
METROLOGIC INSTRUMENTS, INC.

**IS4120 ScanQuest™
Laser Scan Engine**

Programming Guide

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Scope of the IS4120 Programming Guide

Not all hardware versions of the laser scan engine support all of the features universally. PC Keyboard Wedge units **do not** use baud rates. Light Pen emulation scanners **should not** try to drop UPC/EAN check digits. Some features will deliver different results based upon the primary interface selected.

Version 17 Keyboard Wedge units default to Keyboard Wedge communications. Version 41 defaults to RS-232 communications.

Programming the Scanner

The IS4120 is shipped from the factory programmed to a set of default parameters. Defaults are noted in the following pages by double asterisks ** next to the bar code labels. Modifications to the default program to match the host system are made using bar codes contained in this manual.

1. Connect the scanner to the host system or power source. (Refer to the Installation and User's Guide.)
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



Enter Program Mode

**Ability to Enter Program Mode After Any Scan



When this option is selected, enter programming by scanning the ENTER/EXIT PROGRAM MODE bar code after power up or during normal scanning operation.

Enter Program Mode Only on First Scan



When this option is selected, the scanner will only enter program mode after power-up. Scan the ENTER/EXIT PROGRAM MODE bar code immediately after the scanner first receives power. This option prevents the scanner from accidentally entering program mode during normal scanning operation.

Recall Defaults

If during 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



HandSet® Program Mode

An IBM compatible PC-based menu driven program called HandSet is available to configure the IS4120. Please contact Metrologic or the HandSet documentation for details.

Recall Defaults



Serial Program Mode

The MS4120 can be configured via a serial command set from a host system. This works as long as the baud rate of the scanner is always known. The host system simply transmits all of the ASCII representations of all bar codes scanned to configure a scanner for a given application. This is especially useful when an IS4120 will be used as an embedded component in a system. A maintenance/ setup screen may be included so that when a new scan engine is installed in the system, it can automatically be configured to match site specific requirements.

A sample configuration process is listed below. Here the scanner is being configured to activate the laser when it receives a “DC2” character.

Action	Command	Hexadecimal Form
Enter Program Mode	**	2AH, 2AH
Recall Defaults	*DF1*	2AH, 44H, 46H, 31H, 2AH
Enable DC2 Activation	*R40*	2AH, 52H, 34H, 30H, 2AH
Exit Program Mode	**	2AH, 2AH

These are the data and framing characters from the bar codes normally used to configure the scanner via scanning.

Note: The “*” (asterisk) characters are used to frame each command. If the scanner misses a character or has another problem it may interpret the trailing “*” of one command and the leading “*” of the next command as an exit program mode. This is usually only a problem when the initial configuration code is being written for the host software. To help detect this problem, it is recommended that the external beeper be connected at least for development purposes. The scanner beeps 3 times when exiting program mode. It does not beep when entering program mode.

General Flow of the serial program mode process:

Host		Scanner
**	→	(NO scanner beeps)
	←	ACK (06H)
wait 150 milliseconds		(.15 seconds)
DF1	→	
wait 150 milliseconds		(.15 seconds)
R40	→	
wait 150 milliseconds		(.15 seconds)

.

.

If > 20 seconds between characters/commands the scanner sends an NAK (15H) to the host, exits program mode and recalls the previous scanner configuration. (DOES NOT beep in this case)

** → scanner beeps three times to indicate exiting program mode (if equipped with a beeper)

Recall Defaults



Laser Activation Range

Short Range Activation Out of the Stand



When this option is selected, the IR sensor guarantees to activate when the scanning window is positioned three inches from the object.

Short Range Activation In the Stand



When this option is selected, the IR sensor guarantees to activate when an object is presented three inches from the scanning window.

**Long Range Activation Out of the Stand



When this option is selected, the IR sensor guarantees to activate when the scanning window is positioned eight inches from the object.

**Long Range Activation In the Stand



When this option is selected, the IR sensor guarantees to activate when an object is presented eight inches from the scanning window.

Enter/Exit Program Mode



Laser Operation

**Normal Scan



This option is the default setting. When the laser activates by the IR sensor, the laser beam will emit from the output window. It will also display a constant, horizontal line until it senses a bar code or until the scanner timeout elapses.

Pulsing Scan



When the laser activates by the IR sensor, the laser beam will emit from the output window. It will also display a pulsing, horizontal line until it senses a bar code or until the scanner timeout elapses.

Custom Scan



This option is available for special applications. **Do not** scan the CUSTOM SCAN bar code unless instructed by a Metrologic representative.

Sleep Mode

Sleep Mode will cause the scanner to go into low power (approx. 12 milliamps) standby mode after approximately 5 seconds of no activity. Activating the infrared (IR) sensor will “wake” the scanner up.

