METROLOGIC INSTRUMENTS, INC.

**IS4320-41 ScanKey™
Laser Bar Code Scanner**

Installation and User's Guide

Locations:

USA Corporate Headquarters
Metrologic Instruments, Inc.
90 Coles Road
Blackwood, NJ 08012
Customer Service: 1-800-ID-METRO
Tel: 609-228-8100
Fax: 609-228-6673
info@metrologic.com
www.metrologic.com

South America
Metrologic Instruments
Rua Flórida, 1.821-5°Andar-Brooklin
CEP 04571-090, São Paulo-SP, Brasil
Outside Brazil:
Tel: 55-11-5505-6568
Fax: 55-11-5505-1681
info@sa.metrologic.com
In Brazil:
Tel: 55-11-5505-2396
Fax: 55-11-5507-2301
metrolog@br.metrologic.com

Europe
Metrologic Instruments GmbH
Dornierstrasse 2
82178 Puchheim b.
Munich, Germany
Tel: 49-89-89018-0
Fax: 49-89-89019-200
metrologic@europe.metrologic.com

ASIA
Metrologic Asia (PTE) Ltd.
31, Kaki Bukit Road 3
#05-08 Techlink
Singapore 417818
Tel: 65-842-7155
Fax: 65-842-7166
ant888@cyberway.com.sg

Copyright

Table of Contents

Introduction

The IS4320-41 ScanKey™ Laser Scanner is a wearable, fully automatic, laser scanning device complete with keypad and LCD. Since the IS4320-41 is positioned on the back of the hand, operators can scan data quickly and easily. This "hands free" scanning increases operator efficiency and work productivity. Traditional hand-held scanners require the operator to interrupt the work flow by picking up the scanner and returning it to its stand. With the ScanKey, not only are both hands free to perform other tasks, but the operator is always ready and able to scan.

In addition to quick scanning, ScanKey's 17-button keypad enables bar code data to be manually entered. All information is displayed and then transmitted to the host device. Portable data terminals and computers requiring RS-232 or Light Pen Emulation communication are common host devices.

Metrologic's HandSet™ IBM® compatible software program and simple bar code menus make the ScanKey easy to program. Host- programmable features can be displayed at the user's prompt.

Two-way host communication is also a feature of the RS-232 version ScanKey. Among other host-programmable features, operators can use either long-range or short-range activation, establish which bar codes are to be read, and command a "good scan" beep indicator. These features can be accomplished through the command processing set.

The IS4320-41 ScanKey autodiscriminates all standard bar codes, including bar code types with alphanumeric characters. Specifically assigned sequences are provided to translate the standard numeric keys for alphanumeric data entry.

Theory of Operation

The scanning process begins once the infrared (IR) device located behind the window senses an object in the scan field. The IR sensor is active as long as power is applied to the unit. When the IR sensor detects an object, the display reads "READY TO SCAN" and the cursor flashes to show that the laser is "ON." When the laser decodes a bar code, the scanner transmits the data to the host system and then "beeps" to indicate the decoding is complete. The IR sensing range can be programmed for two ranges.

Short Range Activation: The IR signal initiates the scan process if it senses an object anywhere from the face of the window out to approximately 4" to 7".

Long Range Activation: The IR signal initiates the scan process if it senses an object anywhere from the face of the window out to approximately 9" to 13".

If the object is removed from the field during the scanning process, the laser turns off.

However, *if the object stays in the field*, the laser remains on for up to 2.5 seconds trying to detect another bar code. If the scanner does not detect a bar code, the laser turns off. To reactivate the scanning sequence, remove the object and present another.

If the same symbol stays in the field after a successful scan, the laser stays on for approximately 4 seconds and then turns off. This prevents unintentional reads of the same bar code. To read the same symbol more than once, remove the object from the scan field for approximately 1 second and then present the symbol again.

Unpacking List

The following will be in the shipping carton, with the purchase of a
ScanKey™ scanner:

- **!** Installation and User's Guide and Programming Guide

- **!** ScanKey Laser Bar Code Scanner

- **!** Communication Cable

- **!** Glove

To order additional items, contact your dealer, distributor or call Metrologic's
Customer Service Department.

Scanner Installation

Important Note: To maintain compliance with applicable standards, all circuits connected to the scanner must meet the requirements for SELV (Safety Extra Low Voltage) according to EN 60950.

1. "Power off" the host system.

2. Connect the communication cable to the host device.

3. Plug the scanner cable to the communication cable.

   Note: The pin assignments for the scanner cable are listed on page 29.

4. "Power on" the host system.

   Note: When the scanner *first* receives power, diagnostic prompts are displayed then the scanner "beeps." "READY TO SCAN" appears on the display.

Configuration to the Host System

Before the scanner ships from the factory, the factory programs the scanner to a set of default parameters. However, many functions of the scanner can be modified to meet your individual needs. The scanner's parameters can be modified by entering the program mode and scanning the appropriate bar codes that appear in the Programming Guide. For a list of various parameter settings, refer to the Default Settings section in this guide. To modify the settings, refer to the Programming Guide.

