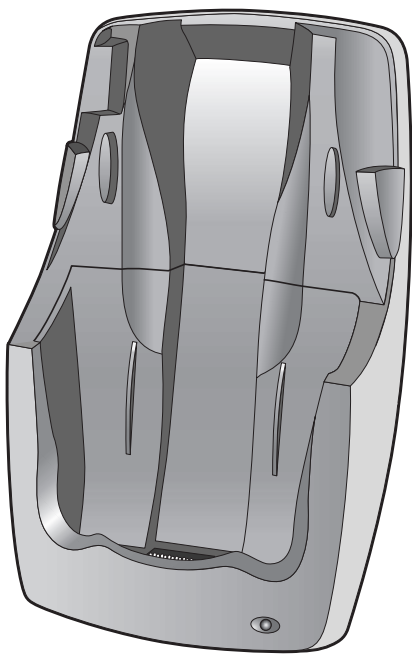


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V e h i c l e C r a d l e



**symbol**<sup>®</sup>

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One Symbol Plaza  
Holtsville, N.Y. 11742-1300  
<http://www.symbol.com>

## Patents

This product is covered by one or more of the following U.S. and foreign Patents:

U.S. Patent No. 4,593,186; 4,603,262; 4,607,156; 4,652,750; 4,673,805; 4,736,095;  
4,758,717; 4,760,248; 4,806,742; 4,816,660; 4,845,350; 4,896,026; 4,897,532; 4,923,281;  
4,933,538; 4,992,717; 5,015,833; 5,017,765; 5,021,641; 5,029,183; 5,047,617; 5,103,461;  
5,113,445; 5,130,520; 5,140,144; 5,142,550; 5,149,950; 5,157,687; 5,168,148; 5,168,149;  
5,180,904; 5,216,232; 5,229,591; 5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791;  
5,250,792; 5,260,553; 5,262,627; 5,262,628; 5,266,787; 5,278,398; 5,280,162; 5,280,163;  
5,280,164; 5,280,498; 5,304,786; 5,304,788; 5,306,900; 5,324,924; 5,337,361; 5,367,151;  
5,373,148; 5,378,882; 5,396,053; 5,396,055; 5,399,846; 5,408,081; 5,410,139; 5,410,140;  
5,412,198; 5,418,812; 5,420,411; 5,436,440; 5,444,231; 5,449,891; 5,449,893; 5,468,949;  
5,471,042; 5,478,998; 5,479,000; 5,479,002; 5,479,441; 5,504,322; 5,519,577; 5,528,621;  
5,532,469; 5,543,610; 5,545,889; 5,552,592; 5,557,093; 5,578,810; 5,581,070; 5,589,679;  
5,589,680; 5,608,202; 5,612,531; 5,619,028; 5,627,359; 5,637,852; 5,664,229; 5,668,803;  
5,675,139; 5,693,929; 5,698,835; 5,705,800; 5,714,746; 5,723,851; 5,734,152; 5,734,153;  
5,742,043; 5,745,794; 5,754,587; 5,762,516; 5,763,863; 5,767,500; 5,789,728; 5,789,731;  
5,808,287; 5,811,785; 5,811,787; 5,815,811; 5,821,519; 5,821,520; 5,823,812; 5,828,050;  
5,848,064; 5,850,078; 5,861,615; 5,874,720; 5,875,415; 5,900,617; 5,902,989; 5,907,146;  
5,912,450; 5,914,478; 5,917,173; 5,920,059; 5,923,025; 5,929,420; 5,945,658; 5,945,659;  
5,946,194; 5,959,285; 6,002,918; 6,021,947; 6,029,894; 6,031,830; 6,036,098; 6,047,892;  
6,050,491; 6,053,413; 6,056,200; 6,065,678; 6,067,297; 6,082,621; 6,084,528; 6,088,482;  
6,092,725; 6,101,483; 6,102,293; 6,104,620; 6,114,712; 6,115,678; 6,119,944; 6,123,265;  
6,131,814; 6,138,180; 6,142,379; 6,172,478; 6,176,428; 6,178,426; 6,186,400; 6,188,681;  
6,209,788; 6,209,789; 6,216,951; 6,220,514; 6,243,447; 6,244,513; 6,247,647; 6,308,061;  
6,250,551; 6,295,031; 6,308,061; 6,308,892; 6,321,990; 6,328,213; 6,330,244; 6,336,587;  
6,340,114; 6,340,115; 6,340,119; 6,348,773; 6,380,949; 6,394,355; D305,885; D341,584;  
D344,501; D359,483; D362,453; D363,700; D363,918; D370,478; D383,124; D391,250;  
D405,077; D406,581; D414,171; D414,172; D418,500; D419,548; D423,468; D424,035;  
D430,158; D430,159; D431,562; D436,104.