Enable Sleep Mode



Disable Sleep Mode



Recall Defaults



RS-232/Serial related activation methods

There are several optional means of activating a scan cycle with scan engine products using an RS-232 type interface. They are generally intended to be used in OEM and industrial applications. It is expected that they will be used in fixed and controlled environments where host system software will be developed to manage the scanner operation.

“DTR” Activation of Scanning

Enable DTR Activation



When the DTR (Data Terminal Ready) activation is enabled, the scan cycle is controlled by the level of the DTR input to the scanner instead of the IR sensor.

**Disable DTR Activation



A +12 volt RS-232 type level on the DTR input activates the scanner.

A -12 volt RS-232 type level on the DTR input will leave the scanner inactive.

Enable DC2 Activation



When the scanner receives an ASCII DC2 (012H, control R, Tape Punch On command) a scan cycle will be started. This will activate the scanner instead of the IR sensor. Disable this feature by recalling defaults.

Enter/Exit Program Mode



Enable Address based Activation



A “address” character can be programmed into the first programmable prefix character location of the scanner. Then, if addressed based activation is enabled, the scanner will start a scan cycle when it receives that character/address via its serial receive pin. The “address” will also be transmitted in front of any data sent from the scanner.

**Disable Address based Activation



Transmit: “NOREAD” message following a scanner timeout with no successful decode



When Enabled, the scanner transmits: “NOREAD” to the host system after a scan cycle timeout without a successful decode.

**Disable “NOREAD” message transmission



**Turn On Green LED during “NOREAD” message transmit



The scanner normally turns on the “green Good READ” LED during all

data transmissions. This feature can be disabled for “NOREAD” messages by adding “RC5” to the scanner configuration sequence.

Do NOT Turn on Green LED during “NOREAD” transmit



Recall Defaults



Same Symbol Re-Scan

The scanner is programmed with a same symbol timeout. For SHORT SAME SYMBOL RE-SCAN, the time delay is ½ second, while the LONG SAME SYMBOL RE-SCAN delay is 1 second. These numbers represent the amount of time that a bar code must be out of the scan field before it can be scanned again.

Short Same Symbol Re-Scan



** Long Same Symbol Re-Scan



Identical Symbol Re-Scan Indicator

During the same symbol timeout, the LED's do not provide an indication of when the unit is ready to begin scanning the same symbol again. To program a LED to flash when the preset delay is over, configure the scanner to Green LED Enabled.

** Disable Green LED



Enable Green LED



Enter/Exit Program Mode



1 vs 2 Scan Buffers

This feature controls the number of bar codes considered for the purposes of the same symbol re-scan. The default, 1 scan buffer only compares new scanned data against the last bar code scanned. 2 scan buffers allow the scanner to test the last 2 bar codes scanned for same symbol re-scan purposes.

Enable 2 Scan Buffers



**Enable 1 Scan Buffer



Decode Options

Enable 2X Redundancy (MECCA)



*Disable 2X Redundancy (MECCA)



The following bar codes are very useful when working with Code 39 and Codabar applications.

Enable Double Border Requirement (large intercharacter space requirement)



**Disable Double Border Requirement (large intercharacter space requirement)



Recall Defaults



Beeper Tones

Program the scanner to emit a certain tone.

- Alternate Tone 1 Low Tone
- Alternate Tone 2 High Tone
(Default)
- Alternate Tone 3 Medium Tone
- No Tone

Alternate Tone 1



**Alternate Tone 2



Alternate Tone 3



No Tone



Enter/Exit Program Mode



Audible Indicators for Communication Timeouts

Two Second Timeout



When this option is selected, the scanner will timeout if it does not transmit its data to the host after two seconds during communication. This is only valid in modes where some type of hand-shaking is involved.

**No Two Second Timeout



Razz Beep on Timeout



When this option is selected, The scanner will produce an audible razzberry tone when communications timeout.

** No Tone After Timeout



Three Beep on Timeout



When this option is selected, the scanner will beep three times when communications timeout.

** Beep Before Transmit



When this option is selected, the scanner will beep before each label transmits.

Beep After Transmit



When this option is selected, the scanner will beep after each label transmits.

Recall Defaults



RS-232 Interface

** Enable RS-232 Interface



RS-232 Parameter - Baud Rate

A baud rate is a unit that measures the speed with which information transfers. The baud rate of the scanner must equal the baud rate of the host device. The available baud rates range from 300 to 38400.

300 Baud Rate



600 Baud Rate



1200 Baud Rate



2400 Baud Rate



Enter/Exit Program Mode



4800 Baud Rate



**** 9600 Baud Rate**



19200 Baud Rate



**38400 Baud Rate
(Transmit Only)**



Recall Defaults



RS-232 Parameter - Parity

Parity is an additional digit that makes the number of bits in the ASCII code odd or even. The scanner's parity must match the host's parity.

**Space Parity



Select this option to make the parity bit always 0.

Even Parity



Select this option to make the additional parity bit either a 0 or 1 to guarantee an even number of bits.