Parts of the Scanner

Figure 1

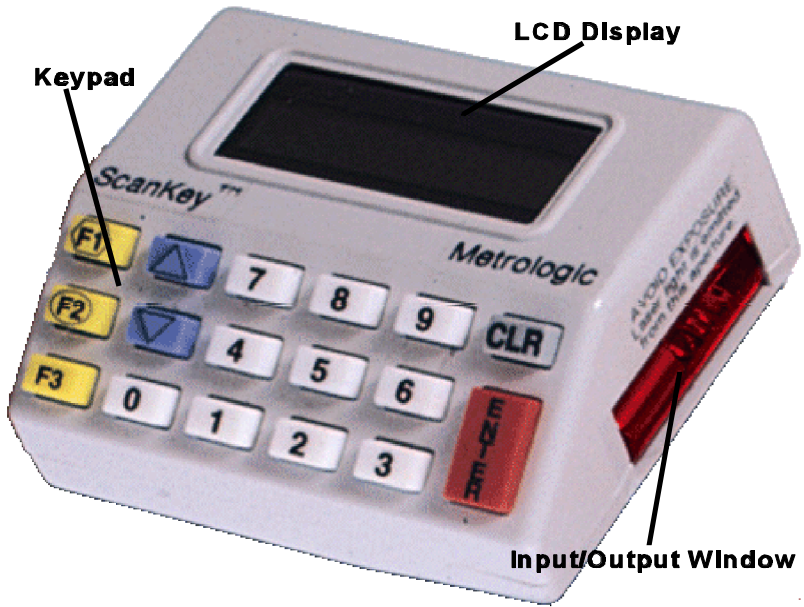**LCD Display**   Displays the scanned or typed information on one line and a message indicating scanner status on another. When the cursor flashes, the laser is "on."

Keypad   Used to enter and transmit numeric and alpha characters. Alpha characters can be entered by pressing two keys in an assigned sequence.

Input/Output Window   Sends and receives the IR signal and Laser beam.

Audible Indicators

The scanner provides sounds to signal certain conditions. To change the volume (three settings are available) or turn the beeper off, refer to the Programming Guide section: Beeper Tones.

One Beep   When the scanner *first* receives power, diagnostic prompts are displayed and then the scanner "beeps." After that, each time the scanner *successfully* reads a bar code, it "beeps."

Razzberry Tone   If, upon power up, the scanner emits a razzberry tone, then the scanner has failed diagnostics.

> **Note:** The scanner can be programmed to emit a razzberry tone when the timeout occurs during communication between the host and scanner. Refer to the Programming Guide section: Audible Indicators for Communication Timeouts.

Three Beeps   When the scanner enters the program mode, it beeps three times then the message "PROGRAM MODE ENABLED" appears. When the scanner exits the program mode, it beeps three times and the message "READY TO SCAN" reappears.

> **Note:** The scanner can be programmed to emit three beeps when the timeout occurs during communication between the host and scanner. Refer to the Programming Guide section: Audible Indicators for Communication Timeouts.

Visual Indicators

The following display messages show the scanner status.

READY TO SCAN The scanner is operational and ready to scan a bar code.

PROGRAM MODE ENABLED Scanning the Enter/Exit Program mode bar code alternately enables and disables the program mode. When the program mode is enabled, this message is displayed.

MAKING KEY ENTRY Keypad data is being entered. (This message disappears when the ENTER key or the CLR key is pressed).

Entering Data Using the Keypad

The display clears with the first key pressed and "MAKING KEY ENTRY" displays on line two of the LED display. Key-in numbers of the bar code, then press enter. The scanner will "beep" to indicate that the data was sent to the host computer.

To make changes while keying in the numbers, use the up and down arrow keys. The up arrow acts the same as the space bar on a computer keyboard. It places a space at the current cursor position and increments the cursor to the next character position. The down arrow acts the same as a backspace key on a computer keyboard. It places a space in the previous character position and deletes any character that might be there thus becoming the new cursor position.
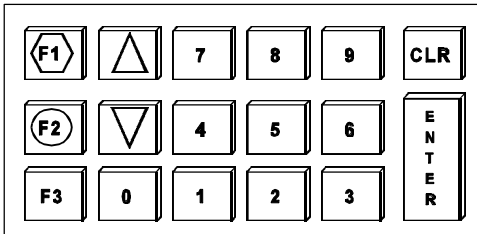
Although only numeric keys are shown on the keypad, alphanumeric characters can be entered by first pressing a Function key then a Numeric key.
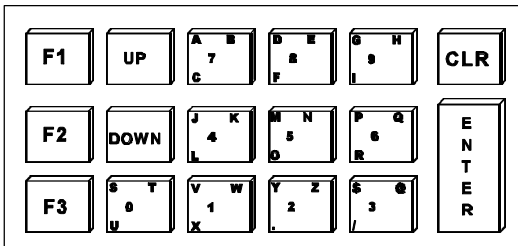
F1 Upper left-hand character set
F2 Upper right-hand character set
F3 Bottom left-hand character set

Example: Press F1 then 7 to get A (F1 + 7 = A)
Press F2 then 3 to get @ (F2 + 3 = @)
Press F3 then 4 to get L (F3 + 4 = L)

Mode Descriptions

Mode 1: Metrologic Default Mode*

This mode's main function is to display and transmit and is not suitable for host prompts. In this mode scanned-in data will be displayed on line 1 of the LCD display and truncated to 20 characters. The first 20 characters are displayed on line 1, the 2nd line is cleared with the 21st character and will display the remaining characters entered. The entire length of the bar code will be transmitted up to and including the 40th character. *Selectable prefix/suffix options are not displayed on the LCD display. They are however, transmitted with the bar code.

ScanKey Mode 2:

This mode's main function is to transmit only. The host system controls the LCD display. Line 1 of the display is blank, all scanned-in data and keyed-in data are transmitted to the host system, nothing additional is displayed. This mode is used for complete host control. It can be used to display customized prompts.

ScanKey Mode 3*:

Line 1 is used for the host prompts. Line 2 is exclusive to the user and will display the data. Scanned-in data displayed on line 2 will be truncated to 20 characters. If a host prompt is being displayed on line 1, it will be cleared to allow for the 21st and subsequent characters to be displayed. The entire length of the bar code will be transmitted up to and including the 40th character. *Selectable prefix/suffix options are not displayed on the LCD display. They are however, transmitted with the bar code.

