



VC1727C/R8 Cradle User Instructions

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**Introduction:**

Versatile Mobile Systems, Inc. is providing your company with hardware for your workforce automation program. This document describes the setup procedures for the Symbol PDT 1740 and the Versatile Systems VC1727C/R8 cradle, using the highly reliable RIM R802D Wireless modem.

RF Exposure Warning – All persons must be at least 20 cm from the antenna when the transmitter is operating to comply with FCC RF exposure requirements.

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Contact information**Installation instructions:****VC1727C Cradle**

This document provides instruction for installing the power connections to the VC1727C Wireless Cradle. It assumes the installer has electrical knowledge in equipment installation.

Parts List

- VC1727 Cradle with Round amount
- Electrical installation kit
- Cellular antenna
- GPS antenna

Suggested Tools

- Digital Multi-meter
- Pliers
- Wire Cutters
- Wire Crimper
- Type 1 & 2 Phillips Screwdriver
- Small Flat Head Screw Driver
- 11/32" Nut Driver
- Crimper, Coax Cable, RG-58, RG-174
- Wire Stripper, Coax, RG-58, RG-174

Important! Please read the '**Installation Notes**' prior to beginning installation of the cradle.

Installation Notes (1):

If possible, to reduce the chance of electrical shock and possible damage to equipment during installation, disconnect the battery before connecting the cradle wiring. Be aware some vehicles have electrical components that require a constant power supply to maintain programmed settings. Disconnecting the



battery without taking steps to continue to supply electrical power to these components could adversely affect the operation of the vehicle.

Routing the power and antenna cables through the vehicle is very important. Hazards such as sharp edges, chafing surfaces and pinching can cause electrical shorts in the wiring causing it to fail or interfere with proper function. Possibly damaging the unit or vehicle. Be aware of what could cause these problems and take appropriate preventative steps.

Warning!

Installing the power connections improperly can result in damage to the device and/or the vehicle. It is advised only trained technicians install this device.

For further assistance with these instructions call: Versatile Mobile Systems, Inc., Technical support at **800-VMS-3125**, (800-867-3125).

1. Cradle installation:

Installation Notes (2):

Caution – Keep in mind the VC1727C cradle weight is approximately 5 lbs. and the mounting surface should be able to support 3 or more times this weight. Wiring or other electrical components could be concealed behind mounting surfaces and care should be taken not to damage them when installing the cradle.

Step 1: Select the mounting location for the VC1727C cradle. Remove the ball from the unattached end of the Round-A-Mount armature. Set the cradle aside and using the unattached ball mark locations for the screw holes on the attachment surface.

Step 2: Drill holes through the mounting surface using a 5/32-drill bit. Then with 8-32 machine screws and self locking nuts or nuts with lock washers attach the Round-A-Mount ball to the mounting surface.

Step 3: Connect the cradle to the mounted ball utilizing the Round-A-Mount armature and adjust to the preferred position.

2. Attaching antenna cable terminals:

Installation Notes (3):

When attaching the antennae terminals it is critical the connections are solid. Nicked, broken and poorly connected coax cables can cause RF signal leakage. This will severely reduce the efficiency of the antennae and could cause antenna failure.

In the past installers have asked us not to terminate the antennae cables because of the difficulty running the antenna cable inside the vehicle with the terminal installed. They found it easier to install the terminal after they ran the cable. For this reason the antennae we shipped to you didn't have the TNC and BNC terminals attached.

If desired future antennae shipments can be shipped with the antennae terminated by request when placing your order.

Step 1: To install the terminals the following tools are needed:

1. Coax wire stripper(s) for RG-58 and RG-174 cable
2. Coax cable crimp tool with a RG-174 die.
3. Coax cable crimp tool with a RG-58 die.



Suggested tools: Ideal Industries crimp tool, part #30-506, with a RG-174 die, part #30-576 and RG-58 die part #30-502. These can be acquired through: Com-Kyle, Inc., 1-800-538-1578, www.shopeis.com.

4. Diagonal wire cutters.

Step 2: Refer to Assembly Instructions-C36 and C26a document accompanying these instructions for cable stripping and crimping specifications.

3. Connecting power:

Installation Notes (4):

!*CAUTION - Special attention must be taken when connecting the device to power. Improper power installation may cause damage to the VC1727C, damage to the vehicle, serious injury or even death.**

Make sure all exposed wire is properly insulated before applying power to the circuit.

Attaching the ground wire directly to the negative terminal of the battery is NOT recommended.

Be sure all electrical connections are solid. Poor connections can cause electrical shorts and equipment failure.

Step 1: Connecting the ground wire - Attach the black ground wire from the power cord to any isolated ground. If an isolated ground is not available, a filter may be purchased from your local automotive supply store.

Step 2: Connecting the shield wire - This is the wire that is braided or foil wrapped around the red (positive power) and black (Ground) wires. The purpose of this wire is to help prevent over currents from damaging the cradle. Connect the power cord shield wire to any safe chassis ground.

