



METROLOGIC INSTRUMENTS, INC.
MS7600 Horizon™ Series
Installation and User's Guide





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INTRODUCTION

The MS7600 Horizon™ series is Metrologic's next generation in-counter laser bar code scanner. This compact, hands-free scanner is designed with a dense 20-line omnidirectional scan pattern that helps provide fast, efficient throughput with a high first pass read rate.

The MS7600 is equipped with a multitude of standard features including:

- Durable die-cast construction
- Available with either a stainless steel (MS7625) or a high-impact plastic (MS7620) top plate
- Firmware updates via Flash ROM
- Field replaceable window
- EAS deactivation antenna is standard
- Supports commonly used interfaces including USB and Keyboard Wedge
- Custom Edit bar code data
- PowerLink, user replaceable cables
- RS232 auxiliary port for adding peripherals
- Programmable depth of field
- OPOS and JPOS system compatible

| SCANNER | | INTERFACE |
|-------------------------|-----------|--|
| High Impact Plastic Top | MS7620-13 | RS232, IBM 46xx, OCIA, Aux |
| | MS7620-37 | RS232, Light Pen, Keyboard Wedge, Stand-Alone Keyboard, USB, Aux |
| Stainless Steel Top | MS7625-13 | RS232, IBM 4680, OCIA |
| | MS7625-37 | RS232, Light Pen, Keyboard Wedge, Stand-Alone Keyboard, USB, Aux |

SCANNER AND ACCESSORIES

| BASIC KIT | |
|-----------|---|
| Part # | Description |
| MS7600 | Horizon™ Series Scanner |
| 00-02407B | MetroSelect® Programming Guide |
| 00-02870B | MS7600 Horizon Series Installation and User's Guide |
| 52-52511A | 24" EAS cable |


Guides also available for download at www.metrologic.com.

| OPTIONAL ACCESSORIES | |
|--|--|
| Part # | Description |
| 46-46640 | Point of Sale (POS) USB Plug |
| 54-54xxx* | Straight PowerLink Cable with built in power jack. 2.1 m (7') cord with short strain relief |
| <i>xxx* specifies connection to the host. Contact a customer service representative for additional information.</i> | |
| 54-54002 | Keyboard Wedge PowerLink Cable with Adapter Cable |
| MVC** | Metrologic Voltage Converter Cable, +12VDC to +5.2VDC or -12VDC to +5.2VDC |
| <i>** Contact a Metrologic Customer Service representative for additional information on Metrologic's MVC cable series and the host connections available.</i> | |
| 54-54020 | Stand Alone Keyboard Wedge PowerLink Cable |
| 54-54667 | RS232 AUX PowerLink Cable |

Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or call Metrologic's Customer Service Department at 1-800-ID-METRO or 1-800-436-3876.

SCANNER AND ACCESSORIES (CONTINUED)

| OPTIONAL ACCESSORIES | |
|---|----------------------------------|
| Part # | Description |
| AC to DC Power Transformer - Regulated 5.2V@650 mA output | |
| 45-45593 | 120V United States |
| 45-45591 | 220V – 240V Continental European |
| 45-45592 | 220V – 240V United Kingdom |
| 46-46641 | Stainless Steel Trim Ring |

| REPLACEMENT PARTS | |
|--|--|
| Part # | Description |
|  Caution | <p>Window types (Sapphire, Everscan, and Standard) are <u>not</u> interchangeable due to laser safety and/or scanner performance differences.</p> <p>To change window type, the scanner must be returned to the manufacturer for additional configuration.</p> |
| 46-46602 | Stainless Steel Top with <i>Sapphire</i> Window |
| 46-46603 | Stainless Steel Top with <i>Everscan</i> Window |
| 46-46604 | Stainless Steel Top with <i>Standard</i> Window |
| 46-46605 | High Impact Plastic Top with <i>Sapphire</i> Window |
| 46-46606 | High Impact Plastic Top with <i>Everscan</i> Window |
| 46-46607 | High Impact Plastic Top with <i>Standard</i> Window |
| 46-46640 | Point of Sale (POS) USB Plug |

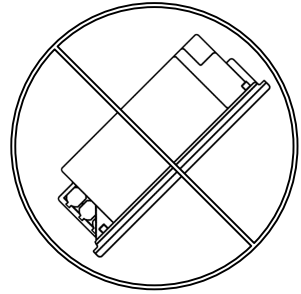
Other items may be ordered for the specific protocol being used. To order additional items, contact the dealer, distributor or call Metrologic's Customer Service Department at 1-800-ID-METRO or 1-800-436-3876.

BEFORE INSTALLING YOUR MS7600

When mounting the MS7600 or replacing the Top Plate:

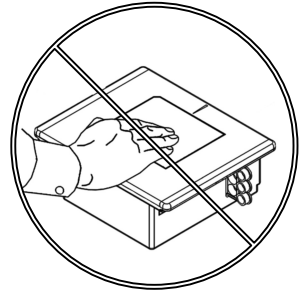
Do NOT Turn
the unit upside down.

Figure 1



Do NOT Press
on the window.

Figure 2



Lift the Top plate straight up to remove.

There is no hardware required to remove or replace the top cover.

 See caution on page 3.

There are two installation tabs under the top cover that can be used to place the unit into the counter top mounting hole.

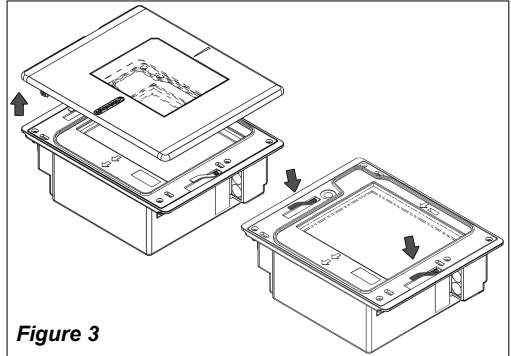
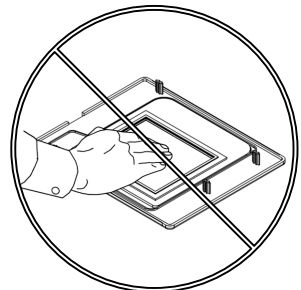


Figure 3

DO NOT PRESS
on the window in the
replacement Top plate.