Mark Parity



Select this option to make the parity bit always 1.

Odd Parity



Select this option to make the additional parity bit either a 0 or 1 to guarantee an odd number of bits.

Enter/Exit Program Mode



RS-232 Parameter - Data Bits

RS-232 serial communication requires ASCII data to transmit in either 7 or 8 data bits. In addition, one parity bit will transmit. If necessary, scan the appropriate bar code that matches your host device's requirements.



RS-232 Parameter - Hardware Handshaking

To prevent scanned information from being lost during transmission, your host device may require an RTS/CTS signal. When RTS/CTS (Ready To Send/Clear To Send) enables, the scanner will output an RTS signal and wait for a CTS signal before any data transmits. The default setting of RTS/CTS disables. If necessary, scan the ENABLE RTS/CTS bar code.



Recall Defaults



** Character RTS/CTS



When this option is selected, the scanner will activate and deactivate its RTS signal on each character that it transmits.

Message RTS/CTS



When this option is selected, the scanner will activate and deactivate its RTS signal on each message that it transmits. This mode should normally enable for Sanyo registers.

RS-232 Parameter - Software Handshaking

For control of the data transmission process, use the following parameters instead of or in addition to the RTS/CTS hardware handshaking option.

ACK/NAK

When this option is enabled, the scanner will not scan again unless after transmission of a bar code it receives an ACK (ASCII 06H). The scanner will retransmit the bar code, if it receives an NAK (ASCII 15H).

Enable ACK/NAK



** Disable ACK/NAK



XON/XOFF

When this option is enabled, the scanner will stop transmission whenever it receives an XOFF (ASCII 13H). Transmission will resume after it receives an XON (ASCII 11H).

Enable XON/XOFF



**Disable XON/XOFF



Enter/Exit Program Mode



RS-232 Parameter - Intercharacter Delay

The time specified with an intercharacter delay bar code represents the interim of time between transmission of characters. Some host systems require this delay when receiving transmissions. If necessary, scan the appropriate bar code.

** No Intercharacter Delay



1 Millisecond Intercharacter Delay



5 Millisecond Intercharacter Delay



25 Millisecond Intercharacter Delay



Recall Defaults



RS-232 Parameter - Scanning Control (DTR Signal)

When the DTR (Data Terminal Ready) input is enabled, the scanner will not transmit unless an active (+12V) DTR signal is present on the scanner's DTR input pin. You can disable the scanner by making DTR inactive (-12V) at the DTR input pin.



The DTR Scan Disable feature will prevent any scanning when the Enable DTR input feature is chosen. Before enabling the Enable DTR Scan Disable feature, scan the Enable DTR Input bar code. To turn off this feature, scan the Recall Defaults bar code.



Enable DTR Scan Disable



"DE" Disable Command

When this option is enabled, the scanner will stop scanning when it receives an ASCII "D" from the host device. Scanning will resume when the scanner receives an ASCII "E". This feature will only work with RS-232 communication.



When this option is chosen, the scanner will not stop scanning when it receives an ASCII "D" from the host device.



Enter/Exit Program Mode



Longitudinal Redundancy Check (LRC)

A Longitudinal Redundancy Check (LRC) is an error checking character that is calculated across a sequence of data characters. It is determined by eXclusive ORing (XOR) the characters to be checked, starting with an initial value of 00H. The result, an "LRC byte" is then transmitted following the data stream and used by the receiving computer to determine if the information was received correctly. In the scanner's case, XOR is performed prior to adding parity bits.

When the LRC is enabled, the scanner defaults to starting the LRC on the second byte of information transmitted. Optionally, the calculation can start on the first byte transmitted.

**Enable LRC Calc+
Transmit RS-232**



****Disable LRC Calc+
Transmit RS-232**



**Start LRC on
First RS-232 Byte**



****Start LRC on
Second RS-232 Byte**



Record Header/Terminator Select

When this option is on, the scanner will transmit a Carriage Return after each bar code.

****CR On**



CR Off



Recall Defaults



When this option is on, the scanner will transmit a Line Feed after each bar code.

** LF On



LF Off



When this option is on, the scanner will transmit a Start of Text (ASCII 02H) before each bar code.

STX Prefix On



** STX Prefix Off



When this option is on, the scanner will transmit an End of Text (ASCII 03H) after each bar code.

ETX Suffix On



** ETX Suffix Off



Enter/Exit Program Mode



When this option is on, the scanner will transmit a TAB (ASCII 09H) before each bar code.

Tab Prefix On



** Tab Prefix Off



When this option is on, the scanner will transmit a TAB (ASCII 09H) after each bar code.

Tab Suffix On



** Tab Suffix Off



Recall Defaults



RS-232 Parameter - UPC/EAN Identifiers

Prefix ID When this option is on, the scanner will transmit a prefix before any UPC/EAN bar code. The prefixes are A (UPC-A), E0 (UPC-E), F (EAN-13), and FF (EAN-8).

