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# SC/VC-2X34

## User's Guide







# **SC/VC-2X34**

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# Regulations 1

## FCC statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

## DOC statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as outlined in the Radio Interference Regulations of the Canadian Department of Communications (DOC).

This Class A digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de Classe A respecte les Standards Canadiens d'émissions et perturbations électromagnétiques.

# Safety information 2

! Do not use a PTC-2234 with the cradle in a hazardous location.

## Using the cradle

The SC/VC-2X34 is not designed for use in Class I, Division 2, Groups A, B, C, and D Hazardous Locations. Although the PTC-2234 is intended for use in hazardous locations, the cradle is not.

## Using the cradle in a vehicle

To safely use the cradle in a vehicle, verify each of the following:

- The cradle is securely mounted
- The vehicle adapter is securely attached to the vehicle
- The cradle and its mounting do not interfere with the operation of seatbelts, airbags, and other safety equipment
- The PTC installed in the cradle is locked in place while the vehicle is in motion
- The cradle's mounting and location conform to the U.S. Department of Transportation Regulation CFR-49 Part 571.208

## Disposing of lithium-ion batteries

Lithium-ion batteries contain chemically active materials that are hazardous to the environment; therefore, they must be disposed of properly. Never attempt to incinerate a lithium-ion battery; doing so could cause it to explode. Symbol urges you to contact the Environmental Protection Agency, the Department of Natural Resources, a local hazardous

waste disposal agency, or the Symbol Customer Support Center at 1-800-653-5350 for assistance prior to disposing of your lithium-ion batteries.

# Scope of the manual 3


This manual provides general information on the SC/VC-2X34's parts, features, and accessories. It also explains how to install, operate, and maintain the cradle. Use this manual as an introduction to the cradle along with the manual or instructions provided by your supervisor.

This manual does not provide instructions on how to perform the tasks specific to your job in your organization. For that information, refer to the manual or instructions provided by your supervisor.

## Document conventions

The following conventions are used throughout this manual.

### Warnings

Warnings indicate potential bodily injury or death. They are set off in the left-hand columns of this manual by the following symbol: .

### Cautions

Cautions indicate potential damage to equipment. They are set off in the left-hand columns of this manual by the following symbol: !.

### Notes

Notes provide supplementary information. They are set off in the left-hand columns of this manual and are not preceded by a symbol.

## Related publications

The following manuals may be useful as you operate the SC/VC-2X34:

- *PTC-2134 User's Guide* - Provides information on the PTC-2134's parts, features, and accessories and explains how to operate and maintain the PTC.
- *PTC-2234 User's Guide* - Provides information on the PTC-2234's parts, features, and accessories and explains how to operate and maintain the PTC.
- Documentation provided with the Symbol Pen-based SC400 Software Development Kit - A set of manuals describing and providing programming information for the software components of a PTC with an SC400-based processor.
- *PTC-2X34 Software Guide* - Serves as a supplement to the documentation provided with the Symbol Pen-based SC400 Software Development Kit. It provides software and programming information specific to the PTC-2134 and PTC-2234.

# Overview of the SC/VC-2X34 4

**!** Do not insert a PTC-1134 unit or a PTC-2234 with the RF-ID option into the cradle; you could cause damage to the PTC.

The Symbol SC/VC-2X34 Single-bay/Vehicle Cradle is an accessory for the PTC-2134 and PTC-2234 (without the RF-ID option). These PTCs are portable computers that collect, store, and transmit data.

The cradle is designed for use on a flat horizontal surface, such as a table or desk, or inside a vehicle's cab (using a vehicle mount). The driver has full access to the PTC when it is installed in the cradle.

The cradle holds one PTC at a time and works with the PTC in two ways. First, it acts as a communication link. Through the cradle, the PTC can send data to and receive data from a host computer or other serial devices. This communication can be handled automatically by the PTC's application program.

Refer to Chapter 12 for details on battery pack charging.

Second, the cradle provides power for recharging the PTC's lithium-ion battery pack when the PTC is installed in the cradle.

Only one of the serial ports can be active at a time. Your PTC's application program determines which port is active.

The cradle can be connected via cable to a network through its Ethernet port or to a host computer or other external serial devices via its two 9-pin and one 25-pin RS-232 serial ports. In addition, a keyboard can be connected to the cradle for use with the installed PTC.

**!** Do not connect the serial/keyboard Y adapter cable to the PTC while it is in the cradle.

A PTC installed in the cradle is fully accessible and can be operated. All PTC controls can be used, and the display and LEDs are fully visible.

# Getting started 5

Follow the instructions below to unpack your SC/VC-2X34 and prepare it for operation with a PTC-2134 or a PTC-2234 without the RF-ID option.

## Unpacking the SC/VC-2X34

Any additional accessories, such as an AC or vehicle adapter, are shipped separately.

Each shipping box contains

- an SC/VC-2X34 Single-bay/Vehicle Cradle with a standard stabilizer bar installed,
- four rubber feet, and
- an *SC/VC-2X34 Read-Me-First Sheet*.

1. Remove the cradle from the box.
2. Remove all packing material from the cradle. Save the packaging in case the cradle is ever stored or shipped to Symbol for service.
3. Check the contents of the package to make sure you have received everything ordered.
4. Check the cradle and accessories for shipping damage.

If anything is missing or damaged, notify your Symbol sales representative.

## Replacing the stabilizer bar (if necessary)

The SC/VC-2X34 is shipped with the standard stabilizer bar installed. This bar is designed for use with PTC-2234 units and PTC-2134 units with LAN radios. If you will be using the cradle with a PTC-2134 equipped with a WAN radio, follow the instructions below to replace the cradle's standard stabilizer bar with one designed for a WAN unit.

