

# VC70N0 Vehicle Computer

## Product Reference Guide





# VC70N0 Vehicle Computer

## Product Reference Guide

72-164686-05

Revision A

December 2020

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## Warranty

Subject to the terms of Zebra hardware warranty statement, the VC70 Vehicle Computer products are warranted against defects in workmanship and materials for a period of one year from the date of shipment. For the complete Zebra hardware product warranty statement, go to: [www.zebra.com/warranty](http://www.zebra.com/warranty)

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## Revision History

Changes to the original manual are listed below:

Change	Date	Description
-05 Rev A	12/2020	Replaced master/slave references with central/peripheral (for Bluetooth) and controller/follower (for non-Bluetooth)
-04 Rev A	1/2019	Correct DC power cable part number.
-03 Rev A	7/2018	Update memory size.
-02 Rev C	8/2016	Correct COM port on page 5-15, step 15. (Change from COM 9 to COM1).
-02 Rev B	1/2016	Add Caution not to use tool when connecting cables to COM and USB ports.
-02 Rev A	2/7/2015	Zebra Re-branding. Update accessory table.
-01 Rev C	09/01/2014	Revision C
-01 Rev B	09/19/13	Revision B Release
-01 Rev A	11/30/12	Initial release.





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## **Glossary**

# About This Guide

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## Introduction

The *VC70 Product Reference Guide* provides information about the VC70 vehicle computer using Microsoft® Windows® CE 7.0 operating system and its accessories.

✓ **NOTE** Screens and windows pictured in this guide are samples and can differ from actual screens.

## Documentation Set

The documentation set for the VC70 is divided into guides that provide information for specific user needs.

- **VC70 Quick Reference Guide** - describes how to install and use the VC70 vehicle computer.
- **VC70 Product Reference Guide** - provides an in-depth description on how to use and setup the VC70 vehicle computer and its accessories.
- **Microsoft Application Guide** - describes how to use Microsoft developed applications that reside on the VC70 vehicle computer.
- **Zebra Application Guide** - describes how to use Zebra developed applications available for the VC70 vehicle computer.
- **EMDK Help File** - provides API information for writing applications.

## Configurations

This guide covers the following configurations:

Configuration	Radios	Display	Memory	Data Capture	OS	Keypad
VC70 Full Screen	WLAN: 802.11a/b/g/n WPAN: Bluetooth	10.4" XGA 1024 x 768 Switchable to SVGA 800x600 (4:3 format)	1 GB DDR2 volatile memory, 2 GB EMMC non volatile memory	Optional Scanner	Windows CE 7.0 Professional	Optional USB QWERTY or AZERTY keyboard

## Software Versions

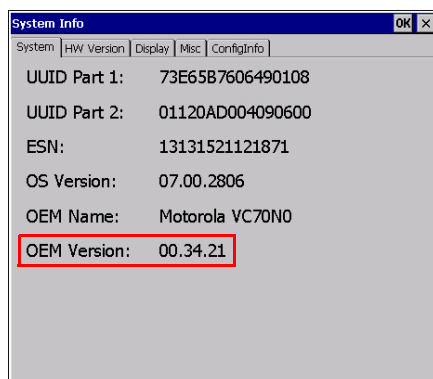
This guide covers various software configurations and references are made to operating system or software versions for:

- OEM version
- Fusion version.

### OEM Software

To determine the OEM software version:

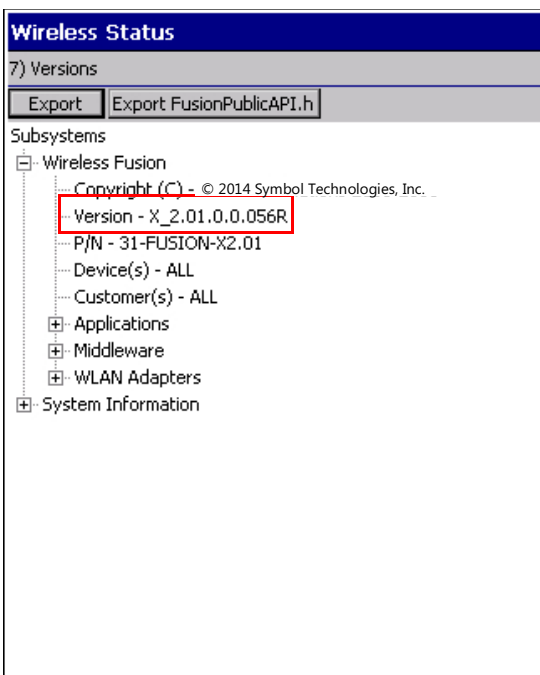
Tap **Start > Settings > Control Panel > System Information** icon > **System** tab.



### Fusion Software

To determine the Fusion software version:

Tap **Fusion** icon > **Wireless Status > Versions**.



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## Chapter Descriptions

Topics covered in this guide are as follows:

- [Chapter 1, Getting Started](#), provides information on getting the vehicle computer up and running for the first time.
- [Chapter 2, Installation](#), provides instructions for installing the vehicle computer in a forklift, on a wall or on a desktop. Provides instructions for installing accessories.
- [Chapter 3, Operating the VC70](#), explains how to use the vehicle computer. This includes instructions for powering on and resetting the vehicle computer, entering and capturing data.
- [Chapter 4, DataWedge Scanner Connection](#), describes how to install the scanners and accessories for the VC70 vehicle computer.
- [Chapter 5, TelnetCE Configuration](#), provides instructions required for connecting serial scanners in a Wavelink TelnetCE session via the VC70 vehicle computer
- [Chapter 6, Wireless LAN Applications](#), provides instructions for using and configuring the mobile computer on a wireless network.
- [Chapter 7, Using Bluetooth](#), explains how to use Bluetooth functionality on the vehicle computer.
- [Chapter 8, Sync with Host Computer](#), provides instructions for installing and configuring ActiveSync.
- [Chapter 9, Application Development and Deployment](#), provides instructions for installing the EMDK for C on the host computer and downloading software files to the vehicle computer.
- [Chapter 10, Staging and Provisioning](#), provides instructions for staging and provisioning the vehicle computer.
- [Chapter 11, Software Configuration](#), includes special configuration instruction for third party software used with the vehicle computer.

- [Chapter 12, Maintenance](#), includes instructions on cleaning and storing the vehicle computer, and provides troubleshooting solutions for potential problems during vehicle computer operation.
- [Appendix A, Specifications](#), includes a table listing the technical specifications for the vehicle computer.

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## Notational Conventions

The following conventions are used in this document:

- “Vehicle computer” refers to the VC70 series of vehicle computers.
- *Italics* are used to highlight the following:
  - Chapters and sections in this and related documents.
- **Bold** text is used to highlight the following:
  - Key names on a keyboard
  - Button names on a screen
  - Dialog box, window and screen names
  - Drop-down list and text box names
  - Check box and radio button names
  - Icons on a screen.
- Bullets (•) indicate:
  - Action items
  - Lists of alternatives
  - Lists of required steps that are not necessarily sequential.
- Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.

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## Related Documents and Software

The following documents provide more information about the VC70 vehicle computers.

- *VC70 Quick Reference Guide*, p/n 72-76346-xx

For the latest version of this guide and all guides, go to: <http://www.zebra.com/support>.

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## Service Information

If you have a problem with your equipment, contact Zebra support for your region. Contact information is available at: <http://www.zebra.com/support>.

When contacting support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software type and version number.

Zebra responds to calls by email, telephone or fax within the time limits set forth in support agreements.



If your problem cannot be solved by Zebra support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your Zebra business product from a Zebra business partner, contact that business partner for support.

## Returning the Vehicle Computer for Service



- NOTE** In the event, the vehicle computer needs to be shipped to Zebra for repair or maintenance, it is essential that the user perform the following steps to electrically disconnect the internal backup battery:
1. Disconnect the power cable from the VC70. The VC70 will continue to work on backup battery power.
  2. Perform cold boot ([Performing a Cold Boot on page 3-19](#)). The backup battery will stop powering the VC70.



# Chapter 1 Getting Started

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## Introduction

The VC70 is Zebra ultra-rugged forklift mounted computer. It is designed to maximize productivity in harsh environments. Its rugged construction and high-performance wireless networking enables real-time data access and collection in a wide range of environments — from the loading dock and freezer to the warehouse.

The VC70's compact design improves visibility and reduces safety concerns while retaining large screen size (10.4"). Its 802.11 a/b/g/n WLAN provides real-time information that improves decision making, reduces errors, and enhances productivity. Its rugged design with integrated shock-mount and MIL-STD 810 military rating for shock and vibration ensures dependable operation in challenging environments. Its IP66 sealing, display, defroster and wide temperature range ensures operation in and out of -30°C freezer storage warehouse.

With its high-resolution and high-brightness display, the VC70 provides the user access to more information in low ambient light warehouse and outdoors.

The VC70 accessories allow backward compatibility with the VC5090 for easy and gradual migration.

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## Unpacking the VC70

When you remove the vehicle computer from its box, save the box and shipping material in case you need to ship or store the vehicle computer. Check the contents of the box against the invoice for completeness and contact your local Zebra service representative if there is a problem.

The VC70 shipping box contains:

- vehicle computer
- VC70 Quick Reference Guide

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## Features

The VC70 has the following features:

- Integrated 802.11a/b/g/n wireless LAN radio

- Windows® CE 7.0 Professional Operating System
- TI OMAP4430 processor at 1GHz in turbo mode CPU
- 1 GB DDR2 volatile memory, 2 GB EMMC non volatile memory
- 10.4" XGA 1024 x 768, Switchable to SVGA 800x600, (4:3 format) color display
- Wireless and wired printing
- Integrated antennas
- Integrated speaker.

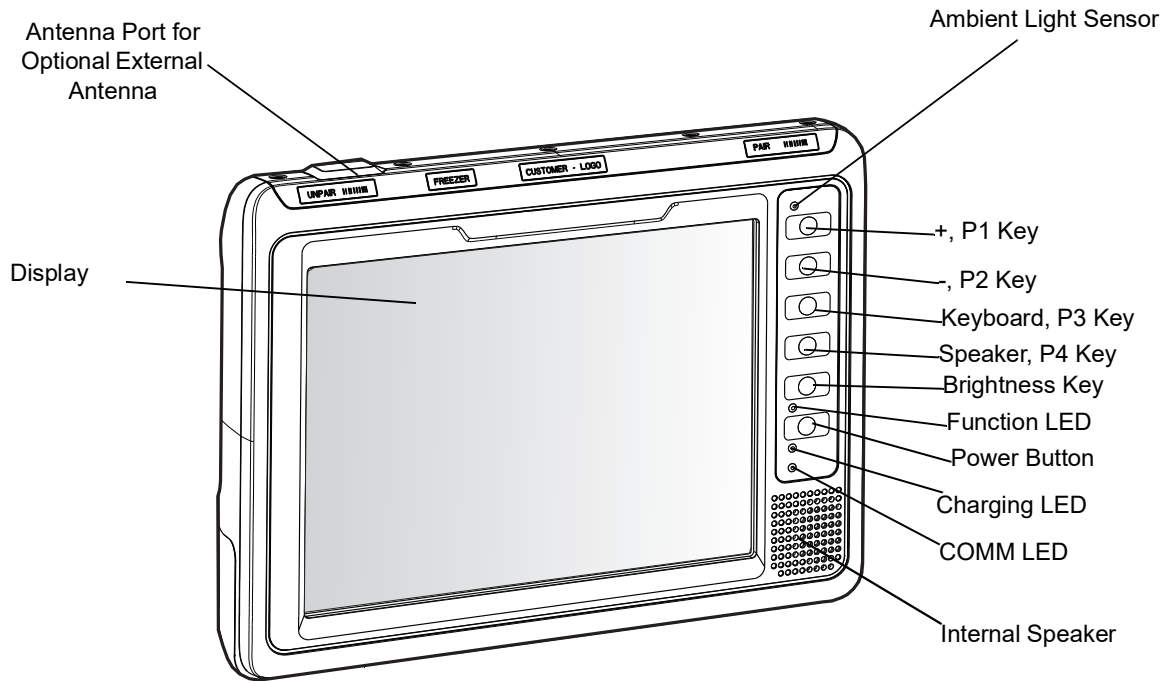


Figure 1-1 VC70 Front View

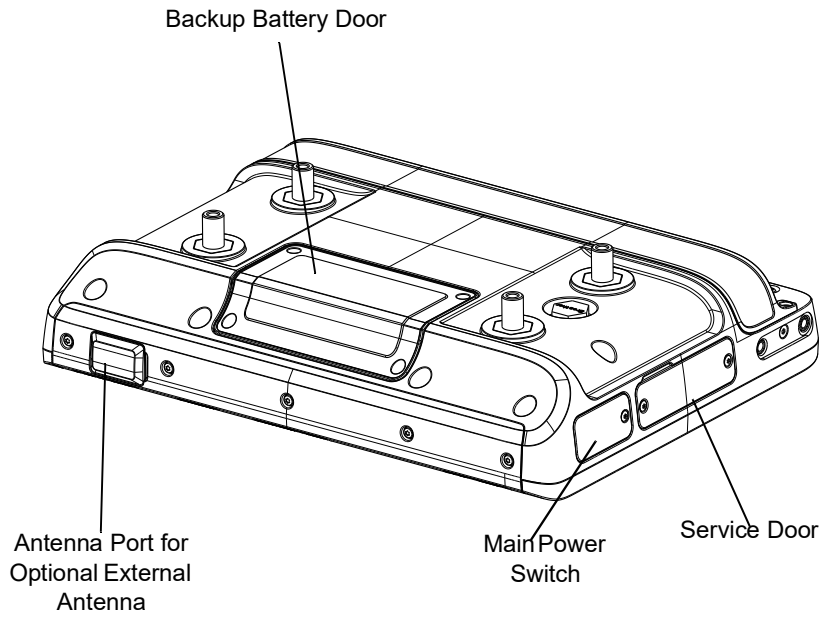
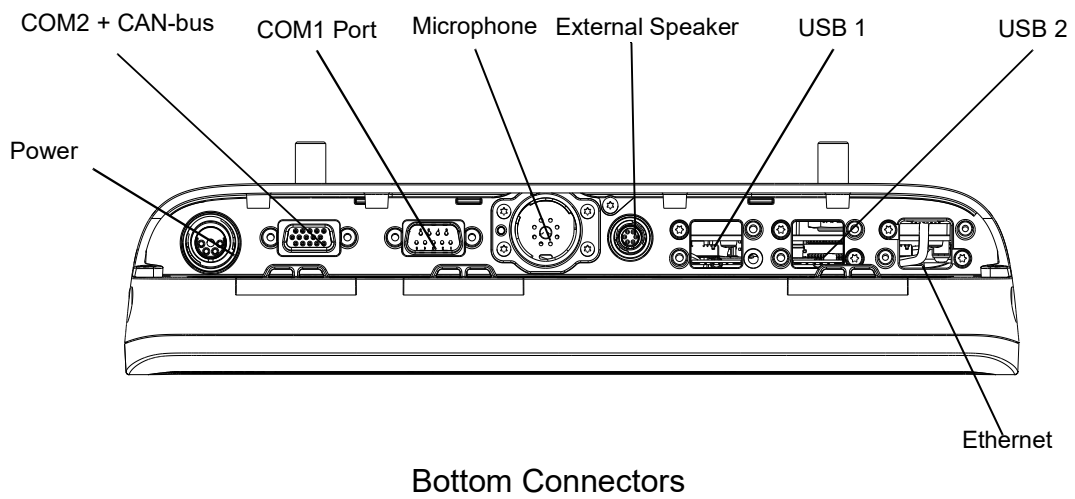


Figure 1-2 VC70 Back View



Bottom Connectors

Figure 1-3 VC70 Bottom View

## Accessories

Table 1-2 lists the accessories available from Zebra for the VC70:

**Table 1-1** Accessories

Accessory	Description	Part Number
<b>Keyboards</b>		
Keyboard: QWERTY, 64-key Backlit, IP66, secured USB-A, VC70. Requires KT-KYBDTRAY-VC70-R mounting tray		KYBD-QW-VC70-03R
Keyboard: AZERTY, 64-key Backlit, IP66, secured USB-A, VC70. Requires KT-KYBDTRAY-VC70-R mounting tray		KYBD-AZ-VC70-03R
Keyboard Protection Grill, QWERTY/AZERTY, VC70		KT-KYBDGRL1-VC70-R
QWERTY/AZERTY Keyboard mounting tray. Includes tilting arms, knobs and screws		KT-KYBDTRAY-VC70-R
Keyboard: 21 Keys, BACKLIT, IP66 SEALED, USB, FUNC/NUM		KYBD-NU-VC70-03R
Keyboard Protection Grill, Functional/Numeric, VC70		KT-KYBDGRL2-VC70-R
Function/Numeric keypad side mount bracket		KT-KYBDMNT-VC70-R
VC5090 keyboard mounting and cable adapters for VC70. Used when reusing existing VC5090 keyboard		KT-VC50KYBD-ADPT-R
Keyboard: 64 Keys, BACKLIT, IP66 SEALED, HT, QWERTY		VC5090KYBD-02R
Keyboard: 64 Keys, BACKLIT, IP66 SEALED, HT, AZERTY		VC5090KYBD-03R
<b>Power supplies and power cables</b>		
External DC power supply	VC70, 9-60VDC Requires 25-159551-01 fused DC power cable to vehicle battery	PWRS-9-60VDC-01R
AC Power supply	Provides power to the VC70 from a 100-240V AC grid. Requires 25-159550-01 adapter cable. Order country specific three wire grounded AC line cord separately.	PWRS-14000-241R
External DC power supply cable to vehicle battery	9-60V DC, 10 feet includes fuse, VC70. Required for the PWRS-9-60VDC-R	25-159551-01
Cable	External power supply cable to VC70 extender. 6.5 feet, VC70	25-159549-01
External power supply cable, to existing VC5090 power cable	Includes fuses, 2 feet, VC70. (VC5090 Cable: 25-71919-03R or 25-71919-04R)	25-159553-01
Power supply cable for AC power supply	AC power supply adapter cable, 6.5 feet, VC70	25-159550-01

**Table 1-1** Accessories (Continued)

Accessory	Description	Part Number
US AC line cord	US AC line cord, grounded, three wire for power supplies PWRS-14000-148R, PWRS-14000-241R, PWRS-0102246H51R, and PWRS-14000-148C. 7.5 feet long. Associated Countries: United States Works with: MC1000, MC17, MC55, MC65, MC70, MC75, MC75A, MC9000, MC9100, MC9500, VC6000, WT4000, and ET1	23844-00-00R
<b>Scanner Cables</b>		
USB Cable for DS3508-ER, LS3408-ER scanners	Coiled, 12 feet, sealed USB secured connector, VC70. Required when the DS3508-ER or LS3408-ER are connected via one of the USB ports for HID interface. Can also be used to connect a charge-only cradle when using the cordless DS3578-ER or LS3578-ER.	25-159548-01
RS232 Cable with TTL Converter	DB9 Female Connector, 9 feet (2.8m) Coiled, Power Pin 9 with RS232 to TTL converter. To be used with DS3508-ER or LS3408-ER scanner. Can also be used to connect a charge-only cradle when using the cordless DS3578-ER or LS3578-ER.	CBA-R49-C09ZAR
DB15 to DB9 adapter	DB15 to DB9 adapter, 6". Use with CBA-R49-C09ZAR for VC70 COM2 serial port scanner. Can also be used to connect other equipment with RS232 interface when CAN bus is not needed.	25-159547-01
<b>Mounting</b>		
U mount for VC70 with mounting hardware	Used when replacing VC5090 mounted with its own U mount	KT-U-MOUNT-VC70-R
Accessory side mount bracket	Used with HMN1089B microphone or KT-SCANMNT-VC70-R scanner mounting holder	KT-ACCMNT-VC70-R
Mounting holder LS34x8ER/LS35x8ER scanner	Requires KT-ACCMNT-VC70-R Accessory side mount bracket	KT-SCANMNT-VC70-R
RAM bridge with RAM-D-2461U RAM MOUNT	D (2.25") size ball with screws. Including screws to mount the PWRS-9-60VDC-01R External DC Power Supply. Used when replacing equipment already mounted with RAM mounts	RAM-D-2461U-MOTO7
RAM-D-2461U RAM MOUNT	D (2.25") size ball with screws. Used when the PWRS-9-60VDC-01R External DC Power Supply has to be mounted away or when AC power supply is used. Used when replacing equipment already mounted with RAM mounts	RAM-D-2461U-MOTO7B
<b>Audio</b>		
External speaker	Zebra HSN4040A 13 Watt water-resistant loudspeaker. Requires 25-159552-01	HSN4040A
Push-To-Talk Hand Microphone	GCAI connector, water resistant	HMN1089B

**Table 1-1** Accessories (Continued)

Accessory	Description	Part Number
	Speaker cable adapter for HSN4040A, VC70. Required to connect the HSN4040A external speaker	25-159552-01
<b>Miscellaneous</b>		
Desiccant bags	Set of 5 desiccant bags	KT-DSCNT-VC70-05R
Screen protector	Set of 5 screen protectors	KT-SPRTCT-VC70-05R
<b>Antenna</b>		
Antenna	2.4GHZ MIN, 5.9GHZ MAX. Connector-mount, multi-band, Omni. Requires the use of an antenna adapter.	AN2030
Antenna adapter	Adapter for WTS2450-RPSMA Antenna. Reverse polarity SMA male reverse thread to reverse polarity SMA female.	RPSMA-RTRPSMA-05R (Pack of five adapters) RPSMA-RTRPSMA-10R (Pack of 10 adapters)
Roof mounted mobile antenna	2.4GHZ MIN, 5.9GHZ MAX, 0DBI	8508851K46
<b>Battery</b>		
VC70 battery	Spare battery kit	BTRY-VC70IAB00



# Chapter 2 Installation

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## Introduction

This chapter describes how to install the vehicle computer in a vehicle or on a desktop and connecting the vehicle computer to a power source. There are different installation options depending on the type of vehicle. This chapter also describes how to install the various accessories for the vehicle computer. Read all of the following instructions before you begin.



***WARNING!*** The vehicle computer and bracket must be firmly secured to a surface that can support the vehicle computer's weight.



***CAUTION*** A competent engineer must perform the installation in a vehicle. Improper installation can damage your vehicle and/or the VC70.

Do not install the vehicle computer in a location that will affect vehicle safety, drivability, or visibility.



***NOTE*** All bolts and screws used for installing the VC70 are metric type with T7 to T30 TORX head.

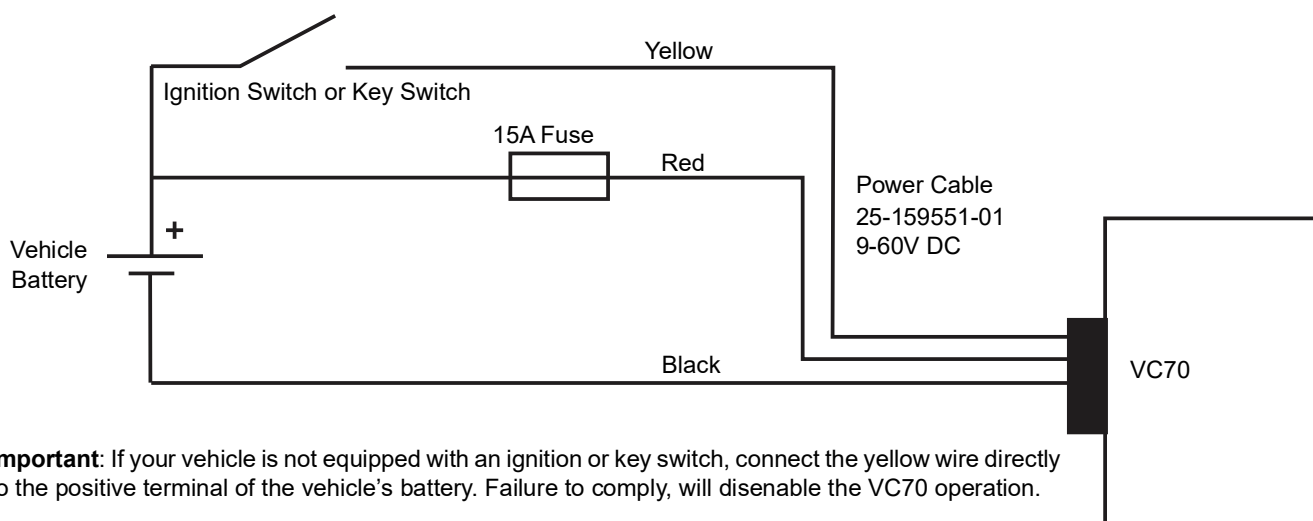
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## Electrical Power Wiring

- ✓ **IMPORTANT** When replacing the forklift battery, avoid draining the internal backup battery of the VC70 by pressing the power button on the front panel for putting the VC70 in unattended mode.
- Establish a neat route for the cable, staying clear of moving parts or hot surfaces.
  - Fix the cable to existing cable runs inside the vehicle using cable ties, but make sure they are away from any moving or hot surfaces.
  - When the cabling must go through a panel, use a suitable gland.
  - When fixing the conduit or cable on the outside of a vehicle, use P-Clips. Either drill and tap the hole or use a nut and bolt to secure the clip.
  - Ensure the cable does not have tight bends. The minimum recommended radius is 63.5 mm (2.5 in.).
  - Ensure cables do not swing or chafe on the structure. This often requires using cable ties approximately every foot, and ensuring the cables do not flex often, especially where they connect to the VC70. However, if you must re-position the VC70 occasionally, ensure there is enough slack in the cable to accommodate movement without putting tension on the cable.
  - DO NOT wind a cable in and out of the mesh on a cage.
  - On electric vehicles, take the power from as close to the battery as possible, but not directly from the battery terminals, and not before any main fuse.
  - On gasoline, diesel or propane vehicles, take the power from as close to the battery terminals as possible, and avoid using existing wiring.
  - Ensure that all fuses are as close as possible to the power source.

## Forklifts and Trucks with 12V, 24V, 36V and 48V Batteries

- All power wiring must use the supplied 25-159551-01 power cable.
- One 3AB, 15A, 250V, FST BLO fuse.
- Keep the path between the battery and the vehicle computer as short as possible and away from any part of the ignition high tension system.



**Important:** If your vehicle is not equipped with an ignition or key switch, connect the yellow wire directly to the positive terminal of the vehicle's battery. Failure to comply, will disenable the VC70 operation.

**Figure 2-1** Wiring Diagram

You can use your old VC5090 power cable. When employing this option, use VC5090 Bridge Cable, PN 25-159553-01. You must also replace the fuses on the red and black wires of the old cable with the new fuses supplied with the bridge cable kit.

1. Disconnect the vehicle battery.



**CAUTION** To prevent damage to the VC70, replacing the vehicle battery is forbidden when the ambient temperature is under  $-10\text{ }^{\circ}\text{C}$ . Attempting to replace a battery under  $-10\text{ }^{\circ}\text{C}$  will result in a warning shown on the VC70 screen and prevent the user from switching off the VC70. To replace the battery, move to a place with temperature is above  $-10\text{ }^{\circ}\text{C}$  - the warning screen will disappear.



**Figure 2-2** Forklift Battery Swap - Low Temperature Warning

2. Connect the red wire directly to the vehicle's battery positive terminal. Connect the black wire directly to the vehicle's battery negative terminal.

✓ **NOTE** The vehicle computer contains an Ignition Sense feature that detects when the ignition switch or key switch is turned off and shuts the vehicle computer down after a preprogrammed timeout. This feature allows the operator to use the vehicle computer for a predetermined time period after the ignition switch or key switch is turned off, then shuts the vehicle computer down automatically to prevent over-discharge of the forklift battery. The timeout period is adjustable by the user (see [Ignition Sensing on page 2-5](#) for setting the timeout value). When the vehicle computer enters low power mode using the Ignition Sense feature, current draw from the vehicle battery is reduced to less than 15mA and the vehicle computer consumes current from its internal battery. This feature provides the automatic shutoff functionality of an external relay, without requiring an actual relay and has the added benefit of allowing the user to work for a preset time period before shutting down.

✓ **NOTE** For power drain of the forklift battery under the various power conditions, refer to [Power Status on page 3-22](#).

✓ **NOTE** See the vehicle Owner's Manual for specific wiring information.

3. Connect the yellow wire to the vehicle's ignition or key switch if such is used. If you do not plan on using the Ignition Sense feature, connect the yellow wire directly to the vehicle's battery positive terminal.

4. Ensure the wiring connections created are sufficiently insulated from each other.

5. Re-connect the vehicle battery.

6. Connect the power cable connector into the vehicle computer's Power port. Align the keyway on the power connector with the notch on the vehicle computer's power port.

7. If the power supply is mounted remotely from the VC70, use 25-159549-01 extender cable to connect between the power supply and the VC70.

8. Secure the power cables on both sides of the power supply with cable ties as close as possible to the connectors.

✓ The VC70 display can be blanked when the vehicle is moving to eliminate driver distraction for safety considerations (see [Screen locking feature on page 11-6](#)).  
To recover from display lock:

1. Press and hold on touch screen (more than 1 second).
2. Remove your finger from the screen to resume operation.

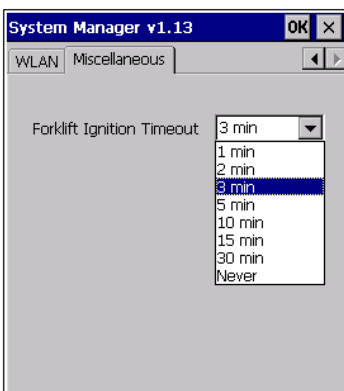
## Ignition Sensing

The vehicle computer contains an Ignition Sense feature that detects when the ignition switch or key switch is turned off and shuts the vehicle computer down after a preprogrammed timeout. This feature allows the operator to use the vehicle computer for a predetermined time period after the ignition switch or key switch is turned off, then shuts the vehicle computer down automatically to prevent over-discharge of the forklift battery. The timeout period is adjustable by the user. When the vehicle computer enters low power mode using the Ignition Sense feature, current draw from the vehicle battery is reduced to less than 15mA and the vehicle computer consumes current from its internal battery. This feature provides the automatic shutoff functionality of an external relay, without requiring an actual relay and has the added benefit of allowing the user to work for a preset time period before shutting down.

The power cable must be connected to the ignition switch or key switch. See [Forklifts and Trucks with 12V, 24V, 36V and 48V Batteries on page 2-3](#) for information on connecting the power cable to enable the Ignition Sense feature.

✓ **NOTE** These settings are not persistent across a cold boot.

1. Tap  > **Settings** > **Control Panel** > **VC70 System Manager** icon. The **System Manager** window displays.
2. Select the **Miscellaneous** tab.



**Figure 2-3** Miscellaneous Tab Window

3. In the **Forklift Ignition Timeout** drop-down list, select the amount of time before the vehicle computer shuts down after the ignition switch or key switch is turned off.
4. Tap **OK**.

## VC70 Power States

✓ **NOTE** Refer to [Power Status on page 3-22](#) for description of the various power states.

[Table 2-1](#) describes the power drain of the forklift battery under various power conditions.

**Table 2-1** VC70 Power States

Power State	Forklift battery	Ignition	Power Switch	Power Key	Power State Description	Power drain from forklift battery
Power On	Connected	On	On	Not Pressed	System on with full functionality.	Typical when internal battery is not charging - 15W. Typical during internal battery charging - 22W. Maximum during operation - 100W.
Low Power	Connected	On	On	Pressed (from Power On State)	System on with display, touch screen and audio off. (see <a href="#">Waking the Vehicle Computer on page 3-23</a> )	No internal battery charging - 7.5W. Internal battery charging - 15W
	Connected	Off after inactivity timer expires (programmable, 3 minutes default)	On	Not Pressed	Reduced power consumption mod, external power turned off - 15mA current drain from forklift battery. System powered from internal battery. When the capacity of the internal battery is reduced to 50%, the device goes to Critical Suspend state.	External power supply idle current - 0.2W
	Not Connected	Don't Care	On	Pressed		
Critical Suspend	Don't Care	Don't Care	Off	Don't Care	System off. Unit in backup mode up to 72 hours. Unit kept alive by internal backup battery.	External power supply idle current - 0.2W

## Installing the VC70 on a Cart, a Wall, or a Desktop

To mount the vehicle computer on a cart, a wall, or a desktop:

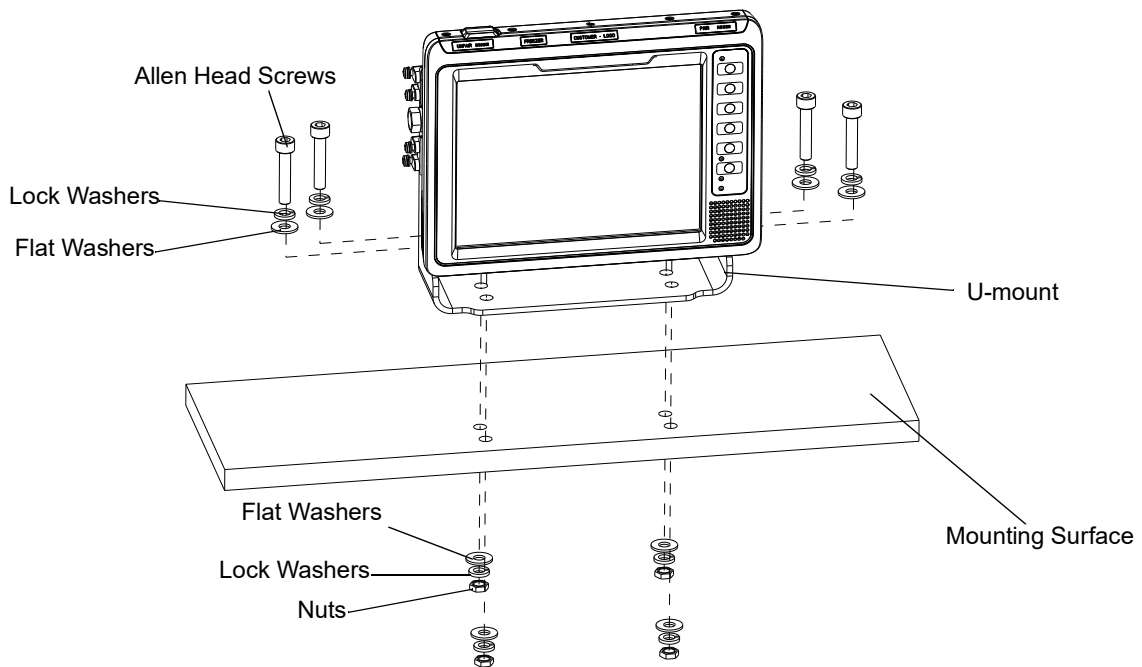
- Install the U-mount to the desktop.
- Connect the vehicle computer to the AC power supply.

✓ **NOTE** For AC power supply and cables, refer to [Accessories on page 1-4](#).

### Mounting the Bracket on a Desktop

⚠ **CAUTION** If mounting to a thin surface such as drywall or plywood, a reinforcing plate is required.

✓ **NOTE** The VC70 ships with four No. 8 Allen head screws (M10x50mm) for securing the mounting bracket. If the supplied cap screws are not long enough, use M10 - X stainless steel Allen head screws where X represents the length in millimeters of the required screws.



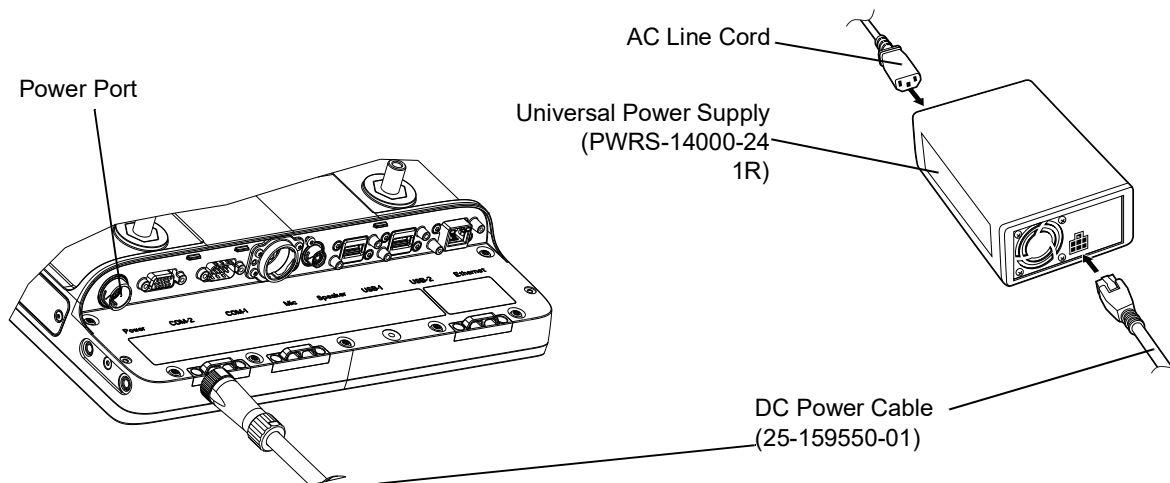
**Figure 2-4** Mounting on a Desktop

## Connecting the Vehicle Computer to AC Power

- ✓ **NOTE** Use only a Zebra-approved power supply, output rated 12 VDC and minimum 9A (part number 50-14000--241R). The power supply is certified to EN60950 with SELV outputs.

To provide power from an AC source:

1. Insert the AC line cord into the AC connector on the universal power supply.



**Figure 2-5** Connecting AC power

2. Plug the other end of the AC power cable into a wall outlet.
3. Insert the DC power cable into the DC connector on the universal power supply.
4. Plug the other end of the cable into the vehicle computer's Power port.

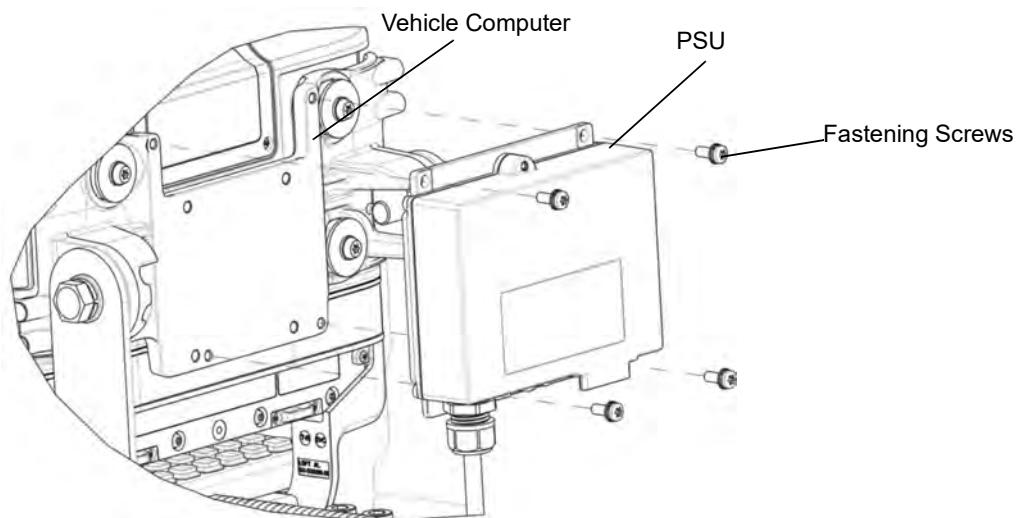
- ✓ **NOTE** For power supply and cables, refer to [Accessories on page 1-4](#).



## Installing the DC Power Supply (PSU) on the VC70

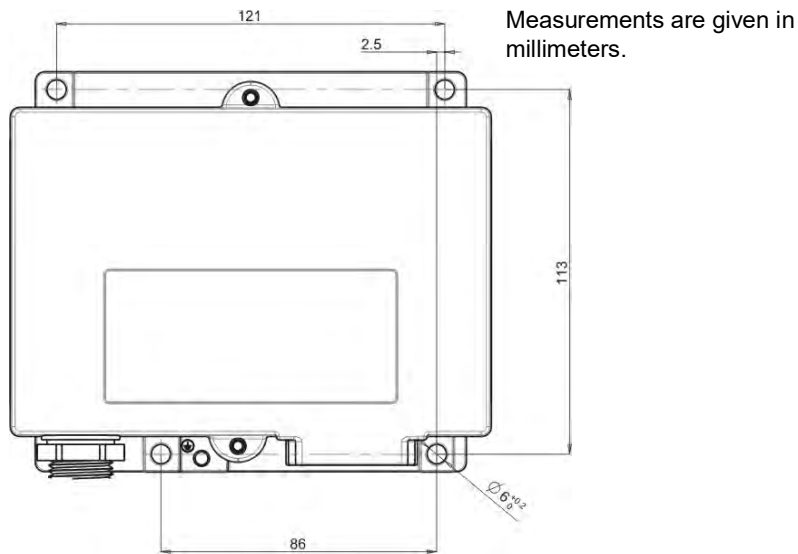
✓ **NOTE** Follow this procedure when using the U-mount. The PSU fastening screws are supplied with the U-mount kit.

5. Attach the PSU to the back of the vehicle computer.
6. Screw the four M5x14mm screws into the PSU mounting holes and tighten. Torque the screws  $20 \pm 10\%$  kgf-cm ( $17 \pm 10\%$  lbs-in).



**Figure 2-6** *Installing the PSU*

✓ **NOTE** Whenever the PSU needs to be mounted remotely, refer to [Installing the PSU on page 2-9](#) to prepare the mounting solution. You need to also use an extender cable PN 25-159549-01 to connect the PSU to the vehicle computer. For power supply and cables, refer to [Accessories on page 1-4](#).



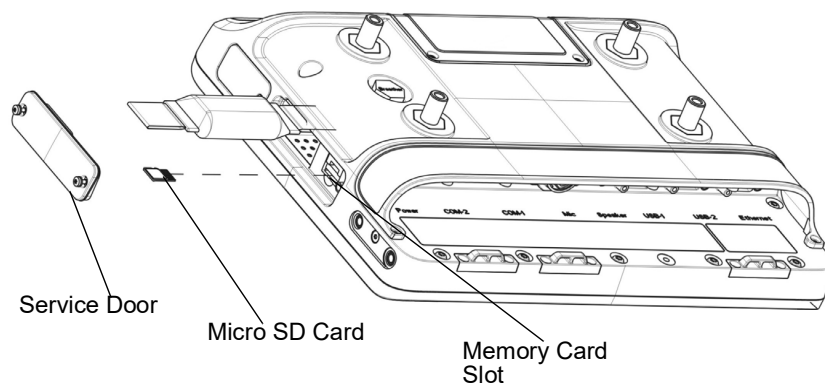
**Figure 2-7** PSU Installation Template

## Installing a Micro SD Card

A micro SD (Secure Digital) card provides secondary non-volatile storage. The card holder is located on the right side of the VC70 under the Service door.

To install the micro SD card:

1. Remove the two T8 TORX screws securing the Service door.



**Figure 2-8** Install Memory Card

2. Push the memory card, with the contacts up, into the card slot until it locks.
3. Replace the Service door and secure using two T8 TORX screws.

**CAUTION** Ensure to torque the screws to seal the device properly. Otherwise, sealing can be compromised.

Torque the Torx head screws to 4.0 + 10% kgf-cm (3.5 ± 10% lbs-in).

## RAM Mount Installation



**CAUTION** If mounting to a thin surface such as drywall or plywood, a reinforcing plate is required.

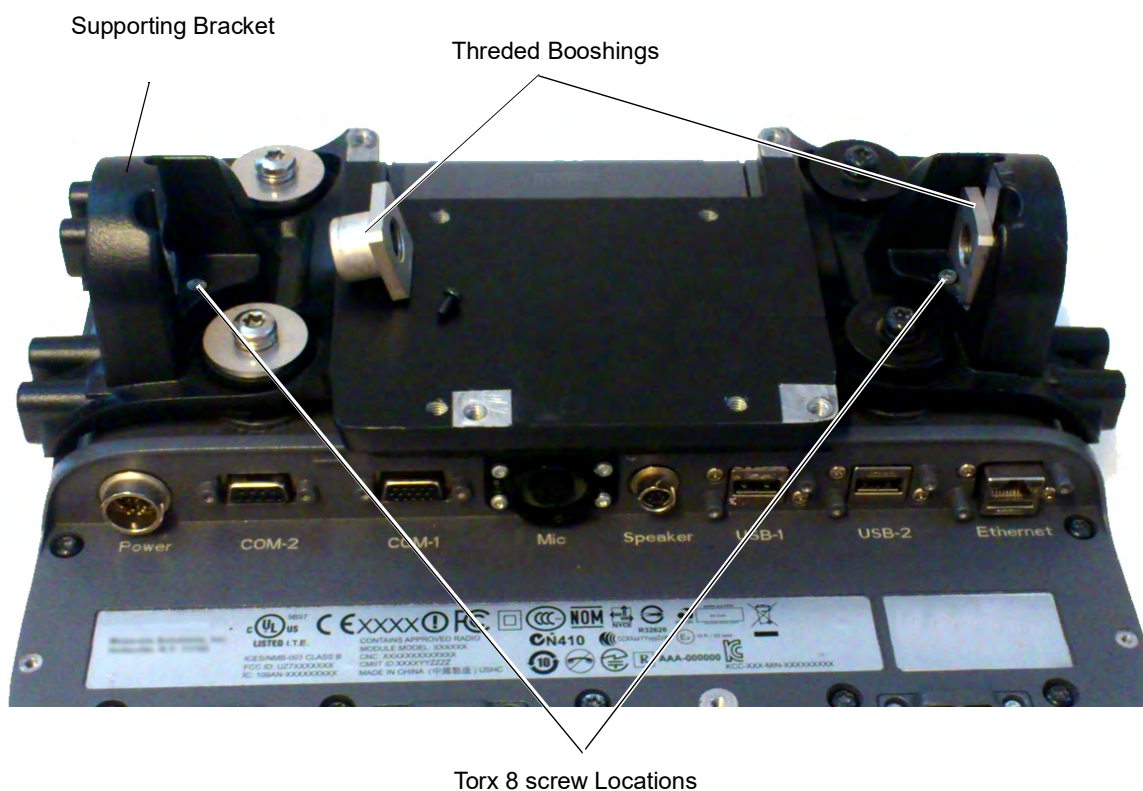


**NOTE** For RAM Mounts, refer to [Accessories on page 1-4](#).

The RAM Double Socket Arm Mount allows the VC70 to be easily adjusted to most comfortable location. A single Adjustment Knob enables simultaneous adjustment of both upper and lower ball joints. The mount affixes to the forklift cage or other strong surface by the supplied hardware kit and bolts provided by the customer (Search for VC70 on <http://www.rammount.com>).

To install the RAM Mount:

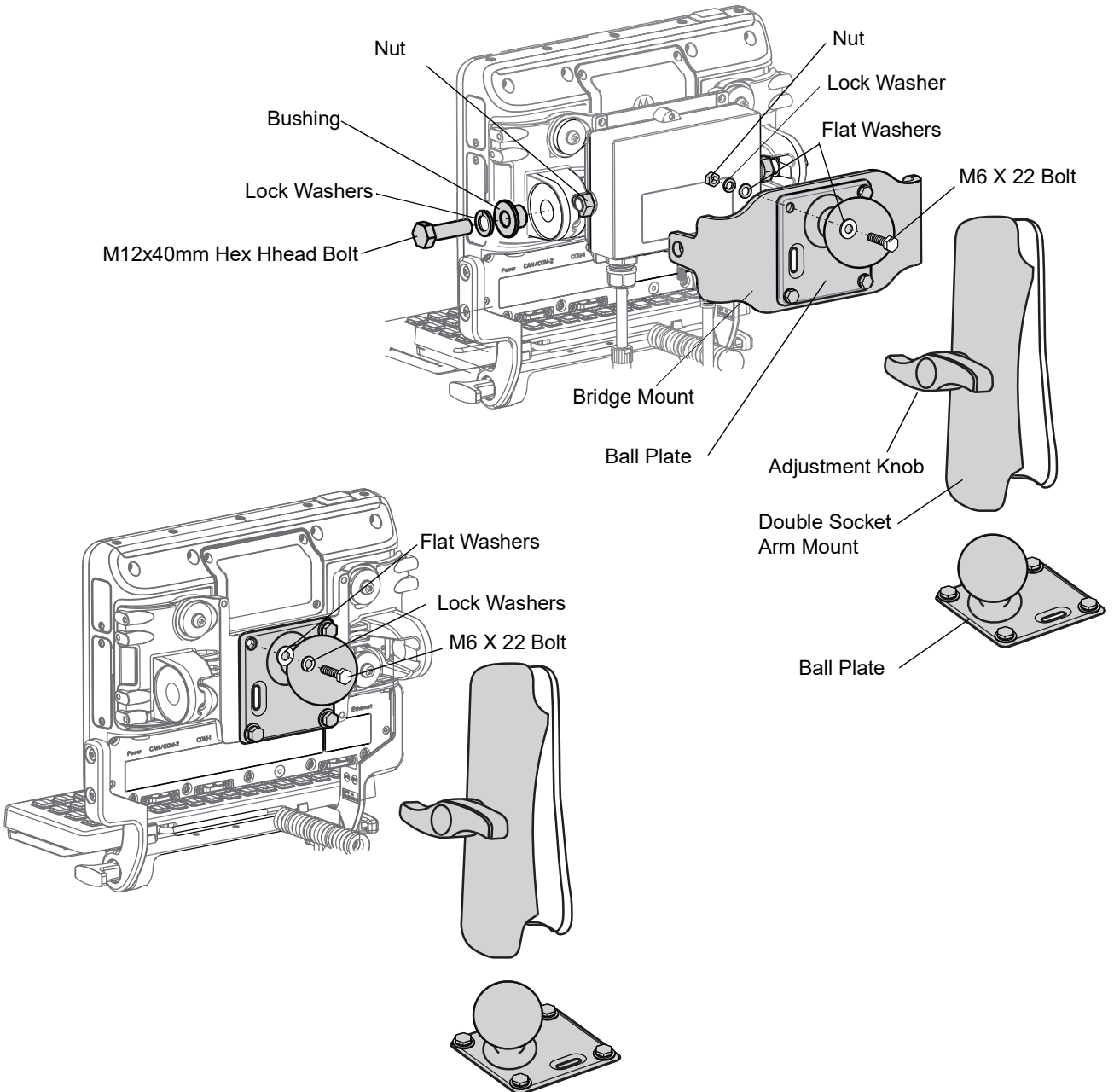
1. If Installed, remove the two threaded booshings from within the supporting bracket.



**Figure 2-9** Removing the Threaded Booshings from within the Supporting Bracket

2. Place the Bridge Mount onto the Supporting Bracket.
3. Use two M12x40mm hex head bolts into mounting holes and tighten. Torque the hex head screws to  $350 \pm 10\%$  kgf-cm ( $300 \pm 10\%$  lbs-in)
4. Use four bolts, nuts, lock washers and flat washers to install the Ball Base to the Bridge Mount. Torque the bolts to  $91.7 \text{ kgf-cm} \pm 10\%$  ( $79.6 \pm 10\%$  lbs-in).
5. Use four bolts, nuts, lock washers and flat washers to install the Ball Base to the forklift surface. Torque the bolts to  $91.7 \text{ kgf-cm} \pm 10\%$  ( $79.6 \pm 10\%$  lbs-in).

6. Install the Double Socket Arm Mount. Adjust the VC70 to the best view position and fasten the Adjustment Knob.



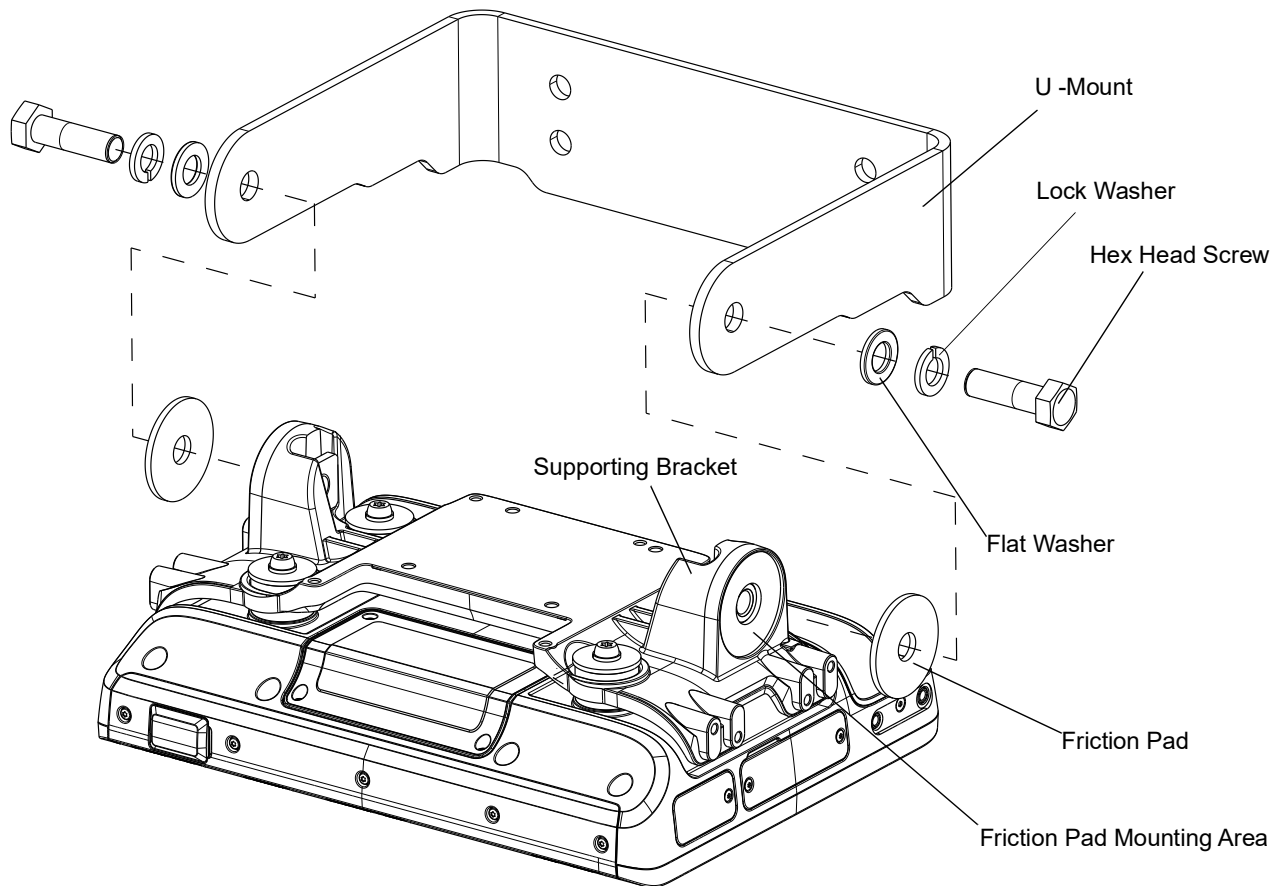
**Figure 2-10** RAM Double Socket Arm Mount

## U-Mount Installation

The U Mount (P/N: KT-U-MOUNT-VC70-R) for is used for replacing a mounted VC5090 with the VC70.

To install the U-mount:

1. Position the friction pads in the friction pad mounting area.
2. Position the U-mount over the mounting holes.
3. Place lock and flat washers onto cap screws.
4. Screw the M12x40mm hex head screws into mounting holes and tighten. Torque the hex head screws to  $350 \pm 10\%$  kgf-cm ( $300 \pm 10\%$  lbs-in).



**Figure 2-11** U-mount Installation

To remove the U-mount:

1. Release and remove the two hex head screws, lock washers, flat washers and friction pad.
2. Remove the U-Munt from the supporting bracket.

Remove the two Torx 8 screws that secure the two threaded booshings.

## Installing the VC70 on a Forklift



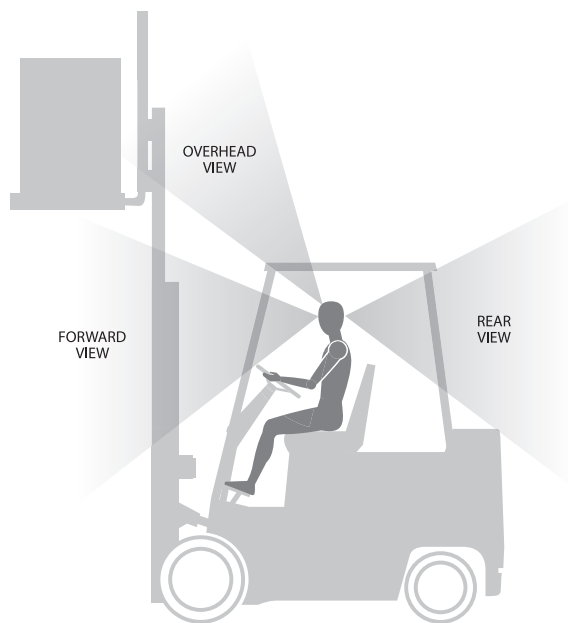
**CAUTION** A competent engineer must perform the installation in a vehicle. Improper installation can injure the operator and damage your vehicle and/or the VC70.

Follow the instructions below to properly install the VC70 on a forklift.

- Determine the best location for mounting the vehicle computer taking into consideration the driver's field of view and ease of accessing the vehicle computer.
- Install the appropriate mounting hardware. The VC70 ships with four No. 8 Allen head screws (M10x50mm) for securing the mounting bracket. If the supplied cap screws are not long enough, use M10 - X stainless steel Allen head screws where X represents the length in millimeters of the required screws.
- Connect the vehicle computer to the vehicle's wiring system.

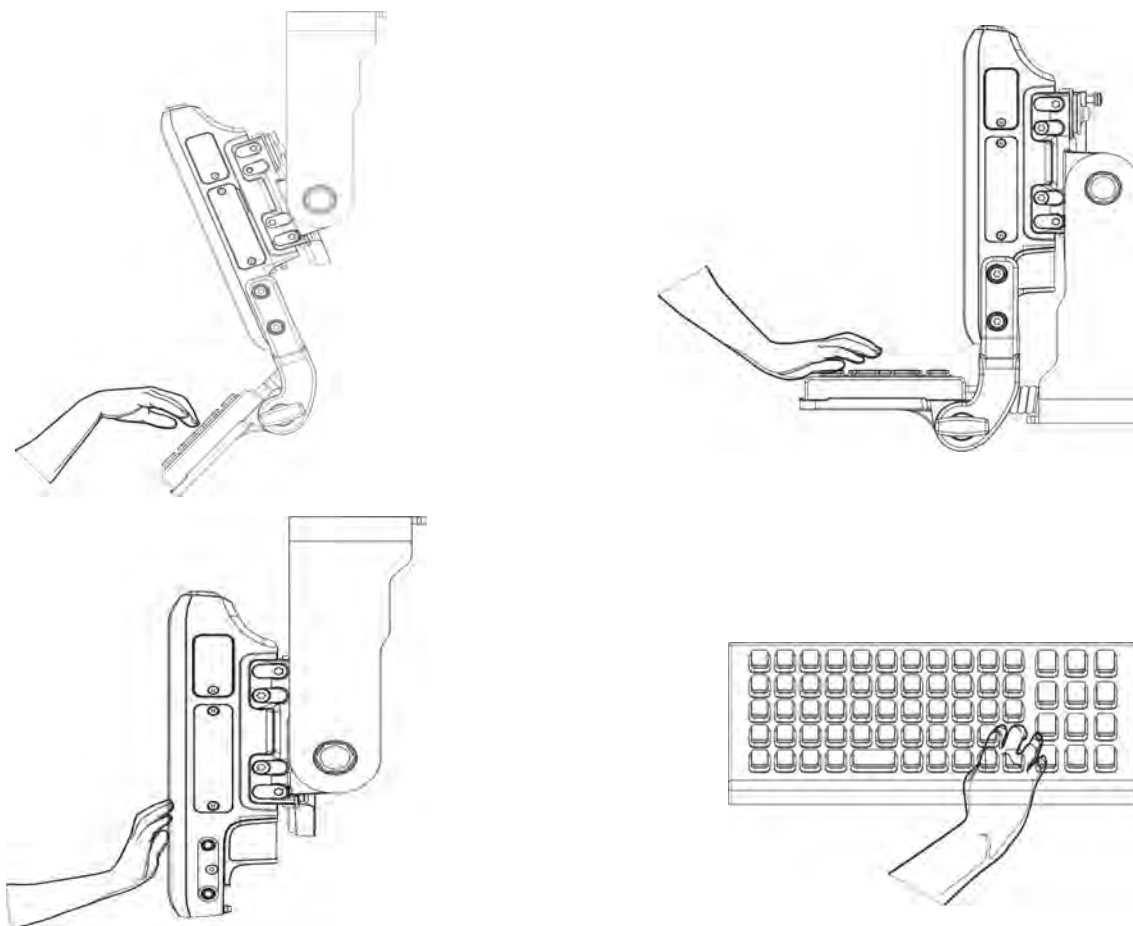
### Positioning the Vehicle Computer

- Determine the best position for the vehicle computer and all the associated components. If a similar vehicle computer was previously installed, check to see if the position it used is suitable for the VC70.
- Test the installation for at least 30 minutes before installing on another vehicle. Record all details:
  - Check that the position of the vehicle computer does not obstruct vehicle controls.

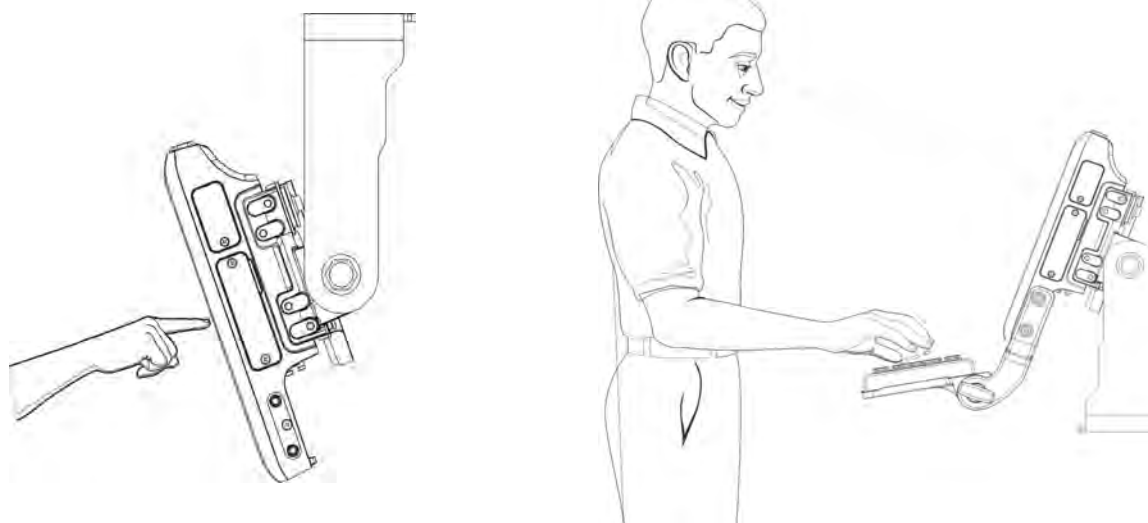


**Figure 2-12** View Obstruction

- Check that the vehicle computer does not obstruct the driver's view.
- Check the position of the vehicle computer for user comfort over long periods.
- Check positioning to avoid extreme wrist angles that may cause injury.