Prefix ID On



** Prefix ID Off



Suffix ID When this option is on, the scanner will transmit a suffix after any UPC/EAN bar code. The suffixes are A (UPC-A), E0 (UPC-E), F (EAN-13), and FF (EAN-8).

Suffix ID On



** Suffix ID Off



Enter/Exit Program Mode



Keyboard Wedge (KB) Interface

Scan the ENABLE KB WEDGE INTERFACE bar code if your communication requirement is keyboard emulation. The scanner will provide keyboard emulation by converting the scanned bar code data to the PC keyboard scan code equivalent. The keyboard settings will only work with a Version 47 (KBWEDGE) MS951 scanner.

Enable Keyboard Wedge Interface



KB Parameter - Keyboard Type

The following bar codes are used to define the type of keyboard in use. If necessary, scan the appropriate bar code.

**** AT Keyboard (includes IBM® PS/2: Models 50, 55, 60, 80)**



XT Keyboard



Enable IBM PS/2 Keyboard (Models 30, 70, 8556)



**** Disable IBM PS/2 Keyboard (Models 30, 70, 8556)**



Enable Single-Ended Keyboard Emulation



Recall Defaults



KB Parameter - Keyboard Country Type

The following bar codes are used to define the keyboard country type.
If necessary, scan the appropriate bar code.

** USA Keyboard



UK Keyboard



France Keyboard



Germany Keyboard



Italy Keyboard



Spain Keyboard



Belgium Keyboard



IBM KB4700 Financial Keyboard



Swiss Keyboard



Enter/Exit Program Mode



* *

Reserved Codes



B R A



B R B



B R C



B R D



B R E



B R F

KB Parameter - Caps Lock Mode

When Caps Lock is used on the keyboard, choose ENABLE CAPS LOCK. Once enabled, the scanner will simulate Caps Lock keyboard input. This mode will not work with all keyboard types.

Enable Caps Lock



R 4 6

**Disable Caps Lock



R 4 7

To detect automatically if Caps Lock is used, enable AUTODETECTION CAPS LOCK MODE. This will only work with an AT computer.

Enable Auto Detection Caps Lock Mode



R 6 8

**Disable Auto Detection Caps Lock Mode



R 6 9

Recall Defaults



KB Parameter - Alt Mode

When this option is enabled, the scanner will duplicate this keyboard sequence: Hold down the Alt key; type the decimal number that corresponds to the appropriate keyboard character. Caution should be observed when using Alt mode because a scanner to host application conflict may occur if the host software application uses the Alt key as a “Hot” key.

Enable Alt Mode



**Disable Alt Mode



KB Parameter - Inter Scan Code Delay (AT and PS/2 Modes)

The time specified with an inter scan code delay bar code represents the amount of time between individual 9 bit scan codes. Each character of a bar code takes between two and twelve of these scan codes to be passed through to the PC via the keyboard interface. This parameter may need to be adjusted for operation with certain PC keyboard BIOS's. Network operating systems often use microprocessor time slices to service network information requests instead of the keyboard interface. While not an issue with manually entered key strokes, this timing can be critical with automatic scanner data entry. Inter-scan code delays can be a useful system tuning tool in these environments.

** 800 Microsecond Delay



7.5 Millisecond Delay



15 Millisecond Delay



Enter/Exit Program Mode



KB Parameter - XT - Clean-Up Bit

Some keyboard BIOS's require a "cleanup bit" to be transmitted prior to an actual scan code being clocked over to the motherboard. Enabling this feature will cause the scanner to send this extra bit to the host computer. More commonly found on older XT style BIOS's, and some AT BIOS's. (required by some NEC 80286 machines).

Enable Cleanup Bit



**** Disable Cleanup Bit**



Recall Defaults



Light Pen Options

If the scanner is being used in place of a light pen, scan the ENABLE LIGHT PEN INTERFACE bar code. When this interface, is enabled the scanner can output a bar or space as the high signal. Enable the appropriate option for your specific application. When the TRANSMIT AS CODE 39 is enabled, the scanner will output the bar code's bar or space high signal as Code 39. These settings will only work with a Version 15 (LTPN) MS951 scanner.

Enable Light Pen Interface



** Bars High



Spaces High



** Transmit as Scanned



Transmit as Code 39



Poll Light Pen 5 Volts



When this option is enabled, the scanner will wait for an active source voltage before transmitting the data.

** No Poll Light Pen



Enter/Exit Program Mode



Enable Reverse Polarity Idle for Light Pen



Some light pen decoders require an extra toggle of the data line before they will recognize a border condition. Others require that while idle, the data line be the polarity of a bar instead of a space. Enabling this feature can satisfy these requirements.