### Equipment required:

- A WAN stabilizer bar
- A Phillips head screwdriver

1. Unscrew and remove the four screws connecting the stabilizer bar to the cradle. See Figure 1.
2. Store the standard stabilizer bar in a safe place in case you need to use it at a later time.

Refer to Appendix B for information on ordering a WAN stabilizer bar.

Figure 1. Replacing the stabilizer bar





3. Slip the sides of the WAN stabilizer bar over the sides of the cradle pegs. See Figure 1.
4. Line up the holes in the stabilizer bar with the holes in the sides of the cradle pegs.
5. Insert a screw into each hole so that the screwheads face the inside of the cradle and tighten.

Figures 2 and 3 on the following pages show and describe the parts of the SC/VC-2X34. The parts listed below are not shown in either figure.

## AC adapter

Refer to Appendix B for information on ordering an AC adapter.

If you are using the cradle outside of the U.S. or Canada, you need a power cord with a CEE-22 connector at one end (for the power supply) and an appropriate wall plug at the other end.

Refer to Appendix B for information on ordering a vehicle adapter.

A 15-VDC, 2.7-A AC adapter provides power to the cradle and an installed PTC for communication and for recharging the PTC's battery pack.

The AC adapter plugs into the cradle's AC power jack and into an electrical outlet (100 to 240 volts AC).

## Vehicle adapter

A 15-VDC, 4-A vehicle adapter provides power to the cradle and an installed PTC for communication and for recharging the PTC's battery pack inside a vehicle. The vehicle adapter connects to the cradle's vehicle power jack and directly to a vehicle's battery or fuse panel.

Figure 2. The SC/VC-2X34 (front, top, and left side view)



1. This 25-pin RS-232 serial port connects an installed PTC to a host computer or to other external serial devices. A communication cable is required to make this connection. See Appendix B for cable part numbers.
2. This 9-pin RS-232 serial port connects an installed PTC to a host computer or to other external serial devices. A communication cable is required to make this connection. See Appendix B for cable part numbers.
3. A 15-VDC, 2.7-A AC adapter plugs into this jack to provide power to the cradle.
4. These two pegs fit into recesses on the bottom of a PTC-2134 or PTC-2234 (without the RF-ID option) to help hold the unit in place.
5. This LED glows when the cradle is receiving power and the installed PTC is on or in standby mode. This LED turns off when the PTC goes into deep suspend mode.
6. This LED glows when an installed PTC is communicating through serial port 1.
7. This LED glows when an installed PTC is communicating through serial port 2.
8. This LED glows when an installed PTC is communicating through serial port 3.
9. This bay holds a PTC-2134 or PTC-2234 (without the RF-ID option) for communication and battery pack charging.
10. This row of contacts inside the PTC bay fits against the contacts on a PTC-2134 or PTC-2234 (without the RF-ID option). The electronic impulses for all communication between the PTC and a host computer and the power for recharging the PTC's battery pack pass through these contacts.

Figure 3. The SC/VC-2X34 (front, top, and right side view)



1. This PS/2 connector allows a PC/AT-type keyboard to be used with a PTC-2134 or PTC-2234 (without the RF-ID option) installed in the cradle. Appendix B lists the part number of the keyboard recommended for use with the cradle.  
! Permanent keyboard damage may occur if a keyboard is connected to or disconnected from the cradle before an installed PTC is suspended.
2. This 9-pin RS-232 serial port is used to connect an installed PTC to a host computer or to other external serial devices. A communication cable is required to make this connection. See Appendix B for cable part numbers.
3. This port connects the cradle and an installed PTC to a local or remote Ethernet network via a standard RJ-45 cable.
4. A 15-VDC, 4-A vehicle adapter with a 3-pin DIN connector plugs into this jack to provide vehicle power to the cradle.
5. These retractable latches help to hold the PTC in place. They disengage when the cradle's release levers are pushed toward the PTC.
6. Push these levers toward the installed PTC to disengage the PTC latches and remove the PTC from the cradle.
7. The bottom of a PTC rests against this bar when the PTC is installed in the cradle. The bar prevents the PTC from falling out of the cradle. The SC/VC-2X34 is shipped with the standard stabilizer bar installed. This bar is designed for use with PTC-2234 units and PTC-2134 units with LAN radios. An optional WAN stabilizer bar is available so the cradle can be used with a PTC-2134 with a WAN radio. See Chapter 5 for instructions on replacing the standard stabilizer bar with the WAN stabilizer bar.

# Features 7

The SC/VC-2X34 performs the following functions:

- Provides an installed PTC-2134 or PTC-2234 (without the RF-ID option) with standard RS-232 communication to a host computer
- Links a PTC-2134 or PTC-2234 (without the RF-ID option) to external serial devices, such as printers and radios
- Provides an Ethernet connection to a local or remote network
- Provides power to charge an installed PTC's lithium-ion battery pack
- Allows an installed PTC to be operated
- Provides a keyboard connection to an installed PTC
- Can be used as a communication connection when reprogramming an installed PTC
- Rests on a horizontal surface or securely mounts inside a vehicle's cab

# Installing the cradle 8

**!** Do not use the SC/VC-2X34 in a hazardous location.

Follow the instructions in one of the sections below to prepare your cradle for use on a flat horizontal surface, such as a table or desk, or to mount it inside a vehicle's cab.

## Preparing the cradle for use on a horizontal surface

Four rubber feet attach to the bottom of the cradle to prevent it from sliding on the horizontal surface on which it will be used.

1. Turn the cradle over so the bottom is facing up.
2. Remove the paper backing from each rubber foot to expose its adhesive; then stick the feet onto the bottom of the cradle (one foot in each corner).

