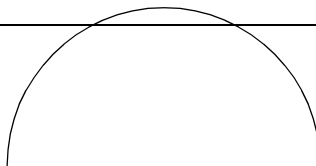




LS 4800

*Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference
Quick Reference • Guide utilisateur • Kurzübersicht
Guida rapida • Guía rapida • Quick Reference*

Quick Reference



© 1997 - 1999 SYMBOL TECHNOLOGIES, INC. All rights reserved.

Symbol reserves the right to make changes to any product to improve reliability, function, or design.

Symbol does not assume any product liability arising out of, or in connection with, the application or use of any product, circuit, or application described herein.

No license is granted, either expressly or by implication, estoppel, or otherwise under any patent right or patent, covering or relating to any combination, system, apparatus, machine, material, method, or process in which Symbol products might be used. An implied license only exists for equipment, circuits, and subsystems contained in Symbol products.

Symbol is a registered trademark of Symbol Technologies, Inc. Other product names mentioned in this manual may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

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. 4,360,798; 4,369,361; 4,387,297; 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; 5,229,591; 5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791; 5,250,792; 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; 5,578,810; 5,581,070; 5,589,679; 5,589,680; 5,608,202; 5,612,531; 5,619,028; 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; 5,745,794; 5,754,587; 5,762,516; 5,763,863; 5,767,500; 5,789,728; 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; D305,885; D341,584; D344,501; D359,483; D362,453; D363,700; D363,918; D370,478; D383,124; D391,250; D405,077; D406,581.

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.

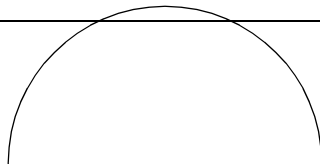
rev. 7/99

Quick Reference

Scanner Varieties

LS 4800s are powered by a power supply or by host power, while LS 4900s are battery-powered versions.

Each scanner has RS-232C or Synapse™ “Smart Cable” interface capability with the host device. If the cable is a Synapse™ “Smart Cable,” there is a separate *Interface Guide* for cabling instructions.

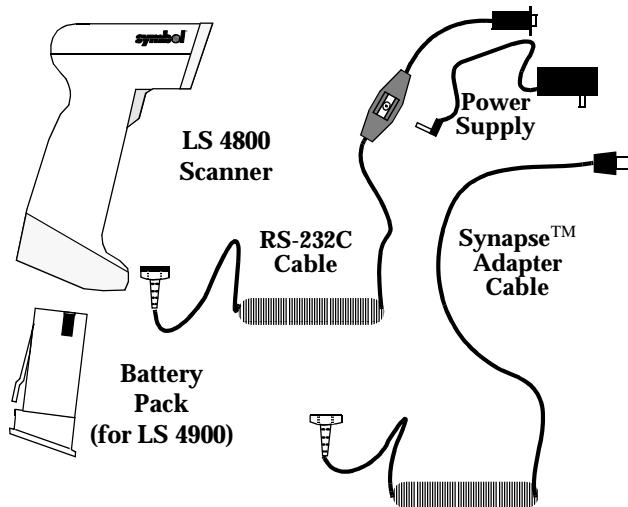


Setup

System Components

The system includes one scanner and one interface cable (both general types are illustrated below).

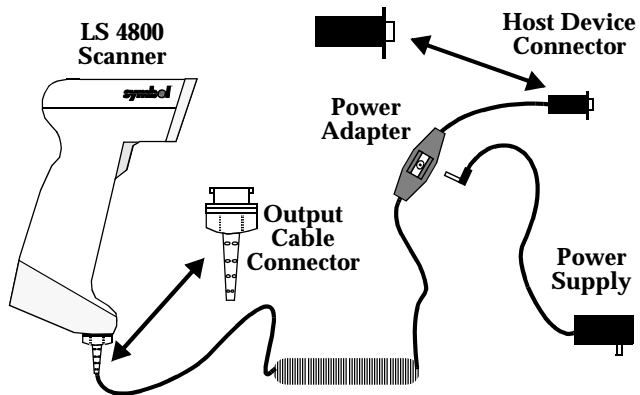
If the scanner is battery powered, it also includes a battery pack, as illustrated below.