Invention No. 55,358; 62,539; 69,060; 69,187, NI-068564 (Taiwan); No. 1,601,796; 1,907,875;  
1,955,269 (Japan); European Patent 367,299; 414,281; 367,300; 367,298; UK 2,072,832; France  
81/03938; Italy 1,138,713  
rev. 06/02

## Introduction

This guide describes how to install and use a VCD 1700/2700 Series vehicle cradle with Symbol SPT 1700 and PPT 2700 Series terminals.

Install the cradle into the cab of your vehicle. Once installed, the cradle holds a terminal securely in place. It also:

- allows you to insert or remove the terminal by pressing the Terminal Release Buttons.
- provides power for operating the terminal.
- provides a serial port for data communication between a terminal and an external device (e.g., a printer).
- re-charges the terminal's Lithium-Ion battery.

The cradle takes its input voltage from a 12 or 24V vehicle electrical system.

## About This Guide

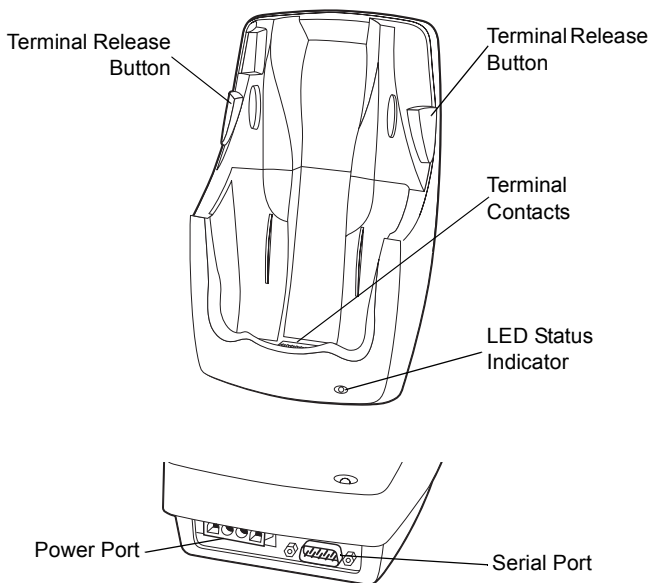
Specific topics in this guide include:

- [\*Parts of the Vehicle Cradle\*](#) on page 2.
- [\*Inserting a Terminal into the Cradle\*](#) on page 3.
- [\*LED Indicators\*](#) on page 4.
- [\*Charging a Terminal Battery\*](#) on page 4.
- [\*Care and Cleaning\*](#) on page 4.
- [\*Data Communications\*](#) on page 5.
- [\*Troubleshooting\*](#) on page 7.
- [\*Installing the Vehicle Cradle\*](#) on page 8.

For more information on the SPT 1700 or PPT 2700 series of terminals, please refer to the Quick Reference Guides that come with these terminals.

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## Parts of the Vehicle Cradle



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**Caution:** DO NOT USE THE TERMINAL WHILE DRIVING, as this may result in property damage or personal injury. Symbol Technologies, Inc. does not promote the use of these products except when parked or stationary, and is not responsible for any loss resulting from the use or misuse of our products. Most importantly, we do not want to see harm come to our customers or anyone else.

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## Inserting a Terminal into the Cradle

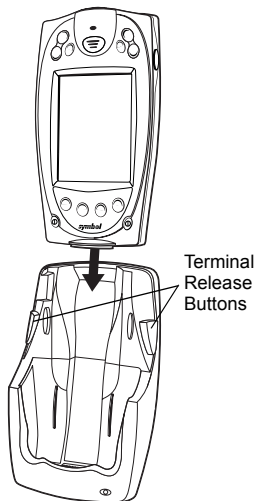
To insert a terminal into the cradle:

1. Place the bottom of the terminal into the cradle.
2. Push the terminal down into the cradle until it clicks into place.

