



The LS 1220 is a miniaturized integrated scanning device intended both for integration into OEM equipment and stand alone fixed-mount applications. It contains Symbol's revolutionary patented mylar scan element with no friction or wear for highest reliability, and generates a visible laser light. It connects to a host system through an RS-232C interface.

Top

2.18 in.

2.13 in.

DECODE SCAN LASER

WARNING: LASER RADIATION - DO NOT STARE INTO BEAM

CAUTION LASER LIGHT - DO NOT STARE INTO BEAM

DO NOT TOUCH LASER LIGHT

STRYKER

LASER CUTTER

Rear

1.30 in.

Front

Set Up

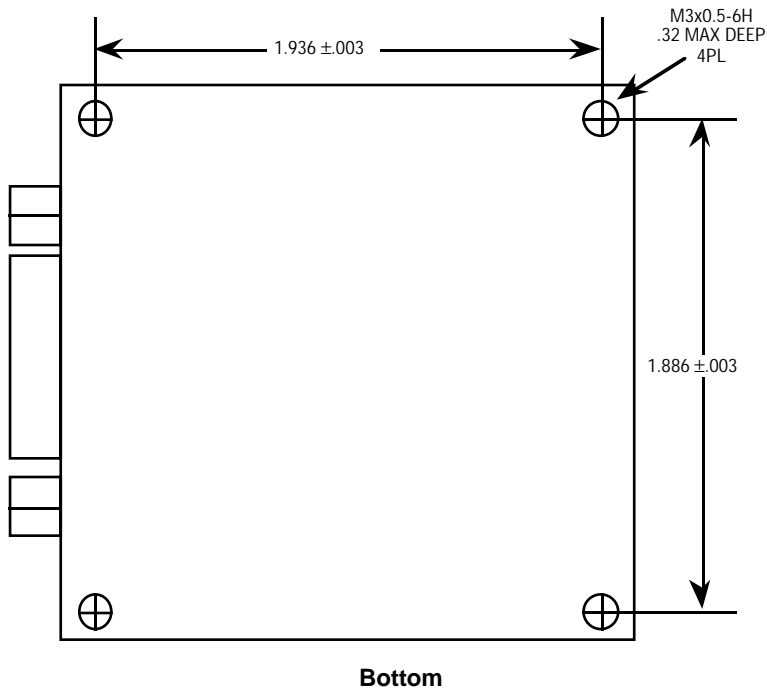
Unpacking

Remove the LS 1220 from its packing and inspect the scanner for evidence of physical damage. If the scanner was damaged in transit, call the **Symbol Support Center** at the telephone number listed on page 1-13.

KEEP THE PACKING. It is the approved shipping container and should be used if you ever need to return your equipment for servicing.

Mounting

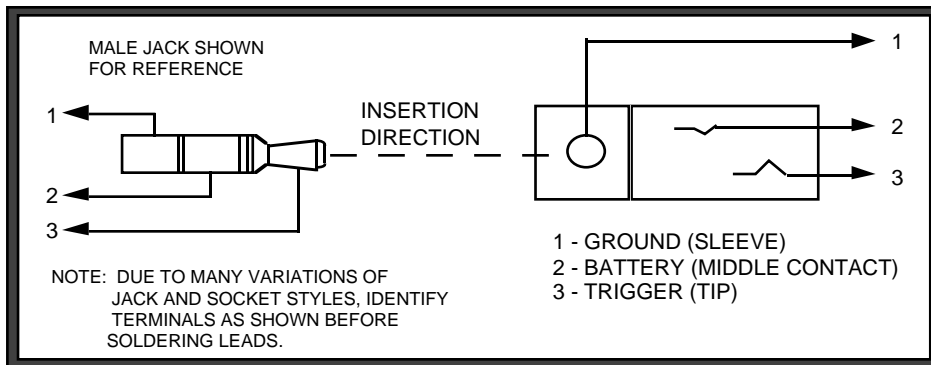
Refer to the drawing below for mounting dimensions.



Connecting the LS 1220

If your LS 1220 came without a host cable, see [page 1-16 to 1-17](#) for configuration and pin-outs. If not:

- Plug the 25-pin D-connector into the appropriate RS-232C port on your host terminal.
- Plug the 9-pin D-connector into the LS 1220.
- Plug the output cable from the power supply into the receptacle on the side of the 25-pin D-connector.
- Plug the power supply into an appropriate AC receptacle.
- If you are using an external triggering switch, plug the switch into the female stereo connector on the flying lead of the 9-pin, D-connector. A standard, off the shelf, stereo mini-plug such as those used for portable cassette or CD players may be used. If an external switch is used with the LS 1220LR, the AIM mode becomes inoperable. Refer to the drawing below for wiring details.