LS 4800 / 4900 System Components

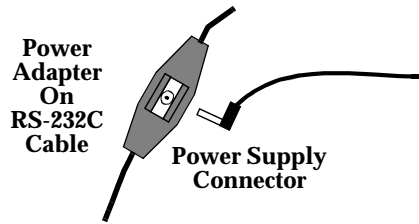
Quick Reference

Installation: LS 4800 with RS-232C



LS 4800 System Components

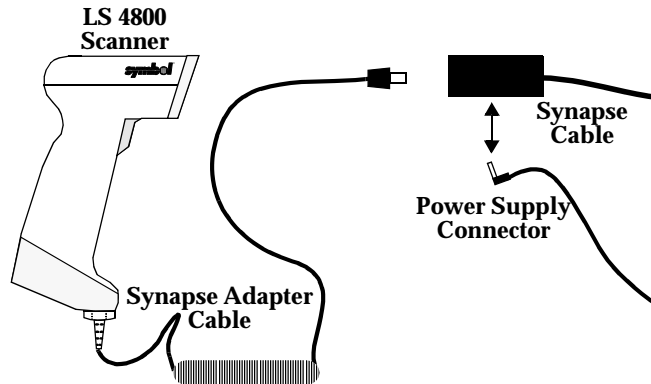
1. Switch off all devices to be connected to the LS 4800 scanning system.
2. Connect the output cable into the port at the base of the scanner's handle. Use the end indicated in the diagram.
 - Plug in the modular connector.
 - Twist the collar clockwise to snap into place.
3. If external power is required, connect the power supply to the Power Adapter input port on the cable and then to a receptacle supplying AC power of the proper voltage level.



4. Plug the opposite end of the host interface cable into the receiving port on the host system.
5. Program all desirable host interface, decode, and communications parameters. Use the bar code menus in the *Product Reference Guide*.
6. Power up the host device.

Quick Reference

Installation: LS 4800 with Synapse



LS 4800 System Components

1. Switch off all devices to be connected to the LS 4800 scanning system.
2. Connect the output cable into the port at the base of the scanner's handle. Use the end indicated in the diagram.
 - Plug in the modular connector.
 - Slide the collar up into the keys.
3. Follow additional instructions in the cable's *Interface Guide*. Power is applied by the Synapse "Smart Cable" interface.

Portable Operation: LS 4900

For portable operation, battery-operated LS 4900 scanners must be used with a portable terminal (e.g., PDT 3300).

If you want to carry the portable terminal and scanner in holsters, the adjustable belt is important for making portable operation simple. Two holsters also can be very useful. One is available to hold the portable terminal to the belt, while a second holster, for the scanner, attaches directly to the belt.

Setup Procedure for Portable Operation

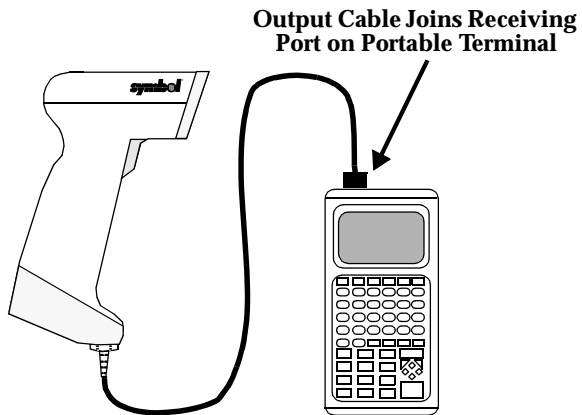
1. Switch off all devices to be connected to the LS 4900 scanner.
2. If you use the optional belt and holsters, thread the belt through a loop on the back of the portable terminal's holster. Add the scanner holster in the same way, or use the belt clip.
3. Naturally, locate the equipment to suit left- or right-handed scanning preferences.
4. Adjust the belt to your size and buckle together the locking ends.