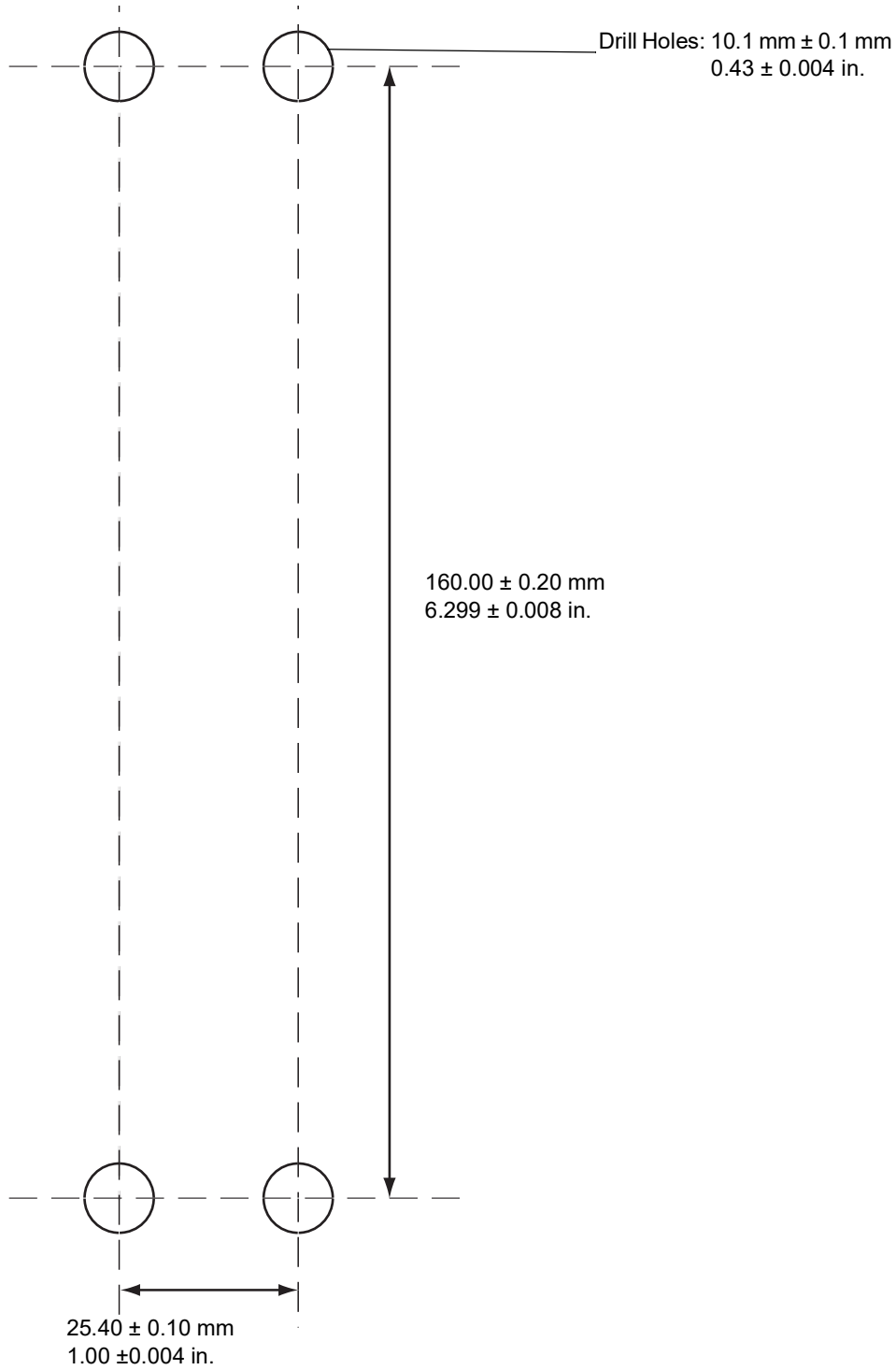
**Figure 2-13** *Avoid Extreme Wrist Angles*



**Figure 2-14** *Optimum Wrist Positions*

## Mounting the Vehicle Computer

### U-Mount Installation Template



**Figure 2-15** Mounting Template



### Important Fixing Information

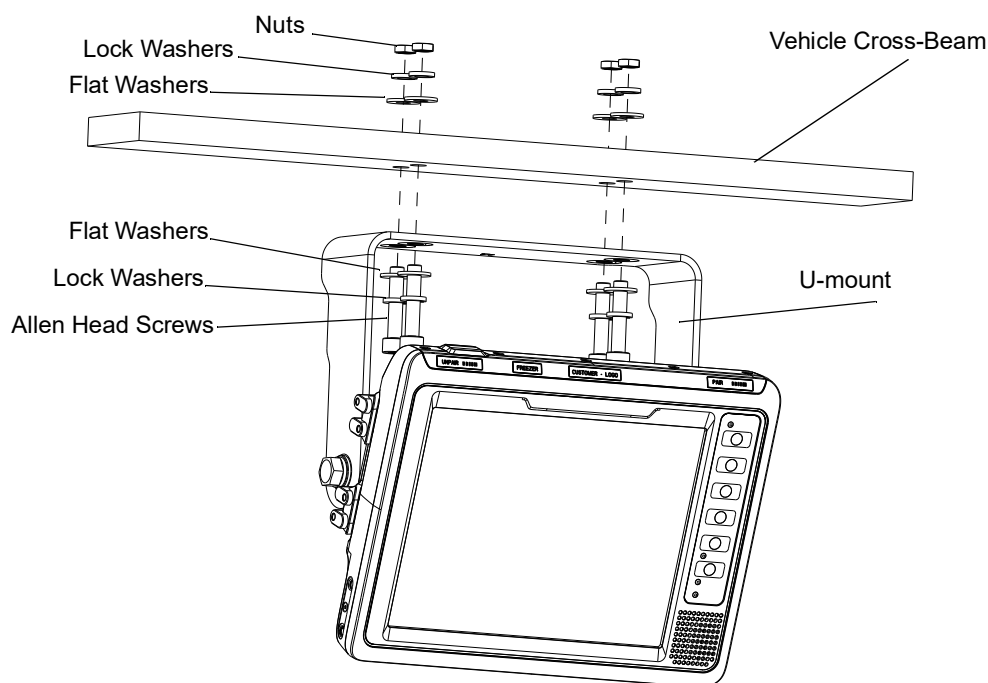


**CAUTION** Any modification to supplied mounting bracket could cause failure of the unit and/or mountings.

- Mounting surface must be flat and stiff and it must extend evenly for the entire length of the mounting bracket surface.
- All four mounting holes must be used.
- All nuts and bolts must be checked periodically and tightened if required.
- When installing the vehicle computer, care must be taken to ensure that the mounting bracket footprint is fully supported. Additional plates may be required to achieve this.
- Do not mount the vehicle computer with the mounting bracket perpendicular to a wall.

### Mounting onto an Over-Head Cross-Beam Example

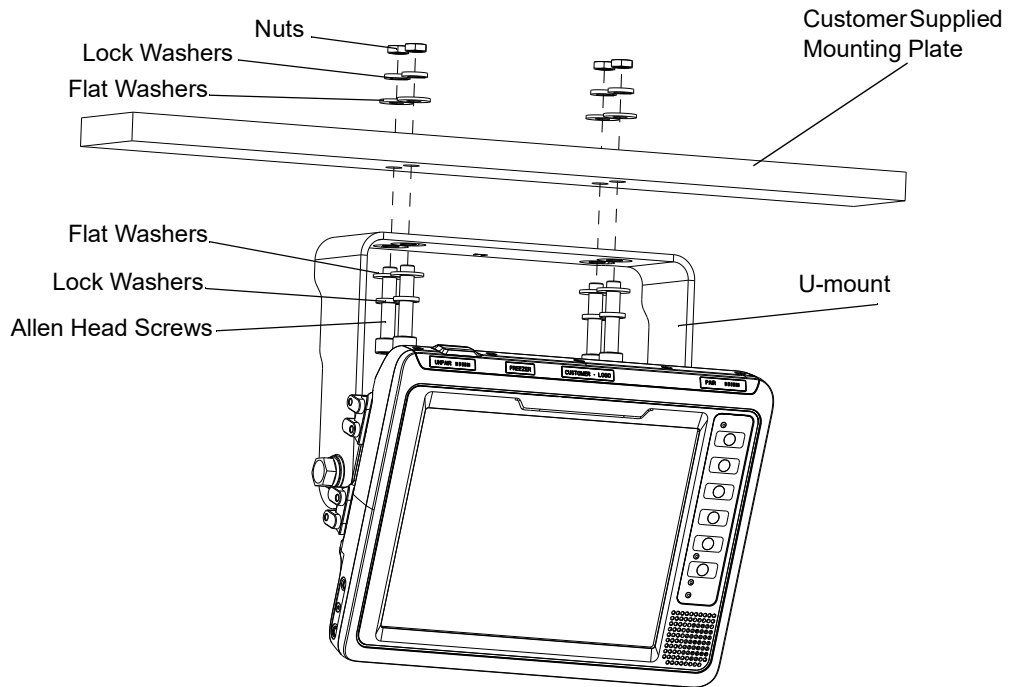
The diagram below illustrates a typical installation where the vehicle computer is mounted onto a cross-beam.



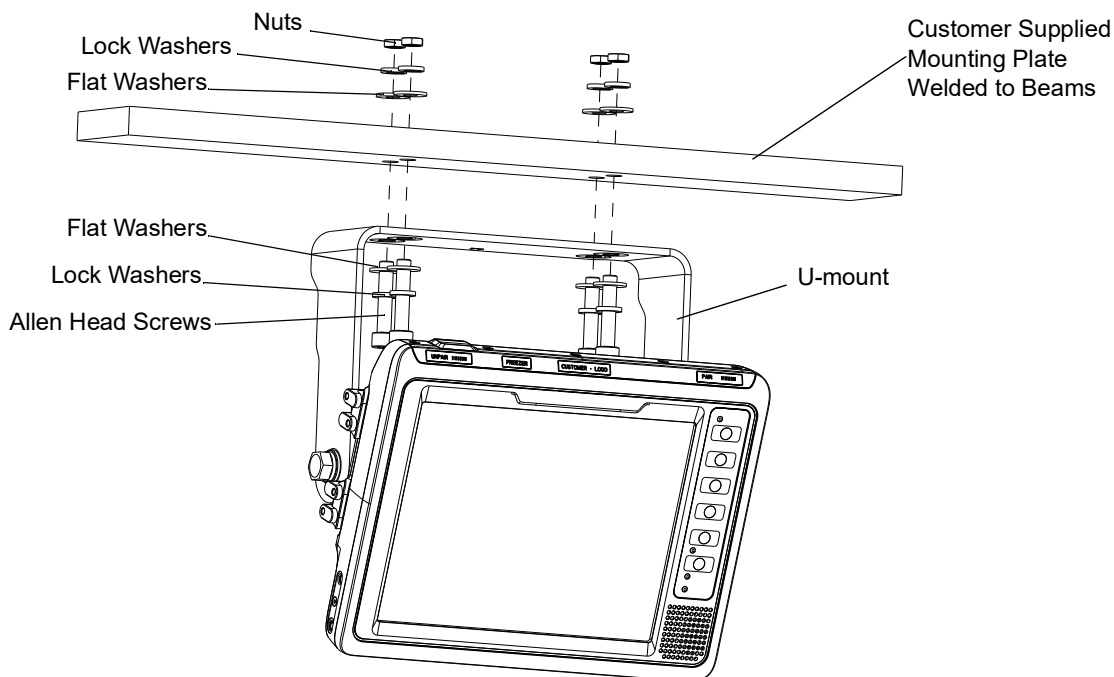
**Figure 2-16** Mounting the VC70 onto an Over-Head Cross-Beam Example

### Mounting onto an Over-Head Cage Example

The diagrams below illustrates a typical installation where the vehicle computer is mounted on an overhead cage. A customer supplied mounting plate must be used that can withstand the weight of the vehicle computer under vibration and shock. The plate must be made of stainless steel or hardened steel with the following dimensions: 3.0 in. (76.0 mm) wide, 8.66 in. (220.0 mm) long and 0.2 in. (5.0 mm) thick. The plate must be secured with hardware or to the underside of the cage by welding.



**Figure 2-17** *Mounting on Flat Overhead Beams*

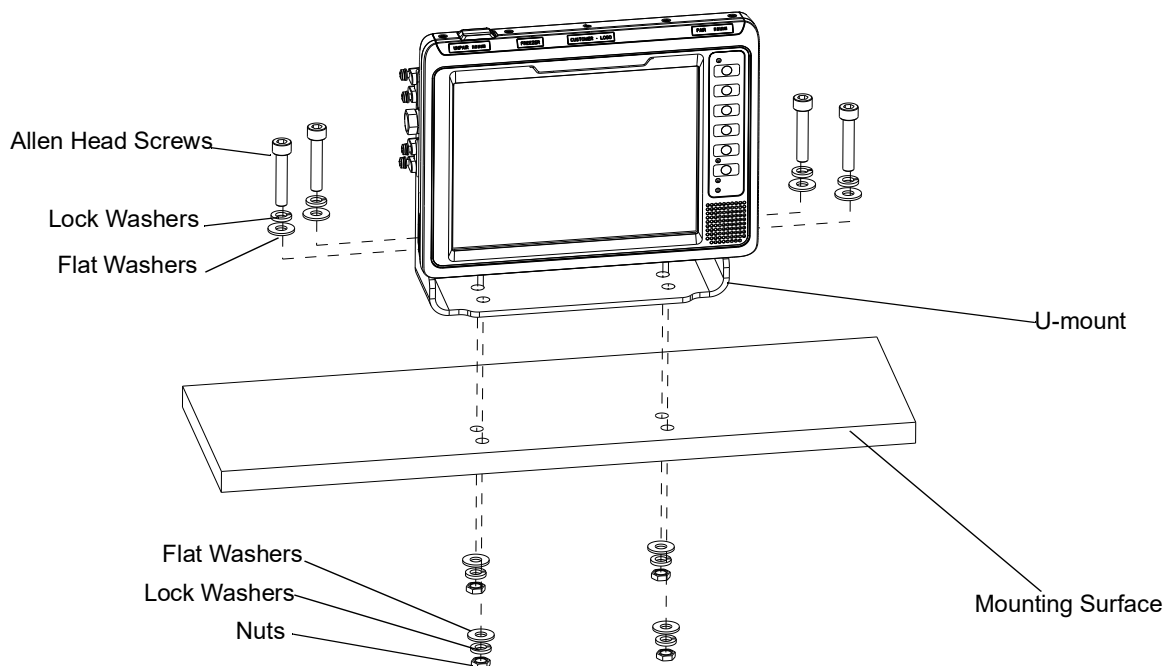


**Figure 2-18** *Mounting on Transverse Overhead Beams*

**Mounting on a Dashboard or Horizontal Surface Example**

The diagram below illustrates a typical installation where the vehicle computer is mounted on a dashboard or horizontal flat surface.

✓ **NOTE** If mounting to a thin surface, a reinforcing plate maybe required.



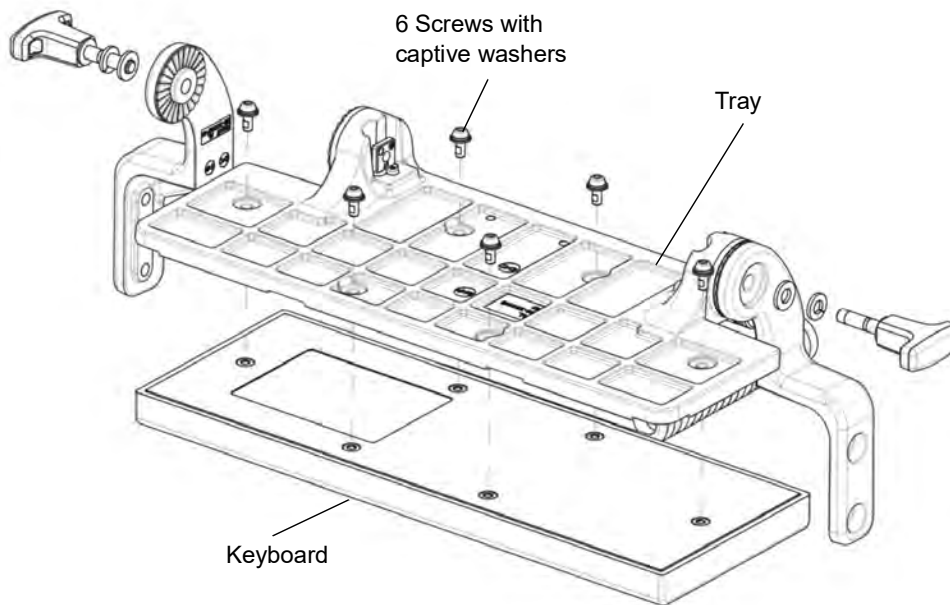
**Figure 2-19** *Mounting on a Vehicle Dashboard*

## Installing the Optional QWERTY/AZERTY Keyboard

The keyboard kit contains the following items:

- Keyboard
- Right and left mounting arms
- Four torx head screws with flat and lock washers
- Six screws with captive flat and lock washers (for keyboard fastening)
- Two locking knobs, two flat washers and two lock washers.

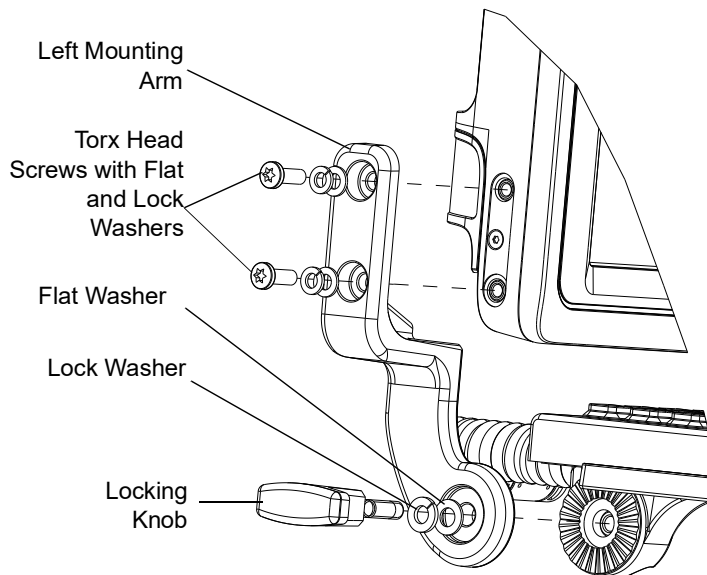
1. Position the keyboard on the tray and fasten six M4x10mm screws.



**Figure 2-20** Attaching the Keyboard to the Tray

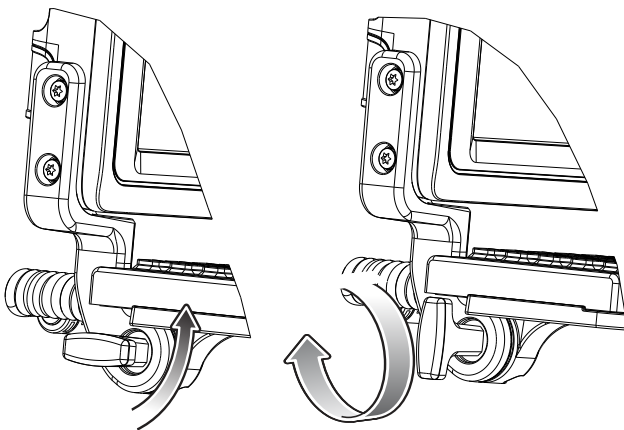
2. Attach the left and right mounting arms to both sides of the VC70, using the M5x14mm Torx head screws with flat and lock washers. Only tighten the cap screws three turns.

✓ **NOTE** For optional QWERTY/AZERTY keyboards, refer to [Accessories on page 1-4](#).



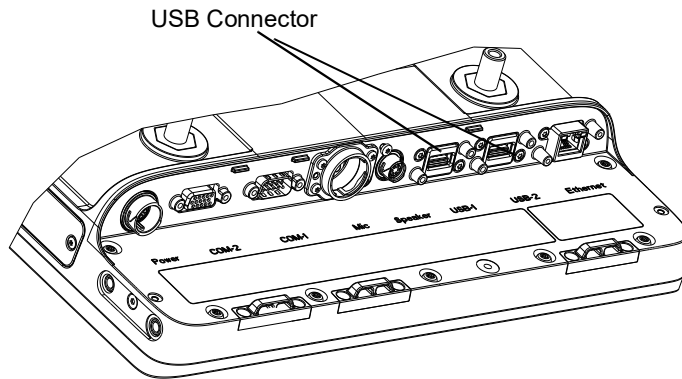
**Figure 2-21** Attaching the Brackets to the VC70

1. Insert the keyboard locking knobs through the washers and brackets and screw into the keyboard tray. Tighten fully to lock into place.
2. Torque the mounting arms torx head screws to 40 + 10% kgf-cm (35 + 10% lbs-in).
3. To adjust keyboard tray position, loosen the right and left locking knobs two full turns and rotate the keyboard tray to the desired position. The keyboard tray snaps into possible positions as it is rotated.



**Figure 2-22** Adjusting the Keyboard Tray Position

4. Tighten the keyboard tray locking knobs to secure the tray in position.
5. Plug the keyboard cable into one of the USB connectors and carefully screw the locking screws using a flat head screw driver.



**Figure 2-23** USB Connectors

## Installing the Optional VC5090 Keyboard on the VC70

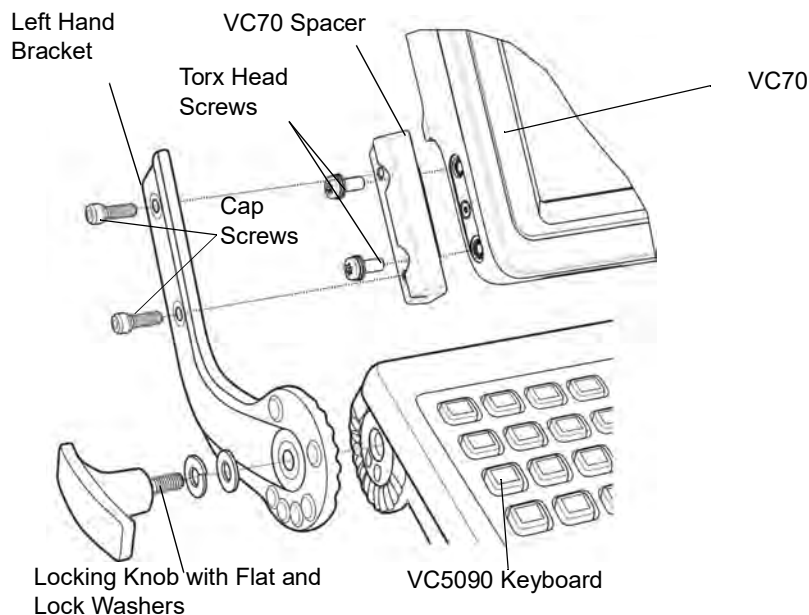
You can install the VC5090 keyboard on the VC70 using the keyboard adapter kit (PN KT-VC50KYBD-ADPT-R).

The kit contains the following items:

- Two spacers with screws and washers
- Adapter cable

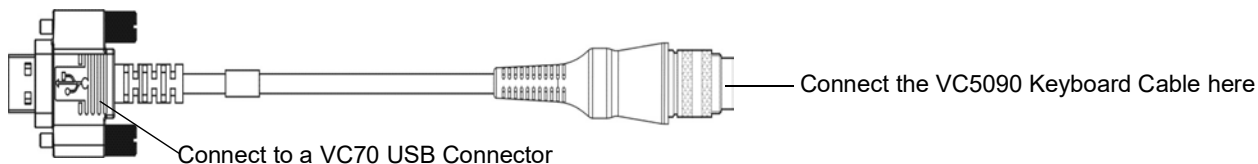
✓ **NOTE** When using the VC5090 keyboards, the integrated keyboard heater is not supported.  
For optional VC5090 keyboards, refer to [Accessories on page 1-4](#).

1. Attach the keyboard spacers to both sides of the VC70 using 2 M5x14mm torx head screws with captive washers for each spacer. Torq the screws to 20 + 5% kgf-cm (17 + 5% lbs-in).



**Figure 2-24** Installing the VC5090 Keyboard on the VC70

2. Attach the VC5090 keyboard brackets (part of the VC5090 keyboard assembly) to both sides of the VC70, using the cap screws with captive washers. Only tighten the cap screws three turns.
3. Insert the keyboard locking knobs through the washers and brackets and screw into the keyboard. Tighten fully to lock into place.
4. Torque the bracket cap screws to 230 kgf-cm (200 lbs-in).
5. Connect the VC5090 keyboard cable to the supplied adapter cable.



**Figure 2-25** VC5090 Adapter Cable

6. Connect the USB connector of the adapter cable into one of the VC70 USB connectors and carefully screw the locking screws using a flat head screw driver.

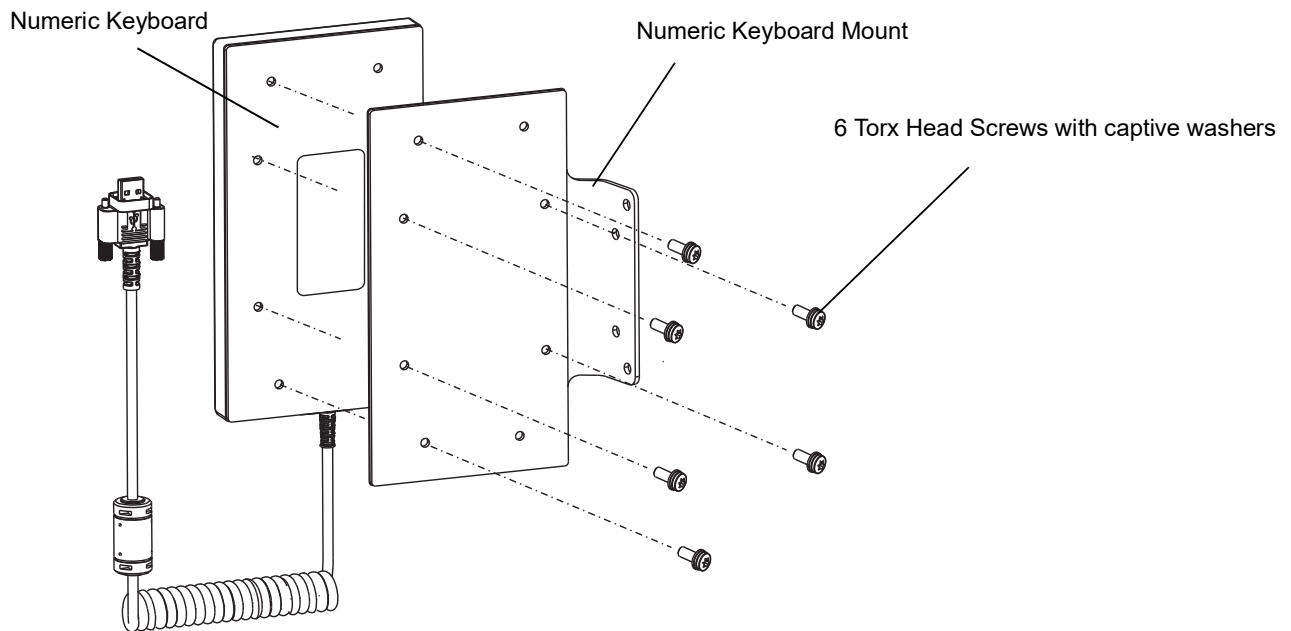
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## Installing a Numeric Keyboard

The Numeric keyboard is installed using the following items:

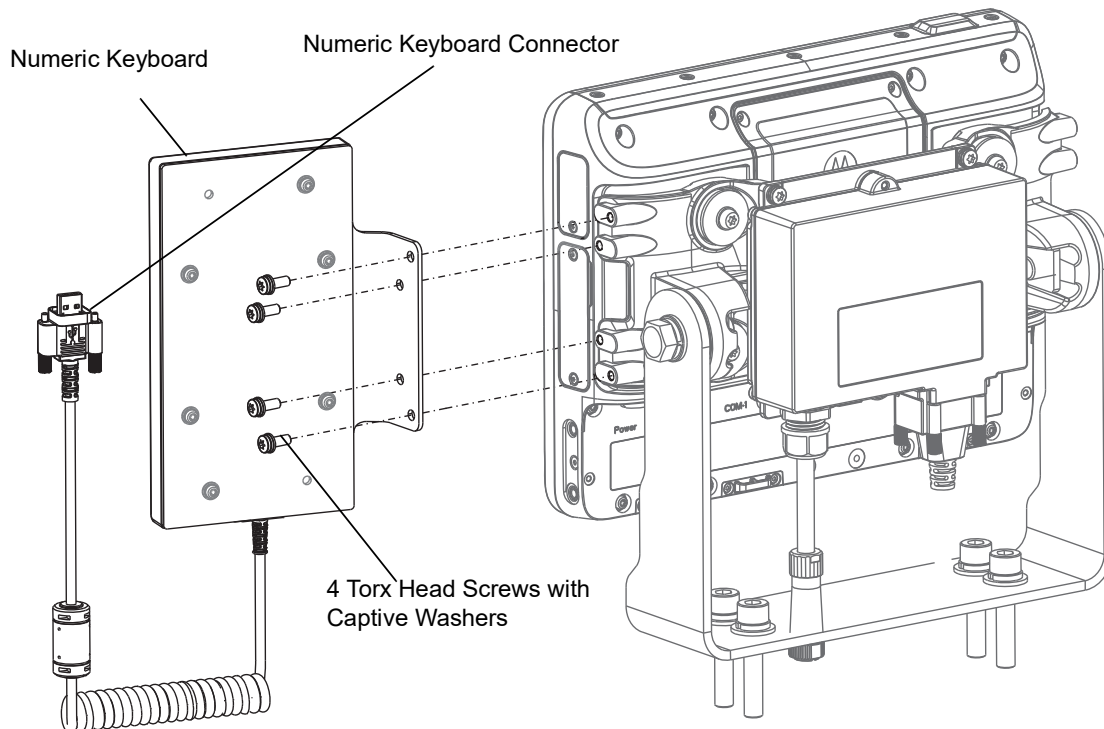
- numeric keyboard mount with all required screws for attaching the keyboard to the mount and the mount to the vehicle computer
1. Attach the numeric keyboard to the mount, using six M4x10mm torx head screws with captive washers.
  2. Torque the numeric keyboard Torx head screws to 8 + 10% kgf-cm (7 + 10% lbs-in).

✓ **NOTE** The Numeric Keyboard can be installed on both sides of the Numeric Keyboard Mount. For optional numeric keyboards, refer to [Accessories on page 1-4](#).



**Figure 2-26** *Installing the Numeric Keyboard on the Mount*

3. Attach the numeric keyboard mount to the VC70, using four M5x14mm torx head screws with captive washers. Tighten the screws.
4. Torque the numeric keyboard torx head screws to 20 + 10% kgf-cm (17 + 10% lbs-in).



**Figure 2-27** *Installing the Mount on the VC70*

5. Connect the numeric keyboard to a free USB connector. Fasten the screws using a flat head screw driver.



## Keyboard Protection Grill Installation

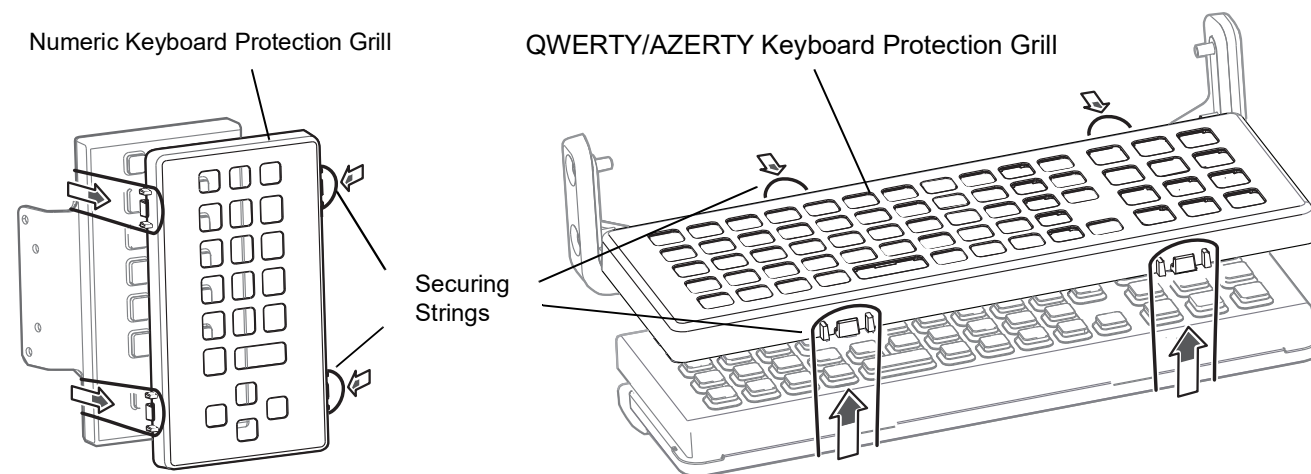
To protect the VC70 keyboard, it is recommended to install a protection grill. Different grills should be used with the QWERTY/AZERTY or Numeric keyboard.

Each grill kit includes the following items:

- Two Securing Strings
- Keyboard Protection Grill

To install the grill:

1. Place the cover onto to the VC70 keyboard.
2. Use the two Securing Strings to attach the Protection Grill to the keyboard.



**Figure 2-28** Keyboard Covers

✓ **NOTE** For Keyboard Protection Grills, refer to [Accessories on page 1-4](#).

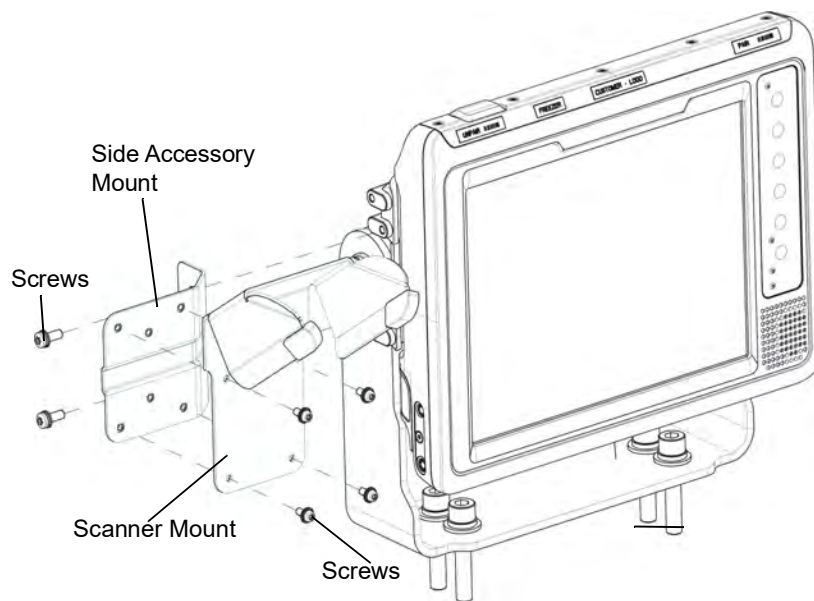
## Installing the Scanner Mount

The Scanner mount kit contains the following items:

- Side accessory mount (PN KT-ACCMNT-VC70-R) with two screws, two captive lock washers and flat washers
- Scanner mount (PN KT-SCANMNT-VC70-R) with four screws, four captive lock washers and flat washers

✓ **NOTE** For scanner mounts information, refer to [Accessories on page 1-4](#).

1. Attach the scanner mount to the side accessory mount, using four M4x10mm screws with captive flat and lock washers. Torque the screws to 8 + 10% kgf-cm (7 + 10% lbs-in).
2. Attach the side accessory mount to the VC70, using two M5x14mm screws with captive flat and lock washers. Torque the screws to 20 + 10% kgf-cm (17 + 10% lbs-in).



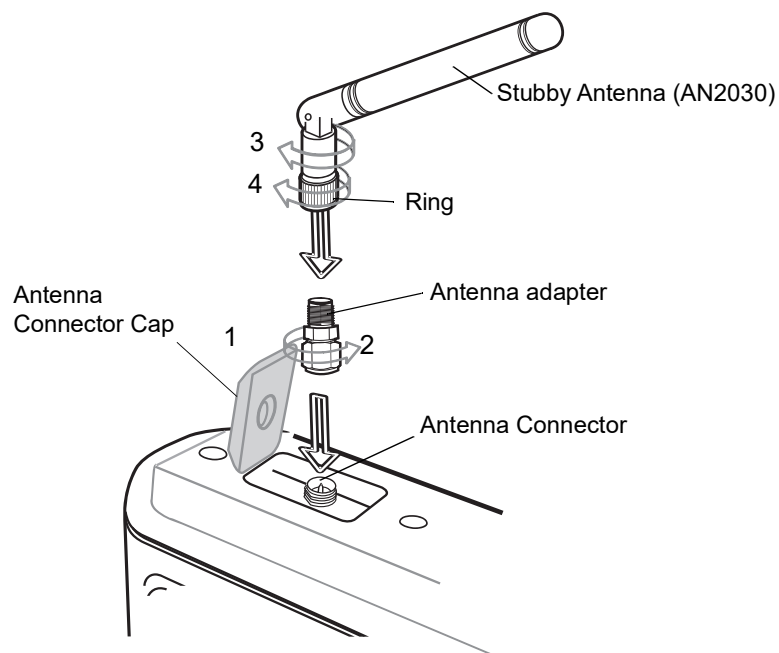
**Figure 2-29** Installing the Scanner Bracket

## Installing a Stubby Antenna

✓ **IMPORTANT** The stubby antenna must only be used with BSP software version 34.11 and above.

To install an external antenna: stubby antenna

1. Lift the Antenna Connector cap on top of the vehicle computer.
2. Screw the Antenna adapter onto the Antenna Connector. Torque to  $5 \pm 0.5$  kgf/cm ( $4.3 \pm 0.4$  in-lbs).
3. Screw the Antenna onto the Antenna adapter.
4. Fasten the Ring at the base of the Antenna to cover as much threads as possible.

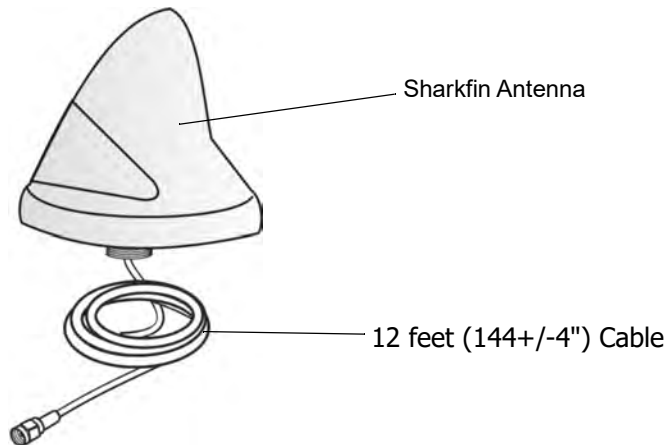


**Figure 2-30** Antenna Installation Example

## Installing the External Roof-mounted Antenna



**WARNING!** The antenna must be installed in a location that will ensure a distance of at least 8" (20cm) between the antenna and any bystander.



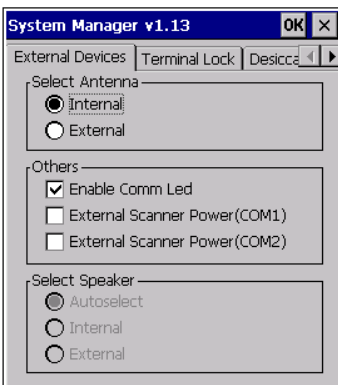
**Figure 2-31** Sharkfin Antenna

✓ **NOTE** Do not use VC5090 antennas.

For general antenna installation instructions refer to the Installation Guide supplied with the antenna.

✓ **IMPORTANT** If not installed on a metal roof, the antenna must be installed in the middle of a flat metal surface (minimum size 2.56" (65 mm)x2.56" (65 mm)).

1. Tap  > **Settings** > **Control Panel** > **System Manager** icon. The **System Manager** window displays.



**Figure 2-32** RF Settings Tab Window

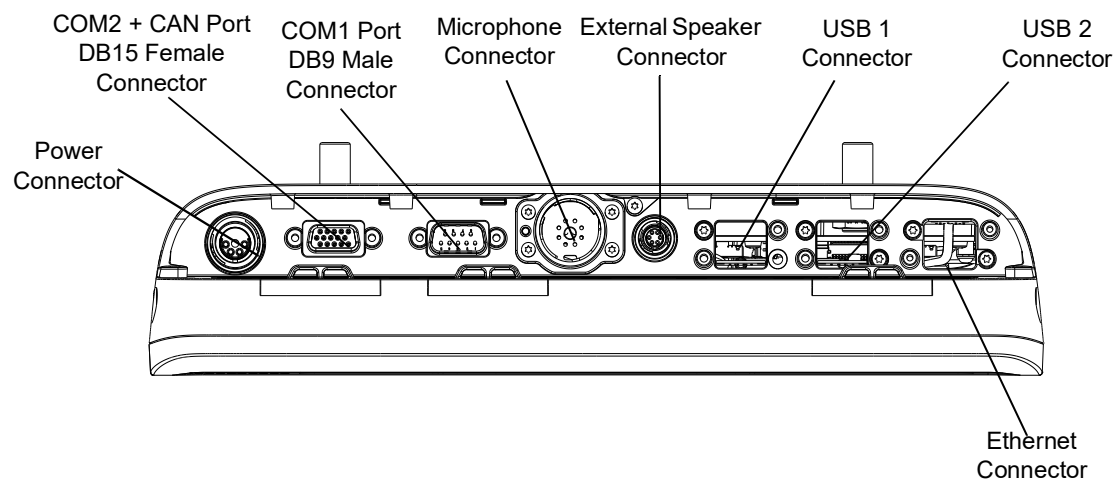
2. Tap the **External Devices** tab.
3. Tap the **External Antenna** radio button.
4. Tap **OK**.

## Connecting Accessories

Connect an optional scanner, ActiveSync serial cable, or USB device (such as a keyboard or mouse) using the appropriate port on the bottom of the VC70.

You should use either COM1 port for serial ActiveSync or the Micro USB (Micro USB On the Go) port for USB ActiveSync.

A standard USB keyboard or mouse can be connected to the USB A connector (Host).



**Figure 2-33** Connection Ports

## Connecting an External Speaker to the Vehicle Computer

It may be necessary to install an external speaker in noisy environments. Use a Zebra HSN4040 15 Watt water-resistant loudspeaker and connect it to the VC70 External Speaker connector using the adapter cable (PN 25-159552-01).

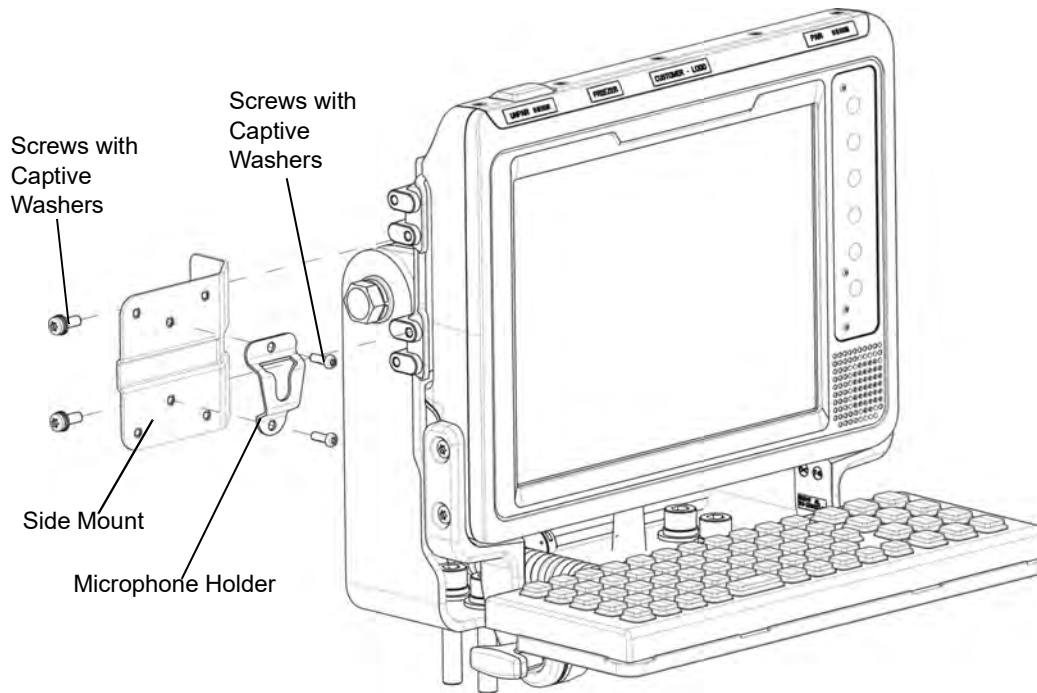
- ✓ **NOTE** When connecting the adapter cable, the audio is automatically routed to the external speaker. If the external speaker is not connected, you will not be able to hear any audio.
- ✓ **NOTE** For external speaker, cable and Push-To-Talk (PTT) hand microphone, refer to [Accessories on page 1-4](#).

## Installing an External Microphone Mount

The External Microphone mount consists of the following two kits:

- microphone holder with two screws and captive washers
  - side mount with two screws and captive washers
1. Attach the microphone holder to the side mount, using two M4x12mm screws with captive washers. Torque the screws to 8 + 10% kgf-cm (7 + 10% lbs-in).

2. Attach the side mount to the VC70, using two M5x14mm screws with captive washers. Torque the screws to 20 + 10% kgf-cm (17 + 10% lbs-in).



**Figure 2-34** *Installing the External Microphone Mount*

# Chapter 3 Operating the VC70

## Introduction

This chapter explains the buttons, status icons and controls on the VC70 and provides basic instructions for using the VC70, including powering on and resetting. It also included instructions for entering and capturing data.







## Control Panel Applications



















- ✓ **NOTE** Some of the scanner parameters accessible through the Control Panel may not be relevant to all scanners used with the VC70.  
For a complete list of scanner setting configured by using API, refer to EMDK documentation. Alternatively, use the configuration bar codes provided with each scanner documentation.

*Table 3-1* lists the available applications on the VC70 Control Panel.






From the VC70 desktop, tap  > **Settings** > **Control Panel**.

**Table 3-1** *List of Control Panel Applications*

Icon	Description	Icon	Description
	<b>Backlight</b> - Set the display backlight time-out and adjust brightness. Refer to the Microsoft Applications for Embedded Version 7.00 User Guide for more information. Refer to <a href="#">Adjusting the Brightness on page 3-12</a> .		<b>Certificates</b> - See information about certificates installed on the VC70.
	<b>DataWedge</b> - Enable data capture using a connected Scanner. <a href="#">DataWedge Scanner Connection on page 4-1</a>		<b>Date/Time</b> - Set the VC70 clock to the date, time and time zone of your location.
	<b>Dialing</b> - Set dialing properties.		<b>Display</b> - Set the background and appearance of the VC70 desktop.

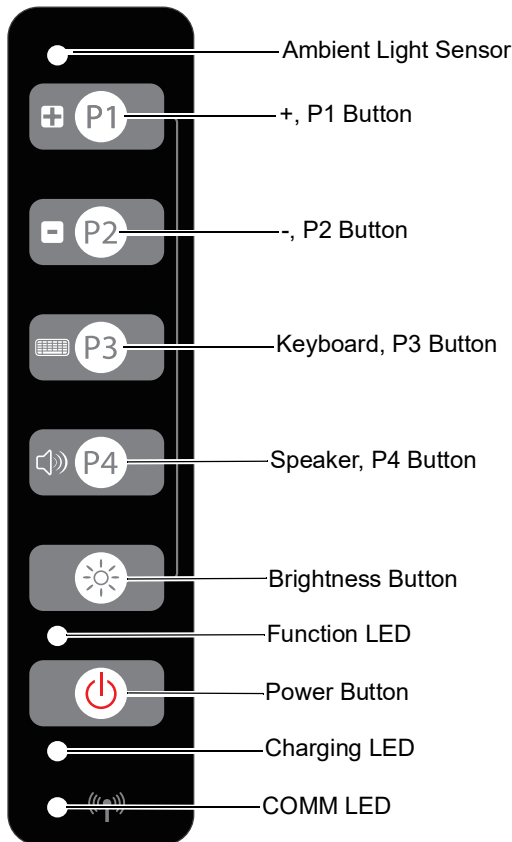
Icon	Description	Icon	Description
	<b>Error Reporting</b> - Report software errors to Microsoft.		<b>Input Panel</b> - Select the type of keyboard to use. See <a href="#">Using the Keyboard on page 3-6</a> .
	<b>Internet Options</b> - Connect the VC70 to the Internet using the VC70 data connection.		<b>IST Settings</b> - Set the appropriate setting for configuring the VC70 Interactive Sensor Technology.
	<b>Keyboard</b> - Set the repeat rate for the keyboard.		<b>MotoBTUI</b> - Enable Bluetooth radio and other Bluetooth functionality.
	<b>Mouse</b> - Set double-click sensitivity for tapping on the screen.		<b>Network and Dial-up Communication</b> - Set up one or more types of modem connections for the VC70, such as Ethernet so that the VC70 can connect to the Internet or a local area network.
	<b>Owner</b> - Enter personal information on the VC70. Refer to the Microsoft Applications for Windows Embedded Version 7.00 User Guide for more information.		<b>Password</b> - Set a password for the VC70.
	<b>PC Connection</b> - Enable or disable the USB connectivity to a personal Computer.		<b>Power</b> - Check backup battery power and set time-out and wakeup of the VC70. Set and monitor all power related activities. See <a href="#">Power Status on page 3-22</a> .
	<b>Programmable Keys</b> - Configure the operation mode of the P1, P2, P3 and P4 keys on the front panel of the VC70. See <a href="#">Programmable ("P") Keys on page 3-6</a> .		<b>Reg Archive</b> - Set persistence memory to software configurations. See <a href="#">Boot Persistence on page 3-20</a> .
	<b>Regional Settings</b> - Set the regional configuration to use, including the format for displaying numbers, currency, date, and time on the VC70.		<b>Remove Programs</b> - Remove programs installed on the VC70.
	<b>Screen Resolution</b> - Set SVGA or XGA screen mode.		<b>Stylus</b> - Perform Screen Calibration. See <a href="#">Controlling the Display on page 3-25</a> .



Icon	Description	Icon	Description
	<p><b>System</b> - Displays the VC70 software and hardware information. Refer to the Microsoft Applications for Windows Embedded Version 7.00 User Guide for more information.</p>		<p><b>System Info</b> - View hardware information of VC70 and internal components.</p>
	<p><b>System Manager</b> - Enables or disables port connection, desiccant warning and other miscellaneous operations.</p>		<p><b>USBConfig</b> - Set USB port and client mode configuration.</p>
	<p>Volume &amp; Sound - Enable sounds for events, notifications and more. Set the type of notification for different events. See <a href="#">Adjusting the Volume on page 3-13</a>.</p>		

## Quick Access Panel

The Quick Access Panel contains buttons and LEDs to control the operation of the vehicle computer.



**Figure 3-1** VC70 Quick Access Panel

### Power Button

Press the Power button to place the vehicle computer into low power mode. When in low power, press the Power button to resume normal operation.

### Charging LED

[Table 3-2](#) lists the states of the charging LED.

**Table 3-2** Charging LED Indications

LED State	Indication
Off	Backup battery charging is not available.
Solid Amber	Backup battery is fully charged (backup battery only available).
Blinking Amber	Backup battery is not full (backup battery only available).
Slow Blinking Amber	Backup battery is low (backup battery only available).

**Table 3-2** Charging LED Indications

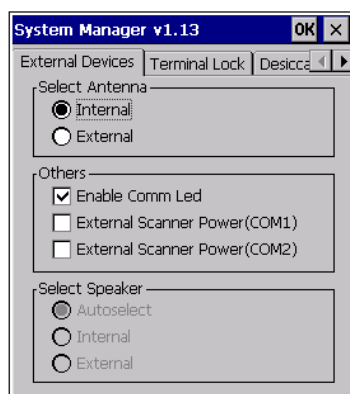
LED State	Indication
Solid Green	Backup battery is fully charged (both external power and backup battery available).
Blinking Green	Backup battery charging in progress (both external power and backup battery available).
Slow Blinking Green	Backup battery is low (both external power and backup battery available).
Solid Red	Backup battery not available (external power only available).

## COMM LED

The COMM LED blinks to indicate WLAN radio activity. [Table 3-3](#) lists the states of the COMM LED. By default, the COMM LED is enabled. To disable the COMM LED:

✓ **NOTE** These settings are not persistent across a cold boot.

1. Tap **My Device** icon > **Control Panel** icon > **System Manager** icon. The **System Manager** window displays.

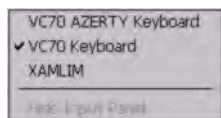
**Figure 3-2** External Devices Tab Window

2. Tap the **Enable Comm Led** check box.
3. Tap **OK**.

**Table 3-3** COMM LED Indications

LED State	Indication
Solid Green	Excellent, very good or good RSSI signal strength.
Slow Blinking Green (once every 2 seconds)	Poor RSSI signal strength.
Off	WLAN is OFF or not connected – no RSSI signal.





**Figure 3-3** Soft Input Panel Pop-up Menu.

✓ **NOTE** SIP will display the last keyboard type that was used.

**Figure 3-4**



**Figure 3-5** QWERTY VC70 Soft Input Panel Keyboards - Normal Size



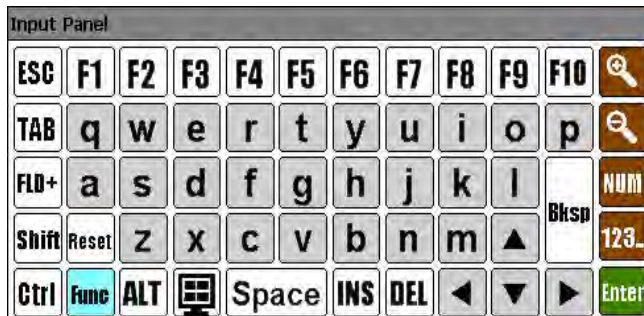
**Figure 3-6** AZERTY VC70 Soft Input Panel Keyboards - Normal Size



**Figure 3-7** XAMLIM Soft Input Panel Keyboard

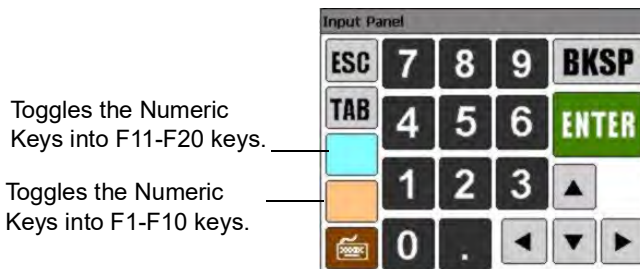
Tap the Enlarge or Reduce Keyboard button to scale the keyboard. The three sizes are small, normal and large with normal being the default size.

To hide or show the numeric keys tap the **Alpha-Numeric Toggle** button.



**Figure 3-8** Keyboard with Numeric Key Hidden

To only display the numeric keys tap the **Numeric Key Toggle** button.



**Figure 3-9** Numeric Only Keys

The **FUNC** key, when depressed, displays a second layer of characters. The second layer stays visible until the **FUNC** key is pressed again.

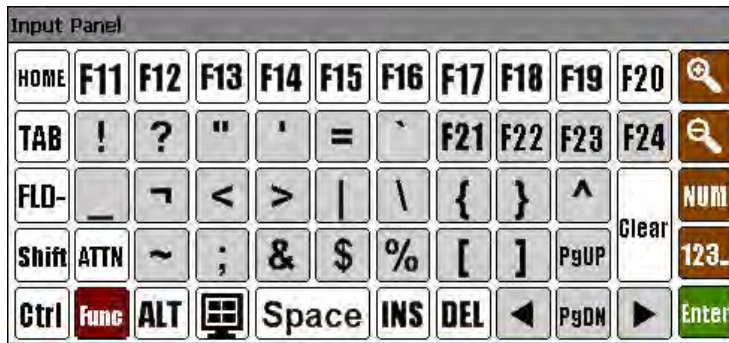


Figure 3-10 QWERTY FUNC Keys

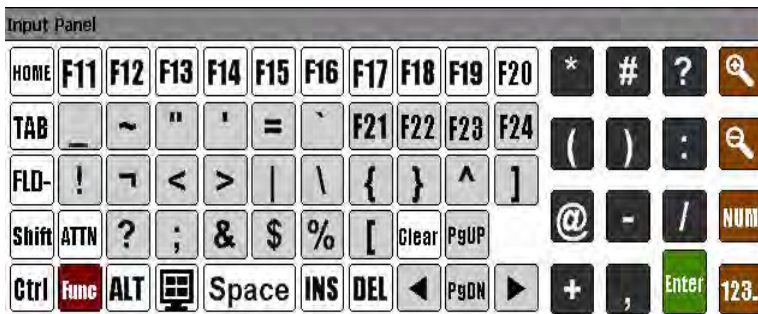


Figure 3-11 AZERTY FUNC Keys

The **SHIFT** key, when depressed, displays the shifted alpha characters on the keyboard. The shifted letters remain until the **SHIFT** key is pressed again.



Figure 3-12 QWERTY Shifted Keys



Figure 3-13 AZERTY Shifted Keys

## Keyboard Functionality

Optional Numeric, QWERTY and AZERTY keyboards can be used with the vehicle computer. Refer to [Figure 3-14](#), [Figure 3-15](#), [Figure 3-16](#) and [Table 3-5](#) for a description of the keys.

[Table 3-5](#) describes the general functions of the keyboard.



**Figure 3-14** VC70 Numeric Keyboard




**Figure 3-15** VC70 QWERTY Keyboard








Figure 3-16 VC70 AZERTY Keyboard

Table 3-5 Key Descriptions

Key	Description
SHIFT	<p>Press the <b>SHIFT</b> key followed by an alpha key to create uppercase alphabetic characters or a <b>FUNC</b> key to perform a function.</p> <p>Pressing <b>SHIFT</b> once will result in the backlight of these key to start blinking to indicate that the next key press is 'Shifted'. Pressing <b>SHIFT</b> twice will result in fast blinking indicating that this key is locked.</p>
CTRL	<p>Press the <b>CTRL</b> key to activate alternate control functions. Use <b>CTRL - ESC</b> key combination to access the  menu.</p> <p>Pressing <b>CTRL</b> once will result in the backlight of these key to start blinking to indicate that the next key press is 'Controlled'. Pressing <b>CTRL</b> twice will result in fast blinking indicating that this key is locked.</p>
ALT	<p>Press the <b>ALT</b> key to activate alternate keyboard functions.</p> <p>Pressing <b>ALT</b> once will result in the backlight of these key to start blinking to indicate that the next key press is 'Altered'. Pressing <b>ALT</b> twice will result in fast blinking indicating that this key is locked.</p>

**Table 3-5** Key Descriptions (Continued)

Key	Description
FUNC	<p>The <b>FUNC</b> key is used to turn the <b>F1</b> to <b>F10</b> function keys into <b>F11</b> to <b>F20</b> function keys. The <b>FUNC</b> key has two modes of operation:</p> <p>Function mode: Switches to <b>F11</b> - <b>F20</b> function keys and returns to normal keyboard operation after pressing <b>F11</b> - <b>F20</b> key.</p> <ol style="list-style-type: none"> <li>1. Press and release the <b>FUNC</b> key - The <b>FUNC</b> key slowly blinks indicating that the keyboard is in function mode.</li> <li>2. Press and release <b>F11</b> - <b>F20</b> key - The <b>FUNC</b> key stops to blink indicating that the keyboard has returned to normal operation.</li> </ol> <p>Locked Function Mode: Switches to <b>F11</b> - <b>F20</b> function keys and returns to normal keyboard operation only when the <b>FUNC</b> key is pressed again.</p> <ol style="list-style-type: none"> <li>1. Press twice the <b>FUNC</b> key - The <b>FUNC</b> key blinks fast indicating that the keyboard is in Locked Function Mode.</li> <li>2. Press and release <b>F11</b> - <b>F20</b> key and continue to work with the keyboard.</li> <li>3. To unlock, press and release the <b>FUNC</b> key - The <b>FUNC</b> key stops to blink indicating that the keyboard has returned to normal operation.</li> </ol>
A through Z	Produces the lowercase alphabetic character shown on the key. Produces uppercase alphabetic character shown on the key when preceded by the SHIFT key.
0 through 9	Produces the numeric character shown on the key.
	Moves the cursor around the screen or highlights the items in a menu.
F1 through F24	Programmable function keys. The application determines the use; see the software or application documentation.
Enter	Moves the cursor to the next data field or screen.
Del	Deletes the character to the right of the cursor.
Backspace	Deletes the character to the left of the cursor.
Space	Enters a space between characters or words.
 Windows	Allows access the  menu.

## Adjusting the Brightness

### Controlling Screen Brightness

To adjust the brightness of the screen, press the **Backlight Control** button on the Quick Access Panel. The amber **Backlight Control** LED lights indicating that the VC70 is in the brightness control mode. Press the **P1** button to decrease the brightness or the **P2** button to increase the brightness. Press the **Backlight Control** button to exit this

mode (or after five seconds of inactivity the VC70 automatically returns to normal operation). A light sensor sets the screen brightness in accordance to ambient light.

- ✓ **NOTE** When using cordless scanner, the default inactivity time-out-timer set for Never should not be overridden. If overridden, a user, standing away from the unit, may not notice that the unit has switched to unattended mode after the time-out-timer had expired.


## Controlling the External Keyboards Backlight

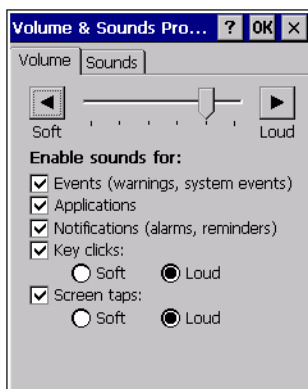
To adjust the optional external QWERTY/AZERTY or numeric keyboards backlight intensity press the **FUNC** key and then the right arrow to increase the back light intensity or the left arrow to decrease the backlight intensity.

## Adjusting the Volume

You can use the Quick Access Panel Speaker button to place the + (P1) and - (P2) buttons into the audio volume level mode where you can adjust the volume level of the Internal and external speaker.

You can also:

1. Tap the  > **Settings** > **Control Panel** > **Volume & Sounds** icon. The **Volume & Sounds Properties** window appears.



**Figure 3-17** Volume and Sounds Properties Window

2. Adjust the volume slider as necessary using the pointer or the up and down arrow keys. Check the **Enable sounds for** check boxes as desired.
3. Tap **OK** to save the setting or tap **X** to exit without saving.

- ✓ **NOTE** To get to MAX volume level, both SW and function volume levels must be on loud.  
If an external speaker is connected, the above controls its volume.

## Taskbar

The Taskbar at the bottom of the window displays the active programs, current time, battery status and communication status.



**Figure 3-18** Taskbar

Status icons are shown in the taskbar to indicate present status of the vehicle computer. Double tapping each status icon displays the corresponding setup window and enables you to change or adjust its settings from the window.

- **Status Icons:** The status icons indicate the function key status. If the **FUNC**, **SHIFT**, **CTRL** or **ALT** functions are active the appropriate status icon is displayed.
- **Active Programs Icons:** The active applications icons are displayed on the taskbar. If more than one program is active, icons can be used to toggle between the open programs (applications). Tap on a taskbar application to maximize the application. The taskbar also displays keyboard keys status (SHIFT, FUNC, CTRL and ALT pressed or locked).
- **AC Power/Battery Status Icons:** The AC Power/Battery Status icons are shown in the taskbar to indicate the present power supply status of the vehicle computer.

**Table 3-6** Status Icons

Status Icon	Description
	Indicates the current time.
	Click to display the selected VC70 Soft Input Panel keyboard.
	Indicates that the vehicle computer is receiving power from a forklift battery or from an AC power supply, the UPS is installed and charging. Double tapping on this icon opens the <b>Power Settings</b> window.
	Indicates that the vehicle computer is running on UPS power and indicates the percentage of battery charge left in 10% increments from 10% to 100%. Double tapping on this icon opens the <b>Power Settings</b> window.
	Indicates that the vehicle computer is connected to a host computer via ActiveSync.
	Indicates that the Bluetooth radio is on.
	Indicates that the <b>SHIFT</b> button function is selected.

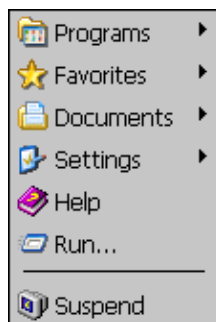
**Table 3-6** *Status Icons (Continued)*

Status Icon	Description
F	Indicates that the <b>FUNC</b> button function is selected.
^	Indicates that the <b>CTRL</b> button function is selected.
ALT	Indicates that the <b>ALT</b> character selection is selected.

## Start Button

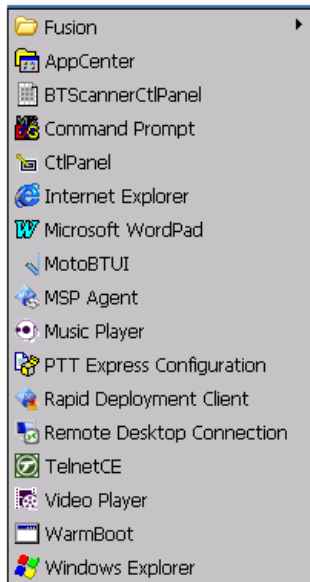
Tap the **Start** button (or press **CTRL > ESC**) to launch the *Start* menu.

