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# **METROLOGIC INSTRUMENTS, INC.**

**MS951 Hand-Held Laser Scanner  
including all scanner configurations**

## **Programming Guide**

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## **Scope of the MS951 Programming Guide**

This Manual contains all of the configuration codes for all versions of the MS951 hand-held bar code scanner products.

Not all hardware versions of the scanner 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.

Emphasis will be placed on PC Keyboard Wedge and RS-232 applications. Keyboard Wedge units default to Keyboard Wedge communications. All other units default to RS-232 parameters.

## Programming the Scanner

---

The scanner is shipped from the factory programmed to a set of default conditions noted in this guide by an asterisk that appears before the brief definition. Since each host system is unique, the scanner has to be configured to match your host system requirements.

1. Connect the scanner to the host system or power source.  
(Refer to the Installation and User's Guide MLPN 2365.)
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 the first menu selection has been scanned, the laser will stay on until the ENTER/EXIT PROGRAM MODE code is scanned 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. Upon 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.)

**Note:** While in program mode, the scanner will make a “razz” sound when:

- ! the bar code it is scanning is not a program mode code type;
- ! the feature is not currently supported in the firmware;
- ! the feature is not supported on the scanner's hardware configuration.

The sound serves as an audible indication that the scanner will not support that feature.

### Recall Defaults



## Enter Program Mode

---

### \*\*Ability to Enter Program Mode After Any Scan



When this option is selected, programming can be entered 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 to the original factory settings, scan the RECALL DEFAULTS bar code. Any settings selected during that session or a previous session will be lost.

### Recall Defaults





## Enter/Exit Program Mode



## Laser Activation Range

---

### Short Range Activation Out of the Stand



When this option is selected, the IR sensor is guaranteed to be activated when the position of the scanning window three inches from the object.

### Short Range Activation In the Stand



When this option is selected, the IR sensor is guaranteed to be activated 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 is guaranteed to be activated when the position of the scanning window is eight inches from the object.

### \*\*Long Range Activation In the Stand



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

## Laser Operation

---

### \*\* Normal Scan



This option is the default setting. When the laser is activated by the IR sensor, the laser beam emits from the output window and displays a constant, horizontal line until a bar code is sensed or until the scanner timeout elapses.

### Pulsing Scan



When the laser is activated by the IR sensor, the laser beam emits from the output window and displays a horizontal line that pulses until a bar code is sensed 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.

### 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 how much time that a bar code must be out of the scan field before that bar code 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



## 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



Enter/Exit Program Mode



## 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 inter-character space requirement)**



**\*\*Disable Double Border Requirement  
(large inter-character space requirement)**



**Recall Defaults**



**Beeper Tones**

---

The scanner can be programmed to emit a certain tone. If necessary, scan the appropriate bar code on page 3.

- 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**





## Audible Indicators for Communication Timeouts

### Two Second Timeout



O C 5

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 handshaking is involved.

### \*\* No Two Second Timeout



O C 6

### Razz Beep on Timeout



O C 7

When this option is selected, the scanner will produce an audible razzberry tone when communications have timed out.

### \*\* No Tone On Timeout



O C 8

### Three Beep on Timeout



O C 9

When this option is selected, the scanner will beep three times when communications have timed out.

### \*\* Beep Before Transmit



R 5 0

When this option is chosen, the scanner will beep before each label is transmitted.

### Beep After Transmit



R 5 1

When this option is chosen, the scanner will beep after each label is transmitted.

Generally used in conjunction with 2 second communications time out. Especially useful with OCIA and IBM 46XX applications.

### Recall Defaults



D F 1

## RS-232 Interface

---

**\*\* Enable RS-232 Interface**



L P 2

## RS-232 Parameter - Baud Rate

---

A baud rate is a unit that measures the speed with which information is transferred. 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



B R 2

### 600 Baud Rate



B R 3

### 1200 Baud Rate



B R 4

### 2400 Baud Rate



B R 5

### 4800 Baud Rate



B R 6

### \*\* 9600 Baud Rate



B R 7

### 19200 Baud Rate



B R 8

### 38400 Baud Rate



B R 1

Enter/Exit Program Mode



## 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.



P A 1

### Even Parity

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



P A 3

### Mark Parity

Select this option to make the parity bit always 1.