- Check connections. Be sure all cables and power supply connections are secure.
- Program your LS 1220 according to your specific requirements. Consult the [Programmer's Guide](#) for more information.

Ready, Test, Scan

1. Ready

Make sure connections are secure.

2. Test

LS 1220

When you trigger the unit, the scanning beam is energized for approximately 3 seconds. The duration of on time is programmable.

LS 1220LR

A two-button switch is necessary to activate the aiming mode. See page 1-17 for *Interface Pin-outs* when designing such a switch. The first button energizes the aiming beam which allows better alignment at longer distances. The second button triggers the scan.

3. Scan

Make sure the symbol you want to scan is within the scanning range. See the *Decode Zone* diagrams on page 1-9 to 1-10.

Align the bar code and trigger the unit.

- The scan beam lights until the programmed on time limit is reached, or until a successful decode.
- The scanner has read the symbol when:
- The green DECODE LED lights.

Triggering

The LS 1220 can be energized by any of seven ways. No host download is permitted with the scanner activated. In order to download, the Laser Off command must be sent first. A Laser Off command from the host turns off the laser in all of the following modes. Refer to the [Programmer's Guide](#) for further details.

Host

The host sends a Laser On command which activates the laser, and begins the decoding process. The external trigger will also energize the laser, and acts as a "Level Trigger" in this mode.

Laser and decoding are turned off by any of the following (whichever comes first):

- Completion of the variable time-on (set in 0.5 sec increments to a maximum of 4.0 sec),
- A good decode, or
- A Laser Off command from the host.

Level Trigger

When the Trigger signal is pulled to ground, the laser turns on. Turned off by any of the following (whichever comes first):

- Completion of the variable time-on (set in 0.5 sec increments to a maximum of 4.0 sec),
- A good decode, or
- The Trigger signal is pulled high.

No host download is permitted with the scanner activated.

Triggering

Pulse Trigger

A pulse on the Trigger line turns the laser on. Turned off by any of the following (whichever comes first):

- Completion of the variable time-on (set in 0.5 sec increments to a maximum of 4.0 sec), or
- A good decode.

Constant Scan and Report

Where bar code information is continuously decoded and transmitted immediately.

Next New Code

Where the scanner will decode and transmit information, then wait until a new code is detected before transmitting again.

Continuous Level

Same as Level Trigger option, except the laser is on continuously, attempts a decode when the trigger line goes low, and stops the decode attempt when the line goes high.

Continuous Pulse

Same as Pulse Trigger option, except the laser is on continuously, attempts a decode when the trigger line goes low, and stops the decode attempt after the completion of the time-on period.

For all options except *Constant Scan and Report* and *Next New Code*, if no decode is accomplished before deactivation, a “No Decode” message can be transmitted if that option is selected.

Aiming

Scan the Entire Symbol

- Your scan beam must cross every bar and space on the symbol.
- The larger the symbol, the farther away you should position the scanner.
- Position the scanner closer for symbols with bars that are close together.



Position at an Angle

Do not position the scanner exactly perpendicular to the bar code. In this position, light can bounce back into the scanner's exit window and prevent a successful decode.

Problems

See *What If...* on page 1-8.

What If...

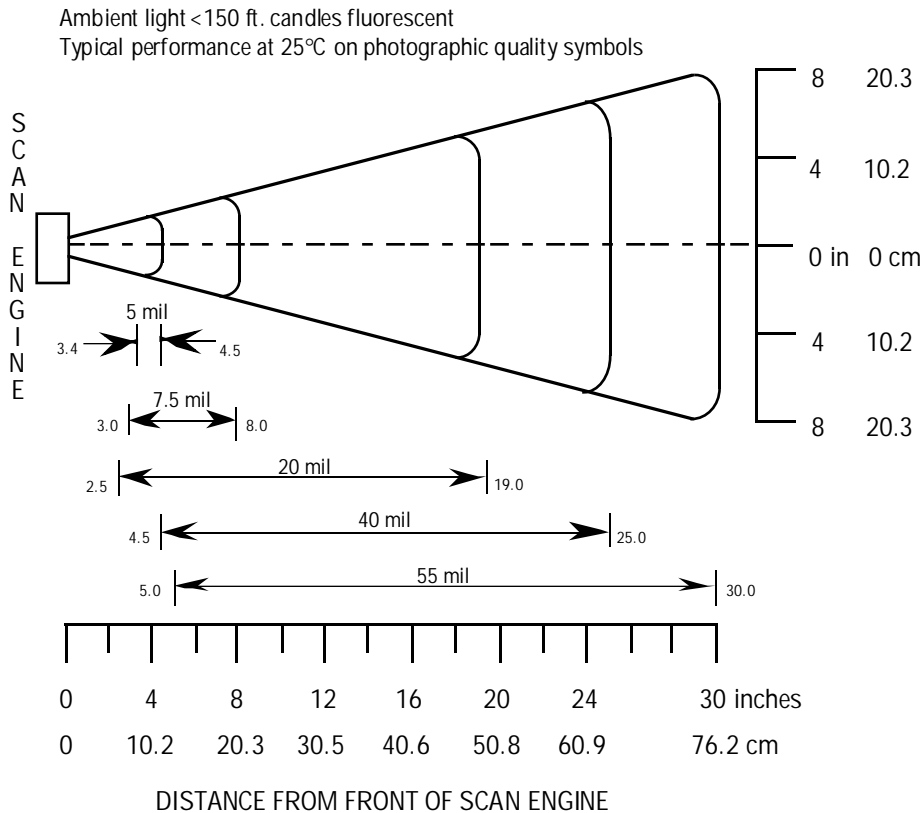
Nothing happens when you follow the operating instructions.

