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Symbol Technologies, Inc. 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. 4,460,120; 4,496,831; 4,593,186; 4,603,262; 4,607,156; 4,652,750; 4,673,805; 4,736,095; 4,758,717; 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; 5,321,246; 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; 5,850,078; 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; 6,036,098; 6,047,892; 6,050,491; 6,053,413; 6,056,200: 6,065,678: 6,067,297: 6,068,190: 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; 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 (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. 04/01

Introduction

The CRD 1500 Modem/Charging Cradle contains an internal MCDA modem card that enables the SPT1500 or SPT1550 terminal to exchange data with other modem-equipped systems through analog telephone lines. The modem checks to ensure the line is not being used before going on-line.

A Hot Sync button on the front of the cradle lets you synchronize information on your terminal with a desktop PC. It also provides charging capability for terminals equipped with a rechargeable battery pack.

To use the modem, follow the cradle installation instructions in this guide, insert your terminal in the cradle, then follow the instructions provided with your terminal's application software. For more information about the SPT 1500 or SPT 1550 terminal, refer to the terminal's *Quick Reference Guide* or *Product Reference Guide*.

Before Setting Up

Each cradle is shipped with its specific certification and regulatory labels. Using the wrong cradle version may cause unreliable operation, damage to your modem, or damage to the telephone network which may lead to prosecution.

Confirm that you have the correct Telecom Approval Label applied to your cradle as required for your region.

Version	Labeling	Cradle	Modem Card
European TBR 21 Australian ACA	"CE" and "A-Tick" marks	CRD1500-1000EU	MCDA-3
Americas FCC 68 and others	"Complies with Part 68, FCC Rules" and others.	CRD1500-1000MC	MCDA-1

Setting Up the Cradle

The cradle may be desk or wall-mounted. To power the cradle, plug the power connector into the back of the cradle and the other end to the wall outlet.

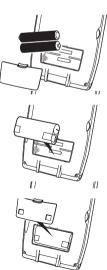
Note: Use only a Symbol-approved power supply, output rated 8 VDC and minimum 700mA. The power supply is certified to EN60950 with SELV outputs.

Hinweis: Benutzen Sie nur eine Symbol Technologies genehmigt Stromversorgung in den Ausgabe: 8 VDC und minimum 700mA. Die Stromversorgung ist bescheinigt nach EN60950 mit SELV Ausgaben.

Installing Rechargeable Batteries

To replace the dry cell batteries in the SPT 1500 terminal with the rechargeable battery pack:

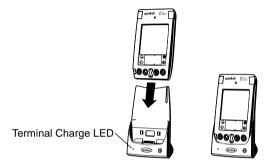
- Remove battery cover on rear of terminal.
- 2. Pull the tether up to release the two dry cell batteries.
- Insert rechargeable battery pack, making sure the tether is in place underneath. Be sure the battery pack is inserted in the proper orientation, as shown.
- 4. Install new battery door (two square holes).



Charging the SPT 1500 Battery Pack

To charge the NiMH battery pack in the terminal:

- 1. Ensure the cradle is powered on.
- 2. Insert the terminal in the cradle.



The Terminal Charge LED turns red to indicate charging. The terminal's battery is fully charged in no more than three hours. The Terminal Charge LED turns green when the battery is fully charged.

Note: Frequent insertion and removal of the terminal in the cradle may decrease battery life.

If the battery in the terminal is low, the Terminal Charge LED may flicker or turn yellow during a HotSync operation. The LED returns to red when the operation is complete.

Connecting to the Telephone Network

Your cradle supports direct 2-wire connection to the PSTN, and indirect connection via compatible extensions on a PABX system. Do not connect to digital lines.

Use a compliant telephone lead with RJ11 connector (line on middle pair) to connect to the cradle, terminated with a wired local

telecom connector compatible with the telephone network. This cable is available from your local supplier. Alternatively, compliant RJ11-to-RJ11 cables may be used with a range of adapters for certain regions, e.g., Europe.

Caution: To reduce risk of fire, use only No. 26 AWG or larger telecommunication line cord

Insert the telephone lead to one of the RJ11 ports on the back of the cradle (the second port can be used to connect parallel telephone equipment). Insert the other end to the telecom network (using an appropriate adapter if required for your country).

Country Settings

To ensure your modem operates properly and in accordance with local telecom regulations, select the correct settings for your telephone network. How settings are selected varies according to the operating system and applications used. See your terminal's manual and any appropriate software manuals for more information.

