INSTALLATION AND OPERATION MANUAL

LazerData Series 9000E
BARCODE SCANNER/DECODER

PSC ®

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FOREWORD

The purpose of this manual is to provide sufficient information and data to install, program, operate, and maintain the LazerData Series 9000E Bar Code Reading System. PSC Automation, Inc. has made every effort to ensure that the information in this manual is both accurate and adequate. It is recommended, in the interest of safety and efficiency, that each section be carefully read before installing or servicing this system. Special attention should be given to the items outlined in Section 1, READ THIS FIRST, before proceeding further.

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READ THIS FIRST

INTRODUCTION

This section contains vital information necessary for proper installation, operation and maintenance of the LazerData Series 9000E Scanner/Decoder Bar Code Reading System. Each item in this section should be read completely before proceeding to other sections of this manual. If any questions arise please contact LazerData Applications Engineering at 1-800-843-2700 for clarification.

FCC CLASS A STATEMENT

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a class A computing device pursuant to Subpart J of Part 15 of the Federal Communication Commission rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

NCDRH COMPLIANCE STATEMENT

This laser bar code scanning system complies with Standard 21 CFR, Subchapter J, for Class I and Class II laser products as set forth by the National Center for Devices and Radiological Health. Any alteration or adjustment that could result in emission of radiation in excess of the level established for Class I or Class II laser products is not authorized, and will void certification of the system as a Class I or Class II laser product. Figure 1-1 on the following page shows the type and location of warning labels affixed to the scanner in compliance to the NCDRH standard. The Caution and Aperture labels do not apply to the Class I Infrared scanners.

NOTE: A ^L (Control L) sent to the Local or Host Port of the Series 9000E Scanner/Decoder will turn the Laser Beam on or off.
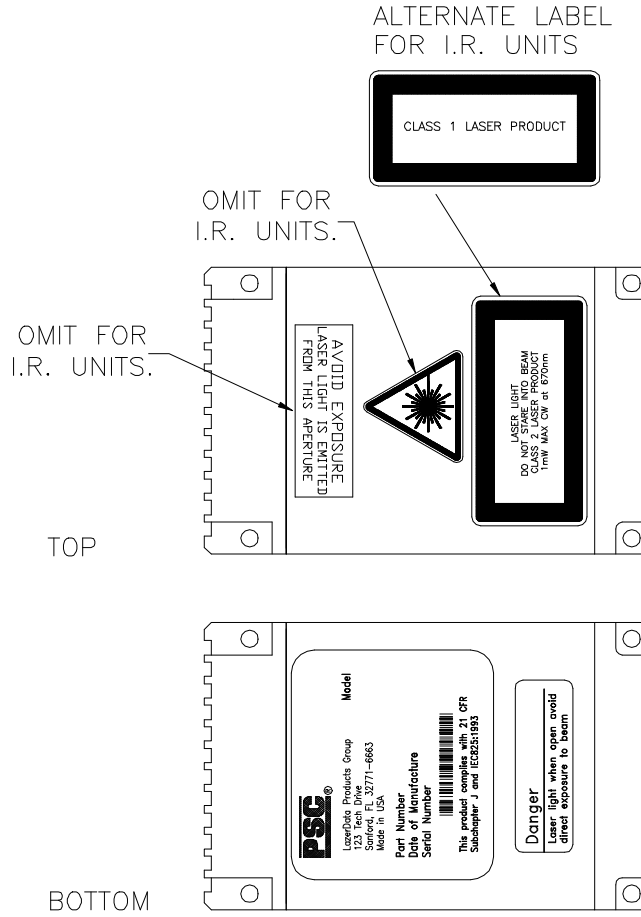
Warning Label Placement
Figure 1-1

READ THIS FIRST

SAFETY PRECAUTIONS

> **CAUTION**
>
> **Use of controls, adjustments or performance of procedures other than those specified herein may result in exposure to hazardous radiation or electrical voltages.**

The LazerData Series 9000E Bar Code Scanning System incorporates features that provide for maximum safety. However, it must be recognized that any equipment employing electrical voltage and emitting direct or scattered radiation may cause serious damage and/or personal injury if improperly handled. The following are recommended safeguards that should be observed at all times.

OPTICAL SAFETY

Never stare directly into the laser beam.

CAUTION: Use of optical instruments with this product will increase eye hazard.

ELECTRICAL SAFETY

Disconnect the main power line before working on any electrical equipment.

Always use insulated tools.

INTRODUCTION

SYSTEM DESCRIPTION

The LazerData Series 9000E Scanner/Decoder offers scanning and decoding functions in a single package measuring only 2.5" wide X 2.5" high X 3.85" long. The durable extruded aluminum housing affords maximum protection for the scanning optics and decoding circuitry. Scanning at speeds from 100 to 1500 scans per second, it is ideal for applications such as high speed packaging machines. The laser diode light source offers the long operating life associated with solid state devices. Systems configuration is accomplished through the use of an ordinary computer terminal and a Series of menu screens assuring that no special programming skills are necessary to setup the unit. The scanner can communicate with peripheral devices using either RS-232, RS-422 or RS-485 protocols. Using an external power supply keeps the scanner size to a minimum and reduces the internal operating temperature.

TECHNICAL SPECIFICATIONS

Light Source
Type:	Laser Diode
Output Wavelength:	670-680 nm--visible red,
	840 nm--infrared or
	1330 nm--infrared,
	depending on model.
Safety Class:	Class II
Operating Life:	Greater than 50,000 hours

Scanning Parameters
Type:	Rotating polygon, unidirectional scan
Rate:	500 to 1000 sweeps per second, depending on model. 1500 scan rate available for special applications.

Series 9000E Scanner/Decoder

Decoding Capability

C11, C39, C93, C128, C49 (2 row numeric only), Codabar, UPCE*, UPCA*, EAN8*, EAN13*, I2/5, Binary, AS10, Pharmacode, ISTR. (* with or without supplemental.)

Host Port

Hardware Protocols:	RS-232C, RS-422 or RS-485
Software Protocols:	ACK/NAK, XON/XOFF, LazerData Intermec Mult-idrop, or None.
Wiring:	DE9S Connector
Baud Rate:	User Programmable, 300 to 38,400

Local Port

Hardware Protocol:	RS-232C
Software Protocol:	XON/XOFF, None
Wiring:	DE9P Connector
Baud Rate:	User Programmable, 300 to 38,400. Set to 9600 at manufacture.

I/O Port

Inputs:	Gate, Push Button Compare
Outputs:	Good Read, No Read, Good Compare, No Compare, Digitized Output.
Wiring:	DE15S Connector

LED Indicators

BI-color LED:	Good Read-Blinks Green
	No Read-Blinks Red
	Not Functional on Infrared Scanners
Amber LED:	Indicates Laser Emission
	Not Functional on Infrared Scanners

Power Requirements

Input Voltages:	+5 VDC $\pm$5%, 860 mA.
	$\pm$12 VDC $\pm$5%, 300 mA.
Wiring:	5-pin keyed connector

INTRODUCTION

PRINCIPLES OF OPERATION

The LazerData Series 9000E bar code scanner/decoder uses a light beam generated by a laser diode light source to illuminate bar code labels. The laser beam is deflected in a fan shaped pattern across the label. The reflected light of the laser beam, representing the light and dark bars of the coded label, is then collected and focused by a lens onto a photodiode, processed, then converted to a digital signal. The signal is a close approximation of the bar code pattern as shown in Figure 2-1. This signal is then analyzed by a high speed microprocessor. The bars and spaces in the code are converted to the numeric or alphabetic characters represented by the bar code symbol. After the label is decoded, the characters are transmitted via the Host and Local Port to an external device or host computer.

Bar Code and Digital Signal
Figure 2-1

In addition to reading the code, the scanner can compare the code that has been read to codes programmed into it's memory and output signals indicating that a comparison has or has not occurred. The scanner can also accept a gate input signal indicating that a code is in position to be read. When the gating input is used, only one data transmission is made for each bar code presented to the scanner. The scanner also outputs separate logic level pulses when Good Read, No Read, Good Compare and No Compare conditions occur.

INSTALLATION

INTRODUCTION

The LazerData Series 9000E Scanner/Decoder is designed for easy installation in many diverse applications and, because of its small size and light weight, can be mounted with common hardware. The user may fabricate a custom mounting bracket or use the mounting holes provided. The scanner can be mounted in any orientation, but label position, and motion relative to the scanner dictate optimum position and distance, as discussed in this section.

UNPACKING AND INSPECTION

Upon receipt of the Series 9000E Scanner/Decoder unit, it should be carefully unpacked and inspected.

Remove all documentation (packing lists, manuals, etc.) from shipping container.

Carefully remove the packing material from around the scanner, and lift the unit from the shipping container.

Do not discard packing material. If your scanner ever needs repair, you are requested to return the unit in its original container.

Check to ensure all items have been received. Standard package content includes:

Series 9000E Scanner/Decoder
Local Port Cable (part # 1702076)
Host Port Mating Connector (part # Y260020)
I/O Port Mating Connector (part # Y259930)
Back shells (part # 7651021)
Power Connector (Some Models)
Power Supply (part # 1902032)
Manual (part # 7902033)

Inspect all items received for any visible damage that may have been incurred during shipping. Of particular interest is the glass window at the front of the scanner unit.

If any items are missing or damaged, immediately notify the carrier and Customer Administration at PSC Automation, Inc. Call 1-800-843-2700. Maintain all shipping documentation, containers, and packing materials until discrepancies are cleared.

MOUNTING PROVISION

The fundamental mounting of the scanner is provided for by eight through holes in the housing designed to accommodate #6 mounting hardware. Mounting brackets may be fabricated by user if deemed necessary. Figure 3-1 illustrates the overall dimensions of the scanning unit as well as the position of the mounting holes relative to the scanning beam location. The installation of the Series 9000E Scanner/Decoder is straight forward and will be successful if some simple guidelines are followed.

Install scanner unit in locations that are:

Protected from collisions with packages that may be passing close to the scanner.

A reasonable operating environment with a temperature between 0 and 50 degrees centigrade (32 and 122 degrees Fahrenheit) and away from extreme heat sources.

Not in a high electrical noise area; for example, near large AC motors or solenoids.

Away from high vibration areas.

Easily accessible for service and adjustment.
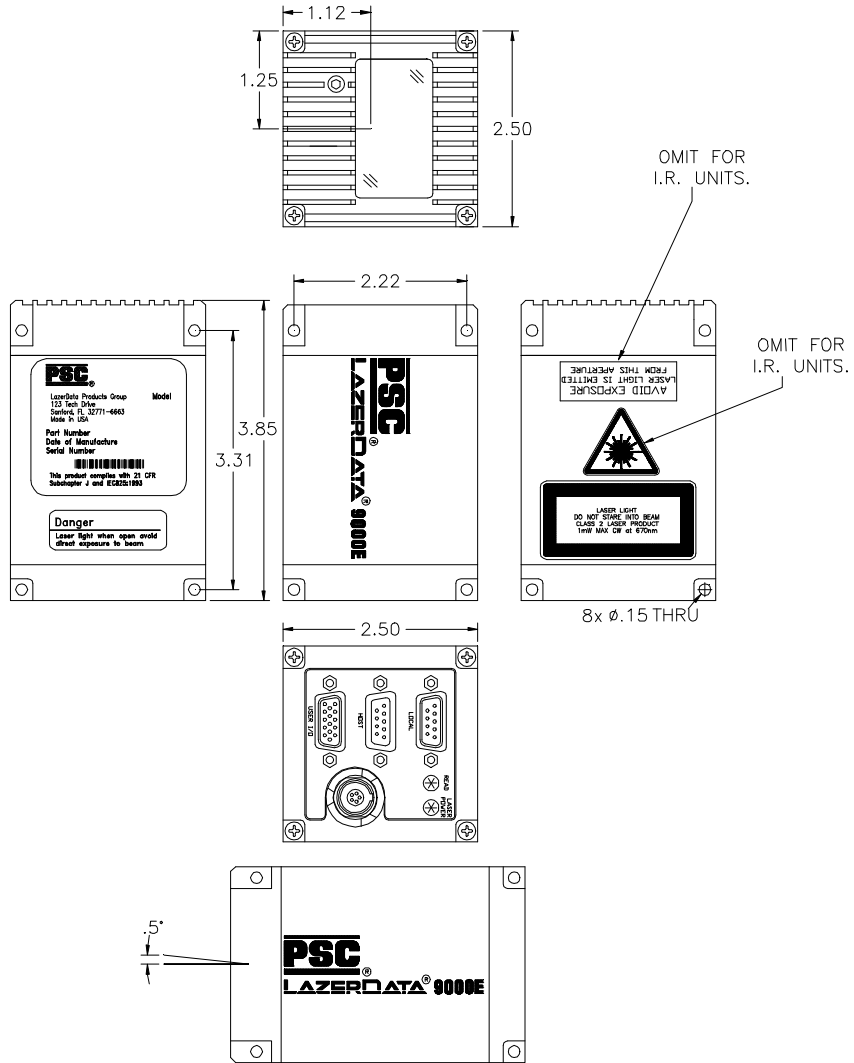
Dimensions
Figure 3-1

POWER REQUIREMENTS

The Series 9000E Scanner/Decoder is powered from a multiple-voltage DC power source. Voltages required are +5 VDC @860 mA. and $\pm$12 VDC @ 300 mA. These voltages are supplied to the unit through a keyed 5-pin power connector. The I/O Port is an alternate connection for input power. For connector wiring consult Section 4, Signal Interfaces.