Mode 4: INTACTIX/INTERCEPT Program

This mode's main function is that it is to be used with the INTACTIX/INTERCEPT program. Scanned-in data will be displayed on the line 1 of the LCD display and truncated to 20 characters. The entire length of the bar code will be transmitted up to and including the 40th character. When using the keypad, the keys are transmitted to the host system via a make/break sequence and the key assignment is simultaneously displayed on the LCD display.

Command Processing Set

The COMMAND PROCESSING SET is a set of predetermined commands to enable or disable some useful scanner functions. The lists on the following pages represent these sets and the protocol for using them. All commands for modes 1, 3 and 4 begin with STX (02H) and end with ETX (03H). All commands for mode 2 begin with ESC (1BH) and end with DEL (7FH). These commands are sent to the scanner RS232. Column 1 represents the command sequence, column 2 the parameters used in the command, and column 3 description of the command.

Command Processing Set for ScanKey Mode 1 (Default Mode), 3 and 4

To enter Mode 1, scan reserved bar code Recall Defaults DF1

To enter Mode 3, scan reserved bar code R96
To exit Mode 3, scan reserved bar code R97 or DF1

To enter Mode 4, scan reserved bar code RAD
To exit Mode, scan reserved bar code RAE or DF1 to recall

Commands sent from the host system to enable/disable scanner functions:

Function	Command	x, y, z
To set activation range	STX R x ETX (02H 52H x 03H)	x = 4CH for Long; 53H for short
To set bar length	STX L x y ETX (2H 4CH x y 03H)	x = minimum = 01H - 20H; y = maximum = 01H - 20H
To clear entire display	STX C ETX (02H 43H 03H)	
To clear individual lines on display	STX c x ETX (02H 63H x 03H)	x = 30H(clear line 1), 31H(clear line 2)
Display message where x refers to the starting position and z represents the data string to be displayed	STX S x z ETX (02H 53H x z 03H)	x = start pos (in Hexadecimal) z = ASCII characters(data string)

x position table

0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?	@	A	B	C
D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W

Code type enable/disable	STX V x y ETX (02H 56H x y 03H)	x, y = 0 to 127-decimal Starting at 0 (zero) Add to enable Codabar Add to enable Code 39
Example: [STX V 35 0 ETX] Enable Code 128, Code 39 and Codabar		Add 4 to enable UPC Add 8 to enable EAN Add 16 to enable ITF Add 32 to enable Code 128 Starting at 0 (zero) Add 1 to enable Code 93 Add 2 to enable Plessey Add 4 to enable Code 11 Add 8 to enable Airline 2 of 5
Sound scanner beep	STX G ETX (02H 47H 03H)	
Disable/enable good scan beep	STX H x ETX (02H 48H x 03H)	x = 31H(Disable); x = 32H(Enable)
Sound razzberry tone	STX Z ETX (02H 5AH 03H)	
Disable Scanning (keypad and display still active). Note: Reserve code 94 must also be enabled.	STX D ETX (02H 44H 03H)	
Enable Scanning	STX E ETX (02H 45H 03H)	
Request Scanner Information	STX F ETX (02H 46H 03H)	

The scanner responds with:

xxxxxyyyyyzzZZ CR LF (xxxxxyyyyyzzZZ 13H 10H)	xxxxx = 5 digit software yyyyy = 5 digit model # zz = number of rows/display ZZ = number of characters/row

Select Bar Code Detection Mode	STX K x ETX (02H 4BH x 03H)	x(Auto Detect Mode - "default") = 30H x(Detect & Notify) = 31H
Scan Activate Now	STX A ETX (023H 41H 03H)	

Use this command to activate the laser and scan the bar code present in the field (detected by the IR sensor).

Label Detection	L (4CH)	An L will be transmitted when in Detect and Notify mode. The L is in response to the IR sensor sensing an object in its field. This should be used in conjunction with the A command to activate the laser and scan the object.

Keypad function

Keys	Transmitted	Description
0-9	30H-39H	Numeric Keys
C		Clear display line 2 (Mode 3)
E*	same as bar code	Sends contents of the display buffer to the host
U		Forward space, places a space at the current cursor position and moves the cursor to the next character position
D		Back space, places a space in the previous character position and this space becomes the new cursor position
F1	A	Transmits an A (41H) along with keyed-in data
F2	B	Transmits an B (42H) along with keyed-in data
F3	C	Transmits an C (43H) along with keyed-in data

*User selected terminator and prefix

Keypad values for Mode 4: INTACTIX/INTERCEPT Program
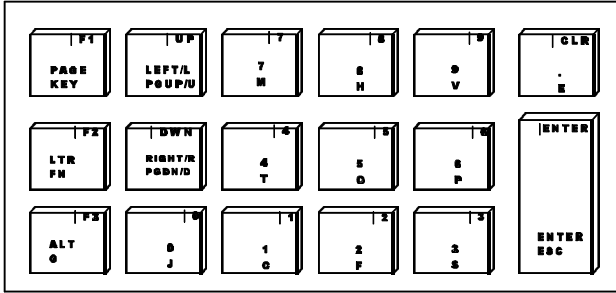
The value in the upper right-hand corner of the keypad represents the current designation or impression found on the keypad. The actual assignment of the key is given by the other values found on the keypad. When depressed, each key will be displayed on the second line of the LCD display.