## Mounting the cradle inside a vehicle's cab

Electrical installation must be completed before the cradle is installed on the mount. See the instructions in Appendix D.

The four holes on the bottom of the SC/VC-2X34 are used to mount the cradle to a user-supplied vehicle mount. Symbol recommends the vehicle mount available from Gamber-Johnson. See Appendix B for part numbers.

Follow these general rules when choosing a location in which to mount your cradle:

- An installed PTC should be easily visible and accessible to the vehicle's driver.
- The cradle should not block access to the glove box or other cab features.

- If possible, the cradle should not be directly in front of a heater vent.
- The cradle should not interfere with the operation of the gearshift, steering wheel, or any other vehicle controls.
- If necessary, sufficient room should be left for any attached peripherals.
- The cradle and mount should not interfere with the driver entering or exiting the cab.

Follow the instructions below to mount your SC/VC-2X34 to a Gamber-Johnson vehicle mount.

**Equipment required:**

- An adapter kit containing an adapter and four 1/4-inch nuts
  - Four 1/4-20 x 1 1/2-inch flat-head machine screws
  - Socket wrenches or box wrenches
1. The cradle must be connected to the vehicle's power source before it is mounted. Follow the instructions in Appendix D to connect the bare-wire vehicle adapter; then return to this section for mounting instructions.
  2. Follow the instructions provided with the vehicle mount to assemble the mount and bolt it to the floor of a vehicle.
  3. Hold the mounting adapter up against the bottom of the cradle, making sure the holes in the adapter line up with the mounting holes in the cradle.
  4. Insert a machine screw into one of the adapter's mounting holes. Make sure the screw goes through both the adapter and the cradle.
  5. Repeat Step 4 for each of the remaining holes in the adapter.

An optional keyboard holder, listed in Appendix B, can be attached to the vehicle mount. Follow the installation instructions provided with the holder.

6. Tighten the screws to secure the adapter to the cradle.
7. Place the cradle on top of the vehicle mount. The studs on the bottom of the adapter fit into the holes on the top of the mount.
8. Slide the nuts provided with the adapter onto the adapter's studs.
9. Tighten the nuts to secure the cradle to the vehicle mount.



# Supplying power to the cradle 9

The SC/VC-2X34 can be powered via an AC or vehicle adapter. The AC adapter connects to both the cradle's AC power jack and an AC electrical outlet.

The vehicle adapter attaches to the cradle's vehicle power jack and directly to a vehicle's battery or fuse panel. Attaching the adapter to a battery or fuse panel provides a continuous power source to the cradle, one that will supply power even when the vehicle is not running.

Follow the instructions in this section to connect the cradle to AC power. To connect the cradle to vehicle power, follow the instructions in Appendix D.

## **Equipment required:**

- A 15-VDC, 2.7-A AC adapter and an appropriate power cord
- An electrical outlet providing 100 to 240 volts AC

1. Connect the appropriate power cord to the AC adapter.
2. Connect the AC adapter to the cradle's AC power jack.
3. Plug the AC adapter's power cord into an electrical outlet.

If you are using the cradle outside of the U.S. or Canada, you need a power cord with a CEE-22 connector at one end (for the power supply) and an appropriate wall plug at the other end.

# Communication and connections 10

All communication between a PTC-2134 or PTC-2234 (without the RF-ID option) and the SC/VC-2X34 takes place through the PTC's and the cradle's communication contacts. The cradle acts as a communication link between the PTC and attached serial devices.

Only one serial port is active at a time.

See Appendix B for cable part numbers.

For the cradle to communicate with a host computer or other serial device, the device must be connected via cable to one of the cradle's three RS-232 serial ports, and your PTC's application must be programmed to activate the correct port and conduct communication. After you follow the instructions in this chapter to connect an external device, see the instructions or manual provided by your supervisor for the proper communication procedure to follow.

! Only one keyboard, connected to the cradle's keyboard port, can be used with the cradle at a time. Do not attempt to use the PTC's serial/keyboard Y adapter cable while the PTC is installed in the cradle.

The cradle can also be connected to a network via the Ethernet port or to a keyboard through the keyboard port.

## Connecting the cradle to a serial device

Follow the instructions in this section to connect the cradle to a host computer or to another serial device such as a printer or radio.

### Equipment required:

- An RS-232 serial cable with a DB-9 or DB-25 connector
- A small screwdriver

1. Make sure the serial device is turned off.
2. If a PTC is in the cradle, suspend it.

**!** Do not force the connectors together. If they do not mate easily, check that they are aligned properly and that no pins are bent.

3. Disconnect the cradle from AC or vehicle power.
4. Connect the female 9-pin or 25-pin connector on the serial cable to the chosen serial port on the cradle.
5. Connect the other end of the cable to the serial device.
6. If the cable connectors have securing screws, tighten the screws to secure the cable to the serial device and to the cradle.
7. Turn on the serial device.
8. Reconnect the cradle to AC or vehicle power.
9. Resume the PTC.
10. Follow the instructions for your PTC's application program to establish communication.

The corresponding Serial Port LED glows when the cradle is communicating with an attached serial device.

## Disconnecting the cradle from a serial device

1. Turn off the device you wish to disconnect from the cradle.
2. If a PTC is in the cradle, suspend it.
3. Disconnect the cradle from AC or vehicle power.
4. If the cable connectors are equipped with securing screws, loosen them completely.
5. Grasp the cable connector attached to the cradle and pull it away from the cradle's serial port.
6. If necessary, grasp the cable connector at the other end and pull it away from the connector on the serial device.
7. Reconnect the cradle to AC or vehicle power.
8. Resume the PTC.

**!** Do not twist or rock the cable connector or pull it at an angle when disconnecting the cable.

The Ethernet drivers must be properly installed for the cradle's Ethernet port to operate correctly.