SPECULAR REFLECTION

Bar code reading scanners can be blinded by specular reflections from mirror-like surfaces on the bar code label and make it difficult or impossible to obtain an accurate reading. This occurs when code symbols are printed on glossy material or a plastic coating is applied over the code symbol for protection. In general, if the bar code looks shiny to the eye, it should be treated as a specular code. Specular reflection can be eliminated by mounting the scanner at an angle relative to the code. Angles of 10 to 15 degrees are normally used. Do not tilt the scanner in the direction of the sweep, but perpendicular to that direction. Figure 3-2 illustrates proper scanner mounting for bar codes with mirror-like surfaces.
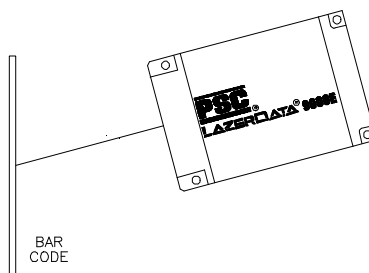
Scanner Mounting for Bar Codes with Mirror-Like Surfaces
Figure 3-2

MOUNTING ORIENTATION

Optimum operation of the bar code scanner demands proper orientation of the scanner relative to the bar code label it is to read. It is not possible to cover all situations so general rules are provided here. The Applications Engineering Group at PSC Automation, Inc. is available to assist in establishing mounting parameters in unusual situations. Call (800) 843-2700 for assistance.

The optimum distance from the scanner to the bar code label varies with the printing density of the barcode. Printing density refers to the width of the smallest bar or space in the code symbol. Higher density labels (narrower bars and spaces) must be closer to the scanner to be read, while lower density labels (wider bars and spaces) can be read further away. Figure 3-3 illustrates typical reading distances for several widths of bars and spaces. The closest distance from scanner to code is usually, but not limited to, 2.0 inches. The distances shown are typical and meant to illustrate the performance capabilities of the scanner.

If density or bar width information about the code symbol is not known, the optimum operating distance can be determined experimentally. Connect a terminal to the Local Port as outlined in Section 5, Local Programming. Enter the Configuration Menu. Select Page 2, Field Parameters. Select the correct algorithm for the barcode to be used. Return to the Main Menu and select Page 7, Diagnostics. Select Read Percentage Test. Adjust the distance from the scanner to the barcode label while viewing the diagnostics display. Find the distance where the values displayed for #Decodes is the largest. This is the optimum distance for that particular label. For most applications the label will be read reliably at a value of 95 or more decodes. This operating distance will be the center of the operating range for the label. Type CFG <enter> to return to the main menu and turn off diagnostics mode.
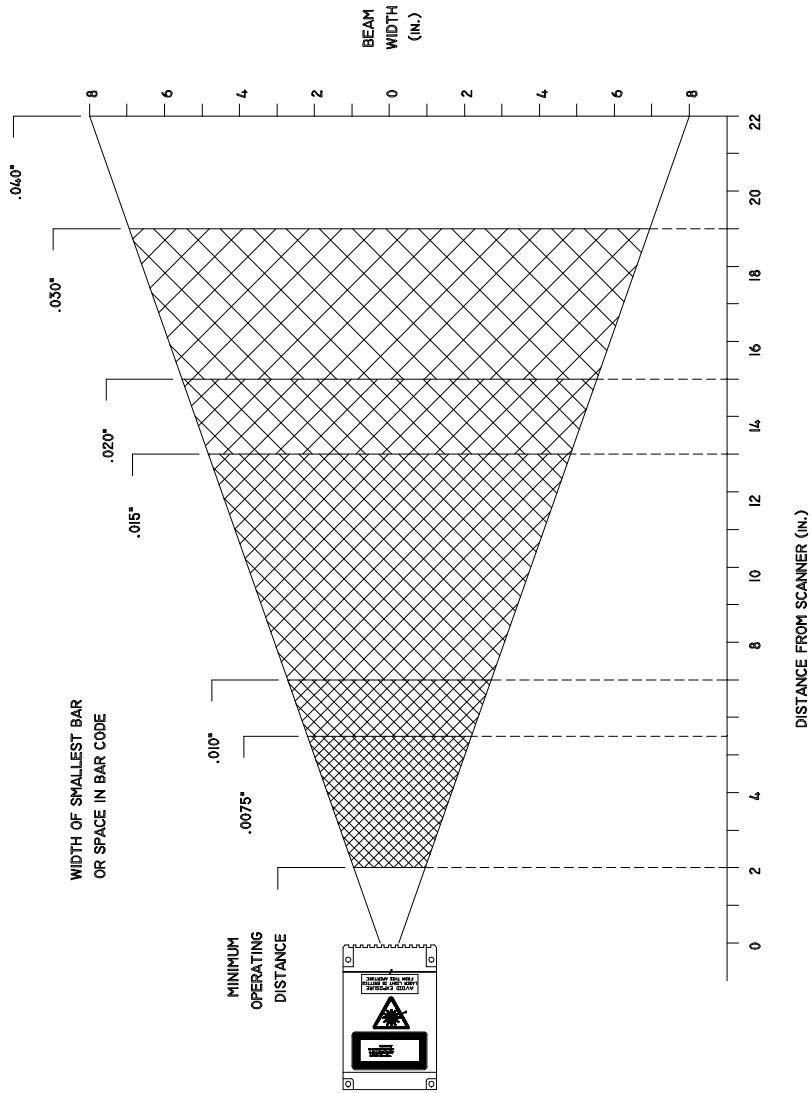
Operating Distance and Beam Sweep Width of Various Bar Sizes
Figure 3-3

In addition to being the correct distance from the scanner, the scan line must pass through the entire code symbol including the quiet zone at the beginning and end of the code. The quiet zone is a white area at least ten times the width of a narrow bar in the code. This is illustrated in Figure 3-4 below.
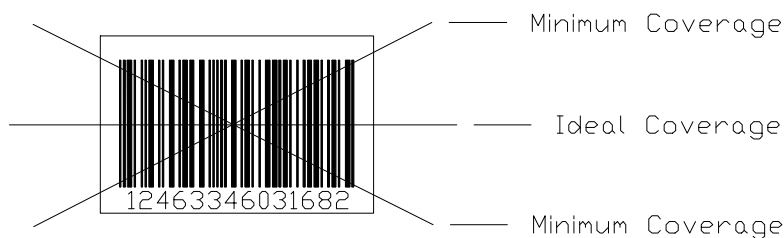
Scanning Beam Position
Figure 3-4

The more times the scanning beam passes through the entire code symbol, the greater is the probability of successfully reading the code. Figure 3-5 shows a method of calculating the number of passes the scanning beam will make over the code symbol for two orientations. In order to perform this calculation the user must know the speed, orientation of the code symbol ("Ladder" or "Picket Fence"), the distance from the scanner to the code and the dimensions of the bar code. In addition, the sweep speed of the scanner and the scanning beam width must be known. The scan speed was specified when the scanner was ordered. The beam width can be determined using Figure 3-3. If the user has a choice of mounting orientation, data for both orientations should be calculated. The orientation yielding the most sweeps over the code should be used.

"LADDER" ORIENTATION

BEAM MOTION

CODE MOTION

12463346031682

Ws

Wc

$$N = F \times (Wc \ / \ V)$$
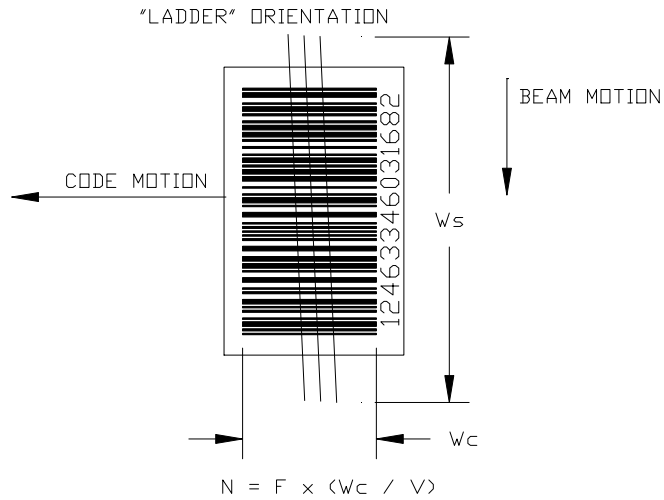
WHERE:
F = BEAM SWEEP/SECOND
Ws = WIDTH OF SCAN
Wc = WIDTH OF CODE SYMBOL (in.)
V = VELOCITY OF SYMBOL (in/sec)
N = NUMBER OF SWEEPS OVER CODE

CODE MOTION

BEAM MOTION

12463346031682

Wc

Ws

$$N = F \times [(Ws - Wc) \ / \ V]$$
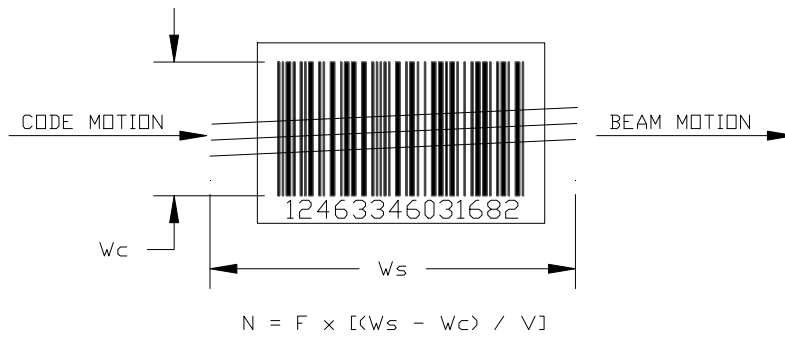
Beam Sweeps Over Code
Figure 3-5

INSTALLATION

RASTER

Some models of the Series 9000E Scanner/Decoder are supplied with a raster scan option. Not only does the beam scan horizontally but it is also incremented vertically so as to sweep an area. The area covered depends on the raster deflection and the distance from the scanner. The unit is available with 5°, 10°, 20°, and 30° deflection. Figure 3-6 below shows the area covered for various deflections and distances from the scanner. For 500-scan/sec. models, six sweeps of the beam are equally spaced over the raster height. For 1000-scan/sec. models, twelve sweeps are equally spaced over the raster height.
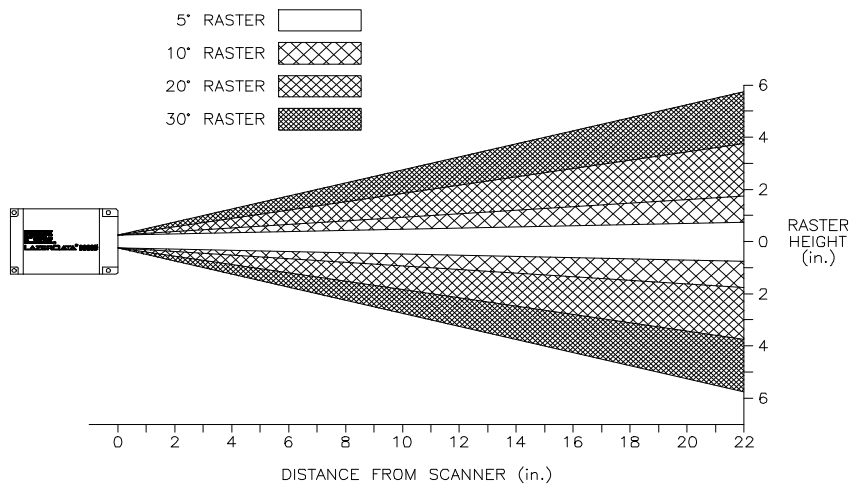
Raster Width for Various Operating Distances
Figure 3-6

SIGNAL INTERFACES

INTRODUCTION

All interface signals are contained on three D-type subminiature connectors at the rear of the scanner housing. Connectors are labeled LOCAL, HOST, and USER I/O. The LOCAL Connector contains the RS-232C signals for a serial terminal that can be used to program the system parameters and monitor activity. The HOST Connector contains the RS-232C, RS-422, or optional RS-485 signals that will be sent to the host computer or other control device.   The USER I/O Connector provides logic level status pulse outputs, gating and push-button compare inputs.   A 5-pin circular connector supplies power to the scanner. +5 VDC, and +12 VDC are required.

