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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

The CRD1500-4000E 4-slot Ethernet cradle enables up to 4 SPT 1500 terminals to simultaneously communicate with their associated host computers connected to a local area network. Up to 4 terminals may be seated in the cradle. Additionally, up to 7 CRD1500-4000S serial cradles may be daisy-chained with this unit, providing a total of 32 slots available for host communications.

Theory of Operation

Palm HotSync Manager software supports one HotSync at a time between a single terminal and a single PC. If the application requires multiple devices to communicate simultaneously with a single host, then synchronization server software such as Scout MTS™ or AVANTGO™ is required. This software may be purchased from Symbol. Contact your Symbol sales representative for information.

About This Guide

This guide provides instruction on the setup, use and maintenance of the CRD1500-4000E 4-slot cradle. Additionally it describes steps to set up an SPT 1500 terminal for use with the CRD1500-4000E, and steps to update the standard SPT 1500 Desktop Software to permit synchronization over an Ethernet network. Specifically, the following topics are discussed:

- [Set Up on page 2](#)
- [Software Configuration on page 8](#)
- [The HotSync Process on page 12](#)
- [Indicator Lights on page 14](#)
- [Troubleshooting on page 15](#)
- [Regulatory Information on page 16](#)
- [Service Information on backcover.](#)



Set Up

The set up of the cradle includes unpacking, mounting the cradle either on a wall or table top, and connecting the power and serial communication cables.

Before setting up the cradle, make sure that SPT 1500 Desktop Software (p/n SW-35138-xx) is installed and running on the host computer, as well as properly configured Network HotSync software on the SPT 1500 terminal. See the *SPT 1500 Product Reference Guide* (p/n 70-33757-xx) for instructions on the installation of this software. Specific software setup necessary to use the CRD1500-4000E is covered in this document.

Additionally, a DHCP server must be configured and operational on the subnet to which the cradle will be attached.

Unpacking the Cradle

The shipping box should include the following:

- One 4-slot cradle (p/n CRD1500-4000E)
- A wall-cube power supply
- This Quick Reference Guide (p/n 72-52665-xx).

No Ethernet cable is shipped with the cradle, but is required to connect the cradle to an Ethernet hub.

If any parts are missing or damaged, contact your authorized Customer Support Representative immediately at 1-800-659-2240 in the USA. See the back of this manual for contact information in other countries. Save the shipping box for storing or shipping.

Connecting Power

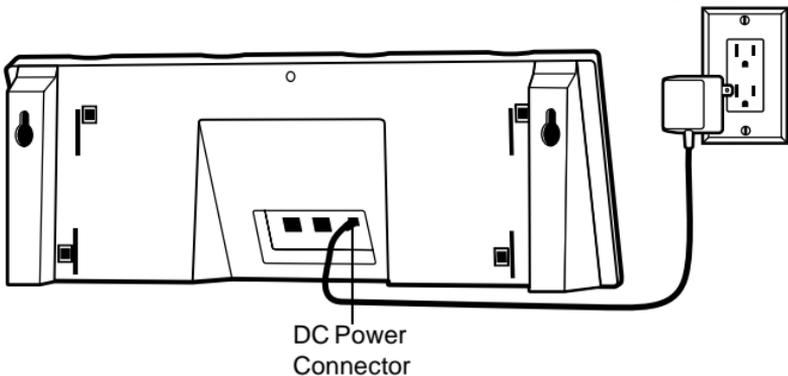
To connect power to the cradle:

1. Connect the power supply cable round plug to the Power Connector on the back of the cradle, as shown in the following illustration.

Note: Make sure the power supply is a 12V, 300ma power supply cable.

2. Connect the Power Supply AC plug to a standard electrical outlet, as shown in the following illustration.

Note: International customers must use a separate AC power cable appropriate for their respective country.