P A 2

### Odd Parity

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



P A 4

## RS-232 Parameter - Data Bits

---

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

### 8 Data Bits



D 8 1

Generally, if 7 data bits are selected, 2 stop bits are transmitted. If 8 data bits are selected, 1 stop bit is transmitted. Stop bits are actually just an idle transmit line. From the scanner's perspective, they are only important if the scanner is receiving more than 1 byte of information at a time. For most applications, the scanner is a transmit only device.

### \*\* 7 Data Bits



D 8 2

### Recall Defaults



## RS-232 Parameter - Hardware Handshaking

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

### Enable RTS/CTS



### \*\* Disable RTS/CTS



### \*\* Character RTS/CTS



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

### Message RTS/CTS



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

## RS-232 Parameter - Software Handshaking

For control of the data transmission process, use ACK/NAK or XON/XOFF instead of or in addition to the RTS/CTS hardware handshaking option.

### Enable ACK/NAK



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

### \*\* Disable ACK/NAK



### Enable XON/XOFF



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

### \*\* Disable XON/XOFF





Enter/Exit Program Mode



## 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, others do not. 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. The scanner can be disabled 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, first scan the EN-ABLE DTR INPUT bar code. To turn off this feature, scan the Recall Defaults bar code.

### Enable DTR Input



### \*\* Disable DTR Input



### Enable DTR Scan Disable



## **"DE" Disable Command**

---

### Enable "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.

### \*Disable "DE" Disable Command



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 RS232**



**\*\*Disable LRC Calc+  
Transmit RS232**



**Start LRC on  
First RS232 Byte**



**\*\*Start LRC on  
Second RS232 Byte**



## Record Header/Terminator Select

**\*\* CR On**



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

**CR Off**



**\*\* LF On**



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

**LF Off**



## Recall Defaults



### STX Prefix On



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

### \*\* STX Prefix Off



### ETX Suffix On



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

### \*\* ETX Suffix Off



### Tab Prefix On



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

### \*\* Tab Prefix Off



### Tab Suffix On



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

### \*\* Tab Suffix Off



Enter/Exit Program Mode



## UPC/EAN Identifiers

---

### Prefix ID On



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

### \*\* Prefix ID Off



### Suffix ID On



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

### \*\* Suffix ID Off



### Recall Defaults



## 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**



Enter/Exit Program Mode



## **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**



**Recall Defaults**



**Reserved**



**Reserved**



**Reserved**



**Reserved**



**Reserved**



**Reserved**





Enter/Exit Program Mode



## **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.

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

**Enable Caps Lock**



**\*\* Disable Caps Lock**



**Enable Auto Detection**



**\*\* Disable Auto Detection**



## **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**



## Recall Defaults



### 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-scancode delays can be a useful system tuning tool in these environments.

#### \*\* 800 Microsecond Delay



#### 7.5 Millisecond Delay



#### 15 Millisecond Delay



### KB Parameter - XT - Clean-Up Bit

---

Some keyboard BIOS's require a "clean-up 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





## Record Header/Terminator Select

---

**\*\* CR On**



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

**CR Off**



**LF On**



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

**\*\*LF Off**



**STX Prefix On**



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

**\*\* STX Prefix Off**



**ETX Suffix On**



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

**\*\* ETX Suffix Off**



**Tab Prefix On**



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

**\*\* Tab Prefix Off**



### Recall Defaults



### Tab Suffix On



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

### \*\* Tab Suffix Off



## 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, others do not. If necessary, scan the appropriate bar code.

### No Intercharacter Delay



### 1 Millisecond Intercharacter Delay



### \*\*10 Millisecond Intercharacter Delay



### 100 Millisecond Intercharacter Delay



Enter/Exit Program Mode



\* \*

## KB Parameter - Special Features

---

**\*\* Transmit F0H Break Code (AT and PS/2 modes only)** When transmit F0H break code is chosen, the scanner will transmit an F0H between make and break key codes.



P A 1

**Do Not Transmit F0H Break Code**

Suppress F0H break code transmission between the make and break key codes.



P A 3

**Reserved**



P A 2

**Reserved**



P A 4

**Reserved**



O C 5

**Reserved**



O C 6

### Recall Defaults



## OCIA Options

---

Scan the ENABLE OCIA INTERFACE bar code **Enable OCIA Interface** if your communications requirement is OCIA (Optically Coupled Interface Adapter). This is a clocked (by the host) serial interface. Also, choose the various format that your host device requires. These settings will only work if with a Version 9 (OCIA) MS951 scanner.