Step 3: Connecting the positive power wire – Attach the positive (red) wire of the power cord to a fused 12 volt power source. A 5 amp 12–15 volt in-line fuse is recommended.

If a fused power source is not available a fuse holder with a 5 amp fuse has been supplied with the cradle. Attach one end of the fuse holder to the positive 12 volt supply and the other end to the cradle power cord.

Do not install the fuse at this time.

4. Electrical check:

Step 1: Using the Digital Multi-meter test the electrical continuity of the power connections.

- a) On the VC1727C power cord the voltage IN power socket is positioned to the left of the plug guide slot of the socket housing. It has a small raised dot next to it. Attach a multi-meter test lead to the power cord side of the fuse holder and the other test lead to the voltage IN socket. The meter should indicate continuity of the circuit.
- b) Check for shorts to ground by connecting one lead of the multi-meter to a ground plane and the other to voltage IN on the power socket. There should be no continuity.
- c) If the battery is disconnected, check continuity between the battery side of the fuse holder and the positive battery cable that connects to the battery terminal. (The battery cable MUST be disconnected from the battery to conduct this test). The meter should indicate continuity.



- d) Check for ground shorts to the battery by connecting one multi-meter lead to the disconnected positive battery cable and the other to a ground plane. The meter should indicate no continuity.
- e) Test for proper circuit continuity to ground by connecting one multi-meter lead to the ground socket on the VC1727C power cord. This socket is positioned to the right of the plug guide slot for the socket housing and the other meter lead to the ground plane. The meter should indicate continuity.
- f) Repeat test (e) on the shield ground circuit. The shield ground socket is located directly below the plug guide of the socket housing.

Step 2: Reattach the battery and install the fuse in the circuit.

Step 3: Set the multi-meter to test DC voltage and test the VC1727C power cord voltage. Attach the red test lead to the positive socket on the power cord and the black test lead to the ground socket. The meter should indicate a voltage of approximately 12 volts.

Step 4: After verifying the power switch on the VC1727C cradle is in the OFF position and the antenna cables are properly connected. Attach the power cord to the unit.

Step 5: Move the power switch to the ON position.

The power/charge LED on the lower right corner of the cradle should turn on.

After a brief pause a blue port select LED and green modem status LED should light. The green LED may blink several times as the modem goes through its power up sequence.

At this point the cradle should be ready for operation provided the modem has been properly activated with the wireless service provider.



VC1727C/R8 testing instructions

Conventions used in this document:

Screen buttons are referred to as “buttons” in this document, and are displayed in the text using uppercase letters between **[BRACKETS]** set in the Arial Narrow, bold typeface. You will be instructed to *TAP* a screen button.

The word “Key” refers to physical keys on the handheld unit. Keys are displayed in lowercase between **(parentheses)**, set in the Arial Narrow, bold typeface. You will be instructed to *PRESS* keys.

Menu options and data fields on a screen are set in **Arial Narrow, Bold, Title Case**.

NOTE:

This document assumes the user is familiar with the PALM OS, including text and numerical entry using the Graffiti Input Area and the On-Screen Keyboard.

Handheld Description:

SYMBOL PDT 1740

4MB RAM
8MB Compact Flash
Palm Operating System
Laser Scanner
Spectrum 24 Network Connection



Cradle Description:

Versatile VC1727C

Symbol VCD1700 cradle
With wireless capability
Optional: Datatac, Mobitex,
CDPD formats
GPS capable
2 external RS232 serial ports



Power Connection GPS Antenna Connection Power Switch Serial Ports Cellular Antenna Connection



1. Setup procedures:

NOTE: Ensure all antennae are securely attached before turning ON the VC1727C cradle. Failure to attach the antennae can greatly decrease the operational life of the radio/wireless modem involved.

The Symbol 1740 uses the Palm OS. Upon first turning on the handheld, the Palm OS will step you through a general set up procedure, in which you will set the system time and date, orient the digitizing pad and learn the Graffiti handwriting interface. This procedure is self explanatory, and beyond the scope of this document. Please refer to the Symbol documentation for more information.

Minimum program requirements for operating the cradle with the PDT 1740 are a communication port switch program and a communications program. These programs must be loaded onto the palm in order to operate the cradle functions.

Versatile Mobile Systems, Inc. uses Switch.prc and ptelnet.prc. If these programs are not on the PDT 1740, Switch.prc may be obtained through Versatile Mobile Systems, Inc. and ptelnet may be acquired at <http://netpage.em.com.br/mmand/ptelnet.htm>.

When the cradle is first turned ON the AUX A port is active (The blue AUX A LED should be lit.). Connect a null modem cable between AUX A on the VC1727C cradle and your computer. Then follow the instructions supplied with your Symbol PDT1740 hand held to upload the desired program files from your computer.

After loading the 'Switch' and 'Communications' programs the PDT1740 is ready for testing the VC1727C.

2. Port/function selection:

To access the different cradle features it is necessary to switch to the corresponding function or port.

Step 1: Turn the VC1727C cradle ON and insert the PDT1740 palm.

Step 2: Go to the **All** application display screen on the palm by tapping the **[HOME]**  button on the palm display screen until **All** is displayed in the upper right corner of the screen.