The assignment of the upper or left value of each key is called by simply pressing that key. ie. 0-9, DECIMAL POINT, LEFT/RIGHT, ENTER

LTR/FN(**F2**): Selects the alternate or alpha representation of the key ie. single letter commands

ALT/G(**F3**): Use this key for commands where the ALT key is required on the keyboard

PAGE KEY(**F1**): Selects the "page" value(s) of the 2 following keys
 (LEFT/L, PGUP/U) & (RIGHT/R, PGDN/D)

LEFT/L, PGUP/U(**U**): this key represents 4 different values:
    1. key pressed = LEFT
    2. LTR + key pressed = L
    3. PAGE KEY + key pressed = PGUP
    4. LTR + PAGE KEY + key pressed = U

RIGHT/R, PGDN/D(**D**): this key represents 4 different values:
    1. key pressed = RIGHT
    2. LTR + key pressed = R
    3. PAGE KEY + key pressed = PGDN
    4. LTR + PAGE KEY + key pressed = D

Command Processing Set for ScanKey Mode 2

To enter Mode 2, scan reserved bar code R88
To exit Mode 2, scan reserved bar code R89

Commands sent from the host system to enable/disable scanner functions:

Function	Command	x, y, z

To set activation range   ESC R x DEL   x = 4CH for Long; 53H for short
(1BH 52H x 7FH)

To set bar length   ESC L x y DEL   x (minimum) = 01H - 20H;
(1BH 4CH x y 7FH)   y (maximum) = 01H - 20H

To clear entire display

ESC C DEL
(1BH 43H 7FH)

To clear individual   ESC c x DEL   x = 31H(clear line 1), 32H(clear line 2)
lines on display   (1BH 63H x 7FH)

Display message   ESC S x z DEL   x = start pos
where x refers to the   (1BH 53H x z 7FH)   z = ASCII(data string)
starting position and
z represents the data
string to be displayed

x position table

@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
T	U	V	W	X	Y	Z	[	\	]	^	_	!	a	b	c	d	e	f	g

Code type enable/disable	ESC V x y D	x, y = 0 to 127 decimal
	(1BH 56H x y 7FH)	Starting at 0 (zero)
		Add 1 to enable Codabar
		Add 2 to enable Code 39
Example: [ESC V 35 0 DEL]		Add 4 to enable UPC
Enable Code 128,		Add 8 to enable EAN
Code 39 and Codabar		Add 16 to enable ITF
		Add 32 to enable Code 128
		Starting at 0 (zero)
		Add 1 to enable Code 93
		Add 2 to enable Plessey
		Add 4 to enable Code 11
		Add 8 to enable Airline 2 of 5

Sound scanner beep ESC G DEL
(1BH 47H 7FH)

Disable/enable ESC H x DEL x = 30H(Disable) x = 31H(Enable)
good scan beep (1BH 48H x 7FH)

Sound razzberry tone ESC Z DEL
(1BH 5AH 7FH)

Disable Scanning ESC D DEL
(keypad and display (1BH 44H 7FH)
still active).
Note: Reserve code 94
must also be enabled.

Enable Scanning ESC E DEL
(1BH 45H 7FH)

Request Scanner ESC F DEL
Information (1BH 46H 7FH)

The scanner responds with:

xxxxxyyyyyzzZZ CR LF	xxxxx = 5 digit software
(xxxxxyyyyyzzZZ 13H 10H)	yyyyy = 5 digit model #
	zz = number of rows/ display
	ZZ = number of characters /row

Select Bar Code ESC K x DEL x (Auto Detect Mode-"default") = 30H
Detection Mode (1BH 4BH x 7FH) x (Detect & Notify*) = 31H
  *A-command only active in this mode

Enable/Disable ESC H x DEL
good scan beep (1BH 48H x 7FH)

Use this command to activate the laser and scan the bar code present in the field (detected by the IR sensor).

Data sent from the ScanKey to the host system.

Bar code   STX x DATA ETB   x = 61H CODABAR
                           (02H x DATA 17H)   62H CODE 39
                                                        63H UPC A
                                                        64H UPC E
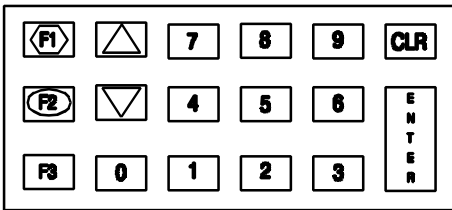   65H INTERLEAVED 2 of 5
                                                        67H EAN 8
                                                        68H EAN 13
                                                        69H CODE 93
                                                        6AH CODE 128

- Default Baud = 9600, Parity = none

Label Detection   L (4CH)   An L will be transmitted when in
                                               Detect and Notify mode. The L is in
                                                   response to the IR sensor sensing an
                                                   object in its field. This should be used
                                                   in conjunction with the A command
                                                   to activate the laser and scan the object.

Keypad function(s)

Keypad function

Keys	Transmitted
0-9	30H-39H
C	C (43H)
E	E (45H)
U	U (55H)
D	D (44H)
F1	F1(46H 31H)
F2	F2(46H 32H)
F3	F3(46H 33H)

16

Label Locations

The scanner is a CDRH Class II laser system. A CDRH Class II label will be at the bottom of the unit with the serial number label. An "Avoid exposure laser light emitted from this aperture" label will be on the side of the unit. Here are examples of these labels:

Metrologic Instruments, Inc.
Blackwood, New Jersey, USA
Manufactured Blackwood, NJ.
November 1996
Model : MS4320   5V ===
ScanKey ™   LTPN/RS232
Serial # : XXXXXXXXXX
              YYYYYYYYYYYY
            Y Y Y Y Y Y Y Y Y Y Y Y
U.S. Patents #5,240,971; #5,340,973
#5,260,663, #5,256,789, #5,528,024

CAUTION
LASER LIGHT
DO NOT STARE
INTO BEAM
1.0 MILLIWATT (PEAK)
VISIBLE LASER DIODE
CLASS II LASER PRODUCT

AVOID EXPOSURE
Laser light is emitted
from this aperture.

IR Sensor Activation

The scanning process initiates by an infrared (IR) sensor located behind the output window. In short range mode the signal it projects extends approximately 4" - 7" beyond the output window. In long range mode the signal it projects extends approximately 9" - 13" beyond the output window. The IR sensor remains active as long as power is applied to the unit.

When the unit remains dormant for a time, the laser will turn off. In this stage, the scanner's computer is on "standby." To reactivate the unit, wave an object in front of the IR sensor or direct the output window downwards.