### NCR - S Format



### NCR - F Format



### \*\* DTS/NIXDORF



### DTS/SIEMENS



### Enter/Exit Program Mode



## IBM 46XX Options

If the scanner will be communicating with an IBM 46XX register, scan the ENABLE IBM 46XX INTERFACE bar code. Then, scan one of the following bar codes. These settings will only work if with a Version 11 (46XX) MS951 scanner.

### Enable IBM 46XX Interface



### Emulating IBM 4500/Port 9?



### Emulating 3687/4014/Port 17



### \*\* Emulating IBM 1520/Port 5b



## IBM 46XX Parameter - Inter Record Delay

The time specified with an inter record delay bar code represents the interim of time between transmission of bar codes. The inter record delay is a useful tool for regulating the flow of the bar code data to the terminal through the operating system device drivers. Some applications software are not as efficient as they could be in managing the scanner data. Selecting longer inter-record delays can prevent data loss during long print routines and file look-ups .

### No Inter Record Delay



### \*\* 25 m/sec Inter Record Delay



### 50 m/sec Inter Record Delay



### 125 m/sec Inter Record Delay



### Recall Defaults



## Light Pen Options

---

If your scanner will be 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 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 Polling Light Pen





### Enter/Exit Program Mode



## Light Pen Emulation Feature

---

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.

### Enable Reverse Polarity

Idle for Light Pen



### \*\*Disable Reverse Polarity

Idle for Light Pen



## Code Type Selections

---

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

### \*\*Enable UPC



C T A

### Disable UPC



C T B

### \*\* Enable EAN



C T C

### Disable EAN



C T D

**Recall Defaults**



**\*\* Enable Code 39**



**Disable Code 39**



**\*\* Enable Codabar**



**Disable Codabar**



**\*\* Enable Code 128**



**Disable Code 128**



**\*\* Enable Code 93**



**Disable Code 93**



**\*\* Enable Interleaved 2 of 5**



**Disable Interleaved 2 of 5**



Enter/Exit Program Mode



Enable Code 11



\*\* Disable Code 11



Enable MSI Plessey



\*\* Disable MSI Plessey



Enable UK Plessey



\*\* Disable UK Plessey



Enable Airline 2 of 5



\*\* Disable Airline 2 of 5



Enable Telepen



\*\* Disable Telepen



\*\*Disable Alphanumeric Telepen



Enable Alphanumeric Telepen



### Recall Defaults



## Minimum Code Length for All Code Types

---

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

### Minimum 1 Character



### \*\* Minimum 3 Characters



### Minimum 6 Characters



## 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 55) 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



Enter/Exit Program Mode



## UPC/EAN Code

UPC and EAN are typical bar code types. The default settings for UPC and EAN are enabled.

**\*\* Enable UPC**



**Disable UPC**



**\*\* Enable EAN**



**Disable EAN**



## UPC-A Options

**\*\*Transmit UPC-A**

**Number Sys**



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



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



**Convert UPC-A to EAN-13**



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



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.

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

**UPC-A Check Digit Off**



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

## Recall Defaults



## 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



### Disable EAN-8 Check Digit Transmission



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



### Disable EAN-13 Check Digit Transmission



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



Enter/Exit Program Mode



**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**



**UCC Supplemental 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 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



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

\*\* Disable Mod 43 Check Digit



\*\*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



**Note:** Mod 43 check digit testing must be enabled to suppress check digit transmit.

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



## Recall Defaults



### Enable Italian Pharmaceutical



### \*\* Disable Italian Pharmaceutical



### Enable Code 39 Start/Stop Character Transmit



### \*\* Disable Code 39 Start/Stop Character Transmit



## 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 is transmitted to the host. This editing only works with 14 digit Codabar type labels.

### \*\* Disable CLSI Editing





## 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 this option is enabled, the scanner will scan ITF bar codes that have a Modulo 10 check digit.

### \*\* Disable ITF Check Digit



### \*\* Transmit MOD 10

#### ITF Check Digit



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. Both must be enabled in order for this feature to work.

### Do Not Transmit MOD 10 ITF Check Digit



**Note:** ITF Mod 10 check digit testing must be enabled to suppress check digit transmit.

### Recall Defaults



## Interleaved 2 of 5 (ITF) Symbol Lengths

The number of ITF digits in the bar codes that will be scanned should be specified by scanning the appropriate bar codes. A maximum of two bar code lengths can be specified. If all of the bar codes that will be scanned are variable lengths, program the scanner to VARIABLE LENGTH.