Modem settings can typically be found under Connection Preferences (or Modem Preferences on older operating systems). If you are unable to find these settings, the application on your terminal is probably selecting the settings automatically. See the manuals or supplier for confirmation.

To select a country, add +GCI=xxZ (where xx is the country code defined in the following table) to the default string (e.g., AT&FX4) so it reads (in this example): AT&FX4+GCI=xxZ

If no default string is available, enter the string AT+GCI=xxZ.

Country Codes Table According to ITU T.35

Country	Code (xx)	Country	Code (xx)	Country	Code (xx)
USA (default)	B5	Canada	20	Mexico	73
Europe (See notes below)	FD	Chile	25	Peru	88
Argentina	07	Greece	46	Portugal	8B
Australia	09	Italy	59	Singapore	9C
Austria	0A	Japan	00	Spain	A0
Brazil	16	Malaysia	6C	Taiwan	FE

European Notes

- European-specific hardware is required. To avoid damage, use CRD1500-1000EU in Europe.
- Both the USA (B5) and European (FD) codes contain the same settings. You may use the default B5 setting in Europe.
- Pulse dialing characteristics vary in Europe. Countries that do not fully support tone dialing can support pulse dialing using the specific Country Code instead of European (FD).
- If you have problems, select the specific country setting.

AT Commands

AT commands may be used by more experienced users. The modem confirms that the telephone line is not being used before making a call. If the line is in use, the modem responds "NO DIALTONE" (or equivalent numeric response, depending on the setting). The application may retry later. To disable this feature, see the S13 command in the table.

AT Command Table

Command	Description	Comment
A/	Repeat last command	
А	Answer Call and attempt connection	
DT1234567890 *#ABCD	Tone Dial 1234567890*#ABCD and attempt connection	Insert comma for pause (see S8), W to dial without
DP1234567890	Pulse Dial 1234567890 and attempt connection	Checking for dial tone (see S6)
E0	Echo off	Commands not returned to terminal display
E1	Echo on (default)	Commands returned to terminal display
Н0	Force off line / Hang up	+++ escape sequence may be needed to enter command mode first
H1	Force on line state	Will not transmit
00	On line data mode	Returns to data mode after using +++ escape
O1	On line data mode with retrain	

Quick Reference

Command	Description	Comment	
Q0	Enable response codes (default)	Sends response	
Q1	Disable response codes	Does not send response	
V0	Enable short form responses	Numeric code	
V1	Enable verbose responses (default)	E.g., "NO DIALTONE"	
W0	Report DTE speed (default)	E.g., "CONNECT 57600" Serial Speed	
W1	Report Line speed, error correction, DTE speed	E.g., "CONNECT 14400 V42 57600"	
W2	Report Line Speed	E.g., "CONNECT 14400"	
X0	Report basic result codes CON- NECT, RING, NO CARRIER, and NO ANSWER		
X4	Report all result codes and connection speeds (default)		
Z	Reset and restore profile	See also &W	
&F0	Restore factory profile		
&K0	Disable flow control		
&K3	Enable RTS/CTS flow control (default)		
&K4	Enable Xon/Xoff flow control		
&K6	Enable both RTS/CTS & Xon/Xoff flow control		

Command	Description	Comment	
&V	Displays current and stored profiles		
&W0	Store current configuration profile (excludes S13 Register)	Only made active after power reset or Z command	
%E0	Disable auto retrain		
%E1	Enable auto retrain		
%E2	Enable fallback/fall forward (default)		
\N0	Disables Error Correction		
\N2	Enables Error Correction	Attempt LAPM then MNP, then hang up	
\N3	Auto reliable mode (default)	Attempt LAPM then MNP, then normal	
\N4	Force LAPM error correction		
\N5	Force MNP error correction		
+GCI=xx	Sets country where xx is T.35 code shown in above table	Activated upon next reset (See Z command)	
+GCI?	Displays active T.35 country code		
%C0	Disable data compression		
%C1	Enable MNP5 data compression		
%C2	Enable V42bis data compression		

Quick Reference

Command	Description	Comment	
%C3	Enable V42bis and MNP5 data compression (default)		
\A0	Select 64 character MNP block		
VA1	Select 128 character MNP block (default)		
\A2	Select 192 character MNP block		
\A3	Select 256 character MNP block		
S0=n	n is 0-255 rings to answer	S0? displays setting	
S6=n	Wait n secs before dial without dial- tone or W modifier in dial string	Restricted by country codes.	
S7=n	Wait n secs for carrier (default 50)		
S8=n	Set n secs for "comma in dial string" pause (default 2)		
S13=0	Disable Check Line quiet before seize	S13 is not in configuration profile; you must use init string	
S13=1	Enable Check Line quiet before seize (default)		
+++	Default Escape sequence	When separated by pause in data stream, returns modem to AT Command mode	