- *Programs*: Use to access available programs.
- *Favorites*: Displays files in *Favorites* directory.
- *Documents*: Displays files in *Documents* directory.
- *Settings*: Accesses the Control Panel, the Network and Dial-up Connections and the Taskbar and Start menu.
- *Help*: Accesses the Windows CE Help.
- *Run . . .*: Runs a program or application.
- *Suspend*: Places the mobile computer in the low power (unattended) state.

**Figure 3-19** *Start Menu*

## Programs Menu

From the *Start* menu, tap *Programs* to open the *Programs* menu. The programs provided with Windows CE .NET 5.0 Professional are displayed in the *Programs* menu. Refer to the *Zebra Application Guide*, p/n 72-68901-xx and the *Microsoft® Applications User Guide for Zebra Devices*, p/n 72E-68197-xx for application information.



**Figure 3-20** Programs Menu

## Desktop Button

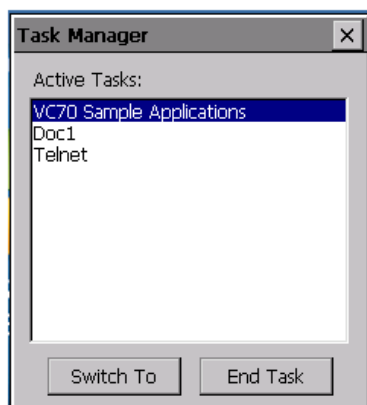
Use the *Desktop* button to minimize all open programs and display the desktop.

## Task Manager and Properties

Use the Task Manager to control an application's use and use the *Properties* functions to set display and clock options.

### Task Manager

1. Select **ALT - TAB**, to display the *Task Manager* window.

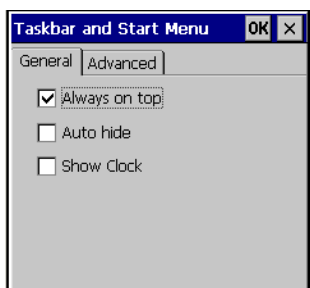


**Figure 3-21** Task Manager Window

2. Tap a task in the *Active Tasks* list and tap **Switch To** to make that task the primary task, or tap **End Task** to end the selected task.
3. Tap **X** to exit the *Task Manager* window.

## Properties

1. Tap **Start** > **Settings** > **Taskbar and Start Menu ...** . The *Task Manager and Start Menu* window displays.
2. This menu provides taskbar options:
  - Check the *Always on Top* checkbox to keep the taskbar on top of all other windows.
  - Check the *AutoHide* checkbox to make the taskbar disappear, touch the bottom of the display to make the taskbar return.
  - Check the *Show Clock* checkbox to display the clock on the taskbar.
3. Tap **OK** to save the settings and exit the window.



**Figure 3-22** *Taskbar and Start Menu, General Tab*

### ***Advanced Tab***

1. Tap the *Advanced* tab.
2. Tap the **Clear** button to delete all of the documents listed in the *Start - Documents* entry, see [Start Button on page 3-15](#). Typically this list is empty, but if there were documents in the list the **Clear** button would delete them.
3. Tap the *Expand Control Panel* checkbox to display the entire contents of the control panel in list form.



**Figure 3-23** *Taskbar and Start Menu - Advanced Tab*

4. Tap **OK** to save the settings and exit the window.


## Using Voice Communication

You may connect an external speaker to your vehicle computer. Use a Zebra HSN4040 15 Watt water-resistant loudspeaker and connect it to the VC70 External Speaker connector using the adapter cable (PN 25-159552-01).

- ✓ **NOTE** When connecting the adapter cable, the audio is automatically routed to the external speaker. If the external speaker is not connected, you will not be able to hear any audio.




You may also connect an external PTT microphone to your vehicle computer and use it for voice communication and voice recording using the CE built in capabilities. Connect the external microphone (HMN1089B) to the Microphone connector.

For recording, perform the following:

1. Tap the  > **Programs** > **Samples**. The **Samples** window appears.
2. Tap the **Sounds** icon. The following sound control window appears.



**Figure 3-24** Sound Control Window

3. To record your voice, press the PTT button and the .
4. To stop recording, press the  and release the PTT button.
5. To listen to your recording, press the .

- ✓ **NOTE** For Wavelink Speakeasy, refer to [Chapter 11, Software Configuration](#).



---

## Resetting the Vehicle Computer


There are two reset functions, warm boot and cold boot.

### Performing a Warm Boot

A warm boot restarts the vehicle computer and saves all stored records and entries. In the Windows CE environment.

✓ **NOTE** Files that remain open during a warm boot may not be retained.

To perform a warm boot:

- Press the Power button on the Quick Access Panel continuously for 5 seconds  
or
- Tap  > **Programs > Warm Boot.**

### Performing a Cold Boot

A cold boot restarts the vehicle computer clears both program memory and storage memory.

To perform a cold boot when external power is connected, simultaneously press the **P1**, **P3** and the **Power** button on the Quick Access Panel.

A cold boot also restarts the vehicle computer, but erases all stored records and entries in RAM. Data saved in flash memory or a memory card is not lost. In addition it returns formats, preferences and other settings to the factory default settings.

✓ **NOTE** Any data previously synchronized with a computer can be restored during the next ActiveSync operation.

## Boot Persistence

When Cold Boot or Image Update is performed all registry changes are erased, unless boot persistence is used, and the device is set back to factory defaults.

The VC70 uses the object store to hold User, Settings and Registry data.

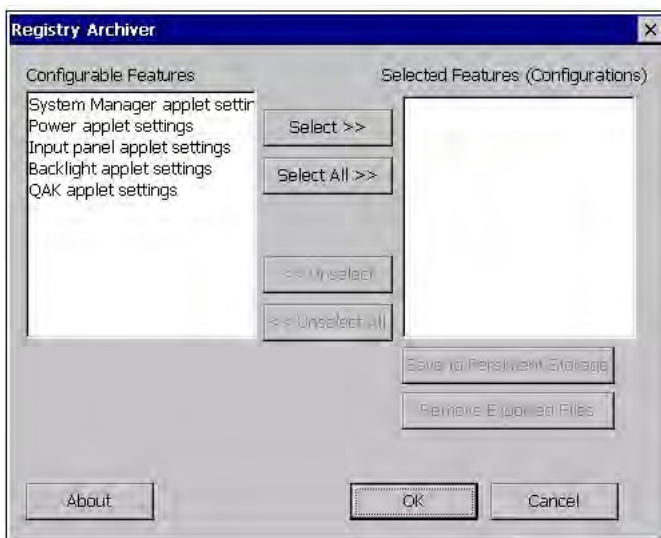
The VC70 operating system stores object data features in persistent storage. Persistent means that information is not erased when power is turned off. Registry information is not stored onto a storage card since when the card is removed, the VC70 can not function. The “persistent store” is a non-removable storage device.

The persistent storage of the VC70 may hold the following features:

- System Manager applet settings - Antenna Selection, Scanner Power Line, Enabled RadioComm LED, Speaker Control, WLAN, Ignition Sense, Desiccant Warning,
- Power applet settings - Battery Reserve Option, Suspend Time Outs, USB Charging Current, wake-up control, Disable Power Switch, CPU Management Mode,
- Input panel applet settings - Keyboard type.
- Backlight applet settings - Battery and External Power, Brightness Button value, AC timeout, AC Backlight tap, Brightness ALS Control, Brightness Initial State.
- QAK applet settings - Programmable Keys (P1, P2, P3, P4) settings.

To add features to boot persistent:

1. Tap  > **Settings** > **Control Panel** > **Reg Archiver**. The **Registry Archiver** window appears.



**Figure 3-25** *Boot Persistent - Registry Archive Window*

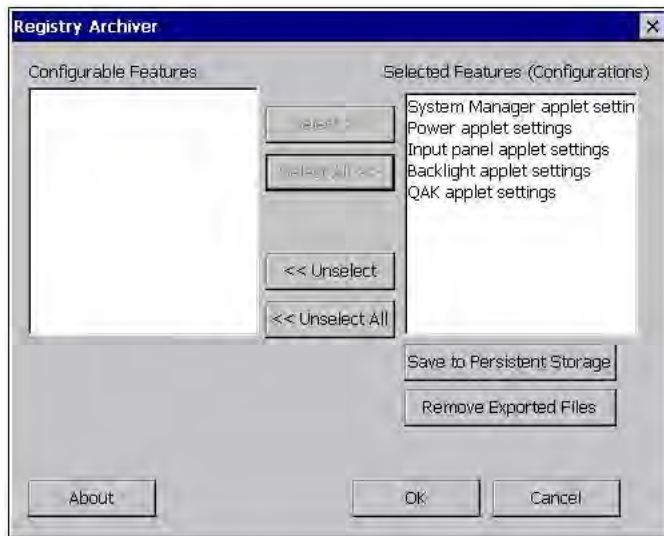
2. From the Configurable Features box select the features that you want to save in persistent storage and tap **Select>>** or tap **Select All>>** to include all features.
3. Tap **Save to Persistent Storage**.

4. Tap **OK** to end and close the Registry Archiver window.

✓ **NOTE** Application specific parameters should be stored under the application to be cold-boot persistent.

To remove features from boot persistent:

1. Tap  > **Settings** > **Control Panel** > **Reg Archiver**. The **Registry Archiver** window appears.



**Figure 3-26** *Boot Persistent - Registry Archive Window*

2. From the Configurable Features (Configurations) box select the features that you want to remove from the persistent storage and tap **Unselect>>** or tap **Unselect All>>** to remove all features.
3. Tap **Remove Exported Files**.
4. Tap **OK** to end and close the Registry Archiver window.

## Power Status

### Power On


Entered when external or/and good internal backup battery is connected. The backup battery is electrically disconnected until the external power connected to the computer for the first time. In this state, The computer is up and running, its components are powered up, and the display is on.

### Low Power Mode

Entered only if the backup battery is connected. The computer looks like in “power off” state but vital system components, including wake-up sources are still running. Other device components are either powered off, or put in the lowest available power consumption modes.

### Methods of Suspension

The VC70 operation can enter low power mode in three ways:

- **Manual suspension:** the operator presses the Power button when the vehicle computer is on.
- **API suspension:** the application requests a suspend via an API call.
- **Time-out suspension:** suspends after the vehicle computer is not used for a set amount of time. Tap  > Settings > Control Panel > Power icon > select the **Advanced** tab to set the time-out value.

✓ **IMPORTANT** When replacing the forklift battery, avoid draining the internal backup battery of the VC70 by pressing the power button on the front panel for putting the VC70 in low power mode.


### Critical Suspension

✓ **NOTE** When the forklift truck is left to charge overnight, the VC70 switches to critical suspend mode. As soon as external power is re-applied, the VC70 resumes from critical suspend mode. The process should take couple of seconds to complete for all hardware components to wake up and all software configurations to re-synchronize. Please allow the process to complete before starting using the VC70 (scanning, etc.). It is also recommended to force a Warm Boot or a Cold Boot to start afresh, to have it done automatically; you can use a registry key (see [Force Warm Boot or Cold Boot After Resuming From Critical Suspension on page 11-9](#)).

Critical suspension occurs when input power is not available and the Backup battery is discharged to a low state that is reserved for backup data retention.

During critical suspension all circuitry is shutdown except for memory retention and the real-time clock. During critical suspension the VC70 is receiving power from the backup battery. The backup battery retains data for at least 72 hours. Critical suspension occurs when the VC70 is receiving power from the Backup battery and the battery discharges to a low capacity.

## Waking the Vehicle Computer

The wakeup conditions define what actions wakeup the vehicle computer after it has gone into low power mode. The vehicle computer can go into low power mode by either pressing the Power button on the Quick Access Panel or automatically by control panel timeout settings. Tap  > **Settings** > **Control Panel** > **Power** icon > **Wakeup** tab.

These settings are configurable and the factory default settings are shown in [Table 3-7](#).

**Table 3-7** Wakeup Default Settings

Condition for Wakeup	Power Button	Automatic TimeOut
Keyboard	No	Yes
Touch Panel	No	No
Microphone PTT	No	Yes
Menu Key	No	Yes
USB	Yes	Yes

## Reduced Power Consumption

During the Reduced Power Consumption mode, the device is powered by the backup battery.

[Table 3-8](#) shows the reduced power consumption mode active components.

**Table 3-8** Reduced Power Consumption Mode

VC70 Component	Active
CPU	On
Sensor Micro	On
Display backlight	Level 1
WLAN state (On)	On (not connected)
WLAN state (connected)	On (connected)
WLAN state (in PTT call)	On (external speaker is disconnected)
Bluetooth	No change
Touch screen heater	Off
RS232#1 5Vout	Off
RS232#2 5Vout	Off
USB#1 5Vout (external keyboard)	Off
USB#2 5Vout	Off
External RS232/USB peripherals	Off
External speaker	Off
External microphone	On

**Table 3-8** Reduced Power Consumption Mode (*Continued*)

VC70 Component	Active
Ethernet	Off
CAN bus	Off
Temperature/Humidity sensor	On
Ambient light sensor	On
Accelerometer	On

## Controlling the Display

### Using the Display



**CAUTION** Do not use sharp objects when touching the screen. Use your finger tip or a stylus when touching the screen.

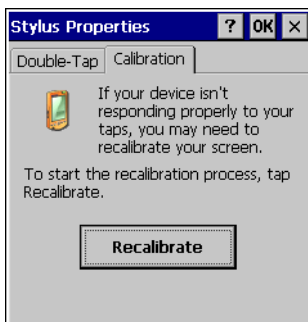
This section describes how to calibrate the VC70 touch screen. If the current calibration does not allow for easy touch screen input or you want to recalibrate the screen at any time, refer to [Using the Keyboard on page 3-6](#).



**NOTE** Use a Stylus for the screen calibration.

To calibrate your VC70:

1. Tap  > **Settings** > **Control Panel** > **Stylus icon** > **Calibration** tab.



**Figure 3-27** Stylus Properties - Calibration Tab Window

2. Tap the **Recalibrate** button. The calibration screen displays.



**Figure 3-28** Calibration Screen

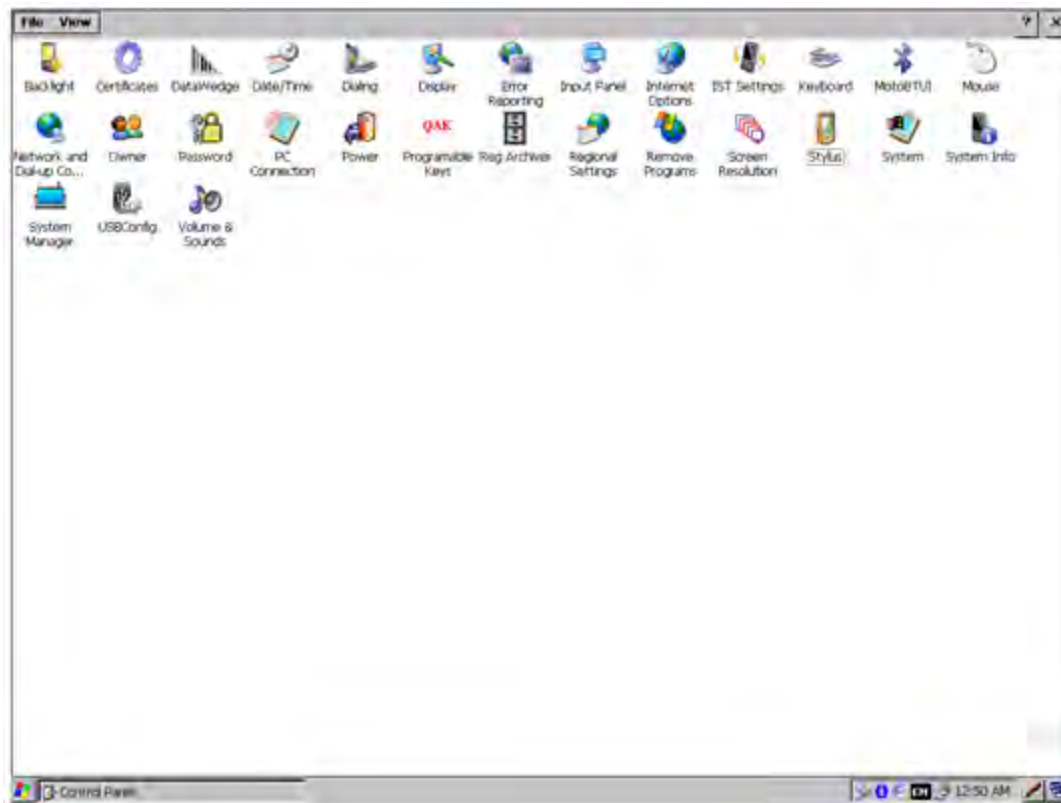


**NOTE** If the calibration screen fails to respond, contact Support Central for assistance.

## Using the Keyboard

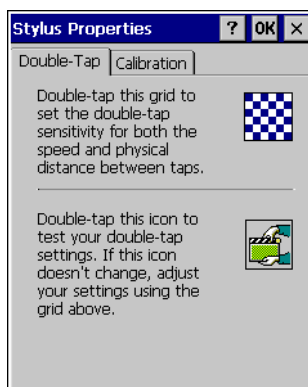
If the present calibration does not allow you to use the touch screen, use the keyboard (or any standard USB keyboard) to calibrate:

1. Press **Ctrl + Esc** keys to access the **Start** menu.
2. Using the arrow keys, select **Settings > Control Panel**.
3. Press **Enter** to display the **Control Panel** window.



**Figure 3-29** Control Panel Window

4. Using the arrow keys, move to the **Stylus** icon and press **Enter**. The **Stylus Properties** window appears.



**Figure 3-30** Stylus Properties Window



- Using the **Tab** key (key with double arrows), select the **Calibration** tab.



**Figure 3-31** Stylus Properties Calibration Tab Window

- Using the **Tab** key, select the **Recalibrate** button.
- Press the space key to start the calibration process. The calibration screen appears.



**Figure 3-32** Calibration Screen

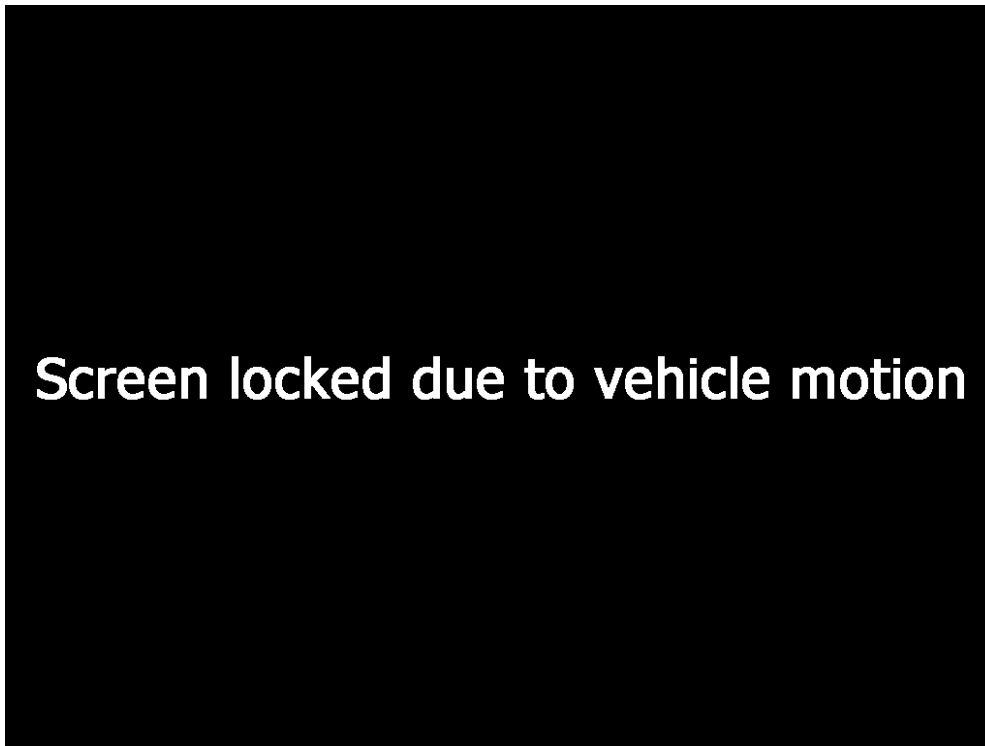
- As the screen instructs, carefully touch and briefly hold on the center of each target that appears on the screen. Repeat as the target moves around the screen.
- Tap the screen to accept the new calibration.

## Screen Lock

The VC70 touch screen is set to be locked when the vehicle is in motion to avoid driver distraction and to prevent unintentional touch interaction.

✓ **NOTE** By default, this feature is disabled. To enable or disable the Screen Lock feature, refer to [Screen locking feature on page 11-6](#).

When the vehicle starts to move the following screen is displayed:



**Figure 3-33** *Screen Lock Notification*

In some conditions where the is screen locked and interaction with the screen is required, the screen lock feature can be bypassed.

To bypass screen lock during motion:

1. Press and hold anywhere on the locked screen for about 10 seconds.
2. Remove your finger from the screen to resume screen operation.

## Checking Backup Battery Status

The VC70 is equipped with an internal Lithium Ion backup battery used in case the of the forklift battery fails or needs to be replaced.

### Disconnecting the Backup Battery

Before the VC70 is shipped out of the factory, the backup battery is electrically disconnected from the VC70 internal circuitry. Upon first time connection of power to the VC70, the battery automatically connects.

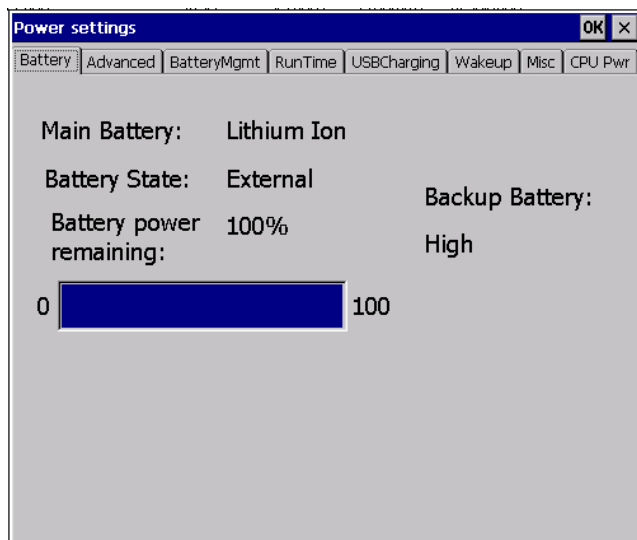
It is recommended to perform electronic disconnection of the backup battery before the VC70 is shipped, stored or not used for a long period.

To disconnect the backup battery electrically:

1. When the VC70 is connected to external power, disconnect and remove the power cable.
2. Perform Cold Boot (see [Performing a Cold Boot on page 3-19](#)).

### Checking the Status of the Backup Battery

To check the status of the backup battery, tap  > **Settings** > **Control Panel** >  to display the **Power Settings** window.



**Figure 3-34** Power settings Window

The tabs of the Power Settings window provides the following options and indications:

- Battery:
- Advanced:
- BatteryMgmt:
- RunTime:
- USBCharging:

- Wakeup:
- Misc:
- CPU Pwr:

To save battery power, set the vehicle computer to turn off after a specified number of minutes.

---

## Sensors Configuration

Humidity and temperature sensors, located under the VC70 touch screen, are used to warn the user of high humidity and temperature inside the VC70.

Readings from the sensors are processed to initiate humidity warning (Desiccant Warning) and over heat of the touch panel (TouchPanel OverHeat).

### Desiccant Warning

When “Check the desiccant packs. Replace if necessary” warning is shown on the screen, the desiccant bag inside the VC70 needs to be replaced.



The Desiccant Warning applet is used to generate humidity warning.

The Desiccant Warning applet can be set to:

- View and/or modify desiccant humidity threshold data.
- Use up to three pre-defined modes of operation for different work environments.

Before setting the Desiccant Warning applet, enable the desiccant warning.

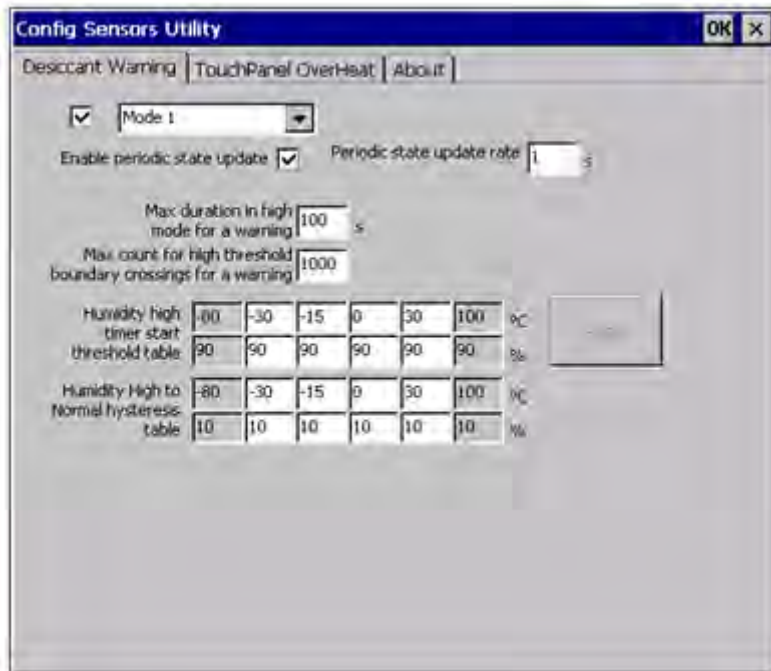
To Enable / Disable the desiccant warning:

1. From the VC70 desktop, tap  > **Settings** > **Control Panel**.
2. Run the System Manager  application.
3. Tap the *Desiccant Warning* tab.
4. Check / Uncheck the Enable Desiccant Warning box.

To configure the Desiccant Warning applet:

1. From the VC70 desktop, tap  > **Programs** > **Windows Explorer** > **Windows**.
2. Run “SensorsConfig.exe”. The Config Sensors Utility opens.

3. Tap the *Desiccant Warning* tab.



**Figure 3-35** *Desiccant Warning Applet Screen*

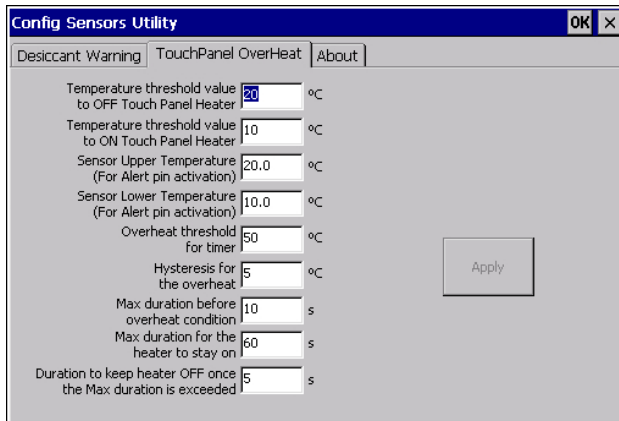
4. Select a mode of operation (for example: Mode 1 can be set to work in a warehouse and Mode 2 for outdoors).
5. Set the following parameters:
  - *Enable periodic state update*: enable periodic sample of humidity.
  - *Periodic state update rate*: the number of seconds between two consecutive samples.
  - *Max Duration closer to DP for warning*: the upper and lower temperature limits.
  - *Max DP reach cycles for warning*: required number of events to issue a warning.
  - *Reaching DP threshold table*: threshold values of humidity reports.
  - *Hysteresis table*: hysteresis values to avoid rapid state switching initiating humidity reports.
6. Tap **Apply** to save changes.

## TouchPanel Heater

The temperature of the touch pad (touch screen) of the VC70 can be automatically controlled by the TouchPanel OverHeat applet.


By default, the heater operation is set to start at +10°C (50° F) and stop at +20°C (68° F).

The TouchPanel OverHeat applet can also be set to generate an alert if the temperature of the touch screen is beyond pre-defined values.



**Figure 3-36** TouchPanel OverHeat Applet

To configure the Desiccant Warning applet:


1. From the VC70 desktop, tap  > **Programs > Windows Explorer > Windows**.
2. Run "SensorsConfig.exe". The Config Sensors Utility opens.
3. Tap the *TouchPanel OverHeat* tab.
4. Set the required parameters.
5. Tap **Apply** to save changes.

---

## Real Time Log

The Real Time Log application monitors the VC70 operation and logs real time events in a log file.

To update and view a log file:

1. On the VC70 desktop, double tap RTLogExport  to trigger an updated of a log file. A successful log file update is indicated by sound feedback.
2. From the VC70 desktop, tap  > **Programs > Windows Explorer > ExportLogs > Logs**.
3. Double tap to open the RTLog\_XXXXXXXXXXXX file.

## Shock Events Log

The VC70 is using an internal shock sensor designed to identify shock events. Using the IST applet, the VC70 can record shock information for future analyses. By entering the IST applet, the user can generate a text log file to view the history of shock events that the VC 70 was subjected to. The log file includes information such as: type, level and date of each shock.

To view the VC70 shock events:

1. To start the IST Settings applet, tap  > **Settings** > **Control Panel** > **IST Settings**.



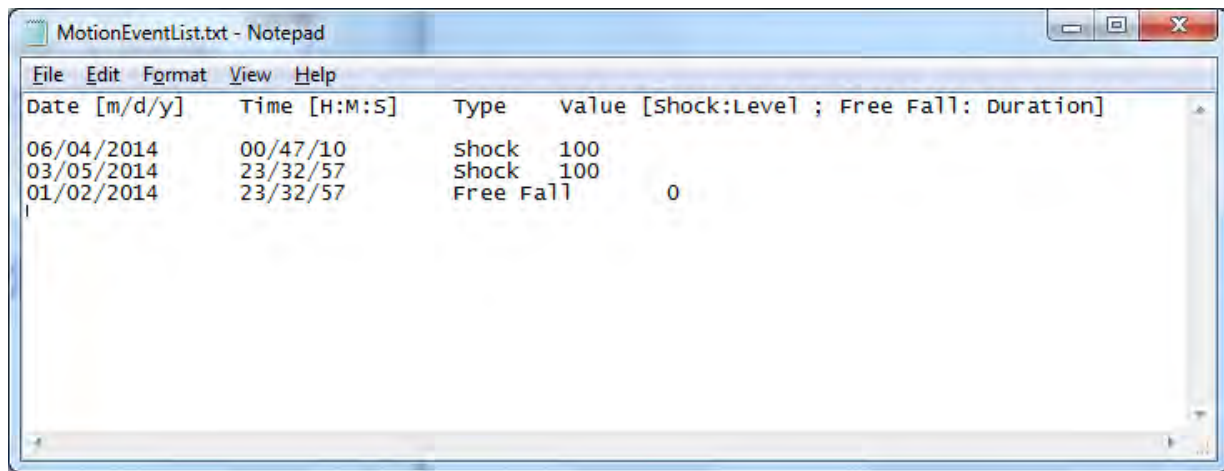
**Figure 3-37** IST Settings Applet - Events Screen

2. Tap **Export Log** to generate a text log file with shock events.
3. Save the generated text log file with shock events on the VC70.



**Figure 3-38** IST Settings Applet - Events Screen

- Using any text editor, open the text log file to view shock events information.



```
MotionEventList.txt - Notepad
File Edit Format View Help
Date [m/d/y] Time [H:M:S] Type value [Shock:Level ; Free Fall: Duration]
06/04/2014 00/47/10 Shock 100
03/05/2014 23/32/57 Shock 100
01/02/2014 23/32/57 Free Fall 0
```



# Chapter 4 DataWedge Scanner Connection

---

## Introduction

This chapter describes how to install the scanners and accessories for the VC70 vehicle computer.

- ✓ **NOTE** The DataWedge application utility is included in the VC70 software image.
  
- ✓ **IMPORTANT** DataWedge may require up to seven seconds to launch, find and connect to a scanner and be ready to read bar codes.
  
- ✓ **NOTE** When using Wavelink TE, the DataWedge should not be running for best performance, unless it is specifically planned for.  
Once DW (DataWedge) is started, it will be running in the background. To make sure DataWedge is disabled when TE is running create a profile within DataWedge, associate the Wavelink TE to this profile, then uncheck the Enabled option for that profile. This will disable DW when Wavelink TE is running, but allow DW to be used for other apps.  
Refer to the Help file in the DW Toolkit available on the VC70 page on Support Central:  
<http://www.zebra.com/support>

## Scanner Connection Method

[Table 4-1](#) describes the scanner connection methods.

**Table 4-1** Scanner Connection Methods

Interface	Serial	Serial SSI	HID	HID with Scan Handlers	Scan Profile (Wireless SSI)	SPP Profile	HID Profile
Physical Port	COM1 / COM2	COM1 / COM2		USB 1 or 2		Bluetooth	
Advantages							
Persistency* during forklift battery replace		X			X	X	
Connection / Scanner	Instructions for DataWedge						
Corded / LS3408-ER	<a href="#">page 4-11</a>	<a href="#">page 4-4</a>					
Corded / DS3508-ER	<a href="#">page 4-14</a>	<a href="#">page 4-8</a>					
Cordless / LS3578-ER						<a href="#">page 4-25</a>	
Cordless / DS3578-ER						<a href="#">page 4-19</a>	
Cordless / RS507					<a href="#">page 4-29</a>	<a href="#">page 4-25</a>	

\* See [Boot Persistence on page 3-20](#).

## Scanner/SSI Firmware Compatibility

Before starting to connect a scanner to the VC70, verify that the current scanner firmware is compatible with the SSI Support Firmware.

[Table 4-2](#) specifies SSI support firmware compatibility with scanner firmware.

**Table 4-2** Scanner Firmware Compatibility

Scanner	SSI Support Firmware
DS3508-ER	All versions
LS3408-ER	NBRNIAAJ or later
DS3578-ER	All versions
LS3578-ER	NBRHMAAI or later

---

## Scanner/SSI Firmware Compatibility

Before starting to connect a scanner to the VC70, verify that the current scanner firmware is compatible with the SSI Support Firmware.

✓ **NOTE** Scanners with old firmware versions may not function with VC70.

---

## Installing a Scanner

The VC70 is available with a serial port (COM1 and COM2) and USB ports as well as Bluetooth with pairing labels on the front of the unit. All the physical ports support the corded scanners.

This chapter provides instructions on how to:

- [Connect LS3408-ER Corded Scanner to a Serial Port of the VC70 \(SSI\) on page 4-4](#)
- [Connect DS3508-ER Corded Scanner to a Serial Port of the VC70 \(SSI\) on page 4-8](#)
- [Connect LS3408-ER Corded Scanner to a Serial Port of the VC70 \(Serial\) on page 4-11](#)
- [Connect DS3508-ER Corded Scanner to a Serial Port of the VC70 \(Serial\) on page 4-14](#)
- [Connect a Bluetooth Scanner DS3578 Directly to the VC70 \(SPP Profile\) on page 4-19](#)
- [Connect a Bluetooth Scanner LS3578 Directly to the VC70 \(SPP Profile\) on page 4-25](#)
- [Connect a Bluetooth Scanner RS507 Directly to the VC70 \(Scan Profile\) on page 4-29](#)
- [Connect a Bluetooth Scanner RS507 Directly to the VC70 \(SPP Profile\) on page 4-31](#)

### Connect LS3408-ER Coded Scanner to a Serial Port of the VC70 (SSI)

- ✓ Once the scanner is connected to the VC70 application in Serial SSI or Wireless SSI (Scan Profile), the application (DataWedge, Wavelink TE, or any other application using the scanner in this mode) has full control of the scanner configuration parameters via the application programming interface (API) and can set or override previously set configuration parameters via the appropriate APIs.

When the application is not running, any scanner can be configured using configuration bar codes, as long as a scanner-enabled software application (Wavelink, Datawedge, etc.) is not active and the scanner is connected to VC70. Once an application is launched and the scanner is connected in SSI to the VC70, it is not able to read any configuration bar codes. To re-enable the ability to scan configuration bar codes, one must completely exit the application and disconnect and reconnect the scanner to the VC70.

- ✓ **NOTE** Refer to the scanner Product Reference Guide for information on configuring the scanner.

To connect a scanner:

1. Connect the serial cable to the scanner.
2. Connect the serial cable to the COM1 port of the VC70.

- ✓ **NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).



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

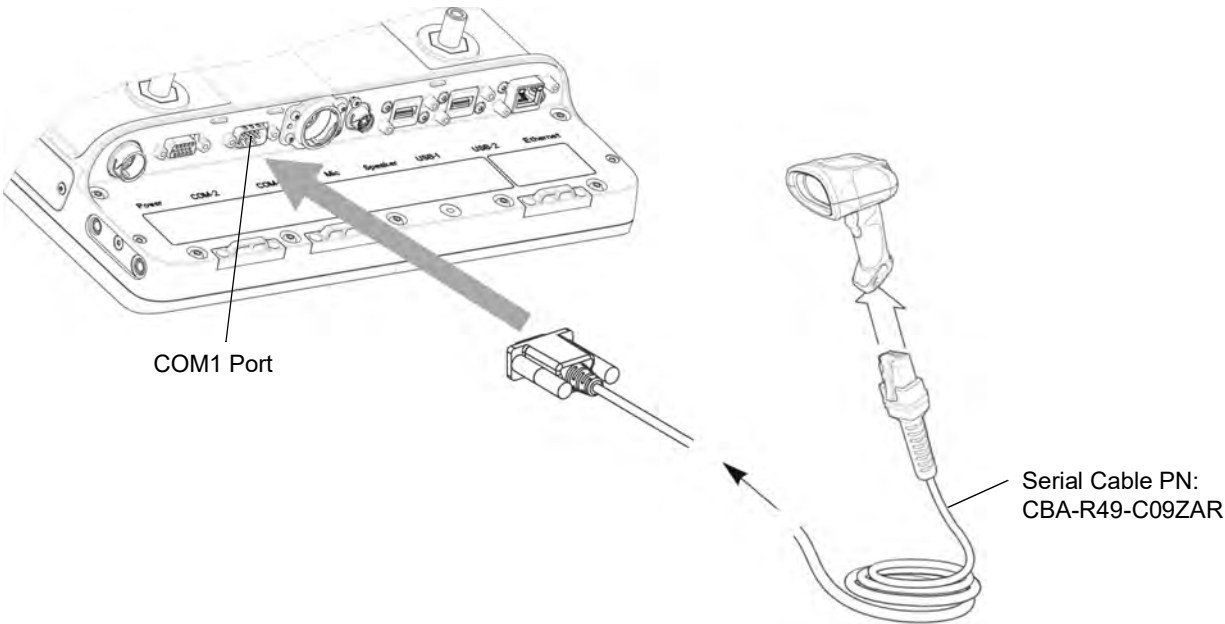


Figure 4-1 Connecting LS3408-ER Scanner to COM1 Port of VC70


- 3. From the VC70 desktop, tap  > Settings > Control Panel > System Manager.
- 4. Scan the **Set All Defaults** bar code.



Figure 4-2 Set All Defaults Bar Code

✓ **NOTE** The All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

- 5. Scan a SSI HOST bar code.

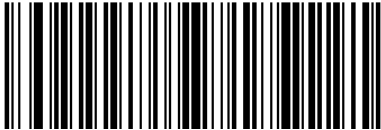


Figure 4-3 SSI Host Bar Code

✓ **NOTE** To select SSI as the host interface, scan the SSI HOST bar code. This is a scan API mode SSI.

- 6. Scan Host RTS Low bar code

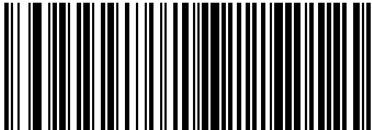


Figure 4-4 RTS Low Bar Code

7. Scan Send Packeted Decode Data bar code.




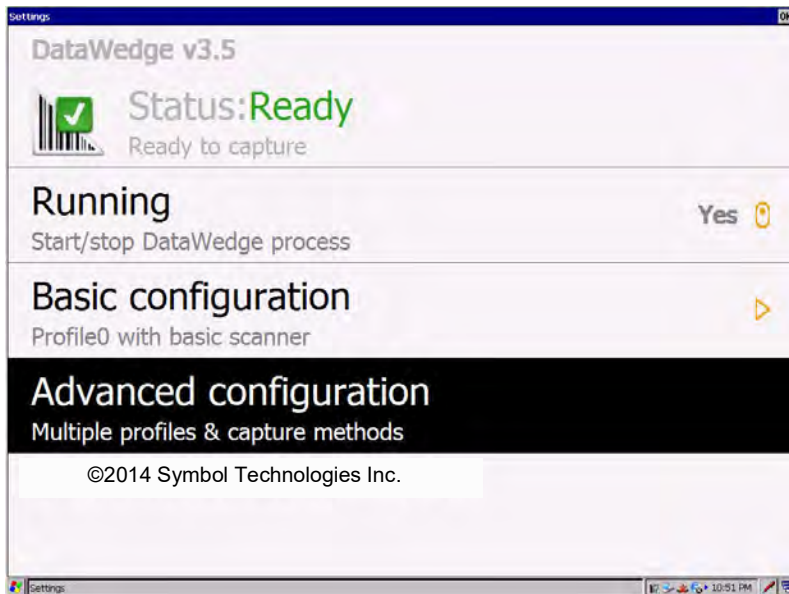
**Figure 4-5** Send Packeted Decode Data Bar Code

8. Scan Write to Custom Defaults bar code.



**Figure 4-6** Custom Default Bar Code

9. From the VC70 Desktop, tap  to launch the DataWedge application.
  10. On the DataWedge main screen, tap **Running** to show **No**.
  11. Tap **Advanced Configuration > Profiles > Profile0 > Input > Scanner > External SSI > Enabled**.
  12. Tap **Back** until you return to **Profile0** screen.
  13. From **Profile0** screen, tap **Routes > Route0 > Input > Plugin > Scanner**.
  14. Keep tapping **Back**, **Exit** and **OK** to return to DataWedge main screen.
- On the DataWedge main screen, tap **Running** to show **Yes** and verify that **Status: Ready**.



**Figure 4-7** Ready to Capture Window

15. Aim the scanner at a bar code and press the scan trigger. The bar code data appears in the **DataWedge Demonstration** window.

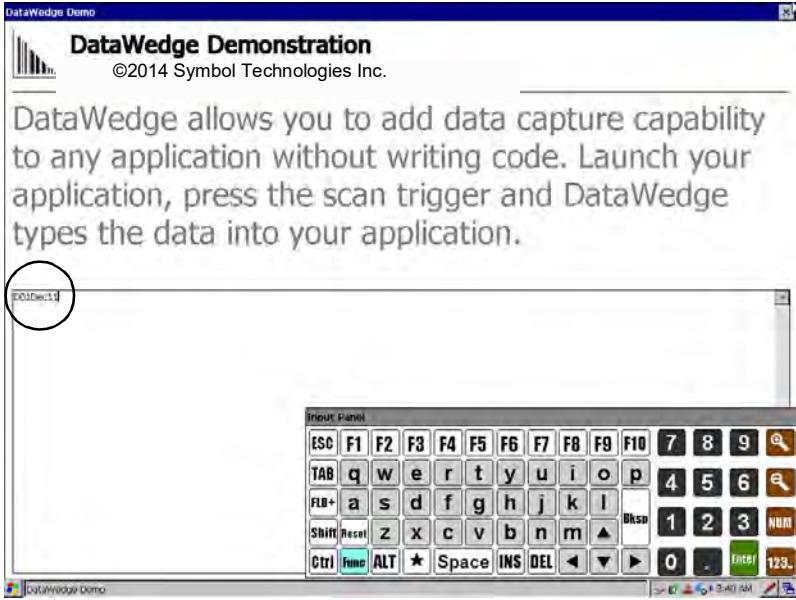


Figure 4-8 DataWedge Demonstration Window

### Connect DS3508-ER Corded Scanner to a Serial Port of the VC70 (SSI)

- ✓ Once the scanner is connected to the VC70 application in Serial SSI or Wireless SSI (Scan Profile), the application (DataWedge, Wavelink TE, or any other application using the scanner in this mode) has full control of the scanner configuration parameters via the application programming interface (API) and can set or override previously set configuration parameters via the appropriate APIs.

When the application is not running, any scanner can be configured using configuration bar codes, as long as a scanner-enabled software application (Wavelink, Datawedge, etc.) is not active and the scanner is connected to VC70. Once an application is launched and the scanner is connected in SSI to the VC70, it is not able to read any configuration bar codes. To re-enable the ability to scan configuration bar codes, one must completely exit the application and disconnect and reconnect the scanner to the VC70.

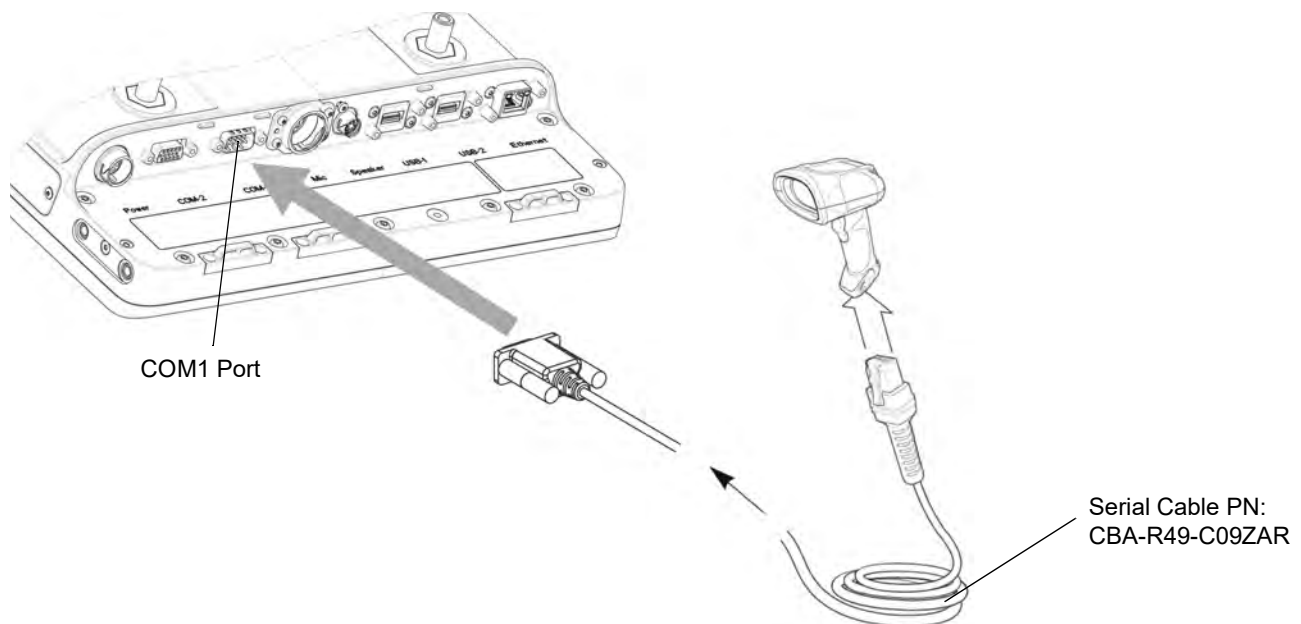
- ✓ **NOTE** Refer to Scanner/SSI Firmware Compatibility to verify that the scanner firmware supports SSI.

To connect a scanner:


1. Connect the serial cable to the scanner.
2. Connect the serial cable to the COM1 Port of the VC70.



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



**Figure 4-9** Connecting DS3508-ER Scanner to COM1 Port of VC70

3. From the VC70 desktop, tap  to launch the DataWedge application.
4. Scan the **Set All Defaults** bar code.





**Figure 4-10** *Set All Defaults Bar Code*

- ✓ **NOTE** The All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

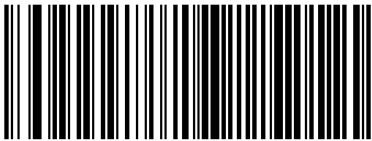
5. Scan a SSI HOST bar code.



**Figure 4-11** *SSI Host Bar Code*

- ✓ **NOTE** To select SSI as the host interface, scan the SSI Host bar code. This is a scan API mode SSI.

6. Scan Host RTS Low bar code



**Figure 4-12** *RTS Low Bar Code*

7. Scan Send Packeted Decode Data bar code.




**Figure 4-13** *Send Packeted Decode Data Bar Code*

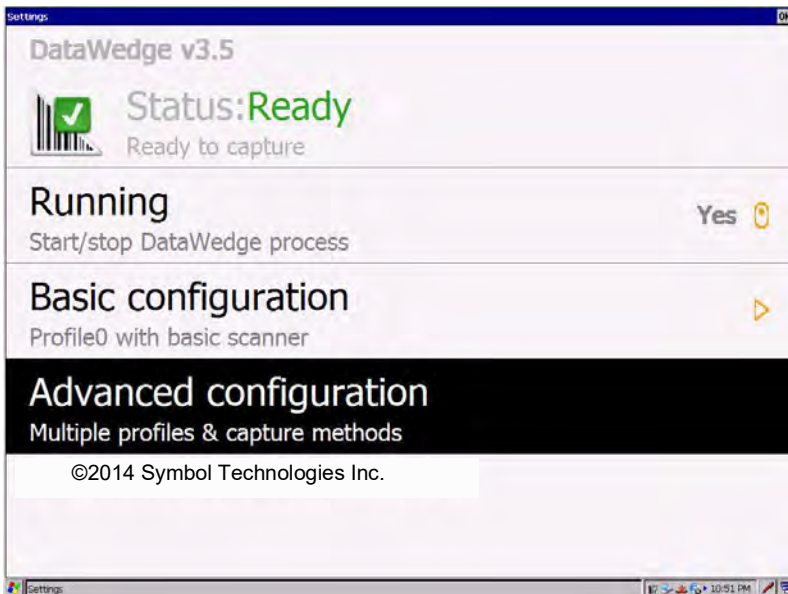
8. Scan Write to Custom Defaults bar code.



**Figure 4-14** *Custom Default Bar Code*

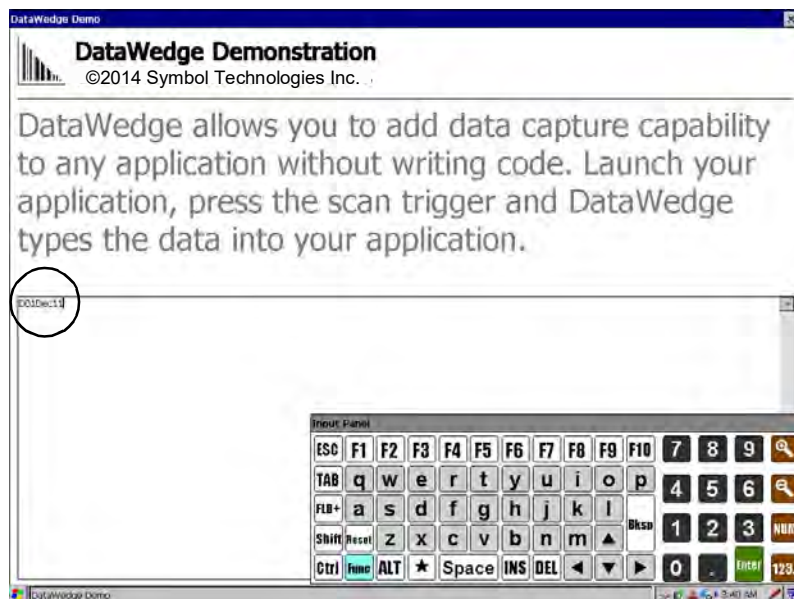
9. From the VC70 Desktop, tap  to launch the DataWedge application.
10. On the DataWedge main screen, tap **Running** to show **No**.
11. Select **Advanced Configuration > Profiles > Profile0 > Input > Scanner > External SSI > Enabled**.
12. Tap **Back** until you return to **Profile0** screen.

13. From **Profile0** screen, tap **Routes > Route0 > Input > Plugin > Scanner**.
14. Keep tapping **Back**, **Exit** and **OK** to return to DataWedge main screen.
15. On the DataWedge main screen, tap **Running** to show **Yes** and verify that **Status: Ready**.



**Figure 4-15** Ready to Capture Window

16. Aim the scanner at a bar code and press the scan trigger. The bar code data appears in the **DataWedge Demonstration** window.

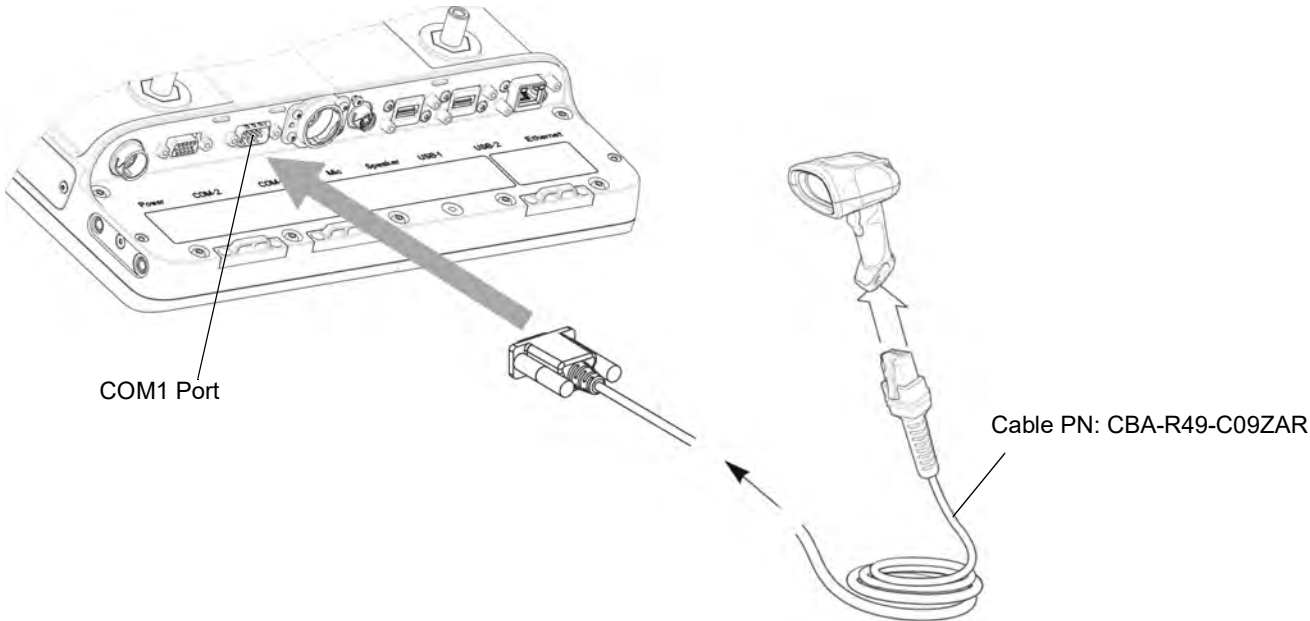


**Figure 4-16** DataWedge Demonstration Window


**Connect LS3408-ER Corded Scanner to a Serial Port of the VC70 (Serial)**

- 1. Connect the serial scanner cable to the scanner.
- 2. Connect the serial scanner cable to the COM1 port of the VC70.

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



**Figure 4-17** Connecting Serial Scanner to COM1 Connector

- 3. From the VC70 desktop, tap  > **Settings > Control Panel > System Manager.**
- 4. Scan the **Set All Defaults** bar code.



**Figure 4-18** Set All Defaults Bar Code

✓ **NOTE** The Set All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

- 5. Scan a serial configuration bar code.



**Figure 4-19** Serial Configuration Bar Code

6. Scan the Host: RTS High bar code.



**Figure 4-20** Host: RTS High Bar Code

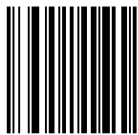
✓ **NOTE** RTS must be configured High to enable reading.

7. Scan the send row decode data bar code.




**Figure 4-21** Send Row Decode Data bar code

8. Scan Write to Custom Defaults bar code.



**Figure 4-22** Write to Custom Default Bar Code

9. From the VC70 desktop, tap  to launch the DataWedge application.
10. On the DataWedge main screen, tap **Running** to show **No**.
11. Tap **Advanced Configuration > Profiles > Profile0 > Routes > Route0 > Input > Plugin > Serial**.
12. Tap **Back** until you return to **Profile0** screen.
13. From the **Profile0** screen, tap **Input -> Serial > COM1: > Enabled**.
14. From the **COM1:** screen, tap **Port Settings** and verify the following defaults:
  - **Baud rate:** 9600
  - **Data bits:** 8
  - **Stop bits:** 1
  - **Parity:** None
15. Keep tapping **Back**, **Exit** and **OK** to return to DataWedge main screen.

On the DataWedge main screen, tap **Running** to show **Yes** and verify that **Status: Ready**.

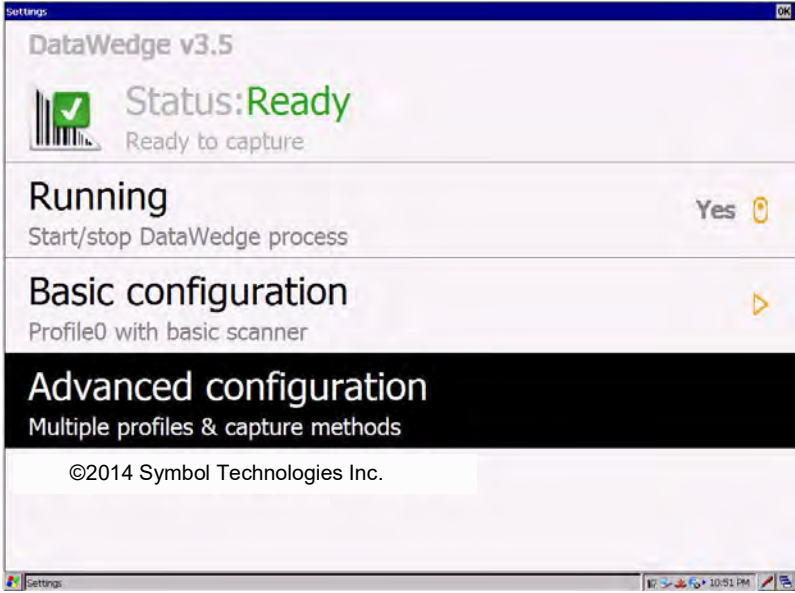


Figure 4-23 Ready to Capture Window

16. Aim the scanner at a bar code and press the scan trigger. The bar code data appears in the **DataWedge Demonstration** window.

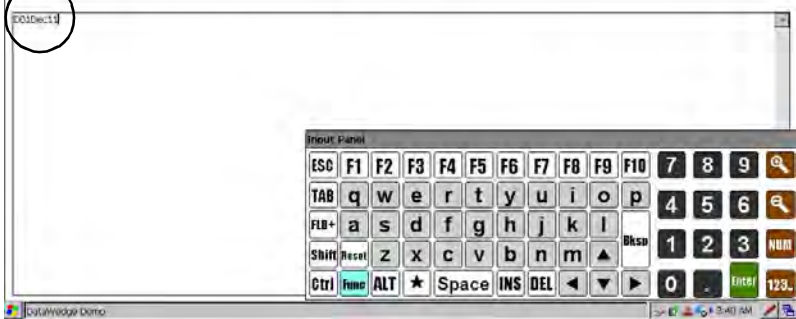

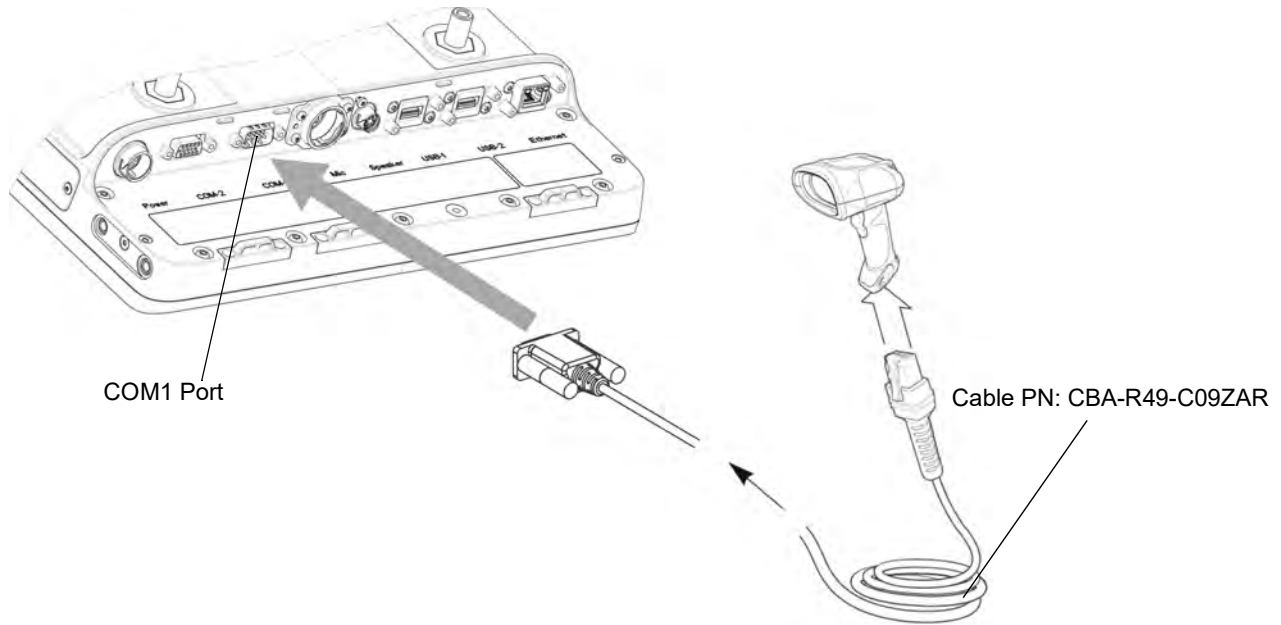


Figure 4-24 DataWedge Demonstration Window

**Connect DS3508-ER Corded Scanner to a Serial Port of the VC70 (Serial)**

1. Connect the serial scanner cable to the scanner.
2. Connect the serial scanner cable to the COM1 port of the VC70.

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



**Figure 4-25** Connecting Serial Scanner to COM1 Connector

3. From the VC70 desktop, tap  > **Settings** > **Control Panel** > **System Manager**.
4. Scan the **Set All Defaults** bar code.



**Figure 4-26** Set All Defaults Bar Code

✓ **NOTE** The Set All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

5. Scan a serial configuration bar code.



**Figure 4-27** Serial Configuration Bar Code

6. Scan the Host: RTS High bar code.



**Figure 4-28** Host: RTS High Bar Code

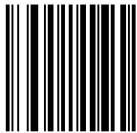
✓ **NOTE** RTS must be configured High to enable reading.