Step 3: Tap the **[SWITCH]**  icon button on the display screen. This will run the 'Switch' program, it maybe necessary to use the scroll bar on the right of the display to see all the available icons.

Step 4: **Select** the desired communications port: **[1]** AUX A serial port **[2]** AUX B serial port **[3]** RIM802 MODEM **[4]** GPS.

Step 5: After selecting the desired communications port tap the **[HOME]**  button to return to the **All** display screen.



3. Modem test:

Step 1: Select port 3. (The WIDE AREA LED should light.)

Step 2: From the **All** menu tap the ptnet  button or equivalent program.

Step 3: Tap the pull down menu bar  button. From the **Options** menu list select '**Serial**'. Set the 'Serial options' **Baud** rate at **9600** by tapping the ▼ icon and selecting 9600 from the displayed list. Tap the **[Ok]** button. This will set the desired ptnet baud rate and return you to the ptnet main display screen.

Step 4: As in step 3 tap the pull down menu bar  button. From the **Options** menu list select '**Terminal**'. Set the 'Terminal options' '**Mode**' to **Serial**. Then tap the **check box** next to the 'Local options' text, located just above the '**Ok**' button. The check box should now have a check on it. Tap the **[Ok]** button. This will set ptnet for a direct serial connection and allow text entered by the user to be displayed as it is entered into the palm.

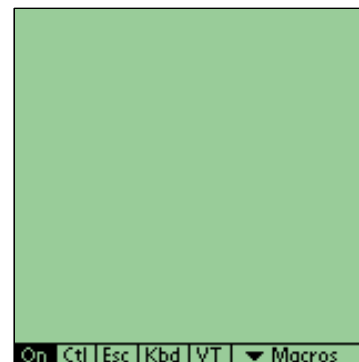


From the drop down menu, choose the Terminal option. Make sure the mode is set to "Serial" and "Local echo" is checked, then tap **[OK]**.

Step 5: Make sure your palm is plugged into the cradle, antennae are attached, the VC1727C cradle is turned on and the correct port is active.



Step 6: Tap the **[On]** button at the bottom of the display screen. Enter the word “**menu**” through the **[Kbd]** keyboard or utilizing the graffiti option. Then enter with a “/” on the touch screen.



Tap the **[ON]** button at the bottom of the screen.....

The R802D-O-2 Modem should now be active.

After displaying the modem ESN number (Electronic Serial Number) the screen should now be displaying the communications status.

Contact = Yes	Indicates the modem has established contact with the service carrier.
Protocol = RD-LAP	Type of communication protocol being utilized
Radio Chan = ????	Radio channel being utilized.
LLI = ????????	Modems identification number
RSSI = ?%	Signal strength.

Step 7: Ping the service tower to assure proper modem operation by tapping the **[Kbd]** entering **[P]** on the keyboard and tapping **[Done]**. The statement “**Message sent**” should be displayed briefly at the bottom of the screen, followed by “**Message received**” when the service provider acknowledges the ping.

Menu command list

Menu	Activates modem test menu
Q	Quit and reset the radio
P	Send ping
N	Set the current network
O	Toggle the radio on/off
R	Refresh display

Step 8: Quit the ‘Menu interpreter’ by tapping the **[Kbd]** button, entering **[Q]** on the keyboard and tapping **[Done]**.

6. Global Positioning System (GPS) test:

The VC1727C utilizes the Garmin GPS25-HVS receiver. On-board memory and rechargeable backup battery allows the GPS receiver to retain critical data such as orbital parameters, position, date and time. The receiver can track up to 12 satellites and provide fast fix with low power consumption. Flash based program memory allows software revisions and upgrades through serial port interface.

The GPS requires line of sight contact with at least 4 GPS satellites/transmitters to determine its position. This means building walls, trees, hills and other obstructions can block the GPS signal.

Step 1: Select port 4. (The GPS LED should light)



Step 2: From the **All** menu tap the ptnet  button or equivalent program.

Step 3: Tap the pull down menu bar  button. From the **Options** menu list select '**Serial**'. Set the 'Serial options' **Baud** rate at **4800** by tapping the ▼ icon and selecting 4800 from the displayed list. Tap the **[Ok]** button. This will set the desired ptnet baud rate and return you to the ptnet main display screen.

Step 4: : Make sure your palm is plugged into the cradle, antennae are attached, the VC1727C cradle is turned on and the GPS port is active.

Step 6: Tap the **[On]** button at the bottom of the display screen.

The GPS telemetry should now be scrolling up the display screen of the PDT1740. This is the data used to determine the position of the device.

Location acquisition time can vary depending on conditions.

- 15 seconds if all data is known.
- 45 seconds if the initial position, time and almanac are known with the ephemeris unknown.
- 1.5 minutes utilizing the Garmin auto locate feature if the initial time and position are unknown.
- 5 minutes if virtually no data is available.

Contact information

For further assistance with these instructions call: Versatile Mobile Systems, Inc., Technical support at **800-VMS-3125**, (800-867-3125).

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