### \*\* Variable Length



### 2 Digits



### 4 Digits



### 6 Digits



### 8 Digits



### 10 Digits



### 12 Digits



### 14 Digits



### 16 Digits



Enter/Exit Program Mode



18 Digits



20 Digits



22 Digits



24 Digits



26 Digits



28 Digits



30 Digits



32 Digits



34 Digits



36 Digits



38 Digits



**Recall Defaults**



**40 Digits**



**42 Digits**



**44 Digits**



**46 Digits**



**48 Digits**



**50 Digits**



Enter/Exit Program Mode



## 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



R B C

### Disable ITF Minimum Symbol Length Test



R B D

## MSI Plessey Check Digit

---

### Enable MSI Plessey



R 0 2

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

### \*\* Disable MSI Plessey



R 0 3

### \*\*Enable MSI Plessey Test of Check Digit



R 0 4

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

### Disable MSI Plessey Test of Check Digit



R 0 5

### \*\*Enable MSI Plessey Mod 10 Check Digit



R 0 6

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

### Recall Defaults



#### MSI Plessey Mod 10/10

##### Check Digit



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

#### \*\*Transmit MSI Plessey

##### Check Digit(s)



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

#### Do Not Transmit MSI Plessey Check Digit(s)



### 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)



#### 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)





Enter/Exit Program Mode



## ScanPal Data Collector

---

The Metrologic ScanPal is a data collection terminal used with the MS951 scanner. The following bar codes are used to configure the scanner to communicate with the ScanPal.

### 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.

### Transmit Code ID



When this mode is selected, the scanner will transmit a code type identifier before each bar code. This feature is used with the ScanPal for special applications.

### \*\*Do Not Transmit Code ID



## Test Modes

---

### Scan Count



When this option is scanned, the scanner will enter scan count test mode. The firmware number of the scanner will also be transmitted to the host device. Do not enable this feature unless instructed to do so by a Metrologic representative.

### Scannability



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

### \*Normal Scan



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

### Transmit Scanner Parameters



When this option is selected, the scanner will transmit (via Keyboard Wedge and at 9600 baud via RS-232) its current configuration.

## Recall Defaults



## 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.

### \*\* Disable Sanyo 635 ECR Protocol



### Enable Sanyo 635 ECR Protocol



### Enable Post Software ID Characters



### \*\* Disable Post Software ID Characters



### Enable "NEWCODE" Mode "A"



### \*\* Disable "NEWCODE" Mode "A"



### Enable "NEWCODE" Mode "B"



### \*\* Disable "NEWCODE" Mode "B"



### Enable SNI Beetle Mode



### \*\* Disable SNI Beetle Mode



**Enter/Exit Program Mode**



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

**\*\* Disable Caps Lock Mode**



**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 )**



**Enable Dayton Hudson RS232**



## Recall Defaults



### Enable Dayton Hudson 468X/9B (STD 468X Port 9B)



### Enable Rochford Thompson Mode



### Disable Rochford Thompson Mode



### Enable RTS Counter Toggle



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



### Enable BEEP on BEL RS232



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

### Disable BEEP on BEL



### Enable Bancomer Mode



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

### Disable Bancomer Mode



### Enable FedEx Parsing



This feature should be used with 32 character ITF Lock.

### \*\*Disable FedEx Parsing



Enter/Exit Program Mode



## **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 50-54 for the decimal equivalents. Some PC keyboard extended keys like F1-F12 can also be supported. See the PC Extended Key Reference Table on pages 55 and 56.

### **1st Programmable Prefix ID**



### **2nd Programmable Prefix ID**



### **1st Programmable Suffix ID**



### **2nd Programmable Suffix ID**



### **Clear All Programmable Prefixes and Suffixes**



## 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	^	8, shift N
5F	95	_	7, 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

## PC Extended Reference Key Tables

The following keys on a PC 101 keyboard can be sent as prefix and suffix ID characters in Keyboard Wedge units.

To send keycode, load the appropriate prefix/suffix code with the decimal value listed in the prefix/suffix value column.