Scan Field

The depth of field for the scanner is 38.1 mm to 139.7 mm (1.5" to 5.5") from the face of the output window.

Maintenance

Smudges and dirt can interfere with the proper scanning of a bar code. Therefore, the output window will need occasional cleaning.

1. Spray glass cleaner onto lint free, nonabrasive cleaning cloth.

2. Gently wipe the output window.

Applications and Protocols

The model number on each scanner includes the scanner number and communications protocol.

Version Identifier	Communication Protocol(s)
41	RS-232 (232) and Light Pen Emulation (LTPN)

Appendix A

Specifications

Application:	Hand-mounted laser bar code scanner
Light Source:	VLD 675 ± 5 nm
Max. Laser Power:	1.0 mwatt
CDRH:	Class II laser product
UL/CSA:	Designed to meet UL 1950; CSA, C22.2 No. 950
EMI:	Designed to meet FCC/VDE Class A
IEC:	Class I

Mechanical

Dimensions:	76.2 mm L x 63.5 mm W x 25.4 mm H
	(3" x 2.5" x 1")
Weight:	128 g. (5 oz.)
Display:	2 x 20 LCD
Keypad:	17 buttons

U.S. Patents #5,340,971; #5,340,973; #5,260,553;
Other Patents Pending

Specifications subject to change without notice.

Electrical

Power :	.75 watts
Input Voltage:	5VDC ± .25V
Operating Current:	160 mA at 5 VDC
Standby Current:	88 mA at 5 VDC

Operational

Bar Width	*Code Density*	*Depth of Field*
6.8mil	High	5" - 3.5'
13.0mil	Medium	.5" - 6"
21.0mil	Low	1.5" - 8"

Scan Speed:	52 scan lines per second
Scan Pattern:	Single scan line
Indicators:	Blinking cursor = laser on
Beeper Operation:	User Selected Beep on "Good Read"
Maintenance:	Clean output window periodically
Decode Capability:	Autodiscriminates (bar code menu select)
System Interfaces:	RS-232C/ Light Pen Emulation
Print Contrast:	35% minimum reflectance difference
Roll, Pitch, Yaw:	42E, 68E, 52E

Environmental

Storage Temperature: -40EC to 60EC (-40EF to 140EF)
Operating Temperature: 0EC to 35EC (32EF to 95EF)
Humidity: 5% to 95% relative humidity, non-
condensing
Light Levels: Up to 3200 foot candles; works in direct
sunlight
Ventilation: None required
Shock: Drop of 1.5 meters (5')
ESD: 8 kV IEC 801-2
Contaminants: Sealed to resist airborne particulate
contaminants

These specifications are subject to change without notice.

Appendix B

Default Settings

Many functions of the scanner can be "Programmed"-that is, enabled or disabled. The factory programs the scanner to a set of default parameters (marked with an asterisk (*) in the default column on the following pages). Unmarked parameters show the unavailability for that protocol. To speak with the host system properly, program the scanner to match the systems individual requirements. Notice that not all functions support all communication protocols. If your protocol supports a function, a check mark appears on the chart.

Note: Although the Programming Guide mentions DTR input, Poll Light Pen 5 Volts and No Poll Light Pen, the IS4320-41 ScanKey scanner cannot support these options.

Parameter	Default	RS-232	Light Pen
Enter Program Mode After Any Scan	*	T	T
Enter Program Mode Only on First Scan		T	T
Short Range Activation		T	T
Long Range Activation	*	T	T
Normal Scan	*	T	T
Pulsing Scan		T	T
Custom Scan		T	T
Short Same Symbol Rescan		T	T
Long Same Symbol Rescan	*	T	T
Alternate Beeper Tone 1		T	T
Alternate Beeper Tone 2	*	T	T
Alternate Beeper Tone 3		T	T
No Beeper Tone		T	T
Two Second Time-out		T	
No Two Second Time-out	*	T	
Razzberry Tone on Time-out		T	
No Tone on Time-out	*	T	
Three Beeps on Time-out		T	
Beep Before Transmit	*	T	
Beep After Transmit		T	
Baud Rate	9600	T	
Parity	Space	T	
8 Data Bits		T	

Parameter	Default	RS-232	Light Pen
Character RTS/CTS	*	T	
Message RTS/CTS		T	
ACK/NAK		T	
7 Data Bits	*	T	
RTS/CTS		T	
XON/XOFF		T	
No Intercharacter Delay	*	T	
1 Millisecond Intercharacter Delay		T	
5 Millisecond Intercharacter Delay		T	
25 Millisecond Intercharacter Delay		T	
Carriage Return	*	T	
Line Feed	*	T	
STX Prefix		T	
ETX Suffix		T	
Tab Prefix		T	
Tab Suffix		T	
Prefix ID for UPC/EAN		T	
Suffix ID for UPC/EAN		T	
Bars High	*		T
Spaces High			T
Transmit as Scanned	*		T
Transmit as Code 39			T
UPC	*	T	T
EAN	*	T	T
Code 39	*	T	T
Codabar	*	T	T
Code 128	*	T	T
Code 93	*	T	T
Interleaved 2 of 5 (ITF)	*	T	T
MSI - Plessey Decode		T	T
Enable Code 11 Decode		T	T
Enable Airline 2 of 5		T	T
Full ASCII Code 39		T	T
Italian Pharmaceutical		T	T
Minimum 1 Character Code Length		T	T
Minimum 3 Character Code Length	*	T	T
Minimum 6 Character Code Length		T	T
Convert UPC-A to EAN-13		T	