Note that mounting the portable terminal upside down in the holster actually makes it more immediately accessible than mounting it right-side up.

Quick Reference

Connect the System Components

Plug the connector at the end of the LS 4900 scanner's coil cord into the receiving port on the portable terminal.



LS 4900 Basic Setup with Portable Terminal

Scanning with the LS 4800 / LS 4900

Depending on how it is programmed, the LS 4800 or LS 4900 may work in one of these ways:

1. **Aiming Dot Option:** When you pull the trigger, the scanner forms a bright aiming dot which can be easily seen in outdoor or high ambient light environments. A slab raster pattern or an open raster pattern appears next, depending on the programmed scanning option.
2. **Slab Raster Option:** When you pull the trigger, the scanner forms a slab raster pattern. If the bar code is PDF417, the pattern opens up.
3. **Always Raster Option:** When you pull the trigger, the pattern opens out to a full raster pattern.

These are the patterns:

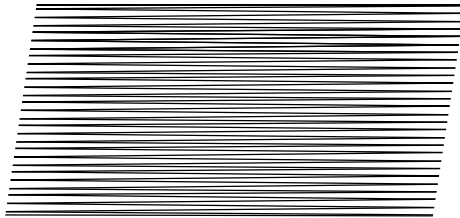
Aiming "Dot" Pattern



"Slab" Raster Pattern



Open Raster Pattern



Quick Reference

Scanning 1-D or 2-D Bar Codes

1. Ready

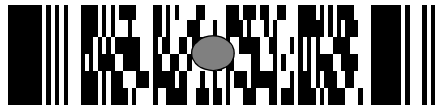
Make sure connections are secure. Also make sure the symbol you want to scan is within the scanning range; refer to *LS 4800 Decode Zones* in the *Product Reference Guide*.

The larger the symbol, the farther away you should hold the scanner. Hold the scanner close for denser symbols. Simple practice will show you what works.

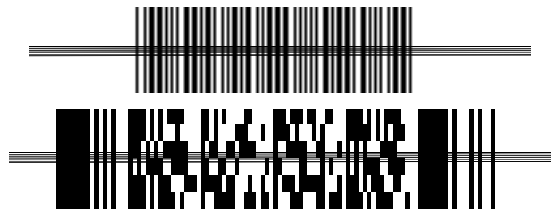
2. Aim the Scanner

Aim the scanner at the symbol. If you're scanning a 2-D symbol, try to keep the nose of the scanner parallel with the symbol's rows.

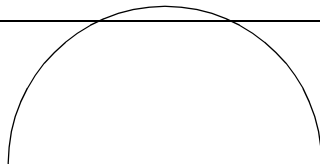
Center the aiming pattern (a spot or slab raster, as programmed) on the bar code.



Aiming Spot



Slab Raster



If the scanner is not aligned to make the bar code readable, the red LED blinks.

3. Scan

For a 1-D symbol, the slab raster pattern reads the bar code.

For a 2-D symbol, the pattern spreads vertically to cover the symbol if it is parallel to the symbol's rows. Keep the pattern in the same horizontal plane as the bar code.

If the pattern does not cover the top and bottom of the 2-D symbol, pull the scanner back until it does. Make sure the scan pattern extends at least *three quarters of an inch* beyond the edges of the bar code. *Simple practice will show you what works best.*



The scanner has successfully decoded the symbol when the green LED comes on and you hear a short, high tone beep.

4. Output

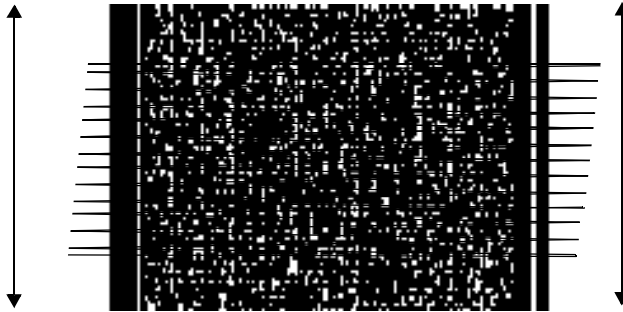
Decoded data is transmitted to the host device. Make sure that the RS-232C parameters (e.g., baud rate, parity, etc.) are set properly. Communication parameters are described in the *Product Reference Guide*.