Figure 4



MOUNTING THE MS7600 SERIES

There are three options for mounting your MS7600. *Option A* uses a shelf to support the unit. *Option B* lets the unit hang free in the counter top. *Option C* lets the unit hang free in the counter top with the use of a stainless steel trim ring for support. The trim ring (MLPN 46-46641) is an optional purchase. Contact a Metrologic customer service representative for details at 1-800-ID-METRO.

Before starting to mount the MS7600, determine the direction of package flow for your application. The unit must be mounted in the countertop with the small arrowhead on the top of the unit pointing in same direction as the package flow.

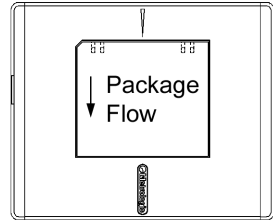


Figure 5: Package Flow

OPTION A: Shelf Support

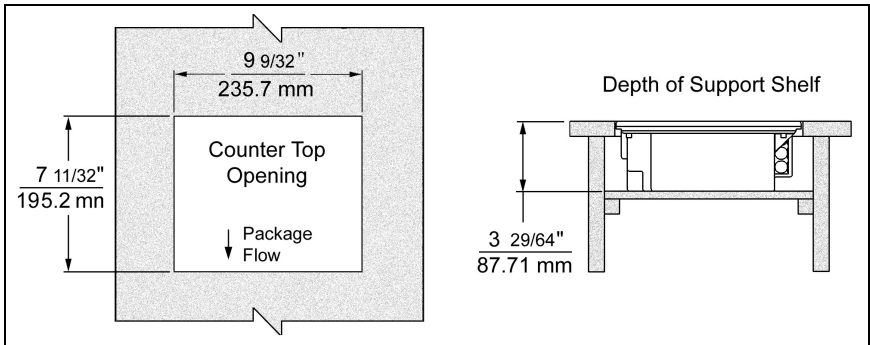


Figure 6: Specifications for shelf support.

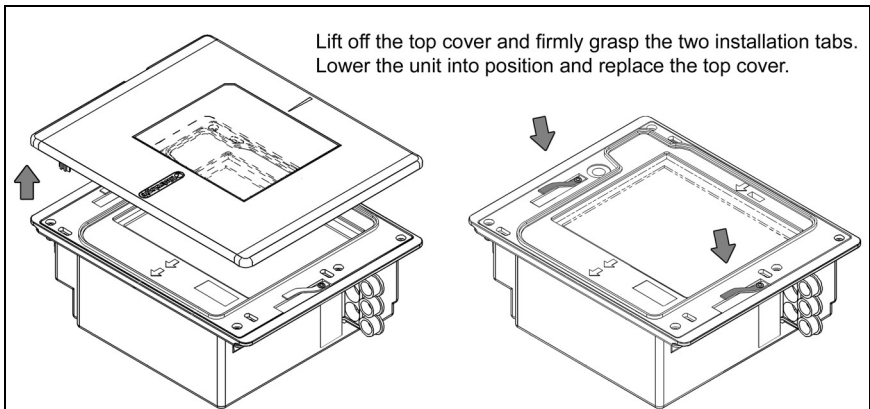


Figure 7: Installation Tabs

MOUNTING THE MS7600 SERIES

OPTION B: Free Hanging Support

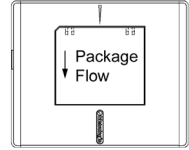


Figure 8: Package Flow (right)

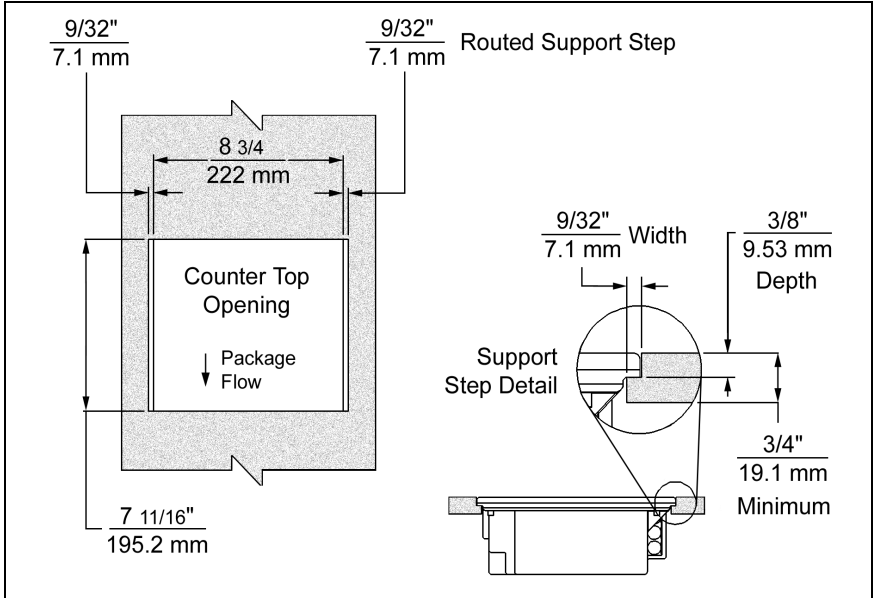


Figure 9: Specifications for free hanging support.