7. Scan the send row decode data bar code.




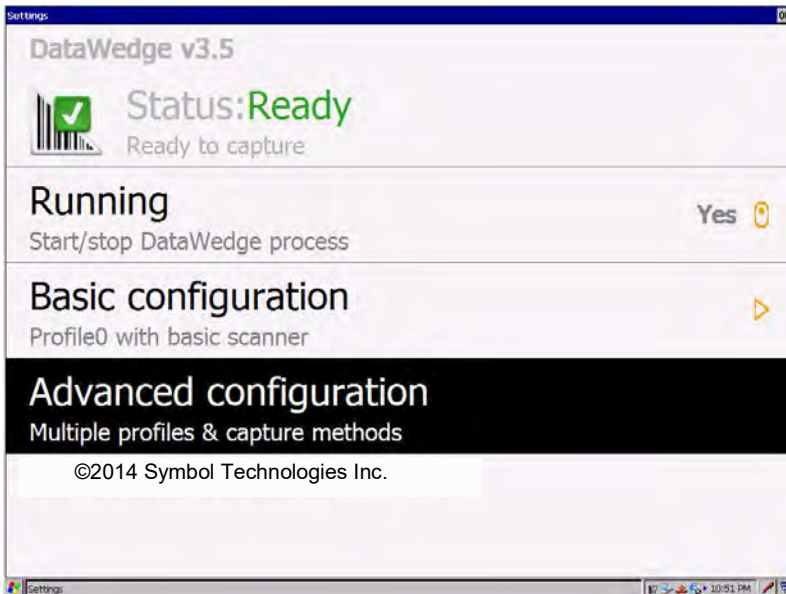
**Figure 4-29** Send Row Decode Data bar code

8. Scan Write to Custom Defaults bar code.



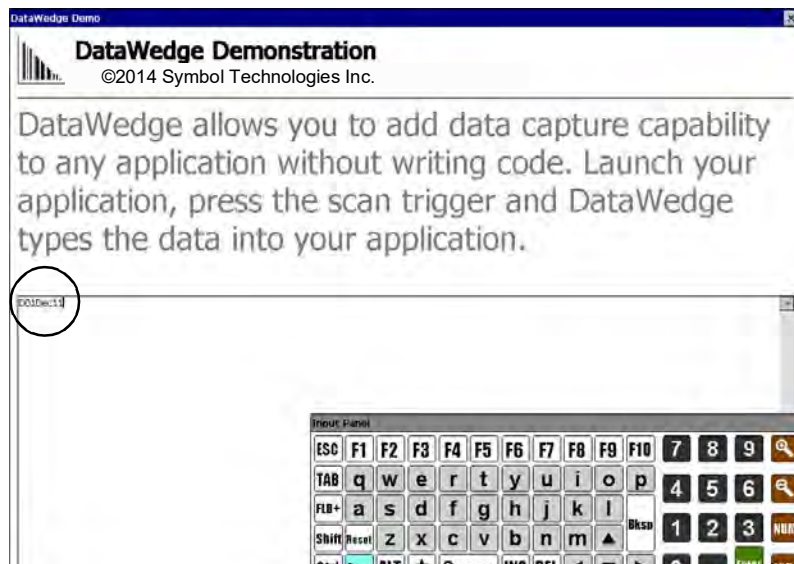
**Figure 4-30** Write to Custom Default Bar Code

9. From the VC70 desktop, tap  to launch the DataWedge application.
10. On the DataWedge main screen, tap **Running** to show **No**.
11. Tap **Advanced Configuration > Profiles > Profile0 > Routes > Route0 > Input > Plugin > Serial**.
12. Tap **Back** until you return to **Profile0** screen.
13. From the **Profile0** screen, tap **Input > Serial > COM1: > Enabled**.
14. From the **COM1:** screen, tap **Port Settings** and verify the following defaults:
- **Baud rate:** 9600
  - **Data bits:** 8
  - **Stop bits:** 1
  - **Parity:** None
15. Keep tapping **Back**, **Exit** and **OK** to return to DataWedge main screen.
16. On the DataWedge main screen, tap **Running** to show **Yes** and verify that **Status: Ready**.



**Figure 4-31** Ready to Capture Window

17. Aim the scanner at a bar code and press the scan trigger. The bar code data appears in the **DataWedge Demonstration** window.



**Figure 4-32** DataWedge Demonstration Window

### ***Connect DS3578/LS3578 Scanner Cradle to USB Port of the VC70***

The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

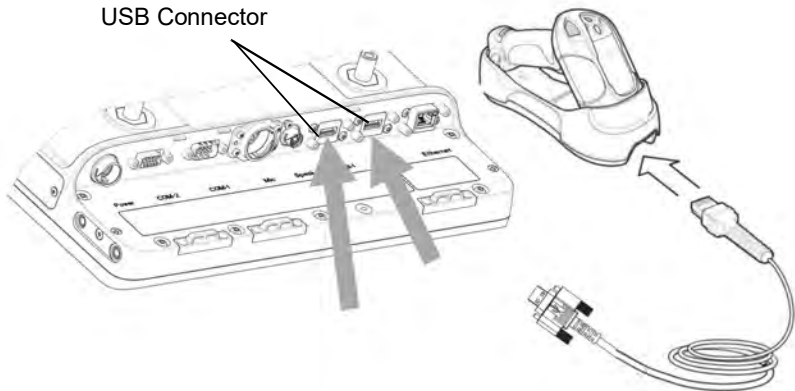
To connect the cradle:

1. Connect the USB scanner cable (PN 25-159548-01) to the cradle.
2. Connect the USB scanner cable to the one of the VC70 USB ports.



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






**Figure 4-33** Connecting DS3578/LS3578 USB Scanner Cradle to VC70

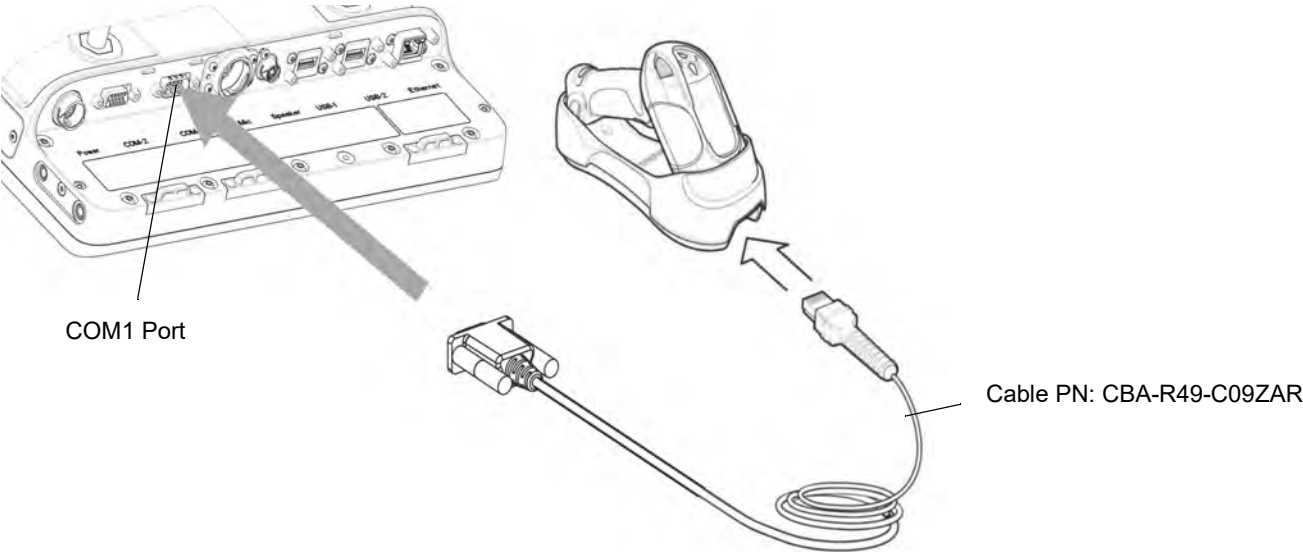
**Connect DS3578/LS3578 Scanner Cradle to a Serial Port of the VC70**

The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

- 1. Connect the serial scanner cable to the cradle (use cable P/N CBA-R49-C09ZAR).
- 2. Connect the serial scanner cable to the COM1 port of the VC70.

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



**Figure 4-34** Connecting Serial Scanner Cradle to COM1 Connector



**NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).

## Connect a Bluetooth Scanner DS3578 Directly to the VC70 (SPP Profile)

✓ **NOTE** To improve performance, use StoneStreet one Bluetooth stack.

To connect a Bluetooth scanner to the VC70:

1. Ensure that the scanner battery is fully charged.
2. Reset the scanner by removing and re-installing the scanner battery.
3. Scan the **Set All Defaults** bar code.



**Figure 4-35** Set All Defaults Bar Code

✓ **NOTE** The Set All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

4. Scan a **SPP Profile** bar code to configure the scanner to Bluetooth SPP profile mode before the pairing.



**Figure 4-36** SPP Profile Bar Code


5. Scan Write to Custom Defaults bar code.



**Figure 4-37** Custom Default Bar Code

6. To pair the scanner with your VC70, scan the pair label bar code on the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70.

7. Enter the following configuration details:

- Tap  > **Programs > BTScannerCtlPanel**
- Check **BT Scanner**
- Select Comm port **COM9**
- Tap **Save and Exit**

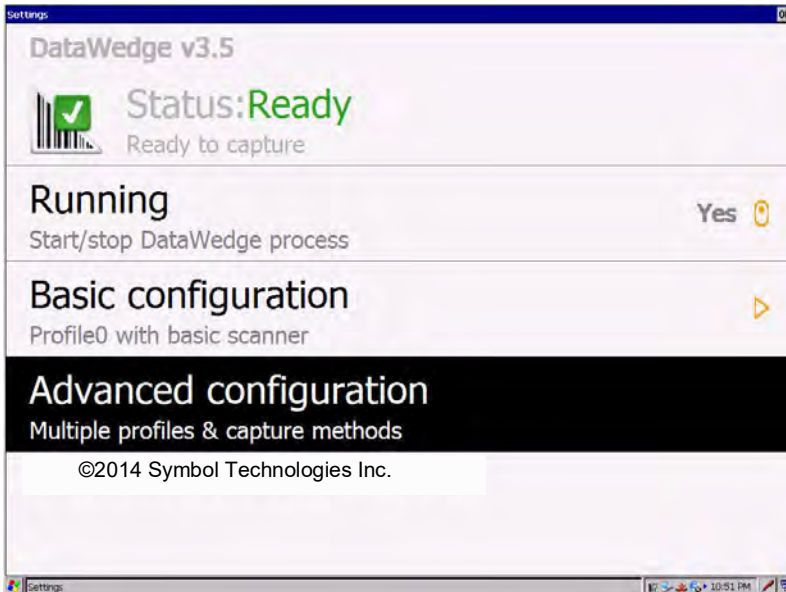
8. From the VC70 desktop, tap  to launch the DataWedge application.

9. On the DataWedge main screen, tap **Running** to show **No**.

10. Tap **Advanced Configuration > Profiles > Profile0 > Routes > Route0 > Input > Plugin > Serial**.

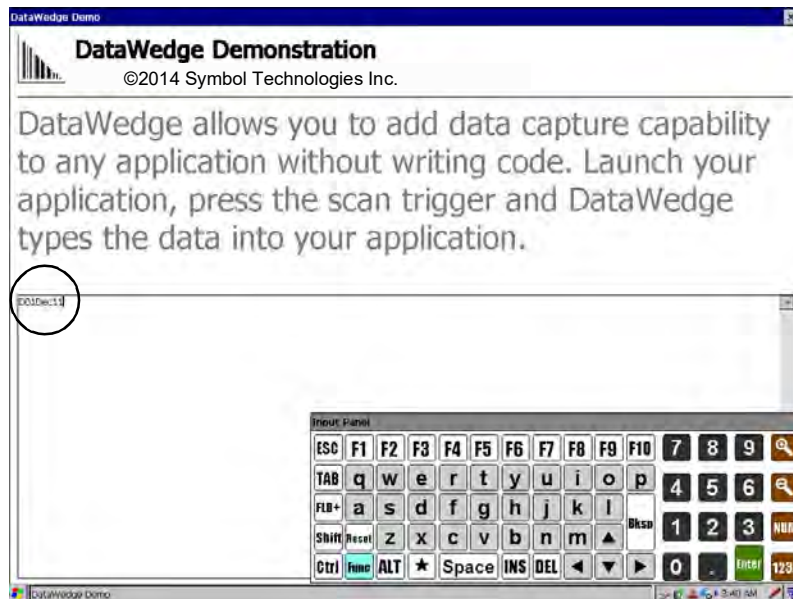
11. Tap **Back** until you return to **Profile0** screen.

12. From the **Profile0** screen, tap **Input > Serial > COM9: > Enabled**.
13. Keep tapping **Back**, **Exit** and **OK** to return to DataWedge main screen.
14. On the DataWedge main screen, tap **Running** to show **Yes** and verify that **Status: Ready**.



**Figure 4-38** Ready to Capture Window

15. Aim the scanner at a bar code and press the scan trigger. The bar code data appears in the **DataWedge Demonstration** window.



**Figure 4-39** DataWedge Demonstration Window

16. To pair the scanner with your VC70, scan the pair label bar code on the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70.

- ✓ **NOTE** To unpair the scanner for using it on other VC70, scan the Unpairing bar code.



**Figure 4-40** Unpairing Bar Code

### ***Connect DS3578/LS3578 Scanner Cradle to USB Port of the VC70***

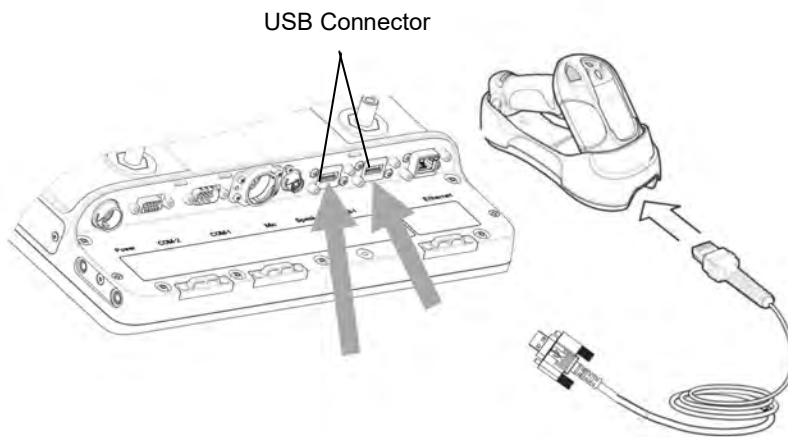
The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

1. Connect the USB scanner cable (PN 25-159548-01) to the cradle.
2. Connect the USB scanner cable to the one of the VC70 USB ports.



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



**Figure 4-41** Connecting DS3578/LS3578 USB Scanner Cradle to VC70

### ***Connect DS3578/LS3578 Scanner Cradle to a Serial Port of the VC70***

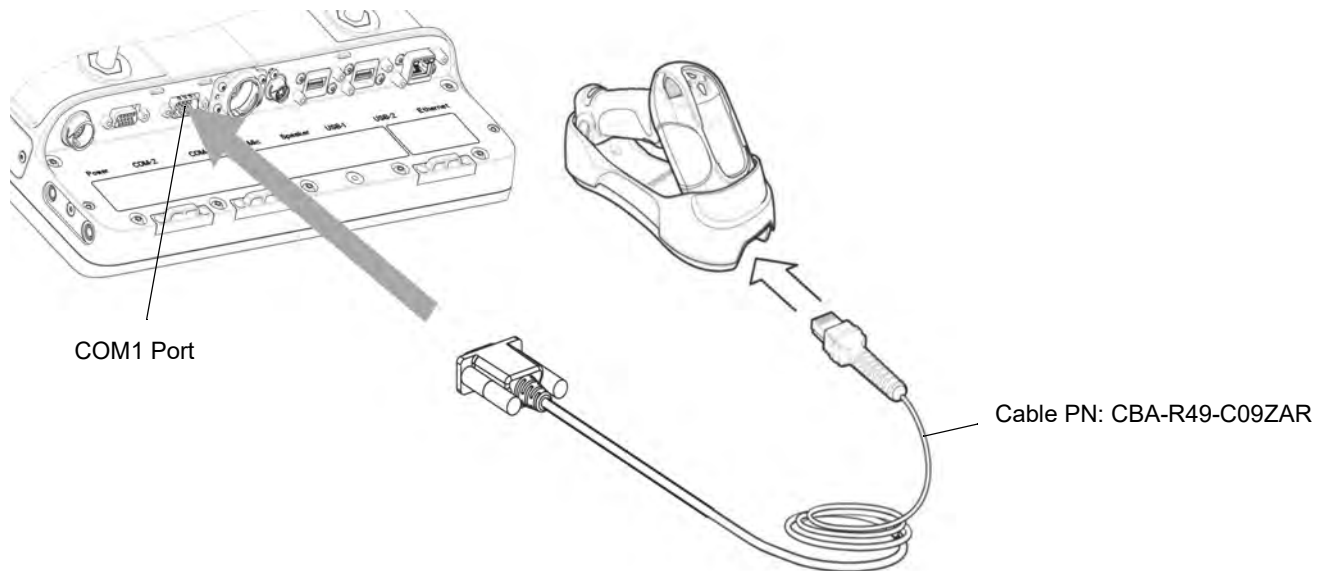
The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

1. Connect the serial scanner cable to the cradle (use cable P/N CBA-R49-C09ZAR).
2. Connect the serial scanner cable to the COM1 port of the VC70.



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



**Figure 4-42** Connecting Serial Scanner Cradle to COM1 Connector

- ✓ **NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).

### ***Connect DS3578/LS3578 Scanner Cradle to USB Port of the VC70***

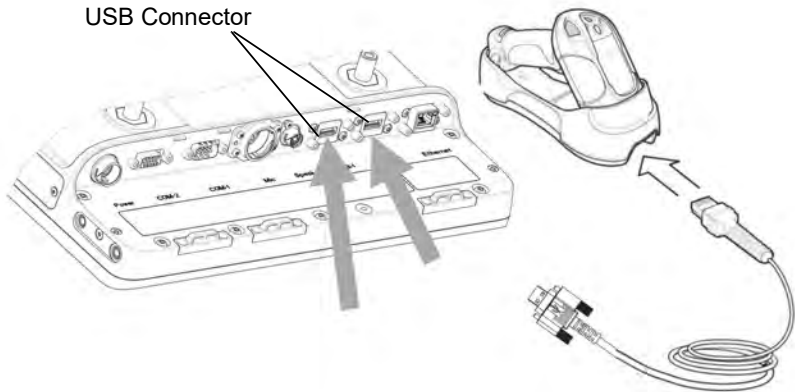
The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

1. Connect the USB scanner cable (PN 25-159548-01) to the cradle.
2. Connect the USB scanner cable to the one of the VC70 USB ports.



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



**Figure 4-43** Connecting DS3578/LS3578 USB Scanner Cradle to VC70

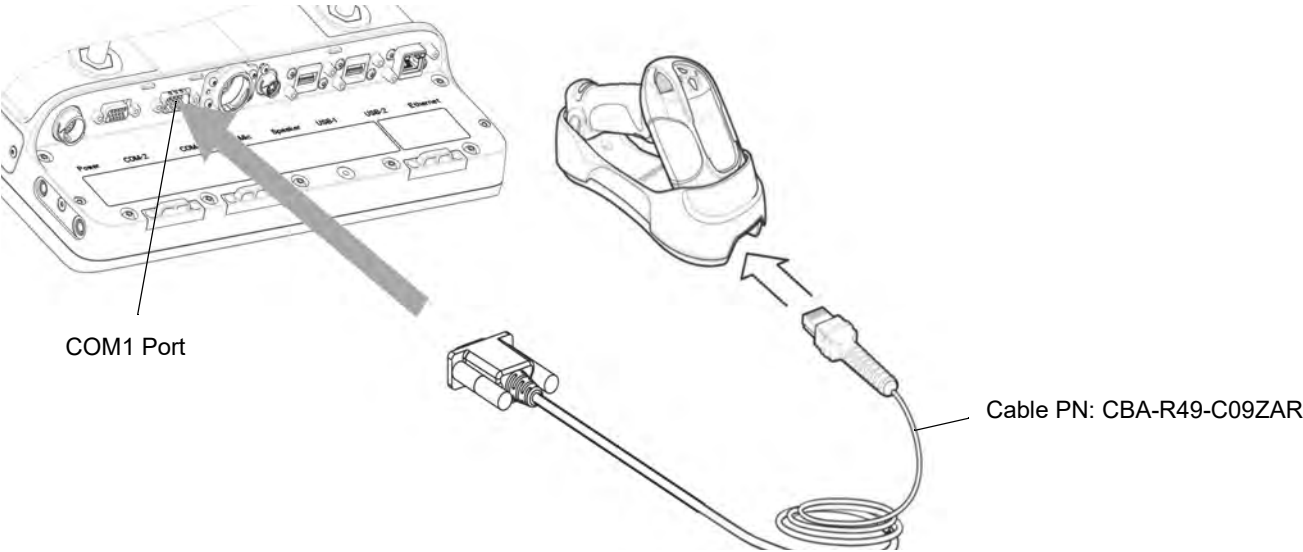
**Connect DS3578/LS3578 Scanner Cradle to a Serial Port of the VC70**

The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

- 1. Connect the serial scanner cable to the cradle (use cable P/N CBA-R49-C09ZAR).
- 2. Connect the serial scanner cable to the COM1 port of the VC70.

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



**Figure 4-44** Connecting Serial Scanner Cradle to COM1 Connector



**NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).



## Connect a Bluetooth Scanner LS3578 Directly to the VC70 (SPP Profile)

✓ **NOTE** To improve performance use StoneStreet one Bluetooth stack.

To connect a Bluetooth scanner to the VC70:

1. Ensure that the scanner battery is fully charged.
2. Reset the scanner by removing and re-installing the scanner battery.
3. Scan the **Set All Defaults** bar code.



**Figure 4-45** Set All Defaults Bar Code

✓ **NOTE** The Set All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

4. Scan a **SPP Profile** bar code to configure the scanner to Bluetooth SPP profile mode before the pairing.





**Figure 4-46** SPP Profile Bar Code

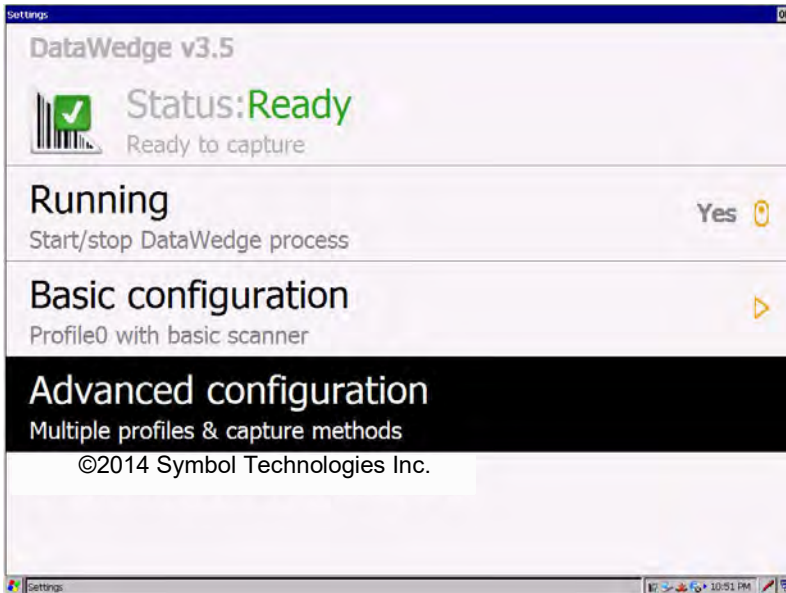
5. Scan Write to Custom Defaults bar code.



**Figure 4-47** Custom Default Bar Code

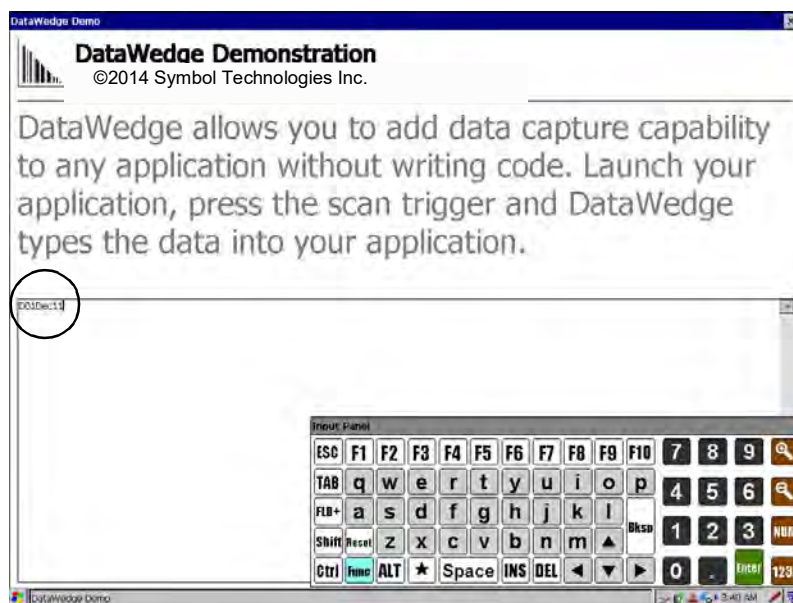
6. To pair the scanner with your VC70, scan the pair label bar code on the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70.
7. Enter the following configuration details:
  - Tap  > **Programs > BTScannerCtlPanel**
  - Check **BT Scanner**
  - Select Comm port **COM9**
  - Tap **Save and Exit**
8. From the VC70 desktop, tap  to launch the DataWedge application.
9. On the DataWedge main screen, tap **Running** to show **No**.
10. Tap **Advanced Configuration > Profiles > Profile0 > Routes > Route0 > Input > Plugin > Serial**.

11. Tap **Back** until you return to **Profile0** screen.
12. From the **Profile0** screen, tap **Input > Serial > COM9 > Enabled**.
13. Keep tapping **Back, Exit** and **OK** to return to DataWedge main screen.
14. On the DataWedge main screen, tap **Running** to show **Yes** and verify that **Status: Ready**.



**Figure 4-48** Ready to Capture Window

15. Aim the scanner at a bar code and press the scan trigger. The bar code data appears in the **DataWedge Demonstration** window.



**Figure 4-49** DataWedge Demonstration Window

✓ **NOTE** To unpair the scanner for using it on other VC70, scan the Unpairing bar code.



**Figure 4-50** Unpairing Bar Code

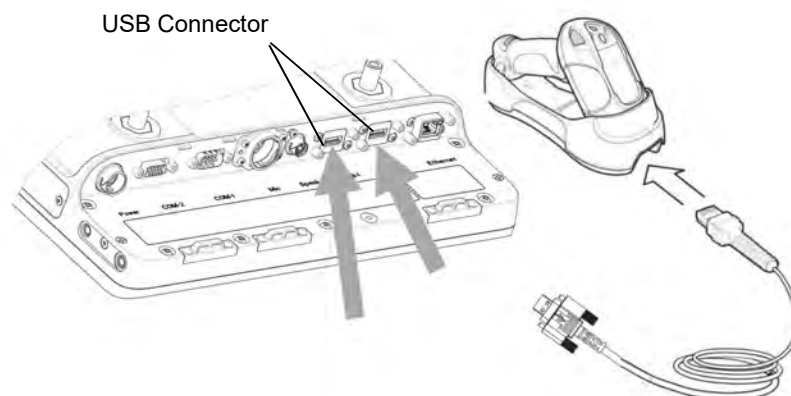
### ***Connect DS3578/LS3578 Scanner Cradle to USB Port of the VC70***

The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

1. Connect the USB scanner cable (PN 25-159548-01) to the cradle.
2. Connect the USB scanner cable to the one of the VC70 USB ports.

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



**Figure 4-51** Connecting DS3578/LS3578 USB Scanner Cradle to VC70

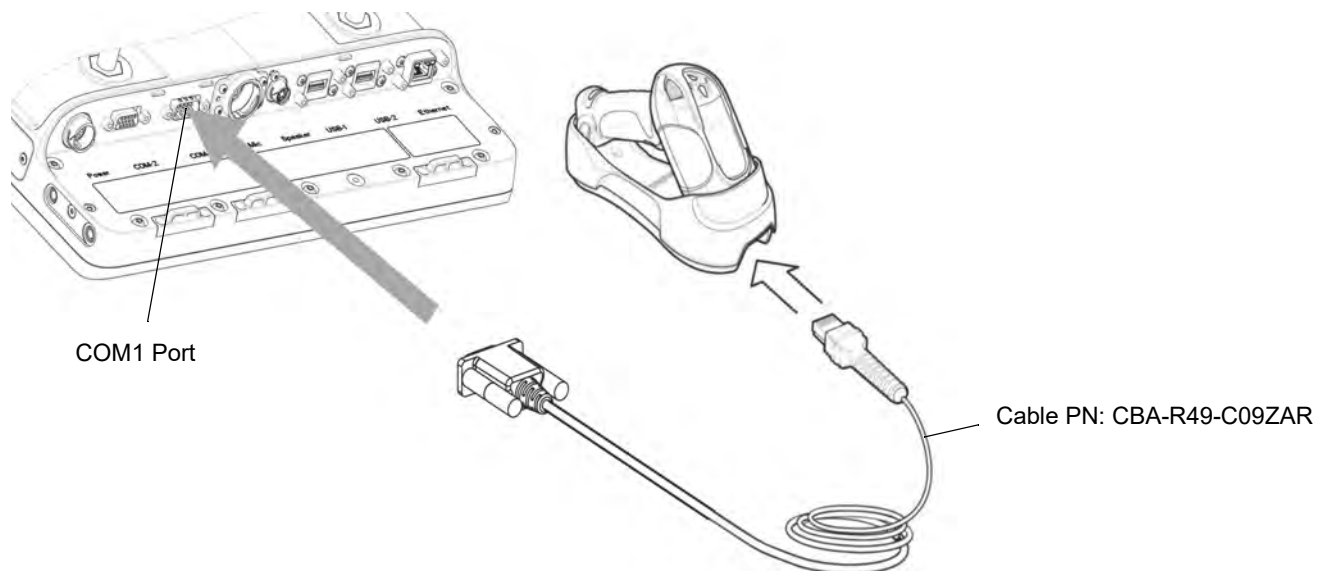
### ***Connect DS3578/LS3578 Scanner Cradle to a Serial Port of the VC70***

The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

1. Connect the serial scanner cable to the cradle (use cable P/N CBA-R49-C09ZAR).
2. Connect the serial scanner cable to the COM1 port of the VC70.

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



**Figure 4-52** Connecting Serial Scanner Cradle to COM1 Connector

- ✓ **NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).

### Connect a Bluetooth Scanner RS507 Directly to the VC70 (Scan Profile)

- ✓ Once the scanner is connected to the VC70 application in Serial SSI or Wireless SSI (Scan Profile), the application (DataWedge, Wavelink TE, or any other application using the scanner in this mode) has full control of the scanner configuration parameters via the application programming interface (API) and can set or override previously set configuration parameters via the appropriate APIs.

When the application is not running, any scanner can be configured using configuration bar codes, as long as a scanner-enabled software application (Wavelink, Datawedge, etc.) is not active and the scanner is connected to VC70. Once an application is launched and the scanner is connected in SSI to the VC70, it is not able to read any configuration bar codes. To re-enable the ability to scan configuration bar codes, one must completely exit the application and disconnect and reconnect the scanner to the VC70.

- ✓ **NOTE** Refer to the scanner Product Reference Guide for information on configuring the scanner.
- ✓ **NOTE** To improve performance use StoneStreet one Bluetooth stack.

1. Ensure that the scanner battery is fully charged.
2. Reset the scanner by removing and re-installing the scanner battery.
3. Scan a Scan Profile bar code to configure the scanner to Bluetooth SPP profile mode before the pairing.




**Figure 4-53** Scan Profile Bar Code

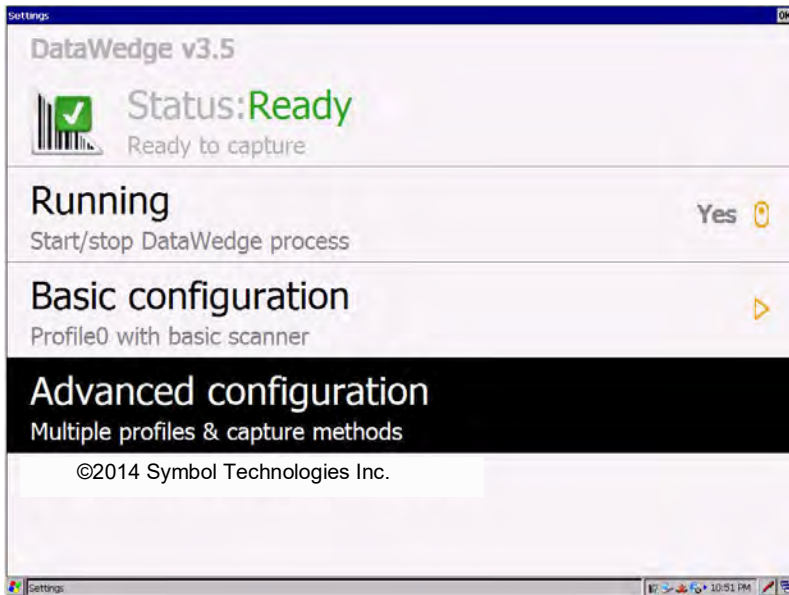
4. Perform a cold boot by removing and re-installing the battery onto the RS507.
5. To pair the scanner with your VC70, scan the **PAIR** bar code in the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70. The scanner beeps indicating that it is successfully connected to the VC70 and Authentication Request box is displayed.



**Figure 4-54** Authentication Request Box

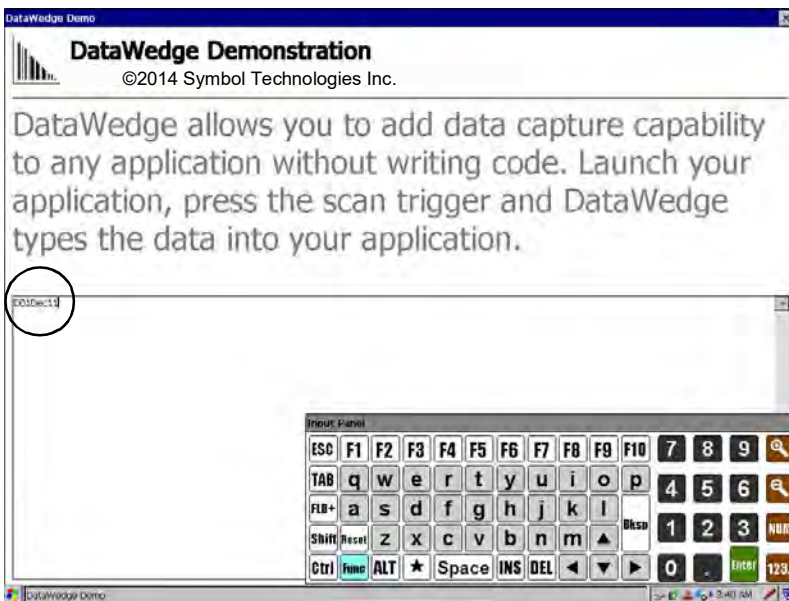
6. Tap **Yes** to allow pairing.
7. From the VC70 desktop, tap  to launch the DataWedge application.
8. On the DataWedge main screen, tap **Running** to show **No**.
9. Tap **Advanced Configuration > Profiles > Profile0 > Routes > Route0 > Input > Plugin > Scanner**.

10. Tap **Back** until you return to **Profile0** screen.
11. From the **Profile0** screen, tap **Input > Scanner > Bluetooth SSI Scanner > Driver > Enabled**.
12. Keep tapping **Back**, **Exit** and **OK** to return to DataWedge main screen.
13. On the DataWedge main screen, tap **Running** to show **Yes** and verify that **Status: Ready**.



**Figure 4-55** Ready to Capture Window

14. Aim the scanner at a bar code and press the scan trigger. The bar code data appears in the **DataWedge Demonstration** window.



**Figure 4-56** DataWedge Demonstration Window

- ✓ **NOTE** To unpair the scanner for using it on other VC70, scan the Unpairing bar code.



**Figure 4-57** Unpairing Bar Code

### Connect a Bluetooth Scanner RS507 Directly to the VC70 (SPP Profile)


- ✓ **NOTE** Refer to the scanner Product Reference Guide for information on configuring the scanner.

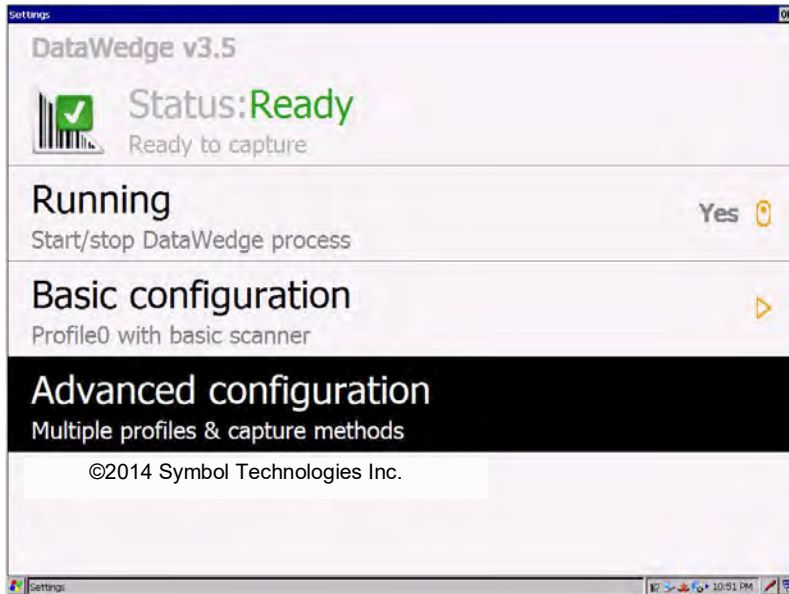
To connect a Bluetooth scanner to the VC70:

1. Ensure that the scanner battery is fully charged.
2. Scan a SPP Profile bar code to configure the scanner to Bluetooth SPP profile mode before the pairing.



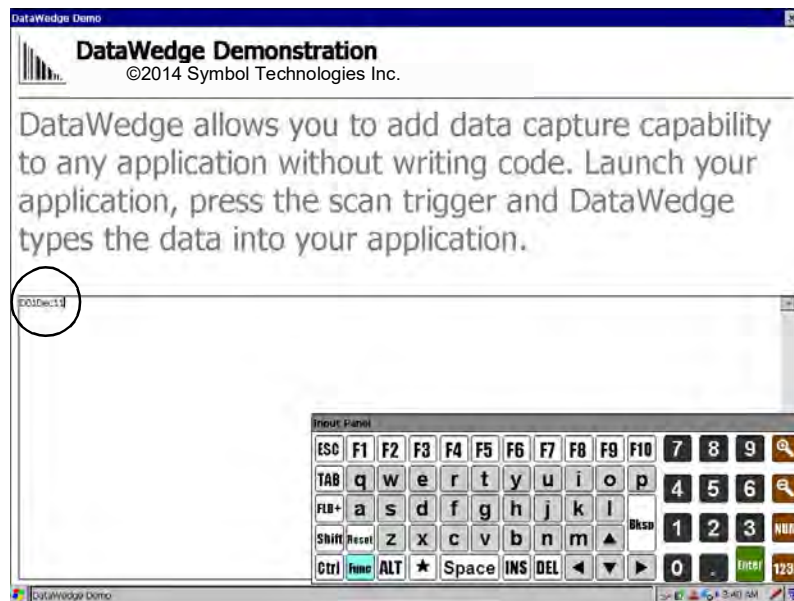
**Figure 4-58** SPP Profile Bar Code

3. Perform a cold boot by removing and re-installing the battery onto the RS507.
4. From the VC70 Desktop, tap  to launch the DataWedge application.
5. Tap: **Advanced Configuration > Profiles > Profile0 > Input > Serial COM9: > Enabled.**
6. Tap **Back** to return to **Profile0.**
7. Tap **Input > Route > Route0 > Input > Plugin > Serial.**
8. To pair the scanner with your VC70, scan the pair label bar code in the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70.
9. Tap **Back** and **Exit** to go back to DataWedge main screen.
10. On the DataWedge main screen, select **Running** and start the DataWedge process by changing the status to **Yes** and verify that the scanner is in **Status: Ready.**



**Figure 4-59** Ready to Capture Window

11. Aim the scanner at a bar code and press the scan trigger. The bar code data appears in the **DataWedge Demonstration** window.



**Figure 4-60** DataWedge Demonstration Window

✓ **NOTE** To unpair the scanner for using it on other VC70, scan the Unpairing bar code.



**Figure 4-61** Unpairing Bar Code



# Chapter 5 TelnetCE Configuration

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## Introduction

This chapter provides instructions required for connecting serial scanners in a Wavelink TelnetCE session via the VC70 vehicle computer.

- ✓ **NOTE** For Speakeasy on Wavelink TE refer to Zebra Technologies Support Center or Wavelink website.
- ✓ **NOTE** Before starting Wavelink TE, make sure DataWedge application is not running to avoid software conflicts.
- ✓ **NOTE** For best performance, when using Wavelink TE, DataWedge application should not be running, unless it is specifically planned for.  
Once DataWedge is started, it will be running in the background. To make sure DataWedge is disabled when Wavelink TE is running create a profile within DataWedge, associate the Wavelink TE to this profile, then un-check the Enabled option for that profile. This will disable DataWedge when Wavelink TE is running, but allow DataWedge to be used for other applications.  
Refer to the Help file in the DW Toolkit available on the VC70 page on Support Central:  
<http://www.zebra.com/support>

This chapter provides instructions on how to:

- [Connect LS3408-ER Corded Scanner to a Serial Port of the VC70 \(SSI\) on page 5-4](#)
- [Connect DS3508-ER Corded Scanner to a Serial Port of the VC70 \(SSI\) on page 5-8](#)
- [Connect LS3408-ER Corded Scanner to a Serial Port of the VC70 \(Serial\) on page 5-11](#)
- [Connect LS3408-ER Corded Scanner to USB Port of the VC70 \(Scan Handlers\) on page 5-29](#)
- [Connect DS3508-ER Corded Scanner to a Serial Port of the VC70 \(Serial\) on page 5-20](#)
- [Connect DS3508-ER Serial Scanner to USB Port of the VC70 \(Scan Handlers\) on page 5-38](#)
- [Connect LS3408-ER Scanner to USB Port of the VC70 \(HID\) on page 5-28](#)
- [Connect DS3508-ER Scanner to USB Port of the VC70 \(HID\) on page 5-36](#)
- [Connect a Bluetooth Scanner RS507 Directly to the VC70 \(Scan Profile\) on page 5-44](#)

- [Connect a Bluetooth Scanner RS507 Directly to the VC70 \(SPP Profile\) on page 5-46](#)
- [Connect a Bluetooth Scanner DS3578 Directly to the VC70 \(SPP Profile\) on page 5-54](#)
- [Connect a Bluetooth Scanner LS3578 Directly to the VC70 \(SPP Profile\) on page 5-63](#)

## Scanner Connection Method

[Table 5-1](#) describes the scanner connection methods.

**Table 5-1** Scanner Connection Methods

Interface	Serial	Serial SSI	HID	HID with Scan Handlers	Scan Profile (Wireless SSI)	SPP Profile	HID Profile
Physical Port	COM1 / COM2	COM1 / COM2	USB 1 or 2		Bluetooth		
Advantages							
Allows use of Scan handlers with Wavelink TE		X		X	X		
Allows programing the scanner within the Wavelink TE or any application using the SCAN APIs		X			X		
Persistency during forklift battery swap		X	X	X	X	X	X
Connection / Scanner	Instructions for Wavelink TE						
Corded LS3408-ER	<a href="#">page 5-11</a>	<a href="#">page 5-4</a>	<a href="#">page 5-28</a>	<a href="#">page 5-29</a>			
Corded DS3508-ER	<a href="#">page 5-20</a>	<a href="#">page 5-8</a>	<a href="#">page 5-36</a>	<a href="#">page 5-38</a>			
Cordless LS3578-ER						<a href="#">page 5-63</a>	
Cordless DS3578-ER						<a href="#">page 5-54</a>	
Cordless RS507					<a href="#">page 5-44</a>	<a href="#">page 5-46</a>	

## Scanner/SSI Firmware Compatibility

Before starting to connect a scanner to the VC70, verify that the current scanner firmware is compatible with the SSI Support Firmware.

*Table 5-2* specifies SSI support firmware compatibility with scanner firmware.

**Table 5-2** *Scanner Firmware Compatibility*

Scanner	SSI Support Firmware
DS3508-ER	All versions
LS3408-ER	NBRNIAAJ or later
DS3578-ER	All versions
LS3578-ER	NBRHMAAI or later

## Wavelink TelnetCE

When using a serial scanner in a Wavelink TelnetCE session, the Wavelink Client communications parameters must be updated to reflect the connection of a scanner to one of the vehicle computer COM ports. Serial options; such as baud rate, data bits, stop bits and parity, of the host session and the scanner must match.

The Wavelink Client defaults are:

- Baud: 9600
- Data bits: 8
- Stop bits: 1
- Parity: None.

Ensure that scanner default parameters match the Wavelink parameters. If they do not, configure the scanner accordingly. Refer to the scanner Product Reference Guide for information on the default scanner settings.

- ✓ **NOTE** It is always recommended to check the latest Wavelink TE version released for the VC70.
- ✓ **NOTE** It is recommend that ALL changes (including Host Profiles and Emulation Parameters) be done at the host server side (Telnet Configuration Menu) and sent down to the VC70. Avoid making changes at the VC70 side. Changes made at a VC70 side would have to include all VC70 units.

### Connect LS3408-ER Coded Scanner to a Serial Port of the VC70 (SSI)

To connect a scanner: )

✓ **NOTE** Refer to Scanner/SSI Firmware Compatibility to verify that the scanner firmware supports SSI.

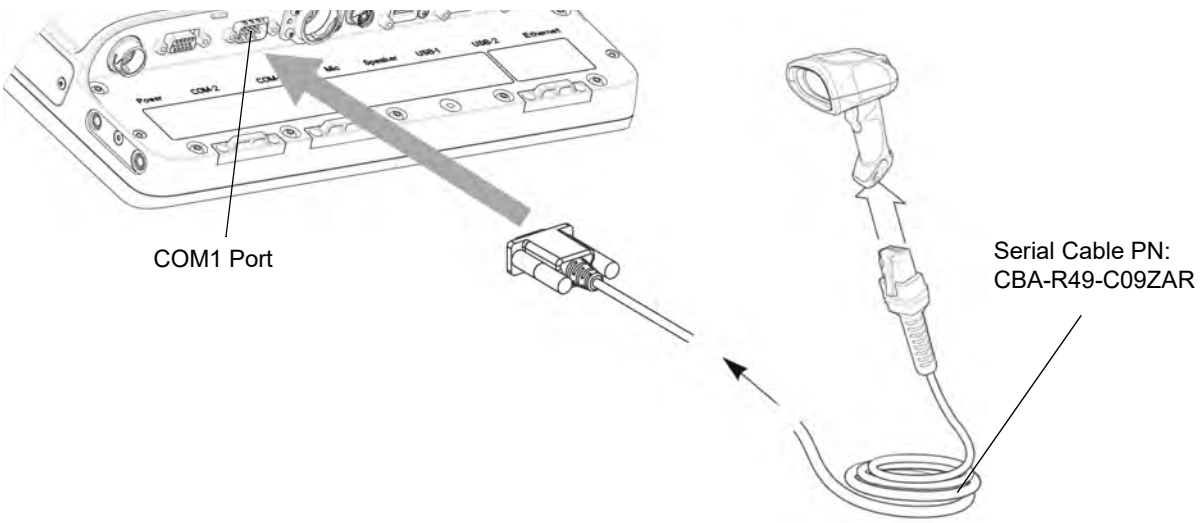
✓ **NOTE** Once the scanner is connected to the VC70 application in Serial SSI or Wireless SSI (Scan Profile), the application (DataWedge, Wavelink TE, or any other application using the scanner in this mode) has full control of the scanner configuration parameters via the application programming interface (API) and can set or override previously set configuration parameters via the appropriate APIs.

When the application is not running, any scanner can be configured using configuration bar codes, as long as a scanner-enabled software application (Wavelink, Datawedge, etc.) is not active and the scanner is connected to VC70. Once an application is launched and the scanner is connected in SSI to the VC70, it is not able to read any configuration bar codes. To re-enable the ability to scan configuration bar codes, one must completely exit the application and disconnect and reconnect the scanner to the VC70.

1. Verify that the VC70 has Ethernet or Wi-Fi connection to a host server (see [Chapter 6, Wireless LAN Applications](#)).
2. Connect the serial cable to the scanner.
3. Connect the serial cable to the COM1 port of the VC70.



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



**Figure 5-1** Connecting LS3408-ER Scanner to COM1 Port of VC70

- ✓ **NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).

4. Scan the **Set All Defaults** bar code.



**Figure 5-2** Set All Defaults Bar Code

- ✓ **NOTE** The All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

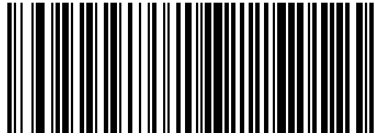
5. Scan a SSI HOST bar code.



**Figure 5-3** SSI Host Bar Code

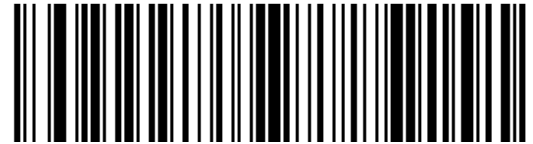
- ✓ **NOTE** To select SSI as the host interface, scan the SSI HOST bar code. This is a scan API mode SSI.

6. Scan Host RTS Low bar code



**Figure 5-4** *RTS Low Bar Code*

7. Scan Send Packeted Decode Data bar code.




**Figure 5-5** *Send Packeted Decode Data Bar Code*

8. Scan Write to Custom Defaults bar code.



**Figure 5-6** *Custom Default Bar Code*

9. From the VC70 desktop, tap  to start TelnetCE. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification.
10. Tap **No**. A black screen with “**No host connection**” indication shows.
11. On the black screen, tap **Options > Connect Session 1**.
12. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
13. Enter the following Host Profile information:
- **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>.
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.
14. Tap **Save**.



**NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

15. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen.

**Connect DS3508-ER Corded Scanner to a Serial Port of the VC70 (SSI)**

- ✓ **NOTE** Refer to the scanner Product Reference Guide for information on configuring the scanner.
- ✓ **NOTE** Once the scanner is connected to the VC70 application in Serial SSI or Wireless SSI (Scan Profile), the application (DataWedge, Wavelink TE, or any other application using the scanner in this mode) has full control of the scanner configuration parameters via the application programming interface (API) and can set or override previously set configuration parameters via the appropriate APIs.

When the application is not running, any scanner can be configured using configuration bar codes, as long as a scanner-enabled software application (Wavelink, Datawedge, etc.) is not active and the scanner is connected to VC70. Once an application is launched and the scanner is connected in SSI to the VC70, it is not able to read any configuration bar codes. To re-enable the ability to scan configuration bar codes, one must completely exit the application and disconnect and reconnect the scanner to the VC70.

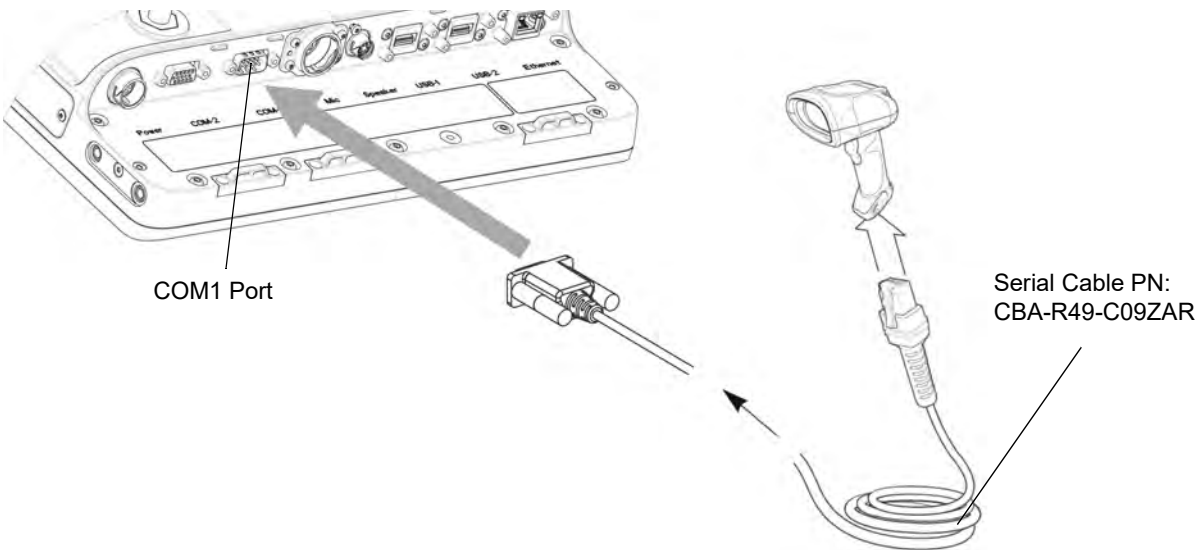
To connect a scanner:

1. Verify that the VC70 has Ethernet or Wi-Fi connection to a host server.
2. Connect the serial cable to the scanner.
3. Connect the serial cable to the COM1 Port of the VC70.



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





**Figure 5-7** Connecting DS3508-ER Scanner to COM1 Port of VC70

- ✓ **NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).

4. Scan the **Set All Defaults** bar code.



**Figure 5-8** Set All Defaults Bar Code

- ✓ **NOTE** The All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

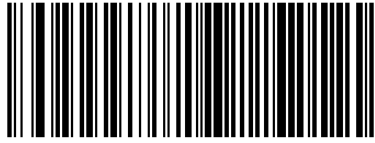
5. Scan a SSI HOST bar code.



**Figure 5-9** SSI Host Bar Code

- ✓ **NOTE** To select SSI as the host interface, scan the SSI Host bar code. This is a scan API mode SSI.

6. Scan Host RTS Low bar code



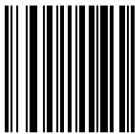
**Figure 5-10** *RTS Low Bar Code*

7. Scan Send Packeted Decode Data bar code.




**Figure 5-11** *Send Packeted Decode Data Bar Code*

8. Scan Write to Custom Defaults bar code.



**Figure 5-12** *Custom Default Bar Code*

9. From the VC70 Desktop, Tap  > **Programs** > **TelnetCE** to start TelnetCE. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification.
10. Tap **No**. A black screen with “**No host connection**” indication shows.
11. On the black screen, tap **Options** > **Connect Session 1**.
12. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
13. Enter the following Host Profile information:
- **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>.
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.
14. Tap **Save**.



**NOTE** If re-editing is required, tap **Options** > **Configure** > **Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

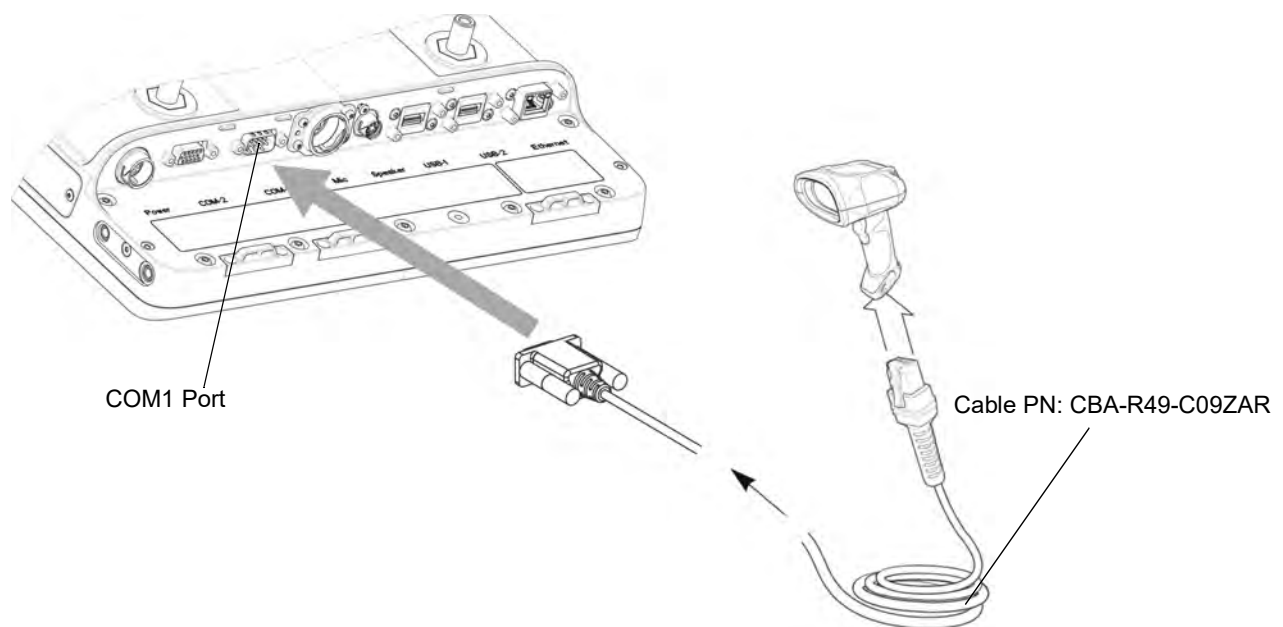
15. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen.

### Connect LS3408-ER Corded Scanner to a Serial Port of the VC70 (Serial)

1. Connect the serial scanner cable to the scanner.
2. Connect the serial scanner cable to the COM1 port of the VC70.



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



**Figure 5-13** Connecting Serial Scanner to COM1 Connector



**NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).

3. Scan the **Set All Defaults** bar code.



**Figure 5-14** *Set All Defaults Bar Code*



**NOTE** The Set All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

4. Scan a serial configuration bar code.



**Figure 5-15** *Serial Configuration Bar Code*

5. Scan the Host: RTS High bar code.



**Figure 5-16** *Host: RTS High Bar Code*



**NOTE** RTS must be configured High to enable reading.

6. Scan the send row decode data bar code.



**Figure 5-17** *Send Row Decode Data bar code*

7. Scan Write to Custom Defaults bar code.



**Figure 5-18** *Write to Custom Default Bar Code*

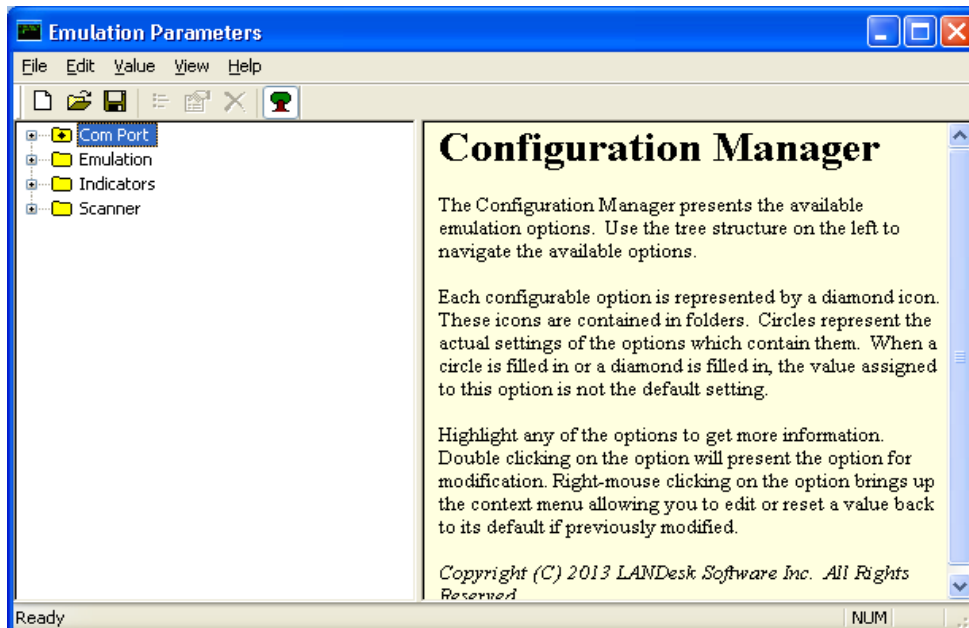
8. From Wavelink web site, download I the Wavelink MOT\_VC7000\_CE7 TelnetCE application ([https://www.wavelink.com/Orders/files/WLTE\\_MOT\\_VC7000\\_CE7\\_7\\_3\\_158\\_AS.exe](https://www.wavelink.com/Orders/files/WLTE_MOT_VC7000_CE7_7_3_158_AS.exe))
9. Install the Wavelink MOT\_VC7000\_CE7 TelnetCE application on a PC used for configuring the VC70.

10. Launch the Wavelink MOT\_VC7000\_CE7 TelnetCE Application - the Wavelink Product Configuration screen is displayed.



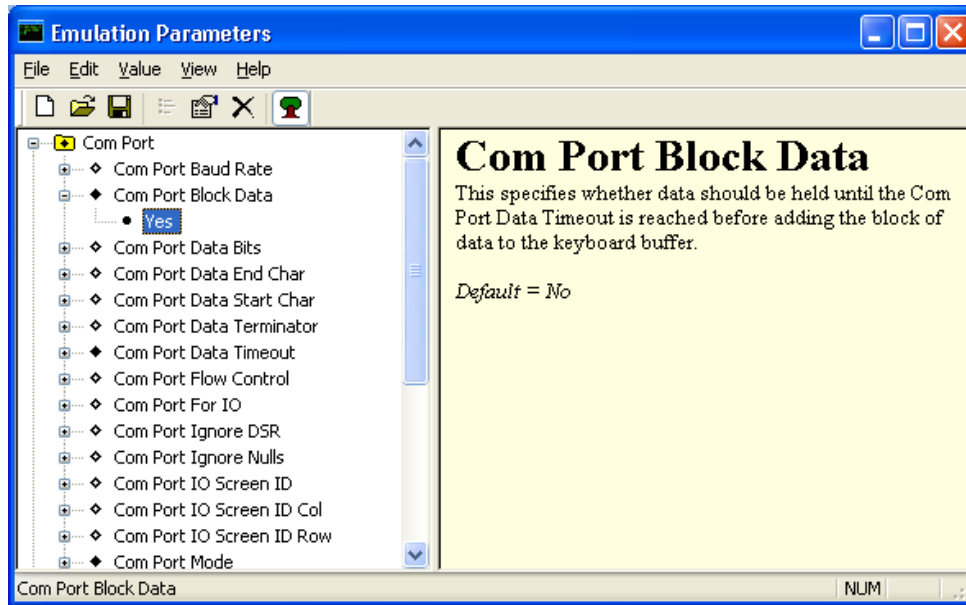
**Figure 5-19** Wavelink Product Configuration Screen

11. On the Wavelink Product Configuration Screen, click **Emulation Parameters**.
12. Click **Com Port**.



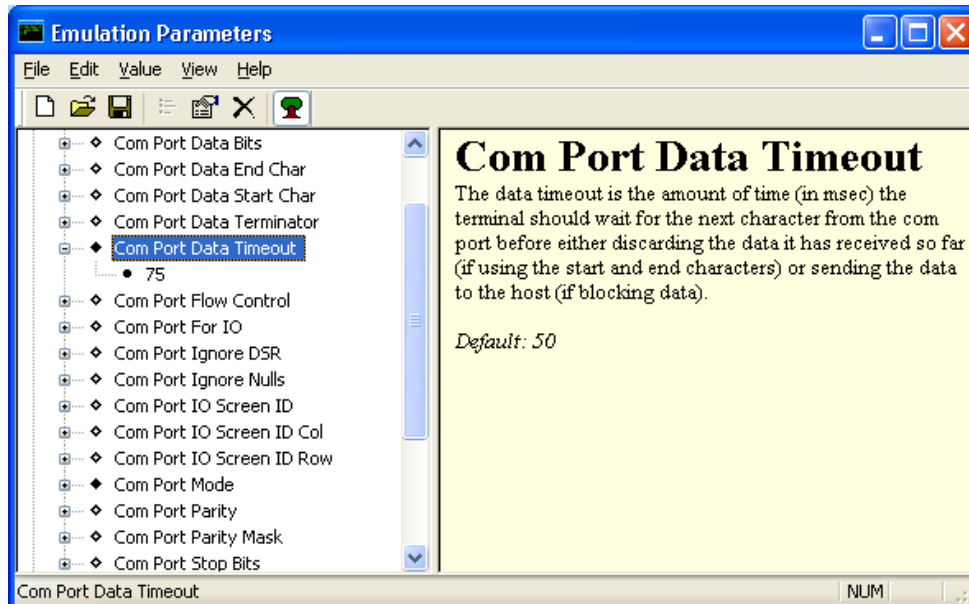
**Figure 5-20** Emulation Parameters Screen

13. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Block Data** and change to **Yes**.