Troubleshooting

If you're having trouble with your modem cradle, check the following:

- Ensure the connection to the telephone network and power supply is correct.
- Ensure the host application is running correctly on the terminal. Try another terminal if available.
- When using a PBX, ensure any requirements such as dialing 9 and ignoring dial tone are considered.
- In the unlikely event that your modem has locked up, remove power for a few seconds and re-apply. The operating system's manager (e.g., serial port, modem, internet) usually resets the modem processor when opening communications. If there are problems, the application automatically closes the manager and resets.

User and Service Access

No part of the cradle, other than the line connection plug, is accessible to users.

Specifications

The cradle contains a 14.400kbps (V32bis) modem with additional Data Compression to allow faster throughput, taking advantage of the higher serial port speeds of 57,600bps available to the terminal. Error Correction (MNP4, V42) is also included.

Regulatory Information

Radio Frequency Interference Requirements

USA (Home or office use)

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. 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 while observing for interference, the user is encouraged to correct the interference by employing one or more of the following measures:

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

This device complies with FCC Part 15. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CANADA

This Class B digital apparatus complies with Industry Canada Standard ICES-003. Cet appareil numérique de la classe B est conform à la norme NMB-003 d'Industrie Canada.

Telecom Approval Warnings and Notices

Connecting to the telephone network

A compliant telephone lead is required with RJ11 plug (line is on middle pair) connection to modem, terminated with an appropriate and correctly wired local telecom connector compatible with the telephone network. Such a cable may be obtained from your local electronics supplier. Alternatively, compliant RJ11-plug-to-RJ11-plug cables may be used with a range of adapters for places such as Europe. Caution: To reduce risk of fire, use only No. 26 AWG or larger telecommunications line cord.

When installing, always connect the telecom cable first to the modem and then to the telecom network. Reverse the procedure on disconnection by first removing from the telephone network socket.

USA

This equipment complies with Part 68 of the FCC rules. A label is located externally on the equipment that contains, among other information, the FCC certification number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive devices on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total REN's, contact the local telephone company.

This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack (RJ11C) that is FCC Part 68 compliant. An FCC compliant telephone cord and modular plug must be used.

Should you experience trouble with this telephone equipment, please first contact your facility's Technical or Systems Support, who will contact your nearest Symbol Customer Service Center. If necessary, the Symbol Support Center may be contacted at the following:

1-800-653-5350 Symbol Support Center One Symbol Plaza Holtsville, NY 11742-1300 support@symbol.com

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

This equipment cannot be used on public coin phone service provided by the telephone company. Connection to party line service is subject to state tariffs. (Contact the state public utility commission, public service commission or corporation commission for information.)

Your telephone company may discontinue your service if your equipment causes harm to the telephone network. They will notify you as soon as possible and, if practical, in advance of disconnection. During notification, you will be informed of your right to file a complaint to the FCC if you believe it is necessary.

Occasionally, your telephone company may make changes to it's facilities, equipment, operations, or procedures that could affect the operation of your equipment. If so, you will be given advance notice of the change to give you an opportunity to maintain uninterrupted service.

Statement of Fax Branding

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message, and the telephone number of the sending machine, or such business, other entity, or individual. The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges. In order to program this information into your fax/modem consult your fax software user's manual for set-up instructions.

CANADA

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices, subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.0.

AUSTRALIA

The Australian Ringer Equivalence Number (REN) of this device is 0.1. The REN value is a guide to the maximum number of telecommunications devices that can be connected together, in parallel, to one telephone line. The maximum permitted REN value is 3.0 and hence the sum REN value of all connected devices must not exceed 3.0.

EUROPE

The equipment meets European Directive requirements for pan-European single terminal connection to the Public Switched Telephone Network (PSTN) using DTMF signalling (tone dial). However, due to differences between the individual PSTN's provided in different countries, this does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point.

Note for Switzerland - Problems may be encountered due to Advice of Charge (AoC) tone bursts used for metering/ billing purposes. To avoid difficulties a cable or adapter containing an AoC 12kHz filter is necessary. In case of difficulty, please contact your equipment supplier for advice.

In the event of any problems, you should contact your equipment supplier in the first instance.