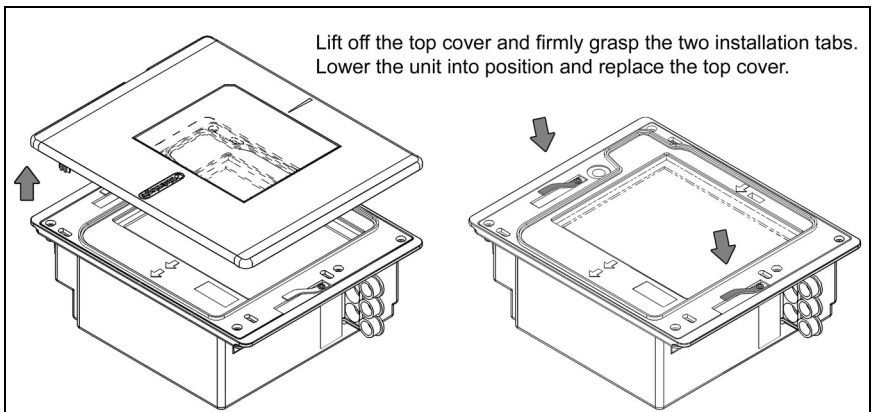


Figure 10: Installation Tabs

MOUNTING THE MS7600 SERIES

OPTION C: Trim Ring (MLPN 46-46641, Additional Purchase)

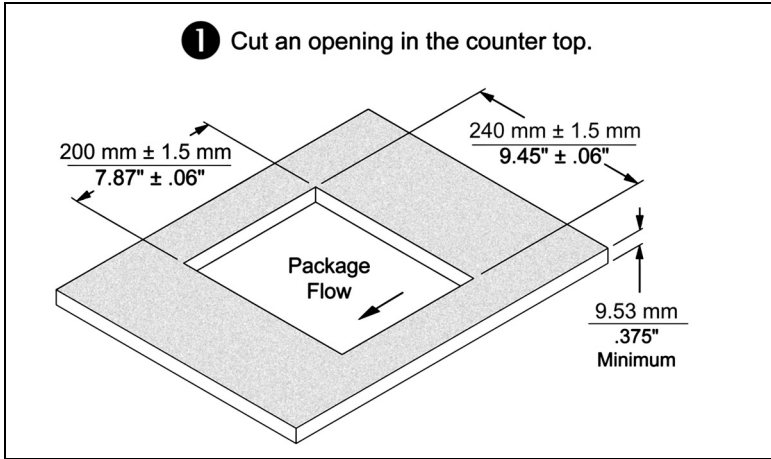


Figure 11: Counter Top Opening for Trim Ring (MLPN 46-46641)

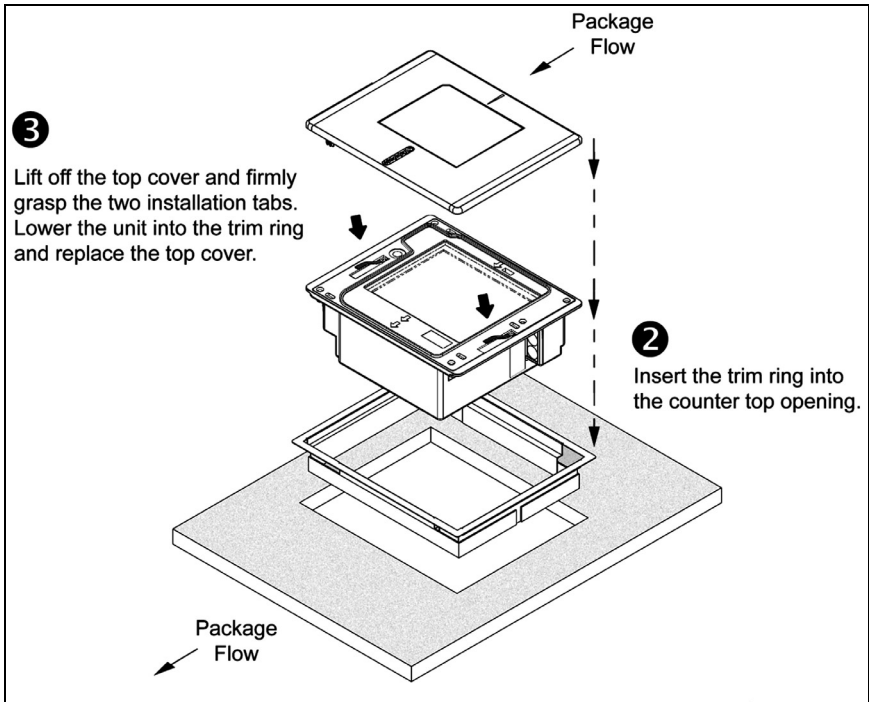



Figure 12: Trim Ring (MLPN 46-46641) Installation

INSTALLATION FOR KEYBOARD WEDGE INTERFACE

1. Turn off the host system.
2. Disconnect the keyboard from the host.
3. Connect the PowerLink cable to the 2nd jack from the top of the MS7600.
4. Connect the “Y” end of the PowerLink cable to the keyboard and the keyboard port on the host. If necessary use the male/female adapter cable supplied with the scanner for proper connections.

 Before continuing verify that the PowerLink cable is connected to the appropriate interface jack on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner.

5. Connect the external power supply to the power jack on the PowerLink cable.
6. Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet.
7. Connect AC power to the transformer. The outlet should be near the equipment and easily accessible.
8. Scan the *Load Keyboard Wedge Defaults* bar code to configure the MS7600 for Keyboard Wedge communication.
9. Turn on the host system.

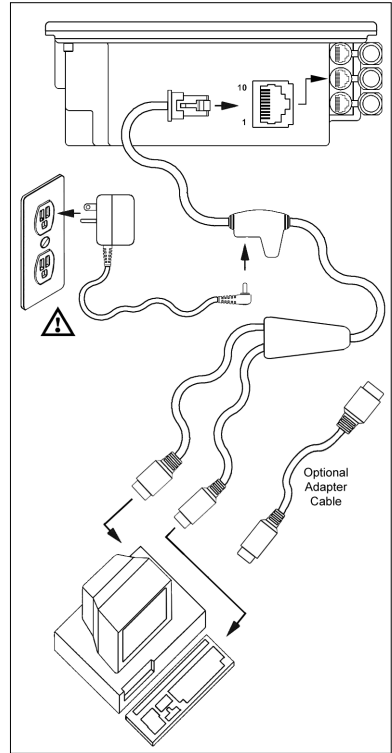


Figure 14: Keyboard Wedge Interfaces

Load Keyboard
Wedge Defaults



Caution:

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.

To maintain compliance with standard CSA C22.2 No. 60950-00/UL 60950 and norm EN 60950, the power source should meet applicable performance requirements for a limited power source.