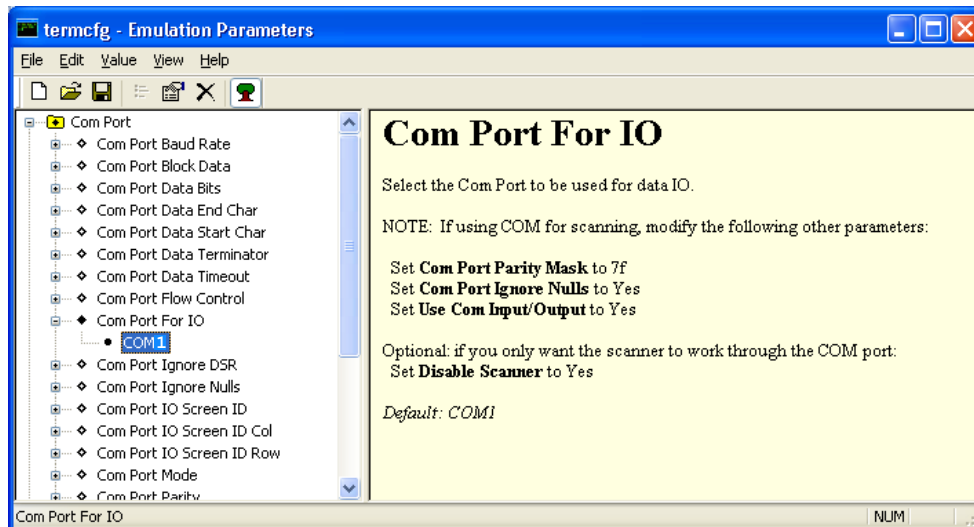
**Figure 5-21** *Emulation Parameters - Com Port Block Data Screen*

14. From the *Emulation Parameters* screen **Com Port** folder, click **Port Data Timeout** and change to **75**.



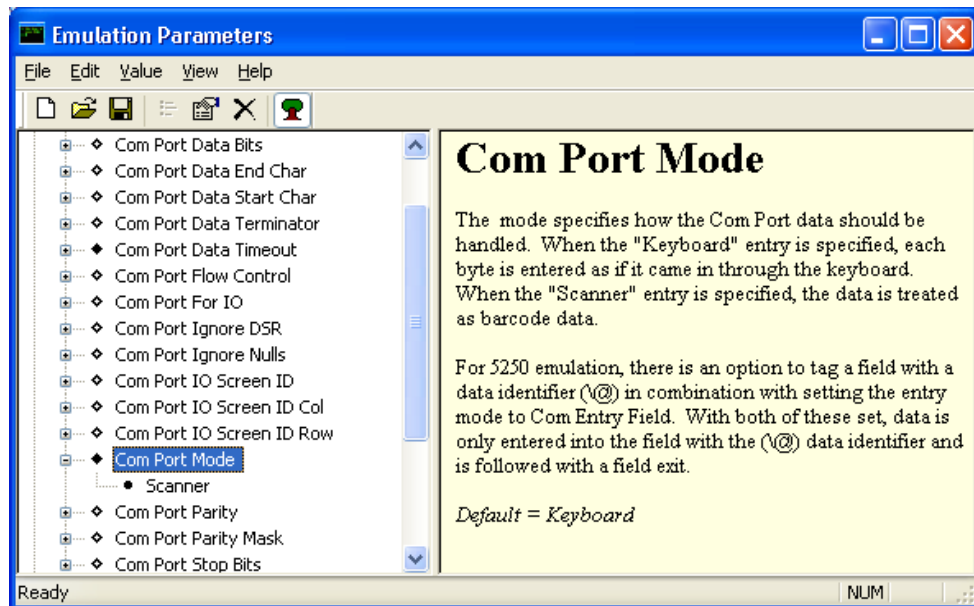
**Figure 5-22** *Emulation Parameters - Port Data Timeout Screen*

15. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port For IO** and change to **COM1**.



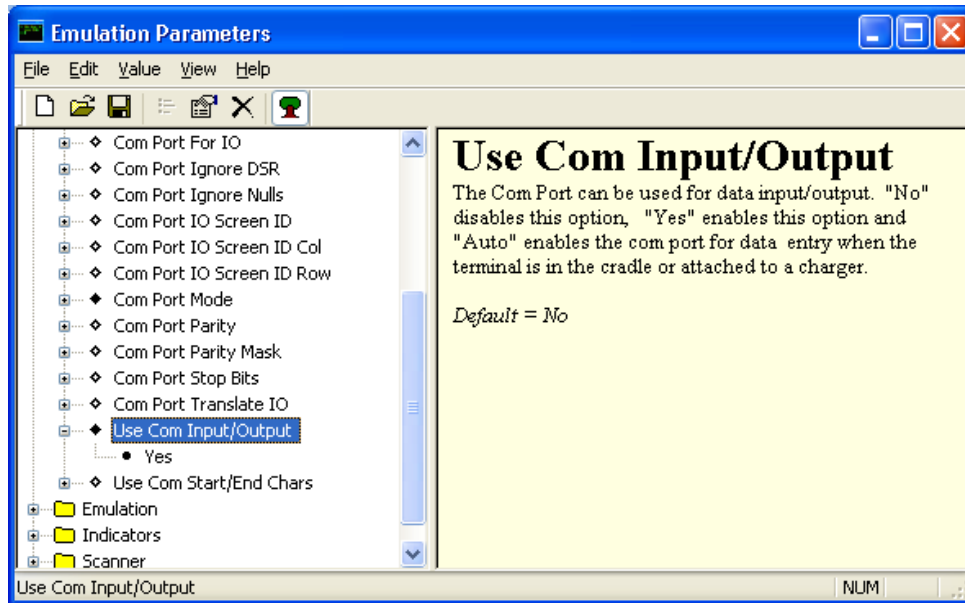
**Figure 5-23** *Emulation Parameters - Port For IO Screen*

16. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Mode** and change to **Scanner**.



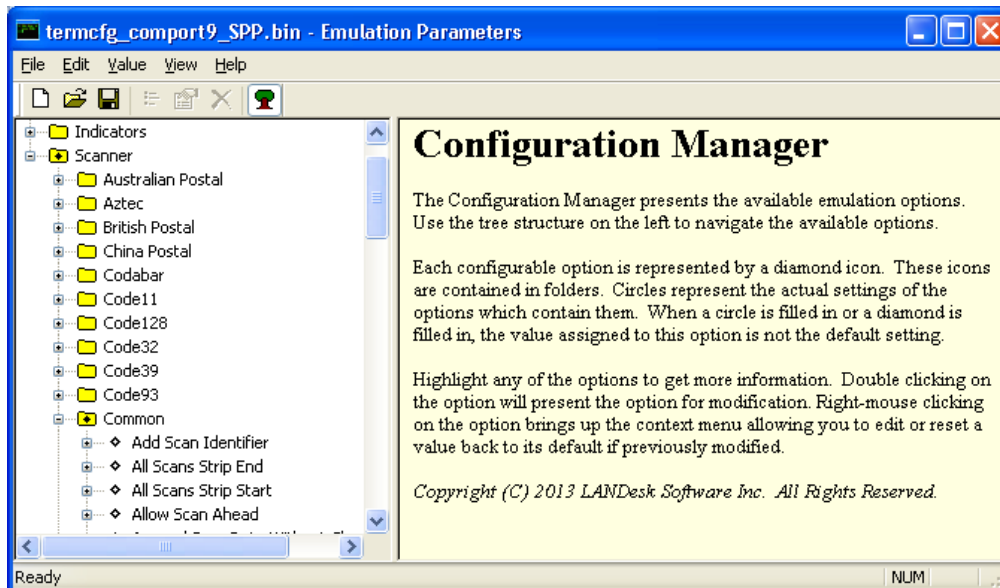
**Figure 5-24** *Emulation Parameters - Com Port Mode Screen*

17. From the *Emulation Parameters* screen **Com Port** folder, click **Use Com Input/Output** and change to **Yes**.



**Figure 5-25** *Emulation Parameters - Use Com Input/Output Screen*

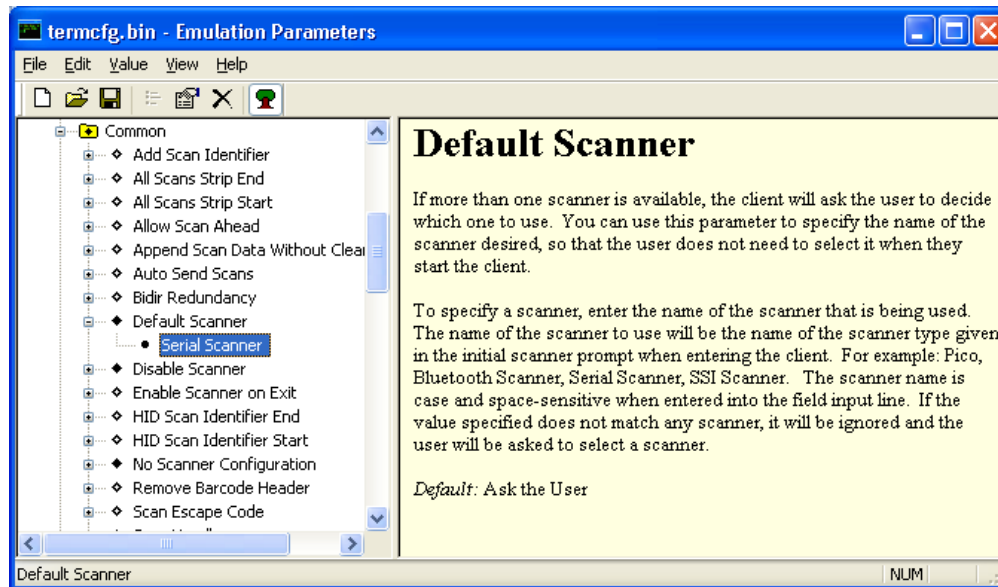
18. From the *Emulation Parameters* screen **Scanner** folder, click **Common**.



**Figure 5-26** *Emulation Parameters - Scanner Screen*

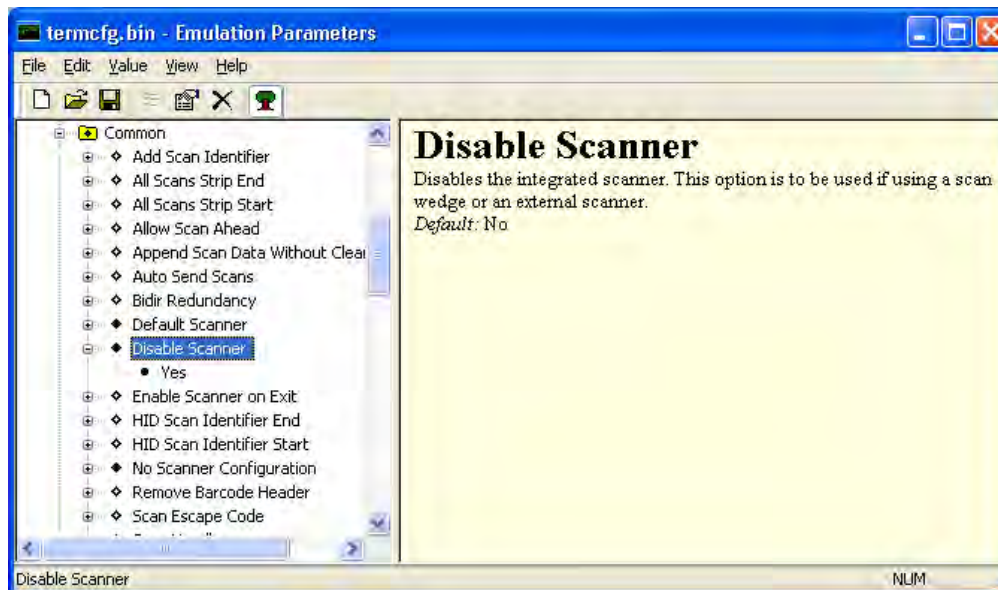


19. From the Emulation Parameters screen **Scanner > Common** folder, click **Default Scanner** and change to **Serial Scanner**.



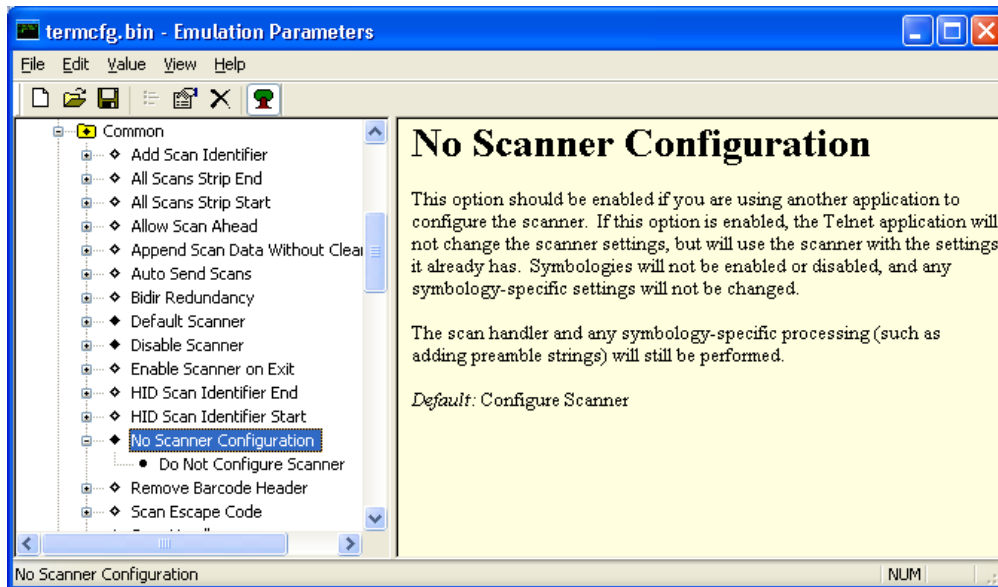
**Figure 5-27** Emulation Parameters - Default Scanner Screen

20. From the *Emulation Parameters* screen **Scanner > Common**, click **Disable Scanner** and change to **Yes**.




**Figure 5-28** Emulation Parameters - Disable Scanner Screen

21. From the Emulation Parameters screen **Scanner > Common** folder, click **No Scanner Configuration** and change to **Do Not Configure Scanner**.



**Figure 5-29** Emulation Parameters - No Scanner Configuration Screen

22. From the Emulation Parameters screen select **File > Save**.
23. From the Emulation Parameters screen select **File > Exit**.
24. Verify that the VC70 is properly connected to the PC (see [Chapter 8, Sync with Host Computer](#)).
25. From the Wavelink Product Configuration screen, click on the **Config Only** button.
26. From the VC70 Desktop, Tap  > **Programs > TelnetCE** to start TelnetCE.
27. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. Tap **No**; a black screen with “**No host connection**” indication shows.
28. On the black screen, tap **Options > Connect Session 1**.
29. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
30. Enter the following Host Profile information:
- **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.

31. Tap **Save**.

✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

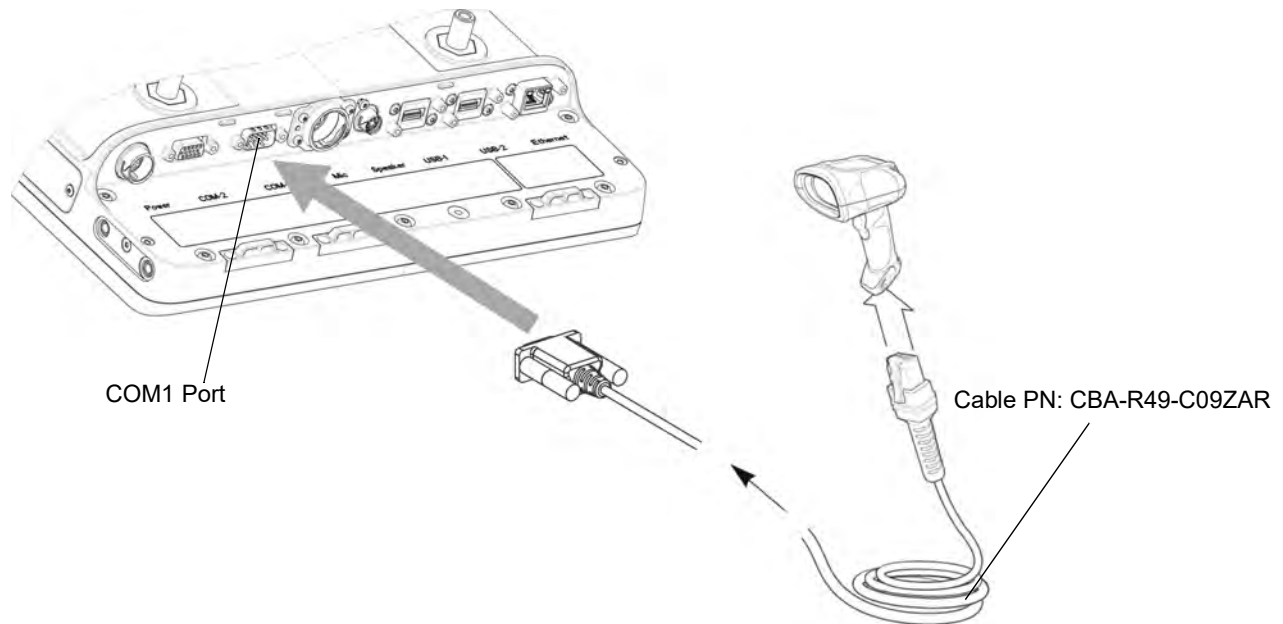
32. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen.

### Connect DS3508-ER Corded Scanner to a Serial Port of the VC70 (Serial)

1. Connect the serial scanner cable to the scanner.
2. Connect the serial scanner cable to the COM1 port of the VC70.



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



**Figure 5-30** Connecting Serial Scanner to COM1 Connector

- ✓ **NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).

3. Scan the **Set All Defaults** bar code.



**Figure 5-31** Set All Defaults Bar Code

✓ **NOTE** The Set All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

4. From Wavelink web site, download I the Wavelink MOT\_VC7000\_CE7 TelnetCE application ([https://www.wavelink.com/Orders/files/WLTE\\_MOT\\_VC7000\\_CE7\\_7\\_3\\_158\\_AS.exe](https://www.wavelink.com/Orders/files/WLTE_MOT_VC7000_CE7_7_3_158_AS.exe))
5. Install the Wavelink MOT\_VC7000\_CE7 TelnetCE application on a PC used for configuring the VC70.
6. Launch the Wavelink MOT\_VC7000\_CE7 TelnetCE Application - the Wavelink Product Configuration screen is displayed.



**Figure 5-32** Wavelink Product Configuration Screen

7. On the Wavelink Product Configuration Screen, click **Emulation Parameters**.

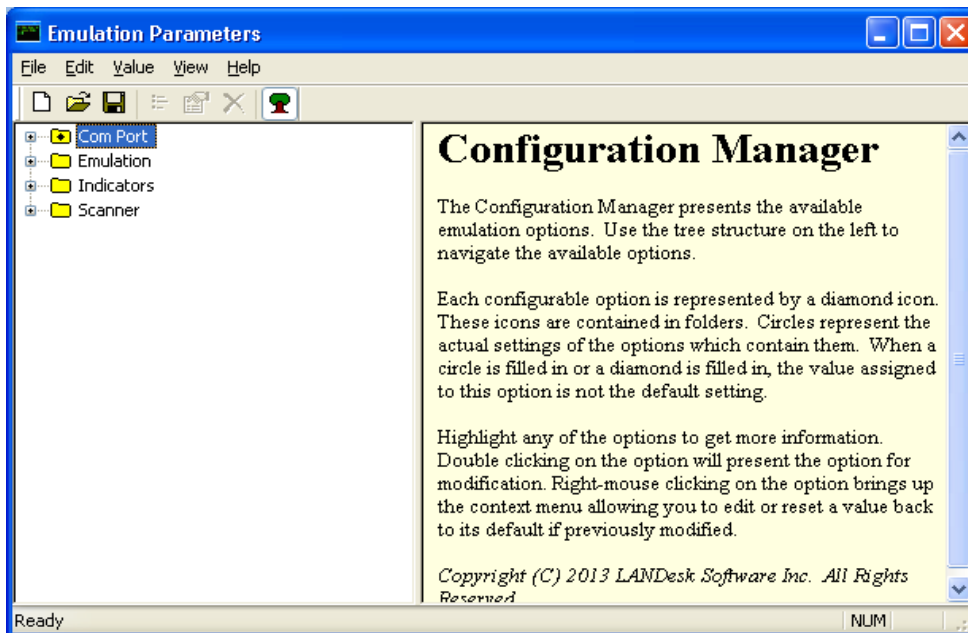
8. Click **Com Port**.

Figure 5-33 Emulation Parameters Screen

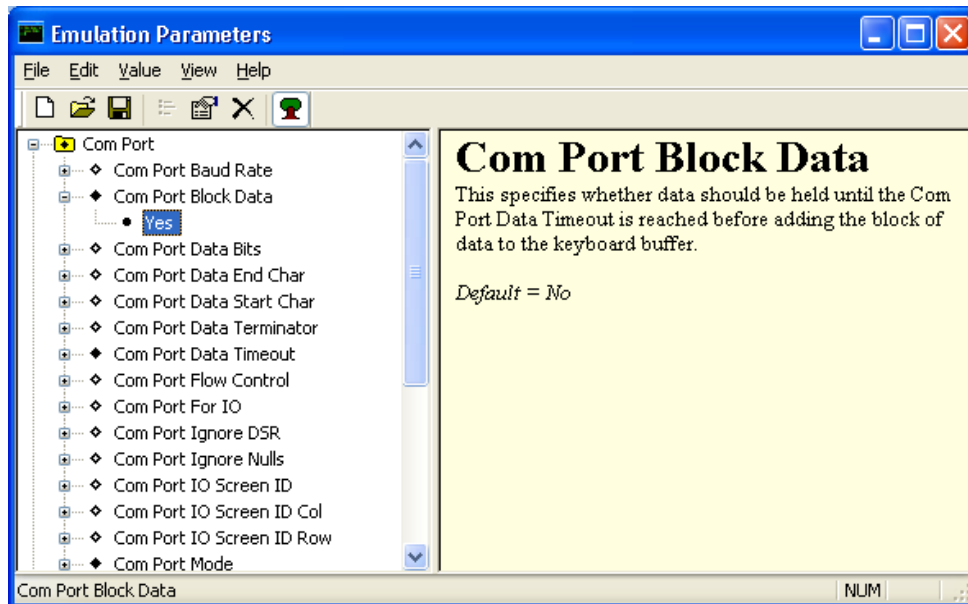
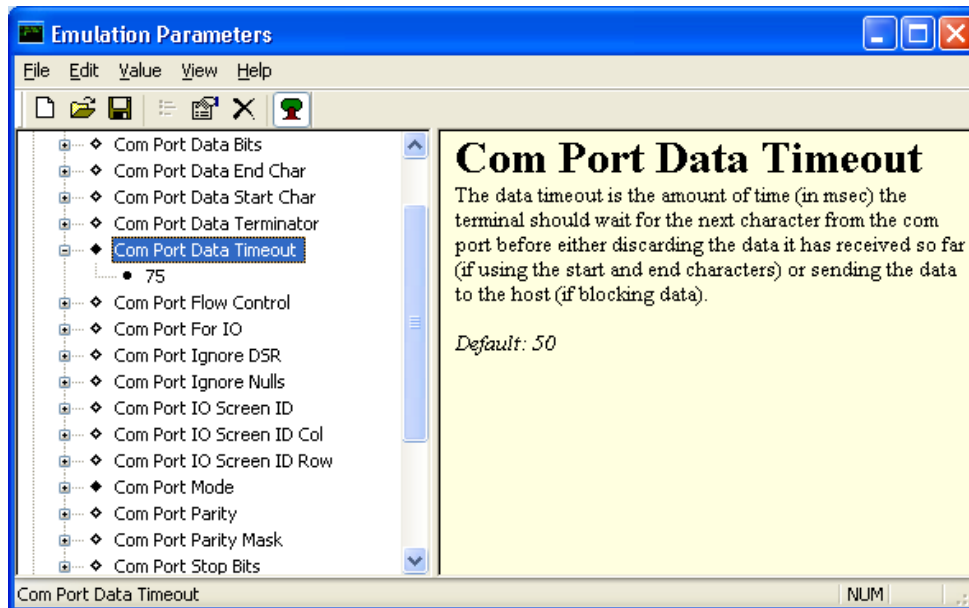
9. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Block Data** and change to **Yes**.

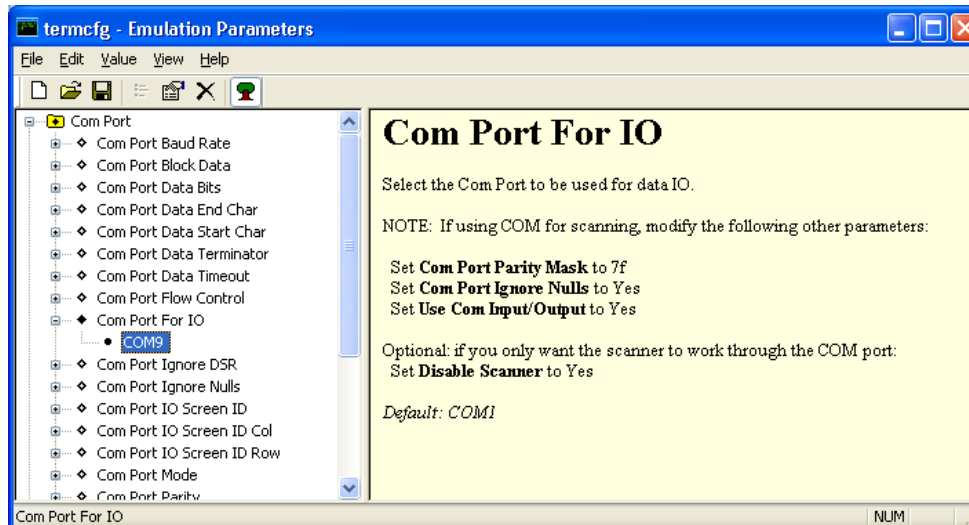
Figure 5-34 Emulation Parameters - Com Port Block Data Screen

10. From the *Emulation Parameters* screen **Com Port** folder, click **Port Data Timeout** and change to **75**.



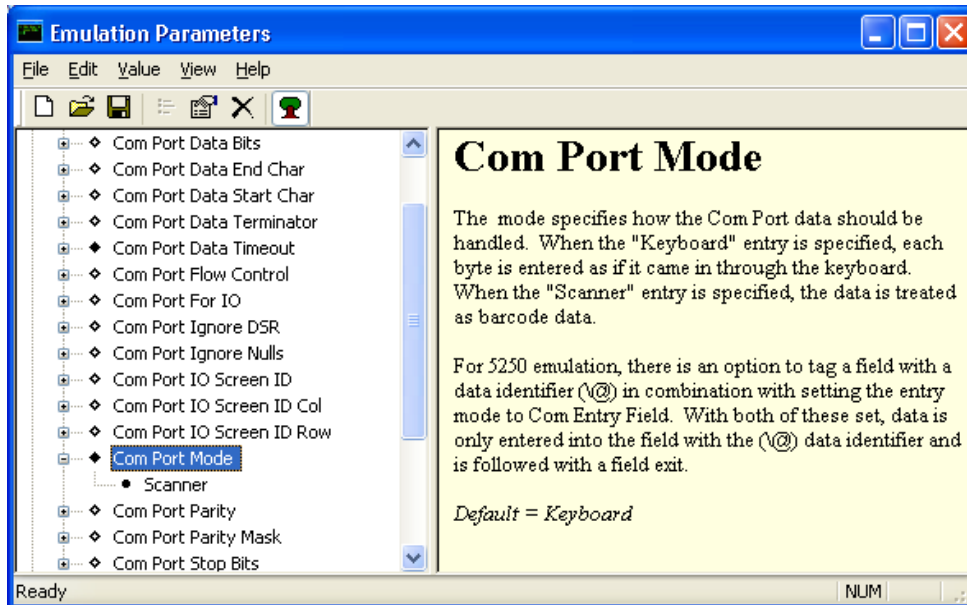
**Figure 5-35** *Emulation Parameters - Port Data Timeout Screen*

11. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port For IO** and change to **COM9**.



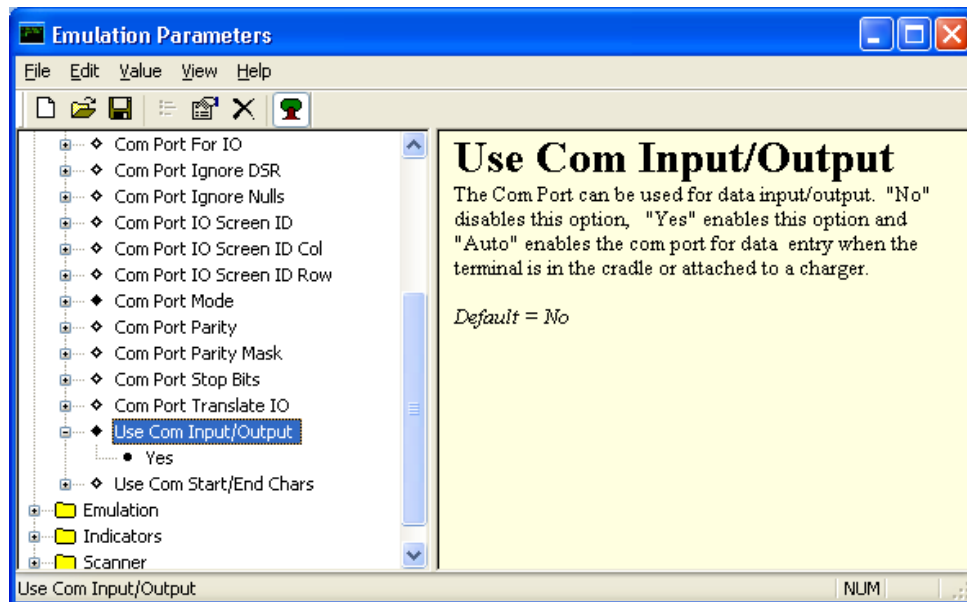
**Figure 5-36** *Emulation Parameters - Port For IO Screen*

12. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Mode** and change to **Scanner**.



**Figure 5-37** *Emulation Parameters - Com Port Mode Screen*

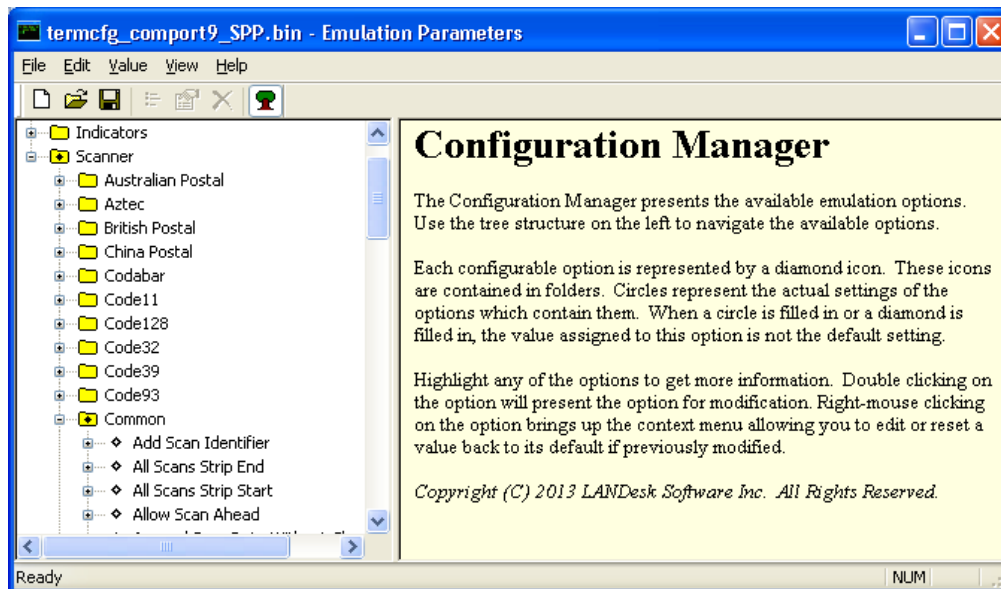
13. From the *Emulation Parameters* screen **Com Port** folder, click **Use Com Input/Output** and change to **Yes**.



**Figure 5-38** *Emulation Parameters - Use Com Input/Output Screen*

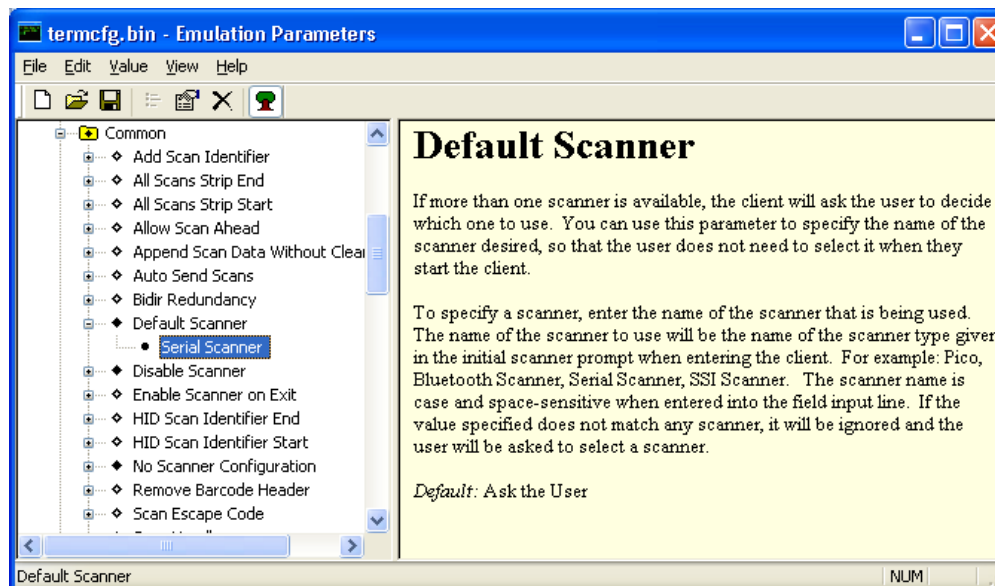


14. From the Emulation Parameters screen **Scanner** folder, click **Common**.



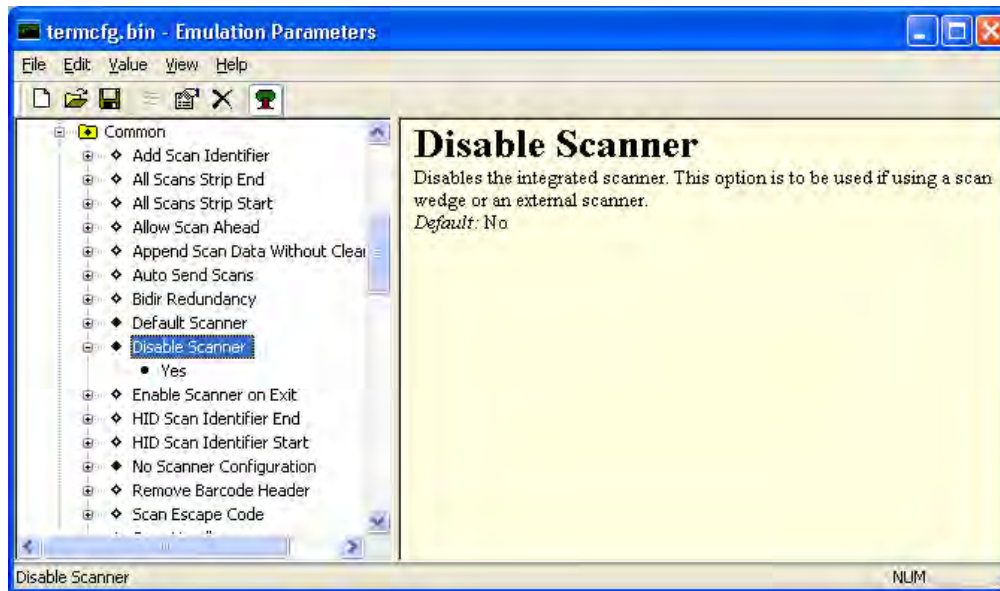
**Figure 5-39** Emulation Parameters - Scanner Screen

15. From the Emulation Parameters screen **Scanner > Common** folder, click **Default Scanner** and change to **Serial Scanner**.



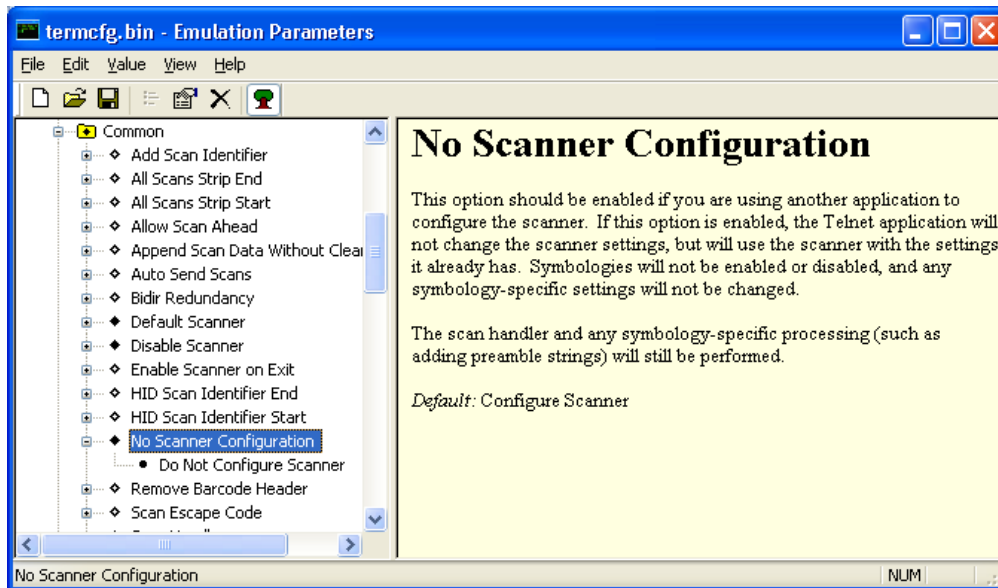
**Figure 5-40** Emulation Parameters - Default Scanner Screen

16. From the *Emulation Parameters* screen **Scanner > Common**, click **Disable Scanner** and change to **Yes**.




**Figure 5-41** *Emulation Parameters - Disable Scanner Screen*

17. From the *Emulation Parameters* screen **Scanner > Common** folder, click **No Scanner Configuration** and change to **Do Not Configure Scanner**.



**Figure 5-42** *Emulation Parameters - No Scanner Configuration Screen*

18. From the *Emulation Parameters* screen select **File > Save**.
19. From the *Emulation Parameters* screen select **File > Exit**.
20. Verify that the VC70 is properly connected to the PC (see [Chapter 8, Sync with Host Computer](#)).
21. From the Wavelink Product Configuration screen, click on the **Config Only** button.

22. From the VC70 Desktop, Tap  > **Programs > TelnetCE** to start TelnetCE.
23. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. Tap **No**; a black screen with “**No host connection**” indication shows.
24. On the black screen, tap **Options > Connect Session 1**.
25. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
26. Enter the following Host Profile information:
  - **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.
27. Tap **Save**.
  - ✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.
28. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen.

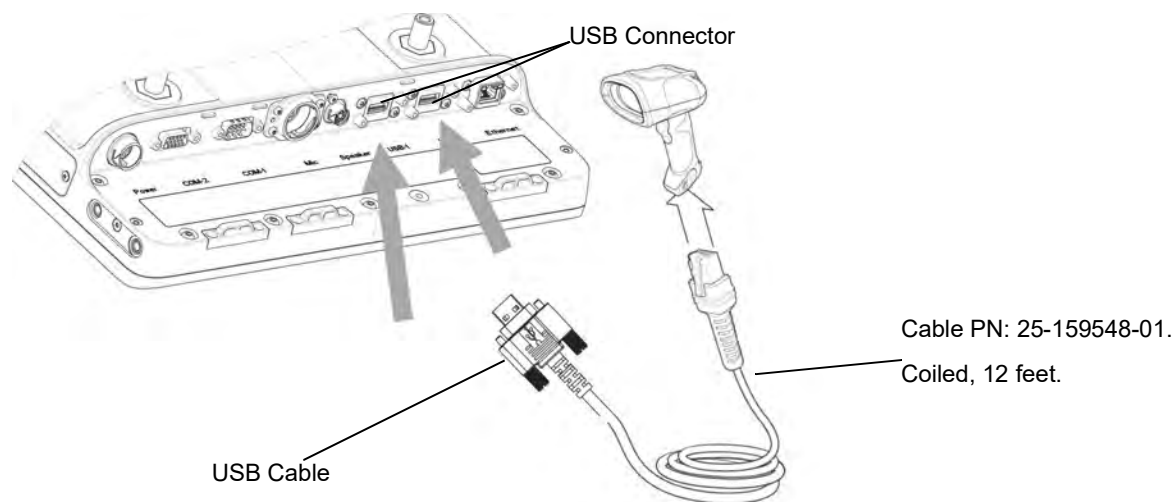
### Connect LS3408-ER Scanner to USB Port of the VC70 (HID)

To connect LS3408-ER scanner to the VC70:


✓ **NOTE** Refer to the scanner Product Reference Guide for information on configuring the scanner.

1. Connect the USB scanner cable (PN 25-159548-01) to the scanner.
2. Connect the USB scanner cable to USB 1 or USB 2 connector of the VC70.

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



**Figure 5-43** Connecting LS3408-ER Serial Scanner to a USB Port

3. Open Microsoft WordPad and scan the following barcode. Verify a correct reading. From the VC70 Desktop, Tap  > **Programs** > **TelnetCE** to start TelnetCE.
4. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. Tap **No**; a black screen with “**No host connection**” indication shows.
5. On the black screen, tap **Options** > **Connect Session 1**.
6. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
7. Enter the following Host Profile information:
  - **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.

- **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
- Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.

8. Tap **Save**.

- ✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

9. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen.

### Connect LS3408-ER Corded Scanner to USB Port of the VC70 (Scan Handlers)

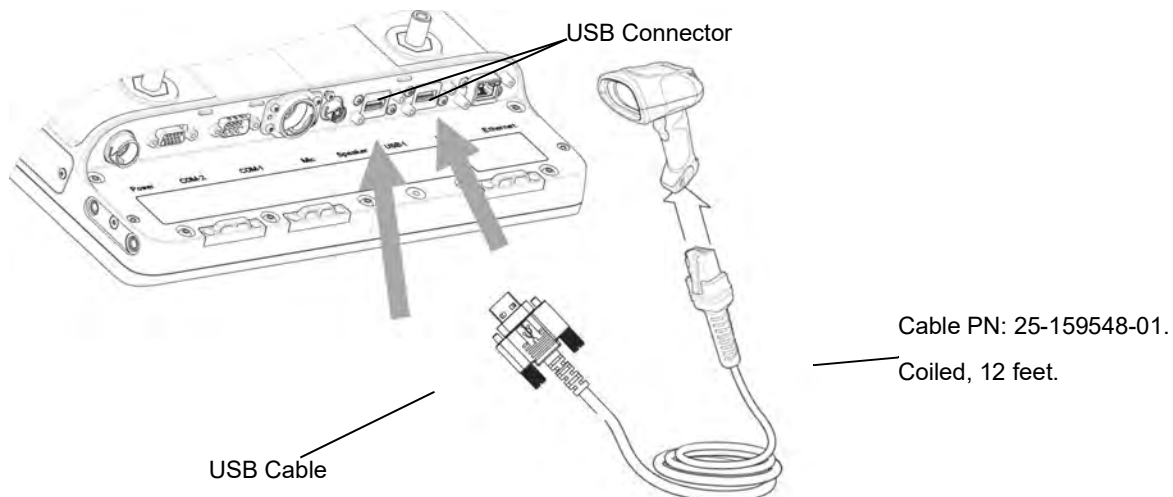
To connect LS3408-ER scanner to the VC70:

- ✓ **NOTE** - Refer to the scanner Product Reference Guide for information on configuring the scanner.  
 - To be able to use Scan Handlers within the TelnetCE application, a set of Advanced Data Formatting (ADF) rules are required. These rules will allow the application to recognize the data as scanned bar codes instead of keyboard input.

1. Connect the USB scanner cable (PN 25-159548-01) to the scanner.
2. Connect the USB scanner cable to USB 1 or USB 2 connector of the VC70.



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



**Figure 5-44** Connecting LS3408-ER Serial Scanner to a USB Port (Scan Handlers)

3. Open Microsoft WordPad and scan the following barcode. Verify a correct reading.

To implement ADF:

1. Set the external scanner to its default values:

Set all defaults



2. Scan AIM Code ID bar code.

AIM Code ID



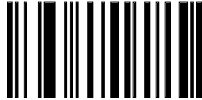
3. Scan a Scan Prefix bar code.

Scan prefix

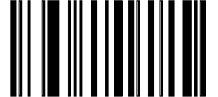


4. Scan the following set of bar codes:

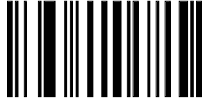
1



1



2



6



5. Scan Suffix Value bar code

Suffix Value



6. Scan the following set of bar codes:



7. Scan a Scan Options bar code.



8. Scan Prefix data Suffix bar code.



9. Scan Enter bar Code



10. Load 7.3.146 or greater of the Wavelink Emulation Software for the VC70N0 to your PC.

11. From the VC70 Desktop, Tap  > **Programs > TelnetCE** to start TelnetCE.

✓ **NOTE** It is recommend that ALL changes (including Host Profiles and Emulation Parameters) be done at the host server side (Telnet Configuration Menu) and sent down to the VC70. Avoid making changes at the VC70 side. Changes made at a VC70 side would have to include all VC70 units.



12. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. Tap **No**; a black screen with “**No host connection**” indication shows.

13. On the black screen, tap **Options > Connect Session 1**.
14. TelnetCE Client shows the following notification: **“No Host Profiles have been configured. Would you like to add a Host Profile?”**. Tap **Yes** to continue.
15. Enter the following Host Profile information:
  - **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.
16. Tap **Save**.
  - ✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.
17. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen.
18. Load 7.3.146 or greater of the Wavelink Emulation Software for the VC70N0 to your PC.
  - ✓ **NOTE** It is recommend that ALL changes (including Host Profiles and Emulation Parameters) be done at the host server side (Telnet Configuration Menu) and sent down to the VC70. Avoid making changes at the VC70 side. Changes made at a VC70 side would have to include all VC70 units.

#### Windows Embedded Compact 7 (CE 7.0)

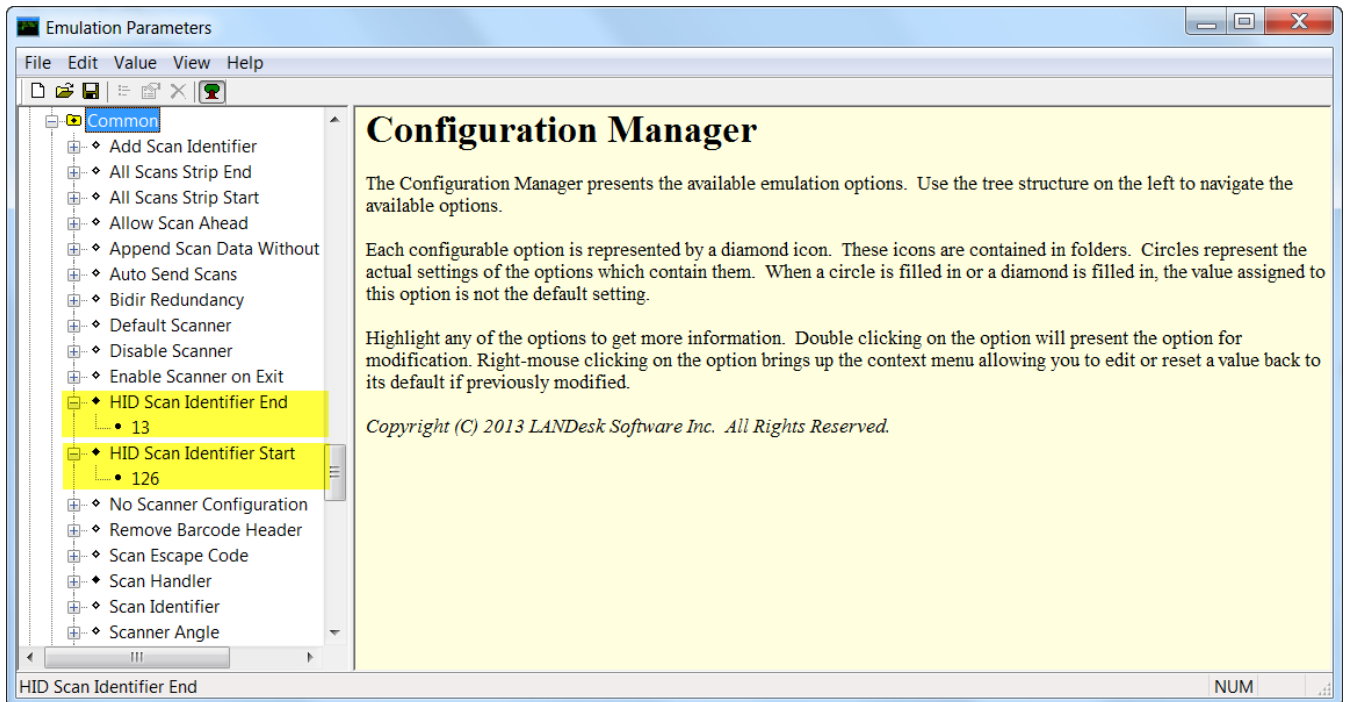
Wavelink TE for the Motorola (Symbol) VC70N0

3/7/2013 v7.3.146

-  [Avalanche \(4.7MB\)](#)    [Avalanche - International \(8.9MB\)](#)    [ActiveSync \(2.4MB\)](#)    [ActiveSync - International \(3.5MB\)](#)    [AirBeam \(2.3MB\)](#)
-  [AirBeam - International \(3.3MB\)](#)    [Release Notes \(107KB\)](#)

19. Make the following Emulation Parameter Changes:





**Figure 5-45** Wavelink Emulation Software



Figure 5-46 Wavelink Emulation Software (Cont)

✓ **NOTE** The Scan Handlers in [Figure 5-46](#) are for example only.

20. Send these changes along with your Host Profile that was configured down to the device.
21. Scan a bar code. The bar code scanned is displayed with the appended 9 at the end

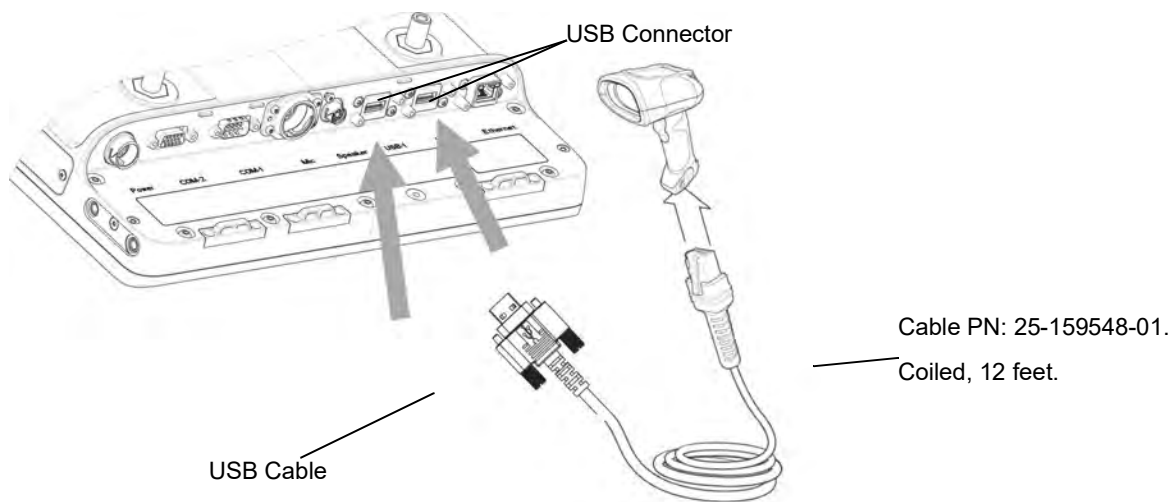
### Connect DS3508-ER Scanner to USB Port of the VC70 (HID)

To connect DS3508-ER scanner to the VC70:


✓ **NOTE** Refer to the scanner Product Reference Guide for information on configuring the scanner.

1. Connect the USB scanner cable (PN 25-159548-01) to the scanner.
2. Connect the USB scanner cable to USB 1 or USB 2 connector of the VC70.

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



**Figure 5-47** Connecting DS3508-ER Serial Scanner to a USB Port

3. Open Microsoft WordPad and scan the following barcode. Verify a correct reading.
4. From the VC70 Desktop, Tap  > **Programs** > **TelnetCE** to start TelnetCE.
5. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. Tap **No**; a black screen with “**No host connection**” indication shows.
6. On the black screen, tap **Options** > **Connect Session 1**.
7. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
8. Enter the following Host Profile information:
  - **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.

- **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
- Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.

9. Tap **Save**.

✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

10. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen. The bar code data will show on the black screen.

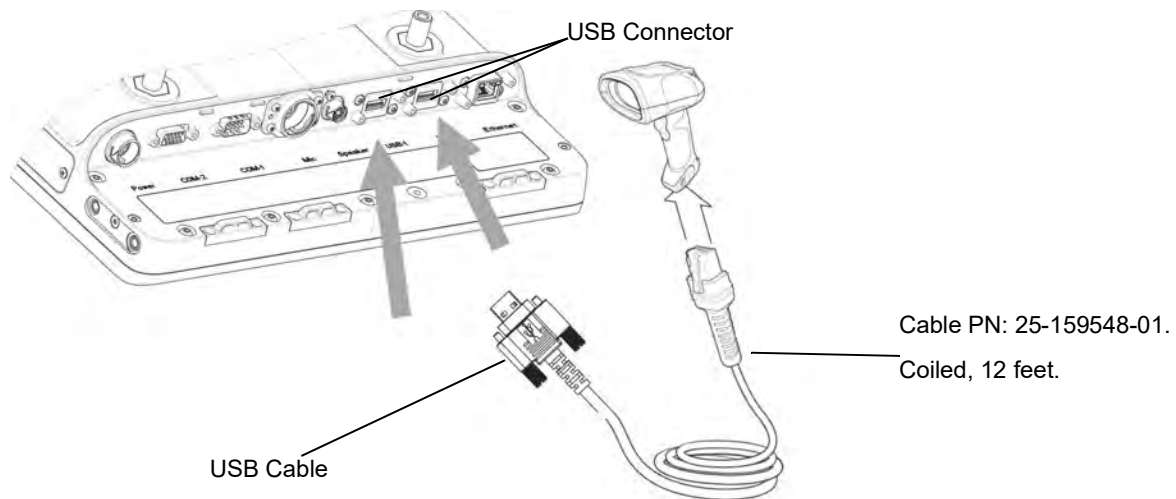
### Connect DS3508-ER Serial Scanner to USB Port of the VC70 (Scan Handlers)

To connect DS3508-ER scanner to the VC70:

- ✓ **NOTE** - Refer to the scanner Product Reference Guide for information on configuring the scanner.
- To be able to use Scan Handlers within the TelnetCE application, a set of Advanced Data Formatting (ADF) rules are required. These rules will allow the application to recognize the data as scanned bar codes instead of keyboard input.

1. Connect the USB scanner cable (PN 25-159548-01) to the scanner.
2. Connect the USB scanner cable to USB 1 or USB 2 connector of the VC70.

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



**Figure 5-48** Connecting DS3508-ER Serial Scanner to a USB Port (Scan Handlers)

3. Open Microsoft WordPad and scan the following barcode. Verify a correct reading.

To implement ADF:

1. Set the external scanner to its default values:

Set Factory Default



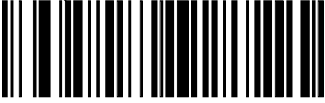
2. Scan AIM Code ID bar code.

AIM Code ID



3. Scan a Scan Prefix bar code.

Scan prefix

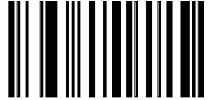


4. Scan the following set of bar codes:

1



1



2

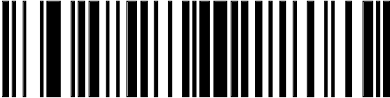


6



5. Scan Suffix Value bar code

Suffix Value



6. Scan the following set of bar codes:

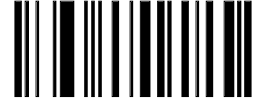
1



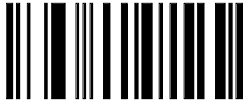
0



1



3



7. Scan a Scan Options bar code.

Scan Options



8. Scan Prefix data Suffix bar code.


Prefix data Suffix



9. Scan Enter bar Code

Enter



10. Load 7.3.146 or greater of the Wavelink Emulation Software for the VC70N0 to your PC.
11. From the VC70 Desktop, Tap  > **Programs** > **TelnetCE** to start TelnetCE.
12. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. Tap **No**; a black screen with “**No host connection**” indication shows.
13. On the black screen, tap **Options** > **Connect Session 1**.
14. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
15. Enter the following Host Profile information:
  - **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.



16. Tap **Save**.

✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.


17. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen. The bar code data will show on the black screen.

18. Load 7.3.146 or greater of the Wavelink Emulation Software for the VC70N0 to your PC.

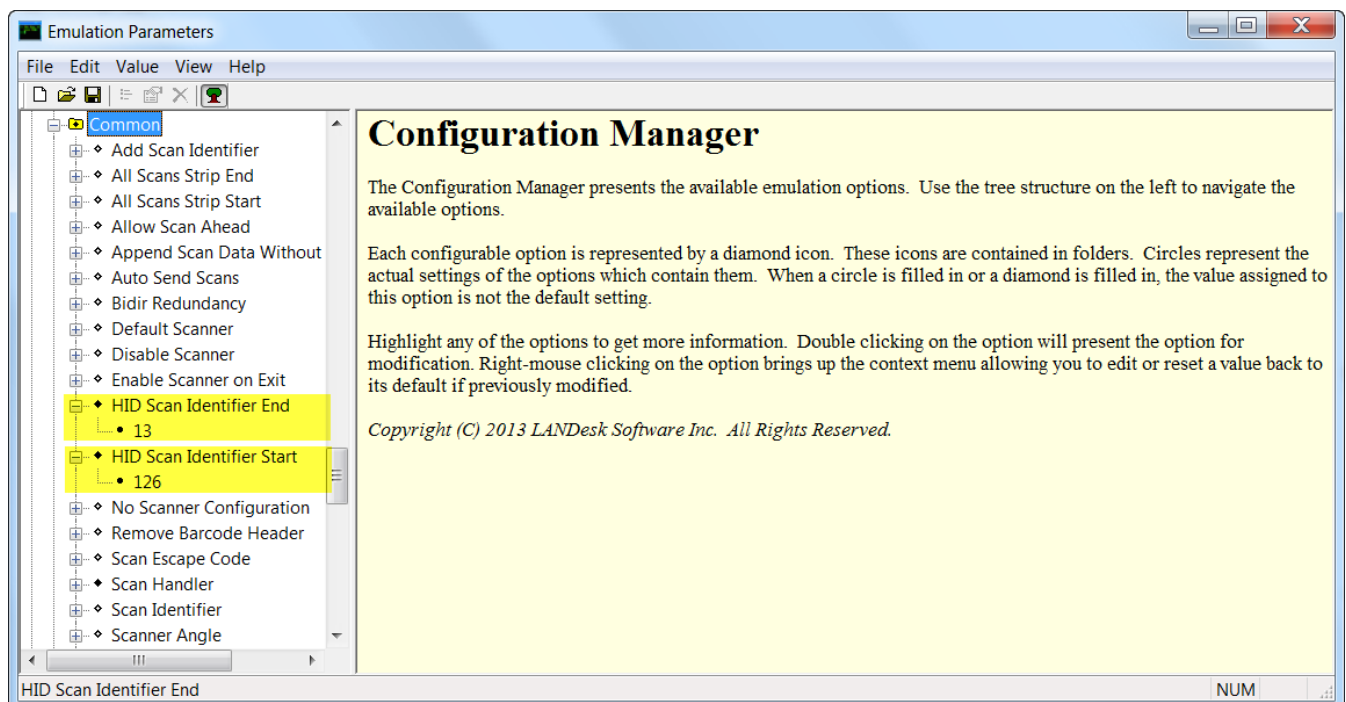
#### Windows Embedded Compact 7 (CE 7.0)

Wavelink TE for the Motorola (Symbol) VC70N0

3/7/2013 v7.3.146

 [Avalanche](#) (4.7MB)
  [Avalanche - International](#) (8.9MB)
  [ActiveSync](#) (2.4MB)
  [ActiveSync - International](#) (3.5MB)
  [AirBeam](#) (2.3MB)
  [AirBeam - International](#) (3.3MB)
  [Release Notes](#) (107KB)

19. Make the following Emulation Parameter Changes:



**Figure 5-49** Wavelink Emulation Software



Figure 5-50 Wavelink Emulation Software (Cont)

✓ **NOTE** The Scan Handlers in [Figure 5-50](#) are for example only.

20. Send these changes along with your Host Profile that was configured down to the device.

21. Scan a bar code. The bar code scanned is displayed with the appended 9 at the end.

### Connect a Bluetooth Scanner RS507 Directly to the VC70 (Scan Profile)

✓ **NOTE** Refer to the scanner Product Reference Guide for information on configuring the scanner.


✓ Once the scanner is connected to the VC70 application in Serial SSI or Wireless SSI (Scan Profile), the application (DataWedge, Wavelink TE, or any other application using the scanner in this mode) has full control of the scanner configuration parameters via the application programming interface (API) and can set or override previously set configuration parameters via the appropriate APIs.

When the application is not running, any scanner can be configured using configuration bar codes, as long as a scanner-enabled software application (Wavelink, Datawedge, etc.) is not active and the scanner is connected to VC70. Once an application is launched and the scanner is connected in SSI to the VC70, it is not able to read any configuration bar codes. To re-enable the ability to scan configuration bar codes, one must completely exit the application and disconnect and reconnect the scanner to the VC70.

1. Ensure that the scanner battery is fully charged.
2. Reset the scanner by removing and re-installing the scanner battery.
3. Scan a Scan Profile bar code to configure the scanner to Bluetooth SPP profile mode before the pairing.




**Figure 5-51** Scan Profile Bar Code

4. Perform a cold boot by removing and re-installing the battery onto the RS507.
5. Enter the following configuration details:
  - Tap  > **Programs > BTScannerCtlPanel**
  - Check **BT Scanner**
  - Select Comm port **COM9**
6. Tap **Save and Exit**
7. To pair the scanner with your VC70, scan the **PAIR** bar code in the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70. The scanner beeps indicating that it is successfully connected to the VC70 and Authentication Request box is displayed.



**Figure 5-52** Authentication Request Box

8. Tap **Yes** to allow pairing.

9. From the VC70 Desktop, Tap  > **Programs > TelnetCE** to start TelnetCE. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. A black screen with “**No host connection**” indication shows.
10. On the black screen, tap **Options > Connect Session 1**.
11. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
12. Enter the following Host Profile information:
  - **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.
13. Tap **Save**.

✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

14. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen. The bar code data will show on the black screen.

✓ **NOTE** To unpair the scanner for using it on other VC70, scan the Unpairing bar code.



**Figure 5-53** Unpairing Bar Code

### Connect a Bluetooth Scanner RS507 Directly to the VC70 (SPP Profile)


- ✓ **NOTE** Refer to the scanner Product Reference Guide for information on configuring the scanner.
- ✓ **NOTE** To improve performance, use StoneStreet One Bluetooth stack.

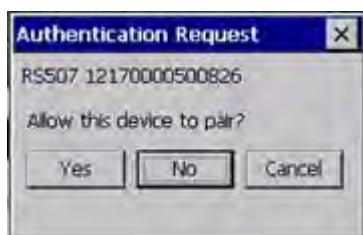
To connect a Bluetooth scanner to the VC70:

1. Ensure that the scanner battery is fully charged.
2. Scan a SPP Profile bar code to configure the scanner to Bluetooth SPP profile mode before the pairing.



**Figure 5-54** SPP Profile Bar Code

3. Perform a cold boot by removing and re-installing the battery onto the RS507.
4. Enter the following configuration details:
  - Tap  > **Programs > BTScannerCtlPanel**
  - Check **BT Scanner**
  - Select Comm port **COM9**
  - Tap **Save and Exit**
5. To pair the scanner with your VC70, scan the **PAIR** bar code on the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70 and Authentication Request box is displayed.