Quick Reference

“Tall” PDF Bar Codes

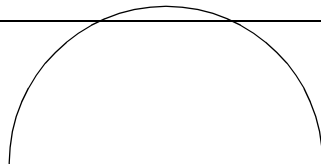
If the PDF417 symbol is “tall,” the vertical scan pattern may not be high enough to cover it.

In this case, try a slow “up and down” scanning motion. With the raster pattern open, try to move the scanner slowly down toward the bottom of the symbol, keeping the beam horizontal to the rows, and then slowly back upward toward the top.



**Moving Scan Pattern Upward and Downward on
“Tall” PDF Symbol**

The scan beam does not have to be *perfectly* parallel with the top and bottom of the symbol (up to a 4° tilt will work).



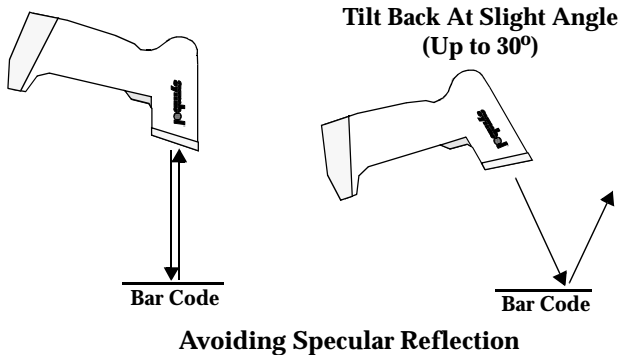
Specular Reflection

When laser beams reflect *directly* back into the scanner from the bar code, they can “blind” the scanner and make decoding difficult. This is specular reflection.

To avoid this, scan the bar code so that the beam does not bounce *directly* back. But don't scan at too oblique an angle; the scanner needs to collect scattered reflections from the scan to make a successful decode. *Simple practice quickly shows what tolerances to work within.*

The Dead Zone

For scanning a 1-D bar code, there is only a small specular dead zone to avoid ($+ 2^\circ$ from the direct laser beam). The specular dead zone is larger for scanning PDF417 ($+ 9^\circ$ from the direct laser beam). At the same time, the scanner is not effective if its beams hit the bar code's surface at an angle greater than 30° from the normal to that surface.



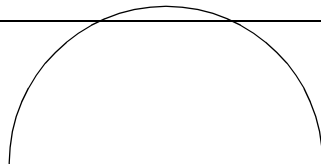
Quick Reference

Maintenance

The LS 4800 scanner, battery pack, and power supply have been designed to provide reliable service over an extended period of time with virtually no maintenance.

For the scanner, the only maintenance required is periodic recharging of the battery pack and cleaning of the exit window.

- Do not allow any abrasive material to touch the window.
- Remove any dirt particles with a damp cloth.
- Wipe the window using a tissue moistened with ammonia/water.
- Do not spray water or other cleaning liquids directly into the window.



Battery Use (LS 4900 Models Only)

Battery powered LS 4900 models uses NiCad rechargeable batteries.

A lit yellow LED on the back of the scanner indicates **low battery power**. When this occurs, change replaceable batteries or recharge rechargeable ones. NiCad batteries may be recharged by inserting them in battery adapters on the Universal Four Slot Charger. See charger specifications for required charge time.

If NiCad rechargeables are used and the scanner cable is attached to an AC power source, the batteries are trickle-charged. Note that batteries can be constantly charged without damage. Trickle charging of batteries takes about 12 hours.

Quick Reference

What If...

Nothing happens when you follow the operating instructions.