## Removing a Terminal from the Cradle

To remove a terminal from the cradle:

1. Press and hold both yellow Terminal Release buttons.
2. Lift the terminal from the cradle.



## LED Indicators

The LED Status Indicator illustrated on [page 2](#) denotes the cradle conditions below.

Condition	LED State
Off	The cradle does not have power.
Red	The cradle has power.
Green	The cradle has power, and an SPT 1700 terminal has been correctly inserted. <b>Note:</b> For a PPT 2700, this light does <b>not</b> appear.

## Charging a Terminal Battery

The cradle uses your vehicle to provide power for:

- operating an SPT 1700 or PPT 2700 series terminal.
- charging a Lithium-Ion battery in an SPT 1700 or PPT 2700.

The terminal begins to power itself through the cradle as soon as you insert it. This does not deplete the vehicle battery significantly. It takes up to 3 hours to recharge a completely depleted Lithium-Ion battery pack in an SPT 1700 or PPT 2700 terminal, but times may vary depending on your terminal. For more battery charging information, refer to your terminal's Quick Reference Guide.

## Care and Cleaning

Avoid getting oils, grease or gasoline on the cradle, and do not let debris gather in the bottom of the cradle slot. When necessary, clean the cradle with a mild cleaner. If you are not sure whether or not to use a particular cleaner, contact Symbol for advice.

## **Data Communications**

### **Connecting to an External Device by Serial Cable**

An SPT 1700 or PPT 2700 provides a serial port at the bottom of the terminal. When you insert a terminal into the vehicle cradle, it connects to the cradle's serial port. The terminal can then use the cradle's serial port to communicate with an external device.

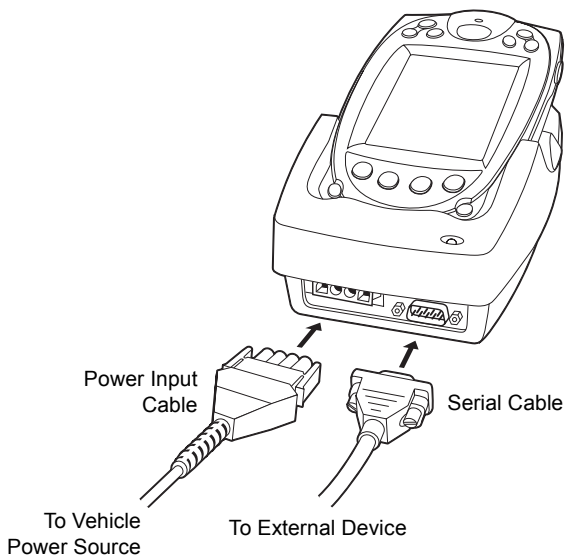
The external device must use an RS-232 serial connection limited to GND, DSR, DTR, TXD, RXD, RTS and CTS data lines. It must also have its own power supply, as the cradle's serial port does not provide power.

To set up communications:

1. Plug a 9-pin serial cable (female) into the serial port located next to the power port at the bottom of the cradle. Note that some devices may require the serial cable to be a null modem cable. The data cable is not provided, and can be ob-

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tained locally. To connect to the Symbol Mobile Gateway, use Symbol Data Cable p/n 25-19229-70.



2. Connect the other end of the cable to the serial port of the external device (e.g., a host computer, printer, or modem).

To begin communication:

1. Insert the terminal into the cradle.
2. The terminal synchronizes automatically by default. To synchronize manually, you must reconfigure the terminal.

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**Caution:** Removing a terminal during data communication will disrupt communication between the terminal and the attached device.