3. The cradle's LEDs should blink, then remain off until a terminal is inserted into one or more of the slots.

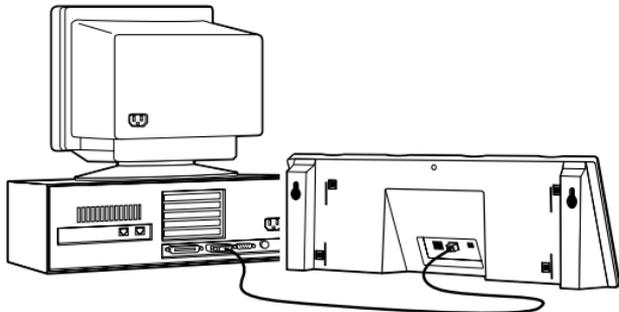
Setting Up for Network Communications

The CRD1500-4000E cradle facilitates communication between SPT 1500 terminals and their associated host computers connected to any Ethernet network. As the CRD1500-4000E is an Ethernet device, it must be connected to an Ethernet network which is connected to the same network as the host computers, or an Ethernet network connected to the larger Internet via an Internet gateway.

There must be a DHCP server on the same subnet as the CRD1500-4000E in order for the unit to be automatically configured with an IP address, a gateway IP address, and a subnet mask. The single IP address is shared between all slots.

To set up for network communications:

1. Ensure there is a DHCP server accessible to the CRD1500-4000E on the subnet to which it will be attached.
2. Connect one end of a standard 10 Base-T network cable to the middle connector on the back of the CRD1500-4000E. Connect the other end of the cable to a hub which is connected to your subnet.
3. Power-up the unit; the CRD1500-4000E performs its power-up sequence, then attempts to collect all network parameters from the local DHCP server. While collecting network parameters, all LEDs flash green. Once configuration completes, all LEDs shut off.



If configuration of the unit from the local DHCP server fails, all LED's flash red. The unit becomes unresponsive until the power is removed, the unit is connected to a network with a DHCP server, and power is restored.

Note: Before communication between the SPT 1500 terminal and the host computer can take place, the SPT 1500 Desktop Software *must* be installed and running on the host computer.

Inter-Connecting Cradles

Up to seven 4-slot CRD1500-4000S serial cradles may be inter-connected (daisy-chained) with the CRD1500-4000E using an RJ-45/10 to RJ-45/10 inter-cradle cable (p/n 70246-001). This cable is required for each cradle to be connected.

WARNING

Each cradle must have its own power supply. Any other method of power hookup is unsafe.

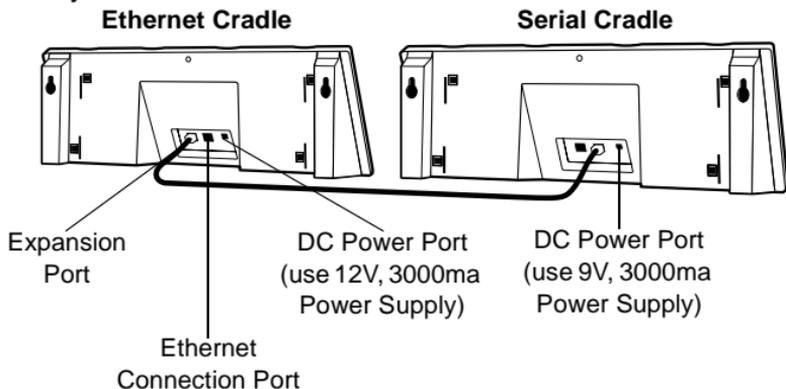
To inter-connect cradles:

1. Connect the power supply to the second 4-slot cradle as described in the *Connecting Power* section.

Note: You must use a 9V 300ma power supply on the serial cradle being connected to the ethernet cradle.

2. Plug one end of the inter-cradle cable into the modular jack labeled *EXP* on the back of the first cradle. The Expansion Connector is the modular jack located furthest from the Power Connector, as shown in the following illustration.
3. Plug the other end of the inter-cradle cable into the modular jack labeled *Host* on the back of the second cradle. The Host Connector is located between the Power Connector and the Expansion Connector, as shown in the following illustration.