## Using the Ethernet port

Follow the instructions below to allow an installed PTC-2134 or PTC-2234 (without the RF-ID option) to communicate via the cradle's Ethernet interface to a local or remote network.

### **Equipment required:**

- A standard RJ-45 cable
1. If a PTC is in the cradle, suspend it.
  2. Insert one of the RJ-45 cable's connectors into the cradle's Ethernet port.
  3. Insert the connector on the other end of the cable into an Ethernet hub.
  4. Resume the PTC.

## Connecting a keyboard

Appendix B lists the part number of the keyboard recommended for use with the SC/VC-2X34.

A PC/AT-type keyboard (with a PS/2 connector) can be connected to the SC/VC-2X34 for use with an installed PTC. Follow the instructions below.

! Permanent keyboard damage may occur if a keyboard is connected to or disconnected from the cradle before an installed PTC is suspended.

1. Use only the correct keyboard type for your PTC. If the keyboard can be switched between AT and XT, make sure the switch is set to the AT position.
2. If a PTC is in the cradle, suspend it.
3. Connect the keyboard's PS/2 connector to the cradle's keyboard port.
4. Resume the PTC.

# Inserting and removing a PTC 11

## Inserting a PTC into the cradle

**!** Do not attempt to connect any other PTC, including a PTC-1134, to the cradle. You could damage both devices.

The PTC's 15-pin serial/keyboard connector cannot be used while the PTC is in the cradle.

The SC/VC-2X34 is designed for use with only a PTC-2134 or a PTC-2234 without the RF-ID option.

1. Make sure the correct stabilizer bar (standard or WAN) is connected to the cradle. See Chapter 5 for instructions on replacing the bar, if necessary.
2. Make sure the cradle is connected to AC or vehicle power to avoid draining the PTC's battery pack.
3. Hold the PTC by its sides, making sure the screen is facing you and the PCMCIA slot is on top.
4. Slide the PTC under the cradle's stabilizer bar, making sure that the two square recesses on the bottom of the PTC fit over the cradle's pegs. See Figure 4.
5. Lower the top of the PTC until it rests on the cradle.
6. Press down firmly on the front of the PTC until the cradle's PTC latches engage with the recesses on both sides of the unit. See Figure 4. The PTC's Power LED blinks green when the unit is seated properly, provided the cradle is connected to AC or vehicle power.
7. The PTC will turn on automatically if it is in standby or suspend mode when inserted into the cradle.

**!** Do not press on the PTC's screen when inserting the unit into the cradle. Pressing on the screen could damage it. Press on the plastic to the sides of the screen instead.

The cradle is designed to be powered. If power is removed from the cradle while a PTC is installed, the PTC's battery pack may drain.

Figure 4. Inserting a PTC into the cradle

! Insert only PTC-2134 units and PTC-2234 units without the RF-ID option into the cradle.



## Removing a PTC from the cradle

When the PTC's Power LED glows solid green, the internal battery pack is charged to a 90% capacity, and the PTC can be removed from the cradle.

! Do not remove the PTC from the cradle while the PTC is communicating with an attached device.

1. Push the cradle's release levers toward the installed PTC. The PTC latches open, disengaging the PTC.
2. Grasp the PTC and carefully slide it out of the cradle.

# Charging battery packs 12

**!** Recharge PTC-2134 or PTC-2234 battery packs only at room temperature. Otherwise, the recharging process will take longer.

Charge times may increase depending on the accessories used with the installed PTC during charging.

The PTC's Power LED blinks green and charging begins automatically when you insert a PTC-2134 or PTC-2234 (without the RF-ID option) into the cradle, provided the cradle is connected to AC or vehicle power. The cradle fast charges the PTC's lithium-ion battery pack to a 90% capacity in approximately 5 hours. The PTC's Power LED glows solid green when the battery pack reaches the 90% capacity.

The PTC can remain on and be operated while its battery pack is being recharged. Also if the PTC is left in the cradle after charging, the cradle will maintain the battery pack at peak efficiency until the PTC is removed.

# Maintaining the SC/VC-2X34 13

Battery charging will take place slowly, if at all, when performed in temperatures below 32 degrees F (0 degrees C).

## Operating conditions

The SC/VC-2X34 is designed to work in environments that are free of dust, dirt, and moisture. It can be operated in temperatures between -4 degrees F (-20 degrees C) and 122 degrees F (50 degrees C).

- Do not leave the cradle where moisture will condense on it.
- Minimize the cradle's and installed PTC's exposure to direct sunlight.

## Handling the cradle

The SC/VC-2X34 is well constructed and durable; however, it is a precision electronic device and must be treated as such. Following the guidelines in this section will help to ensure you receive reliable service.

- Do not attempt to open the cradle. No user-serviceable parts are inside.
- Make sure all cables are connected correctly and locked firmly into place and the correct cables are used.

## Cleaning the cradle

! Do not use a paper towel to clean the cradle and do not soak the cloth or spray or pour cleaning liquids directly onto the cradle.

To clean the SC/VC-2X34, slightly moisten a soft, clean, lint-free cloth with a mild, nonabrasive cleaner, such as Windex, and wipe the cradle's outside surface.

Use a brush or soft cloth to clean any dirt from the communication/charging contacts.



If the cradle becomes extremely dirty or if liquids, dirt, or other foreign materials get inside the case, contact your Symbol service representative.

## Storing the cradle

- Do not store the SC/VC-2X34 in temperatures below –40 degrees F (–40 degrees C) or above 158 degrees F (70 degrees C).
- Do not store the cradle in a damp or humid environment (over 95% noncondensing).

Pack the cradle in the original packing material or in a padded box and put it in a safe place away from dust, dirt, extreme humidity, and excessive heat or cold.