Parameter	Default	RS-232	Light Pen
Expand UPC-E		T	
UPC-E Check Digit Transmit		T	
Transmit UPC-A Number Sys	*	T	T
UPC-A Check Digit Transmit	*	T	T
UPC-E Leading 0 Transmit		T	
EAN-8 Check Digit Transmit	*	T	T
EAN-13 Check Digit Transmit	*	T	T
2 Digit Supps (Scan)		T	
5 Digit Supps (Scan)		T	
Convert EAN-8 to EAN-13		T	
Bookland (Scan)		T	
Supplement Required		T	
Mod 43 Check Digit		T	T
Transmit Mod 43 Check Digit	*	T	T
Transmit Start/Stop		T	T
CLSI Editing (Enable)		T	
ITF Check Digit		T	T
Transmit MOD 10 ITF Check Digit		T	T
I 2 of 5 Symbol Lengths	Variable	T	T
MSI - Plessey Test of Check Digit	*	T	T
Enable MSI - Plessey Mod 10 Check Digit	*	T	T
Enable MSI - Plessey Mod 10/10 Check Digit		T	T
Transmit MSI - Plessey Check Digit	*	T	T
Sanyo 635 ECR Protocol		T	
Post Software ID Characters		T	
"Newcode" Mode A		T	
"Newcode" Mode B		T	
Enable Sineko Mode		T	
Enable French Wyse 120 PC Term		T	
SNI Beetle Mode		T	

Appendix C

Programmable Bar Codes

The IS4320-41 ScanKey™ is shipped from the factory programmed to a set of default parameters. Defaults are noted on the previous pages.

1. Connect the scanner to the host system or power source.

2. Scan the ENTER/EXIT PROGRAM MODE bar code. (The unit will beep three times.)

3. Scan by positioning the output window within two inches of each code. (When you scan the first menu selection, the laser will stay on until you scan the ENTER/EXIT PROGRAM MODE code again. If no scanning occurs for 30 seconds while the scanner is in program mode, the unit will beep three times and all changes made will be lost. If this occurs, return to Step 1.)

4. After completing the scanning of the appropriate configuration options, scan the ENTER/EXIT PROGRAM MODE bar code again. (The new options will be saved and the scanner is ready for normal operation.)

**Enter/Exit
Program Mode**

‖‖‖‖‖‖‖

*   *

If during the programming of the scanner, there is a need to return the scanner to the original factory settings, scan the RECALL DEFAULTS bar code. Any settings selected during that session or any previous session will be lost.

Recall Defaults

‖‖‖‖‖‖‖‖‖

D   F   1

ScanKey Mode Options

Enable ScanKey Mode 2

```
R    8    8
```

When this option is enabled, the scanner will transmit ScanKey Mode 2 specific commands beginning with ESC (1BH) and ending with DEL (7FH).

Disable ScanKey Mode 2

```
R    8    9
```

Enable ScanKey Mode 3

```
R    9    6
```

When this option is enabled, the scanner will transmit ScanKey Mode 3 specific commands beginning with STX (02H) and ending with ETX (03H).

Disable ScanKey Mode 3

```
R    9    7
```

Enable ScanKey Mode 4

```
R    A    D
```

When this option is enabled, the scanner will transmit ScanKey Mode 4 specific commands beginning with STX (02H) and ending with ETX (03H).

Disable ScanKey Mode 4

```
R    A    E
```

Keyboard Options

Enable TTY Mode

```
R     A     R
```

When this option is enabled, the scanner will transmit and/or display each key depressed on the keypad.

*Disable TTY Mode

```
R     A     S
```

When this option is disabled, the normal keypad operation.

LCD Display Options

*Enable Display Mode

```
R     B     K
```

When this option is enabled, the scanner will display all data (mode dependant).

Disable Display Mode

```
R     B     L
```

When this option is disabled, no data will be displayed unless sent via the command processing set.

Power-On Display Options

*Enable Opening Display

```
O     C     3
```

When this option is enabled, the scanner will use a pre-programmed opening display.

Disable Opening Display

```
O     C     4
```

When this option is disabled, the scanner will not use an opening display.

Laser Indicator Selection

Enable Blinking Display

When this option is enabled, the entire display will blink.

```
O    C    1
```

***Enable Blinking Cursor
40th Character Position
of LCD Display**

When this option is disabled, the cursor will blink at the 40th character position only.

```
O    C    2
```

Appendix D

Pin Assignments for the Scanner connector

The scanner is equipped with a 9-pin PCMCIA breakaway connector.

Pin   **Function**

1   +5 VDC Power to Scanner
2   Power/Signal Ground
3   RS-232 Transmit Output
4   RS-232 Receive Input
5   **R**equest **T**o **S**end Output
6   **C**lear **T**o **S**end Input
7   Light Pen Data
8   Light Pen Source
9   Reserved

Appendix E

Warranty and Disclaimer

Limited Warranty

Products manufactured by Metrologic have a 2-year limited warranty from date of manufacture.

This warranty is limited to repair, replacement or refund at Metrologic's discretion. Faulty equipment must be returned to the Metrologic facility in Blackwood, New Jersey or Puchheim, Germany. To do this, contact Metrologic Customer Service/Repair for a Returned Material Authorization (RMA) number.

In the event that it is determined that the equipment failure is covered under the warranty, Metrologic shall, as its sole option, repair, replace with a functionally equivalent unit, or refund an amount equal to the purchase price to the original purchaser, whether distributor, dealer/reseller, or retail consumer, and return the equipment to the customer without charge for service or return freight.

This limited warranty does not extend to any Product which, in the sole judgement of Metrologic, has been subjected to misuse, neglect, improper installation or accident, nor does it extend to any Product which has been repaired or altered by anyone who is not a Metrologic authorized representative.