4. Repeat the previous steps for any additional 4-slot cradles you want to connect.



Stacking Cradles

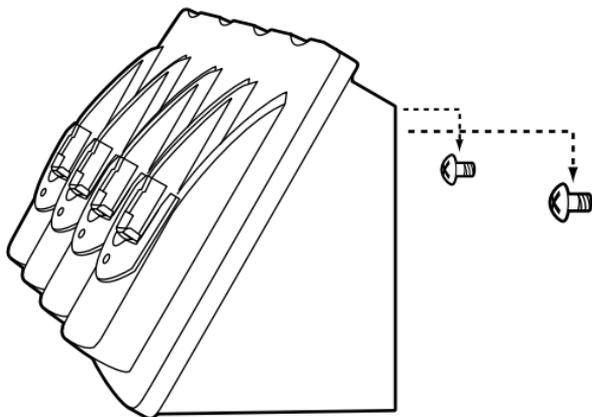
Optionally, you can stack up to 4 cradles on top of each other seated on a table top. To stack the cradles, you'll need the 4-slot cradle Stacking Kit, (p/n CRD1500-4000KT). Instructions for stacking the cradles are provided with the kit.

Wall-Mounting the Cradle

The CRD1500-4000E 4-slot cradle can either be seated on a table top or mounted on a wall. Make all cable connections before wall-mounting the cradle.

To wall-mount the cradle:

1. Insert two screws appropriate for the mounting surface into the wall, 14 inches apart. These screws must be able to support a weight of at least 2.2 lbs.
2. Place the back of the cradle over the screws, aligning the wall-mount holes over the two screws, and pull down on the cradle to fasten onto the screws, as shown:





Software Configuration

The CRD1500-4000E appears to SPT 1500 terminals inserted into the cradle as a dial-up PPP service. Therefore, just as you would set up a Palm III terminal to connect to an Internet Service Provider (ISP) like Compuserve or Earthlink, the SPT 1500 terminals must be configured for use with the cradle. This section describes the steps necessary to configure both the SPT 1500 terminal and the CRD1500-4000E.

Installing NetSync

An SPT 1500 terminal must have NetSync installed and configured for it to communicate with the CRD1500-4000E. Additionally, NetSync extensions to the HotSync Manager must be installed on the host system which the SPT 1500 terminal is to synchronize with. The Network HotSync software is a free add-on for the SPT 1500 and Palm Computing Platform series organizers and is available from the PalmComputing website at <http://www.palm.com/custsupp/downloads/netsync.html>. Please note, in some later versions, such as Palm V, Network HotSync is included as part of the desktop software.

Follow the instructions to install the network HotSync software on your host PC, then perform a HotSync to install the program on your SPT 1500 terminal.

Configuring NetSync Options

Once NetSync is installed on your SPT 1500 terminal, it must be configured for use with the CRD1500-4000E. From the HotSync panel on your SPT 1500, select each of the option panels available from the "Options" menu (accessed by tapping the Menu icon) and configure them as follows:

1. To configure the *Modem Sync Preferences*:
 - a. Select the HotSync application from the main application screen.
 - b. Select the menu icon to display the options menu.

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- c. Select Modem Sync Prefs.
 - d. Select “Network” and tap “OK”.
2. To configure the *LANSync Preferences*:
- a. Select the HotSync application from the main application screen.
 - b. Select the menu icon to display the options menu.
 - c. Select LANSync Prefs.
 - d. Select either LANSync or Local HotSync. The CRD1500-4000E doesn't use the LANSync functionality, so your selection here doesn't have an effect.
3. To configure the *Primary PC host Setup*:

Note: This panel is extremely important! It tells the SPT 1500 terminal how to locate the machine which it will synchronize with on the network.