INSTALLATION FOR STAND-ALONE KEYBOARD INTERFACE

1. Turn off the host system.
2. Disconnect the keyboard from the host.
3. Connect the PowerLink cable to the 2nd jack from the top of the MS7600.
4. Connect the other end of the PowerLink cable to the keyboard port on the host.



Before continuing verify that the PowerLink cable is connected to the appropriate interface jack on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner.

5. Connect the external power supply to the power jack on the PowerLink cable.
6. Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet.
7. Connect AC power to the transformer. The outlet should be near the equipment and easily accessible.
8. Scan the *Load Keyboard Wedge Defaults* bar code then the *Enable Stand Alone Keyboard* bar code to configure the MS7600 for Stand-Alone Keyboard communication.

Note: When scanning the bar codes, cover the code not being scanned to ensure the codes are read in the proper sequence.

9. Turn on the host system.

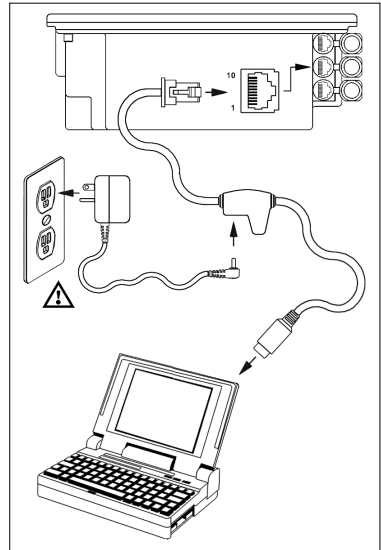


Figure 15: Stand-Alone Keyboard Interface

Load Keyboard Wedge Defaults

Scan 1st



Enable Stand-Alone Keyboard

Scan 2nd



Caution:

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.

To maintain compliance with standard CSA C22.2 No. 60950-00/UL 60950 and norm EN 60950, the power source should meet applicable performance requirements for a limited power source.

INSTALLATION FOR USB INTERFACE

1. Turn off the host system.
2. Determine if your application requires **USB Keyboard** communication protocols or **USB Point of Sale** communication protocols.
3. If you require **USB Keyboard** communication protocols, **skip** to step 4.

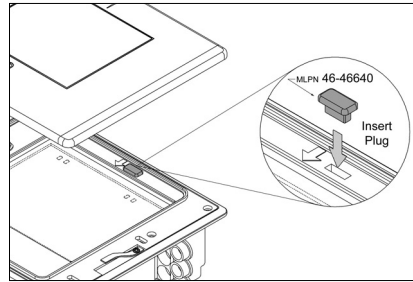


Figure 16: POS Plug Installation

If you require **USB Point of Sale** communication protocols:

- Remove the MS7600 top cover.
 - Insert the POS plug (MLPN 46-46640) into the slot indicated in Figure 16.
 - Replace the top cover.
4. Connect the PowerLink USB cable to the 2nd jack down from the top of the MS7600.
 5. Connect the other end of the USB cable to the host.



Before continuing verify that the USB PowerLink cable is connected to the appropriate interface jack on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner.

Continued on next page.

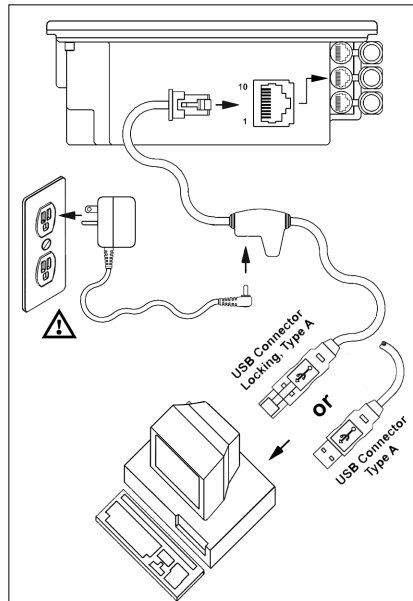


Figure 17: USB, Interface



Caution:

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.

To maintain compliance with standard CSA C22.2 No. 60950-00/UL 60950 and norm EN 60950, the power source should meet applicable performance requirements for a limited power source.

INSTALLATION FOR USB INTERFACE



Manufacturers Note:

Plugging the scanner into the USB port of the PC does not guarantee that scanned information will appear at the PC. A software driver and correct configuration setting are also required for proper communication to occur.

6. Scan the *Enable USB Defaults* bar code to configure the MS7600 for USB communication.



7. Turn on the host system.

INSTALLATION FOR RS232 OR LIGHT PEN INTERFACES

1. Turn off the host system.
2. Connect the PowerLink cable into the 1st jack down from the top of the MS7600.
3. Connect the other end of the PowerLink cable to the host.



Before continuing verify that the PowerLink cable is connected to the appropriate interface jack on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner.

4. Connect the external power supply to the power jack on the Power Link Cable.
5. Check the AC input requirements of the power supply to make sure the voltage matches the AC outlet.
6. Connect AC power to the transformer. The outlet should be near the equipment and easily accessible.
7. Scan the appropriate bar codes on page 14 to configure the MS7600 for RS-232 or Light Pen communication.
8. Turn on the host system.

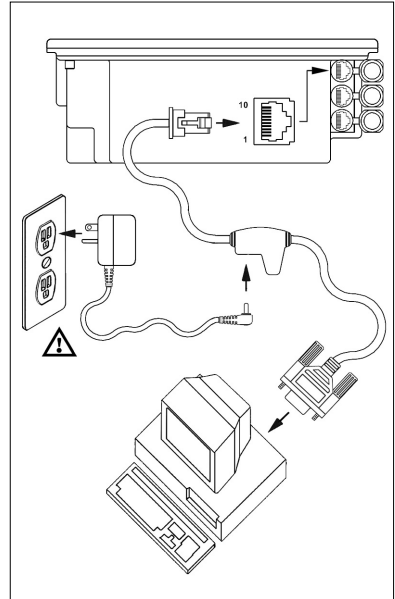


Figure 18: RS232 or Light Pen Interface



Caution:

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.