You Should

- Check the system power.
- Check for loose cable connections.
- Make sure the scanner is programmed to read the type of bar code you want to scan.
- Check the symbol to make sure it is not defaced.
- Try scanning similar symbols of the same code type.

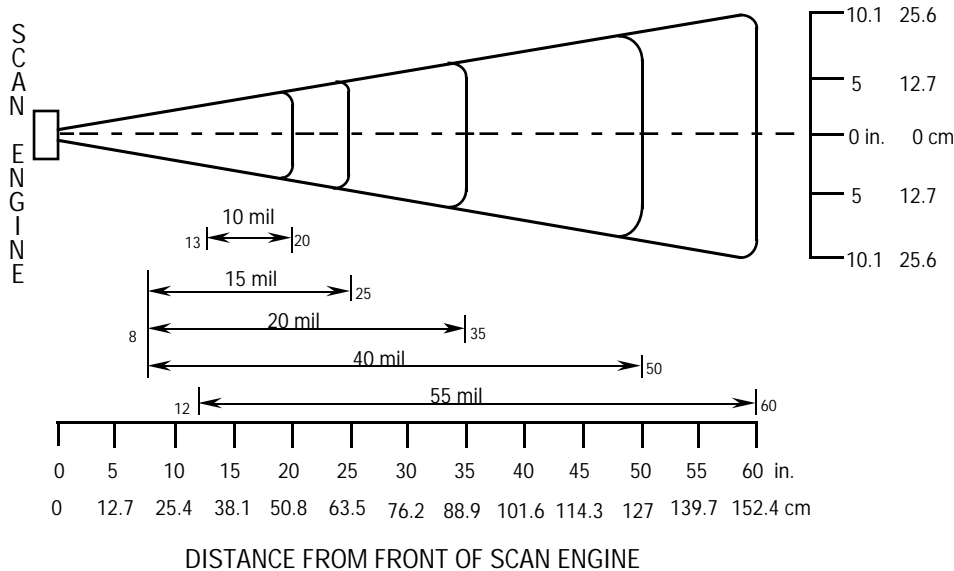
Note: If after performing these checks the symbol still does not scan, contact your distributor or call the *Symbol Support Center*. See page 1-13 for the telephone number.

LS 1220 Standard Range Decode Zone



LS 1220 Long Range Decode Zone

Ambient light <150 ft. candles fluorescent
Typical performance at 25°C on photographic quality symbols



Maintenance

Cleaning the exit window is the only maintenance required.

- Do not allow any abrasive material to touch the window.
- Remove any dirt particles with a damp cloth.
- The scan window is best cleaned with a damp cloth, and, if necessary, a non-ammonia based detergent.

Factory Service

If you have a problem, contact the *Symbol Support Center* at the telephone number on page 1-13.

Before calling, have the model number and several of your bar code symbols at hand.

Call the Support Center from a phone near the scanning equipment so that the service person can try to talk you through your problem. If the equipment is found to be working properly and the problem is symbol readability, Support will request samples of your bar codes for analysis at our plant.

If your problem cannot be solved over the phone, you may need to return your equipment for servicing. If that is necessary, you will be given specific directions.

Note: Symbol Technologies is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty. If the original shipping container was not kept, contact Symbol to have another sent to you.

Symbol Support Center

In the U.S.A., for service information, warranty information or technical assistance call:

SYMBOL SUPPORT CENTER

1-800-653-5350

If you purchased your Symbol product from a Symbol Business Partner, contact that Business Partner for service.