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## Troubleshooting

Symptom	Possible Cause	Action
LED Status Indicator does not light up.	Cradle is not receiving power.	Make sure the Power Input cable is securely connected to the cradle's Power Port.
Terminal's battery is not recharging.	Terminal was removed from the cradle too soon.	Replace the terminal in the cradle; you may have removed it before it was recharged. It takes about 3 hours to recharge a completely depleted Lithium-Ion battery pack in an SPT 1700 or PPT 2700 terminal.
	Battery is faulty.	Replace the battery.
	Terminal has not been placed correctly in the cradle.	Remove the terminal from the cradle, and re-insert correctly. If the battery still does not charge, contact Customer Support. For an SPT 1700, the LED Status Indicator turns green when the terminal has been correctly inserted. For a PPT 2700, the LED stays red.
	Terminal is drawing power.	Turn the terminal off.
No data was transmitted, or transmitted data was incomplete.	Terminal removed from cradle during communications.	Replace terminal in cradle and re-transmit.
	No null modem cable was used.	Some external devices require a null modem cable. Retransmit using a null modem cable.
	Incorrect cable configuration.	See your system administrator.

## Installing the Vehicle Cradle

Please read all of these instructions before you begin. To install the vehicle cradle, you need:

- one Power Input cable UL listed #18 AWG stranded, outer jacket resistant to automotive chemicals.
- one UL-listed in-line fuse holder rated at 7 Ampere 32 VDC with a UL-listed slow blow fuse with a 2 Ampere rating.
- four #8-32 self-locking nuts.
- a drill with a #10 drill bit (.1935”).
- a connector for terminating the Power Input cable. Select one that mates with your vehicle’s power source connector.

### **WARNING**

A properly trained technician must perform the installation. Improper installation can damage your vehicle and the cradle.

Routing and securing the power cable assembly from the battery, through the fuse, and to the power unit is very important. The hazards associated with improper wiring around the vehicle engine compartment are severe. Use the proper bushings and clamps when routing the wires through openings to avoid any contact with sharp edges or sharp surfaces. A wire contacting sharp surfaces and subject to engine vibrations under normal operation can cause the insulation of the wiring to wear away causing a short between the bare wire and the vehicle chassis. This results in the potential for starting a fire in the vehicle engine compartment.

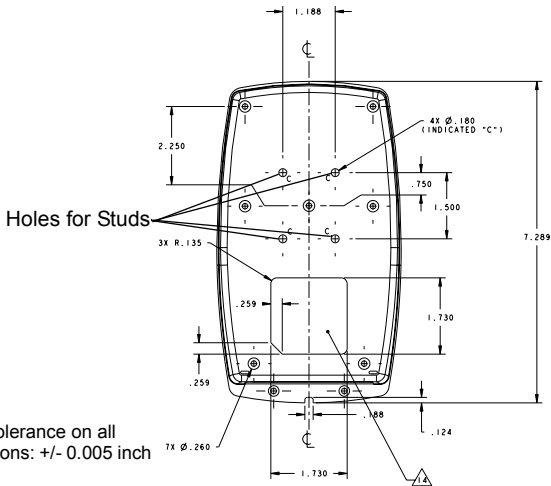
To install the vehicle cradle:

1. Select a mounting location for the cradle. The area should be flat and approximately 8” x 5” in size. There must be adequate room to insert and remove the terminal from the cradle.

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Note: The cradle chassis must be grounded to the truck chassis.

2. Prepare the mounting surface to accept four #8-32 studs in the pattern shown below. You need to drill four holes with a #10 drill bit.



Note: Tolerance on all dimensions: +/- 0.005 inch

3. Install the cradle on the mounting surface.
  - a. Position the cradle on the mounting surface.
  - b. Fasten it using four #8-32 self-locking nuts.

---

**Caution:** Do not install the cradle on or near an airbag cover plate or within an airbag zone. Also, do not install it in a location that will affect vehicle safety or driveability.

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## 4. Locate your vehicle power source.

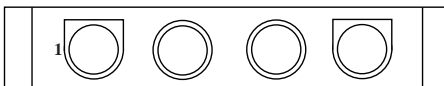
<b>Installation Note: Power Sources</b>
<p>The ideal location for connecting the Power Input cable is an accessory output in your vehicle's fuse panel. If a fused output is not available, Symbol recommends that you use the provided in-line fuse holder and 2A fuse. The fuse protects your vehicle from an electrical short on the power line to the cradle.</p> <p>To use the cradle when your vehicle's ignition is off, connect the cradle to unswitched power.</p>