**Disable Reverse Polarity Idle for Light Pen



Code Type Selections

Use the following bar codes to program the scanner to read different types of bar codes. This will enable the default settings for all of the bar code types. To improve reliability, disable the code types that will not be used. This will not decrease the amount of time it takes for the scanner to scan a bar code. It will prevent the operator from accidentally scanning bar code types that are not included in your application.

** Enable UPC



Disable UPC



** Enable EAN



Disable EAN



Recall Defaults



D F 1

**** Enable Code 39**



C T F

Disable Code 39



C T E

**** Enable Codabar**



C T I

Disable Codabar



C T J

**** Enable Code 128**



C T G

Disable Code 128



C T H

**** Enable Code 93**



C T K

Disable Code 93



C T L

Enter/Exit Program Mode



* *

**** Enable Interleaved 2 of 5**



C T M

Disable Interleaved 2 of 5



C T N

Enable Matrix 2 of 5



R B M

***Disable Matrix 2 of 5**



R B N

Enable Code 11



R 4 1

**** Disable Code 11**



R 4 2

Enable Hong Kong Matrix 2 of 5



R B U

Disable Hong Kong Matrix 2 of 5



R B V

Recall Defaults



Enable Airline 2 of 5



**** Disable Airline 2 of 5**



Minimum Code Length for All Code Types

The minimum number of characters can be specified in the bar code that will be scanned by scanning one of the following bar codes. For example, when the minimum is 3, the scanner will not scan bar codes that have less than 3 characters.

Minimum 1 Character



**** Minimum 3 Characters**



Minimum 6 Characters



Enter/Exit Program Mode



Code Length Minimum Feature

A custom minimum character length can be configured for non-UPC/EAN type bar codes. Scan RBA followed by the digits in the RB0-RB9 range (on page 57) that match the 3 digit decimal number for the minimum. (e.g. RBA, RB0, RB1, RB6 for a 16 character minimum) The scanner will not scan codes with fewer than the configured minimum of characters.

Set minimum character length



A custom character lock length can be configured for non-UPC/EAN type bar codes. Scan RBB followed by the digits in the RB0-RB9 range that match the 3 digit decimal number for the lock length. (e.g. RBB, RB0, RB1, RB2 for a 12 character lock length) The scanner will only scan bar codes with the number of characters that match the configured lock length.

Set character lock length



UPC/EAN Code

UPC and EAN are typical bar code types. These enable the default settings for UPC and EAN.

** Enable UPC



Disable UPC



Recall Defaults



**** Enable EAN**



Disable EAN



UPC-A Options

When this option is selected , the scanner will transmit the UPC-A number system character. Metrologic strongly discourages the disabling of this feature because duplicate numbers may result in the database when the scanner is programmed not to transmit the UPC-A number system character.

****Transmit UPC-A Number Sys**



**Do Not Transmit
UPC-A Number Sys**



When this option is on, the scanner will transmit the UPC-A check digit.

****UPC-A Check Digit On**



UPC-A Check Digit Off



Enter/Exit Program Mode



Convert UPC-A to EAN-13



When this option is selected, the scanner will convert UPC-A to EAN-13 by transmitting a leading zero before the bar code.

** Do Not Convert UPC-A to EAN-13



UPC-E Options

Expand UPC-E



When this option is selected, the scanner will expand UPC-E to the 12 digit equivalent UPC-A.

** Do Not Expand UPC-E



UPC-E Check Digit On



When this option is on, the scanner will transmit the UPC-E check digit.

** UPC-E Check Digit Off



UPC-E Leading 0 On



When this option is on, the scanner will output a zero before each UPC-E bar code.

** UPC-E Leading 0 Off



Recall Defaults



Disable EAN-8 Check Digit Transmission



**** Enable EAN-8 Check Digit Transmission**



Disable EAN-13 Check Digit Transmission



**** Enable EAN-13 Check Digit Transmission**



Convert EAN-8 to EAN-13



When this option is selected , the scanner will convert EAN-8 to EAN-13 by transmitting five zeroes before the bar code.

**** Do Not Convert EAN-8 to EAN-13**



Enable "\$" Prefix ID for UPC/EAN



**** Disable "\$" Prefix ID for UPC/EAN**



Enter/Exit Program Mode



Supplemental UPC Options

Enable 2 Digit Supps



When this option is enabled, the scanner will scan 2 digit supplementals.

** Disable 2 Digit Supps



Enable 5 Digit Supps



When this option is enabled, the scanner will scan 5 digit supplementals.

** Disable 5 Digit Supps



Enable Bookland



When this option is enabled, the scanner will require that a 5-digit supplement be scanned whenever an EAN-13 code begins with 978.

** Disable Bookland



Supplement Required



When this option is selected, all UPC/EAN labels that are to be scanned must have a supplement.

** Supplement Not Required



Recall Defaults



Supplemental ISBN Options

These features convert Bookland bar codes to a variety of International Standard Book Number (ISBN) formats.

