATION

Narrowband Radio Setup



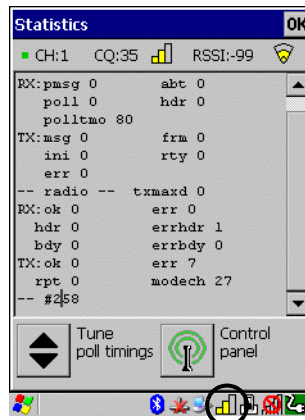
IMPORTANT For Narrowband radios, always attach the antenna, following the instructions on the package, *before* connecting the power supply.

Only when the antenna is installed:

- Remove the battery cover, insert the battery, and replace the battery cover.

To display the Narrowband screens and the *Control Panel*:

- Click on the **Narrowband icon** in the taskbar.



Keep in mind that the *Narrowband* icon is only visible when a Narrowband radio is installed in the unit.

- Click on the **Control Panel icon** in the bottom-right corner of the *Statistics* screen to display the additional Narrowband screens.

Basic Tab



CH (Channel)

CH displays the current channel. This value may change when a channel is out of range. *Active* channels are assigned in the *Channels* tab (see [Channels Tab on page D-3](#)).

CQ (Channel Quality)

This option displays the channel quality. CQ (Channel Quality) can be affected by the *Channel switch speed* set in the *Channels* tab.

RSSI (Received Signal Strength Indicator)

RSSI is an indication of the power level being received by the antenna. The higher the RSSI number, the stronger the signal.

Radio Address

If *auto* radio address is enabled, the hand-held requests an automatically assigned radio address. When *auto* is selected, the next field in which a radio address can be entered manually, is not available.

The field to the right of *auto* is used to assign a radio address *manually*. Manually assigned radio addresses must be predetermined by the system administrator before this field is completed. A unique value from 1 to 3840 must be assigned for each unit to identify each hand-held over the radio link. Initially, this field is set to 0 to prevent radio communication.

Starting Channel

This parameter determines the initial operating radio channel of the hand-held. When the unit is first powered on and channel selection is set to *auto* (refer to [Radio Address on page D-2](#)), a starting channel is automatically chosen. Otherwise, a channel from one to twenty can be chosen from the drop-down menu. Keep in mind that only the channels that have been enabled are listed here.

Radio Information

This information is read from the radio installed in the unit and is not editable.

Import from XML File and Export to XML File

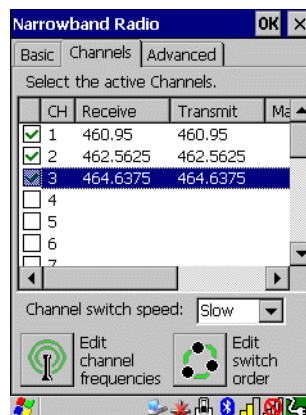
Import from XML file allows you to use a configuration that has already been created to set up your unit.

Export to XML can be used to clone a radio setup so that configuration need only be completed once and can then be copied to an unlimited number of devices.

- Configure the device once.
- Choose **Export to XML file** to export the configuration to an XML file – it will be named *NBRadio_Settings.xml* automatically in the *My Device* folder.
- **Copy** the file to your PC or a USB key, and rename it to *NBRadio_AutoLoadSettings.xml*.
- On a new unit, copy this file to the root directory (the *My Device* folder).
- Warm reset the unit.

The XML file will be auto-loaded onto the device (and deleted). The device is ready for use.

Channels Tab



This tab lists the channel frequency pairs. Channels can be enabled or disabled here. Refer to [Edit Channel Frequencies on page D-4](#) to learn how to add or edit frequencies.



WARNING! Do not add frequencies that are not applicable to your license.

Channel Switch Speed

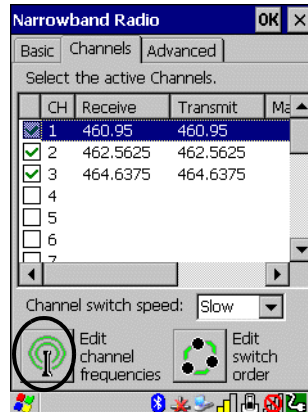
This parameter changes the threshold the hand-held uses to determine when communication quality with a base station is unacceptable. When this threshold is exceeded, the unit starts channel searching for a new base station.

Setting this parameter to *Slow* means a higher threshold – the hand-held is more tolerant of poor communication quality. When the channel quality of the hand-held radio drops below the percentage assigned in the *Advanced* tab under *Low CQ* (note that data in this tab can only be changed by authorized personnel), the unit monitors the channel quality for 15 time-out periods before searching for a new channel. If *Channel Switch Speed* is set to *Fast*, the current channel is only monitored for up to 2 time-out periods before channel switching begins.

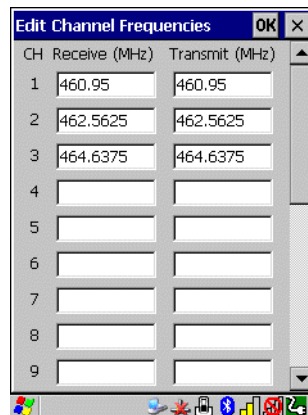


IMPORTANT *Fast* switch speed is most effective where coverage areas are largely overlapping. If the coverage areas barely overlap, have dead spots, or if the hand-held frequently operates on the fringe of coverage, this parameter should be set to **Slow**.