## 5. Route the Power Input cable from the cradle location to the connection point for your vehicle's power source.

<b>⚠ Installation Note: Cable Routing Caution ⚠</b>
<p>The means of routing and securing the Power Input cable from the cradle through to the vehicle power source is extremely important. Hazards associated with improper wiring can be severe. To avoid unintentional contact between the wire and any sharp edges, provide the cable with proper bushings and clamping where it passes through openings. If the wire is subjected to sharp surfaces and excess engine vibration, the wiring harness insulation can wear away, causing a short between the bare wire and chassis. This can start a fire.</p>

Pin 1: No Connection

Pin 2: Chassis ground  
(Bare Wire)



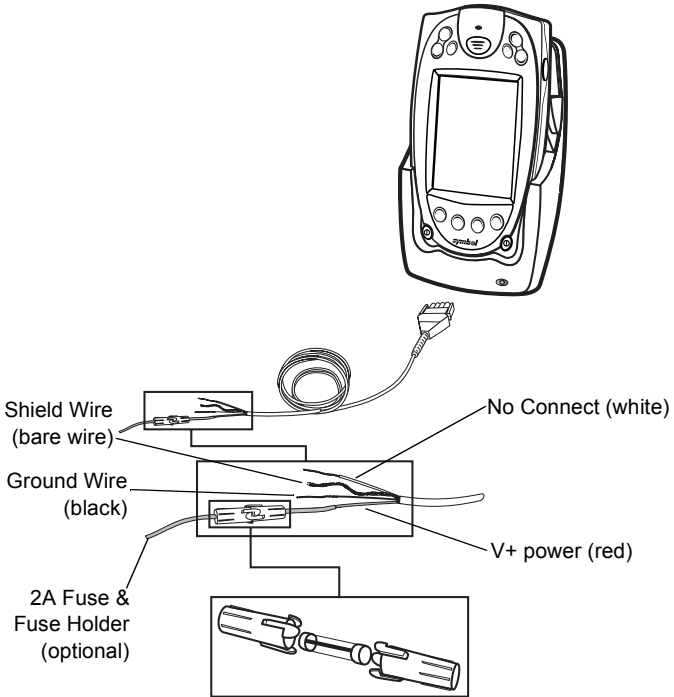
Pin 3: Ground  
(Black Wire)

**Power Cable Assembly Connector**

Pin 4: V+ (Red Wire)

<b>Voltage/Current</b>	<b>Value</b>
Input Voltage	+12/24 VDC <u>    </u> <u>    </u> <u>    </u>
V+ Input Current	2000 mA maximum

# Q u i c k R e f e r e n c e



6. If you are using the in-line fuse holder supplied with the cradle (optional):
  - a. Make sure the fuse holder contains a 2 Amp slow-blow fuse.
  - b. Splice the fuse holder to the end of the red V+ (9-32VDC) wire, as shown above. Make the distance from the fuse to the power connection point as short as possible. Place a CAUTION label on each fuse holder.

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7. Prepare the cable termination.
  - a. Red wire: connect to a V+ (9 to 32 VDC) vehicle power source.
  - b. Black wire: connect to vehicle ground wire or chassis ground.
  - c. Shield wire: remove any shield wire that may be exposed. Note: The shield wire is connected to the ground wire inside the terminal.
  - d. White wire: Remove any white wire that may be exposed.

<b>Installation Note: Cable Termination</b>
How the cable terminates depends on your vehicle. If your vehicle has a power output connector, then you must attach a mating connector to the end of the power cable. You may be able to connect to a fuse panel with a simple blade terminal or commercially available connector. Consult your vehicle Owner's Manual for information on how to access your vehicles power supply.

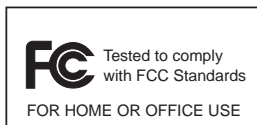
8. Connect the Power Input cable to your vehicle power source. Then plug the cable into the Power Port on the terminal.

## Regulatory Information

All Symbol devices are designed to be compliant with rules and regulations in locations they are sold and will be labeled as required.

Any changes or modifications to Symbol Technologies equipment, not expressly approved by Symbol Technologies, could void the user's authority to operate the equipment.