## Servicing the cradle

Do not attempt to repair the SC/VC-2X34. Only a trained Symbol technician may service the cradle. Follow the procedure set up by your organization to have the cradle serviced properly.

# Troubleshooting 14

## The cradle's Power LED does not light

- Make sure the PTC-2134 or PTC-2234 (without the RF-ID option) installed in the cradle is on or in standby mode. The cradle's Power LED will not come on otherwise.
- Make sure the cradle is properly connected to AC or vehicle power.
- If power to the vehicle adapter is fused, check the fuse and replace it if necessary.
- Contact your Symbol service representative.

## The cradle fails to communicate with an external device

- Make sure you are using the correct cables.
- Make sure the cables are properly connected.
- Make sure the external device is turned on.
- Make sure the cradle is properly connected to AC or vehicle power.
- Make sure the PTC is properly installed in the cradle and the communication contacts of both the cradle and the PTC are touching.
- Make sure your PTC's application program is addressing the serial port to which the external device is connected.
- Contact your Symbol service representative.

See Chapter 11 for instructions on inserting a PTC into the cradle.

## The PTC fails to communicate through the cradle

See Chapter 11 for instructions on inserting a PTC into the cradle.

See Chapter 13 for instructions.

- Make sure the PTC is on.
- Make sure the PTC is properly installed in the cradle and the communication contacts of both the cradle and the PTC are touching.
- Clean the PTC and cradle communication contacts.
- Contact your Symbol service representative.

## The PTC's battery pack takes too long or fails to recharge

See Chapter 11 for instructions on inserting a PTC into the cradle.

See Chapter 13 for instructions.

- Check the temperature in which the cradle is being used. Battery charging will take place slowly, if at all, when performed in temperatures below 32 degrees F (0 degrees C).
- Make sure the PTC is properly installed in the cradle and the charging contacts of both the cradle and the PTC are touching.
- Turn off as many of the PTC's external devices and internal features (radio, PCMCIA slot, etc.) as possible. Each active device or feature draws power from the battery pack and affects charging.
- Clean the charging contacts on the cradle and on the PTC.
- Try to recharge the PTC's battery pack outside of the cradle using the PTC's AC adapter.
- Replace the battery pack with another one and try to recharge it.
- Try another PTC to make sure the PTC's connectors are working correctly.
- Contact your Symbol service representative.

See Chapter 11 for instructions on inserting a PTC into the cradle.

## The PTC's Power LED does not blink green when the PTC is installed in the cradle

- Make sure the PTC is properly installed in the cradle and the charging contacts of both the cradle and the PTC are touching.
- Make sure the cradle is properly connected to AC or vehicle power.
- If power to the vehicle adapter is fused, check the fuse and replace it if necessary.
- Contact your Symbol service representative.

## Other problems or difficulties

If you experience any other problems with your cradle, notify your Symbol service representative or contact the Symbol Customer Support Center at 1-800-653-5350.

# Appendix A

## Specifications

### Communication

Only one serial port is active at a time.

Data communication:	Via two 9-pin and one 25-pin RS-232 serial ports; 75 to 115.2 K bits per second (bps)
Transmission speed:	Determined by the PTC and host application programs
Ethernet communication:	Via one UTP (RJ-45) Ethernet port; 10 Mbps
Keyboard interface:	Via one PS/2 keyboard connector

### Electrical

Input power	
Desktop use:	15 VDC @ 2.7 A (via AC adapter)
Vehicle use:	11 to 28 VDC (via bare-wire adapter)
Battery charging:	Cradle provides power to charge PTC-2X34's internal battery pack

### Environmental

Battery charging will take place slowly, if at all, when performed in temperatures below 32 degrees F (0 degrees C).

Operating temperature:	-4 to 122 degrees F (-20 to 50 degrees C)
Storage temperature:	-40 to 158 degrees F (-40 to 70 degrees C)
Relative humidity:	0 to 95% noncondensing
Operating altitude:	Up to 15,000 ft/4,572 m
ESD protection:	15 kV with no damage; 8 kV with no reboot or data loss

## Physical

Length:	7.63 in/19.4 cm
Width:	8.85 in/22.5 cm
Height:	4.4 in/11.2 cm (with standard stabilizer bar); 4.83 in/12.3 cm (with WAN stabilizer bar)
Weight:	4.7 lb/2.1 kg
Capacity:	One PTC-2134 or PTC-2234 (without the RF-ID option) at a time

## Accessory part numbers

Contact your Symbol sales representative to order any of the following parts.

The following table lists part numbers for ordering the SC/VC-2X34 and accessories.

Table 1. Accessory part numbers

Item	Part number
SC/VC-2X34 Single-bay/Vehicle Cradle	24910-001
WAN stabilizer bar	24909-001
<b>Power supplies</b>	
AC adapter (15 VDC, 2.7 A)	21988-002
Vehicle adapter (15 VDC, 4 A)	
11- to 28-volt bare-wire adapter	23662-001
<b>Keyboard accessories</b>	
Keyboard	21369-000
Keyboard holder*	P-81712-010
<b>Cables</b>	
Cradle-to-host, DB9F to DB9F	P-81903-000
Cradle-to-modem, DB9F to DB25M	13656-321
Null modem, DB9 to DB25 (6 ft/1.8 m)	13656-323
Null modem, DB9 to DB25 (10 ft/3 m)	13656-333
Null modem, DB9 to DB25 (25 ft/7.6 m)	13656-343
<b>Mounting supplies</b>	
Gamber-Johnson pedestal (bottom of mount)	P-81589-000
Gamber-Johnson clevis (top of mount)	P-81589-001
Gamber-Johnson adapter kit	P-81905-000
<b>Software</b>	
Symbol Pen-based SC400 Software Development Kit	24136-000

\*The keyboard holder attaches to the vehicle mount. See the instructions provided.