KEY	AT SCAN CODE	XT/PS2 SCAN CODE	PREFIX/SUFFIX VALUE	
			HEX	DECIMAL
UP ARROW	75H	48H	80H	= 128
DOWN ARROW	72H	50H	81H	= 129
RIGHT ARROW	74H	4DH	82H	= 130
LEFT ARROW	6BH	4BH	83H	= 131
INSERT KEY	70H	52H	84H	= 132
DELETE KEY	71H	53H	85H	= 133
HOME KEY	6CH	47H	86H	= 134
END KEY	69H	4FH	87H	= 135
PAGE UP KEY	7DH	49H	88H	= 136
PAGE DOWN KEY	7AH	51H	89H	= 137
RIGHT ALT KEY	11H	38H	8AH	= 138
RIGHT CTRL KEY	14H	1DH	8BH	= 139
RESERVED	00H	00H	8CH	= 140
RESERVED	00H	00H	8DH	= 141
NUMERIC <ENTER>	5AH	1CH	8EH	= 142
NUMERIC /	4AH	35H	8FH	= 143

## PC Extended Key Reference Tables Continued

Function keys F1 - F12 and other keys (No E0H required)

KEY	AT SCAN CODE	XT/PS2 SCAN CODE	PREFIX/SUFFIX VALUE	
			HEX	DECIMAL
F1	05H	3BH	90H	= 144
F2	06H	3CH	91H	= 145
F3	04H	3DH	92H	= 146
F4	0CH	3EH	93H	= 147
F5	03H	3FH	94H	= 148
F6	0BH	40H	95H	= 149
F7	83H	41H	96H	= 150
F8	0AH	42H	97H	= 151
F9	01H	43H	98H	= 152
F10	09H	44H	99H	= 153
F11	78H	57H	9AH	= 154
F12	07H	58H	9BH	= 155
NUMERIC +	79H	4EH	9CH	= 156
NUMERIC -	7BH	4AH	9DH	= 157
NUMERIC *	7CH	37H	9EH	= 158
CAPS LOCK	58H	3AH	9FH	= 159
NUM LOCK	77H	45H	A0H	= 160
LEFT ALT KEY	11H	38H	A1H	= 161
LEFT CTRL KEY	14H	1DH	A2H	= 162
LEFT SHIFT	12H	2AH	A3H	= 163
RIGHT SHIFT	59H	36H	A4H	= 164

## 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.

These former reserved codes have been assigned functions by Metrologic.

<b>Code</b>	<b>Page #</b>	<b>Assigned Function</b>
R24	17	Enable Keyboard Wedge Interface
R27	47	Enable Bancomer Mode
R29	46	Golden Bountiful Formatting
R33	37	Disable Code 39 Start/Stop Character Transmit
R68	20	Enable AutoDetection Caps Lock Mode
R69	20	** Disable AutoDetection Caps Lock Mode
R70	34	Enable "\$" Prefix ID for UPC/EAN
R71	34	** Disable "\$" Prefix ID for UPC/EAN
R74	37	Enable Code 39 Start/Stop Character Transmit
R75	30	Enable Telepen
R76	30	** Disable Telepen
R77	30, 43	Enable UK Plessey
R78	30, 43	** Disable UK Plessey
R79	43	Enable UK Plessey Special Format
R80	43	** Disable UK Plessey Special Format
R81	43	Transmit UK Plessey Check Digit
R82	43	** Do Not Transmit UK Plessey Check Digit
R86	6	Enable 2X redundancy (MECCA)
R87	6	Disable 2X redundancy (MECCA)
R92	5	Enable 2 Scan Buffers
R93	5	**Enable 1 Scan Buffer
R94	13	Enable "DE" Disable Command
R95	13	*Disable "DE" Disable Command
R98	47	Disable Bancomer Mode
R99	14	Disable LRC Transmit Via RS232
RA0	14	Enable LRC Transmit Via RS232
RA1	46	Enable Intermec Polling Mode D (Limited Function)
RA2	46	Disable Polling Mode D
RA3	35	Enable Coupon Code 128
RA4	35	Disable Coupon Code 128
RA5	36	Enable ] C1 Transmit Coupon C128
RA6	36	Disable ] C1 Transmit Coupon C128
RA9	46	Enable Dayton Hudson RS232

RAA	47	Enable Dayton Hudson 468X/9B (STD 468X Port 9B)
RAB	47	Enable Rochford Thompson Mode
RAC	47	Disable Rochford Thompson Mode
RAF	35	Enable Bookland To ISBN
RAG	35	Disable Bookland To ISBN
RAH	35	Enable Transmit ISBN CD
RAI	35	Disable Transmit ISBN CD
RAJ	35	Enable ISBN Reformatting
RAK	35	Disable ISBN Reformatting
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RAV	48	1st Programmable Suffix ID
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RAX	48	Clear All Programmable Prefixes and Suffixes
RAY	43	Enable A to X Conversion (UK)
RAZ	43	Disable A to Z Conversion (UK)

























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