Enable Bookland to ISBN



**Disable Bookland to ISBN



Enable Transmit ISBN CD



**Disable Transmit ISBN CD



Enable ISBN Reformatting



**Disable ISBN Reformatting



Coupon Code 128

Supplemental scanning - perform in program mode - up to 80 numeric characters is automatic.

Enable Coupon Code 128



*Disable Coupon Code 128



Enter/Exit Program Mode



Enable] C1 Transmit Coupon C128



***Disable] C1 Transmit Coupon C128**



Disable Coupon 128 Group Separator



Enable Coupon 128 Group Separator



Code 39

****Enable Code 39**



When this option is enabled, the scanner will scan Code 39 bar codes.

Disable Code 39



Enable Mod 43 Check Digit



When this option this enabled, the scanner will only scan Code 39 bar codes that have a Modulo 43 check digit.

**** Disable Mod 43 Check Digit**



Recall Defaults



Enable Italian Pharmaceutical



** Disable Italian Pharmaceutical



**Transmit Mod 43 Check Digit



When this option is selected, the scanner will transmit to the host the Modulo 43 check digit of Code 39.

Do Not Transmit Mod 43 Check Digit



Enable Full ASCII Code 39



When this option is enabled, the scanner will scan full ASCII Code 39 bar codes.

** Disable Full ASCII Code 39



Enable Reserved Feature



Disable Reserved Feature



Enter/Exit Program Mode



Codabar

**Enable Codabar



When this option is enabled, the scanner will scan Codabar bar codes.

Disable Codabar



Transmit Start/Stop



When this option is selected, the scanner will transmit Codabar's start and stop characters before and after each bar code.

** Do Not Transmit Start/Stop



Enable CLSI Editing



When this option is enabled, the scanner will perform CLSI library type editing before the information transmits to the host. This editing only works with 14 digit Codabar type labels.

** Disable CLSI Editing



Recall Defaults



Interleaved 2 of 5 (ITF)

** Enable ITF



When this option is enabled, the scanner will scan Interleaved 2 of 5 (ITF) bar codes.

Disable ITF



Enable ITF Check Digit



When these options are enabled, the scanner will scan ITF bar codes that have a Modulo 10 check digit.

** Disable ITF Check Digit



Transmit MOD 10 ITF



When the transmit option is chosen, the scanner will transmit the ITF MOD 10 check character. This feature works with the ITF check digit option. In order for this feature to work both must be enabled.

** Do Not Transmit MOD 10 ITF Check Digit



Enter/Exit Program Mode



* *

Interleaved 2 of 5 (ITF) Symbol Lengths

Specify the number of ITF digits in the bar codes that will be scanned by scanning the appropriate bar codes. Specify a maximum of two bar code lengths. If all of the bar codes that will scan are variable lengths, program the scanner to VARIABLE LENGTH.

** Variable Length



1 0 0

2 Digits



1 0 2

4 Digits



1 0 4

6 Digits



1 0 6

8 Digits



1 0 8

10 Digits



1 1 0

12 Digits



1 1 2

Recall Defaults



14 Digits



16 Digits



18 Digits



20 Digits



22 Digits



24 Digits



26 Digits



28 Digits



Enter/Exit Program Mode



30 Digits



32 Digits



34 Digits



36 Digits



38 Digits



40 Digits



42 Digits



44 Digits



Recall Defaults



46 Digits



48 Digits



50 Digits



ITF Minimum Symbol Length Test

A custom minimum character length can be configured for only ITF bar codes. This leaves shorter minimum lengths for other code types possible. The scanner will not scan codes with fewer than the configured minimum of characters. To activate, first scan an ITF character lock length. Then scan RBC-enable minimum test. This feature overrides ITF character locking.

Enable ITF Minimum Symbol Length Test



Disable ITF Minimum Symbol Length Test



Enter/Exit Program Mode



Matrix 2 of 5

Enable Matrix 2 of 5



*Disable Matrix 2 of 5



Transmit Matrix 2 of 5 Check Digit



Do Not Transmit Matrix 2 of 5 Check Digit



Enable Hong Kong Matrix 2 of 5



Disable Hong Kong Matrix 2 of 5



Recall Defaults



MSI - Plessey Check Digit

Enable MSI - Plessey

When this option is enabled, the scanner will scan Plessey bar codes.



** Disable MSI - Plessey



**Enable MSI - Plessey Test of Check Digit



When this option is enabled, the scanner will check the Plessey bar code for a proper check digit.

Disable MSI - Plessey Test of Check Digit



**Enable Plessey Mod 10 Check Digit



When this option is enabled, the scanner will scan Plessey bar codes that have a single Modulo 10 check digit.

Plessey Mod 10/10 Check Digit



When this option is selected, the scanner will scan Plessey bar codes that have a double Modulo 10 check digit.