LOCAL PORT

This port is designed to accept a serial RS-232 terminal to configure the system operating parameters and monitor scanner operation if desired. It is set to 9600 baud, 1 start bit, 8 data bits, no parity bit, 1 stop bit (9600 N81) at manufacture. A 50-foot maximum cable length is suggested. Interface is through a DE9P connector as shown below.
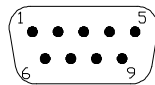
DE-9P

DE9P Connector

PIN	NAME	DESCRIPTION	DIRECTION

1	N/C	No Connection	
2	TXD	Transmit Data	Out
3	RXD	Receive Data	In
4	N/C	No Connection	
5	GND	Common Ground	
6	N/C	No Connection	
7	N/C	No Connection	
8	N/C	No Connection	
9	N/C	No Connection	

Pin 2   TRANSMIT DATA - Data Transmitted from the SERIES 9000E SCANNER/DECODER to the local programming terminal. Transmission format is serial ASCII, 1 Start Bit, 8 Data Bits, No Parity Bit, 1 Stop Bit. Baud rate is set at 9600.

Pin 3   RECEIVE DATA - Data transmitted from the local programming terminal to the Series 9000E Scanner/Decoder. Transmission format is serial ASCII, as above.

Pin 5   COMMON GROUND - Ground terminal common to both Transmit and Receive Data Lines.

HOST PORT

The Host Port is designed to provide RS-232, RS-422, or optional RS-485 communications to a host computer or other intelligent peripheral device. The type of communications used is user-programmable and is selected on Page 3 of the Programming Menus. When selecting RS-232

communications, a 50-ft. maximum cable length is suggested. With RS-422 or RS-485 communications, cable lengths up to 500 feet can be used. Interface is made via a DE9S connector as shown below. Pin assignments vary depending on the hardware protocol selected. Connections for the various protocols are shown in the following tables.
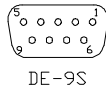
DE-9S

DE9S Connector

RS-232 Connections

PIN	NAME	DESCRIPTION	DIRECTION
1	N/C	No Connection	
2	TXD	Transmit Data	Out
3	RXD	Receive Data	In
4	DSR	Data Set Ready	In
5	GND	Common Ground	
6	DTR	Data Terminal Ready	Out
7	CTS	Clear to Send	In
8	RTS	Request to Send	Out
9	N/C	No Connection	

Pin 2 TRANSMIT DATA - Data transmitted from the Series 9000E Scanner/Decoder to the host computer. Transmission is serial ASCII. Format is user programmable.

Pin 3 RECEIVE DATA - Data transmitted from the Host Computer to the Series 9000E Scanner/Decoder. Transmission is serial ASCII. Format is user programmable.

Pin 4 DATA SET READY - A signal sent from the Host Computer to the Series 9000E Scanner/Decoder to indicate that it is on-line.

4-3

Pin 5   COMMON GROUND - Ground terminal common to all signal lines.

Pin 6   DATA TERMINAL READY - A signal sent from the Series 9000E Scanner/Decoder to the Host Computer to indicate that it is on-line.

Pin 7   CLEAR TO SEND - A signal sent from the Host Computer to the Series 9000E Scanner/Decoder as an acknowledgment to the Request to Send signal, and giving permission to send data. Configuration is user programmable.

Pin 8   REQUEST TO SEND - A signal sent from the Series 9000E Scanner/Decoder to the Host Computer indicating that it has data to send. Configuration is user programmable.

RS-422 Connections

PIN	NAME	DESCRIPTION	DIRECTION
1	RXD-	Receive Data -	In
2	TXD+	Transmit Data +	Out
3	N/C	No Connection	
4	N/C	No Connection	
5	GND	Common Ground	
6	N/C	No Connection	
7	N/C	No Connection	
8	TXD-	Transmit Data -	Out
9	RXD+	Receive Data +	In

Pin 1   RECEIVE DATA (-) - Negative connection for data transmitted from the Host Computer to the Series 9000E Scanner/Decoder.

Pin 2   TRANSMIT DATA (+) - Positive connection for data transmitted from the Series 9000E Scanner/Decoder to the Host Computer. Transmission is serial ASCII. Format is user-programmable.

Pin 5   COMMON GROUND - Ground connection common to all signals.

Pin 8   TRANSMIT DATA (-) - Negative connection for data transmitted from the SERIES 9000E Scanner/Decoder to the Host Computer.

Pin 9   RECEIVE DATA (+) - Positive connection for data transmitted from the Host Computer to the Series 9000E Scanner/Decoder. Transmission is serial ASCII. Format is user-programmable.

RS-485 Connections

PIN	NAME	DESCRIPTION	DIRECTION
1	RS-485 (-)	Data -	Bi-directional
2	N/C	No Connection	
3	N/C	No Connection	
4	N/C	No Connection	
5	GND	Common Ground	
6	N/C	No Connection	
7	N/C	No Connection	
8	N/C	No Connection-	
9	RS-485 (+)	Data +	Bi-directional

Pin 1   RS-485 (-) - Signal for three wire Party Line configuration.

Pin 5   Common Ground - Ground common to all signals.

Pin 9   RS-485 (+) - Signal for three wire Party Line configuration.

I/O PORT

This port is designed to provide status output pulses and accept input signals for gating and push button compare. Output pulses are provided for Good Read, No Read, Good Compare, and No Compare Conditions. Pins 1, 6 and 15 can be used as an alternate method of supplying scanner power. If the scanner is powered using the power connector, these pins may be used as a voltage source to power external hardware such as a gate sensor.   Connections are made through a DE-15S connector as shown below.
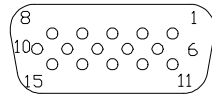
```
 8                    1
10  o o o o o o      6
      o o o o o
15                   11
        DE-15S
```

DE-15S Connector

PIN	NAME	DESCRIPTION	DIRECTION
1	-12VDC	-12VDC Power	Input/Output
2	GND	Common Ground	
3	GC	Good Compare	Output
4	NC	No Compare	Output
5		Reserved*	
6	+12VDC	+12VDC Power	Input/Output
7	GND	Common Ground	
8	GND	Common Ground	
9	GR	Good Read	Output
10	NR	No Read	Output
11	GND	Common Ground	
12	O/D	Digital Output	Output
13	Gate	Gate Input	Input
14	PBC	Push Button Compare	Input
15	+5VDC	+5VDC Power	Input/Output

*NOTE: DO NOT MAKE ANY CONNECTION TO THIS PIN.

Pin 1   -12 VDC INPUT/OUTPUT - Alternate input power connection to the Series 9000E Scanner/Decoder. -12 VDC $\pm$ 5% @ 300 mA. required. -12 VDC available at this pin when power connector is used.

Pin 2   COMMON GROUND - Ground connection common to all signals.

Pin 3   GOOD COMPARE - User programmable TTL level output pulse from Series 9000E Scanner/Decoder on each code read that compares with a compare buffer entry (open collector on some models).

Pin 4   NO COMPARE - User-programmable TTL level output pulse for each code read that does not compare with a compare buffer entry (open collector on some models).

Pin 5   **DO NOT MAKE ANY CONNECTION TO THIS PIN. RESERVED.**

Pin 6   +12 VDC INPUT/OUTPUT - Alternate input power connection to the Series 9000E Scanner/Decoder. +12 VDC ± 5% @ 300 mA. required. +12 VDC available at this pin when power connector is used.

Pin 7,8 COMMON GROUND - Ground connection common to all signals.

Pin 9   GOOD READ - User-programmable TTL level output pulse for each code read by the Series 9000E Scanner/Decoder. (Open collector on some models).

Pin 10   NO READ - User-programmable TTL level output pulse for each code not successfully decoded. (Open collector on some models).

Pin 11   COMMON GROUND - Ground connection common to all signals.

Pin 12   DIGITAL OUTPUT - TTL level output. Bar = 1 Space = 0. Refer to Section 2, Figure 2-1.

Pin 13   GATE INPUT - Input signal to the Series 9000E Scanner/Decoder indicating that a code is present. Can be supplied by a switch, a photoelectric sensor, or an input voltage. The input voltage at this terminal is 30 VDC maximum. Connecting this terminal to ground or applying a voltage less than 0.8 V gates the scanner. See Figure 4-1.

Pin 14   PUSH BUTTON COMPARE - Shorting between this terminal and ground will enter the next code read into the compare buffer. Scanner will automatically be set to compare mode when push button is used.

Pin 15 5 VDC input/output - Alternate input power connection to Series 9000E Scanner/Decoder. 5 VDC+5% @ 860 mA required. 5 VDC available at this pin when power connector is used.

Note: Open collector outputs are capable of switching up to 24 VDC at currents of up to 100 mA.
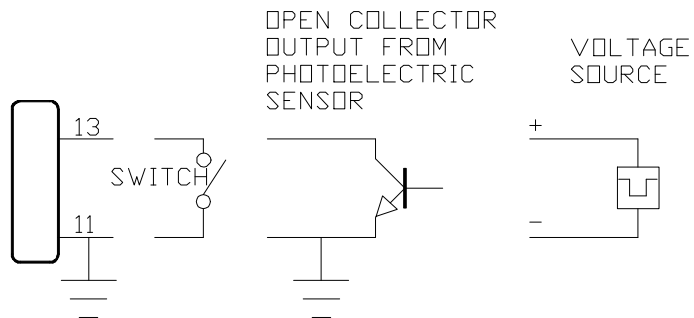
```
                    OPEN COLLECTOR
                    OUTPUT FROM        VOLTAGE
                    PHOTOELECTRIC      SOURCE
                    SENSOR
   ┌──┐ 13                                   +
   │  │                                      ┌──┐
   │  │ SWITCH                               │┌┐│
   │  │ 11                                   └──┘
   └──┘                                      −

            Note:  In each case the input grounds pin 13 to gate the scanner
```

Typical Gate Connection
Figure 4-1

POWER CONNECTOR

The Power Connector is used to supply input power to Series 9000E Scanner/Decoder. Terminal locations are shown below. The I/O Port can be used as an alternative method of supplying power. The table below lists the voltages required and the minimum required current for each voltage.
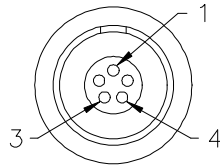
PIN	CONNECTION
1	Ground
2	+12 VDC, 300 mA. minimum
3	Ground
4	-12 VDC, 300 mA. minimum
5	+5 VDC, 860 mA. minimum

SIGNAL INTERFACES

MATING CONNECTORS

Mating connectors are available from LazerData for all connectors used on the Series 9000E Scanner/Decoder. They can be ordered by the part numbers listed below.
Call Customer Administration at (800) 843-2700.