Item	Part number
<b>Related publications</b>	
<i>PTC-2134 User's Guide</i>	30313-000
<i>PTC-2234 User's Guide</i>	30314-000
<i>PTC-2X34 Software Guide</i>	30317-000



# Appendix C

## Communication connections

This appendix provides information on the connections used to establish and maintain communication between the SC/VC-2X34 and other devices.

Table 2 lists the pinouts for the cradle's two 9-pin RS-232 serial ports, Table 3 lists the pinouts for the cradle's 25-pin RS-232 serial port, Table 4 lists the pinouts for the cradle's Ethernet port, Table 5 lists the pinouts for the cradle's keyboard port, and Table 6 lists the pinouts for the cradle contacts.

Table 2. 9-pin serial port pinouts

Pin	Signal	Description
1	CD	Data carrier detect
2	RXD	Receive data
3	TXD	Transmit data
4	DTR	Data terminal ready
5	GND	Signal ground
6	DSR	Data set ready
7	RTS	Request to send
8	CTS	Clear to send
9	RI	Ring indicate

**Table 3. 25-pin serial port pinouts**

<b>Pin</b>	<b>Signal</b>	<b>Description</b>
1	N/C	No connection
2	TXD	Transmit data
3	RXD	Receive data
4	RTS	Request to send
5	CTS	Clear to send
6	DSR	Data set ready
7	GND	Ground
8	CD	Carrier detect
9	N/C	No connection
10	N/C	No connection
11	N/C	No connection
12	N/C	No connection
13	N/C	No connection
14	N/C	No connection
15	N/C	No connection
16	N/C	No connection
17	N/C	No connection
18	N/C	No connection
19	N/C	No connection
20	DTR	Data terminal ready
21	N/C	No connection
22	N/C	No connection
23	N/C	No connection
24	N/C	No connection
25	N/C	No connection

**Table 4. Ethernet port pinouts**

Pin	Signal	Description
1	TXD+	Ethernet transmit pair
2	TXD-	
3	RXD+	Ethernet receive pair
6	RXD-	
4	N/C	No connection
5	N/C	No connection
7	N/C	No connection
8	N/C	No connection

**Table 5. Keyboard port pinouts**

Pin	Signal	Description
1	KDAT	Keyboard data (TTL signals)
2	N/C	No connection
3	GND	Ground
4	VCC	Keyboard power (+5 VDC)
5	KCLK	Keyboard clock (TTL signal)
6	N/C	No connection

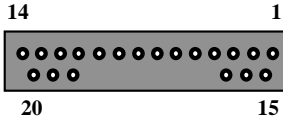


Table 6. Cradle contacts

Pin	Signal	Description
1	OTXD	Cradle serial in
2	ORXD	Cradle serial out
3	OTXS#	Receive serial status
4	ORXS#	Transmit serial status
5	KB_CLK	Keyboard clock
6	GND	Ground
7	VCHARGE	15 VDC @ 2.7 A
8	5 VSW	Switched power
9	GND	Ground
10	KB_DATA	Keyboard data
11	ETXD+	Ethernet transmit pair
12	ETXD-	
13	ERXD+	Ethernet receive pair
14	ERXD-	
15	N/C	No connection
16	N/C	No connection
17	Detect 1	Used to detect PTC-1134 units
18	Detect 2	Used to detect PTC-1134 units
19	N/C	No connection
20	N/C	No connection

# Appendix D

## Connecting the SC/VC-2X34 to vehicle power

**⚠ The procedures in this appendix should be performed only by qualified maintenance personnel.**

This appendix provides instructions for connecting a bare-wire vehicle adapter to the SC/VC-2X34's vehicle power jack and to a vehicle's constant power source, such as the battery or fuse panel. This procedure will allow the cradle to receive power even when the vehicle is not running.

### Electrical requirements

The SC/VC-2X34 requires a constant 11- to 28-VDC source and so draws its power directly from a vehicle's 12- or 24-volt system.

### Electrical installation

Electrical installation varies according to vehicle. Use the following information to plan your installation. Read all instructions before beginning the installation.

The bare-wire vehicle adapter consists of a voltage regulator with two cables coming out of one end. At the end of one cable is a 3-pin DIN connector, which plugs into the cradle. At the end of the other cable are two exposed wires, which connect to the vehicle's power system. The wires are defined in Table 7.

The maximum input voltage range supported by the SC/VC-2X34 is 11 to 28 VDC.

Table 7. Bare-wire vehicle adapter

Wire	Description
White	Continuous 12 or 24 VDC
Black	Vehicle ground

Follow the appropriate set of instructions on pages 38 through 42.

### Installing the white power wire

Connect the white power wire to a continuous 12- or 24-volt source (one that provides power even when the vehicle is not running). This can be a direct connection to the vehicle's battery or a connection to a continuous source on the vehicle's fuse panel.