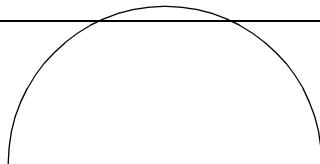
You Should:

- Check the system power.
- Make sure you are using the correct interface cable for the host device.
- Check for loose cable connections.
- Make sure the scanner is programmed to read the symbology you are trying to read. See the *Product Reference Guide*.
- Check the label to make sure it is not defaced; if damaged beyond its error correction capability, it will not decode.
- Try scanning a test symbol of the symbology you are trying to read.

Your terminal operates but scanned data is not displayed correctly?

You Should:

- Check the system power.
- Check for loose cable connections.
- Check that the communication parameters (baud rate, parity, stop bits, etc.) are set properly for the receiving device.



What If...

Your terminal is operative but scanned data is not displayed? Or is displayed improperly on the screen?

- If you're working with a Synapse "Smart Cable," refer to your *Installation Guide*.
- If you're operating in RS-232C, check that the following parameters have been programmed correctly:
 - > Baud Rate > Stop Bits > Parity
 - > Bits per Character

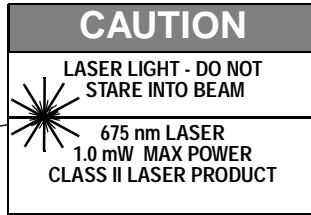
The laser does not activate, which is followed by a long, high beep.

- You may be scanning in an inappropriately hot environment. Remove the scanner from the environment, or allow the laser to cool down. If the condition persists, contact the Symbol Support Center.

Quick Reference

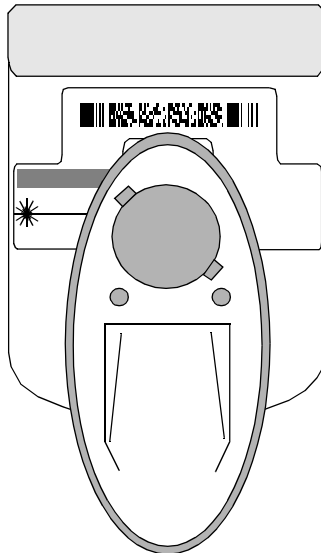
Regulatory Information

Scanner Labeling



LS 48XX/49XX scanners use a low-power, visible laser. As with any bright light source, such as the sun, the user should avoid staring directly into the light beam. Momentary exposure to a CDRH Class II laser is not known to be harmful. Note the required safety label as it appears on the scanner.

Caution: Use of controls, adjustments, or performance of procedures other than those specified herein may result in hazardous laser light exposure.



Quick Reference

Regulatory Information

Radio Frequency Interference Requirements

This device has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the Federal Communications Commissions Rules and Regulation. 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 the 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 the user will be required to correct the interference at his own expense.

However, there is no guarantee that interference will not occur in a particular installation. If the 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:

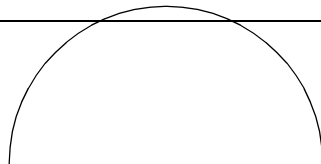
- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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.

Radio Frequency Interference Requirements - Canada

This device complies with RSS 210 of Industry & Science Canada. 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.

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



CE Marking and European Union Compliance



Products intended for sale within the European Union are marked with the CE Mark which indicates compliance to applicable Directives and European Normes (EN), as follows. Amendments to these Directives or ENs are included:

Applicable Directives

- Electromagnetic Compatibility Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC

Applicable Standards

- EN 55 022 - Limits and Methods of Measurement of Radio Interference Characteristics of Information technology Equipment

WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

- EN 50 082-1:1997 - Electromagnetic Compatibility - Generic Immunity Standard, Part 1: Residential, commercial, Light Industry
- IEC 1000-4-2(1995-01) - Electromagnetic compatibility (EMC) - Part 4:Testing and measurement techniques - Section 2: Electrostatic discharge immunity test.
- IEC 1000-4-3(1995-03) - Electromagnetic compatibility (EMC) - Part 4:Testing and measurement techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test.
- IEC 1000-4-4(1995-01) - Electromagnetic compatibility (EMC) - Part 4:Testing and measurement techniques - Section 4: Electrical Fast transient/burst immunity test.
- EN 60 950 + Amd 1 + Amd 2 - Safety of Information Technology Equipment Including Electrical Business Equipment
- EN 60 825-1 (EN 60 825) - Safety of Devices Containing Lasers

Laser Devices

Symbol products using lasers comply with US 21CFR1040.10, and IEC825-1:1993, EN60825-1:1994+A11:1996. The laser classification is marked on one of the labels on the product.