To maintain compliance with standard CSA C22.2 No. 60950-00/UL 60950 and norm EN 60950, the power source should meet applicable performance requirements for a limited power source.

INSTALLATION FOR RS232 OR LIGHT PEN INTERFACES

Step 7, page 12 continued.

For RS232 Communication:



For Light Pen Communication:



INSTALLATION FOR IBM 46XX INTERFACE

1. Turn off the host system.
2. Connect the MVC cable to the 1st jack down from the top of the MS7600.
3. Connect the other end of the MVC cable to the host.



Before continuing verify that the MVC cable is connected to the appropriate interface jack on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner.

Manufacturers Note:

Plugging the scanner into the serial port of the PC does not guarantee that scanned information will appear at the PC. A software driver and correct configuration setting are also required for proper communication to occur.

4. Turn on the host system.
5. Scan the *Load 46xx IBM Defaults* bar code to configure the MS7600 for IBM 46xx communication.

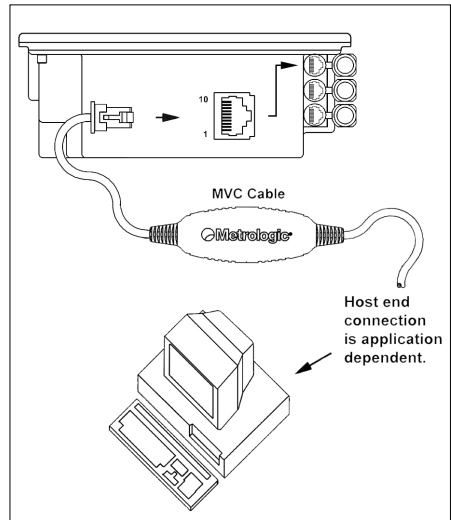


Figure 19: RS232/IBM, Interface



For additional communication options for IBM interfaces refer to the MetroSelect Programming Guide (MLPN 00-02407B).



Caution:

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.

To maintain compliance with standard CSA C22.2 No. 60950-00/UL 60950 and norm EN 60950, the power source should meet applicable performance requirements for a limited power source.

INSTALLATION FOR OCIA INTERFACE

1. Turn off the host system.
2. Connect the MVC cable to the 2nd jack down from the top of the MS7600.
3. Connect the other end of the MVC cable to the host.



Before continuing verify that the MVC cable is connected to the appropriate interface jack on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner.

Manufacturers Note:

Plugging the scanner into the serial port of the PC does not guarantee that scanned information will appear at the PC. A software driver and correct configuration setting are also required for proper communication to occur.

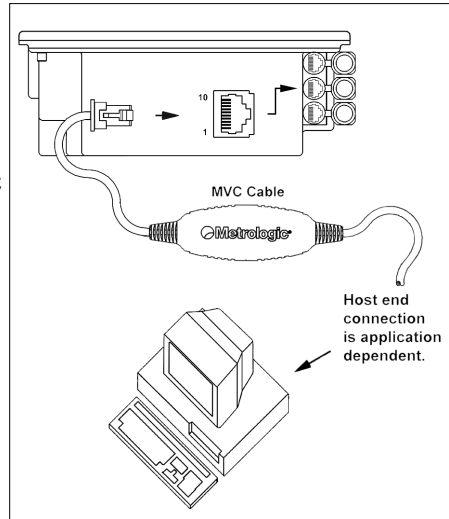


Figure 13: OCIA, Interface

4. Turn on the host system.
5. Scan the *Load OCIA Defaults* bar code to configure the MS7600 for OCIA communication.



For additional communication options for OCIA interfaces refer to the MetroSelect Programming Guide (MLPN 00-02407B).



Caution:


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.

To maintain compliance with standard CSA C22.2 No. 60950-00/UL 60950 and norm EN 60950, the power source should meet applicable performance requirements for a limited power source.


INSTALLATION OF A SECONDARY SCANNER

1. Turn off the host system.
2. Connect the **round** end of the PowerLink RS232 AUX cable [MLPN 54-54667A] to the RS232 jack of the **secondary** scanner (see figure 20).
3. Connect the other end of the PowerLink RS232 AUX cable into the **3rd** jack down from the top of the MS7600.

The following Metrologic scanners can be used in the "Aux" input of the MS7600: the MS9520, MS9540, MS7220, MS7120, MS6720, MS6220, MS6520, MS5145 or another MS7600.

 **Important:** The MS7600 aux port requires the signals: transmit, receive, RTS & CTS from the secondary scanner.

4. Connect the MS7600/Host PowerLink* cable to the appropriate interface jack on the back of the MS7600.
5. Connect the other end of the MS7600/Host PowerLink cable to the host.
6. Connect the external power supplies for the secondary scanner and the MS7600 to the power jacks on the two PowerLink cables.

 Before continuing verify that the PowerLink cables are connected to the appropriate interface jacks on the scanner. An incorrect cable connection can cause communication problems or potential damage to the scanner.

7. Insert the attached rubber plug into the remaining jack *not* being used on the MS7600.
8. Check the AC input requirements of both power supplies to make sure the voltage matches the AC outlets.
9. Connect AC power to the transformers. The outlets should be near the equipment and easily accessible.
10. Configure the MS7600 for the appropriate interface configuration settings*.

Continued on page 17.

- * The MS7600/host cable connection is interface dependent. Refer to the installation steps provided for the type of interface (*RS232, IBM 46xx, etc.*) required for your application.

Caution:

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.



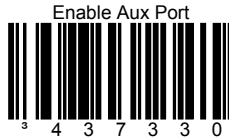
To maintain compliance with standard CSA C22.2 No. 60950-00/UL 60950 and norm EN 60950, the power source should meet applicable performance requirements for a limited power source.

INSTALLATION OF A SECONDARY SCANNER

11. Scan the following bar code to configure the auxiliary port on the MS7600 to accept a Metrologic scanner as the secondary scanner.



The following bar codes **do not apply** when using an MS6720 as a secondary scanner. Contact a Metrologic representative for additional information on the MS6720. If the secondary scanner is not a Metrologic scanner refer to Section O of the MetroSelect Configuration Guide.