- a. Select the HotSync application from the main application screen.
- b. Select the menu icon to display the options menu.
- c. Select Primary PC host Setup.
- d. Using the PC you will synchronize with most often, copy the Primary PC Name, the Primary PC address, and the Subnet Mask to the terminal. To do this, place the SPT 1500 terminal in the cradle. Then, on the host PC, right click on the HotSync Manager in your Windows tray. Left click on Setup, click on the Network tab and then click on the TCP/IP Settings button. Your SPT 1500 now displays the copied data on the Primary PC setup panel.

Note: If the Subnet Mask box on your PC is empty, you do not need to enter anything in that section on your SPT 1500. Also, Network Hotsync setup must be run on this PC before the Network tab will be available.



4. To configure the *Conduit Setup*:
 - a. Select the HotSync application from the main application screen.
 - b. Select the menu icon to display the options menu.
 - c. Select Conduit Setup.
 - d. Check any items that you want synchronized and uncheck any items that you don't want synchronized. Then tap "OK."
5. To configure the *Modem Setup*:
 - a. Select the HotSync application from the main application screen.
 - b. Select the menu icon to display the options menu.
 - c. Choose the communication rate of 57600 bps and a Standard modem.
 - d. Tap "Done."

Creating a CRD1500-4000E Modem Sync Service

The SPT 1500 terminal communicates with the CRD1500-4000E via a Modem Sync. The Modem Sync offers many options which must be configured for use with the CRD1500-4000E.

Create a separate CRD1500-4000E network configuration and select it as your default Modem Sync service. Use either Graffiti or the keyboard feature (click in the lower left-hand corner of the scratch pad on the **abc** to access the keyboard) to enter the following information:

1. Select the HotSync application from the main application screen.
2. Choose the Select Service box under the Modem Sync icon to create a new CRD1500-4000E service.
3. To select the Earthlink service, Click Menu->Duplicate.

4. Change the service name to CRD1500-4000E. Leave the user name and password blank. You may enter any phone number you want, except '00', or you may leave it blank. The SPT 1500 terminal will not be able to HotSync if you use '00' as a phone number.

Configuring the Remote Host PC

The remote PC you wish to HotSync the SPT 1500 to must be set up for Network HotSync and configured to run from the network.

1. Make sure HotSync Manager is installed and running.
2. From the HotSync Manager, make sure Network is checked. If you don't want HotSync Manager to use a serial port, make sure Local is unchecked.

Note: The PC must be configured for proper TCP/IP network operation.

Upgrading to HotSync 3.01

You must have HotSync 3.0.1 or later installed on all SPT 1500 terminals to be used with the CRD1500-4000E. The Palm website explains how to perform this upgrade: <http://www.palm.com/custsupp/downloads/hs301.html>.



The HotSync Process

Once the CRD1500-4000E is properly connected, data communication between an SPT 1500 terminal and the host computer can take place. When a terminal is inserted in the cradle, the cradle detects its presence and attempts to initiate the HotSync process on the terminal. All local slots in the cradle operate simultaneously; the HotSync procedure starts immediately when any terminal is inserted into a local slot.

As stated earlier, if multiple slots are to be Hotsync'd simultaneously, each must communicate with a different host PC. If the application requires simultaneous connection to a single host database, additional software, available from Symbol, is required.