MATES TO	PART No.	DESCRIPTION
LOCAL PORT	Y259600 7651021	Connector Back for above
HOST PORT	Y260020 7651021	Connector Back for above
I/O PORT	Y259930 7651021	Connector Back for above
POWER	5601006	Connector

Series 9000E Scanner/Decoder

LOCAL FORMATTING

INTRODUCTION

The LazerData Series 9000E Bar Code Scanner/Decoder is capable of being configured with a computer terminal or a computer programmed to emulate a terminal. When power is first applied to the system, a Startup screen appears on the terminal. Type CFG and press the ENTER key on the terminal keyboard to display the Scanner Configuration Screen. A terminal emulation must be chosen before displaying the Main Menu Screen. The Main Menu screen provides access to eight unique screens. These eight screens allow the user to configure the Series 9000E Scanner/Decoder to meet the unique requirements of the application.

```
Downloading ...............................

Host Port  RS232 9600 NONE EIGHT ONE
Local Port RS232 9600 NONE EIGHT ONE

LD9000E


AB-123
AB-123
AB-123
AB-123
AB-123
AB-123
AB-123
AB-123
```

STARTUP/SHOW BAR CODES

Purpose of Screen:

Indicates that power is on and the system is ready to read bar codes.
Displays enabled bar codes currently being scanned.

Field Descriptions:

When power is applied to the Series 9000E Bar Code Scanner/Decoder
a startup screen will appear on the terminal. The startup screen will
indicate that the scanner is downloading it's program from memory and
is loading the database most recently saved. Once this is completed the
Host and Local Port comm-unication parameters will be displayed. The
scanner will then display **LD9000E** on the terminal screen.
Once loading is complete, the Series 9000E Bar Code Scanner/Decoder
will begin transmitting decoded bar codes to the terminal screen. If

there is no bar code label in front of the scanner, or the gate is not enabled the terminal will remain blank.

Operator Actions:

1. To display bar code values on the local terminal, put a bar code label in front of the Series 9000E Bar Code Scanner/Decoder. If the bar code type has been enabled it will be displayed when decoded.

2. To access the Setup Screen type CFG and press ENTER.

Note: To return to the Display Bar code screen from the Main Menu select the X = EXIT TO READ MODE option.

```
LazerData LD9000E SCANNER CONFIGURATION SYSTEM
LAZERDATA MODEL: LD9000E  Revision 1.60  May 18, 1995
Please select one of the following terminal
types by entering the number indicated:


1 = DEC VT100, ANSI, LCDOS
2 = TELEVIDEO 912, 920
3 = WYSE 30
4 = LazerData SSDL


Enter 1-4 or <CR>: 1
```

TERMINAL SELECTION

Purpose of Screen:

Indicates the start of the Configuration Mode.
Displays the current scanner software version identification.
Allows user to select the type of terminal that will be used for programming.

Field Descriptions:

The menu presents four choices of terminals. Select the choice that represents the terminal being used. If a terminal emulation program is being used, the program can be set to emulate any of the typical types listed. All terminal types have screen formatting capabilities, so the displays will look like those presented here.
Operator Actions:

LOCAL FORMATTING

Select the appropriate terminal type by typing in the corresponding number. Press ENTER to confirm selection and move to the MAIN MENU. Terminal #1 is the default option. If choosing this terminal, just press ENTER to move to the MAIN MENU.

```
MAIN MENU

1 = GATE PARAMETERS
2 = FIELD DEFINITIONS
3 = HOST PORT PARAMETERS
4 = LOCAL PORT PARAMETERS
5 = INPUT/OUTPUT PULSE PARAMETERS
6 = SAVE/DEFAULT CONFIGURATION
7 = READ RATE DIAGNOSTICS
8 = COMPARE STRINGS
x = EXIT TO READ MODE

Enter selection: 1
```

MAIN MENU

Purpose of Screen:

This screen allows you to access eight setup and configuration screens.

Field Descriptions:

Menu items 1 through 8 provide access to detailed menus for setting the configuration parameters to the specific requirement of your system. If the system is being configured for the first time, the menus can be accessed in order. If changes are desired under a particular menu, that menu can be accessed directly.

The X = EXIT TO READ MODE selection returns you to a blank screen to display the bar code currently being read.
Operator Action:

Type the number of the selection you wish to make. The screen for the selection you make will be displayed.

```
GATE CONFIGURATION

LASER MODE OF OPERATION:          Continuous
LASER BEAM TRACKING:              NO
TRANSMIT AFTER:                   GATE CLOSES
HOST START SCAN CHARACTER:        <SI>
HOST STOP SCAN CHARACTER:         <ETX>
ACK/NAK TIMEOUT VALUE:            0    msec
(0 - 9999 msec for host port only)
DATA CHANGE TIMEOUT VALUE:        0    msec
(0 - 30000 msec)
GATE INPUT DEBOUNCE TIME:         1    msec
(1 - 999 msec for the host port only)
GATE TIMEOUT VALUE:               0    msec
(0 - 30000 msec)
COMPARE MODE:                     NO
(See Main Menu Option 8 for Setup)
MASTER/SLAVE MODE:                NO
(Send Gate Open/Close message to the multiplexor)




KEYS: SPACE=TOGGLE+ BKSPACE=TOGGLE-  <CTRL-U>=LAST SCREEN
```

PAGE 1 - GATE PARAMETERS

Purpose of Screen:

This screen allows the user to set the mode of operation. The user may select the method of signaling the Series 9000E Bar Code Scanner/Decoder to read a bar code and assure that only a single transmission is made for each bar code read.
The user can also control when that transmission is made, and program the laser beam to follow the gate mode and turn on only when a bar code is present.

Field Descriptions:

LASER MODE OF OPERATION

Choices are:

CONTINUOUS - The 9000E Scanner/Decoder reads, decodes and transmits continuously. Data for every read is transmitted. No gating is performed.

DATA CHANGE MODE BUFFERED - Once a bar code is read and the data transmitted the 9000E Scanner/Decoder will not recognize that bar code again until a different bar code has been decoded.

HARDWARE GATE MODE - Using an external device (as outlined on Page 4-8) the scanner is gated to read when a bar code is present. Only a single data transmission is made for each gate signal.

SOFTWARE GATE MODE - The Host computer may be programmed to gate the 9000E Scanner/Decoder via an ASCII start and stop signal.

HIGH SPEED MODE - Same as hardware gate mode but only outputs are triggered. The label is not transmitted.

DATA CHANGE MODE WITH TIMEOUT - Allows the user to specify a TIMEOUT value before 9000E Scanner/Decoder will read the next bar code.

LASER BEAM TRACKING - Selecting NO will leave the laser beam on at all times. Selecting YES will turn the laser beam on when a gate signal is received and turn the beam off when the gate is closed. This will insure that the beam is on only when necessary.

TRANSMIT AFTER - The two choices available are CLOSE and READ. Selecting READ will cause the 9000E Scanner/Decoder to transmit the bar code data immediately after a successful read. Selecting CLOSE will cause the data transmission to be delayed until the close of the gate signal.

HOST START SCAN CHARACTER - The host computer may be used to gate the 9000E Scanner/Decoder . The start of each gate must be

specified as a character or string of characters. Any two character string can be specified but normally ASCII control characters are used.

The default character string, SI (Shift In) has been programmed. It may be changed by the user if desired. When these characters are used they must be bracketed by < >.

HOST STOP SCAN CHARACTER - The host computer character to end the gate period can also be specified as a character or string of characters. The default string, <ETX> has been programmed. It may be changed to any two character ASCII string if desired.

ACK/NAK TIMEOUT VALUE - If ACK/NAK software protocol is selected, each time a label is read it is sent to the Host for confirmation. If the host answers ACK (CTRL-F), the scanner can then immediately read the next label. If the host answers NAK (CTRL-U) or gives no response in the allotted time then the scanner will resend the label. The scanner will resend the label to the host up to 5 times.

DATA CHANGE TIMEOUT VALUE - The data change mode can be modified to recognize the same code again after a set period of time. In Data Change timeout, once the label leaves the field, a timer is started. If at the end of the set time the same bar code is presented to the scanner again, it will be considered a new code. Values specified can range from 0 to 30000 msec.

GATE INPUT DEBOUNCE TIME - If a switch or relay contact is used for a gate signal, a debounce time may be necessary. Times will have to be determined experimentally. Once a gate signal is detected, it must be present for the set time before it is considered valid. Debounce time may be specified from 1 to 999 msec.

GATE TIMEOUT VALUE - The Gate Timeout Value is used to simulate a close gate signal. When the time set has expired the gate will close and either transmit the bar code data or a No Read. The timer will ignore all activity on the Gate line until it has timed out. When a new open gate signal happens the timer starts counting down again.

COMPARE MODE - Activates the Compare String mode. (See Page 8 - Compare Strings) for information on compare string options.

5-9

MASTER/SLAVE MODE - This option will send a multiplexor open message, scanner label data and then a multiplexor close message. The open message consists of STX SI CAN CR. The close message consists of STX SO CAN CR.

Operator Action:

1. When the cursor is positioned on the LASER MODE OF OPERATION line, press SPACE to display the desired setting. Press ENTER to select the choice and move the cursor to the next line.

2. Position the cursor on the LASER BEAM TRACKING line. Press SPACE to change the settings from YES to NO. When the desired setting is displayed press ENTER to enter the choice and move the cursor to the next line.

3. With the cursor positioned on the TRANSMIT AFTER line press SPACE to change the settings from GATE CLOSES to READ and back. When the desired setting is displayed, press ENTER to enter the choice and move the cursor to the next line.

4. Position the cursor at the end of the HOST START SCAN CHARACTER line. To accept the currently selected character string press ENTER. To change the character press BACK SPACE to delete the present string and enter the new character string. Press ENTER to proceed to the next line.

5. Position the cursor at the end of the HOST STOP SCAN CHARACTER line. To accept the currently selected character string press ENTER. To change the character press BACK SPACE to delete the current string and enter the new character string. Press ENTER to proceed to the next line.

6. With the cursor on the ACK/NAK TIMEOUT VALUE line enter the desired value in milliseconds. This value can be between 0 and 9999 milliseconds. Press ENTER to enter the value and move to the next line.

7. With the cursor on the GATE CONTROL DEBOUNCE VALUE line, enter the desired value in milliseconds.

8. With the cursor on the GATE TIMEOUT VALUE line, enter the desired value in milliseconds.

9. With the cursor on the COMPARE MODE line use the SPACE BAR to toggle between the choices; YES and NO. Press ENTER to select.

10. With the cursor on the MASTER/SLAVE MODE line use the SPACE BAR to toggle between the choices; YES and NO. Press ENTER to select.

```
FIELD DEFINITION SUMMARY SCREEN

NO. CODE TYPES              LENGTHS
01 C_39                        0




SELECT ACTION:



KEYS: SPACE=TOGGLE+ BKSPACE=TOGGLE-  <CTRL-U>=LAST SCREEN
```

PAGE 2 - FIELD DEFINITION SUMMARY

Purpose of Screen:

Displays a summary of how each previously entered field is defined. Also lets the user edit, delete or insert fields.

Field Descriptions:

A total of up to six fields can be listed. Each listing is a summary of how a field is defined. Existing fields can be edited or deleted. New Fields can be inserted.

Note: Think of a field as an encapsulated object that grabs things. the entries made in the Definition for Field Number screen (Page 2, level 2) are simply a set of filters the field uses to filter out the things it does not want to grab. Each field allows up to 10 code

type/length combinations (i.e., ten types of code each with their own number of characters). More than one field turned on means that the user is looking for more than one label on a package.

Operator Actions:

Choose EDIT, DELETE, or INSERT by typing in E, D, or I at the SELECT ACTION prompt.