THIS LIMITED WARRANTY, EXCEPT AS TO TITLE, IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, ARISING BY LAW, CUSTOM OR CONDUCT. THE RIGHTS AND REMEDIES PROVIDED HEREIN ARE EXCLUSIVE AND IN LIEU OF ANY OTHER RIGHTS OR REMEDIES. IN NO EVENT SHALL METROLOGIC BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY INJURY TO PROPERTY OR PERSON OR EFFECT ON BUSINESS OR PROFIT, AND IN NO EVENT SHALL ANY LIABILITY OF METROLOGIC EXCEED THE ACTUAL AMOUNT PAID TO METROLOGIC FOR THE PRODUCT.

Metrologic Instruments, Inc.
90 Coles Road
Blackwood, NJ 08012

Metrologic Instruments GmbH
Dornierstrasse 2
82178 Puchheim b.
Munich, Germany
TEL: 49-89-89019-0
FAX: 49-89-89019-200

Customer Service Department
1-800-ID-METRO (1-800-436-3876)
TEL: 609-228-8100
FAX: 609-228-6673

Disclaimer

Metrologic Instruments, Inc. and the author or authors make no claims or warranties with respect to the contents or accuracy of this publication, or the product it describes, including any warranties of fitness or merchantability for a particular purpose. Any stated or expressed warranties are in lieu of all obligations or liability for any damages, whether special, indirect, or consequential, arising out of or in connection with the use of this publication or the product it describes. Furthermore, the right is reserved to make any changes to this publication without obligation to notify any person of such changes. Metrologic also reserves the right to make any changes to the product described herein.

Exclusion des responsabilités

Metrologic Instruments, Inc. et le/les auteur(s) ne sont ni garants, ni responsables pour l'exhaustivité et la correction des informations contenues dans cette brochure - que ce soit relativement à leur teneur et à l' exactitude - ou pour le produit qui y est décrit. Ils ne sont en outre responsables d'aucune garantie de propriété ou de qualité pour un usage particulier. Toutes les assurances nommées ou exprimées excluent toute garantie ou responsabilité pour les dommages spéciaux, indirects ou des suites de l'utilisation de cette brochure ou du produit qui y est décrit respectivement. en rapport avec l'emploi de cette brochure et du produit qui y est décrit. Il leur est également réservé le droit de procéder à des modifications de cette brochure sans avoir à en avertir qui que ce soit. Metrologic se réserve en outre le droit de procéder à des modifications du produit qui y est décrit.

Haftungsausschluß

Metrologic Instruments, Inc. und der/die Autor(en) übernehmen keinerlei Gewähr und haften nicht für die Richtigkeit im Hinblick auf Inhalt oder Genauigkeit der Angaben dieser Veröffentlichung oder des hierin beschriebenen Produkts. Sie übernehmen ebenso keinerlei Eignungsgarantie oder Gewährleistung durchschnittlicher Qualität für einen bestimmten Zweck. Alle benannten oder ausdrücklichen Zusicherungen schließen sämtliche Verpflichtungen oder Haftungen aus jeglichem Schaden aus, ganz gleich ob speziell, indirekt oder als Folge der Verwendung dieser Veröffentlichung oder des hierin beschriebenen Produkts bzw. in Zusammenhang mit der Verwendung dieser Veröffentlichung oder des hierin beschriebenen Produkts. Darüber hinaus wird das Recht vorbehalten, Änderungen an dieser Veröffentlichung vorzunehmen ohne die Verpflichtung, irgend jemanden über solche Änderungen zu unterrichten. Metrologic behält sich ferner das Recht vor, Änderungen an dem hierin beschriebenen Produkt vorzunehmen.

Esclusione della responsabilità

La Metrologic Instruments, Inc. e l'autore/gli autori non assumono nessuna garanzia e non rispondono della correttezza per quanto riguarda il contenuto o la precisione di quanto indicato nel presente Manuale o del prodotto in esso descritto. Neppure essi assumono una garanzia per l'idoneità o una garanzia della qualità media per un determinato scopo. Tutte le garanzie citate o fatte espressamente escludono qualsiasi obbligo o responsabilità derivanti da qualsiasi danno, indipendentemente dal fatto che questo obbligo/questa responsabilità risulti in particolare, i-ndirettamente o come conseguenza dall'uso del presente Manuale o del prodotto in esso descritto oppure se è legato/a all'uso del presente Manuale o del prodotto in esso descritto. Inoltre ci si riserva il diritto di modificare il presente Manuale senza essere obbligati ad informare persona alcuna circa dette modifiche. Metrologic si riserva il diritto di apportare modifiche al prodotto descritto nel presente Manuale.

Appendix F

Notices

Notice
This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense. Any unauthorized changes or modifications to this equipment could void the users authority to operate this device.

Notice
This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Industry and Canada.

Caution
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light. Under no circumstances should the customer attempt to service the laser scanner. Never attempt to look at the laser beam, even if the scanner appears to be nonfunctional. Never open the scanner in an attempt to look into the device. Doing so could result in hazardous laser light exposure. The use of optical instruments with the laser equipment will increase eye hazard.

Remarque
Après contrôle de cet appareil, on a noté qu'il répondait aux valeurs limites de la classe A, conformément à la partie 15 des directives de l'administration fédérale américaine pour les télécommunications. Ces valeurs limites ont été prévues pour garantir une protection suffisante contre les effets nocifs dus à l'emploi de l'appareil dans un magasin. L'appareil génère et utilise une énergie haute fréquence et peut, s'il n'est pas installé et utilisé conformément aux instructions mentionnées dans le guide d'utilisation, entraîner des perturbations dans la radiocommunications. L'utilisation de cet appareil dans une zone d'habitation entraînera très vraisemblablement des perturbations. Dans ce cas, l'utilisateur est tenu de remédier à ces perturbations à ses propres frais. Toute modification ou remplacement non autorisé sur cet appareil peut entraîner l'invalidité de l'autorisation d'utilisation de l'appareil.

Remarque
Cet appareil numérique ne va pas contre les valeurs limites pour émissions de bruits radios des appareils numérique de la classe A, conformément aux directives relatives aux perturbations des radiocommunications du ministère canadien pour l'industrie.