Connecting to a battery with top terminals

### Equipment required:

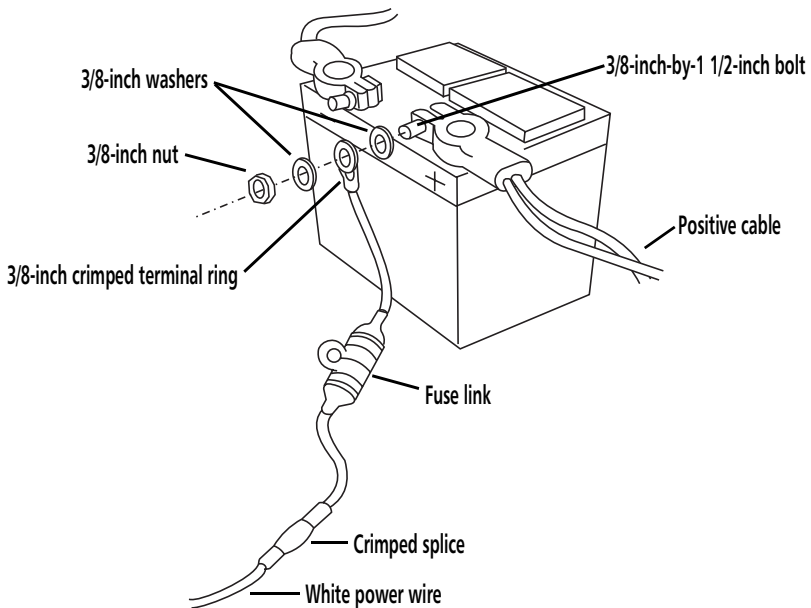
- A length of white wire
- Two crimped splices
- A power drill and an assortment of drill bits
- A snap-in bushing
- A wire stripping/crimping tool
- A fuse link
- A 3/8-inch terminal ring
- A 3/8-inch-by-1 1/2-inch bolt
- Two 3/8-inch washers
- A 3/8-inch nut
- Socket wrenches or box wrenches

Refer to Figure 5 as you perform the following steps.

If the wire is not long enough, you will need an additional length of wire.

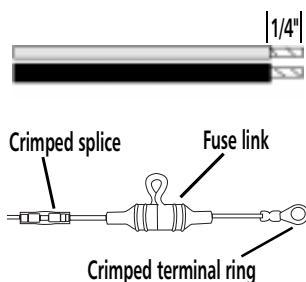
1. Determine if the white power wire is long enough to reach the battery's positive (+) terminal.

Figure 5. Connecting to a top-terminal battery



If you connect the vehicle adapter on the switched side of the vehicle's ignition switch, the cradle will not be able to charge the PTC's battery when the vehicle is turned off.

2. If necessary, use a crimped wire splice to join the additional length of wire to the white power wire.
3. If necessary, drill a hole through the vehicle's firewall for the power wire.
4. If you have drilled a hole through the firewall or other sheet metal, insert a snap-in bushing to protect the wire.
5. Run the wire from inside the cab to the battery.
6. Strip 1/4 inch (.64 centimeters) of insulation from the end of the white wire or the extension wire, if the wire is not already stripped.
7. Attach a fuse link to the stripped end of the white wire using a crimped splice. If necessary, crimp a 3/8-inch terminal ring onto the free end of the fuse link.



8. Remove the bolt from the battery's positive (+) terminal.
9. Replace the bolt with a 3/8-inch-by-1 1/2-inch bolt.
10. Slide a 3/8-inch washer onto the bolt.
11. Slide the terminal ring on the white wire's fuse link onto the bolt.
12. Slide a second 3/8-inch washer onto the bolt.
13. Thread a 3/8-inch nut onto the bolt.
14. Tighten the nut securely.

Connecting to a battery with side terminals

**Equipment required:**

- A length of white wire
- Two crimped splices
- A power drill and an assortment of drill bits
- A snap-in bushing
- A wire stripping/crimping tool
- A fuse link
- A 3/8-inch terminal ring
- A 3/8-inch-by-1 1/2-inch bolt
- A 3/8-inch nut
- Two 3/8-inch washers
- Socket wrenches or box wrenches

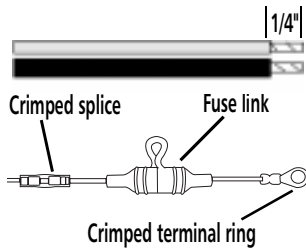
Refer to Figure 6 as you perform the following steps.

1. Determine if the white power wire is long enough to reach the battery's positive (+) terminal.
2. If necessary, use a crimped wire splice to join the additional length of wire to the white power wire.

If the wire is not long enough, you will need an additional length of wire.

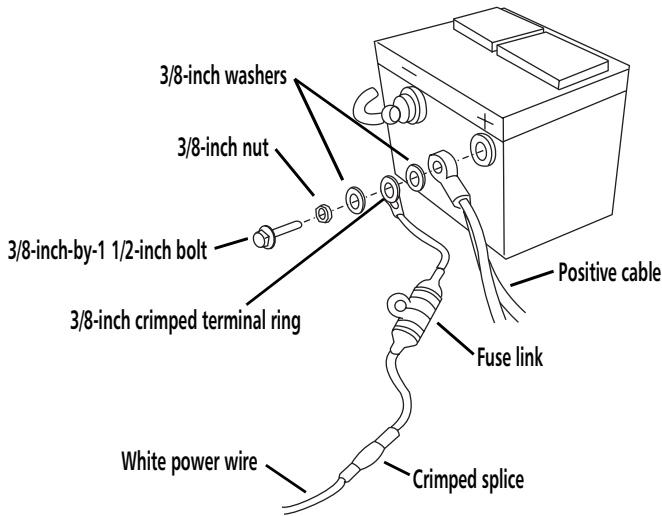


If you connect the vehicle adapter on the switched side of the vehicle's ignition switch, the cradle will not be able to charge the PTC's battery when the vehicle is turned off.