Canada

Mississauga, Ontario
Canadian Headquarters
(905) 629-7226

Europe

Wokingham, England
European Headquarters
01734-771-222 (Inside UK)
+44-1734-771222 (Outside UK)

Asia

Singapore
Symbol Technologies Asia, Inc.
337-6588 (Inside Singapore)
+65 337-6588 (Outside Singapore)

Accessories

Required Accessories

LS 1220 scanners are sent as a package with required accessories, listed in the *Product Ordering Guide*. Optional accessories are available at extra cost.

Optional Accessories

Optional accessories, listed in the *Product Ordering Guide*, include various stands and holders, which are supplied at extra cost. Additional units of standard accessories listed above may also be purchased at extra cost.

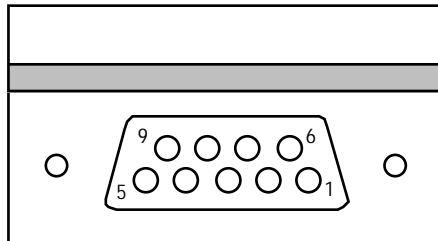
Technical Specifications

Table 1-1. Technical Specifications

Item	Description
Power Requirements LS 1220 LS 1220LR	5VDC $\pm 5\%$ 170 mA typical 170 mA typical
Standby Current	47 mA
Decode Capability	The LS 1220 scanner can be programmed to decode the following code types: UPC/EAN, Code 39, Code 39 Full ASCII, Codabar, Interleaved 2 of 5, Code 128, EAN 128, Discrete 2 of 5, and MSI Plessey. Set code length(s) for any 2 of 5 code type. There is no autodiscrimination between Code 39 and Code 39 Full ASCII
Scan Repetition Rate	36 (± 3) scans/sec. (bidirectional)
Decode Depth of Field LS 1220 LS 1220LR	Maximum working distance is 30 in. (76.2 cm); Minimum element width resolution is 5.0 mils (.13 mm) Maximum element width resolution is 55 mils (1.4 mm) Maximum working distance is 60 in. (152.4 cm); Minimum element width resolution is 10 mils (.254 mm) Maximum element width resolution is 55 mils (1.4 mm)
Skew Tolerance	$\pm 65^\circ$ from normal
Pitch Angle	$\pm 55^\circ$ L/R of normal
Print Contrast Minimum LS 1220 LS 1220LR	20% absolute dark/light reflectance differential, measured at 675 nm. 50% absolute dark/light reflectance differential, measured at 675 nm

Table 1-1. Technical Specifications

Item	Description	
Ambient Light Immunity	Immune to direct exposure from office-level lighting and direct exposure from sunlight.	
Sunlight	8000 ft. candles	86,112 lux with correct enclosure
Artificial Light	150 ft. candles	1615 lux
Drop	3 ft. to concrete	
Shock	1500G applied via any mounting surface	
Vibration	Withstands a sinusoidal vibration of 1g along each of the 3 mutually perpendicular axes for a period of 1 hr. per axis, over a frequency range of 5 Hz to 2000 Hz.	
Operating Temperature	-4° to 122° F	-20° to 50° C
Storage Temperature	-40° to 140° F	-40° to 60° C
Humidity	5% to 95% non-condensing	
Depth	2.18 in.	5.5 cm
Width	2.13 in.	5.4 cm
Height	1.3 in.	3.3 cm
Weight		
LS 1220	6.5 oz.	184 gm
LS 1220LR	6.5 oz.	184 gm
Connector	9-pin, Male, D-Type as shown below. See the next page for pin-outs.	



Interface Pin-outs

Table 1-2. 9-Pin Male, D-Type Connector

Pin	Name	Type*	Function
1	Trigger	I	This pin is normally pulled high. When this pin is grounded, the scan module begins scanning.
2	TxD	O	Serial data transmit output. It will drive the serial data receive input on the device communicating with the scan module.
3	RxD	I	Serial data receive input. It will be driven by the serial data transmit output on the device communicating with the scan module
4	Aim	I	This pin, used only on the LS 1220 Long Range version, is normally high. When this pin is grounded with Pin 1, the scan module emits a narrow beam for aiming. This pin is left floating, or pulled high for the standard LS 1220 and LS 1220LR during normal scanning.
5	Ground		Power supply input ground pin and reference for both output signals. It must be capable of sinking all return current.
6	Power		5.0VDC \pm 5%
7	CTS	I	Clear-to-send handshaking input line. It may be optionally used by another device to signal the scanner that it may commence transmitting data. It can be used only in conjunction with the RTS line.
8	RTS	O	Request-to-send handshaking output line. It may be optionally used by the scanner to signal another device that data is available to send. It can only be utilized in conjunction with the CTS line.
9	Beeper	O	This is an open collector beeper output that can sink 50 mA maximum. Output frequency 2.5 kHz nominal, 50% duty cycle.

*I = Input O = Output