Attention
L'emploi de commandes, réglages ou procédés autres que ceux décrits ici peut entraîner de graves irradiations. Le client ne doit en aucun cas essayer d'entretenir lui-même le scanner ou le laser. Ne regardez jamais directement le rayon laser, même si vous croyez que le scanner est inactif. N'ouvrez jamais le scanner pour regarder dans l'appareil. Ce faisant, vous vous exposez à une rayonnement laser mortel. L'emploi d'appareils optiques avec cet équipement laser augmente le risque d'endommagement de la vision.

Anmerkung

Nach Überprüfung dieses Geräts wurde festgestellt, daß es den Grenzwerten für Digitalgeräte der Klasse A gemäß Teil 15 der Richtlinien der US-amerikanischen Bundesbehörde für das Fernmeldewesen entspricht. Diese Grenzwerte wurden festgelegt, um einen angemessenen Schutz gegen schädliche Auswirkungen bei Einsatz des Geräts in einer Ladenumgebung zu gewähren. Das Gerät erzeugt und verwendet Hochfrequenzenergie und kann diese ausstrahlen, und kann, falls es nicht gemäß den im Bedienerhandbuch enthaltenen Anweisungen installiert und verwendet wird, zu einer Störung des Funkverkehrs führen. Der Betrieb dieses Geräts in einem Wohngebiet führt höchstwahrscheinlich zu Störungen. In diesem Fall ist der Bediener verpflichtet, die Störung auf eigene Kosten zu beseitigen. Durch jegliche unerlaubte Auswechselung oder Änderung an diesem Gerät könnte die Genehmigung des Bedieners zur Verwendung dieses Geräts ungültig werden.

Anmerkung

Dieses Digitalgerät verstößt nicht gegen die Grenzwerte für Funkrauschemissionen von Digitalgeräten der Klasse A gemäß den Richtlinien für Funkstörungen des kanadischen Ministeriums für Industrie.

Achtung

Die Verwendung anderer als der hierin beschriebenen Steuerungen, Einstellungen oder Verfahren kann eine lebensgefährliche Laserstrahlung hervorrufen. Der Kunde sollte unter keinen Umständen versuchen, den Laser-Scanner selbst zu warten. Sehen Sie niemals in den Laserstrahl, selbst wenn Sie glauben, daß der Scanner nicht aktiv ist. Öffnen Sie niemals den Scanner, um in das Gerät hineinzusehen. Wenn Sie dies tun, können Sie sich einer lebensgefährlichen Laserstrahlung aussetzen. Der Einsatz optischer Geräte mit dieser Laserausrüstung erhöht das Risiko einer Sehschädigung.

N.B.

Dal controllo di questo apparecchio risulta che esso risponde ai valori limite per apparecchi digitali della classe A conf. parte 15 delle direttive sulle telecomunicazioni dell'Autorità federale statunitense. Questi valori limite sono stati fissati per garantire una protezione adeguata contro gli effetti nocivi se questo apparecchio viene usato all'intero di un negozio. L'apparecchio genera, utilizza e può emettere energia ad alta frequenza e, se non viene installato ed utilizzato conformemente alle indicazioni fornite nel Manuale utente, può provocare disturbi al servizio radiofonico. L'uso di questo apparecchio in zone residenziali causa molto probabilmente dei disturbi. In questo caso l'utente è obbligato ad eliminare questi disturbi a sue spese. Qualsiasi sostituzione o modifica non autorizzata all'apparecchio potrebbe rendere invalida l'autorizzazione dell'utente all'uso dell'apparecchio.

N.B.

Questo apparecchio digitale non supera I valori limite per l'emissione di radiorumori da parte di apparecchi digitali della classe A conformemente alle direttive per radiodisturbi del Ministero canadese per l'Industria.

Attenzione

L'utilizzo di sistemi di controllo, di regolazioni o di procedimenti diversi da quelli decritti nel presente Manuale può provocare dei raggi laser pericolosi per la vita. Il cliente non deve assolutamente tentare di riparare egli stesso lo scanner laser. Non guardate mai nel raggio laser, anche se credete che lo scanner non sia attivo. Non aprite mai lo scanner per guardare dentro l'apparecchio. Se tuttavia lo fate, potete esporVi a dei raggi laser pericolosi per la vita. L'uso di apparecchi ottici con questo equipaggiamento laser aumenta il rischio di danni alla vista.

Appendix G

Patents

"Patent Information

This METROLOGIC product may be covered by one or more of the following U.S. Patents:

U.S. Patent No. 4,360,798; 4,369,361; 4,387,297; 4,460,120; 4,496,831; 4,593,186; 4,607,156; 4,673,805; 4,736,095; 4,758,717; 4,816,660; 4,845,350; 4,896,026; 4,923,281; 4,933,538; 4,992,717; 5,015,833; 5,017,765; 5,059,779; 5,117,098; 5,124,539; 5,130,520; 5,132,525; 5,140,144; 5,149,950; 5,180,904; 5,200,599; 5,229,591; 5,247,162; 5,250,790; 5,250,791; 5,250,792; 5,262,628; 5,280,162; 5,280,164; 5,304,788; 5,321,246; 5,324,924; 5,396,053; 5,396,055; 5,408,081; 5,410,139; 5,436,440; 5,449,891; 5,468,949; 5,479,000; 5,532,469; 5,545,889

No license right or sublicense is granted, either expressly or by implication, estoppel, or otherwise, under any METROLOGIC or third party intellectual property rights (whether or not such third party rights are licensed to METROLOGIC), including any third party patent listed above, except for an implied license only for the normal intended use of the specific equipment, circuits, and devices represented by or contained in the METROLOGIC products that are physically transferred to the user, and only to the extent of METROLOGIC's license rights and subject to any conditions, covenants and restrictions therein."

Index