**Figure 5-55** Authentication Request Box

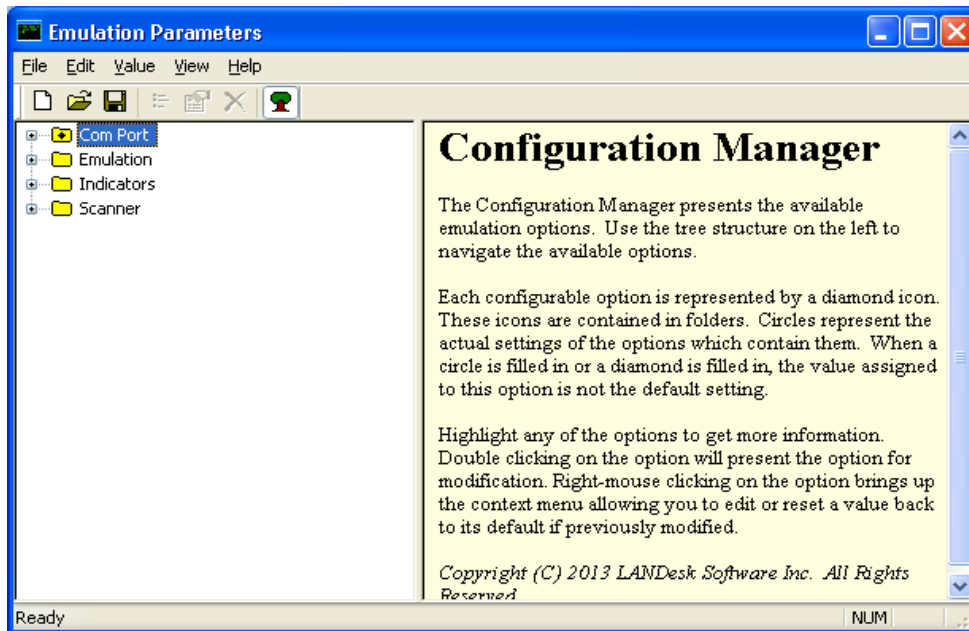
6. Tap **Yes** to allow pairing.
7. From Wavelink web site, download I the Wavelink MOT\_VC7000\_CE7 TelnetCE application ([https://www.wavelink.com/Orders/files/WLTE\\_MOT\\_VC7000\\_CE7\\_7\\_3\\_158\\_AS.exe](https://www.wavelink.com/Orders/files/WLTE_MOT_VC7000_CE7_7_3_158_AS.exe))
8. Install the Wavelink MOT\_VC7000\_CE7 TelnetCE application on a PC used for configuring the VC70.

9. Launch the Wavelink MOT\_VC7000\_CE7 TelnetCE Application - the Wavelink Product Configuration screen is displayed.



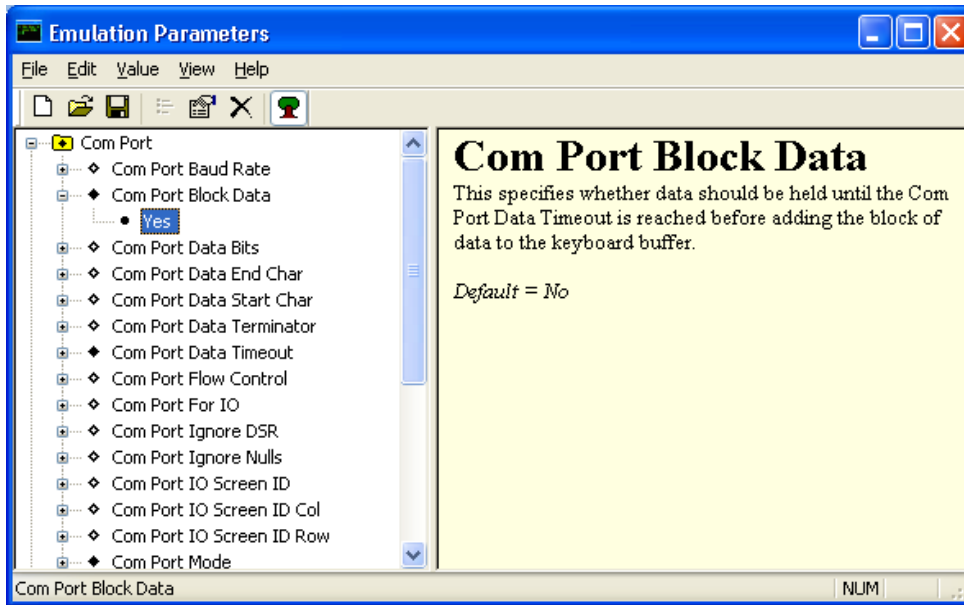
**Figure 5-56** Wavelink Product Configuration Screen

10. On the Wavelink Product Configuration Screen, click **Emulation Parameters**.
11. Click **Com Port**.



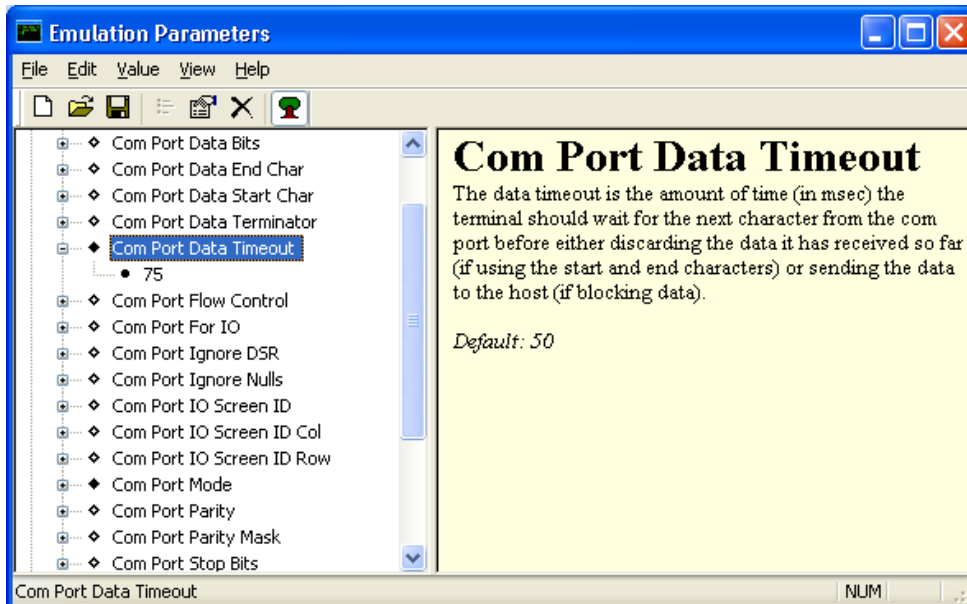
**Figure 5-57** Emulation Parameters Screen

12. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Block Data** and change to **Yes**.



**Figure 5-58** *Emulation Parameters - Com Port Block Data Screen*

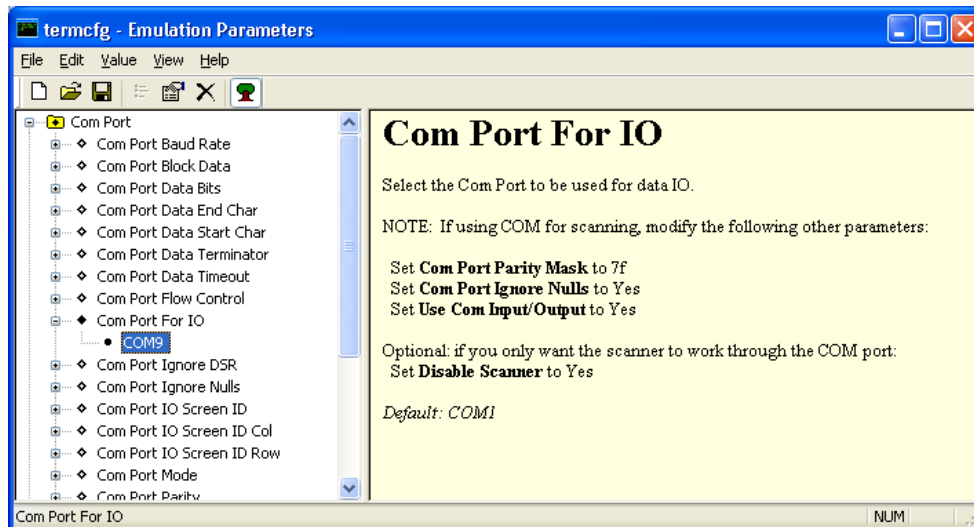
13. From the *Emulation Parameters* screen **Com Port** folder, click **Port Data Timeout** and change to **75**.



**Figure 5-59** *Emulation Parameters - Port Data Timeout Screen*

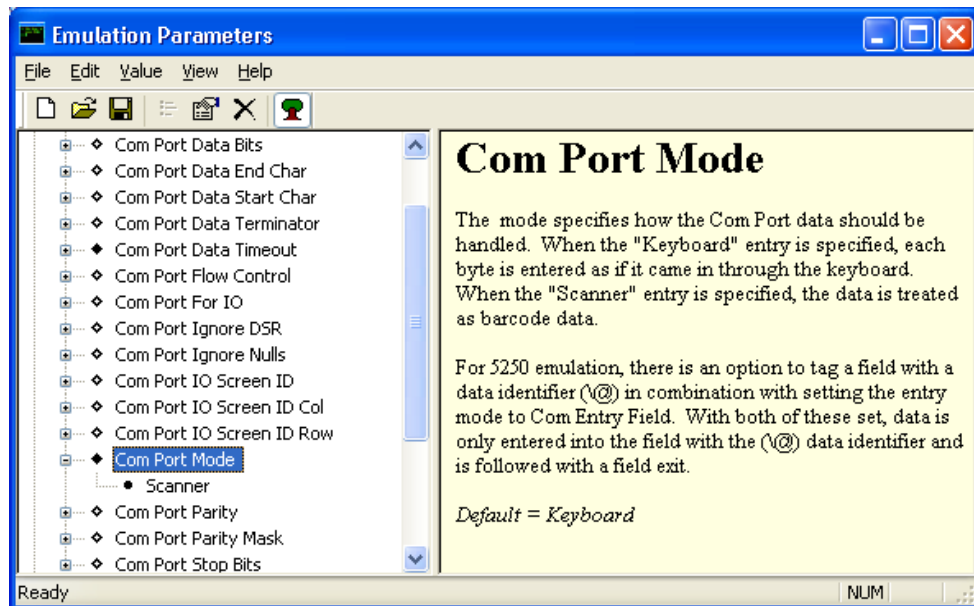


14. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port For IO** and change to **COM9**.



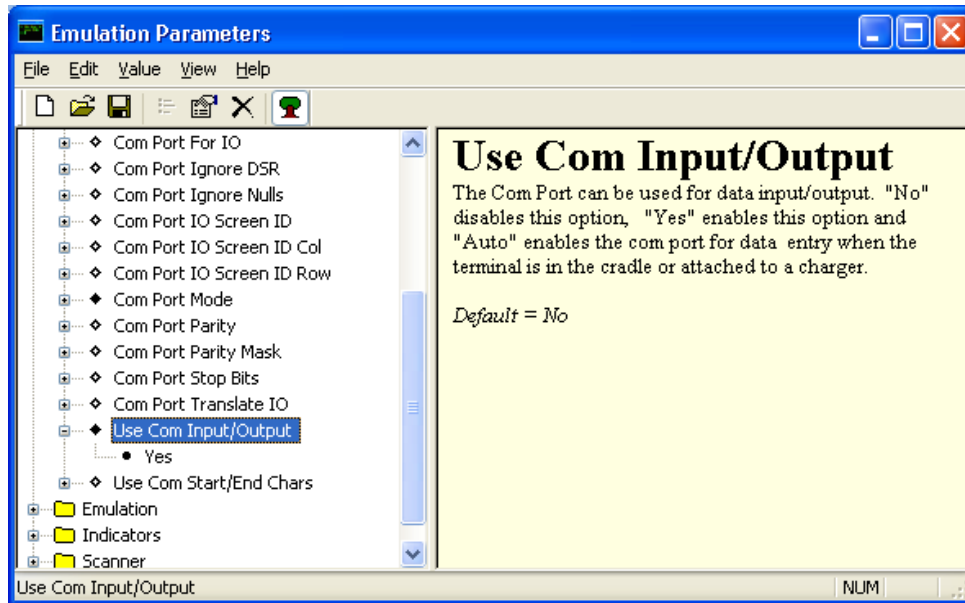
**Figure 5-60** *Emulation Parameters - Port For IO Screen*

15. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Mode** and change to **Scanner**.



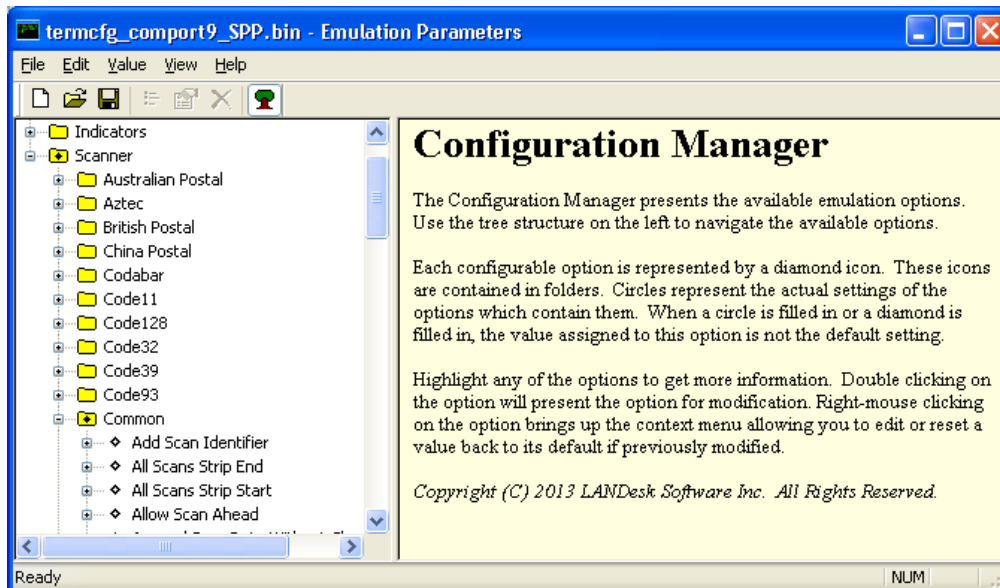
**Figure 5-61** *Emulation Parameters - Com Port Mode Screen*

16. From the *Emulation Parameters* screen **Com Port** folder, click **Use Com Input/Output** and change to **Yes**.



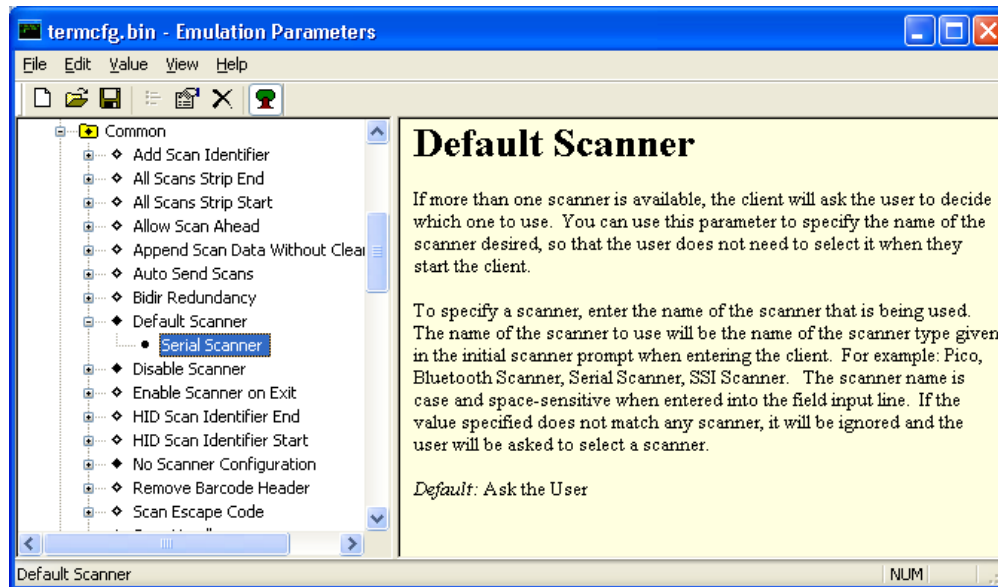
**Figure 5-62** *Emulation Parameters - Use Com Input/Output Screen*

17. From the *Emulation Parameters* screen **Scanner** folder, click **Common**.



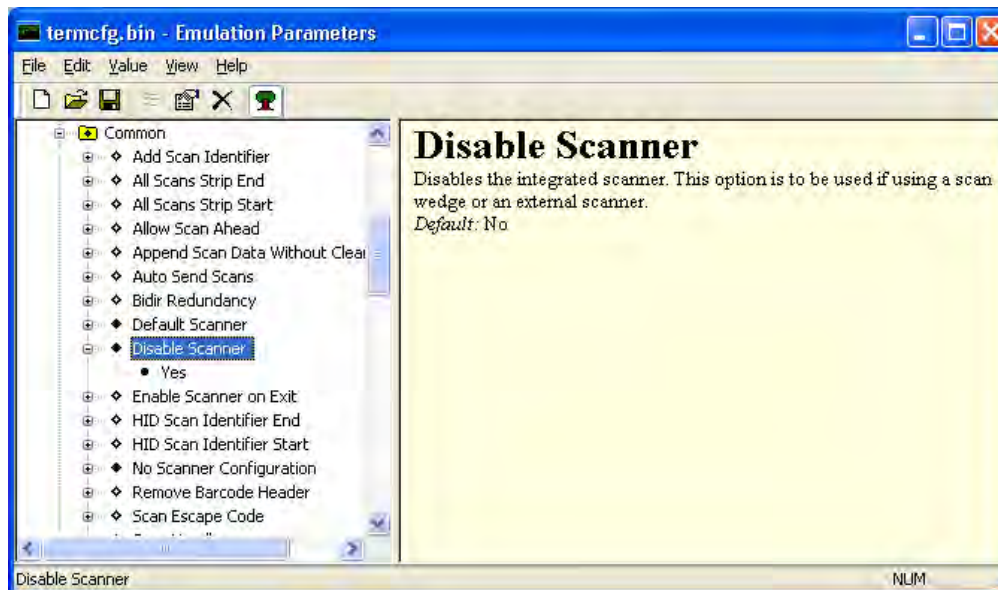
**Figure 5-63** *Emulation Parameters - Scanner Screen*

18. From the Emulation Parameters screen **Scanner > Common** folder, click **Default Scanner** and change to **Serial Scanner**.



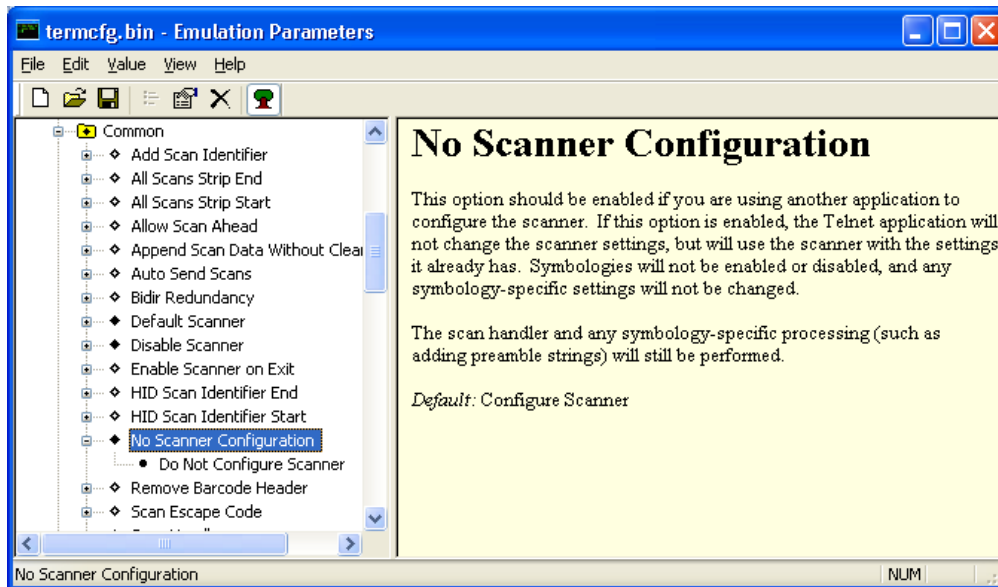
**Figure 5-64** Emulation Parameters - Default Scanner Screen

19. From the *Emulation Parameters* screen **Scanner > Common**, click **Disable Scanner** and change to **Yes**.




**Figure 5-65** Emulation Parameters - Disable Scanner Screen

20. From the Emulation Parameters screen **Scanner > Common** folder, click **No Scanner Configuration** and change to **Do Not Configure Scanner**.



**Figure 5-66** Emulation Parameters - No Scanner Configuration Screen

21. From the Emulation Parameters screen select **File > Save**.
22. From the Emulation Parameters screen select **File > Exit**.
23. Verify that the VC70 is properly connected to the PC (see [Chapter 8, Sync with Host Computer](#)).
24. From the Wavelink Product Configuration screen, click on the **Config Only** button.
25. From the VC70 Desktop, Tap  > **Programs > TelnetCE** to start TelnetCE. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. A black screen with “**No host connection**” indication shows.
26. On the black screen, tap **Options > Connect Session 1**.
27. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
28. Enter the following Host Profile information:
- **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.

29. Tap **Save**.

- ✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

30. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen. The bar code data will show on the black screen.

- ✓ **NOTE** To unpair the scanner for using it on other VC70, scan the Unpairing bar code.



**Figure 5-67** Unpairing Bar Code

## Connect a Bluetooth Scanner DS3578 Directly to the VC70 (SPP Profile)

✓ **NOTE** To improve performance, use StoneStreet one Bluetooth stack.

To connect a Bluetooth scanner to the VC70:

1. Ensure that the scanner battery is fully charged.
2. Scan the **Set All Defaults** bar code.



**Figure 5-68** Set All Defaults Bar Code

✓ **NOTE** The Set All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

3. Scan a **SPP Profile** bar code to configure the scanner to Bluetooth SPP profile mode before the pairing.




**Figure 5-69** SPP Profile Bar Code

4. Scan Write to Custom Defaults bar code.



**Figure 5-70** Custom Default Bar Code

5. To pair the scanner with your VC70, scan the pair label bar code on the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70.
6. Enter the following configuration details:
  - Tap  > **Programs > BTScannerCtlPanel**
  - Check **BT Scanner**
  - Select Comm port **COM9**
  - Tap **Save and Exit**
7. To pair the scanner with your VC70, scan the pair label bar code on the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70.

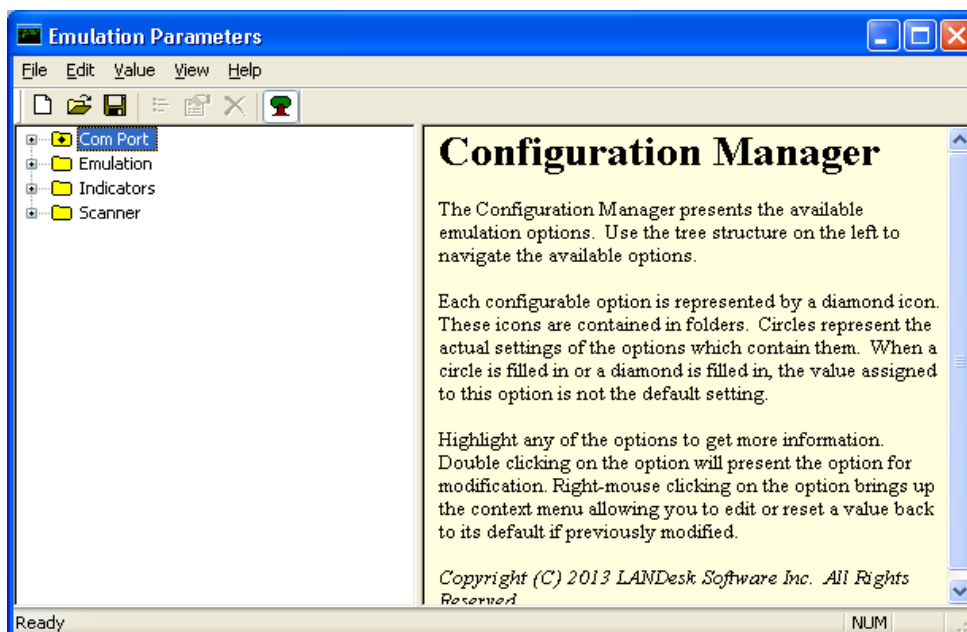
✓ **NOTE** Do not close the DataWedge application. To enable bar code scanning through TelnetCE, the DataWedge application must remain active.

8. From Wavelink web site, download I the Wavelink MOT\_VC7000\_CE7 TelnetCE application ([https://www.wavelink.com/Orders/files/WLTE\\_MOT\\_VC7000\\_CE7\\_7\\_3\\_158\\_AS.exe](https://www.wavelink.com/Orders/files/WLTE_MOT_VC7000_CE7_7_3_158_AS.exe))
9. Install the Wavelink MOT\_VC7000\_CE7 TelnetCE application on a PC used for configuring the VC70.
10. Launch the Wavelink MOT\_VC7000\_CE7 TelnetCE Application - the Wavelink Product Configuration screen is displayed.



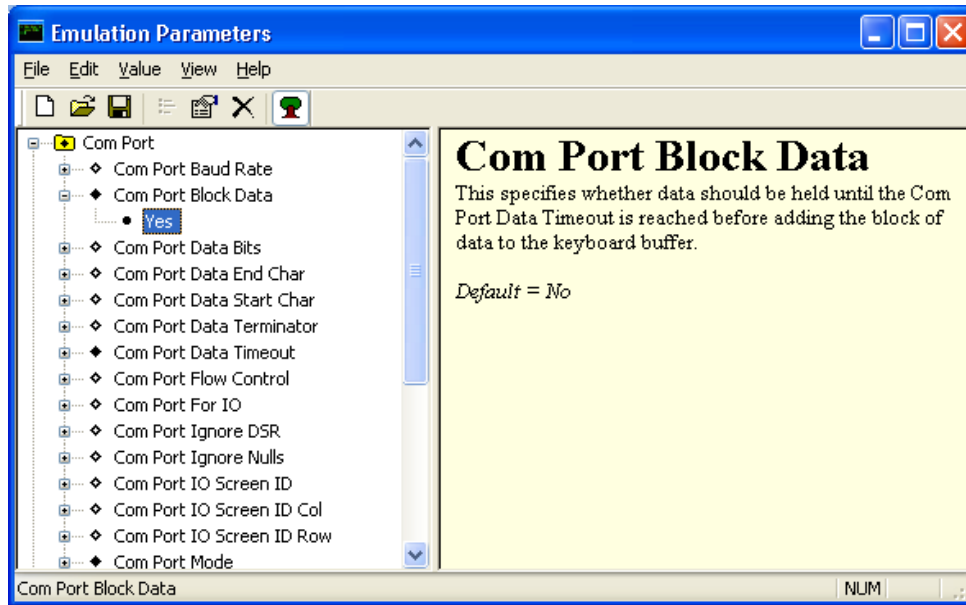
**Figure 5-71** Wavelink Product Configuration Screen

11. On the Wavelink Product Configuration Screen, click **Emulation Parameters**.
12. Click **Com Port**.



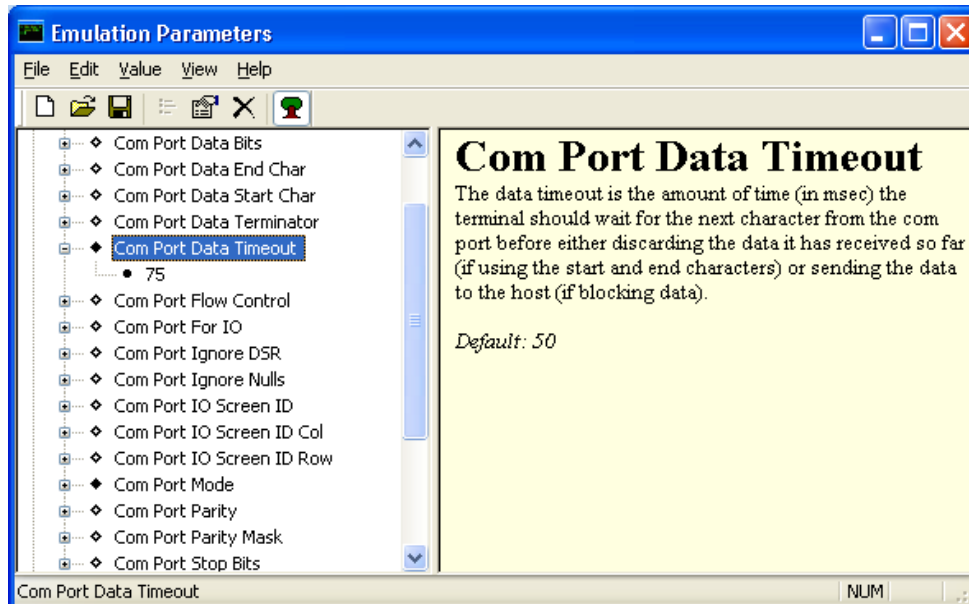
**Figure 5-72** Emulation Parameters Screen

13. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Block Data** and change to **Yes**.



**Figure 5-73** *Emulation Parameters - Com Port Block Data Screen*

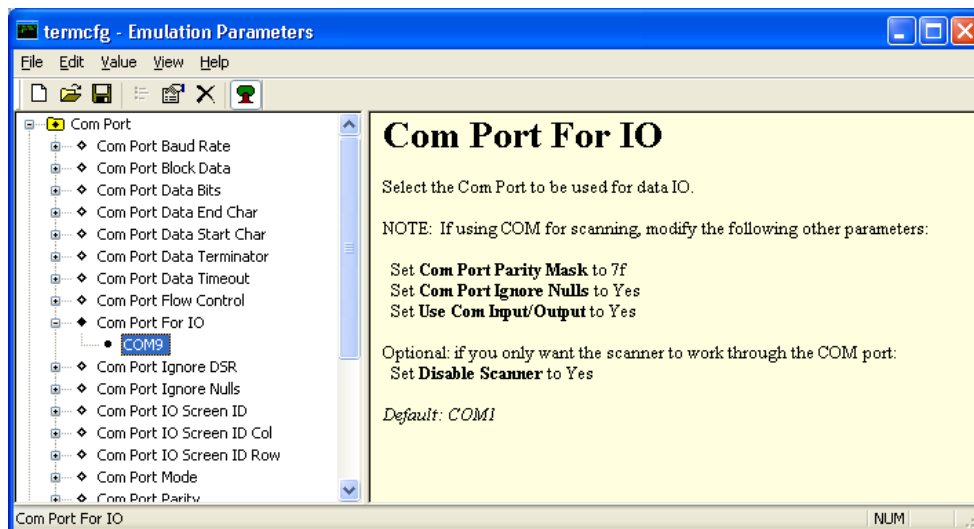
14. From the *Emulation Parameters* screen **Com Port** folder, click **Port Data Timeout** and change to **75**.



**Figure 5-74** *Emulation Parameters - Port Data Timeout Screen*

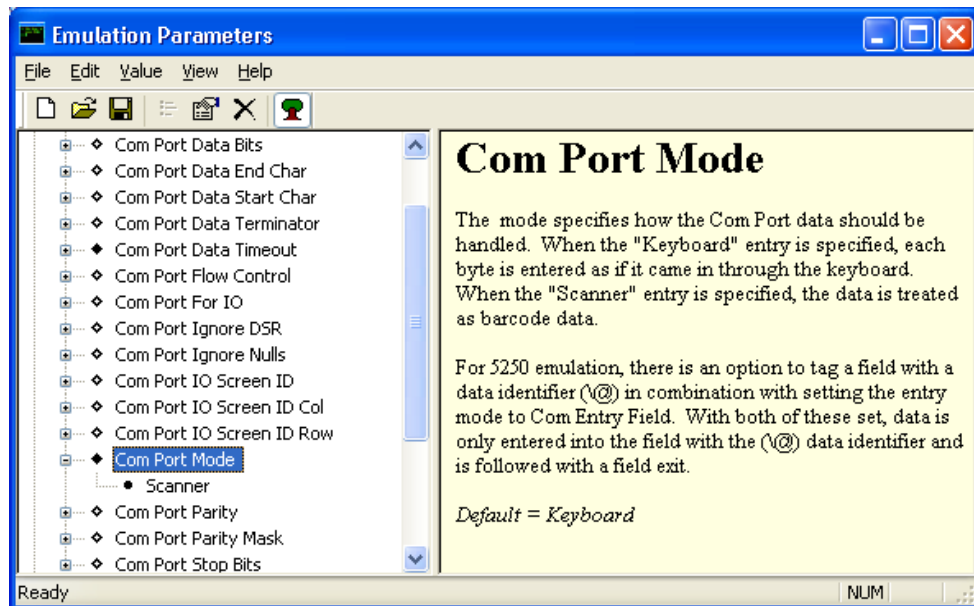


15. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port For IO** and change to **COM9**.



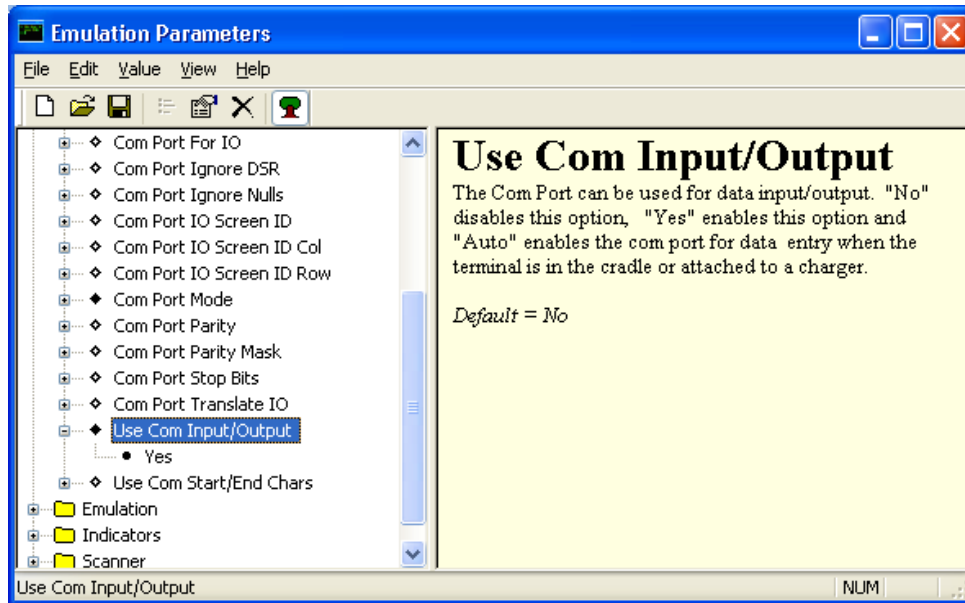
**Figure 5-75** *Emulation Parameters - Port For IO Screen*

16. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Mode** and change to **Scanner**.



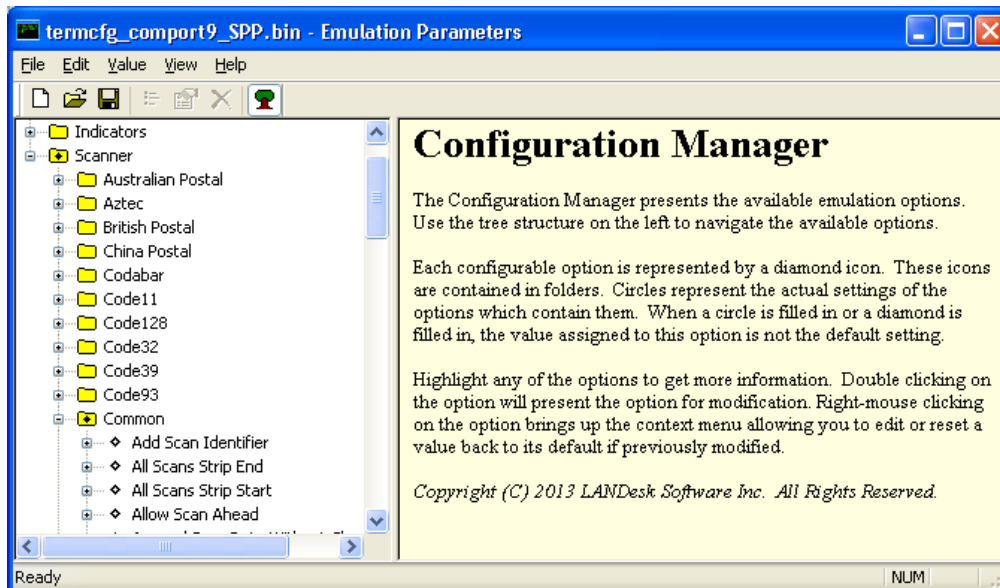
**Figure 5-76** *Emulation Parameters - Com Port Mode Screen*

17. From the *Emulation Parameters* screen **Com Port** folder, click **Use Com Input/Output** and change to **Yes**.



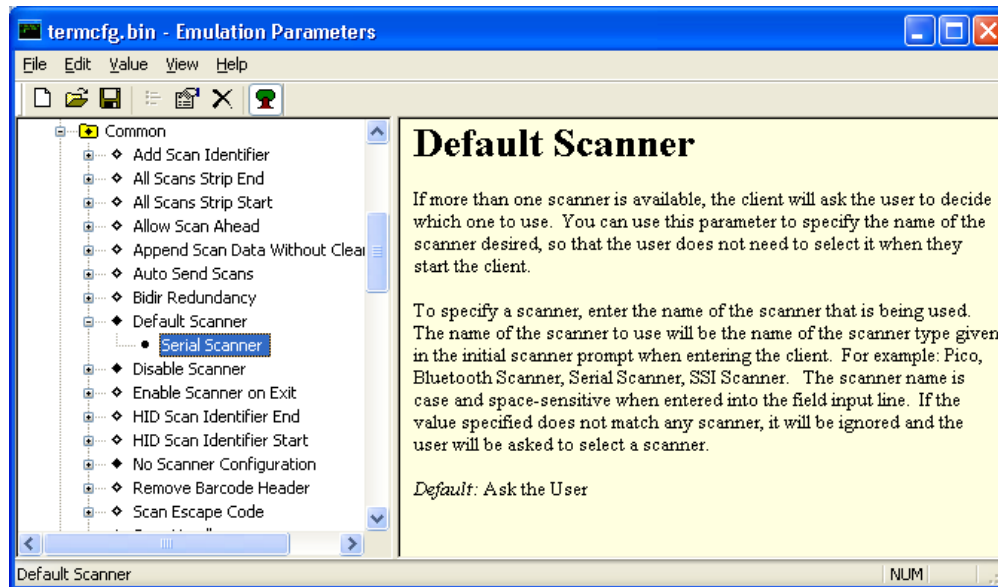
**Figure 5-77** *Emulation Parameters - Use Com Input/Output Screen*

18. From the *Emulation Parameters* screen **Scanner** folder, click **Common**.



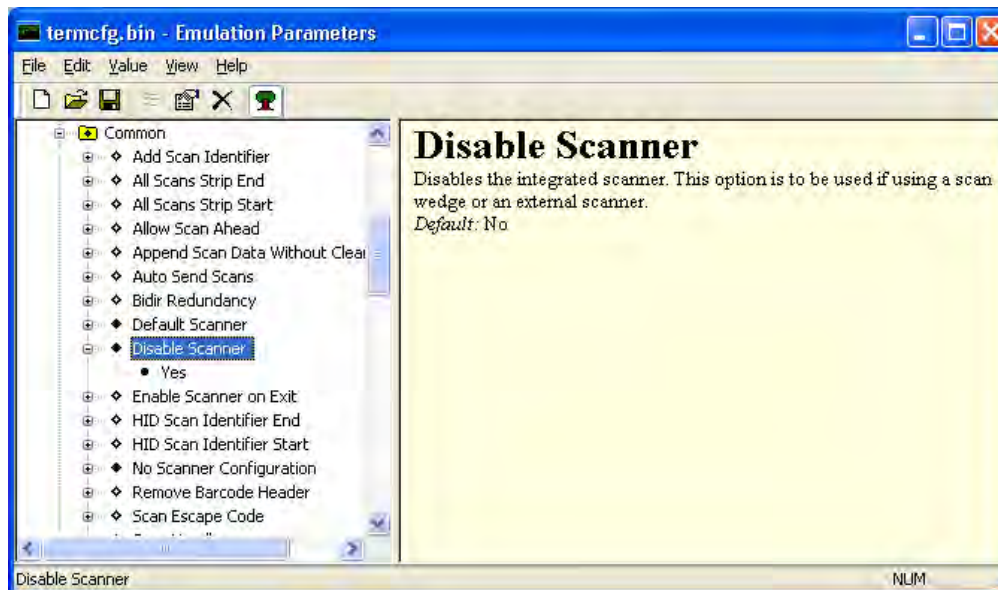
**Figure 5-78** *Emulation Parameters - Scanner Screen*

19. From the Emulation Parameters screen **Scanner > Common** folder, click **Default Scanner** and change to **Serial Scanner**.



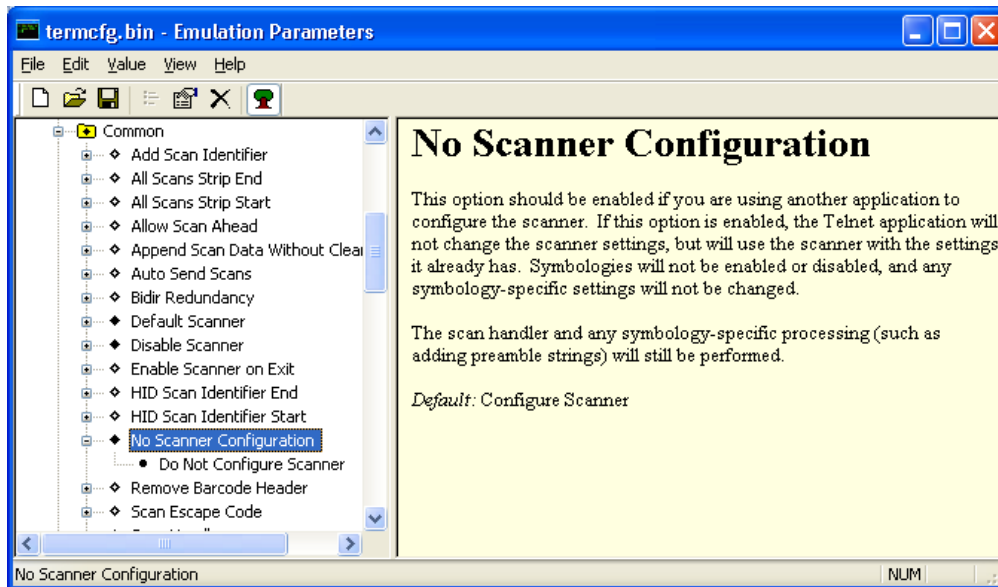
**Figure 5-79** Emulation Parameters - Default Scanner Screen

20. From the *Emulation Parameters* screen **Scanner > Common**, click **Disable Scanner** and change to **Yes**.




**Figure 5-80** Emulation Parameters - Disable Scanner Screen

21. From the Emulation Parameters screen **Scanner > Common** folder, click **No Scanner Configuration** and change to **Do Not Configure Scanner**.



**Figure 5-81** Emulation Parameters - No Scanner Configuration Screen

22. From the Emulation Parameters screen select **File > Save**.
23. From the Emulation Parameters screen select **File > Exit**.
24. Verify that the VC70 is properly connected to the PC (see [Chapter 8, Sync with Host Computer](#)).
25. From the Wavelink Product Configuration screen, click on the **Config Only** button.
26. From the VC70 Desktop, Tap  > **Programs > TelnetCE** to start TelnetCE. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. A black screen with "No host connection" indication shows.
27. On the black screen, tap **Options > Connect Session 1**.
28. TelnetCE Client shows the following notification: "No Host Profiles have been configured. Would you like to add a Host Profile?". Tap **Yes** to continue.
29. Enter the following Host Profile information:
- **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.

30. Tap **Save**.

- ✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

31. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen. The bar code data will show on the black screen.

- ✓ **NOTE** To unpair the scanner for using it on other VC70, scan the Unpairing bar code.



**Figure 5-82** Unpairing Bar Code

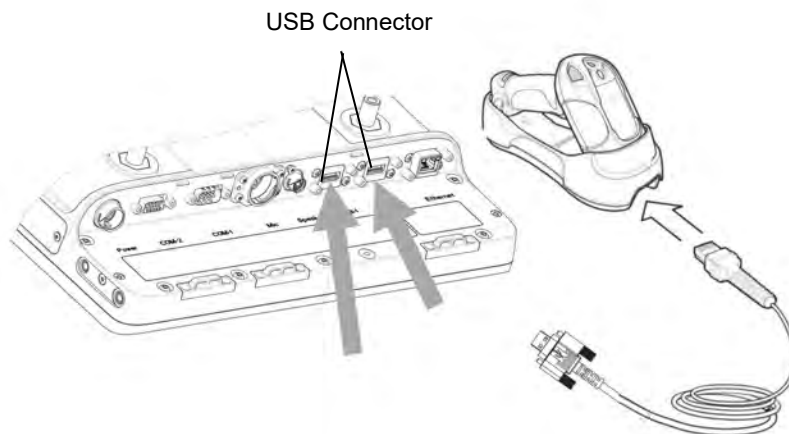
### ***Connect DS3578/LS3578 Scanner Cradle to USB Port of the VC70***

The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

1. Connect the USB scanner cable (PN 25-159548-01) to the cradle.
2. Connect the USB scanner cable to the one of the VC70 USB ports.

- ⚠ **CAUTION** Do not use tools to secure connector thumbscrews. Only tighten thumbscrews by hand.



**Figure 5-83** Connecting DS3578/LS3578 USB Scanner Cradle to VC70

### ***Connect DS3578/LS3578 Scanner Cradle to a Serial Port of the VC70***

The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

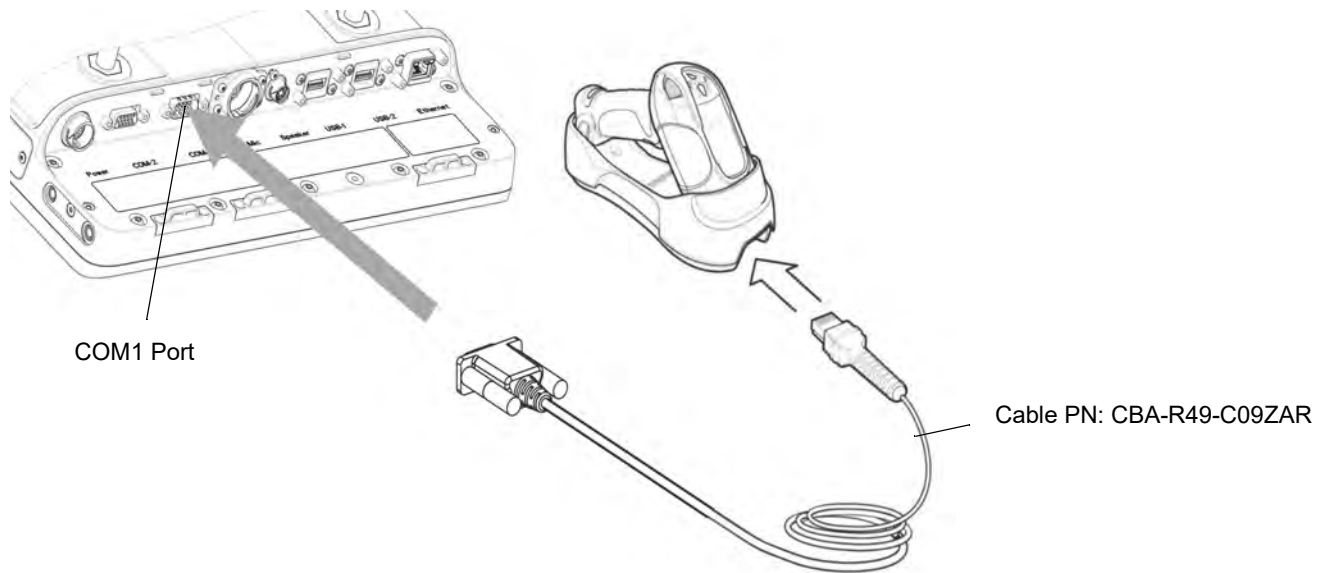
To connect the cradle:

1. Connect the serial scanner cable to the cradle (use cable P/N CBA-R49-C09ZAR).

2. Connect the serial scanner cable to the COM1 port of the VC70.



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



**Figure 5-84** Connecting Serial Scanner Cradle to COM1 Connector



**NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).

## Connect a Bluetooth Scanner LS3578 Directly to the VC70 (SPP Profile)

✓ **NOTE** To improve performance, use StoneStreet one Bluetooth stack.

To connect a Bluetooth scanner to the VC70:

1. Ensure that the scanner battery is fully charged.
2. Scan the **Set All Defaults** bar code.



**Figure 5-85** Set All Defaults Bar Code

✓ **NOTE** The Set All Defaults Bar Code allows the scanner to reset from any previous configuration to the default configuration.

3. Scan a **SPP Profile** bar code to configure the scanner to Bluetooth SPP profile mode before the pairing.




**Figure 5-86** SPP Profile Bar Code

4. Scan Write to Custom Defaults bar code.



**Figure 5-87** Custom Default Bar Code

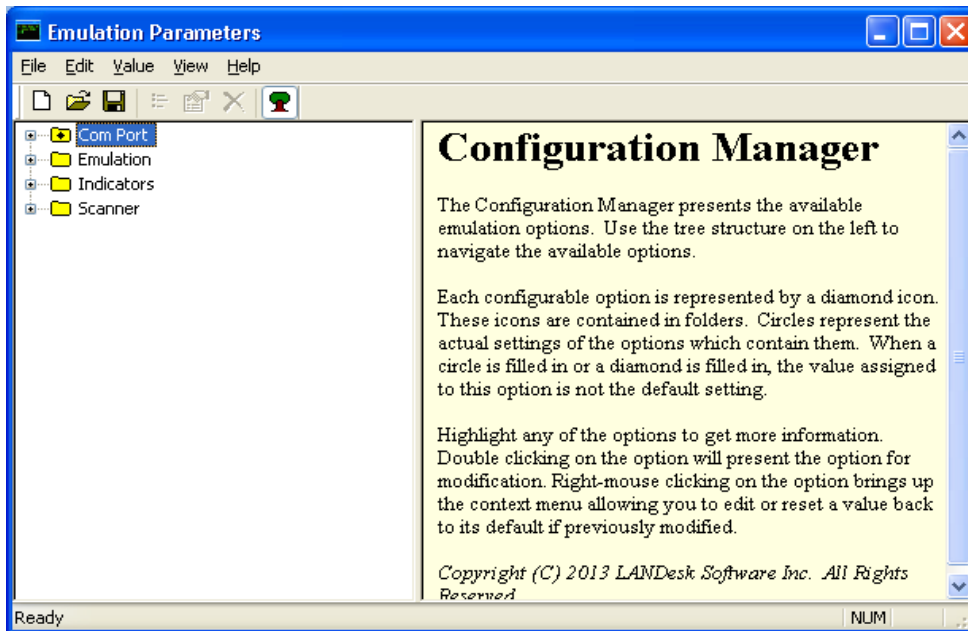
5. To pair the scanner with your VC70, scan the pair label bar code on the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70.
6. Enter the following configuration details:
  - Tap  > **Programs** > **BTScannerCtlPanel**
  - Check **BT Scanner**
  - Select Comm port **COM9**
  - Tap **Save** and **Exit**
7. From Wavelink web site, download I the Wavelink MOT\_VC7000\_CE7 TelnetCE application ([https://www.wavelink.com/Orders/files/WLTE\\_MOT\\_VC7000\\_CE7\\_7\\_3\\_158\\_AS.exe](https://www.wavelink.com/Orders/files/WLTE_MOT_VC7000_CE7_7_3_158_AS.exe))
8. Install the Wavelink MOT\_VC7000\_CE7 TelnetCE application on a PC used for configuring the VC70.

9. Launch the Wavelink MOT\_VC7000\_CE7 TelnetCE Application - the Wavelink Product Configuration screen is displayed.



**Figure 5-88** Wavelink Product Configuration Screen

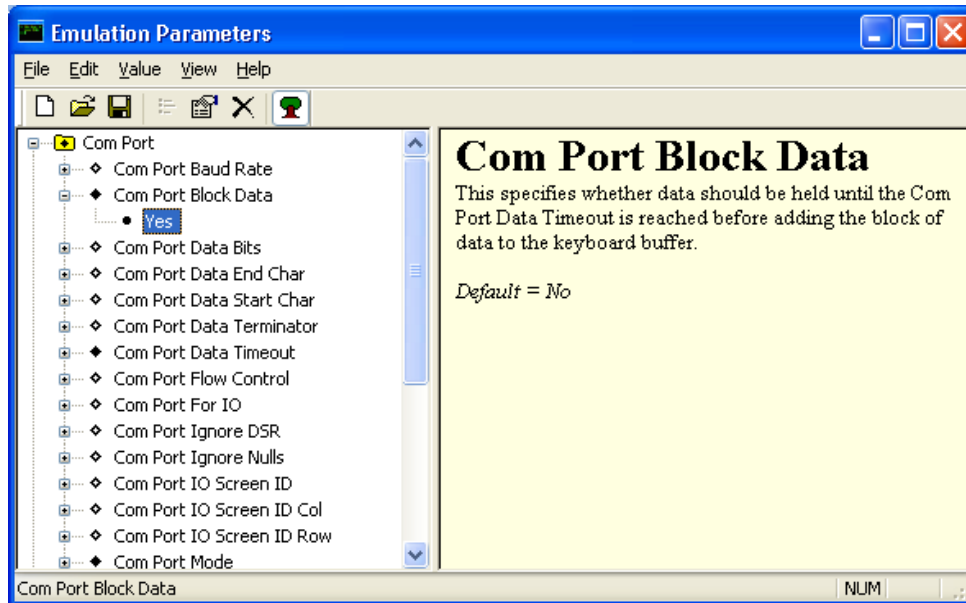
10. On the Wavelink Product Configuration Screen, click **Emulation Parameters**.
11. Click **Com Port**.



**Figure 5-89** Emulation Parameters Screen

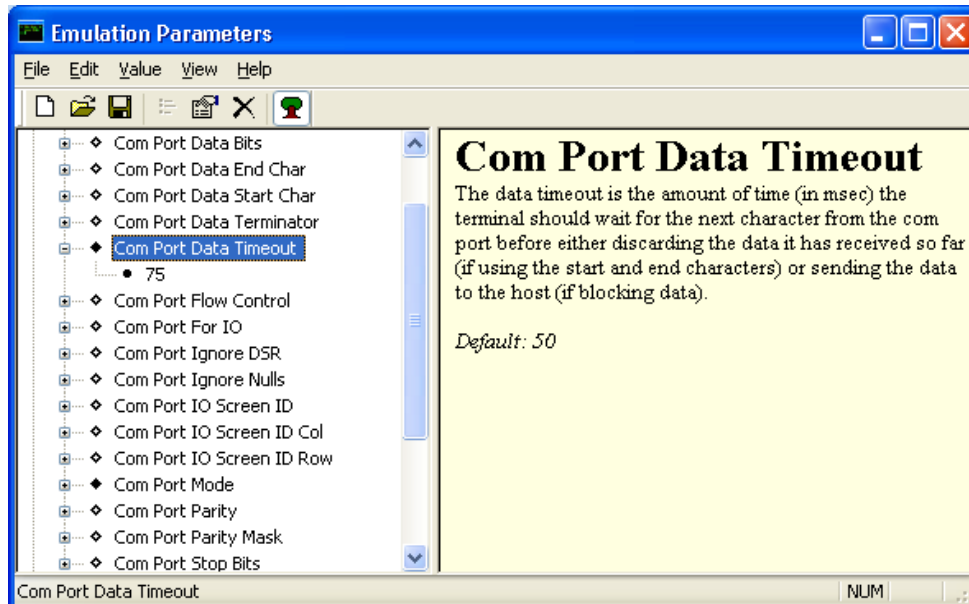


12. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Block Data** and change to **Yes**.



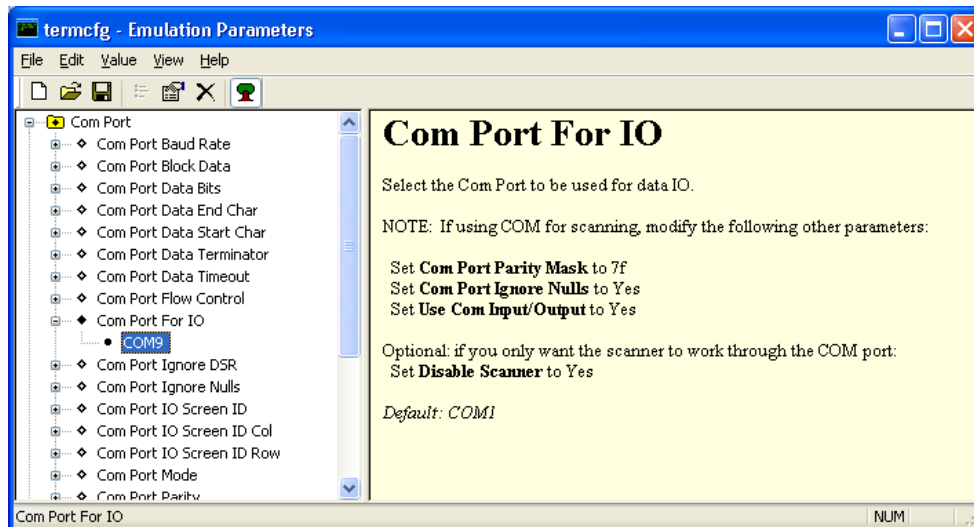
**Figure 5-90** *Emulation Parameters - Com Port Block Data Screen*

13. From the *Emulation Parameters* screen **Com Port** folder, click **Port Data Timeout** and change to **75**.



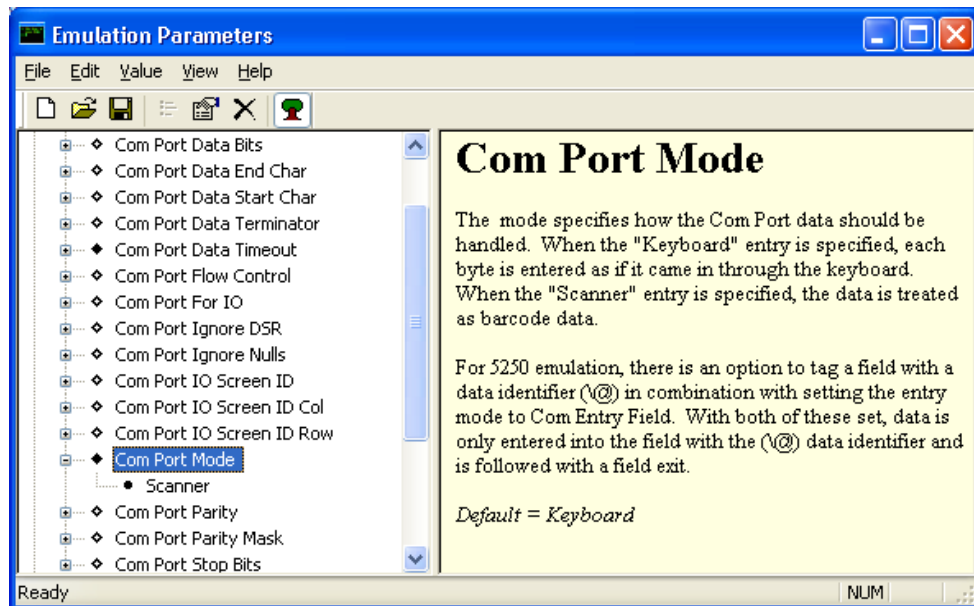
**Figure 5-91** *Emulation Parameters - Port Data Timeout Screen*

14. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port For IO** and change to **COM9**.



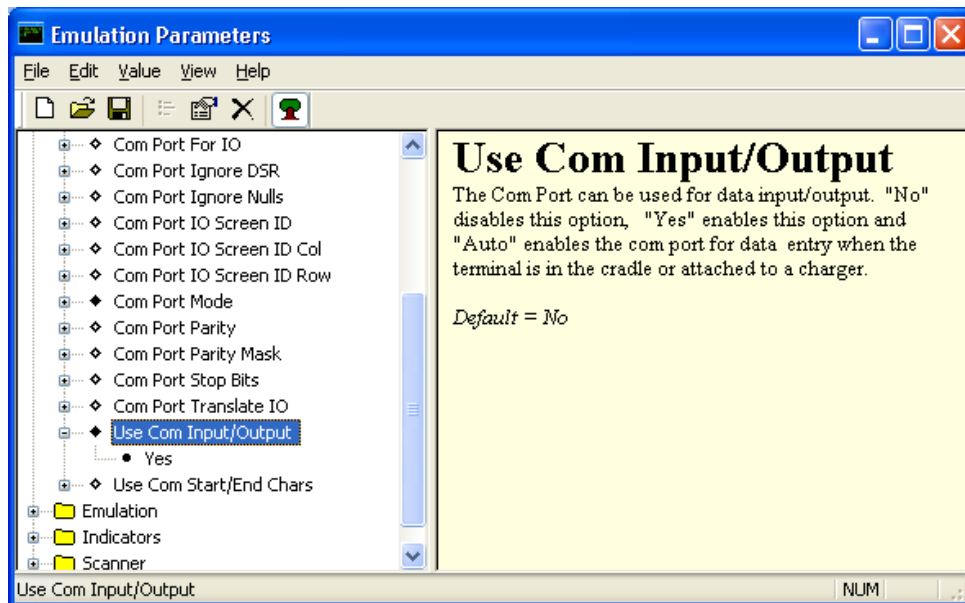
**Figure 5-92** *Emulation Parameters - Port For IO Screen*

15. From the *Emulation Parameters* screen **Com Port** folder, click **Com Port Mode** and change to **Scanner**.



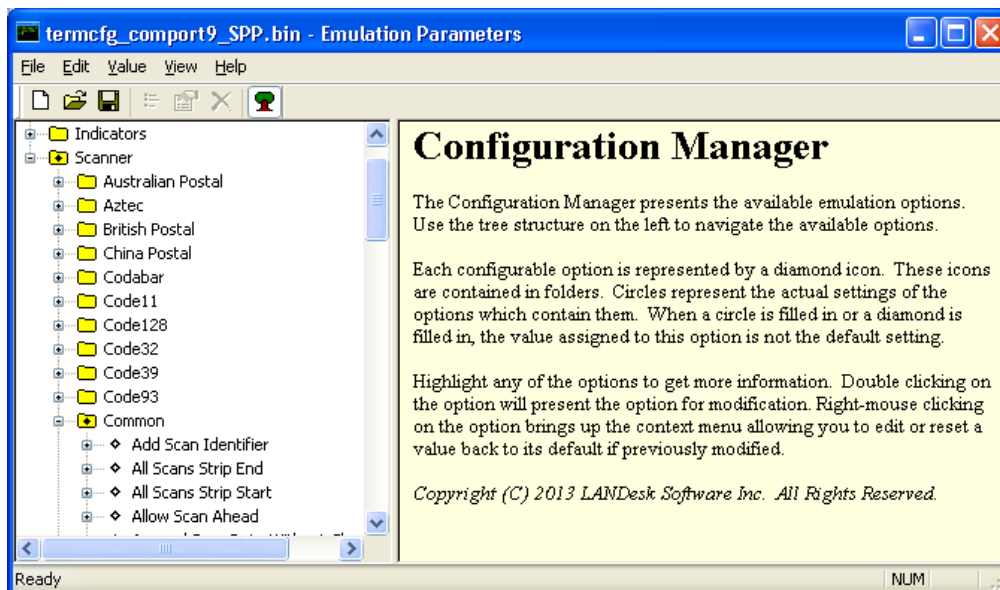
**Figure 5-93** *Emulation Parameters - Com Port Mode Screen*

16. From the *Emulation Parameters* screen **Com Port** folder, click **Use Com Input/Output** and change to **Yes**.



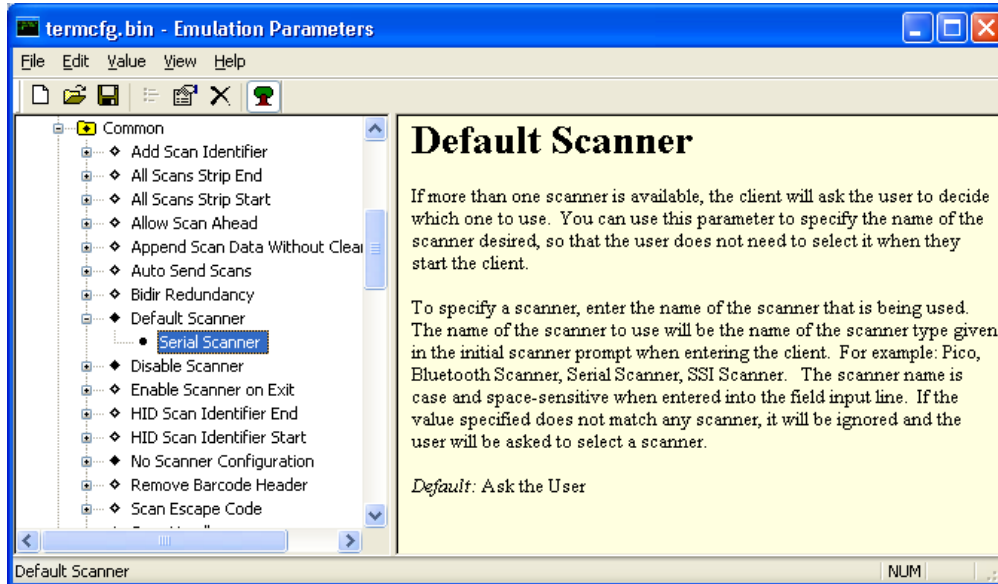
**Figure 5-94** *Emulation Parameters - Use Com Input/Output Screen*

17. From the Emulation Parameters screen **Scanner** folder, click **Common**.



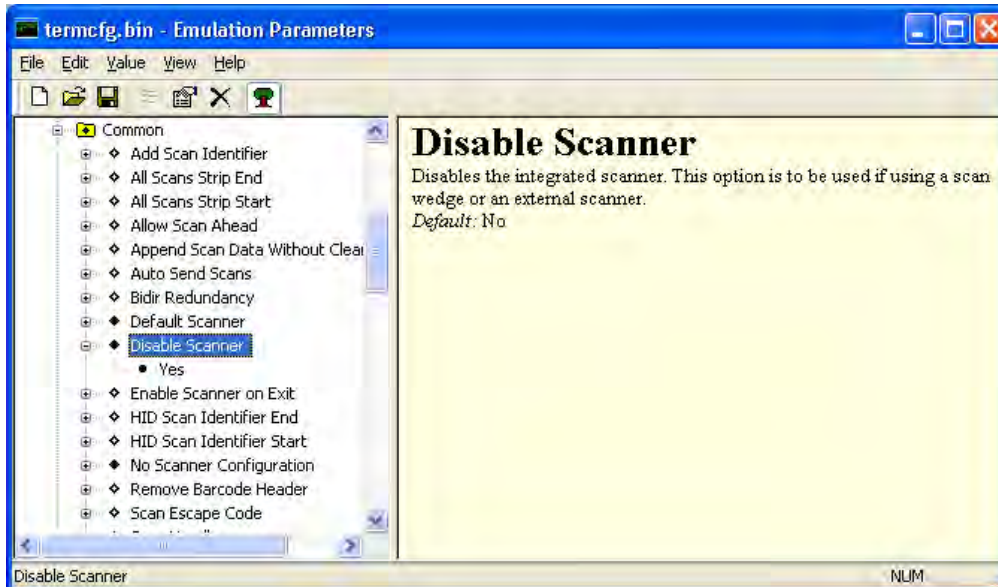
**Figure 5-95** *Emulation Parameters - Scanner Screen*

18. From the Emulation Parameters screen **Scanner > Common** folder, click **Default Scanner** and change to **Serial Scanner**.