## Radio Frequency Interference Requirements



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

## Radio Frequency Interference Requirements - Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.



## Marking and European Economic Area (EEA)

### Statement of Compliance

Symbol Technologies, Inc., hereby declares that this device is in compliance with all the applicable Directives, 89/336/EEC, 73/23/EEC, 95/54/EEC. A Declaration of Conformity may be obtained from <http://www2.symbol.com/doc/>

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# Q u i c k R e f e r e n c e

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V e h i c l e C r a d l e

# Q u i c k R e f e r e n c e

## Warranty

(A) Seller's hardware Products are warranted against defects in workmanship and materials for a period of twelve (12) months from the date of shipment, provided the Product remains unmodified and is operated under normal and proper conditions. Warranty provisions and durations on software, integrated installed systems, Product modified or designed to meet specific customer specifications ("Custom Products"), remanufactured products, and reconditioned or upgraded products, shall be as provided in the applicable Product specification in effect at the time of purchase or in the accompanying software license. (B) Products may be serviced or manufactured with parts, components, or subassemblies that originate from returned products and that have been tested as meeting applicable specifications for equivalent new material and Products. The sole obligation of Seller for defective hardware Products is limited to repair or replacement (at Seller's option) on a "return to service depot" basis with prior Seller authorization. Shipment to and from Seller will be at Seller's expense, unless no defect is found. No charge will be made to Buyer for replacement parts for warranty repairs. Seller is not responsible for any damage to or loss of any software programs, data or removable data storage media, or the restoration or reinstallation of any software programs or data other than the software, if any, installed by Seller during manufacture of the Product. The aforementioned provisions do not extend the original warranty period of any Product that had either been repaired or replaced by Seller. (C) The above warranty provisions shall not apply to any Product (i) which has been repaired, tampered with, altered or modified, except by Seller's authorized service personnel; (ii) in which the defects or damage to the Product result from normal wear and tear, misuse, negligence, improper storage, water or other liquids, battery leakage or failure to perform operator handling and scheduled maintenance instructions supplied by Seller; (iii) which has been subjected to unusual physical or electrical stress, abuse, or accident, or forces or exposure beyond normal use within the specified operational and environmental parameters set forth in the applicable Product specification; nor shall the above warranty provisions apply to any expendable or consumable items, such as batteries, supplied with the Product. EXCEPT FOR THE WARRANTY OF TITLE AND THE EXPRESS WARRANTIES STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES ON PRODUCTS FURNISHED HERUNDER INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW ARE LIMITED IN DURATION TO THE LIMITED WARRANTY PERIOD. SOME STATES OR COUNTRIES DO NOT ALLOW A LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS. IN SUCH STATES OR COUNTRIES, FOR SUCH PRODUCTS, SOME EXCLUSIONS OR LIMITATIONS OF THIS LIMITED WARRANTY MAY NOT APPLY. The stated express warranties are in lieu of all obligations or liabilities on the part of Seller for damages, including but not limited to, special, indirect or consequential damages arising out of or in connection with the use or performance of the Product or service. Seller's liability for damages to Buyer or others resulting from the use of any Product or service furnished hereunder shall in no way exceed the purchase price of said Product or the fair market value of said service, except in instances of injury to persons or property.

## Service Information

Before you use the unit, it must be configured to operate in your facility's network and run your applications.

If you have a problem running your unit or using your equipment, contact your facility's Technical or Systems Support. If there is a problem with the equipment, they will contact the Symbol Support Center:

United States <sup>1</sup>	1-800-653-5350 1-631-738-2400	Canada	905-629-7226
United Kingdom	0800 328 2424	Asia/Pacific	337-6588
Australia	1-800-672-906	Austria/Österreich	1-505-5794-0
Denmark/Danmark	7020-1718	Finland/Suomi	9 5407 580
France	01-40-96-52-21	Germany/Deutschland	6074-49020
Italy/Italia	2-484441	Mexico/México	5-520-1835
Netherlands/Nederland	315-271700	Norway/Norge	+47 2232 4375
South Africa	11-8095311	Spain/España	91 324 40 00 Inside Spain
Sweden/Sverige	84452900		+34 91 324 40 00 Outside Spain
Latin America Sales Support	1-800-347-0178 Inside US +1-561-483-1275 Outside US		
Europe/Mid-East Distributor Operations	Contact local distributor or call +44 118 945 7360		

<sup>1</sup>Customer support is available 24 hours a day, 7 days a week.

For translations and the latest version of this guide go to:

<http://www.symbol.com/manuals>.



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**Revision B — July 2002**