Enter/Exit Program Mode



**Transmit Plessey Check Digits



When this option is selected, the scanner will transmit Plessey's check digit(s) character. This option works with the Plessey Mod 10 and/or Plessey Mod 10/10 features. Enable this option and one or both of the Plessey Mod options in order for this feature to work.

Do Not Transmit Plessey Check Digits



UK Plessey Options

Enable UK Plessey



When this option is enabled, the scanner will scan UK Plessey bar codes.

** Disable UK Plessey



Transmit UK Plessey Check Digit(s)



When this option is selected, the scanner will transmit Plessey's check digit(s) character.

** Do Not Transmit UK Plessey Check Digit(s)



Recall Defaults



Enable UK Plessey

Special Format



When this option is enabled, the scanner will output the data in the special format required by some UK libraries.

** Disable UK Plessey

Special Format



Enable A to X

Conversion (UK)



**Disable A to Z

Conversion (UK)



Test Modes

Scan Count



When scanning this option, the scanner will enter the scan count test mode. The firmware number of the scanner will also transmit to the host device. Do not enable this feature unless a Metrologic representative instructs you to do so.

Scannability



When this option is enabled, the scanner will enter the scannability test mode. Do not enable this feature unless a Metrologic representative instructs to do so.

Enter/Exit Program Mode



Normal Scan/Operating



When this option is selected, the scanner will exit from the scannability or scan count test modes.

Transmit Scanner Parameters



When this option is selected, the scanner will transmit (at 9600 baud) its current configuration.

Special Features

The special features options are for special applications. Do not enable any of the special features options unless instructed by a Metrologic representative.

Default to ScanPal

Communication Parameters



When this option is selected, the scanner's parameters will automatically change to the default settings of the ScanPal data collector. The IS4120 is not completely hardware compatible with the ScanPal.

Transmit Code ID



When this mode is selected, the scanner will transmit a code type identifier before each bar code.

**Do Not Transmit Code ID



** Disable Sanyo 635 ECR Protocol



Recall Defaults



D F 1

Enable Sanyo 635 ECR Protocol



R 0 1

Enable Post Software ID Characters



R 0 8

**** Disable Post Software ID Characters**



R 0 9

Enable "NEWCODE" Mode "A"



R 1 4

**** Disable "NEWCODE" Mode "A"**



R 1 5

Enable "NEWCODE" Mode "B"



R 1 6

**** Disable "NEWCODE" Mode "B"**



R 1 7

Enable SNI Beetle Mode



R 2 5

**** Disable SNI Beetle Mode**



R 2 6

Enter/Exit Program Mode



BIO DATA Mode



Recall Defaults to disable. Combines DTR and Special same symbol rescan handling.

Golden Bountiful Formatting



Enable Sineko Mode



Once Sineko mode is enabled, the only way to disable this feature is by scanning the Recall Defaults bar code.

Enable Caps Lock Mode (for the MI951 external wedge)



Enable this option when Caps Lock is used on the keyboard. Once enabled, Metrologic's MS951 (RS-232) hand-held scanner will simulate Caps Lock keyboard input when used with

** Disable Caps Lock Mode



Metrologic's MI951 external keyboard wedge. This mode may not work with all applications.

Enable French Wyse 120V PC Term



** Disable French Wyse 120V PC Term



Enable Intermec Polling Mode D (limited function)



Disable Intermec Polling Mode D (limited function)



Recall Defaults



D F 1

Enable Rochford Thompson Mode



R A B

Disable Rochford Thompson Mode



R A C

Enable RTS Counter Toggle



R A L

When enabled, the RTS output line is pulsed high for approximately 15 milliseconds following the transmission of the bar code data to the host computer.

Disable RTS Counter Toggle



R A M

Enable BEEP on BEL RS-232



R B E

The scanner will beep upon receiving an ASCII Bell character (07H) via the RS-232 port.

Disable BEEP on BEL



R B F

Enable Bancomer Mode



R 2 7

Locks on 16, 20, 23, 28 and 30 character bar codes.

Disable Bancomer Mode



R 9 8

Enable FedEx Parsing



R B I

This feature should be used with 32 character ITF Lock.

**Disable FedEx Parsing



R B J

Enter/Exit Program Mode



Enable Retransmit of Same Code



**Disable Retransmit of Same Code



User Programmable Prefix and Suffix ID Characters

User selected prefix/suffix characters can be programmed into the scanner by scanning the 3 digit decimal equivalent of the ASCII character into the appropriate character location with the RB0-RB9 bar codes. For example, scan RAT, RB0, RB0, RB7 (007 = decimal equivalent of an ASCII "BEL" character) and the scanner will transmit an ASCII "BEL" character before each bar code. For single character prefixes or suffixes always configure the "1st" position. Use the ASCII Reference Table on pages 58-62 for the decimal equivalents.