Edit Channel Frequencies

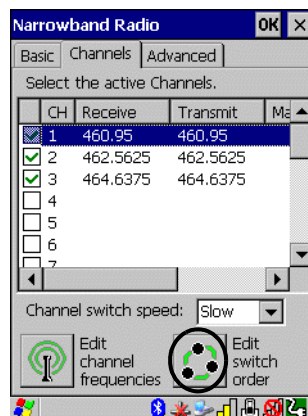


- Click on the **Edit channel frequencies** button in the bottom-left corner of the tab to display the *Edit* dialog box.



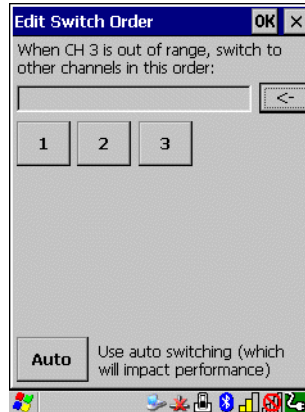
- In the appropriate channel field, type the **Receive** and **Transmit** frequency for the channel, and click **OK**. You can either edit an existing frequency if required or assign new frequencies for a new channel, keeping in mind that you can only use frequency pairs assigned to your license.

Edit Switch Order



When a channel is out of range, the *Edit switch order* screen allows you to indicate the order in which channels will switch. Edit switch order (the button) is rarely used. It is used when the order of channel switching needs to be tightly controlled. It is not recommended that *Edit switch order* be used without a clear understanding of how to order the channel sequences for optimum performance.

- Highlight the channel you want to edit in the *Channel* tab **before** clicking on the *Edit switch order* button.
- Next, tap on the **Edit switch order** button in the lower-right corner of the *Channel* tab to configure channel switching order.



- Tap on the channel numbers in the order you want them to switch – in the sample screen for example, you can click on channels 1, 2 and 3 in the order you want the channels to switch.
- Click on **OK**.



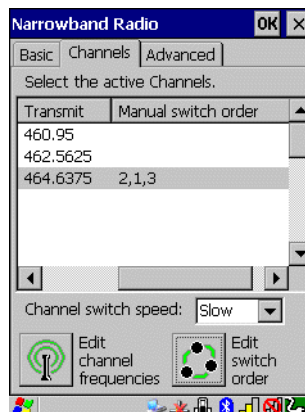
IMPORTANT With manual channel switch order specified, the channels will be switched exactly as stated. It is important to also include the original channel at the end of the manual switch order as the example above shows (original channel is #3). This allows the radio to return to this original channel if for some reason the other channels cannot be reached.



IMPORTANT Clicking on *Auto* clears the manually selected channel order.

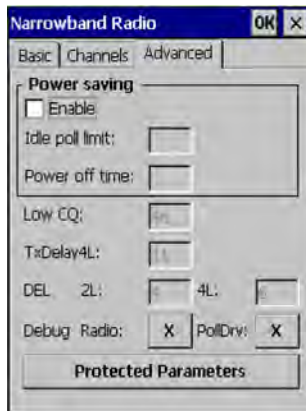
The manually ordered channels are listed in the *Manual switch order* column in the *Channels* tab.

- Scroll to the right to display the manually ordered channels.



If communication quality falls below the channel quality percentage specified in the *Advanced* tab under *Low CQ* (note that this tab is restricted to authorized personnel), only the channels entered in the *Manual switch order* are considered for channel switching. The channel search is carried out in the order in which the channels were selected.

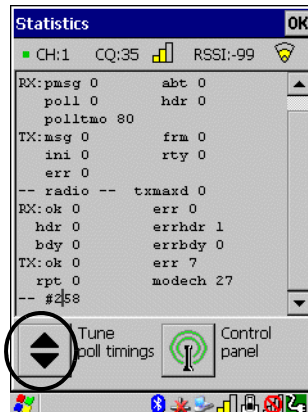
Advanced Tab



The *Advanced* tab contains protected parameters that are only available to authorized personnel.

Tune Poll Settings

- Tap on the **Tune Poll Timings** button in the bottom-left corner of the *Statistics* screen to display the options.



Use the following website to identify the appropriate polling parameter values:

<http://www.ingenuityworking.com/knowledge/w/knowledgebase/narrow-band-polling-protocol-parameter-settings.aspx>



IMPORTANT

These parameters should not be changed without a clear understanding of radio protocol timing.

Statistics Screen

- Tap on the **Narrowband** radio icon in the taskbar to display the *Statistics* screen.

These statistics are updated every second while the dialog box is displayed.

The following table provides a brief description of these protocol and radio statistics.

Protocol Statistics	Description
Rx: pmsg	Number of received polls with attached message
Rx: poll	Number of received polls
Rx: polltmo	Number of poll timeouts
Rx: abt	Number of received radio link aborts
Rx: hdr	Number of received headers
Tx: msg	Number of transmitted messages, complete application messages
Tx: ini	Number of transmitted radio link initialization messages
Tx: err	Number of transmitted errors
Tx: frm	Number of transmitted frames
Tx: rty	Number of transmitted retries

Radio Statistics	Description
Rx: ok	Messages successfully received
Rx: hdr	Received poll headers without CRC error
Rx: bdy	Received poll body without CRC error
Rx: err	Received errors
Rx: errhdr	Received poll header with CRC error or non-basestation message
Rx: errbdy	Received poll body with CRC error
Tx: ok	Messages successfully transmitted
Tx: rpt	Messages retransmitted
Tx: err	Number of transmit errors
motech	Number of complete mode changes

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