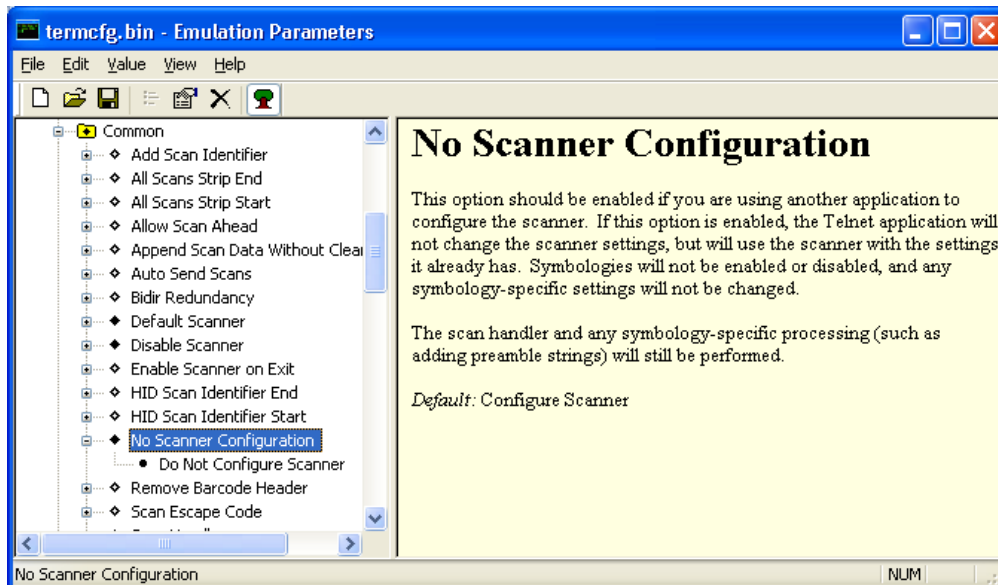
**Figure 5-96** Emulation Parameters - Default Scanner Screen

19. From the *Emulation Parameters* screen **Scanner > Common**, click **Disable Scanner** and change to **Yes**.




**Figure 5-97** Emulation Parameters - Disable Scanner Screen

20. From the Emulation Parameters screen **Scanner > Common** folder, click **No Scanner Configuration** and change to **Do Not Configure Scanner**.



**Figure 5-98** Emulation Parameters - No Scanner Configuration Screen

21. From the Emulation Parameters screen select **File > Save**.
22. From the Emulation Parameters screen select **File > Exit**.
23. Verify that the VC70 is properly connected to the PC (see [Chapter 8, Sync with Host Computer](#)).
24. From the Wavelink Product Configuration screen, click on the **Config Only** button.
25. From the VC70 Desktop, Tap  > **Programs > TelnetCE** to start TelnetCE. TelnetCE Client launches on the VC70 and displays the Scanner Selection notification. A black screen with “**No host connection**” indication shows.
26. On the black screen, tap **Options > Connect Session 1**.
27. TelnetCE Client shows the following notification: “**No Host Profiles have been configured. Would you like to add a Host Profile?**”. Tap **Yes** to continue.
28. Enter the following Host Profile information:
- **Alias:** Indicates the name of the host profile. Usually, this is the name or alias of the host system with which the VC70 creates a Telnet session.
  - **Emulation:** Indicates the type of emulation that the host system uses. Available Options: <IBM-5251-11> <IBM-3278-2> <IBM-3279-2> <IBM-3279-2E> <VT100> <VT220> <HP>. Default: <IBM-5251-11>
  - **Address:** Indicates the IP address or host name of the host system. Possible Values: Valid IP address of the running terminal emulation or host name.
  - **Port:** Indicates the TCP port on which the host system is listening for Telnet connections. Possible Values: 0 - 65535. Default: 23 for Telnet server.
  - Secure Shell (SSH) is a cryptographic network protocol for secure data communication. Check the **Use SSH encryption** box if required.

29. Tap **Save**.

- ✓ **NOTE** If re-editing is required, tap **Options > Configure > Host Profiles** and enter default password: "system". tap **OK** to continue. On the Edit Host Profile box, verify the Alias name and tap **Done**.

30. Tap **Options > Connect Session 1** and scan a bar code to scan a bar code to verify that the scanner is properly connected to the host system. The bar code data will show on the black screen. The bar code data will show on the black screen.

31. When completing scanning, scan the unpair label bar code in the upper left side of the VC70. This will disconnect your scanner from the VC70.

- ✓ **NOTE** To unpair the scanner for using it on other VC70, scan the Unpairing bar code.



**Figure 5-99** Unpairing Bar Code

### ***Connect DS3578/LS3578 Scanner Cradle to USB Port of the VC70***

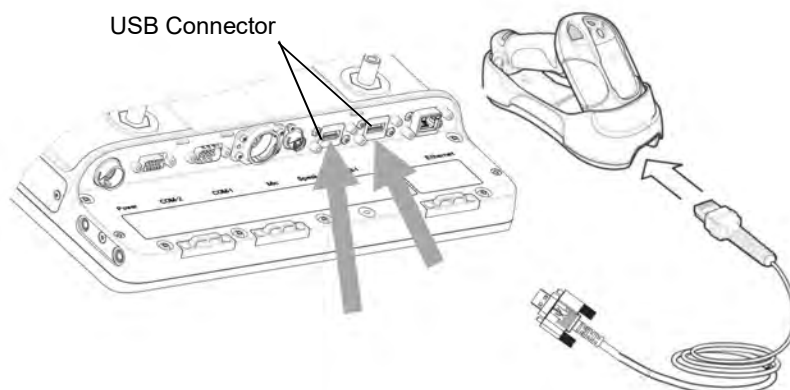
The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

1. Connect the USB scanner cable (PN 25-159548-01) to the cradle.
2. Connect the USB scanner cable to the one of the VC70 USB ports.



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



**Figure 5-100** Connecting DS3578/LS3578 USB Scanner Cradle to VC70

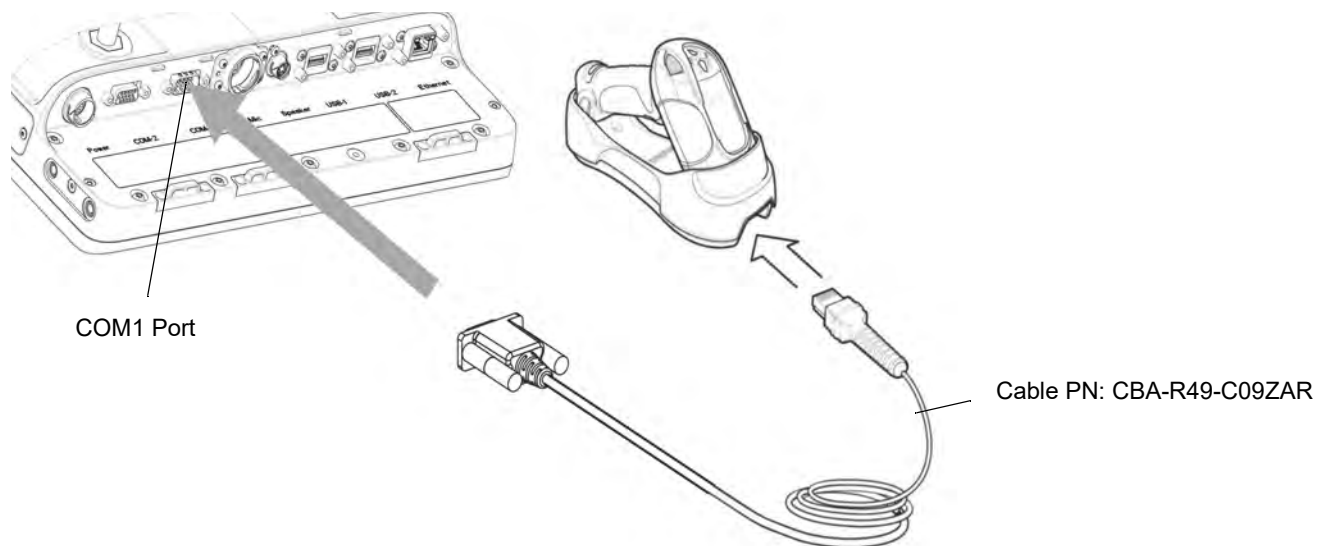
### ***Connect DS3578/LS3578 Scanner Cradle to a Serial Port of the VC70***

The DS3578/LS3578 scanner cradle is used only for charging the DS3578/LS3578 Scanner.

To connect the cradle:

1. Connect the serial scanner cable to the cradle (use cable P/N CBA-R49-C09ZAR).

2. Connect the serial scanner cable to the COM1 port of the VC70.



**Figure 5-101** Connecting Serial Scanner Cradle to COM1 Connector

- ✓ **NOTE** The connected scanner is powered from the COM1 port of the VC70. By default, after the VC70 boots, the COM1 port remains powered off. In the current revision (C), scanner power is enabled whenever the scan application starts (the scan application calls Com open as in the standard CE Com port API). Power to the scanner is disabled when the scan application is closed (when the scan application calls Com close). The current revision (C) differs from the legacy revision (B) where the user manually enabled the scanner power via applet or registry settings. To enable scanner power in revision C via the applet or registry (as in revision B), refer to [COM1 Power Output to Scanner on page 11-4](#). When the scanner is enabled via the applet or registry, the scanner power remains on (the Com port API is overwritten on the scanner power control and the scanner power will not turn off when the scan application calls Com close).





# Chapter 6 Wireless LAN Applications

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## Introduction

Wireless Local Area Networks (WLAN) allow mobile computers to communicate wirelessly inside a facility and send data to a host server in real time.

Before using the VC70 to operate wirelessly in a facility, the facility must be set up with the required hardware to run the WLAN and the VC70 must be configured.

To configure the VC70, the Wireless Fusion Zebra tool is provided. Fusion includes a set of wireless applications used for configuring and testing the WLAN radio inside the VC70.

To setup and configure the WLAN inside the facility, refer to the documentation provided with the host server software and access point units (APs) of the facility.

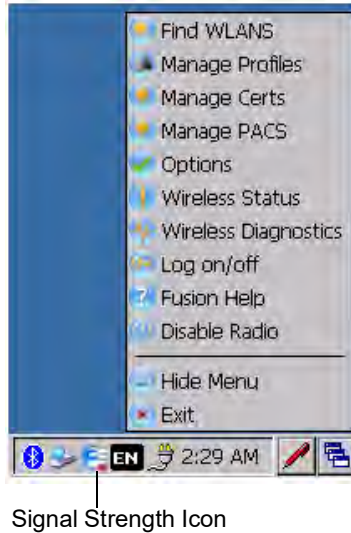
✓ **NOTE** The WLAN operation in the VC70 is active by default.

✓ **IMPORTANT** This section includes basic user instructions available for the Wireless Fusion Zebra tool. For your convenience, a complete Wireless Fusion Zebra User Guide, available at the time this guide was released, is provided with this manual (see *Wireless Fusion User Guide Ver X2.01*). For the most updated Wireless Fusion guide, refer to the Wireless Fusion Zebra User Guide, p/n 72E-122495-xx at: [www.zebra.com/support](http://www.zebra.com/support)

The **Wireless Applications** menu on the task tray provides the following wireless applications:

- Wireless Status
- Wireless Diagnostics
- Find WLANs
- Manage Profiles
- Options
- Log On/Off
- Enable/Disable Radio (Fusion 2.5 and above only).

Tap the  > **Programs** > **Fusion** > **Wireless Launch** to display the **Wireless Applications** menu.



**Figure 6-1** Wireless Applications Menu

## Signal Strength Icon

The **Signal Strength** icon in the task tray indicates the mobile computer's wireless signal strength as follows:

*Table 6-1 Wireless Applications Icons, Signal Strength Descriptions*

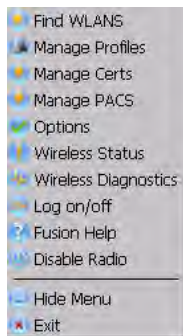
Icon	Status	Action
	Excellent signal strength	Wireless LAN network is ready to use.
	Very good signal strength	Wireless LAN network is ready to use.
	Good signal strength	Wireless LAN network is ready to use.
	Fair signal strength	Wireless LAN network is ready to use. Notify the network administrator that the signal strength is only "Fair".
	Poor signal strength	Wireless LAN network is ready to use. Performance may not be optimum. Notify the network administrator that the signal strength is "Poor".
	Out-of-network range (not associated)	No wireless LAN network connection. Notify the network administrator.
	No wireless LAN network card detected.	No wireless LAN network card detected or radio disabled. Notify the network administrator.

---

## Turning the WLAN Radio On and Off

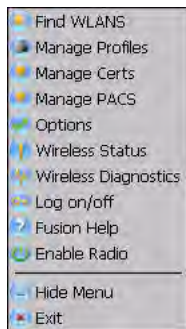
### With Fusion

To turn the WLAN radio off tap the **Signal Strength** icon and select **Disable Radio**.



**Figure 6-2** *Disable Radio*

To turn the WLAN radio on tap the **Signal Strength** icon and select **Enable Radio**.



**Figure 6-3** *Enable Radio*

---

## Find WLANs Application

Use the **Find WLANs** application to discover available networks in the vicinity of the user and mobile computer. To open the **Find WLANs** application, tap the **Signal Strength** icon - **Find WLANs**. The **Find WLANs** window displays.

WLAN Networks	Network Type	Channel	Signal Strength
M-Guest	802.11(g)	9 (2452 MHz)	-68 dBm
M-Team	802.11(g)	9 (2452 MHz)	-68 dBm
M-Wireless	802.11(g)	9 (2452 MHz)	-68 dBm
TUPnP	802.11(g)	8 (2447 MHz)	-90 dBm
Y5	802.11(n)	3 (2422 MHz)	-85 dBm

**Figure 6-4** Find WLANs Window

✓ **NOTE** Find WLAN display is limited to 32 items (ESSIDs or MAC addresses). A combination of up to 32 ESSIDs/APs may be displayed.

Manually enter valid ESSIDs not displayed in the **Find WLANs** window.

The **Find WLANs** list displays:

- **WLAN Networks** - Available wireless networks with icons that indicate signal strength and encryption type. The signal strength and encryption icons are described in [Table 6-2](#) and [Table 6-3](#).
- **Network Type** - Type of network.
- **Channel** - Channel on which the AP is transmitting.
- **Signal Strength** - The signal strength of the signal from the AP.

**Table 6-2** Signal Strength Icon

Icon	Description
	Excellent signal
	Very good signal
	Good signal
	Fair signal
	Poor signal
	Out of range or no signal

**Table 6-3** Encryption Icon

Icon	Description
	No encryption. WLAN is an infrastructure network.
	WLAN is an Ad-Hoc network.
	WLAN access is encrypted and requires a password.

Tap-and-hold on a WLAN network to open a pop-up menu which provides three options: **Connect to...**, **Create profile** and **Refresh**. Select **Refresh** to refresh the WLAN list. Select **Connect to...** to connect to the network or **Create profile** to create a wireless profile from that network. This starts the **Wireless LAN Profile Entry** which allows you to set the values for the selected network. After editing the profile, the vehicle computer automatically connects to this new profile.

# Chapter 7 Using Bluetooth

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## Introduction

Bluetooth-equipped devices can communicate wirelessly, using frequency-hopping spread spectrum (FHSS) RF to transmit and receive data in the 2.4 GHz Industry Scientific and Medical (ISM) band (802.15.1). Bluetooth wireless technology is specifically designed for short-range (30 feet/10 meters) communications and low power consumption.

Vehicle computers with Bluetooth capabilities can exchange information (e.g., files and tasks) with other Bluetooth enabled devices such as scanners and printers.

Vehicle computers with Bluetooth technology use the StoneStreet One Bluetooth stack. To program Bluetooth within the vehicle computer refer to the StoneStreet One SDK.

- ✓ **NOTE** For instructions how to connect cordless (Bluetooth) scanners, refer to [Chapter 5, TelnetCE Configuration](#).
  
- ✓ **NOTE** To switch to Microsoft Bluetooth stack, refer to [Switch Between Microsoft and StoneStreet One \(SS1\) Bluetooth Stack on page 11-3](#).

---

## Adaptive Frequency Hopping

Adaptive Frequency Hopping (AFH) is a method of avoiding fixed frequency interferers. AFH can be used with Bluetooth voice. All devices in the piconet (Bluetooth network) must be AFH-capable in order for AFH to work. There is no AFH when connecting and discovering devices. Avoid making Bluetooth connections and discoveries during critical 802.11b/g/n communications. AFH for Bluetooth can be broken-down into four main sections:

- Channel Classification - A method of detecting an interference on a channel-by-channel basis, or pre-defined channel mask.
- Link Management - Coordinates and distributes the AFH information to the rest of the Bluetooth network.
- Hop Sequence Modification - Avoids the interference by selectively reducing the number of hopping channels.
- Channel Maintenance - A method for periodically re-evaluating the channels.

When AFH is enabled, the Bluetooth radio “hops-around” (instead of through) the 802.11b/g/n high-rate channels. AFH coexistence allows vehicle computers to operate in any infrastructure. AFH is always enabled in the VC70.

The Bluetooth radio in this vehicle computer operates as a Class 2 device power class. The maximum output power is 2.5mW and the expected range is up to 32.8 feet (10 meters). A definitive definition of ranges based on power class is difficult to obtain due to power and device differences, and whether one measures open space or closed office space.

---

## Security

The current Bluetooth specification defines security at the link level. Application-level security is not specified. This allows application developers to define security mechanisms tailored to their specific need. Link-level security is really between devices not users, while application-level security can be implemented on a per-user basis. The Bluetooth specification defines security algorithms and procedures needed to authenticate devices, and if needed, encrypt the data flowing on the link between the devices. Device authentication is a mandatory feature of Bluetooth while link encryption is optional.

Pairing of Bluetooth devices is accomplished by creating an initialization key that is used to authenticate the devices and create a link key for them. Entering a common PIN number in the devices being paired generates the initialization key. The PIN number is never sent over the air. By default, the Bluetooth stack responds with no key when a key is requested (it is up to user to respond to the key request event). Authentication of Bluetooth devices is based-upon a challenge-response transaction. Bluetooth allows for a PIN number or passkey that is used to create other 128-bit keys used for security and encryption. The encryption key is derived from the link key used to authenticate the pairing devices. Also worthy of note is the limited range and fast frequency hopping of the Bluetooth radios that makes long-distance eavesdropping difficult.

It is recommended:

- Perform pairing in a secure environment
- Keep PIN codes private and don't store the PIN codes in the vehicle computer
- Implement application-level security.

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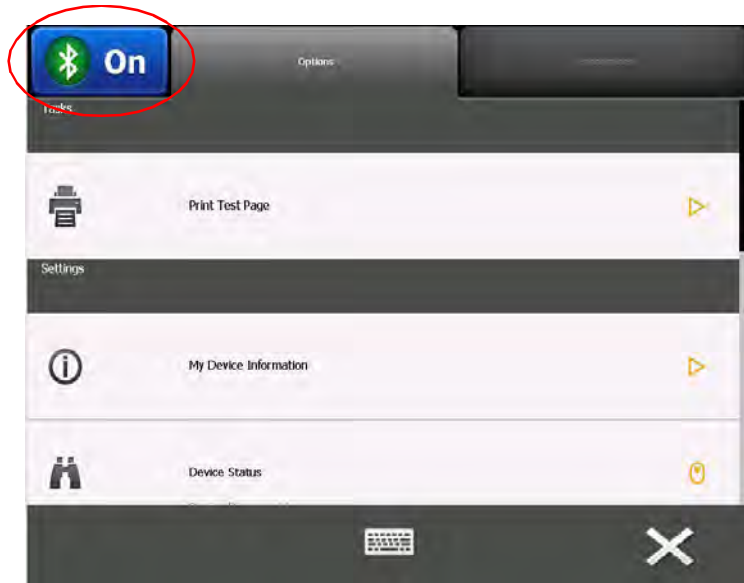
## Turning the Bluetooth Radio Mode On and Off

Turn off the Bluetooth radio to save power or if entering an area with radio restrictions (e.g., an airplane). When the radio is off, the vehicle computer can not be seen or connected to by other Bluetooth devices. Turn on the Bluetooth radio to exchange information with other Bluetooth devices (within range). Communicate only with Bluetooth radios in close proximity.

✓ **NOTE** The bluetooth radio in the VC70 is On by default.



### Disabling Bluetooth

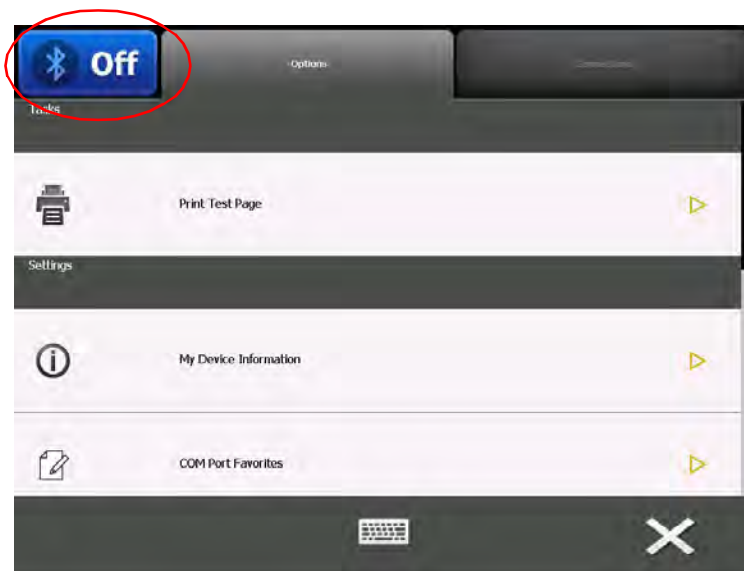
Tap  > **Settings** > **Control Panel** > **MotoBTUI** icon. Click the Bluetooth On button. The  disappears from the system tray.



**Figure 7-1** *Disable Bluetooth*

## Enabling Bluetooth

Tap  > **Settings** > **Control Panel** > **MotoBTUI** icon. Click the Bluetooth Off button. The  appears in the system tray.



**Figure 7-2** *Enable Bluetooth*

## Bluetooth Power States

### Cold Boot

When a cold boot is performed on the vehicle computer, Bluetooth turns off. It is normal to see the Bluetooth icon appear and disappear, as well as a wait cursor, when initialization proceeds in all modes.

### Warm Boot

When a warm boot is performed on the vehicle computer, Bluetooth returns to the disabled state (off).

### Low Power

When the vehicle computer is in low power mode, Bluetooth does not turn off.

---

## Pairing Cordless Scanners

The primary purpose of the bluetooth in the VC70 is to enable connection with the available cordless scanners.

To pair your cordless bluetooth scanner, scan the pair label barcode in the upper right of the VC70.

In that case the scanners are the Central and the VC70 is the Peripheral.

To unpair your cordless bluetooth scanner, scan the unpair label barcode in the upper left of the VC70.

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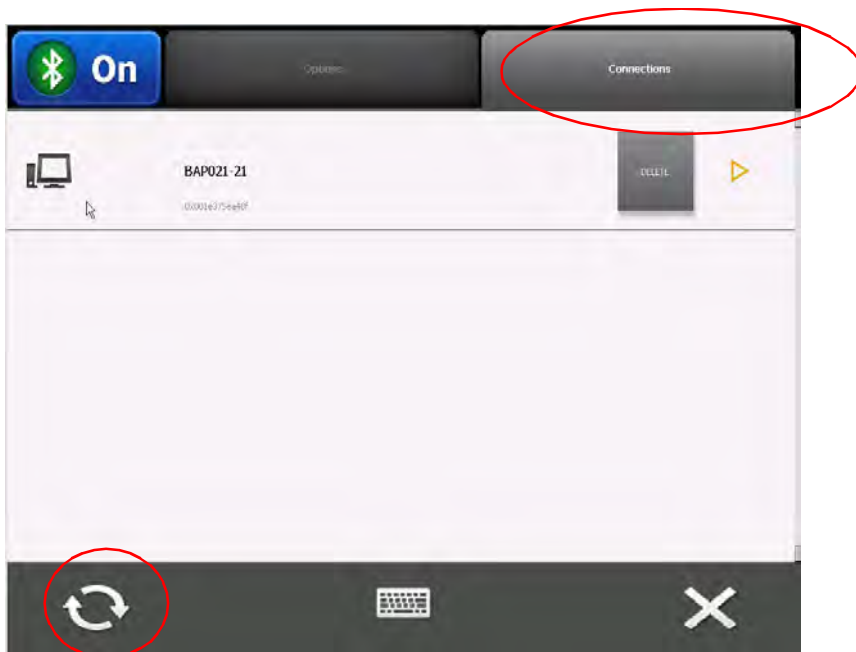
## Discovering Bluetooth Device(s)

Follow the steps below to discover Bluetooth devices. The vehicle computer can receive information from discovered devices, without bonding. However, once bonded, an exchange of information between the vehicle computer and a bonded device occurs automatically when the Bluetooth radio is turned on.

To find Bluetooth devices in the area:

1. Ensure that the Bluetooth device being looked for is in discoverable mode.
2. Ensure that the two devices are within 30 feet (10 meters) of one another.
3. Click the **Connections** tab.





4. The application scans for bluetooth devices automatically. A list of discovered bluetooth devices is shown on the screen.
5. To refresh your list, click the refresh button on the lower left side of the screen.

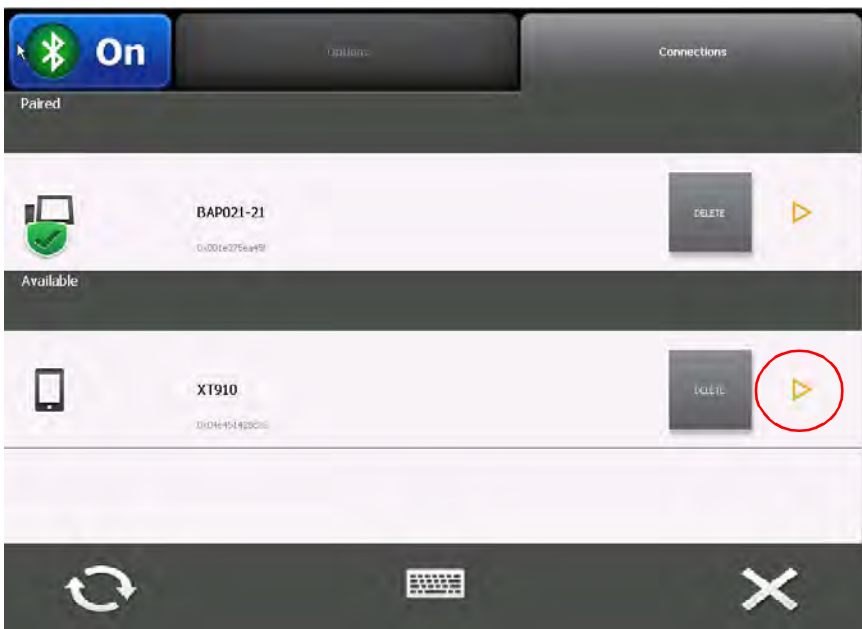
### **Bonding with Discovered Device(s)**

- ✓ **NOTE** You can bond (pair) a scanner to your vehicle computer by scanning the pair barcode in the upper right side of the VC70. The scanner beeps indicating that it is successfully connected to the VC70.

A bond is a relationship created between the vehicle computer and another Bluetooth device to exchange information in a secure manner. Creating a bond involves entering the same PIN on the two devices to bond. Once a bond is created, and the Bluetooth radios are turned on, the devices recognize the bond and are able to exchange information without re-entering a PIN.

To bond with a discovered Bluetooth device:

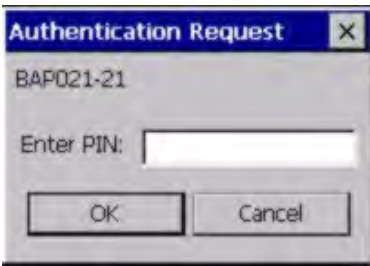
1. Discover remote devices. See [Discovering Bluetooth Device\(s\) on page 7-4](#).
2. Select the required device from the list and click the > button.



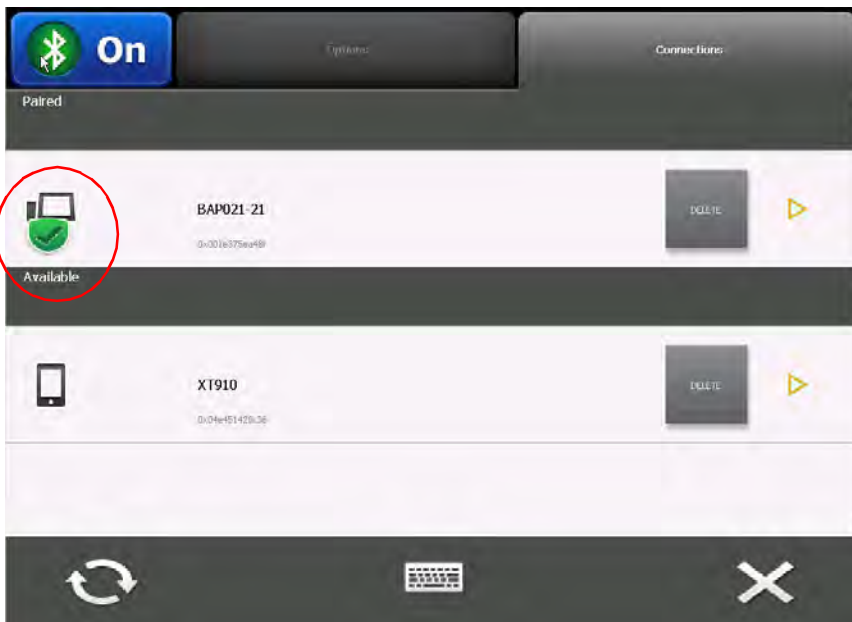
3. The following Pair button appear.



4. Click to pair the discovered device to your computer.




5. If **Pin Code** is required, enter the code (12345). You will be required to enter the same code on your device.
6. Your device appears as available on your screen.

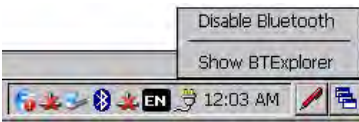


## File Transfer Services

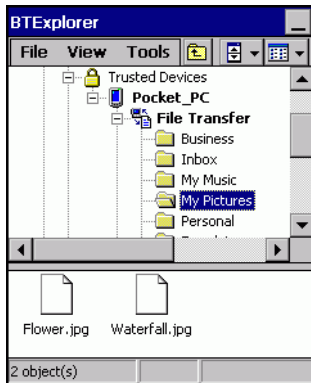
- ✓ **NOTE** The following services are available with Stonestreet One stack.
- ✓ **NOTE** Shared folders are a security risk.

To transfer files between the vehicle computer and another Bluetooth enabled device:

1. Ensure the vehicle computer is discoverable and connectable. See [Bluetooth Settings on page 7-12](#).
2. Discover and bond (pair) with the remote access point. See [Bonding with Discovered Device\(s\) on page 7-5](#).
3. To see the **BTE Explorer** tap the  icon. The following menu appear:



4. Click the **Show BTE Explorer**.
5. In **BTE Explorer**, select the **Remote Devices** folder.
6. Select the **Trusted Devices** folder.
7. Tap the remote device folder.
8. Tap and hold on the remote device and select **Explore** from the pop-up menu.
9. Tap and hold on **File Transfer** and select **Connect**. The remote device's accessible folders appear.
10. Select a folder. The contents of the folder appear in the sub-window.



**Figure 7-3** Remote Device Folders

11. Tap and hold on the file. A pop-up menu appears.
12. Select the action to perform:
  - a. *New* - create a new file or folder. on the remote device
  - b. *Delete* - delete the selected file on the remote device.
  - c. *Get File* - copy the file from the remote device to the vehicle computer.
  - d. *Put File* - copies a file from the vehicle computer to the remote device.

### Create New File or Folder

To create a new folder or file on the remote device:

1. Tap and hold on the file and select **New > Folder** or **New > File**. The **Create New Folder** or **Create New File** window appears.
2. Enter the name for the new folder or file. Tap **OK**.
3. A new folder or file is created on the remote device.

### Delete File

To delete a file from the remote device:

1. Tap and hold on the file and select **Delete**.
2. In the **Delete Remote Device File** dialog box tap **OK**.

### Get File

To copy a file from a remote device:

1. Tap and hold on the file and select **Get**. The **Save Remote File** window appears.
2. Navigate to the directory to save the file.
3. Tap **Save**. The file is transferred from the remote device to the vehicle computer.


### Put File

To copy a file to a remote device:

1. Tap and hold on the file and select **Put**. The **Send Local File** window appears.
2. Navigate to the directory to save the file and select a file.
3. Tap **Open**. The file is transferred from the vehicle computer to the remote device.

## Connect to Internet Using Access Point

This section explains how to access a Bluetooth-enabled LAN access point (AP) for a network connection. With this method of communication the Internet Explorer can be used to connect to a server.

1. Ensure the vehicle computer is discoverable and connectable. See [Bluetooth Settings on page 7-12](#).
2. Discover and bond (pair) with the remote access point. See [Bonding with Discovered Device\(s\) on page 7-5](#).
3. In **BTE Explorer**, select the **Remote Devices** folder.
4. Select the **Trusted Devices** folder.
5. Tap the remote device folder.
6. Tap and hold on the remote device and select **Explore** from the pop-up menu.
7. Tap and hold **LAN Access using PPP** service and select **Connect** from the pop-up menu.
8. The vehicle computer connects with the Access Point.
9. Tap  > **Internet Explorer**. The **Internet Explorer window** appears.
10. In the address field, enter an internet address and tap the **Enter** button. The web page loads.

## OBEX Object Push Services

Object Exchange (OBEX) is a set of protocols allowing objects such as Contacts or pictures to be shared using Bluetooth.

To exchange contact information with another Bluetooth enabled device:

1. Ensure the vehicle computer is discoverable and connectable. See [Bluetooth Settings on page 7-12](#).
2. Discover and bond (pair) with the remote device. See [Bonding with Discovered Device\(s\) on page 7-5](#).

3. In **BTEplorer**, select the **Remote Devices** folder.
4. Select the **Trusted Devices** folder.
5. Tap the remote device folder.
6. Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.
7. In the **Action** drop-down list, select one of the options: **Send Contact Information**, **Swap Contact Information**, **Fetch Contact Information** or **Send a Picture**.

### Send a Picture

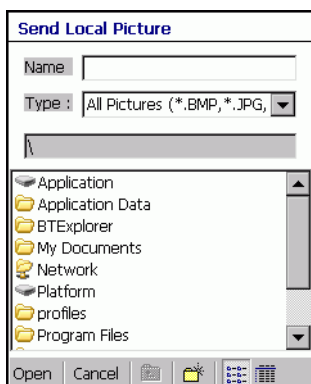
To send a picture to another device:

1. Ensure the vehicle computer is discoverable and connectable. See [Bluetooth Settings on page 7-12](#).
2. Discover and bond (pair) with the remote device. See [Bonding with Discovered Device\(s\) on page 7-5](#).
3. In **BTEplorer**, select the **Remote Devices** folder.
4. Select the **Trusted Devices** folder.
5. Tap the remote device folder.
6. Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.



**Figure 7-4** *OBEX Object Push Window*

7. In the **Action** drop-down list, select **Send A Picture**.
8. Tap **[...]**. The **Send Local Picture** window appears.



**Figure 7-5** *Send Local Picture Window*

9. Navigate to the picture that you want to send to the other device.
10. Tap **Open**.
11. Tap **OK**. The picture is sent to the other device and a confirmation dialog box appears on the other device to accept the picture. A **Send Picture** dialog appears.
12. Tap **Ok**.

## Headset Services

To connect to a Bluetooth headset:

1. Ensure the vehicle computer is discoverable and connectable. See [Bluetooth Settings on page 7-12](#).
2. Discover and bond (pair) with the headset.
3. In **BTEplorer**, select the **Remote Devices** folder.
4. Select the **Trusted Devices** folder.
5. Tap the remote device folder.
6. Tap and hold on the remote device and select **Explore**. A headset service item appears.
7. Tap and hold on the headset service name and select **Connect**.
8. The vehicle computer connects to the headset. Refer to your headset user manual for instruction on communicating with a Bluetooth device.

To adjust the microphone gain:

1. Tap and hold on the headset service item and select **Adjust Microphone** from the pop-up menu. The **Microphone Properties** window appears.
2. Select the slider and adjust the gain.
3. Tap **OK**.

## Serial Port Services



**NOTE** By default, COM ports COM4, COM5 and COM9 are Bluetooth virtual ports. If an application opens one of these ports, the Bluetooth driver activates and guides you through a Bluetooth connection.

Use the wireless Bluetooth serial port connection just as you would a physical serial cable connection. You must configure the application that will use the connection to the correct serial port.

To establish a serial port connection:

1. Ensure the vehicle computer is discoverable and connectable. See [Bluetooth Settings on page 7-12](#).
2. Discover and bond (pair) with the remote device. See [Bonding with Discovered Device\(s\) on page 7-5](#).
3. In **BTEplorer**, select the **Remote Devices** folder.
4. Select the **Trusted Devices** folder.
5. Tap the remote device folder.

6. Tap and hold **Serial Port** and select **Connect** in the pop-up menu. The **Remote Service Connection** window appears.



**Figure 7-6** Remote Service Connection Window

7. In the **Local COM Port** drop-down list select a COM port.
8. Tap **OK**.

## Personal Area Network Services

Connect two or more Bluetooth devices to share files, collaborate or play multi player games.

To establish a Personal Area Network connection:

1. Ensure the vehicle computer is discoverable and connectable. See [Bluetooth Settings on page 7-12](#).
2. Discover and bond (pair) with the remote device. See [Bonding with Discovered Device\(s\) on page 7-5](#).
3. In **BTE Explorer**, select the **Remote Devices** folder.
4. Select the **Trusted Devices** folder.
5. Tap the remote device folder.
6. Tap and hold **Personal Area Network** and select **Connect** in the pop-up menu.

---

## Bluetooth Settings

Use the **BTE Explorer Settings** window to configure the operation of the **BTE Explorer** application. Tap **Tools > Settings**. The **BTE Explorer Settings** window appears.

## Device Info Tab

Use the **Device Info** tab to configure the vehicle computer's Bluetooth connection modes.





**Figure 7-7** BTE Explorer Settings - Device Info Tab

Device Name	Displays the name of the vehicle computer.
Discoverable Mode	Allows you to set the vehicle computer to be discoverable by other Bluetooth devices or not be discoverable. <b>Note:</b> For security reasons, the default is set to <b>Non Discoverable</b> .
Connectable Mode	Allows you to set the vehicle computer to be connectable by other Bluetooth devices or not be connectable. <b>Note:</b> For security reasons, the default is set to <b>Non Connectable</b> .

## Services Tab

✓ **NOTE** For security reason, by default services are not enabled.

Use the *Services* tab to add or delete Bluetooth services.



**Figure 7-8** BTE Explorer Settings - Services Tab

To add a service:

1. Tap **Add**. The **Add Local Service** window displays.



**Figure 7-9** Add Local Service Window

2. In the list, select a service to add.
3. Tap **OK**. The **Edit Local Service** window displays for the selected service.
4. Select the appropriate information and then tap **OK**. See the following paragraphs for detailed information on the available services.

## File Transfer Service

File transfer allows files to be browsed by other Bluetooth devices.



**Figure 7-10** File Transfer Information Window

Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list; None, Authenticate or Authenticate/Encrypt.
Root Directory	Select the directory that other Bluetooth devices can access.
File Permissions	Select the file permissions for the selected directory. Check the appropriate box to grant Read access, write access and delete access.

## Personal Area Networking Service

Personal Area Networking hosts a Personal Area Network which allows communication with other Bluetooth devices.

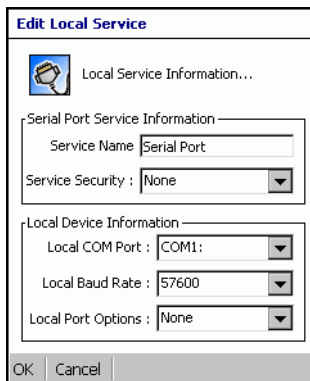


**Figure 7-11** Personal Area Networking Window

Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list; <b>None</b> , <b>Authenticate</b> or <b>Authenticate/Encrypt</b> .
Support Group Ad-Hoc Networking	TBD

## Serial Port Service

Serial port allows COM ports to be accessed by other Bluetooth devices.



**Figure 7-12** Serial Port Service Window

Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list; <b>None</b> , <b>Authenticate</b> or <b>Authenticate/Encrypt</b> .
Local COM Port	Select the COM port. Select COM1 to use a modem or other device that is connected to the connector on the bottom of the vehicle computer.
Local Baud Rate	Select the communication baud rate.
Local Port Options	Select the port option.

## Headset Service

Serial port allows COM ports to be accessed by other Bluetooth devices.



**Figure 7-13** Headset Service Window

Service Name                      Displays the name of the service.

## Security Tab

To adjust the security settings for an individual service, select the **Services** tab first, then select the individual service, then **Properties**.



**Figure 7-14** BTE Explorer Settings - Security Tab

Use PIN Code (Incoming Connecting)

Select for automatic use of the PIN code entered in the **PIN Code** text box. It is recommended not to use this automatic PIN code feature. See [Security on page 7-2](#) for more information.

PIN Code

Enter the PIN code.

Encrypt Link On All Outgoing Connections

Select to enable or disable encryption. Use encryption whenever possible.

## Discovery Tab

Use the **Discovery** tab to set and modify discovered devices.

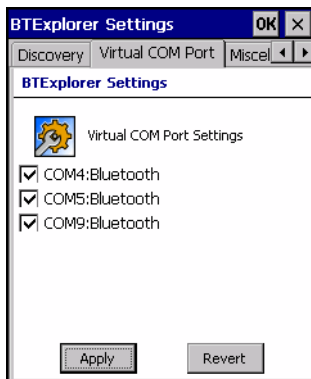


**Figure 7-15** BTE Explorer Settings - Discovery Tab

Inquiry Length	Sets the amount of time that the vehicle computer takes to discover Bluetooth devices in the area.
Name Discovery Mode	Select either <b>Automatic</b> or <b>manual</b> .
Discovered Devices	Deletes all discovered devices and link keys.

## Virtual COM Port Tab

Use the **Virtual COM Port** tab to select the COM ports for Bluetooth communication.



**Figure 7-16** BTE Explorer Settings - Virtual COM Port Tab

COM4:Bluetooth	Enable or disable COM Port 4.
COM5:Bluetooth	Enable or disable COM Port 5
COM9:Bluetooth	Enable or disable COM Port 9

✓ **NOTE** If an application uses one of the COM ports assigned to Bluetooth, opening this port causes the Bluetooth stack to activate and guide you through the connection process.



**Figure 7-17** COM Port Connection

## Miscellaneous Tab



**Figure 7-18** BTE Explorer Settings - Miscellaneous Tab

Highlight Connections

Select the connection type to highlight when connected. In the Wizard Mode, the only option is **Favorites** or **None**. In the **Explorer Mode** the options are **None**, **Tree View Only**, **List View Only** or **Tree and List View**.

Apply Text Style

Select the text style to be applied to the connection text.

Apply Text Color

Select the text color to be applied to the connection text.

# Chapter 8 Sync with Host Computer

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## Introduction

To communicate with a host computer, the host computer requires a synchronization program. After synchronizing the VC70 with a host computer, changes made on the VC70 or host computer appear in both places.

To communicate with a host computer running Windows XP, install Microsoft ActiveSync (version 4.5 or higher).

To communicate with a host computer running Windows 7, install Windows Mobile Device Center (WMDC version 6.1 or higher).

Using a synchronization software:

- Allows working with VC70-compatible host applications on the host computer. The synchronization software replicates data from the VC70 so the host application can view, enter, and modify data on the VC70.
- Synchronizes files between the VC70 and host computer, converting the files to the correct format.
- Backs up the data stored on the VC70. Synchronization is a one-step procedure that ensures the data is always safe and up-to-date.
- Copies (rather than synchronizes) files between the VC70 and host computer.
- Controls when synchronization occurs by selecting a synchronization mode, e.g., set to synchronize continually while the VC70 is connected to the host computer, or set to only synchronize on command.
- Selects the types of information to synchronize and controls how much data is synchronized.

## Installing the Synchronization Software

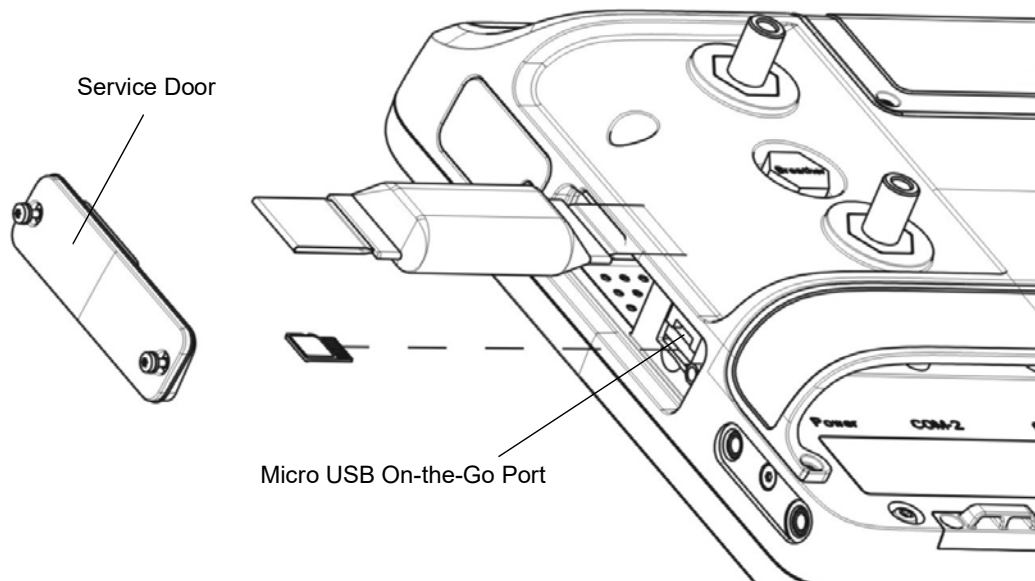
To install ActiveSync on the host computer, download version 4.5 or higher from the Microsoft web site at <http://www.microsoft.com>. Refer to the installation included with the ActiveSync software.

Windows Embedded Compact 7 supports ActiveSync 4.5 on Windows XP. Or, Windows Mobile Device Center on Windows Vista and Windows 7.

## Vehicle Computer Setup

✓ **NOTE** Microsoft recommends installing ActiveSync on the host computer before connecting the vehicle computer.

The vehicle computer can be set up to communicate only by USB. USB connection can be made to the vehicle computer Micro USB (Micro USB On-the-Go) port.



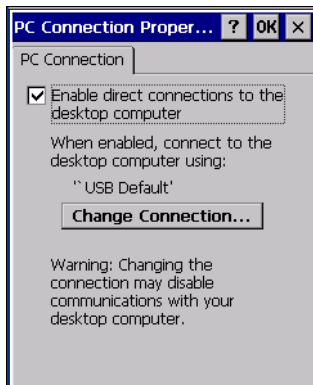
**Figure 8-1** Micro USB On-the-Go Port

*Chapter 2, Installation* provides the accessory setup and cable connection information for use with the vehicle computer. The vehicle computer communication settings must be set to match the communication settings used with ActiveSync.

✓ **NOTE** ActiveSync connection to a host computer can only be done through the micro USB On-the-Go (OTG) port under the side service door. USB scanner plugged into the rugged USB port can not be used when the VC70 is connected to a host computer by ActiveSync.

1. On the vehicle computer tap  > **Settings** > **Control Panel** > **PC Connection** icon. The **PC Connection Properties** window appears.






**Figure 8-2** PC Connection Properties Window

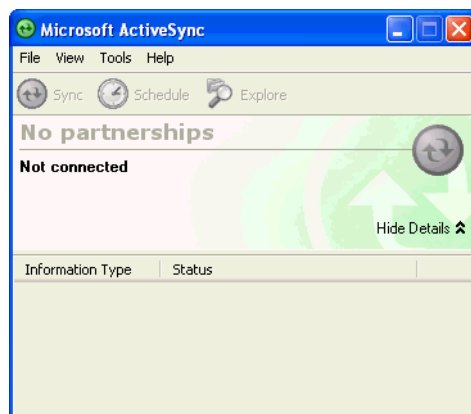
2. Make sure that **Enable direct connections to the desktop computer** check box is checked.
3. Tap **OK** to exit the **PC Connection Properties** window.
4. Proceed with installing ActiveSync on the host computer and setting up a partnership.

## Setting Up an ActiveSync Connection on the Host Computer (Windows XP)

Use this procedure to set up a Sync connection using Windows XP.

To start ActiveSync:

1. Select  > **Programs** > **Microsoft ActiveSync** on the host computer. The **ActiveSync** window displays.



**Figure 8-3** ActiveSync Window



**NOTE** Assign each vehicle computer a unique device name. Do not try to synchronize more than one vehicle computer to the same name.

2. In the *ActiveSync* window, select **File** > **Connection Settings**. The **Connection Settings** window appears.




**Figure 8-4** Connection Settings Window

3. Select the appropriate check box for the type of connection used.
4. If desired, select the **Show status icon in Taskbar** check box.
5. Select **OK** to save any changes made.

## Setting up a Partnership

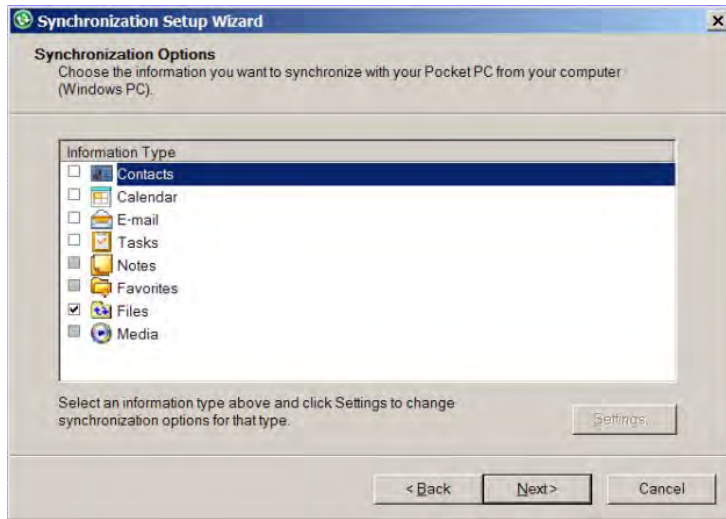
To set up a partnership:

1. If the **Get Connected** window does not appear on the host computer, select  > **All Programs** > **Microsoft ActiveSync**.



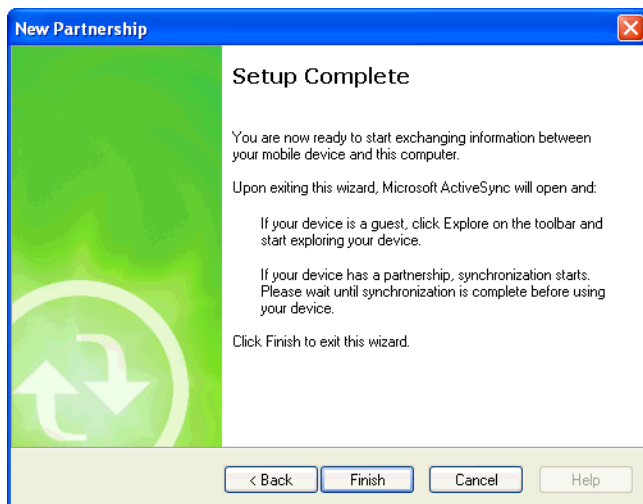
**Figure 8-5** New Partnership Window

2. Click **Cancel** to connect as a guest (normally selected option).
3. Click **Next** to synchronize with host computer.



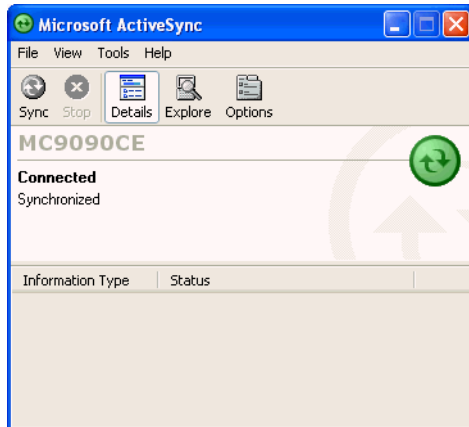
**Figure 8-6** Select Synchronization Setting Window

4. Select the appropriate settings and click **Next**.



**Figure 8-7** Setup Complete Window

5. Click **Finish**.



**Figure 8-8** ActiveSync Connected Window

During the first synchronization, information stored on the vehicle computer is copied to the host computer. When the copy is complete and all data is synchronized, the vehicle computer can be disconnected from the host computer.

- ✓ **NOTE** The first ActiveSync operation must be performed with a local, direct connection. To retain partnerships after a cold boot, capture partnership registry information in a .reg file and save it in the Flash File System, detailed information is provided in the *EMDK Help File*.

For more information about using ActiveSync, start ActiveSync on the host computer, then see ActiveSync Help.

## Setting Up an Windows Mobile Device Center Connection on the Host Computer (Windows 7)

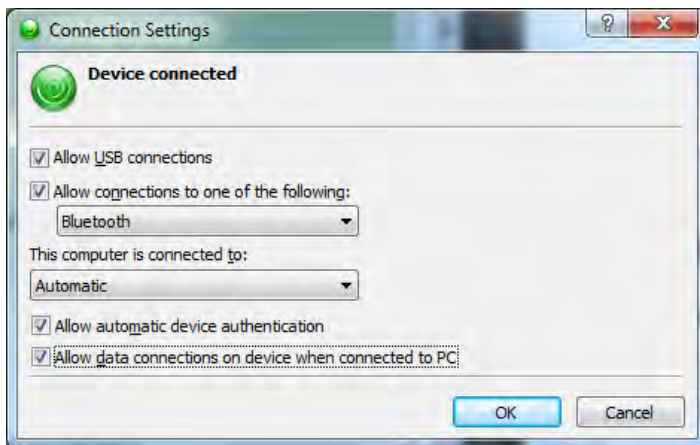
To set up a Sync connection using Windows 7:

1. Select **Start > All Programs > Windows Mobile Device Center** on the host computer.



**Figure 8-9** Windows Mobile Device Center (WMDC) Window

2. In the WMDC window, under **Mobile Device Settings**, click **Connection** settings.



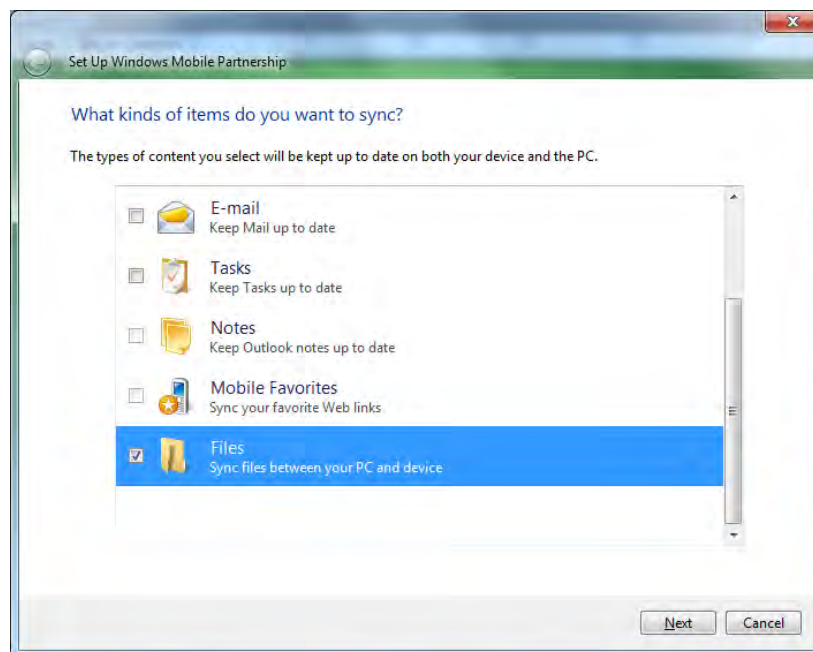
**Figure 8-10** Connection Settings Window

3. Select **Allow USB connections** and adjust any additional settings as needed.
4. Click **OK** to save your settings.

## Setting up a Partnership

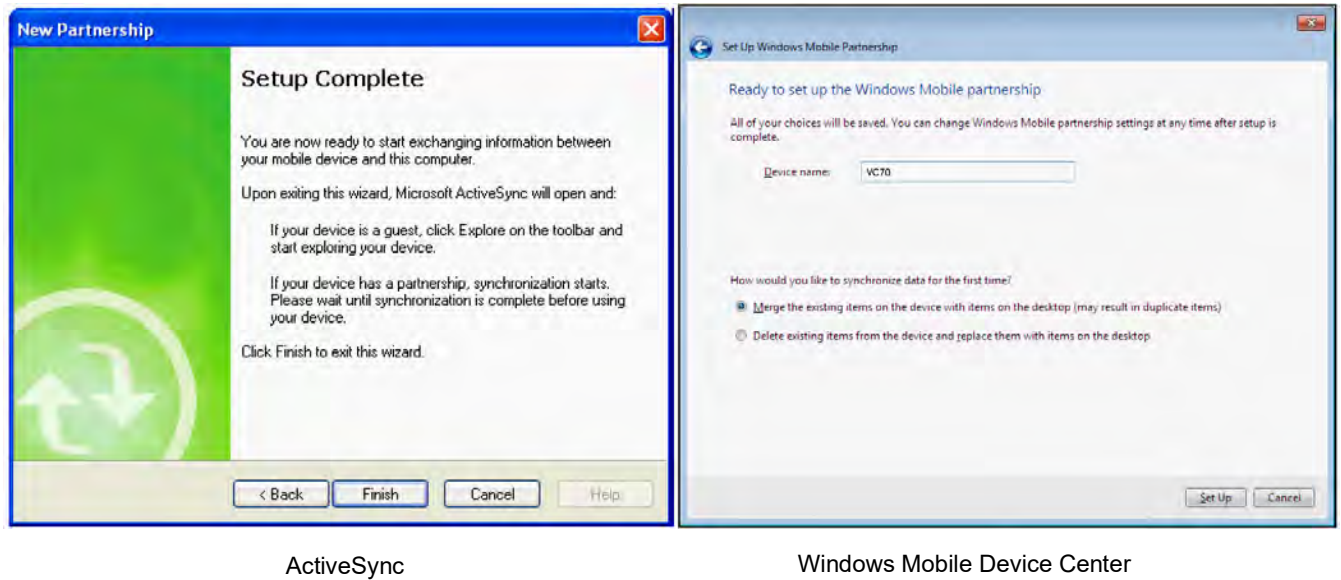
To set up a partnership:

1. If the **Get Connected** window does not appear on the host computer, select **Start > All Programs > Microsoft ActiveSync**.
2. Select if you want to create synchronize with the host computer or to connect as a guest.
3. Click **Next**.



**Figure 8-11** Select Synchronization Setting Window

4. Select the appropriate settings and click **Next**.

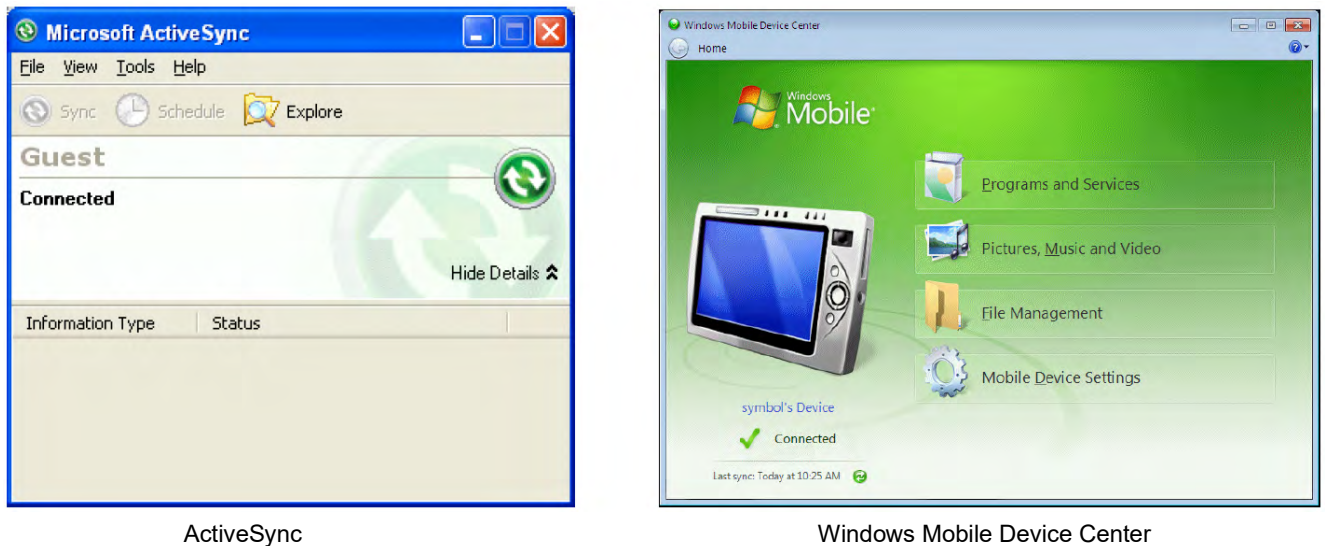


ActiveSync

Windows Mobile Device Center

**Figure 8-12** Setup Complete Window

5. Click **Finish** or **Setup**.



ActiveSync

Windows Mobile Device Center

**Figure 8-13** Connected Window

During the first synchronization, information stored on the VC70 is copied to the host computer. When the copy is complete and all data is synchronized, the VC70 can be disconnect from the host computer.