The auxiliary input port's data format must match the main output format of the secondary scanner.

12. Scan the following bar codes, in order, to configure the secondary scanner to match the auxiliary port's data format.

1st

Enable AUX Output



2nd

Secondary Scanner
Data Format



3rd

Enable Comm Timeouts



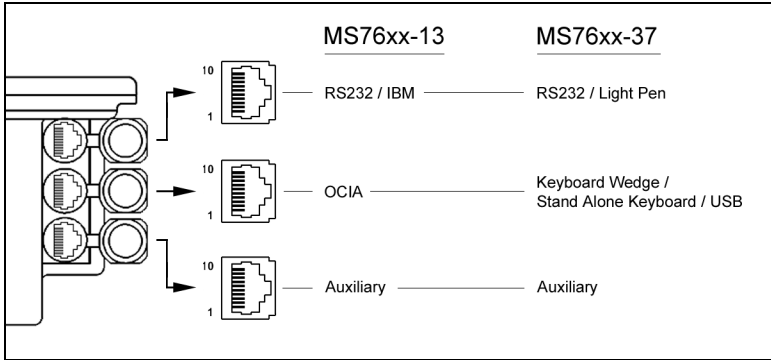
4th (Optional)

Turn OFF Secondary
Scanner's Beeper

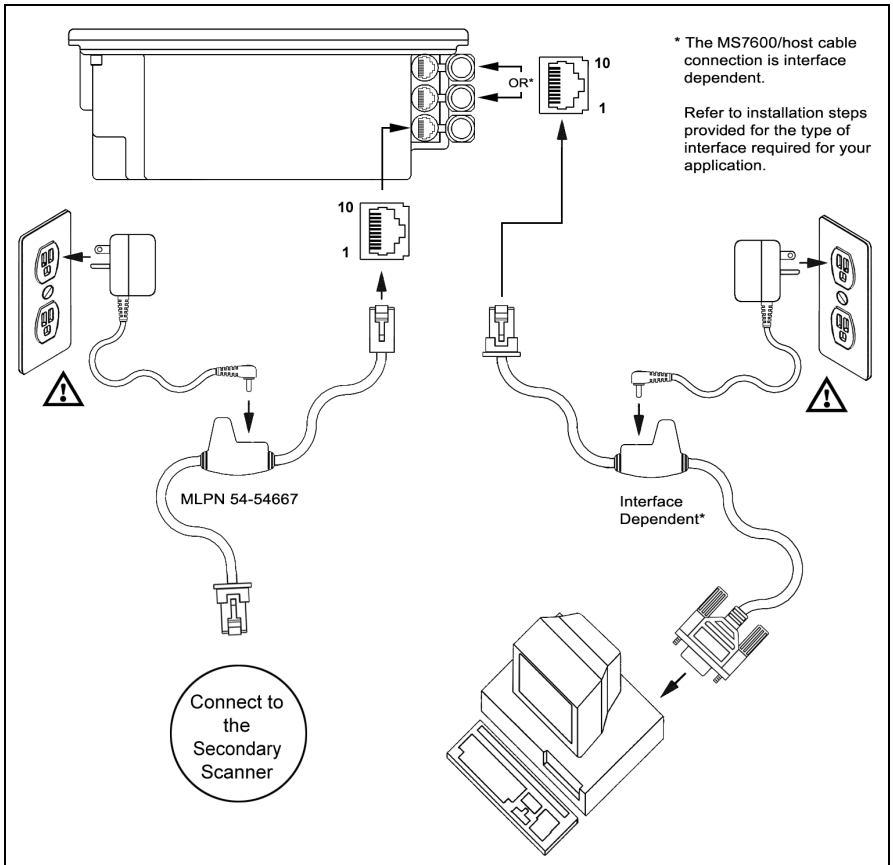


13. Turn on the host system.

INSTALLATION OF A SECONDARY SCANNER



**Figure 20: Connector Orientation (Top)
Secondary Scanner Setup (Bottom)**



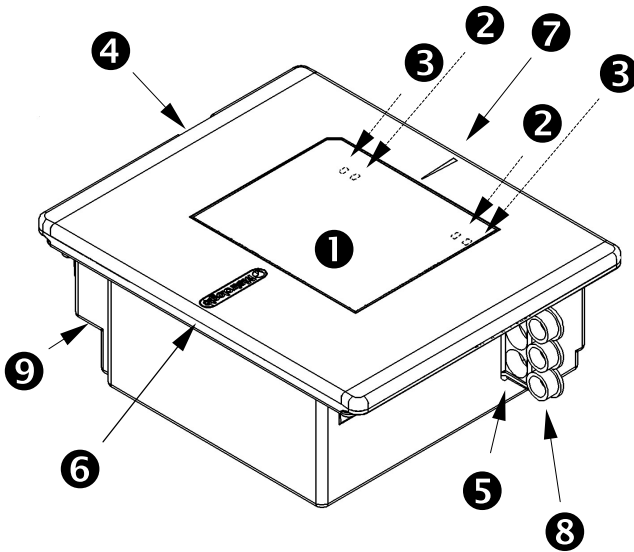


Figure 21: Scanner Parts

- 1** Output Window (Laser Aperture)
- 2** Amber LED (Located Under Window)
- 3** Red LED (Located Under Window)
- 4** Speaker
- 5** Cable Connection Area
- 6** Stainless Steel Top (MS7625 units only)
- 7** Package Flow Indicator Arrow Head
- 8** Rubber Connector Plug
- 9** EAS Deactivation Antenna Connector

MAINTENANCE

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

For the MS7600 glass window:

1. Spray glass cleaner onto lint free, non-abrasive cleaning cloth.
2. Gently wipe the scanner window.

For the MS7600 red window:

1. Use mild soap and water with lint free, non-abrasive cleaning cloth.
2. Gently wipe the scanner window.

EAS DEACTIVATION ANTENNA

SW1 and SW2 are the switch banks inside the Checkpoint Device that set the deactivation range. Metrologic recommends end users program the MS7600 to the Fixed Low-Density depth of field, so that the unit does not scan out beyond the deactivation range.