1st Programmable Prefix ID



2nd Programmable Prefix ID



1st Programmable Suffix ID



2nd Programmable Suffix ID



Clear All Programmable Prefixes and Suffixes



Recall Defaults



RB0 - RB9 Bar Codes

A 3 digit decimal value must be entered for the desired ID Character.



ASCII Reference Table

HEX Value	Decimal value	Character	Control Keyboard Eqv
00	0	NUL	@
01	1	SOH	A
02	2	STX	B
03	3	ETX	C
04	4	EOT	D
05	5	ENQ	E
06	6	ACK	F
07	7	BEL	G
08	8	BS	H
09	9	HT	I
0A	10	LF	J
0B	11	VT	K
0C	12	FF	L
0D	13	CR	M
0E	14	SO	N
0F	15	SI	O
10	16	DLE	P
11	17	DC1	Q
12	18	DC2	R
13	19	DC3	S
14	20	DC4	T
15	21	NAK	U
16	22	SYN	V
17	23	ETB	W
18	24	CAN	X
19	25	EM	Y

HEX Value	Decimal value	Character	Control/Alternate Eqv
1A	26	SUB	Z
1B	27	ESC	[
1C	28	FS	\
1D	29	GS]
1E	30	RS	^
1F	31	US	_
20	32	SP	space, blank
21	33	!	
22	34	"	
23	35	#	
24	36	\$	
25	37	%	
26	38	&	
27	39	'	apostrophe
28	40	(
29	41)	
2A	42	*	
2B	43	+	
2C	44	,	comma
2D	45	-	minus
2E	46	.	period
2F	47	/	
30	48	0	number zero
31	49	1	number one
32	50	2	
33	51	3	

HEX Value	Decimal value	Character	Control/Alternate Eqv
34	52	4	
35	53	5	
36	54	6	
37	55	7	
38	56	8	
39	57	9	
3A	58	:	
3B	59	;	
3C	60	<	less than
3D	61	=	
3E	62	>	greater than
3F	63	?	
40	64	@	shift P
41	65	A	
42	66	B	
43	67	C	
44	68	D	
45	69	E	
46	70	F	
47	71	G	
48	72	H	
49	73	I	letter I
4A	74	J	
4B	75	K	
4C	76	L	
4D	77	M	

HEX Value	Decimal value	Character	Control/Alternate Eqv
4E	78	N	
4F	79	O	letter O
50	80	P	
51	81	Q	
52	82	R	
53	83	S	
54	84	T	
55	85	U	
56	86	V	
57	87	W	
58	88	X	
59	89	Y	
5A	90	Z	
5B	91	[shift K
5C	92	\	shift L
5D	93]	shift M
5E	94	^	~, shift N
5F	95	_	~, shift O, underscore
60	96	`	accent grave
61	97	a	
62	98	b	
63	99	c	
64	100	d	
65	101	e	
66	102	f	
67	103	g	

HEX Value	Decimal value	Character	Control/Alternate Eqv
68	104	h	
69	105	i	
6A	106	j	
6B	107	k	
6C	108	l	
6D	109	m	
6E	110	n	
6F	111	o	
70	112	p	
71	113	q	
72	114	r	
73	115	s	
74	116	t	
75	117	u	
76	118	v	
77	119	w	
78	120	x	
79	121	y	
7A	122	z	
7B	123	{	
7C	124		vertical slash
7D	125	}	alt mode
7	126	~	(alt mode)
7F	127	DEL	delete,rubout

Reserved Codes

Metrologic has reserved the codes on the following pages for features that will be added at a later date. Do not assign a function for any of the reserved codes.



R S 7



R S 8



R 2 4



R 2 7



R 2 8



R 3 3



R 3 4



R 4 8



R 4 9



R 3 5



R 6 0



R 6 1



R 6 2



R 6 3



R 6 8



R 6 9



R 7 4



R 8 3



R 8 4



R 8 8



R 8 9



R 9 6



R 9 7



R 9 8



R A 7



R A 8



R A 9



R A A



R A D



R A E



R A R



R A S



R B K



R B L



R B Q



R B R



R B S



R B T



R B W



R B X



R B Y



R B Z



R C 6



R C 7



R C 8



R C 9



R C A



R C B



R C C



R C D



R C E



R C F



R C G



R C H



R C I



R C J



R C K



R C L



R C M



R C N



R C O



R C P



R C Q



R C R



R C S



R C T



R C U



R C V



R C W



R C X



R C Y



R C Z



R D 0



R D 1



R D 2



R D 3



R D 4



R D 5



R D 6



R D 7



R D K



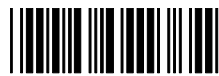
R D 9



R D A



R D B



R D C



R D D



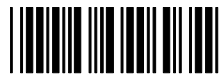
R D E



R D F



R D G



R D H



R D I



R D J



R D W



R D L



R D M



R D N



R D O



R D P



R D Q



R D R



R D S



R D T



R D U



R D V



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