If DELETE is chosen, the ENTER FIELD NUMBER TO DELETE: prompt will appear. Enter the Field number 1 through 6. The entire Field will be deleted from the display.

If a Field is to be edited or inserted, enter the number of the Field at the prompt, and the next screen will be displayed.

```
DEFINITION FOR FIELD NO: 01


CODE TYPE   MIT S/S   XMIT CHK DGT   LENGTH   READ CNTS

C-39          NO         NO             0          1
OFF           NO         NO             0          1
OFF           NO         NO             0          1
OFF           NO         NO             0          1
OFF           NO         NO             0          1
OFF           NO         NO             0          1
OFF           NO         NO             0          1
OFF           NO         NO             0          1
OFF           NO         NO             0          1
OFF           NO         NO             0          1



HOST GOOD READ XMIT FORMAT:        %D%
LOCAL GOOD READ XMIT FORMAT:       %D%
HOST NO READ XMIT FORMAT:          NR
LOCAL NO READ XMIT FORMAT:         NR
HOST READ CONFLICT XMIT FORMAT:    %D%
LOCAL READ CONFLICT XMIT FORMAT:   %D%
LABEL MASK:                        NO

KEYS: SPACE=TOGGLE+ BKSPACE=TOGGLE-  <CTRL-U>=LAST SCREEN
```

PAGE 2 - LEVEL 2 FIELD DEFINITION

Purpose of Screen:

Allows the user to edit existing entries and insert new entries as well as specify data that will be transmitted along with the bar code data.

Field Descriptions:

CODE TYPE - Any data previously entered will be displayed. If none, all the entries in this column will read OFF.

XMIT S/S - (Transmit Start/Stop). This controls transmission of Start and Stop characters with the bar code data. Not all bar codes have start/stop characters. Not all start/stop characters are transmittable. Length (number of characters) in field definition must be set long enough to include start/stop characters if XMIT S/S is enabled.

XMIT CHK DGT - (Transmit Check Digit). It may or may not be desirable to transmit the check digits contained in some bar codes. Not all bar codes have check digits. Not all check digits are transmittable. Length (number of characters) in field definition must be set long enough to include check digits, if enabled.

LENGTH - Determines the number of characters in the code to be read, including any check characters and start/stop characters if enabled. UPC and EAN codes may not have the first and last digits printed. A 0 allows any length of code to be read.

READ COUNT - Number of times the same label must be decoded before it's transmitted.

HOST GOOD READ XMIT FORMAT - This entry determines what data is transmitted from the Host Port when a Good Read occurs. The entry can be a literal string such as GR, a formatted data string or a combination of the two. See Data Formatting Codes page 5-17.

LOCAL GOOD READ XMIT FORMAT - This entry determines what data is transmitted from the Local Port when a Good Read occurs. The entry

can be a literal string such as GR, a formatted data string or a combination of the two. See Data Formatting Codes page 5-17.

HOST NO READ XMIT FORMAT - This entry determines what data is transmitted from the Host Port if a No Read condition occurs. This is usually a message string saying that there is no bar code label to transmit. See Data Formatting Codes page 5-17.

LOCAL NO READ XMIT FORMAT - This entry determines what data is transmitted from the Local Port if a No Read condition occurs. This is usually a message string saying that there is no bar code label to transmit. See Data Formatting Codes page 5-17.

HOST READ CONFLICT XMIT FORMAT - This entry determines what data is transmitted from the Host Port if a Read Conflict occurs. A Read Conflict occurs when the bar codes read on a particular package exceeds the number of Field Definitions that have been entered. See Data Formatting Codes page 5-17.

LOCAL READ CONFLICT XMIT FORMAT - This entry determines what data is transmitted from the Local Port if a Read Conflict occurs. A Read Conflict occurs when the bar codes read on a particular package exceeds the number of Field Definitions that have been entered. See Data Formatting Codes page 5-17.

LABEL MASK - This entry allows the user to define which fields the decoded labels are inserted into. Five labels per field can be specified.

LABEL MASK EXAMPLES:

Label: "123456"   Label Mask String: 123*
123 match up so we have a good compare.

Label: "123456"   Label Mask String: 1?3?5?
1,3,5 match up so we have a good compare.

* - ignores all characters from that point on in the bar code.
? - ignores the character in that position in the bar code.

Operator Actions:

1. With the cursor at the first CODE TYPE line, use the DOWN ARROW key to select the desired line. Press the SPACE BAR to review the code types available. When the correct choice is displayed, press ENTER to move to the XMIT S/S line.

2. With the cursor on the XMIT S/S line use the SPACE BAR to toggle between the choices, YES and NO. When the desired choice is displayed, press ENTER to make the selection and move to the next line.

3. With the cursor on the XMIT CHK DGT line use the SPACE BAR to toggle between the YES and NO choices. Press ENTER to select the appropriate choice and move to the next field.

4. With the cursor positioned on the LENGTH line, enter the number of characters in the code to be read including any check characters and start/stop characters if enabled. Entering a zero will cause any length to be read.

5. With the cursor positioned on the READ COUNTS line, enter the number of times the label must be read before it will be transmitted.

6. When all the desired code types have been entered, use the DOWN ARROW key to position the cursor next to the HOST GOOD READ XMIT FORMAT line. This is the first of six entries that format the Local and Host ports for the Good Read, No Read and Read Conflict conditions.

7. With the cursor positioned on the LABEL MASK line enter the characters for the label mask string. This string will accept the * and ? qualifiers. When the * is used everything from the asterisk till the end of the letter is ignored. When the ? is used, the positions selected are ignored.

DATA FORMATTING CODES:

The two types of entries are **data formatting** and **literal formatting**.

LOCAL FORMATTING

Data formatting information is always bracketed by **%** and controls how the bar code data is transmitted. Data formatting information only applies to the current field. Different fields can have different data formatting.

The **%** symbol is used as a format place holder (any characters not bracketed by **%** will transmit as literal messages).

D is label data. It indicates label data should be transmitted.

C is read count (how many times a label is seen on a package). It indicates read count data should be transmitted. Any string following this command must be preceded by a %.

N, S, and **Z** control fill characters. **N** = not fill, **S** = fill with spaces, and **Z** = fill with zeros.

R, **L,** and **M** select right (or right justified), left (or left justified), or middle (midstring characters). The entry for **M** is two numbers with a comma between them. For example, an entry of **3,7** would mean that with a string of eight characters such as 12345678 or ABCDEFGH the selection would start at the third character (3 or C) and end with the seventh character (7 or G).

For example, **%DZR6%** and **%DR6%** both mean transmit right six characters. In the event that the data is passed on to a system (e.g. a main frame computer) with a standard format of greater than six characters, **%DZR6%** would be used and the blank spaces filled with zeros. **%DR6%** would be used when the string is shorter than the bar code.

DATA FORMATTING CODES EXAMPLES:

Example bar code: "012345678"

Format Control	Output
%D%	"012345678"
%DR6%	"345678"

5-17

%DL6%	"012345"
%DM2,6%	"12345"
%DZR11%	"00012345678"
%DSL11%	"012345678__"
	(the label followed by two spaces)

Literal formatting information is transmitted from the port exactly as entered. Literal messages have a maximum length of sixty characters. %D% will send the message out to the port exactly like it was decoded.

```
HOST PORT PARAMETERS  SCREEN


COM HARDWARE PROTOCOL:  RS 232
COM BAUD RATE:              9600
COM PARITY:                 NONE
COM DATA BITS:              EIGHT
COM STOP BITS:              ONE
RTS/CTS FLOW CONTROL:   NO
COM SOFTWARE PROTOCOL:  NONE
COM ECHO/PASS-THROUGH:  NO_ECHO

TRANSMIT ON ANY NO READ:   YES
TRANSMIT ON ALL NOREADS:   YES
TRANSMIT ALGORITHM ID:      NO
TRANSMIT READ DIRECTION:   NO

START OF MESSAGE STRING:
END OF MESSAGE STRING:     <CR><LF>
GOOD COMPARE STRING:       GC
NO COMPARE STRING:         NC
SCANNER ID STRING:
FIELD DELIMETER STRING:     +
INTERCHARACTER DELAY:    0    (0 - 999 msec)

KEYS: SPACE=TOGGLE+ BKSPACE=TOGGLE-  <CTRL-U>=LAST SCREEN
```

PAGE 3 - HOST PORT FORMATTING

Purpose of Screen:

Allows the user to set the data transfer parameters between the Series 9000E Bar Code Scanner/Decoder and the host computer available through the Host Port.

LOCAL FORMATTING

Allows the user to format the data string which is sent from Series 9000E Bar Code Scanner/Decoder to the host computer when a bar code is read.

Field Descriptions:

COM HARDWARE PROTOCOL - Allows choice of one of three
hardware protocols: RS-232, RS-422, RS-485 2 wire*, RS-485 4 wire*.
          * intended to be used with LazerData Multidrop only

COM BAUD RATE - The baud rate can be set using any of the following
values: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400.

COM PARITY - Parity for this port can be set to none, even or odd. If
set to none there is no parity bit in the transmission.

COM DATA BITS - The number of data bits per character can be 7 or 8.

COM STOP BITS - The number of stop bits per character can be 1 or 2.

RTS/CTS FLOW CONTROL - This controls whether the RTS and CTS
handshake signals will be used for RS-232 or RS-422.

COM SOFTWARE PROTOCOL - Software protocols may be specified if
desired. If NONE is chosen, no software protocol will be used. Other
choices are: ACK/NAK (ACK/NAK Timeout is explained on page 5-9),
XON/XOFF (short cut keys are CTRL Q and CTRL S, respectively),
INTERMEC and LazerData MULTI-DROP.

COM ECHO/PASS THROUGH - Each transmission received on this port
can be echoed (repeated) to another port. The choices are NO ECHO,
HOST, LOCAL, or BOTH. Selecting NO ECHO will not echo any
transmission. Selecting HOST will re-transmit the input signal on this
port to the output on this port. Selecting LOCAL will echo the input
signal on this port to the output on the local port. Selecting BOTH will
echo the input signal on this port to the output on both ports.

TRANSMIT ON ANY NOREAD - User can determine whether a data
transmission will (YES) or will not (NO) be made when a No Read
condition occurs in ANY field.

LOCAL FORMATTING

TRANSMIT ON ALL NOREADS - User can determine whether a data transmission will (YES) or will not (NO) be made when a No Read condition occurs in ALL fields. TRANSMIT ON ANY NOREAD must be set to YES.

TRANSMIT ON NO COMPARE - User can determine whether a data transmission will (YES) or will not (NO) be made when a No Compare condition occurs.

TRANSMIT ALGORITHM ID - User can determine if the Algorithm ID will be part of the serial transmission. Will not transmit when multiple fields have been selected.

TRANSMIT READ DIRECTION - User can determine if direction of bar code read (FWD = Forward, REV = Reverse) is transmitted. Will not transmit when multiple fields have been selected.

START OF MESSAGE STRING - User may select any character string to signify the beginning of each data transmission. The length can be up to 10 characters.   If control characters are included they must be bracketed, < >. For example: <STX>.

END OF MESSAGE STRING - User may select a string of characters to signify the end of each data transmission. The length can be up to 10 characters. Default string is <CR><LF> (carriage return, line feed).

GOOD COMPARE STRING - User may select a string of characters to be transmitted to signify a Good Compare. Default is GC. Maximum length is 60 characters.

NO COMPARE STRING - User may select a string of characters to be transmitted to signify No Compare. Default is NC. Maximum length is 60 characters.

SCANNER ID STRING - User may select a character string to identify the scanner sending the message. In an installation with multiple decoders connected to a host, this identification string may be necessary. Maximum length is 10 characters.

FIELD DELIMITER STRING - When data for more than one bar code is sent during a single transmission, a character or string of characters is specified that separates the bar code data fields. This occurs if more than one bar code label is on a single package. Default character is "+". Control characters must be bracketed, < >. Maximum length is 2 characters.

INTERCHARACTER DELAY - Sets the delay between every character sent to the port.