| Unit # | CheckPoint Recommended Switch Bank Settings | MS7600 Depth of Field Settings |
|--------|---|--------------------------------|
| MS7620 | 1, 2, 3, 4, 5, on SW1 & SW2 | Fixed Low Density* |
| MS7625 | 1, 2, 3, 4, 5, on SW1 & SW2 | Fixed Low Density* |

**Note: Minimum element width changes to 6.8 mil when in this mode.*

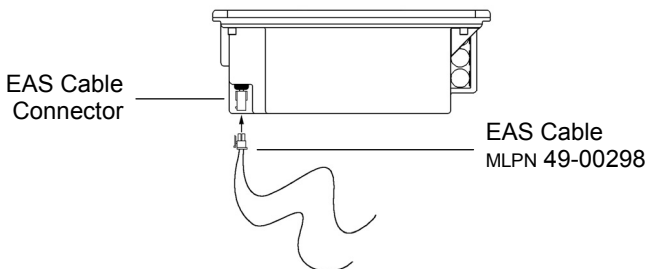


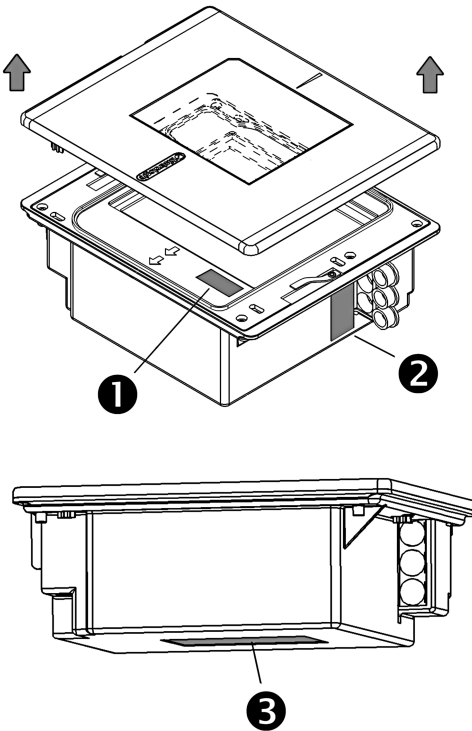
Figure 22: EAS Cable and Connector

Contact Checkpoint Systems directly for additional EAS support.

SCANNER LABELS

Each scanner has a label on the bottom of the unit. The label contains information such as the model number, date of manufacture, serial number, and caution information. An additional caution label is located under the top plate. The following are examples of these labels.

Figure 23: Label Locations



1

CAUTION-CLASS 2 LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM. ATTENTION - CLASSE 2 RAYONNEMENT LASER EN CAS D'OUVERTURE. NE PAS REGARDER DANS LE FAISCEAU

2

See serial number label for applicable interfaces.

| | | | | |
|-----------------|-----|------|---------|---------|
| RS232 LIGHT PEN | IBM | OCIA | AUX | 762X-13 |
| KB WEDGE | USB | AUX | 762X-37 | |

3

Metrologic Instruments, Inc.
 Blackwood, New Jersey, U.S.A. (P) 13
 Manufactured: January 2002
 Blackwood, NJ, U.S.A.

Horizon™ Barcode Scanner 5V


Model: **MS7625 IBM/OCIA/RS232**

0000000000

SAMPLE

CAUTION - CLASS 2 LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM. ATTENTION - CLASSE 2 RAYONNEMENT LASER EN CAS D'OUVERTURE. NE PAS REGARDER DANS LE FAISCEAU. Contains no user serviceable components. Complies with 21 CFR 1040.10 and 1040.11 except deviations pursuant to Laser Notice No. 50 dated July 26, 2001.

Patents See Manual.

CE  LISTED 94J8 I.T.E.

IEC 60825-1:1993+A2:2001

**CLASS 1 LASER PRODUCT
 APPAREIL A LASER DE
 CLASSE 1**

**LASER KLASSE 1
 PRODUKT**

AUDIBLE INDICATORS

When the MS7600 scanner is in operation, it provides audible feedback. These sounds indicate the status of the scanner. Eight settings are available for the tone of the beep (normal, 6 alternate tones and no tone) plus three volume settings. To change the tone or volume, refer to the *Changing the Beeper Tone & Volume* section of this manual.



One Beep

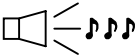
When the scanner *first* receives power, the amber LED will turn on, the red LED will flash and the scanner will beep once. (The red LED will remain on for the duration of the beep.) The scanner is now ready to scan.

When the scanner *successfully* reads a bar code, the red LED will flash and the scanner beeps once (if programmed to do so). If the scanner does not beep once and the red light does not flash, then the bar code has *not* been successfully read.



Razzberry Tone

This is a failure indicator. Refer to failure modes page 24.

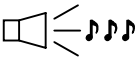


Three Beeps - during operation

When placing the scanner in program mode, the red LED will flash while the scanner simultaneously beeps three times. The red and amber LEDs will continue to flash until the unit exits program mode. Upon exiting program mode, the scanner will beep three times and the red LED will stop flashing.

When configured, 3 beeps can also indicate a communications timeout during normal scanning mode.

When using one-code-programming, the scanner will beep three times (the current selected tone), followed by a short pause, a high tone and a low tone. This tells the user that the single configuration bar code has *successfully* configured the scanner.



Three Beeps - on power up

This is a failure indicator. Refer to failure modes page 24.

VISUAL INDICATORS

There is a red LED and amber LED on the front of the MS7600. When the scanner is on, the flashing or constant illumination of the LEDs indicates the status of the current scan and the scanner.

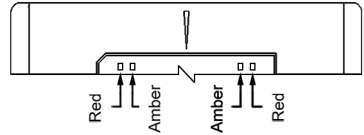


Figure 24: LEDs

No Red or Amber LED

The LEDs will not be illuminated if the scanner is not receiving power from the host or transformer.



Steady Amber

When the laser is active, the amber LED is illuminated. The amber LED will remain illuminated until the laser is deactivated.