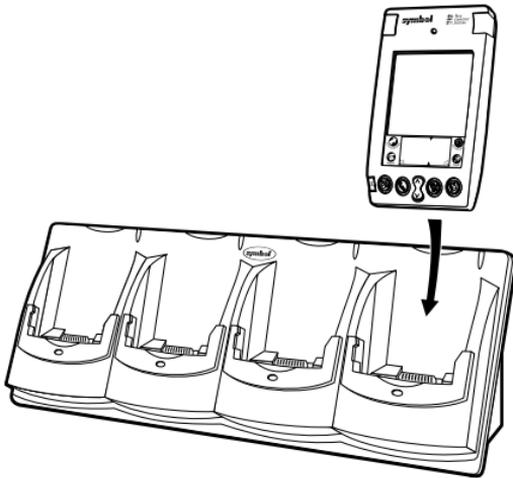
Terminals inserted into daisy-chained cradles are Hotsynced in a round-robin fashion simultaneously with any HotSyncs from local slots. Daisy-chained cradles share a logical "fifth slot" on the CRD1500-4000E, which, while it shares equal priority with the local slots, allows only one HotSync at a time.

Performing HotSync

To initiate communication between the terminal and the host, gently insert the SPT 1500 terminal into a local cradle slot, or a slot on an inter-connected serial cradle. Do not force. When properly inserted, the slot's LED turns red, then changes to flashing green, indicating that the host and the terminal are communicating.

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Removing the terminal from the cradle while the LED is flashing green will result in a disruption of communication data may be lost.



If the terminal is inserted into an inter-connected serial cradle slot while another terminal on the serial cradle chain is communicating with a host, the terminal waits (its LED remains red) until the first terminal finishes communicating. After the communication session completes, the slot's LED turns solid green and remains green until the terminal is removed from the slot. To remove the terminal, pull it straight up from the slot.

Indicator Lights

Light	Indication
Off	No terminal is present in the slot.
Solid Red	Terminal is present, but communication has not started.
Green Flashing	Terminal is in the cradle, and communicating with the host computer.
Slow Red Flashing	Error, communication did not start.
Fast Red Flashing	Error, terminal inactivity timeout. The terminal has not activated in the past 15 minutes, and the timeout period has expired.
Solid Green	Terminal is present in the slot, communication is complete.
All LEDs Red Flashing	Automatic configuration of the cradle via the local DHCP service failed. Connect a properly configured DHCP server to the subnet, and power cycle the CRD1500-4000E.

Troubleshooting

Symptom	Cause	Suggested Action
LEDs do not light when the cradle is plugged in.	Cradle is not receiving power.	Make sure the power supply is securely connected and receiving power.
LED does not light when the cradle is connected.	Terminal is not seated firmly in the cradle.	Reseat the terminal in the cradle.
Attempt by the cradle to HotSync the terminal failed.	Terminal was removed from the cradle while the LED was blinking green.	Replace the terminal in the cradle. This allows the cradle to attempt another HotSync.
	Terminal's batteries are dead.	Replace alkaline batteries in terminal.
	Active Error dialog box on terminal.	Error dialog box must be cleared in the terminal. Use the stylus to press "OK" on the terminal's touchscreen.
The unit locks up with all LEDs flashing red.	The unit could not configure itself, or it lost its lease on its IP address	Hook the unit up to an Ethernet network with a correctly functioning DHCP server and one available IP address.

Ergonomic Recommendations

Caution: In order to avoid or minimize the potential risk of ergonomic injury follow the recommendations below. Consult with your local Health & Safety Manager to ensure that you are adhering to your company's safety programs to prevent employee injury.

- Reduce or eliminate repetitive motion
- Maintain a natural position
- Reduce or eliminate excessive force
- Keep objects that are used frequently within easy reach
- Perform tasks at correct heights
- Reduce or eliminate vibration
- Reduce or eliminate direct pressure
- Provide adjustable workstations
- Provide adequate clearance
- Provide a suitable working environment
- Improve work procedures.



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.

CE 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. A Declaration of Conformity may be obtained from <http://www2.symbol.com/doc/>

Warranty

(A) Seller's hardware Products are warranted against defects in workmanship and materials for a period of three (3) 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 ¹	1-800-653-5350 1-631-738-2400	Canada	905-629-7226
United Kingdom	0800 328 2424	Asia/Pacific	+65-6796-9600
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		

¹Customer support is available 24 hours a day, 7 days a week.

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



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