Operator Action:

1. With the cursor positioned at the end of the HARDWARE PROTOCOL line press SPACE to step through the choices. When the desired choice is displayed press ENTER to enter it and proceed to the next line.

2   With the cursor set to the BAUD RATE line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

3. With the cursor set to the PARITY line press SPACE to step through the choices, ODD, EVEN or NONE. When the desired choice is displayed press ENTER to select it and move to the next line.

4. With the cursor set to the DATA BITS line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

5. With the cursor set to the STOP BITS line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

6. With the cursor set to the RTS/CTS FLOW CONTROL line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

7. With the cursor set to the SOFTWARE PROTOCOL line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

8. With the cursor set to the ECHO/PASS-THROUGH line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

9. With the cursor positioned on the TRANSMIT ON ANY NO READ line press SPACE to select YES or NO. When the desired choice is displayed press ENTER to select it and move to the next line.

10. With the cursor positioned on the TRANSMIT ON ALL NO READS line press SPACE to select YES or NO. When the desired choice is displayed press ENTER to select it and move to the next line.

11. With the cursor positioned on the TRANSMIT ALGORITHM ID line press SPACE to select YES or NO. When the desired choice is displayed press ENTER to select it and move to the next line.

12. With the cursor positioned on the TRANSMIT READ DIRECTION line press SPACE to select YES or NO. When the desired choice is displayed press ENTER to select it and move to the next line.

     Note: The BACK SPACE or DEL keys can be used to edit information entered on the following lines.

13. With the cursor positioned on the START OF MESSAGE STRING LINE type the message start string. Control characters must be enclosed in < >.

14. With the cursor positioned on the END OF MESSAGE STRING Line type in the message end string. Press ENTER to select new string and move cursor to the next line. Control characters must be enclosed in < >. Press ENTER to select default, <CR><LF>.

15. With the cursor positioned on the GOOD COMPARE STRING line type in the Good Compare message. To accept the default (GC), press ENTER.

16. With the cursor positioned on the NO COMPARE STRING line type in the No Compare message. To accept the default (NC), press ENTER.

17. With the cursor positioned on the SCANNER ID STRING line type in the character string used to identify the scanner. Press ENTER to select the string and move the cursor to the next line.

18. With the cursor positioned on the FIELD DELIMITER line type in the character string used. Press ENTER to select the new string and move the cursor to the next line. Control characters must be enclosed in < >. Press ENTER to select default, "+".

19. With the cursor positioned on the INTERCHARACTER DELAY line type in the value in milliseconds of the delay. Value must be between 0 and 999 msec.

```
LOCAL PORT PARAMETERS SCREEN


COM HARDWARE PROTOCOL:  RS 232
COM BAUD RATE:          9600
COM PARITY:             NONE
COM DATA BITS:          EIGHT
COM STOP BITS:          ONE
COM SOFTWARE PROTOCOL:  NONE
COM ECHO/PASS-THROUGH:  NO_ECHO


TRANSMIT ON ANY NO READ:  YES
TRANSMIT ON ALL NOREADS:  YES
TRANSMIT ALGORITHM ID:    NO
TRANSMIT READ DIRECTION:  NO


START OF MESSAGE STRING:
END OF MESSAGE STRING:    <CR><LF>
GOOD COMPARE STRING:      GC
NO COMPARE STRING:        NC
SCANNER ID STRING:
FIELD DELIMETER STRING:   +
INTERCHARACTER DELAY:     0    (0 - 999 msec)

KEYS: SPACE=TOGGLE+ BKSPACE=TOGGLE-  <CTRL-U>=LAST SCREEN
```

PAGE 4 - LOCAL PORT FORMATTING

Purpose of Screen:

Allows the user to set the data transfer parameters for the Local Port.
Allows the user to format the data string for the Local Port.

Field Descriptions:

COM HARDWARE PROTOCOL - Hardware protocol is set to RS-232.

COM BAUD RATE - The baud rate can be set using any of the following
values: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400.

COM PARITY - Parity for this port can be set to none, even or odd. If
set to none there is no parity bit in the transmission.

5-25

COM DATA BITS - The number of data bits per character can be 7 or 8.

COM STOP BITS - The number of stop bits per character can be 1 or 2.

COM SOFTWARE PROTOCOL - Software protocols may be specified if desired. Choices are NONE or XON/XOFF.

COM ECHO/PASS THROUGH - Each transmission received on this port can be echoed (repeated) to another port. The choices are NO ECHO, HOST, LOCAL, or BOTH. Selecting NO ECHO will not echo any transmission. Selecting HOST will re-transmit the input signal on this port to the output on the HOST port. Selecting LOCAL will echo the input signal on this port to the output on the local port. Selecting BOTH will echo the input signal on this port to the output on both ports.

TRANSMIT ON ANY NOREAD - User can determine whether a data transmission will (YES) or will not (NO) be made when a No Read condition occurs in ANY field. GOOD READ BASED ON must be set to "ALL FIELDS".

TRANSMIT ON ALL NO READS - User can determine whether a data transmission will (YES) or will not (NO) be made when a No Read condition occurs in ALL fields. TRANSMIT ON ANY NOREAD must be set to YES.

TRANSMIT ON NO COMPARE - User can determine whether a data transmission will (YES) or will not (NO) be made when a No Compare condition occurs.

TRANSMIT ALGORITHM ID - User can determine if the Algorithm ID will be part of the serial transmission. Will not transmit when multiple fields have been selected.

TRANSMIT READ DIRECTION - User can determine if direction of bar code read (F = Forward, R = Reverse) is transmitted. Will not transmit when multiple fields have been selected.
START OF MESSAGE STRING - User may select any character string to signify the beginning of each data transmission. The length can be up to 10 characters. If control characters are included they must be bracketed, < >.

END OF MESSAGE STRING - User may select a string of characters to signify the end of each data transmission. Default string is <CR><LF> (carriage return, line feed). Maximum length is 10 characters.

GOOD COMPARE STRING - User may select a string of characters to be transmitted to signify a Good Compare. Default is GC. Maximum length is 60 characters.

NO COMPARE STRING - User may select a string of characters to be transmitted to signify No Compare. Default is NC. Maximum length is 60 characters.

SCANNER ID STRING - User may select a character string to identify the scanner sending the message. In an installation with multiple decoders connected to a host, this identification string may be necessary. Maximum length is 10 characters.

FIELD DELIMITER STRING - When data for more than one bar code is sent during a single transmission, a character or string of characters is specified that separates the bar code data fields. This occurs if more than one bar code label is on a single package. Default character is "+". Control characters must be bracketed, < >. Maximum length is two characters.

INTERCHARACTER DELAY - Sets the delay between every character sent to the port.

Operator Action:

1. With the cursor set to the BAUD RATE line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.
2. With the cursor set to the PARITY line press SPACE to step through the choices, ODD, EVEN or NONE. When the desired choice is displayed press ENTER to select it and move to the next line.

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3.   With the cursor set to the DATA BITS line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

4.   With the cursor set to the STOP BITS line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

5.   With the cursor set to the RTS/CTS FLOW CONTROL line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

6.   With the cursor set to the SOFTWARE PROTOCOL line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

7.   With the cursor set to the ECHO/PASS-THROUGH line press SPACE to step through the choices. When the desired choice is displayed press ENTER to select it and move to the next line.

8.   With the cursor positioned on the TRANSMIT ON ANY NO READ line press SPACE to select YES or NO. When the desired choice is displayed press ENTER to select it and move to the next line.

9.   With the cursor positioned on the TRANSMIT ON ALL NO READS line press SPACE to select YES or NO. When the desired choice is displayed press ENTER to select it and move to the next line.

10. With the cursor positioned on the TRANSMIT ALGORITHM ID line press SPACE to select YES or NO. When the desired choice is displayed press ENTER to select it and move to the next line.

11. With the cursor positioned on the TRANSMIT READ DIRECTION line press SPACE to select YES or NO. When the desired choice is displayed press ENTER to select it and move to the next line.

Note: The BACK SPACE or DEL keys can be used to edit information entered on the following lines.

12. With the cursor positioned on the START OF MESSAGE STRING Line type the message start string. Control characters must be enclosed in < >.

13. With the cursor positioned on the END OF MESSAGE STRING Line type in the message end string. Press ENTER to select new string and move cursor to the next line. Control characters must be enclosed in < >. Press ENTER to select default, <CR><LF>.

14. With the cursor positioned on the GOOD COMPARE STRING line type in the Good Compare message. To accept the default (GC), press ENTER.

15. With the cursor positioned on the NO COMPARE STRING line type in the No Compare message. To accept the default (NC), press ENTER.

16. With the cursor positioned on the SCANNER ID STRING line type in the character string used to identify the scanner. When the message is typed in press ENTER to enter the string and move the cursor to the next line.

17. FIELD DELIMITER - With the cursor positioned on the FIELD DELIMITER line type in the character string used. Press ENTER to select the new string and move the cursor to the next line. Control characters must be enclosed in < >. Press ENTER to select default, "+".

18. With the cursor positioned on the INTERCHARACTER DELAY line type in the value in milliseconds of the delay. Value must be between 0 and 999 msec.

```
INPUT/OUTPUT PULSE PARAMETERS SCREEN


OUTPUT #1  GOOD-READ:              10   msec
(0-9999 msec)
OUTPUT #2  NO-READ:               10   msec
(0-9999 msec)
OUTPUT #3  GOOD-COMPARE:           10   msec
(0-9999 msec)
OUTPUT #4  NO-COMPARE:            10   msec
(0-9999 msec)

OUTPUT PULSES ARE ACTIVE WHEN:  LOW
GATE INPUT IS ACTIVE WHEN:        LOW
GOOD READ BASED ON:              ALL FIELDS
TRANSMIT NOCOMPARE ON NOREAD:  YES




KEYS: UP DOWN LEFT RIGHT BACKSPACE DEL <CTRL-U>=LAST SCREEN
```

PAGE 5 - OUTPUT PULSE CONFIGURATION

Purpose of Screen:

This screen enables the user to select output pulse duration's for various read conditions. Duration's up to 9999 milliseconds are possible.

Field Descriptions:

GOOD READ - The duration of the output pulse that occurs on a Good Read condition can be programmed. Values up to 9999 milliseconds may be entered.

NO READ - The duration of the output pulse that occurs on a No Read condition can be programmed. Values up to 9999 milliseconds may be entered.

LOCAL FORMATTING

GOOD COMPARE - The duration of the output pulse that occurs on a Good Compare condition can be programmed. Values up to 9999 milliseconds may be entered.

NO COMPARE - The duration of the output pulse that occurs on a No Compare condition can be programmed. Values up to 9999 milliseconds may be entered.

OUTPUTS ARE ACTIVE - Outputs can be made active high or active low. An active high output would normally be low (logic 0) and go high (logic 1) when activated. An active low output is the opposite.

GATE INPUT IS ACTIVE - Gate input can be made active high or active low. An active high gate input would normally be low (logic 0) and go high (logic 1) when activated. An active low gate input is the opposite.

GOOD READ BASED ON - When multiple fields are used this entry line defines the criteria for Good Read Pulse Output.

a   All Fields - Every code type for each field must be identified for Good Read Pulse. This is the default condition.

        First Field - Good Read pulse asserted if first field contains data.

        Any Field - Good Read pulse asserted if any field contains data.

TRANSMIT NOCOMPARE ON NOREAD - This option will allow the user greater control over the No Compare output pulse.

If YES is selected the output of scanner will be one of the following:

bar code	GC text	GR pulse	GC pulse
bar code	NC text	GR pulse	NC pulse
NR	NC text	NR pulse	NC pulse

If NO is selected the output of scanner will be one of the following:

bar code	GC text	GR pulse	GC pulse
bar code	NC text	GR pulse	NC pulse
NR	No NC text	NR pulse	no NC pulse

If formatting is modified the Good Read Text will appear before or after the bar code.

Operator Action:

1. With the cursor positioned at the end of the GOOD READ line type in the desired duration in milliseconds. Press ENTER to select this value and move to the next line.