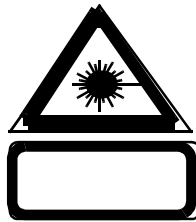
Class 1 Laser devices are not considered to be hazardous when used for their intended purpose. The following statement is required to comply with US and international regulations:

Quick Reference

Caution: Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

Class 2 laser scanners use a low power, visible light diode. As with any very bright light source, such as the sun, the user should avoid staring directly into the light beam. Momentary exposure to a Class 2 laser is not known to be harmful.

In accordance with Clause 5, IEC 0825 and EN60825, the following information is provided to the user:



ENGLISH		HEBREW		
CLASS 1	CLASS 1 LASER PRODUCT		מוצר לייזר רמה 1	רמה 1
CLASS 2	LASER LIGHT DO NOT STARE INTO BEAM CLASS 2 LASER PRODUCT		אור לייזר אין להביט אל תוך הזרם מוצר לייזר רמה 2	רמה 2
DANISH		ITALIAN		
KLASSE 1	KLASSE 1 LASERPRODUKT	CLASSE 1	PRODOTTO AL LASER DI CLASSE 1	
KLASSE 2	LASERLYF SE IKKE IND I STRÅLEN KLASSE 2 LASERPRODUKT AL LASER DI CLASSE 2	CLASSE 2	LUCE LASER NON FISSARE IL RAGGIOPRODOTTO	
DUTCH		NORWEGIAN		
KLASSE 1	KLASSE-1 LASERPRODUKT	KLASSE 1	LASERPRODUKT, KLASSE 1	
KLASSE 2	LASERLICHT NIET IN STRAAL STAREN KLASSE-2 LASERPRODUKT	KLASSE 2	LASERLYS IKKE STIRR INN I LYSSTRÅLEN LASERPRODUKT, KLASSE 2	
FINNISH		PORTUGUESE		
LUOKKA 1	LUOKKA 1 LASERTUOTE	CLASSE 1	PRODUTO LASER DA CLASSE 1	
LUOKKA 2	LASERVALO ÄLÄ TUIJOTA SÄDETTÄ	CLASSE 2	LUZ DE LASER NÃO FIXAR O RAIO	
LUMINOSO	LUOKKA 2 LASERTUOTE		PRODUTO LASER DA CLASSE 2	
FRENCH		SPANISH		
CLASSE 1	PRODUIT LASER DE CLASSE 1	CLASSE 1	PRODUCTO LASER DE LA CLASE 1	
CLASSE 2	LUMIERE LASER NE PAS REGARDER LE RAYON FIXEMENT PRODUIT LASER DE CLASSE 2	CLASSE 2	LUZ LASER NO MIRE FIJAMENTE EL HAZ PRODUCTO LASER DE LA CLASE 2	
GERMAN		SWEDISH		
KLASSE 1	LASERPRODUKT DER KLASSE 1	KLASS 1	LASERPRODUKT KLASS 1	
KLASSE 2	LASERSTRAHLEN NICHT DIREKT IN DEN LASERSTRAHL SCHAUEN LASERPRODUKT DER KLASSE 2	KLASS 2	LASERLJUS STIRRA INTE MOT STRÅLEN LASERPRODUKT KLASS 2	

Test Symbols



CODE 128

5012345248



13 MIL UPC

12345 67890



PDF417



PDF417

Quick Reference

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	
		+44 118 945 7360	

Warranty

Symbol Technologies, Inc. ("Symbol") manufactures its hardware products in accordance with industry-standard practices. Symbol warrants that for a period of twelve (12) 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, (ii) 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 preceding exclusion or limitation may not apply to you.



70-15663-03
Revision C - August 1999