3. If necessary, drill a hole through the vehicle's firewall for the power wire.
4. If you have drilled a hole through the firewall or other sheet metal, insert a snap-in bushing to protect the wire.
5. Run the wire from inside the cab to the battery.
6. Strip 1/4 inch (.64 centimeters) of insulation from the end of the white wire or the extension wire, if the wire is not already stripped.
7. Attach a fuse link to the stripped end of the white wire using a crimped splice. If necessary, crimp a 3/8-inch terminal ring onto the free end of the fuse link.
8. Remove the bolt from the battery's positive (+) terminal.
9. Thread a 3/8-inch nut onto a 3/8-inch-by-1 1/2-inch bolt.
10. Slide one 3/8-inch washer onto the bolt.
11. Slide the terminal ring on the white wire's fuse link onto the bolt.
12. Slide a second 3/8-inch washer onto the bolt.
13. Slide the vehicle's positive (+) cable connector onto the bolt.
14. Screw the bolt into the battery's positive terminal and tighten it securely.
15. If necessary, tighten the nut installed on the bolt to secure the washers and cable connectors in place.

Figure 6. Connecting to a side-terminal battery



Connecting to the fuse panel

### Equipment required:

- A wire stripping/crimping tool
- An assortment of crimp connectors
- A truck or automotive fuse



Many fuse panels require a female spade connector.

1. Strip 1/4 inch (.64 centimeters) of insulation from the end of the white wire, if the wire is not already stripped.
2. Crimp the correct connector for your fuse panel onto the white power wire.
3. Connect the white power wire to the fuse panel.
4. Install a fuse of the proper rating (7.5 A) in the fuse panel.

## Installing the black ground wire

### Equipment required:

- A wire stripping/crimping tool
- An assortment of crimped terminal rings
- A power drill
- An assortment of drill bits
- A metal punch
- An assortment of sheet-metal screws
- An assortment of washers
- A screwdriver



1. Strip 1/4 inch (.64 centimeters) of insulation from the end of the black wire, if the wire is not already stripped.
2. Crimp a small terminal ring onto the stripped end of the black wire.
3. Select a place on the vehicle cab's sheet metal where you will attach the ground wire.
4. Drill a small hole at that spot.
5. With a punch, dimple and enlarge the hole slightly.
6. Scrape off a small circle of paint around the hole. You must expose the metal for a good electrical contact.
7. Use a sheet-metal screw and washer of the appropriate size to secure the black wire's terminal ring to the sheet metal.

Securing the wires

**Equipment required:**

- Wire ties

Secure the voltage regulator cables in place every 12 to 18 inches (30 to 46 centimeters) using wire ties.

- Make sure the cables do not interfere with any equipment or vehicle controls.
- Make sure the cables will not be damaged by any engine parts or sheet metal.

Connecting the bare-wire vehicle adapter to the cradle

1. Place the cradle inside the vehicle's cab, provided electrical installation is complete.
2. Plug the vehicle adapter into the cradle's vehicle power jack.
3. Securely mount the vehicle adapter inside the vehicle's cab using double-sided tape.

## Mounting the SC/VC-2X34

Follow the instructions in Chapter 8 to mount the SC/VC-2X34 to a vehicle mount within the vehicle's cab.

# Glossary

application	A PC, mainframe, or PTC program that is designed to perform a specific task for a user. Examples include route accounting, payroll, price lookup, shipping, and inventory control.
bit	The fundamental binary unit, either a 1 (on) or a 0 (off).
bps	Bits per second.
CD	Carrier detect signal. CD indicates that the modem is receiving a signal from the remote modem.
CTS	Clear-to-send signal. CTS indicates that the line between a modem and a terminal device is clear for transmission. CTS usually follows a raised request-to-send (RTS) signal.
data communication	The transport of encoded information from one device to another.
DSR	Data set ready signal. The modem sends DSR to the attached device to indicate that the modem is connected, on, and ready.
DTR	Data terminal ready signal. The signal sent by the terminal device to the modem to indicate that the terminal is ready for transmission.
ESD	Electrostatic discharge.
GND	Ground.
host computer	A customer-supplied computer that processes and stores data supplied by PTCs. A host computer may range in size, depending on the application, from a personal computer to a large mainframe computer.

LAN	Local area network. A radio network that supports data communication within a local area, such as within a warehouse or building. Contrast with <i>WAN</i> .
LED	Light-emitting diode. The LEDs serve as indicator lights on the cradle.
lithium-ion battery	A type of rechargeable battery used to power a PTC-2134 or PTC-2234. The advantage of lithium-ion batteries (over nickel-cadmium batteries) is their increased capacity in comparable weight and volume.
modem	Modulator-demodulator. A communication device that converts serial digital data from a transmitting device to a signal suitable for transmission over a telephone line and then reconverts the signal to serial digital data for the receiving device.
nickel-cadmium battery	A type of rechargeable battery used to power some PTCs and accessories.
port	A connector on the cradle through which data and instructions are sent to and received from other devices. Also the connector on the cradle to which cables or accessories are attached.
PTC	Portable Tele-Transaction Computer. A battery-powered, programmable, hand-held device used for collecting, storing, and transmitting data.
RI	Ring indicate signal. RI alerts a modem to a call waiting on the attached telephone line.
RS-232	An Electronic Industries Association (EIA) standard that defines the connector, the connector pins, and the signals used to serially transfer data from one device to another.
RTS	Request-to-send signal. RTS initiates the data transmission sequence on a communication line between a modem and a terminal device.
RXD	Receive data. RXD is the data that is being received.

SC/VC-2X34 Single-bay/Vehicle Cradle	A device that allows a PTC-2134 or PTC-2234 (without the RF-ID option) to communicate with an external serial device while charging the PTC's battery pack. The cradle is designed to be used on a flat horizontal surface, such as a table or desk, or inside a truck, car, or other vehicle.
signals	Electronic impulses that transmit data from one device to another.
TXD	Transmit data signal. TXD is the data that is being transmitted.
VDC	Volts direct current. A unit of measure of electric potential or potential difference in a unidirectional electrical current.
WAN	Wide area network. A radio network that supports data communication beyond a local area. That is, information can be sent across a city, state, or even nationwide. Contrast with <i>LAN</i> .





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