2. With the cursor positioned at the end of the NO READ line type in the desired duration in milliseconds. Press ENTER to select this value and move to the next line.

3. With the cursor positioned at the end of the GOOD COMPARE line type in the desired duration in milliseconds. Press ENTER to select this value and move to the next line.

4. With the cursor positioned at the end of the NO COMPARE line type in the desired duration in milliseconds. Press ENTER to select this value and move to the next line.

5. With the cursor positioned at the end of the OUTPUTS ARE ACTIVE line use SPACE to display the choices; High or Low. When the desired condition is displayed, press ENTER to select this condition and move to the next line.

6. With the cursor positioned at the end of the GATE INPUT IS ACTIVE line use SPACE to display the choices; High or Low. When the desired condition is displayed, press ENTER to select this condition and move to the next line.

7. With the cursor positioned at the end of the GOOD READ BASED ON line use SPACE to display the choices; All Fields, First Field, or Any Field. Press ENTER to select.

8.   With the cursor positioned at the end of the TRANSMIT
     NOCOMPARE ON NOREAD line use SPACE to display the
     choices; YES or NO. When the desired condition is displayed press
     ENTER to select this condition and move to the next line.

```
CONFIGURATION SAVE/DEFAULT SCREEN

SAVE CONFIGURATION:      NO
DEFAULT CONFIGURATION: NO

LAZERDATA MODEL: LD9000E   REVISION: 2.00 Date: August 23, 1995




KEYS: SPACE=TOGGLE+ BKSPACE=TOGGLE-  <CTRL-U>=LAST SCREEN
```

PAGE 6 - SAVE DATA BASE CONFIGURATION

Purpose of Screen:

This screen enables the user to save a new configuration or load the default data base configuration.

Field Descriptions:

SAVE CONFIGURATION - Saves current user configuration.

DEFAULT CONFIGURATION - Loads the factory default configuration but does not automatically save. If scanner is powered down prior to saving the
DEFAULT CONFIGURATION the scanner will return to its previously saved configuration. Returns terminal type to 1 ("DEC VT100, ANSI, LCDOS").

Operator Action:

LOCAL FORMATTING

1. With the cursor positioned at the end of the SAVE CURRENT CONFIGURATION line use the SPACE key to toggle between the choices, Yes or No. When the desired choice is displayed, press ENTER to select choice.

2. With the cursor positioned at the end of the DEFAULT CONFIGURATION line use the SPACE key to toggle between the choices, Yes or No. When the desired choice is displayed, press ENTER to select choice.

```
LD9000E DIAGNOSTICS

READ PERCENTAGE:      NO
(# of decodes per 100 attempted decodes)


TOTALS COUNTER:       NO
(Gates/Good Reads/No Reads/Good Compares/No Compares)


SYNC COUNTS:          NO
(# of Sync Counts per Second)




KEYS: SPACE=TOGGLE+ BKSPACE=TOGGLE-  <CTRL-U>=LAST SCREEN
```

PAGE 7 - LD9000E DIAGNOSTICS

Purpose of Screen:

Allows the user to access information about the bar code labels being read. Only one diagnostic mode will be displayed at a time.

Field Description:

READ PERCENTAGE - Allows the user to select option which displays the number of successful decodes per 100 attempted decodes. Only displayed when in the CONTINUOUS Mode.

TOTAL GATE COUNTER - Allows the user to select option which displays the number of Gates, Good Reads, No Reads, Good Compares and No Compares. CNTS (Transmits Total Gate Counter string) or CLRC (restest the counter to zero) can be entered on the Host Port when TOTAL GATE COUNTER is selected.

SYNC COUNTS- Will output to the screen the number of Sync Counts per second that have occurred. Only displayed when in the CONTINUOUS Mode.

Operator Action:

1.   With the cursor on the READ PERCENTAGE line press the SPACE BAR to toggle between the choices; Yes and No. Select Yes if you wish to have the Read Rate displayed.

2.   With the cursor on the TOTALS COUNTER line press the SPACE BAR to select between the choices; Yes and No. Select Yes if you wish to have the TOTALS information displayed on the local port. The HOST port will continue to transmit data.

3.   To see the information displayed you must exit the MENU. First select Ctrl U to return to the MAIN MENU. Next select X to exit the menu and return to the run screen. The following screen and information will be displayed.

```
Read Rate Diagnostics

        Sweeps              Decodes
         100                  100

```

```
SYNC COUNT DIAGNOSTICS
------------------------------------------
syncs = 480

```

```
Gates      Good Reads  No Reads  Good Compares  No Compares
00000000   00000000    0000000   00000000       00000000

```

```
COMPARE STRING DEFINITION SCREEN

NO.          COMPARE STRING
01
02
03
04
05
06
07
08
09




KEYS: E=EDIT  D=DELETE  I=INSERT     <CTL-U>=LAST SCREEN



SELECT ACTION: E
ENTER LINE NUMBER TO EDIT: 1


KEYS: UP DOWN LEFT RIGHT BACKSPACE DEL <CTRL-U>=LAST SCREEN
```

PAGE 8 - COMPARE STRING - SUMMARY

Purpose of Screen:

Allows the user to define compare values for bar code types previously selected. This option must be turned on in PAGE 1 GATE PARAMETERS.

Field Description:

Up to twenty fields can be selected. If no entries have previously been made, all code types will be off. When multiple codes are being read in a Gated Mode the Delimiter defaults to the Host Port Field Delimiter. Do not use Read Count command when using Compare Strings.

SELECT ACTION - Allows the user to DELETE a field, INSERT a new field or EDIT an existing field.

LOCAL FORMATTING

ENTER LINE NUMBER TO EDIT - Allows the user to select the field to be changed.

Operator Actions:

1.   Type D to delete a selected field.

2.   Type I to insert a new field.

3.   Type E to edit an existing code type.

4.   If E is selected the user is then prompted to select the field they wish to Edit. Type in the appropriate number and press ENTER. This will take you to PAGE 8 LEVEL 2.

```
COMPARE STRINGS LINE NO: 01




KEYS: UP DOWN LEFT RIGHT BACKSPACE DEL <CTRL-U>=LAST SCREEN
```

PAGE 8 - LEVEL 2 COMARE STRING - DETAIL

Purpose of Screen:

Allows the user to enter the string that will be used for compare.

Field Descriptions:

1 compare string can be entered.

Operator Actions:

1. Type the data that is to be used as the compare string (this must include the Host Good Read Message, the label information and the Host Delimiter information, when applicable) and <enter>.

LOCAL FORMATTING

CAUTION: Blank spaces are not visible at end of strings. If there are any blank spaces they will be interpretted as part of the string.

2.   Type Ctrl-U to return to page 8 level 1.

3.   If more entries are desired the operator can elect to add them now. If not Ctrl-U to return to the main menu.

4.   Push button compare is another way of entering data into the compare buffer. Once the contact is activated the scanner will insert the next code read into the compare buffer. This will automatically turn the compare mode on if it wasn't already. This should not be used with the Read Count command.

EXAMPLE: If three labels are read: ab123, bc123, cd123. When the push button compare mode is selected: ab123+bc123+cd123 would be entered into compare string number one.

* - ignores all characters from that point on in the bar code.
? - ignores the character in that position in the bar code.

Note: The delimiter is automatically added to the string unless there is nothing selected for the delimiter.

HOST PROGRAMMING

INTRODUCTION

In addition to having the capability of being programmed by a terminal connected to the Local Port, the **Series 9000E Bar Code Scanner/Decoder** can be programmed by commands from the host computer. Since the host may be used for both data collection and system configuration, a simple programming language is offered to allow system tailoring or alteration based on the flow of barcode data from the scanning system. All system parameters can be set or altered using the host download commands.

PROGRAMMING

Host commands are accessed via the host port of the Series 9000E Bar Code Scanner/Decoder . A communications package such as Telix, Procomm, SSDL or LCDOS can be used.

Type CTRL-R and the following prompt will appear ">:"

At this point the user has entered the Host Commands mode.

All Host Commands must be capitalized. Other text may be upper or lower case.

END or EXIT will exit the Host Commands mode.

Control characters can be entered into text fields by bracketing the command. Example: HSOM <STX> ENTER

The characters entered on the host port will not be echoed to the terminal screen.

Host Command Prompt is defaulted as <CR><LF>>: . This prompt is configurable by entering HCP plus the text. Example: HCP <STX>.

HOST PROGRAMMING

COMMANDS

Following is a list of commands and their functions.

COMMAND   **FUNCTION**

MODECONT   Continuous Read mode
MODEDCB   Data Change buffered
MODEHARD   Hardware Gate mode
MODESOFT   Software Gate mode
MODEDCT   Data Change with timer

Example: >:MODEHARD <enter>

Selects the Hardware Gate mode for scanning and transmitting code data.

COMMAND   **FUNCTION**

TRKON   Beam tracking turned on
TRKOFF   Beam tracking turned off

Example: >:TRKON<enter>

Laser beam will turn on when a gate signal is received and turn off when the gate is closed.

COMMAND   **FUNCTION**

GTXREAD   Transmit on Read
GTXCLOSE   Transmit on Close

Example: >:GTXCLOSE<enter>

Sets the data transmission to occur on a gate close or a good decode.

COMMAND   **FUNCTION**

HSTARTCHR xx   Host Start Character (open)
HSTOPCHR xx   Host Stop Character (close)

Example: >:HSTARTCHR CTLO<enter>
>:HSTOPCHR CTLC<enter>

Character that specifies the start of software gate is CONTROL O.
Software gate stop is specified as CONTROL C.

COMMAND   **FUNCTION**

ACKT   ACK NAK timer   (0-995 Msec)
DCT   Data Change timer   (0-30000 Msec)
GDT   Gate Debounce timer   (1-999 Msec)
GTV   Gate Timeout Value   (1-30000 Msec)

Example: >: ACKT 100<enter>

Sets the time delay between resending codes at 100 milliseconds.

COMMAND   **FUNCTION**

MASTERON   Master/Slave option on
MASTEROFF   Master/Slave option off

Example: .:MASTERON

Turns on the Master/Slave option.

HOST PROGRAMMING

COMMAND	FUNCTION
CMP1 xxx	Compare String field one
CMP2 xxx	Compare String field two
...	
CMP20 xxx	Compare String field twenty
CCB	Clear compare buffers and turns off compare mode
CMPON	Turns compare mode on
CMPOFF	Turns compare mode off
INR	Inserts next read into compare buffer only if compare mode is ON

Example: >:CMP1 xxxxx<enter>

Selects compare string for field one.

COMMAND	FUNCTION
HI232	Host port interface 232
HI422	Host port interface 422
HI4852	Host port interface 485 2 wire
HI4854	Host port interface 485 4 wire

Example: >:HI232<enter>

Use with caution since these commands will directly affecty communications on this port and can not be saved by typing SAV.

Selects RS232 as the host port interface.

COMMAND   **FUNCTION**

HB300   Host port Baud Rate 300
HB600   Host port Baud Rate 600
HB1200   Host port Baud Rate 1200
HB2400   Host port Baud Rate 2400
HB4800   Host port Baud Rate 4800
HB9600   Host port Baud Rate 9600
HB19200   Host port Baud Rate 19200
HB38400   Host port Baud Rate 38400

Example: >:HB300<enter>

Sets host port baud rate at 300

COMMAND   **FUNCTION**

HPRTYNONE   Host port Parity none
HPRTYEVEN   Host port Parity even
HPRTYODD   Host port Parity odd

Example: >:HPRTYNONE<enter>

Sets the host port parity at none.

COMMAND   **FUNCTION**

HDBTS7   Host port Data Bits 7
HDBTS8   Host port Data Bits 8

Example: >:HDBTS7<enter>

Sets the host port data bit stream at 7 bits.

HOST PROGRAMMING

COMMAND	FUNCTION
HSBTS1	Host port Stop Bits 1
HSBTS2	Host port Stop Bits 2

Example: >:HSBTS1<enter>

Sets the host port stop bits at 1 bit per character.

COMMAND	FUNCTION
HRTSON	Host port RTS on
HRTSOFF	Host port RTS off

Example: >:HRTSON<enter>

Selects the RTS handshake signal for the host port interface.