Parallel Equipment loading in Europe

The Loading Factor (LF) is 22 Loading Units (LU) and should allow for the operation of several parallel connected equipment on the telephone line, should the application permit. The total loading of an installation can be obtained by adding the LU values of connected equipment. This can then be compared with the LF value that the telephone network can support as given by the operator of the telephone network. The total equipment LF should be less than the network LF to avoid risking a degradation in the equipment performance. (e.g. 4 items similar to this modem specification of 22 LU will operate on a network terminating point that can support 88 LU.)

(DECLARATION OF CONFORMITY

We,	Symbol Technologies, Inc.		
of	One Symbol Plaza, Holtsville, NY 11742-1300, USA		
1. Meets procedur 2. Is desi	res detailed in Annex II of the directi igned to interwork with the following Austria, Belgium, Denmark, Finland,	tive 1999/5/EC (R&TTE) and conforms to the standards listed below. The	
	this declaration relates, is in conformative documents.	mity with the following standards and/or	
ETS TBF	R21: 1998		
EN 6095	i0: 1992 + A1-A4, A11		
EN 5502	2: 1998 (Class B)		
EN 5502	4: 1998		
Dornu N	larnor		
(name)			
Senior D	irector, Regulatory		
(title)			
	8 OMice	September 2000	
(sianatur	re of authorised person)	(date)	

C R D 1 5 0 0 M o d e m / C h a r g i n g C r a d l e

Warranty

Symbol Technologies, Inc. ("Symbol") manufactures its hardware products in accordance with industry-standard practices. Symbol warrants that for a period of three (3) months from date of shipment, products will be free from defects in materials and workmanship.

This warranty is provided to the original owner only and is not transferable to any third party. It shall not apply to any product (i) which has been repaired or altered unless done or approved by Symbol, (iii) which has not been maintained in accordance with any operating or handling instructions supplied by Symbol, (iii) which has been subjected to unusual physical or electrical stress, misuse, abuse, power shortage, negligence or accident or (iv) which has been used other than in accordance with the product operating and handling instructions. Preventive maintenance is the responsibility of customer and is not covered under this warranty.

Wear items and accessories having a Symbol serial number, will carry a 90-day limited warranty. Non-serialized items will carry a 30-day limited warranty.

Warranty Coverage and Procedure

During the warranty period, Symbol will repair or replace defective products returned to Symbol's manufacturing plant in the Us. For warranty service in North America, call the Symbol Support Center at 1-800-653-5350. International customers should contact the local Symbol office or support center. If warranty service is required, Symbol will issue a Return Material Authorization Number. Products must be shipped in the original or comparable packaging, shipping and insurance charges prepaid. Symbol will ship the repaired or replacement product freight and insurance prepaid in North America. Shipments from the US or other locations will be made F.O.B. Symbol's manufacturing plant.

Symbol will use new or refurbished parts at its discretion and will own all parts removed from repaired products. Customer will pay for the replacement product in case it does not return the replaced product to Symbol within 3 days of receipt of the replacement product. The process for return and customer's charges will be in accordance with Symbol's Exchange Policy in effect at the time of the exchange.

Customer accepts full responsibility for its software and data including the appropriate backup thereof.

Repair or replacement of a product during warranty will not extend the original warranty term. Symbol's Customer Service organization offers an array of service plans, such as on-site, depot, or phone support, that can be implemented to meet customer's special operational requirements and are available at a substantial discount during warranty period.

General

Except for the warranties stated above, Symbol disclaims all warranties, express or implied, on products furnished hereunder, including without limitation implied warranties of merchantability and fitness for a particular purpose. The stated express warranties are in lieu of all obligations or liabilities on part of Symbol for damages, including without limitation, special, indirect, or consequential damages arising out of or in connection with the use or performance of the product. Seller's liability for damages to buyer or others resulting from the use of any product, shall in no way exceed the purchase price of said product, except in instances of injury to persons or property. Some states (or jurisdictions) do not allow the exclusion or limitation of incidental or consequential damages, so the proceeding exclusion or limitation may not apply to you.

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	1-800-653-5350	Canada	905-629-7226
United Kingdom	0800 328 2424	Asia/Pacific	337-6588
Australia	1-800-672-906	Austria	1-505-5794
Denmark	7020-1718	Finland	9 5407 580
France	01-40-96-52-21	Germany	6074-49020
Italy	2-484441	Mexico	5-520-1835
Netherlands	315-271700	Norway	66810600
South Africa	11-4405668	Spain	9-1-320-39-09
Sweden	84452900		
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

+44 208 945 7360



72-52018-01 Revision A — May 2001