For more information about using ActiveSync or WMDC, start the application on the host computer, then see Help.

# Chapter 9 Application Development and Deployment

---

## Introduction

This chapter lists the tools required for developing applications, describes how to package applications and provides procedures for deploying applications onto the VC70.

---

## Software Installation on Development PC (Application Development)

To develop applications to run on the vehicle computer, use one or more of the following:

- Zebra Developer Kit (EMDK) for C
- Zebra Developer Kit (EMDK) for .NET
- Windows CE Platform SDK for VC70

The EMDK for C is a development tool used to create native C and C++ applications for all vehicle computers. It includes documentation, header files (.H), and library files (.LIB) for native code application development that targets Zebra value-add APIs.

The Windows CE Platform SDK for the VC70 is used in conjunction with the EMDK for C to create Windows CE applications for the VC70 vehicle computer. The Platform SDK installs a new Windows CE device type and its associated libraries onto the development PC. Visual Studio 2008 is used to develop application for the VC70. The new device (like: Zebra VC70 Windows CE PSDK) is added to the active platform configuration.

## Platform SDK

To download and install the Platform SDK:

1. Download the appropriate Platform SDK from the Support Central web site [www.zebra.com/support](http://www.zebra.com/support)
  - a. On [www.zebra.com/support](http://www.zebra.com/support), select *Support Contacts > Software Downloads*.
  - b. Select Mobile Computers, select Vehicle-Mounted Computers and then select VC70N0.
  - c. Select Software Downloads and then select the latest version of OS Update Image for VC70N0 CE7.
  - d. Save the .exe file to the development computer.
2. Run the file and follow the screen prompts to install.

## Zebra Developer Kit

To install an EMDK:

1. Download the EMDK from the Support Central web site, [www.zebra.com/support](http://www.zebra.com/support):
  - a. On [www.zebra.com/support](http://www.zebra.com/support), select *Support Contacts > Software Downloads*.
  - b. Select *Mobile Computers*, select *Vehicle-Mounted Computers* and then select *VC70N0*.
  - c. Select *Software Downloads* and then select the latest version of the EMDK.
  - d. Save the .exe file to the development computer.
2. Double-click the executable file and follow the install screen prompts.
3. Once installed, access the major components of the EMDK from the *Zebra Developer Kit* program group of the Windows Start Menu. The components include: *Help*, *Platform Integrator*, *Readme*, *Samples*, and *Web Updates*.
4. The sample applications provide examples of how to interface with the Zebra API functions. To build a sample application, open the *Samples* folder from the Windows *Start* menu. Open the folder for the desired sample and then open the project file. The project file has an extension of *VCP*. Microsoft Visual C++ v9.0 automatically launches. Select *WinCE* as the Active WCE Configuration. Select *Win32 (WCE ARMV4I) Debug* as the Active Configuration.

✓ **NOTE** If both Microsoft Visual C++ v8.0 and Microsoft Visual C++ v9.0 are installed on the development computer, ensure Microsoft Visual C++ v9.0 launches.

## Installing Other Development Software

Developing applications for the vehicle computer may require installing other development software such as application development environments on the development PC. Follow the installation instructions provided with this software.

---

## Software Installation on Vehicle Computer

With the appropriate accessory, software, and connection, the vehicle computer can share information with the host device. This chapter provides information about installing software and files on the vehicle computer.


Download or install software using:

- ActiveSync
- Mobility Services Platform (MSP)
- Micro SD Card
- OS Update
- Disk-On Key.

### ActiveSync

Use ActiveSync to copy files from a host computer to the vehicle computer.



1. Ensure that ActiveSync is installed and that a partnership has been created, see [Chapter 8, Sync with Host Computer](#).
2. Connect the vehicle computer to the host computer using a USB cable.
  - ✓ **NOTE** ActiveSync connection to a host computer is done only through the micro USB On-the-Go (OTG) port under the side service door.
3. On the host computer, select  > **Programs > ActiveSync**.
4. Select **Explore**.

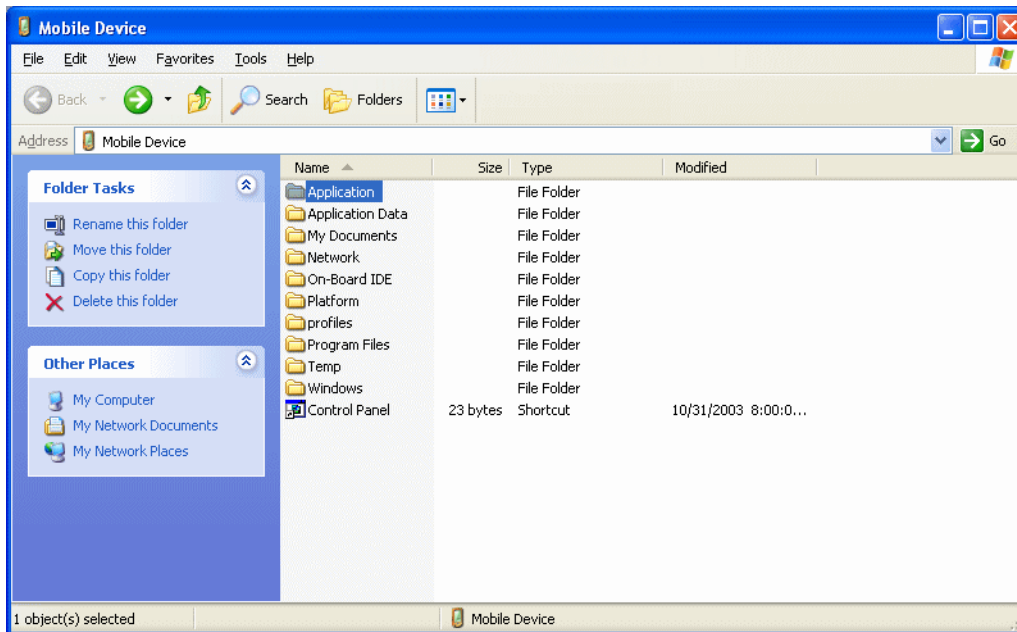


Figure 9-1 ActiveSync Explorer

5. Double-click the folder to expand the contents of the folder.

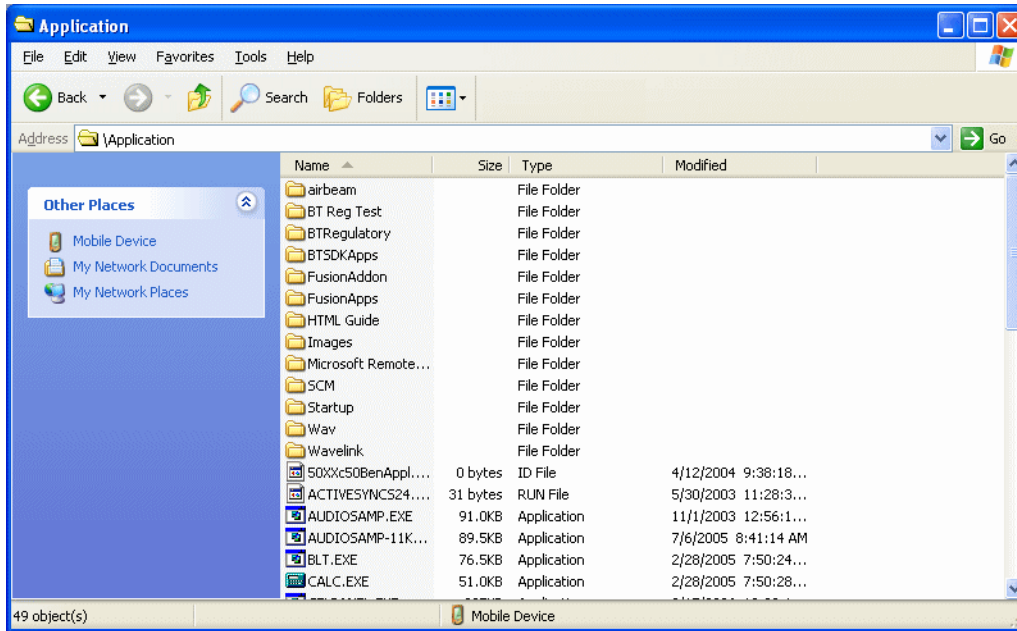


Figure 9-2 Application Folder Contents

6. Use Explorer to locate the host computer directory that contains the file to download. Tap that directory in the left pane to display its contents in the right pane.
7. Drag the desired file(s) from the host computer to the desired mobile device folder.
  - *Program Files* folder: files stored in this folder are discarded after a cold boot.
  - *Application* folder: files stored in this folder are retained after a cold boot.

## Micro SD Card

The Micro SD card can be used to download/upload files to and from the vehicle computer. See [Installing a Micro SD Card on page 2-10](#) for instructions for installing an Micro SD card. To view the contents of the Micro SD card, open Windows Explorer and select Storage Card. You can copy files from the Micro SD card to the vehicle computer or double-tap the executable file to launch the application.

---

## Flash Storage

In addition to the RAM-based storage standard on Windows CE vehicle computers, the vehicle computer is also equipped with a non-volatile eMMC-based storage area which can store data (partitions) that can not be corrupted by a cold boot. This Flash area is divided into two categories: Flash File System (FFS) Partitions and Non-FFS Partitions.

### FFS Partitions

The vehicle computer includes two FFS partitions. These partitions appear to the vehicle computer as a hard drive that the OS file system can write files to and read files from. Data is retained even if power is removed.

The two FFS partitions appear as two separate folders in the Windows CE file system and are as follows:

- Platform: The Platform FFS partition contains Zebra-supplied programs and Dynamic Link Libraries (DLLs). This FFS is configured to include DLLs that control system operation. Since these drivers are required for basic vehicle computer operation, only experienced users should modify the content of this partition.
- Application: The Application FFS partition is used to store application programs needed to operate the vehicle computer.

## Working with FFS Partitions

Because the FFS partitions appear as folders under the Windows CE file system, they can be written to and read like any other folder. For example, an application program can write data to a file located in the Application folder just as it would to the Windows folder. However, the file in the Application folder is in non-volatile storage and is not lost on a cold boot (e.g., when power is removed for a long period of time).

Standard tools such as ActiveSync can be used to copy files to and from the FFS partitions. They appear as the “Application” and “Platform” folders to the ActiveSync explorer. This is useful when installing applications on the vehicle computer. Applications stored in the Application folder are retained even when the vehicle computer is cold booted.

There are two device drivers included in the Windows CE image to assist developers in configuring the vehicle computer following a cold boot: RegMerge and CopyFiles.

### RegMerge.dll

RegMerge.dll is a built-in driver that allows registry edits to be made to the Windows CE Registry. Regmerge.dll runs very early in the boot process and looks for registry files (.reg files) in certain Flash File System folders during a cold boot. It then merges the registry changes into the system registry located in RAM.

Since the registry is re-created on every cold boot from the default ROM image, the RegMerge driver is necessary to make registry modifications persistent over cold boots.

RegMerge is configured to look in the root of two specific folders for .reg files in the following order:

```
\Platform
\Application
```

Regmerge continues to look for .reg files in these folders until all folders are checked. This allows folders later in the list to override folders earlier in the list. This way, it is possible to override Registry changes made by the Platforms partitions folders. Take care when using Regmerge to make Registry changes.

✓ **NOTE** Regmerge only merges the .reg files on cold boots. The merge process is skipped during a warm boot.

Typically, do not make modifications to registry values for drivers loaded before RegMerge. However, these values may require modification during software development. Since these early loading drivers read these keys before RegMerge gets a chance to change them, the vehicle computer must be cold booted. The warm boot does not re-initialize the registry and the early loading driver reads the new registry values.

Do not use Regmerge to modify built-in driver registry values, or merge the same Registry value to two files in the same folder, as the results are undefined.

### CopyFiles

Windows CE expects certain files to be in the Windows folder, residing in volatile storage. Windows CE maintains the System Registry in volatile storage. CopyFiles copies files from one folder to another on a cold boot. Files can be copied from a non-volatile partition (Application or Platform) to the Windows or other volatile partition during a cold boot. During a cold boot CopyFiles looks for files with a .CPY extension in the root of the Platform and

Application FFS partitions (Platform first and then Application). These files are text files containing the source and destination for the desired files to be copied separated by ">". The following example from the file application.cpy is contained on the demo application partition included. It can also be obtained from the Support Central web site at [www.zebra.com/support](http://www.zebra.com/support).

Files are copied to the Windows folder from the Flash File System using copy files (\*.cpy) in the following order:

```
\Platform
  \Application
```

Example:

```
\Application\ScanSamp2.exe>\Windows\ScanSamp2.exe
```

This line directs CopyFiles to copy the ScanSamp2.exe application from the \Application folder to the \Windows folder.

## Non-FFS Partitions

Non-FFS Partitions include additional software and data pre-loaded on the vehicle computer that can be upgraded. Unlike FFS Partitions, these partitions are not visible when the operating system is running. They also contain system information. Non-FFS partitions include the following:

- Windows CE: The complete Windows CE operating system is stored on Flash devices. If necessary, the entire OS image may be downloaded to the vehicle computer using files provided by Zebra. The current OS partition on the vehicle computer is included as part of the installation package. Any upgrades must be obtained from Zebra. This partition is mandatory for the vehicle computer.
- Splash Screen: a bitmap smaller than 16 Kb (and limited to 8 bits per pixel) is displayed as the vehicle computer cold boots. To download a customized screen to display, see [Flash Storage on page 9-4](#).

✓ **NOTE** 8 bits per pixel only applies to splash screen images. Once Windows CE is running, the color density is 16 bits per pixel.

- IPL: This program interfaces with the host computer and allows downloading via serial cable any or all of the partitions listed above, as well as updated versions of IPL. Use caution downloading updated IPL versions; incorrect downloading of an IPL causes permanent damage to the vehicle computer. IPL is mandatory for the vehicle computer.
- Partition Table: Identifies where each partition is loaded in the vehicle computer.

# Chapter 10 Staging and Provisioning

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## Introduction

The Mobility Services Platform (MSP) 3 Client Software is a set of software components that come pre-installed on the VC70. This integrated software service provides support for your MSP application, including server software, and mobile client software.

Refer to the Mobility Services Platform 3.2 User's Guide, p/n 72E-100158-06, for instructions for using the Rapid Deployment MSP 3 Agent clients.




**NOTE** Rapid deployment client is supported with all scanners that communicate with SSI (serial SSI or Wireless SSI) with the VC70.

## MSP 3 Agent

The MSP 3 Agent provides MSP 3 Provisioning functionality and Control functionality when used with MSP 3.2 Control Edition.

MSP client pre-requisites:

1. The device is connected over WLAN or over wired LAN, and receives IP address.
2. External scanner is connected to provide "Image Update" info scanning option.
3. Barcode image is available.

After all pre-requisites are applied, the MSP client is activated using  **Programs > Rapid Deployment Client menu.**

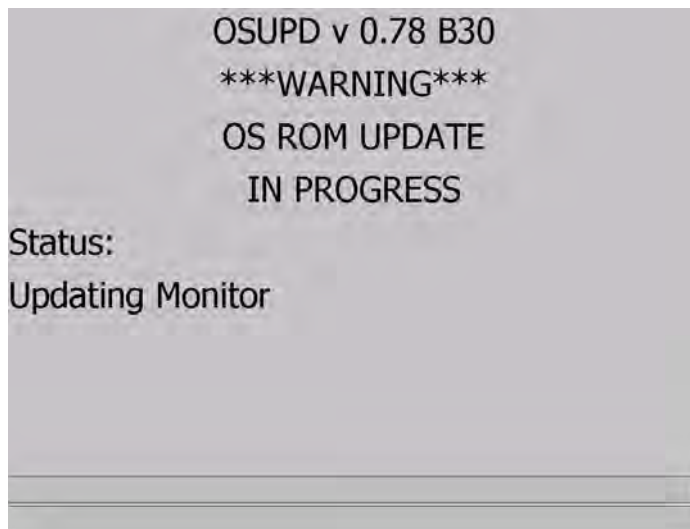
Once the device had acquired the IP address and Rapid Deployment client scanned the provided bar code:

1. The MSP Client contacts the MSP server.
2. The MSP server downloads required files for update to the required location on the device (Micro SD card or other).
3. The MSP client activates update process.
4. The update process normally performs a special sort of boot, followed by flashing of the downloaded files.

- When flashing is over, the device is automatically rebooted.

✓ **NOTE** The above steps do not require any user interaction.

- The screen is an example of screens shown on the device during the update process performed via OS Update utility.



**Figure 10-1** Screen Shown During the Update Process Performed Via OS Update Utility

## AppCenter

The Title tab enables the creation of a custom title to display in the Launch Screen taskbar instead of the default AppCenter title.

- Alternate Title - enter the text for a custom title that will appear in the taskbar. This title overrides the default AppCenter title.
- Display MAC address as title - displays the device MAC address as the taskbar title. If a device does not have a MAC address, the AppCenter title appears.
- To replace the "AppCenter" title in the Launch Screen taskbar with the VC70's IP address:  
 §- VC70 > **appcenter** > **admin login** > **tools** > **options** > **title tab** > **Display IP Address**.  
 §- VC70 > **appcenter** > **admin login** > **tools** > **options** > **signal tab** > **adapter name** > **NPMEIXWING20\_1**

✓ **NOTE** The adapter name must be correct on all devices to display the MAC address as the taskbar title.

- Display IP address as title - displays the device IP address as the taskbar title.
- To replace the "AppCenter" title in the Launch Screen taskbar with the VC70's Mac Address:  
 - VC70 > **appcenter** > **admin login** > **tools** > **options** > **title tab** > **Display Mac Address**.  
 - VC70 > **appcenter** > **admin login** > **tools** > **options** > **signal tab** > **adapter name** > (needs to be blank)

✓ **NOTE** The adapter name must be correct on all devices to display the IP address as the taskbar title.

✓ **NOTE** Once started, exiting the AppCenter may requires entering a password. If password is required, use the password **zebra**.

# Chapter 11 Software Configuration

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## Introduction

This chapter provides instructions required for upgrading the VC70 software. This chapter also provide information on registry settings commonly used in the VC70.

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## VC70 Operating System - Image Upgrade

### Updating the Image

#### Monitor Mode

A Monitor Mode (also called Boot Loader) is used to update the image into memory and then jump to the OS startup routine. Monitor Mode quickly download the new image to the VC70. The Monitor Mode software resides in nonvolatile storage on the VC70 and executes when the system powers up or resets.

#### To Update the Image



On the PC side, perform the following steps:

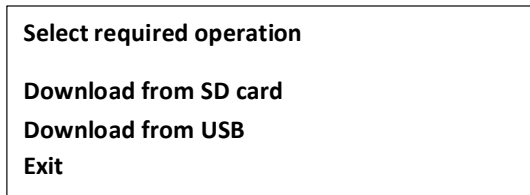
1. Copy and unzip the BSP package file to your PC (extracted content: MLO and monitor.nb0 files and VC70N0 folder with all its files).
2. Copy the extracted content of the BSP package file to the root directory of the microSD card.

✓ **NOTE** Use Micro SD Card (Preferred SDHC Class 10), with up to 32GB free space.

On the VC70 side, perform the following steps:

1. Connect the VC70 to external power.
2. Remove the VC70 Service Door using T8 TORX head screwdriver.
3. Insert the microSD Card into microSD Card Slot of the VC70.

4. On the front panel of the VC70, simultaneously, press the **P1**, **P3** and **Power**  keys.
5. Once the screen is switched off, press the **Menu** key  until the following options screen is displayed:



6. On the front panel of the VC70, use the “+” and “-” keys to navigate to the **Download from SD card** option and press **P3** key to select - a list of files is displayed.
7. Select the *AllLoad.mcf* file and press the **P3** key to start downloading the OS image files to the VC70.
8. Once all files are downloaded, the monitor temporarily turns off. **DO NOT DISCONNECT THE VC70 FROM POWER.** Once installation is completed, the VC70 re-boots with the new OS image.
9. On the VC70 desktop, double tap **My Device** > **Control Panel** > **System Info** and verify the a new image is installed.

## OSUpgrade Mode

OsUpdate Application is an operating system application used to update the operating system of the VC70.

The OsUpdate Application is launch manually (not through the MSP service) by the user.

To update the operating system:

1. Unzip Release Package (VC70N0 CE).

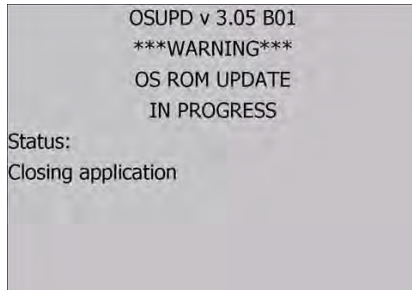


**Figure 11-1** OSUpdate Folder

2. Copy OSUpdate folder (this is Update Loader Package) into the \Temp directory of the VC70 or the root directory of a microSD storage card.



- From the \Temp or root directory of the microSD, double tap the VC70c70Ben\_TEMP file (or VC70c70Ben\_SD file if the package is stored on the microSD) to run the update package. The update process starts and the OS ROM UPDATE IN PROGRESS screen displayed.



**Figure 11-2** OS ROM UPDATE IN PROGRESS Screen

---

## Switch Between Microsoft and StoneStreet One (SS1) Bluetooth Stack

Use the following registry settings to switch between MS Stack and SS1 Bluetooth stack:

[HKEY\_LOCAL\_MACHINE\SOFTWARE\SymbolBluetooth]

"SSStack"=dword:0 - StoneStreet stack is disabled and Microsoft stack is enabled (default value).

"SSStack"=dword:1 - StoneStreet stack is enabled and Microsoft stack is disabled.

After changing the registry key, a warm boot is needed for it to take effect.

If it is required for the change to survive cold boot, a reg file with the above registry key can be created and placed in the Application folder."

---

## Often Used Registry Settings

### Power Suspend

To modify the power suspend settings:

**Key Name:** [HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Control\Power\Timeouts]

- **Name:** ACSuspendTimeout
  - **Data Type:** dword
  - **Description:** To suspend the device when not used for a certain period of time when operating on external power.

✓ **NOTE** When connected to external power, the VC70 enters the "unattended" state rather than "low power mode" state.

- **Default Value:** 00000000: 0 seconds (never)
- **Options:**
  - 00000000: Never.
  - 00000060: 1 minute.
  - 00000120: 2 minutes.
  - 00000180: 3 minutes.

- 00000300: 5 minutes.
- 00000600: 10 minutes.
- 00000900: 15 minutes.
- 00001800: 30 minutes.
- **Name:** BattSuspendTimeout
- **Data Type:** dword
- **Description:** To suspend the device when not used for a certain period of time when operating on battery power.
- **Default Value:** 00000015: 15 seconds
- **Options:**
  - 00000000: Never.
  - 00000030: 30 seconds.
  - 00000060: 1 minute.
  - 00000120: 2 minutes.
  - 00000180: 3 minutes.
  - 00000240: 4 minutes.
  - 00000300: 5 minutes.
  - 00000360: 6 minutes.

## COM1 Power Output to Scanner

**Key Name:** KEY\_CURRENT\_USER\ControlPanel\SystemManagement\ScannerPowerLine

- **Name:** ScannerPowerLine1State
- **Description:** Selects COM1 output power on/off after VC70 boot up.
- **Default Value:** ScannerPowerLine1State: Power on.
- **Options:**
  - 0: Power off.
  - 1: Power on.

## COM2 Power Output to Scanner

**Key Name:** KEY\_CURRENT\_USER\ControlPanel\SystemManagement\ScannerPowerLine

- **Name:** ScannerPowerLine2State
- **Description:** Selects COM1 output power on/off after VC70 boot up.
- **Default Value:** ScannerPowerLine2State: Power on.
- **Options:**
  - 0: Power off.
  - 1: Power on.

## External Antenna

**Key Name:** [HKEY\_CURRENT\_USER\ControlPanel\SystemManagement\Antenna Selection]

- **Name:** SelectedAntenna
  - **Data Type:** dword
  - **Description:** Selects internal or external antenna.
  - **Default Value:** 00000000: Internal antenna.
  - **Options:**
    - 00000000: Internal antenna.
    - 00000001: External antenna.

## Ignition Timeout

**Key Name:** [HKEY\_CURRENT\_USER\ControlPanel\SystemManagement\IgnSense]

- **Name:** Ignition Timeout
  - **Data Type:** dword
  - **Description:** Forklift ignition timeout
  - **Default Value:** 00000180: 3 minutes.
  - **Options:**
    - 00000000: Never.
    - 00000060: 1 minute.
    - 00000120: 2 minutes.
    - 00000180: 3 minutes.
    - 00000300: 5 minutes.
    - 00000600: 10 minutes.
    - 00000900: 15 minutes.
    - 00001800: 30 minutes.

## Registry Values for P1/P2/P3/P4 Keys

**Key Name:** [HKEY\_LOCAL\_MACHINE\SOFTWARE\symbol\ProgrammableKeys\P1]  
 [HKEY\_LOCAL\_MACHINE\SOFTWARE\symbol\ProgrammableKeys\P2]  
 [HKEY\_LOCAL\_MACHINE\SOFTWARE\symbol\ProgrammableKeys\P3]  
 [HKEY\_LOCAL\_MACHINE\SOFTWARE\Symbol\ProgrammableKeys\P4]

- **Name:** Action
  - **Data Type:** REG\_dword
  - **Description:** Sets the function of the Px key.
  - **Default Value:** 00000000: No action.
  - **Options:**
    - 00000000: No action.
    - 00000001: Launch Application.
    - 00000002: Simulate Key Press.
    - 00000003: Toggle SIP.
    - 00000004: Toggle Touch.
    - 00000005: Play Key Sequence.
    - 00000006: Launch calibration.

- **Name:** ApplicationPath
  - **Data Type:** String
  - **Description:** Used to specify which application to invoke with the press of Px key. Required only when action is Launch Application.
- **Name:** CommandLine
  - **Data Type:** String
  - **Description:** Used to specify any command line argument to the application to be invoked with the press of Px key. Required only when action is Launch Application.
- **Name:** Modifier
  - **Data Type:** dword
  - **Description:** Used to specify modifier key for the simulated key press P1. Required only when action is Simulate Keypress.
- **Name:** RepeatKey
  - **Data Type:** dword
  - **Description:** Used to specify if repeat key is on or off. required only when action is Simulate Keypress.
- **Name:** KeyPress
  - **Data Type:** String
  - **Description:** Used to specify key press for Simulate Key press. Required only when action is Simulate Keypress.
- **Name:** KeySequence
  - **Data Type:** String
  - **Description:** Used to specify key press for Simulate Key press. Required only when action is Simulate Keypress.

## Disabling the Fusion RX Sensitivity Degradation

**Key Name:** [HKEY\_LOCAL\_MACHINE\Comm\XWING20\_1\Parms]

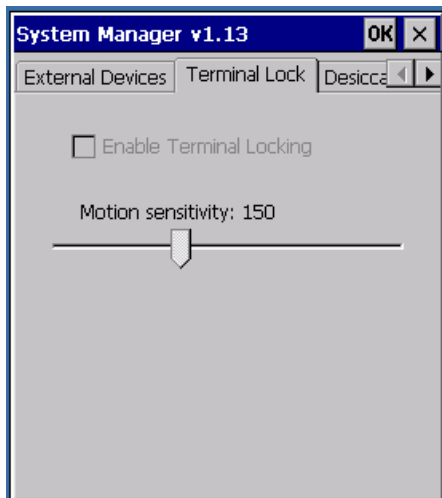
DesenseRxEnable="1"

## VC70N0 WinCE 7.0 Registry Settings for Control Panel Applets

This memo describes some Registry parameters that controls the control panel System Manager applet.

### Screen locking feature

By default terminal lock feature is disabled.

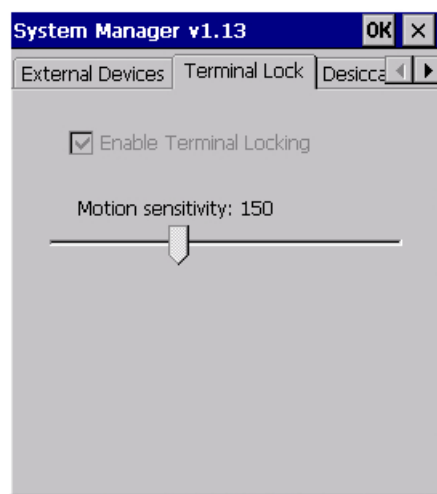


**Figure 11-3** Figure 1: Terminal Lock disabled

To enable it set the following registry value:

[HKEY\_CURRENT\_USER\ControlPanel\SystemManagement\TermLock]

"Enabled Terminal Locking"=dword:00000001



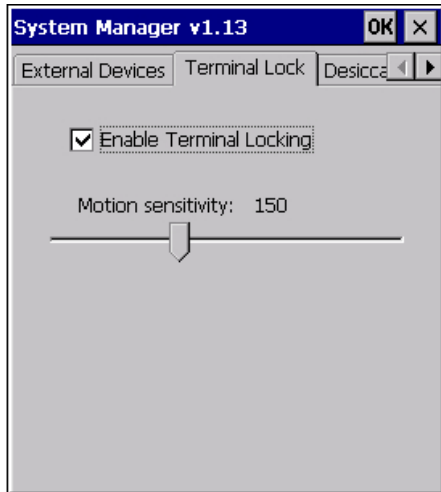
**Figure 11-4** Figure 2: Terminal Lock enabled

By default Terminal Lock applet is read only.

To gain read/write access to this applet, set the registry:

[HKEY\_CURRENT\_USER\ControlPanel\SystemManagement\TermLock]

"Administrator Terminal Locking"=dword:00000001

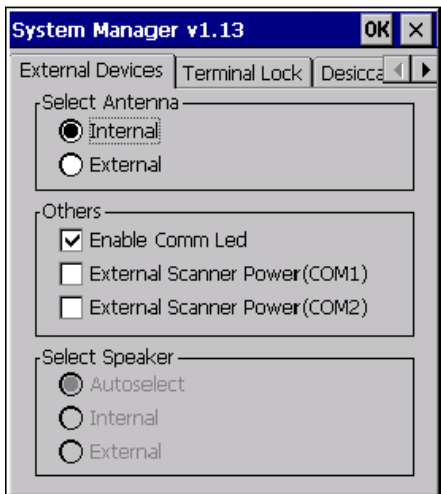


**Figure 11-5** Figure 3: Read-write access to Terminal Lock applet

## Speaker control

Speaker control is determined by the values located at:

[HKEY\_CURRENT\_USER\ControlPanel\SystemManagement\SpeakerControl] registry key



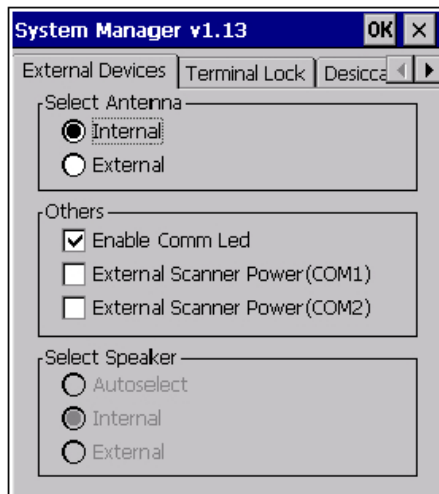
**Figure 11-6** Figure 4: Speaker control default state

To select Internal or external speaker modify the following value:

[HKEY\_CURRENT\_USER\ControlPanel\SystemManagement\SpeakerControl]

"SelectedSpeaker"=dword:00000004

For example, set "SelectedSpeaker"=dword:00000001 for internal speaker



**Figure 11-7** Figure 5: Internal speaker selected

To gain read/write access from this applet set:

```
[HKEY_CURRENT_USER\ControlPanel\SystemManagement\SpeakerControl]
```

```
"Administrator Speaker Control"=dword:00000001
```

## Setting COM5 as Default Serial Port

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\BarcodeReaderBT\Settings]
```

```
"PortName"="\\$device\COM5"
```

---

## Disable SIP from Auto-Launching

Use the following system registry key and value to disable SIP from auto-launching:

```
[HKEY_CURRENT_USER\ControlPanel\Sip]
```

```
"Disabled"=dword:00000001
```

---

## Force Warm Boot or Cold Boot After Resuming From Critical Suspension

When resuming from Critical Suspension, Cold or Warm Boot should be performed (depends on user preference) to insure starting from clean environment.

Cold or Warm Boot is especially important after resuming from critical suspend that resulted from pressing on the Power button or after the backup battery of the VC70 is depleted.

Running the PwrSrc.reg file, insures that the system will resume by either performing Cold or Warm boot.

To force Warm Boot or Cold Boot after resuming from critical suspension:

1. Using a text editor, create a file named PwrSrc.reg (registry key). The content of the file shall be according the following examples:

- The following registry section is used for critical resume after depleted battery:

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SMD\PwrSrc]

; 0 - warm boot, 1 - cold boot

"ResumeFromCSBootType"=dword:00000000

Set:

"ResumeFromCSBootType"=dword:00000000 for Warm Boot

"ResumeFromCSBootType"=dword:00000001 for Cold Boot

- The following registry section is used for critical resume after Power button turn off:

; 0x0008 battery very low 0x0010 Main Power Switch OFF/ON

"CSReasonForBoot"=dword:00000001

Set:

"CSReasonForBoot"=dword:00000000 for Warm Boot

"CSReasonForBoot"=dword:00000001 for Cold Boot

- The following registry section is used for critical resume after Power disconnection from the VC70:

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SMD\PwrSrc] "CSOnExtPwrOff"=dword:1

By default, Critical Suspend is not issued on external power disconnection and the VC70 continues to operate.

- The following registry section is used for critical resume after Power connection to the VC70:

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SMD\PwrSrc] "BootOnExtPwrOn"=dword:1 for Warm Boot

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SMD\PwrSrc] "BootOnExtPwrOn"=dword:2 for Cold Boot

By default, no boot is issued on external power connection and the VC70 continues to operate.

- The following registry section is used for boot upon resuming from critical suspend:

[HKEY\_LOCAL\_MACHINE\Drivers\BuiltIn\SMD\PwrSrc]

; Set Critical Suspend reason tmask), indicates on what

; Critical Suspend reboot is required

"CSReasonForBoot"=dword:00000008 ; 0x0008 battery very low



```
; Set boot type that is required on resume from Critical Suspend  
; 0 - Warm boot, 1 - Cold boot  
"ResumeFromCSBootType"=dword:0
```

By default, no boot is issued on resume from Critical Suspend and the VC70 continues to operate.

2. Save and run the PwrSrc.reg file to implement change.



# Chapter 12 Maintenance

---

## Introduction

This chapter includes instructions on cleaning and storing the vehicle computer, and provides troubleshooting solutions for potential problems during vehicle computer operation.

---

## Maintaining the Vehicle Computer

- ✓ **NOTE** Whenever the VC70 is being replaced on a fork lift, ensure that the VC70 is compatible with the power cable installed on the truck.

For trouble-free service, observe the following tips when using the vehicle computer:

- Take care not to scratch the screen of the vehicle computer. When working with the vehicle computer, use your finger tip or plastic-tipped pens intended for use with a touch-sensitive screen. Never use an actual pen or pencil or other sharp object on the surface of the vehicle computer screen.
- Although the vehicle computer is water and dust resistant, do not expose it to rain or moisture for an extended period of time. In general, treat the vehicle computer as you would any other electronic device.
- The screen of the vehicle computer is glass. Do not drop the vehicle computer or subject it to strong impact.
- Protect the vehicle computer from temperature extremes.
- Do not store or use the vehicle computer in any location that is extremely dusty, damp, or wet.
- Use a soft lens cloth to clean the vehicle computer. If the surface of the vehicle computer screen becomes soiled, clean it with a soft cloth moistened with a diluted window-cleaning solution.
- Periodically check nuts and bolts to ensure they are tightened to the proper torque.
- Ensure that you have spare screws when changing desiccant bags and SD cards.

## Returning the Vehicle Computer for Service

- ✓ **NOTE** Zebra has taken great care to ensure environmental conditions such as humidity will not affect the stability of the vehicle computer. This is accomplished by means of desiccant bags which can be inserted by the user upon receipt of the vehicle computer. In the event, the vehicle computer needs to be shipped by air carrier to Zebra for repair or maintenance, it is essential that the user remove the desiccant door cover before the vehicle computer is packaged for shipment. The reason for this step is to avoid compromising the vehicle computer as a result of pressurization during air transit. The user must simply remove the screws associated with the desiccant door on the back of the unit. Discard the used desiccant bags. Upon receipt of the repaired vehicle computer, the user should insert new desiccant bags (if used) and reseal the doors using new screws.

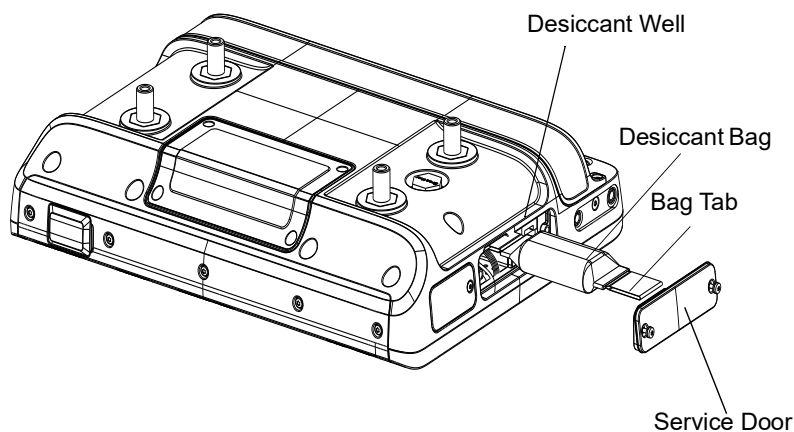
## Replacing the Desiccant Bag

1. The VC70 ships with a desiccant bag installed. The installer may wish to replace the desiccant in the VC70 with a new bag prior to installing the VC70 on the vehicle, as transit and storage may have saturated the desiccant.
2. Open the two screws securing the service door and remove the door.



**CAUTION** Do not use any sharp tool to pull the desiccant bag out of the VC70. Failure to comply may cause tear of the bag and damage to the VC70.

3. Pull out the old desiccant bag using the attached tab.
4. Open the new desiccant package and remove the desiccant bag.
5. Fold the four corners of the bag under to form a pillow.
6. Place the desiccant bag in the desiccant well.



**Figure 12-1** Replacing the Desiccant Bag

7. Carefully place the service door onto the right side of the housing.



**CAUTION** Be sure to torque the screws to seal the device properly. Otherwise, sealing can be compromised.

8. Secure the door to the housing using the two captive screws. Torque to  $9 \pm 0.5$  kgf.cm ( $7.8 \pm 0.4$  in-lbs).

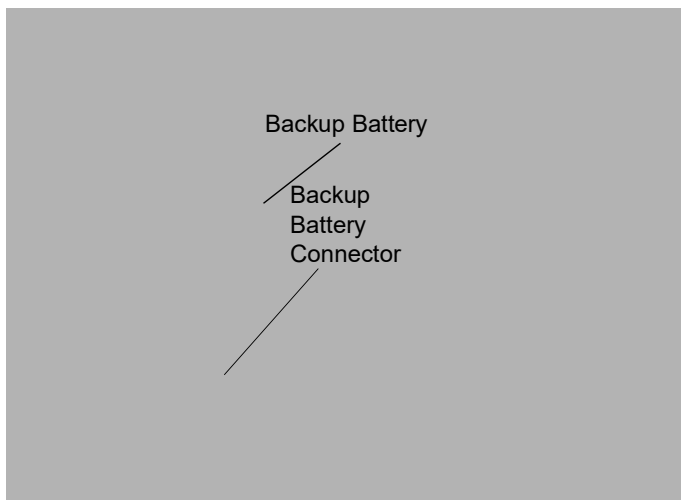
## Replacing the Backup Battery

To replace the backup battery:



**CAUTION** Use ESD precautions when installing the backup battery.

1. Disconnect the power cable from the VC70. The VC70 will continue to work on backup battery power.
2. Perform cold boot. The backup battery will stop powering the VC70.
3. Open the four screws securing the Backup Battery door on the back of the vehicle computer and remove the door.
4. Open the four screws securing the Backup Battery and disconnect the Backup Battery connector.
5. Carefully pull the Backup Battery out of the computer.
6. Place the new backup battery into the well.



**Figure 12-2** Replacing the Backup Battery

7. Connect the Backup Battery connector to the connector inside the Backup Battery well.
8. Secure the battery into location using four screws.
9. Place the Backup Battery door over the battery and secure using the four captive screws.



**CAUTION** Be sure to torque the screws to seal the device properly. Otherwise, sealing can be compromised.

10. Torque the screws to 9 +/- 0.5 kgf.cm (7.8 ± 0.4 in-lbs).
11. Connect the power cable to the VC70.

It takes four hours to fully charge the Backup Battery.

## Troubleshooting

**Table 12-1** Vehicle Computer Problems

Symptom	Possible Cause	Action
Vehicle computer does not power on or shuts off suddenly.	The power cable ignition sense wire (yellow) is not connected properly.	Verify that the power cable is connected properly. See <a href="#">Forklifts and Trucks with 12V, 24V, 36V and 48V Batteries on page 2-3</a> .
	Main power switch on right side of the vehicle computer is in the Off position.	Turn the main power switch on.
	Power cable not connected properly or unplugged.	Connect power cable to power cable portion underside of vehicle computer. Turn the main power switch on.
	If the vehicle computer is powered by a vehicle battery, the vehicle battery is depleted.	Replace or charge the vehicle battery.
Cannot see characters on display.	Vehicle computer not powered on (Power LED is off).	Press the Power switch on the side of the vehicle computer.  Turn the main power switch on top of the vehicle computer to the on position.
	Screen is too bright/dark.	Adjust the brightness; see <a href="#">Adjusting the Brightness on page 3-12</a> .
	Display not adjusted properly.	Select <b>Display</b> in the Control Panel settings and adjust the display.
	The vehicle computer is in low power mode (Power LED is on).	Press the Power button on the Quick Access Panel to turn on the vehicle computer.
Touchscreen not working.	Display not properly calibrated.	Recalibrate the screen through the Control Panel Calibration utility. If problem continues, contact Zebra support. See <a href="#">Service Information on page xiv</a> .
	Replacement screen protector was not applied correctly.	Replace or re-apply screen protector.

**Table 12-1** Vehicle Computer Problems (Continued)

Symptom	Possible Cause	Action
Optional serial scanner does not operate.	Scanner is not properly connected to the vehicle computer.	Connect the scanner to the COM1 port. Ensure the proper COM port is selected in the DataWedge application, see <a href="#">DataWedge Scanner Connection on page 4-1</a> . If the problem continues, refer to the scanner Product Reference Guide.
	DataWedge application is not enabled or set to the correct COM Port.	Ensure that the DataWedge application is enabled and set to the correct port. See <a href="#">DataWedge Scanner Connection on page 4-1</a> .
	External power is not connected.	Verify external power connection.
No sound is heard when you tap the touchscreen or press a key.	Volume is turned down.	Adjust the volume in the Control Panel.
	Application currently running disabled the sound.	Configure the application to enable the sound.
	Faulty speaker.	Contact Zebra support. See <a href="#">Service Information on page xiv</a> .
	The optional external speaker cable is connected without the speaker.	Connect the external speaker, or, disconnect the cable.
Missing pixels on the display.	Faulty LCD.	Contact Zebra support. See <a href="#">Service Information on page xiv</a> .
COM1 or COM2 port is not working.	Another application, ActiveSync or SerialWedge is using the port.	Stop the application using the port, disconnect the ActiveSync cable from the host, or change the SerialWedge COM Port Settings.
No response when ActiveSync is initiated.	ActiveSync cable not connected properly.	Connect the ActiveSync cable.
	ActiveSync is not configured properly.	Configure ActiveSync in the Control Panel. See <a href="#">Setting Up an ActiveSync Connection on the Host Computer (Windows XP) on page 8-3</a> .
No keys are working on the optional or built-in keyboard.	The optional keyboard is not properly connected to the vehicle computer.	Check the cable connections between the keyboard and the vehicle computer.
	The application does not require keyboard input.	Configure the application to use the keyboard.
	Vehicle computer is not responding.	Warm boot the vehicle computer.
COMM LED is off.	Lost network connection.	If problem continues, contact Zebra support. See <a href="#">Service Information on page xiv</a> .
	COMM LED is turned off.	Enable the COMM LED using the Control Panel. See <a href="#">COMM LED on page 3-5</a>

**Table 12-1** *Vehicle Computer Problems (Continued)*

Symptom	Possible Cause	Action
Vehicle computer cannot find any Bluetooth devices nearby.	Too far from other Bluetooth devices.	Move closer to the other Bluetooth device(s), within a range of 10 meters.
	The Bluetooth device(s) nearby are not turned on.	Turn on the Bluetooth device(s) you wish to find.
	The Bluetooth device(s) are not in discoverable mode.	Set the Bluetooth device(s) to discoverable mode. If needed, refer to the device's user documentation for help.
When installed on some electric forklifts, the scanner range is shorter than it is when installed on other forklifts.	Electro-magnetic interference caused by the forklift.	Consult forklift vendor about reducing the interference by adding a capacitor between the forklift chassis and its battery's negative terminal, or by providing another solution
When installed on some old electric forklifts, fuse on power cable blows or VC70 power supply turn off during forklift operation.	High voltage surge in forklift power system.	Add a filter between forklift battery and VC70 power supply. Consult forklift manufacturer on recommended filter type.



# Appendix A Specifications

## Technical Specifications

The following tables summarize the vehicle computer's intended operating environment and general technical hardware specifications.

### Vehicle Computer

The following table summarizes the vehicle computer's intended operating environment.

**Table A-1** *Technical Specifications*

Item	Characteristics
<b>Physical and Environmental Characteristics</b>	
Dimension	11.5 in. L x 8.9 in. W x 2.4 in. D 291 mm L x 225.4 mm W x 60 mm D
Weight	9.4 lbs./4.3 kg
Keyboard Options	3 keyboards, all backlit with IP66 sealing and tactile feedback: QWERTY or AZERTY, 65-key with function keys F1-F24; side-mounted 21-key Numeric/Functional keypad
Power	External IP66 sealed 9-60V DC/DC converter for all engines with 12V, 24V, 36V or 48V truck battery; External 100-240VAC power supply for AC-powered carts
Integrated Dual-function Battery	Provides up to 30 minutes session persistence during forklift battery swap and up to 72 hours RAM backup
Display	10.4 in. color XGA (1024 x 768) LCD; 600 NIT LED backlit; resistive touchscreen; auto brightness control with ambient light sensor or manual control; motion sensing blanking
Interface Ports	Standard sealed and secured connectors: 2 RS-232 serial ports (both with 5V/1.5A on pin 9) 2 USB port (host, both 5V/1.5A) 1 USB OTG (service) CAN-Bus (J1939) 10/100Mbps Ethernet

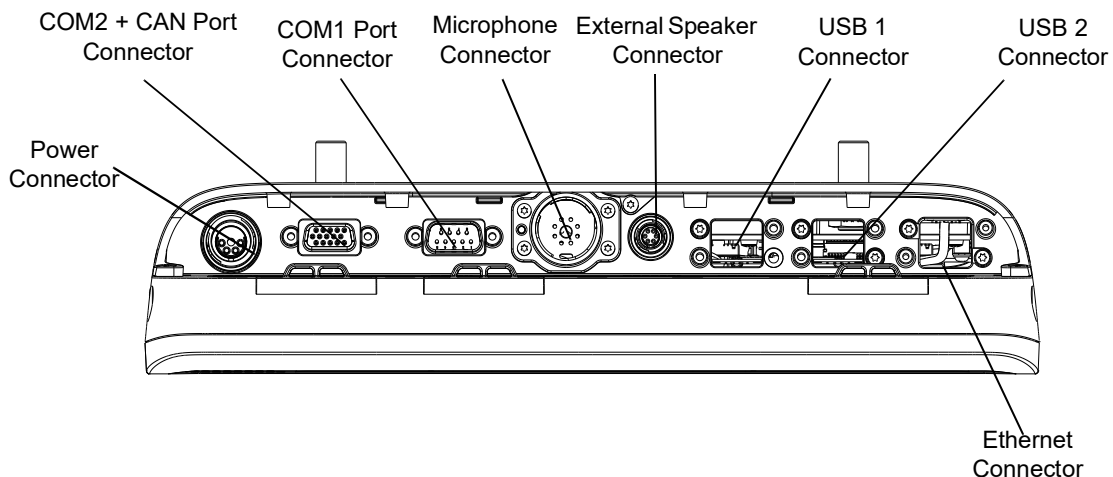
**Table A-1** Technical Specifications (Continued)

Item	Characteristics
Audio	Built-in front-mounted 2W speaker; Optional external 13 watt speaker and external Push-To-Talk microphone that is ready for voice communication and voice-assisted applications
<b>Performance Characteristics</b>	
CPU	TI OMAP4430 processor at 800MH - 1GHz in turbo mode
Operating System	Windows Embedded Compact 7 (WEC 7)
Memory (RAM/ROM)	1 GB DDR2 volatile memory, 2 GB EMMC non volatile memory
Expansion	Micro SD, SDHC Class 10 Card, up to 32 GB
Application Development	PSDK, and EMDK available through Support Central Web Site
Data Capture Options	Optional external scanner
<b>User Environment</b>	
Operating Temperature for VC70 Freezer Configuration	-22°F to 122°F (-30°C to 50°C)
Operating Temperature for VC70 Non-freezer Configuration	-4°F to 122°F (-20°C to 50°C)
Storage Temperature	-40°F to 158°F (-40°C to 70°C)
Battery Charging Temperature	32 °F to 104 °F (0 °C to +40 °C) ambient temperature range.
Humidity	5% to 95% condensing
Environmental Sealing	IP66
ESD	±15kV air discharge, ±8kV direct discharge
<b>Wireless Data Communications</b>	
WLAN	802.11a/b/g/n
Output Power	100mW U.S. and International
WLAN Data Rates	802.11a: up to 54Mb per second 802.11b: up to 11Mb per second 802.11g: up to 54Mb per second 802.11n: up to 65Mb per second
Antennas	Internal WLAN diversity antenna; optional external WLAN antenna with diversity; internal Bluetooth antenna

**Table A-1** Technical Specifications (Continued)

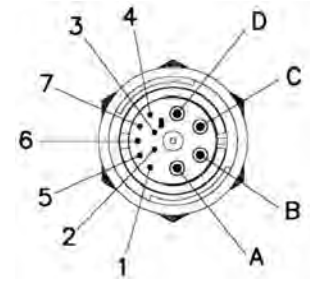
Item	Characteristics
WLAN Frequency Bands:	802.11a: 5 GHz 802.11b: 2.4 GHz 802.11g: 2.4 GHz 802.11n: 2.4 GHz & 5 GHz
Bluetooth	Bluetooth Version 2.1. A full featured SDK is available for download from Support Central.
<b>Regulatory</b>	
Electrical Safety	UL/cUL/IEC/EN 60950-1 Indoor use and UL/cUL/IEC/EN 60950-22 Outdoor use
EMI/RFI	North America: FCC Part 15, Class B; Canada: ICES 003 Class B; EU: EN55022, EN 301 489-1, EN 301 489-17
WLAN/Bluetooth	USA: FCC Part 15.247, 15.407 Canada: RSS-210; EU: EN 300 328, EN 301 893 AU/NZ: AS/NZS 4268
Environmental	RoHS/WEEE compliant
Flammability	IEC UL94-VO

## Vehicle Computer Connectors

**Figure A-1** VC70 Connectors

**Table A-2** Power Connector Pin-Outs

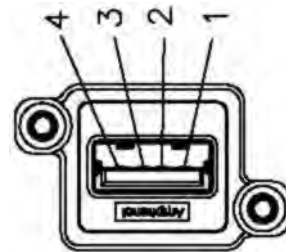
Pin	Signal	Description
A	12V_IN	12V output from AC supply/battery
B	12V_IN	12V output from AC supply/battery
C	GND	Ground
D	GND	Ground
1	Ignition	Ignition Sense input from forklift
2	POW_GOOD	
3	SW_Shutdown	
4	HW_Shutdown	
5	GND	Ground



Mating connector: LF13WBP-11S

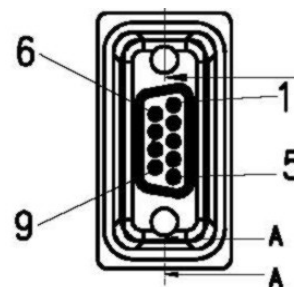
**Table A-3** USB 1 and USB 2 Connector Pin-Outs

Pin	Signal	Description
1	Vbus	5 VDC USB power (1.5A)
2	D-	USB negative signal
3	D+	USB positive signal
4	GND	Ground

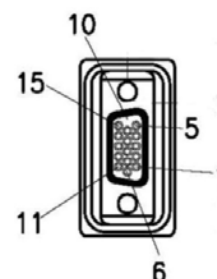


**Table A-4** COM1 Connector Pin-Outs

Pin	Signal	Description
1	DCD1	Data Carrier Detect input to VC70
2	RxD1	Serial data input to VC70
3	TxD1	Serial data output to VC70
4	DTR1	Data Terminal Ready output from VC70
5	GND	Ground
6	DSR1	Data Set Ready
7	RTS1	Request To Send output from VC70
8	CTS1	Clear To Send input to VC70
9	5V out	5 VDC switched power output to peripherals (1.5A)

**Table A-5** COM2/CAN-bus Connector Pin-Outs

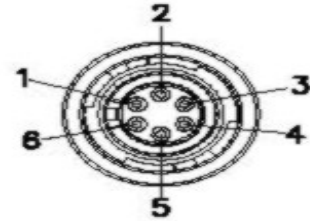
Pin	Signal	Description
1	DCD2	Data Carrier Detect input to VC70
2	RxD2	Serial data input to VC70
3	TxD2	Serial data output to VC70
4	DTR2	Data Terminal Ready output from VC70
5	GND	Ground
6	DSR2	Data Set Ready
7	RTS2	Request To Send output from VC70
8	CTS2	Clear To Send input to VC70
9	5V out	5 VDC switched power output to peripherals (1.5A)
10	GND	Ground
11	GND	Ground
12	GND	Ground
13	CAN_P	CAN BUS Positive
14	CAN_N	CAN BUS Negative
15	CAN_GND	CAN BUS Ground



**Table A-6** External Microphone Connector Pin-Outs

Pin	Signal	Description
1		
2	PTT	Push-to-Talk button signal from handset
3		
4		
5	GND/MIC_-	Audio input from microphone
6		
7	MIC_+	Audio input from microphone
10	MIC_Detect	External microphone detection

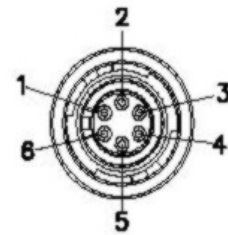
Mating cable: mating cable Mot PN: 3064078H01/H02



**Table A-7** External Speaker Connector Pin-Outs

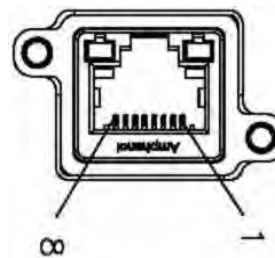
Pin	Signal	Description
1	SPK_POS	Speaker output
2	SPK_POS	Speaker output
3	SPK_NEG	Speaker output
4	SPK_NEG	Speaker output
5	GND	Ground
6	SPK_Detect	External speaker detection

Mating connector: LF07WBP-6P



**Table A-8** Ethernet Connector Pin-Outs

Pin	Signal	Description
1	TX_P	Transmit +
2	TX_N	Transmit -
3	RX_P	Receive +
4	GND	Ground
5	GND	Ground
6	RX_N	Receive -
7	GND	Ground
8	GND	Ground







# Glossary

---

## A

**API.** An interface by means of which one software component communicates with or controls another. Usually used to refer to services provided by one software component to another, usually via software interrupts or function calls

**Application Programming Interface.** See **API**.

**ASCII.** American Standard Code for Information Interchange. A 7 bit-plus-parity code representing 128 letters, numerals, punctuation marks and control characters. It is a standard data transmission code in the U.S.

**AZERTY.** A standard keyboard commonly used on French keyboards. "AZERTY" refers to the arrangement of keys on the top row of keys.

---

## B

**Bit.** Binary digit. One bit is the basic unit of binary information. Generally, eight consecutive bits compose one byte of data. The pattern of 0 and 1 values within the byte determines its meaning.

**Bits per Second (bps).** Bits transmitted or received.

**Bluetooth.** A low-cost, short-range radio link between two devices. Bluetooth can replace cables and can be used to create ad hoc networks and provide a standard way to connect devices.

**boot or boot-up.** The process a computer goes through when it starts. During boot-up, the computer can run self-diagnostic tests and configure hardware and software.

**bps.** See **Bits Per Second**.

**BSP.** Board Support Package is a software that enables a device to conform to an operating system.

**Byte.** On an addressable boundary, eight adjacent binary digits (0 and 1) combined in a pattern to represent a specific character or numeric value. Bits are numbered from the right, 0 through 7, with bit 0 the low-order bit. One byte in memory is used to store one ASCII character.

---

## C

**CAN Bus.** Controller Area Network is a vehicle bus standard designed to allow microcontrollers and devices to communicate with each other within a vehicle without a host computer.

**Cold Boot.** A cold boot restarts the vehicle computer and erases all user stored records and entries.

**COM port.** Communication port; ports are identified by number, e.g., COM1, COM2.

---

## D

**DDR2.** Double data rate synchronous dynamic random-access memory interface. Memory type that DDR2 allows higher bus speed and requires lower power.

---

## E

**EMDK.** ZebraDeveloper's Kit.

**EMMC.** Embedded Multi Media Card. NAND Flash memory and controller with multimedia card interface.

**ESD.** Electro-Static Discharge.

---

## F

**Flash Memory.** Flash memory is nonvolatile, semi-permanent storage that can be electronically erased in the circuit and reprogrammed. The vehicle computers use Flash memory to store the operating system, and the vehicle computer emulators.

---

## H

**Hard Reset.** See **Cold Boot**.

**HID.** USB human interface device class (USB HID class) is a part of the USB specification for computer peripherals. It specifies a type of computer hardware for human interface devices such as Laser scanners, Imagers, keyboards or mouse devices. The same HID protocol is used unmodified in Bluetooth human interface devices.[2] The Bluetooth profile specification only points readers to the USB HID documentation. In this sense those devices also belong to the USB HID class.

**Hz.** Hertz; A unit of frequency equal to one cycle per second.

**Host Computer.** A computer that serves other vehicle computers in a network, providing such services as computation, database access, supervisory programs and network control.

---

## I

**IOCTL.** Input/Output Control.

**Internet Protocol Address.** See **IP**.

**I/O Ports.** I/O ports are primarily dedicated to passing information into or out of the vehicle computer's memory. VC70 vehicle computers include Serial and USB ports.

**IP.** Internet Protocol. The IP part of the TCP/IP communications protocol. IP implements the network layer (layer 3) of the protocol, which contains a network address and is used to route a message to a different network or subnetwork. IP accepts "packets" from the layer 4 transport protocol (TCP or UDP), adds its own header to it and delivers a "datagram" to the layer 2 data link protocol. It may also break the packet into fragments to support the maximum transmission unit (MTU) of the network.

**IP Address.** (Internet Protocol address) The address of a computer attached to an IP network. Every client and server station must have a unique IP address. A 32-bit address used by a computer on a IP network. Client workstations have either a permanent address or one that is dynamically assigned to them each session. IP addresses are written as four sets of numbers separated by periods; for example, 204.171.64.2.

**IS-95.** Interim Standard 95. The EIA/TIA standard that governs the operation of CDMA cellular service. Versions include IS-95A and IS-95B. See CDMA.

---

## L

**LCD.** See **Liquid Crystal Display**.

**LED.** A semiconductor diode (LED - Light Emitting Diode) used as an indicator, often in digital displays. The semiconductor uses applied voltage to produce light of a certain frequency determined by the semiconductor's particular chemical composition.

**Liquid Crystal Display (LCD).** A display that uses liquid crystal sealed between two glass plates. The crystals are excited by precise electrical charges, causing them to reflect light outside according to their bias. They use little electricity and react relatively quickly. They require external light to reflect their information to the user.

**Light Emitting Diode.** See **LED**.

---

## O

**OEM.** An Original Equipment Manufacturer manufactures products that are retailed under a brand name of a purchasing firm.

---

## P

**Parameter.** A variable that can have different values assigned to it.

**PTT.** Push-to-talk, is a method of having conversations on half-duplex communication lines of a two-way radio, using a momentary button to switch from voice reception to transmit mode.

---

## Q

**QWERTY.** A standard keyboard commonly used on North American and some European PC keyboards. "QWERTY" refers to the arrangement of keys on the left side of the third row of keys.

---

## R

**RAM.** Random Access Memory. Data in RAM can be accessed in random order, and quickly written and read.

**Resolution.** The narrowest element dimension which is distinguished by a particular reading device or printed with a particular device or method.

**RF.** Radio Frequency.

**ROM.** Read-Only Memory. Data stored in ROM cannot be changed or removed.

**RS-232.** An Electronic Industries Association (EIA) standard that defines the connector, connector pins, and signals used to transfer data serially from one device to another.

---

## S

**Scanner.** An electronic device used to scan bar code Zebra and produce a digitized pattern that corresponds to the bars and spaces of the Zebra. Its three main components are: 1) Light source (laser or photoelectric cell) - illuminates a bar code,; 2) Photodetector - registers the difference in reflected light (more light reflected from spaces); 3) Signal conditioning circuit - transforms optical detector output into a digitized bar pattern.

**SDHC.** Secure Digital High Capacity that supports SD cards with capacities up to 32 GB.

**SDK.** Software Development Kit

**SIP.** Session Initiation Protocol (SIP) is a signaling communications protocol, used for controlling multimedia communication over Internet Protocol (IP) networks.

**SMA.** SubMiniature version A connectors are semi-precision coaxial RF minimal connector interface for coaxial cable.

**Soft Reset.** See **Warm Boot**.

**SPP.** Serial Port Profile profile is a protocol that emulates a serial cable to provide a simple substitute for existing RS-232.

**SSI.** Serial Peripheral Interface bus is a synchronous serial data link that operates in full duplex mode. Devices communicate in controller/follower mode where the controller device initiates the data frame.

**SVGA.** Super Video Graphics Array is an extension to the VGA standard display resolution.

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## T

**TCP/IP.** (Transmission Control Protocol/Internet Protocol) A communications protocol used to internetwork dissimilar systems. This standard is the protocol of the Internet and has become the global standard for communications. TCP provides transport functions, which ensures that the total amount of bytes sent is received correctly at the other end. UDP is an alternate transport that does not guarantee delivery. It is widely used for real-time voice and video transmissions where erroneous packets are not retransmitted. IP provides the routing mechanism. TCP/IP is a routable protocol, which means that all messages contain not only the address of the destination station, but the address of a destination network. This allows TCP/IP messages to be sent to multiple networks within an organization or around the world, hence its use in the worldwide Internet. Every client and server in a TCP/IP network requires an IP address, which is either permanently assigned or dynamically assigned at startup.

**Telnet.** A vehicle computer emulation protocol commonly used on the Internet and TCP/IP-based networks. It allows a user at a vehicle computer or computer to log onto a remote device and run a program.

**Tolerance.** Allowable deviation from the nominal bar or space width.

**Transmission Control Protocol/Internet Protocol.** See **TCP/IP**.

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## U

**UDP.** User Datagram Protocol. A protocol within the IP protocol suite that is used in place of TCP when a reliable delivery is not required. For example, UDP is used for real-time audio and video traffic where lost packets are simply ignored, because there is no time to retransmit. If UDP is used and a reliable delivery is required, packet sequence checking and error notification must be written into the applications.

**USB.** Universal Serial Bus is an industry standard that defines the cables, connectors and communications protocols used for connection, communication, and power supply between devices.

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## V

**VC.** Vehicle Computer.

**Vehicle Computer.** In this text, *vehicle computer* refers to the VC70 vehicle computer. It can be set up to run as a stand-alone device, or it can be set up to communicate with a network, using wireless radio technology.

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## W

**Warm Boot.** A warm boot restarts the vehicle computer by closing all running programs. All data that is not saved to flash memory is lost.

**WLAN.** Wireless Local Area Network links two or more devices, using wireless distribution method, to connect through an access point device.

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## X

**XGA.** Extended Graphics Array, an IBM display standard.





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