COMMAND	FUNCTION
HPNONE	Host port software protocol none
HPXON	Host port software protocol XON/XOFF
HPACK	Host port software protocol ACK/NAK
HPMULT	Host port software protocol LazerData multi-drop

Example: >:HPNONE<enter>

No software protocol will be used.

COMMAND   **FUNCTION**

HEHOST   Host port Echo host
HELOCAL   Host port Echo local
HEBOTH   Host port Echo both
HENONE   Host port Echo none

Example: >:HELOCAL<enter>

Each transmission received on the host port will be repeated to the local port.

COMMAND   **FUNCTION**

HXNRON   Host port transmit on ANY No Read on
HXNROFF   Host port transmit on ANY No Read off
HXANRON   Host port transmit on ALL No Reads on
HXANROFF   Host port transmit on ALL No Reads off
HXALGOIDON   Host port transmit Algorithm ID on
HXALGOIDOFF   Host port transmit Algorithm off
HXDIRON   Host port transmit Read Direction on
HXDIROFF   Host port transmit Read Direction off

Example: >:HXNRON<enter>

Data transmission will be made when a No Read condition occurs.

HOST PROGRAMMING

COMMAND	FUNCTION
HSOM	Host port Start of message
HEOM	Host port End of message
HGCT	Host port Good Compare text
HNCT	Host port No Compare text
HIDT	Host port Scanner ID text
HDEL	Host port Delimiter
HICD	Host port Intercharacter Delay (0-999 Msec)

Example: >:HSOMSTART<enter>

Start of message string will be sent at the beginning of each data transmission.

COMMAND	FUNCTION
LB300	Local port Baud Rate 300
LB600	Local port Baud Rate 600
LB1200	Local port Baud Rate 1200
LB2400	Local port Baud Rate 2400
LB4800	Local port Baud Rate 4800
LB9600	Local port Baud Rate 9600
LB19200	Local port Baud Rate 19200
LB38400	Local port Baud Rate 38400

Example: >:LB300<enter>

Sets local port baud rate at 300

COMMAND   **FUNCTION**

Command	Function
LPRTYNONE	Local port Parity none
LPRTYEVEN	Local port Parity even
LPRTYODD	Local port Parity odd

Example: >:LPRTYNONE<enter>

Sets the local port parity at none.

COMMAND   **FUNCTION**

Command	Function
LDBTS7	Local port Data Bits 7
LDBTS8	Local port Data Bits 8

Example: >:LDBTS7<enter>

Sets the local port Data Bit stream at 7 bits.

COMMAND   **FUNCTION**

Command	Function
LSBTS1	Local port Stop Bits 1
LSBTS2	Local port Stop Bits 2

Example: >:LSBTS1<enter>

Sets the local port Stop Bits at 1 bit per character.

COMMAND   **FUNCTION**

Command	Function
LPNONE	Local port software protocol none
LPXON	Local port software protocol XON/XOFF

Example: >:LPNONE<enter>

No software protocol will be used.

HOST PROGRAMMING

COMMAND	FUNCTION
LEHOST	Local port Echo host
LELOCAL	Local port Echo local
LEBOTH	Local port Echo both
LENONE	Local port Echo none

Example: >:LELOCAL<enter>

Each transmission received on the local port will be repeated to the local port output.

COMMAND	FUNCTION
LXNRON	Local port transmit on ANY No Read on
LXNROFF	Local port transmit on ANY No Read off
LXANRON	Local port transmit on ALL No Reads on
LXANROFF	Local port transmit on All No Reads off
LXALGOIDON	Local port transmit Algorithm ID on
LXALGOIDOFF	Local port transmit Algorithm ID off
LXDIRON	Local port transmit Read Direction on
LXDIROFF	Local port transmit Read Direction off

Example: >LXNRON<enter>

Data transmission will be made when a No Read condition occurs.

COMMAND	FUNCTION
LSOM	Local port Start of message
LEOM	Local port End of message
LGCT	Local port Good Compare text
LNCT	Local port No Compare text
LIDT	Local port Scanner ID text
LDEL	Local port Delimiter
LICD	Local port Intercharacter Delay (0-999 Msec)

Example: >:LICD 400<enter>

Sets delay between characters transmitted at 400 milliseconds.

COMMAND	FUNCTION
GRDUR	Good Read pulse duration (0-9999 Msec)
NRDUR	No Read pulse duration (0-9999 Msec)
GCDUR	Good Compare pulse duration (0-9999 Msec)
NCDUR	No Compare pulse duration (0-9999 Msec)

Example: >:GRDUR 500<enter>

Sets the duration of the output pulse that occurs on a Good Read condition at 500 milliseconds.

COMMAND	FUNCTION
OLEVHIGH	Output Level high
OLEVLOW	Output Level low

Example: >:OLEVHIGH<enter>

Outputs are active high.

HOST PROGRAMMING

COMMAND   **FUNCTION**

GLEVHIGH   Gate Level high
GLEVLOW   Gate Level low

Example: >:GLEVHIGH<enter>

Gate input is active high.

COMMAND   **FUNCTION**

GRLOGALL   Good Read logic all fields
GRLOGFIRST   Good Read logic first field
GRLOGANY   Good Read logic any field

Example: >:GRLOGALL<enter>

Every code type for each field must be identified for a Good Read Pulse.

COMMAND	FUNCTION
XNCON	Transmit NoCompare on NoRead on
XNCOFF	Transmit NoCompare on NoRead off
VER	Shows software version
SHOGATE	Shows all settings for menu page 1
SHOHOST	Shows all settings for menu page 3
SHOLOCAL	Shows all settings for menu page 4
SHOIO	Shows all settings for menu page 5
SHODIAG	Shows all settings for menu page 7
SHOCMP	Shows all settings for menu page 8
SHOFLD1	Shows all settings for menu field 1
SHOFLD2	Shows all settings for menu field 2
SHOFLD3	Shows all settings for menu field 3
SHOFLD4	Shows all settings for menu field 4
SHOFLD5	Shows all settings for menu field 5
SHOFLD6	Shows all settings for menu field 6
SHOALL	Dumps all the configuration setting out host port

Example: >:VER<enter>

Shows software version currently running.

COMMAND	FUNCTION
SAV	Save settings
LDF	Loads and saves Default configuration and automatically EXITS Host Commands

Example: >:SAV<enter>

Saves changes made in setup.

HOST PROGRAMMING

COMMAND   **FUNCTION**

EXIT   Exit Host Commands

Example: >:EXIT<enter>

Exits Host Commands mode.

COMMAND   **FUNCTION**

ENB   Enable

OPTIONS TO ENABLE

FLD (1-6)
LINE (1-10)

CODE TYPE:	C39	CDBR	PHRM
	UPCA	C93	ISTR
	UPCE	C49	SUPP2
	I25	AS10	
	C128	BINY	
	EA13	C11	
	EAN8	SUPP5	

SS	Start/Stop transmit (on)
CD	Check Digit transmit (on)
LEN	Set Length (0-60)
RDC	Set Read Count (0-99)
HGRT xx	Host Good Read text (blank spaces must be entered as <SP>)
HNRT xx	Host No Read text (blank spaces must be entered as <SP>)
HRCT xx	Host Read Conflict text (blank spaces must be entered as <SP>)
LGRT xx	Local Good Read text (blank spaces must be entered as <SP>)
LNRT xx	Local No Read text (blank spaces must be entered as <SP>)
LRCT xx	Local Read Conflict text (blank spaces must be entered as <SP>)
LMS	Label Mask String (on)

Example: >:ENB FLD # LINE # CODE TYPE SS CD LEN# RDC##<enter>

Example: >:ENB FLD 1 LINE 1 I25<enter>

Inserts Interleaved 2 of 5 in first field.

When enabling a code type the FLD and LINE number must be specified.

SS will enable start/stop character transmission for the specified field and line.
CD will enable check digit transmission for the specified field and line.
LEN will default to 0 if not specified.
RDC will default to 0 if not specified.

Example: >:ENB FLD # HGRT xx<enter>

Note: xx is text to insert

When enabling a text string the FLD (1-6) must be given.

Example: >:ENB FLD # LINE # LMS CODE TYPE TEXT STRING<enter>

When enabling the Label Mask String the FLD (1-6) and the LINE (1-5) must be given. Code Type must be specified, followed by the text string.

COMMAND	FUNCTION
DSB	Disable

OPTIONS TO DISABLE

FLD (1-6)
LINE (1-10)

CODE	Disables any code type
SS	Start/Stop transmit (off)
CD	Check Digit transmit (off)
LEN	Set Length (0)
RDC	Set Read Count (0)
HGRT	Host Good Read text
HNRT	Host No Read text
HRCT	Host Read Conflict text
LGRT	Local Good Read text
LNRT	Local No Read text
LRCT	Local Resd Conflict text
LMS	Label Mask String (off)

Example: >:DSB FLD # LINE # CODE SS CD LEN RDC<enter>

When disabling a code type the FLD and LINE number must be specified. If they are not, they will default to FLD 1 LINE 1.

SS will disable start/stop character transmission for the specified field and line.
CD will disable check digit transmission for the specified field and line.
LEN will be set to 0 for the specified field and line.
RDC will be set to 0 for the specified field and line.

When disabling a text string the FLD (1-6) must be given. The text string will be set back to the factory default setting when disabled.

Example: >:DSB FLD # HGRT<enter>

When disabling the Label Mask String the FLD (1-6) and the LINE (1-5) must be given. Code Type will be set to off and the string will be set to null.

Example: >:DSB FLD # LINE # LMS<enter>

LMS master switch will only turn off when Line 1 of the masks are disabled. Otherwise it must stay enabled to check the other lines.

APPENDIX

GLOSSARY OF TERMS

Alphanumeric Display - A display that presents the alphabetic characters A thru Z as well as the numbers 0 thru 9.

Bar Code - An array of rectangular marks and spaces in a predetermined pattern.

Bar Code Character - A single group of bars and spaces which represent an individual number, letter, punctuation mark or other symbol.

Baud - The signalling rate at which serial data transmissions are sent. It is the switching speed, or number of transitions (voltage or frequency changes) that are made per second. Only at low speeds are bauds equal bits per second; for example, 300 baud equals 300 bits per second equals 30 characters per second.

Baud Rate - A redundant reference to baud, which *is* a rate. *See* Baud.

Check Digit - A calculated character included in a barcode, that is used for error detection.

Code Density - The number of characters per inch of length that the bar code symbol contains.

Code Length - The number of characters contained in the bar code symbol. Does not include start or stop patterns.

Decoder - A microprocessor based device that accepts a digital input signal from a scanner, decodes that signal, and transmits the barcoded data to another device.

Depth of Field - The distance between the maximum and minimum plane from which a bar code symbol can be read.

EAN - European Article Numbering System, the international standard bar code for retail food packages.

EIA - Electronic Industries Association.

Laser Diode - A semiconductor device that emits a highly concentrated beam of light.

Misalignment - Misorientation of the code from its normal position.

Non-Volatile Memory - Memory that will not lose its contents with an interruption of power.

No Read - Inability to read a barcode because of a defective code symbol, missing code symbol, or decoder failure.

Omni-Directional - A bar code reading system that can read a code regardless of orientation. Usually this type of scanner emits multiple scanning beams.

Pitch - Misalignment of the bar code symbol around the x-axis.

APPENDIX

Photodetector - A semiconductor device who's output changes in proportion to the amount of light striking its sensing surface.

Quiet Zone - A clear space, containing no dark marks, which precedes the start character of a bar code and follows the stop character.

Resolution - The dimension of the smallest code element which can be identified by an optical scanner. Normally measured in thousandths of an inch.

Skew - Misalignment of the code symbol around the z-axis.

Specular Reflection - The mirror like reflection of light from a surface.

Start/Stop Pattern - Patterns added to the bar code symbol to indicate the direction that the symbol is being scanned.

UPC - Universal Product Code, the standard bar code symbol for retail products in the United States.

SERIES 9000E

APPENDIX-4

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