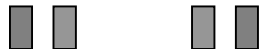
Steady Amber and Single Red Flash

When the scanner successfully reads a bar code, the red LED will flash and the scanner will beep once. If the red LED does not flash or the scanner does not beep once, then the bar code has not been successfully read.



Steady Amber and Steady Red

After a successful scan, the scanner transmits the data to the host device. Some communication modes require that the host inform the scanner when data is ready to be received. If the host is not ready to accept the information, the scanner's red LED will remain on until the data can be transmitted.

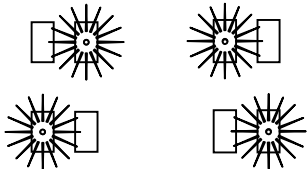


Flashing Amber then Flashing Red

This indicates the scanner is in program mode. A razzberry tone indicates that an invalid bar code has been scanned in this mode.

or

If the unit is in sleep mode, each LED will flash once every 15 seconds.



Steady Red, Amber off

This indicates the scanner may be waiting for communication from the host.



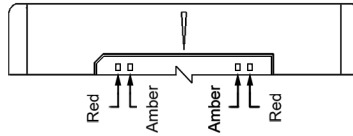
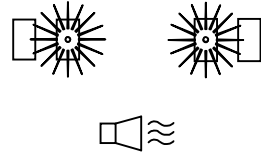


Figure 25: LEDs

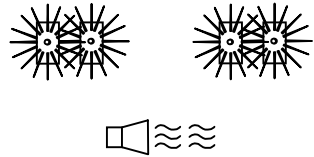
Flashing Amber and One Razzberry Tone

This indicates the scanner has experienced a laser subsystem failure. Return the unit for repair at an authorized service center.



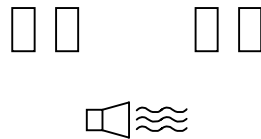
Flashing Red and Amber and Two Razzberry Tones

This indicates the scanner has experienced a motor failure. Return the unit for repair at an authorized service center.



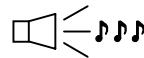
Continuous Razzberry Tone with both LEDs off

If, upon power up, the scanner emits a continuous razzberry tone, then the scanner has an electronic failure. Return the unit for repair at an authorized service center.



Three Beeps - on power up

If the scanner beeps 3 times on power up then, the nonvolatile memory that holds the scanner configuration has failed. Return the unit for repair at an authorized service center.



CHANGING THE BEEPER TONE & VOLUME

Changing the Beeper Tone

Beeper tones may be programmed directly or incrementally using the following bar code. The new tone will be heard followed by a short pause. Two more new tones will be heard signifying the new setting has been stored in memory. The silent (no beep) tone is also selectable.



Changing the Beeper Volume

Volume levels may be programmed directly or incrementally using the following bar code. The new volume will be heard followed by a short pause. Two more tones will be heard signifying the new setting has been saved in memory. The silent (no volume) tone is also selectable.



These volume control and beeper tone bar codes can also be found under the Top plate of the scanner and in the MetroSelect Programming Guide.

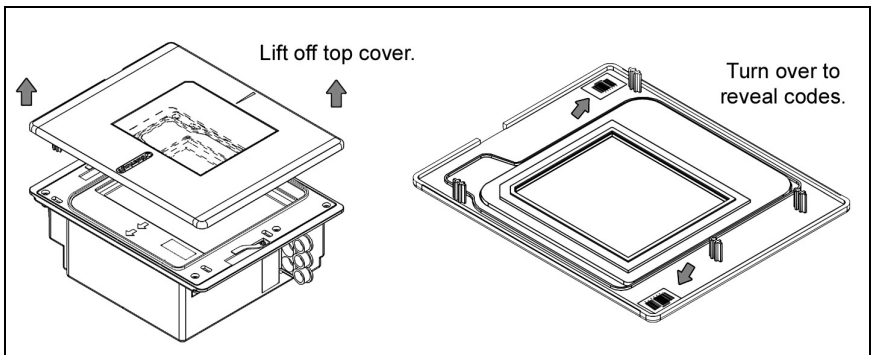


Figure 26: Additional Beeper Tone and Volume Control Bar Codes.

POWER SAVE MODES AND IR DETECTION

The MS7600 has five programmable power save modes. Refer to the *MetroSelect Programming Guide* for additional information on Power Save Modes.

1. **Blink Power Save Mode:**

Blinks the laser OFF & ON after a programmed period of non-use.

When the scanner recognizes a bar code it will exit the Blink mode.

2. **Laser Off Power Save Mode:**

Turns the laser OFF after a programmed period of non-use. The motor continues to spin allowing for a faster “wake” up time.

Any movement detected by the IR will “wake” the scanner from the *Laser Off* power save mode (see figure 27).

3. **Laser & Motor Off Power Save Mode:**

Turns the laser and motor OFF after a programmed period of non-use.

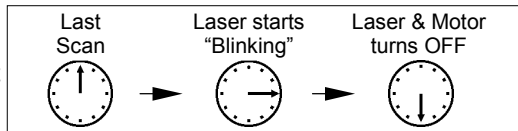
Any movement detected by the IR will “wake” the scanner from the power save mode (see figure 27). This mode’s “wake” time is slightly longer due to the motor’s need to restart.

4. **Dual Action Power Save Mode #1:**

“Blinks” the laser OFF & ON after a programmed period of non-use turns the laser and motor OFF at thirty-minute intervals.

Example:

If the power save timeout is set to 15 minutes.



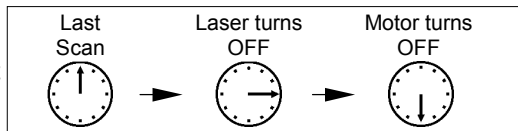
Any movement detected by the IR will “wake” the scanner from the power save mode (see figure 27).

5. **Dual Action Power Save Mode #2 (Default):**

Turns the laser OFF after a programmed period of non-use then turns the motor OFF after thirty-minute intervals.

Example:

If the power save timeout is set to 15 minutes.



Any movement detected by the IR will “wake” the scanner from the power save mode (see figure 27).

POWER SAVE MODES AND IR DETECTION

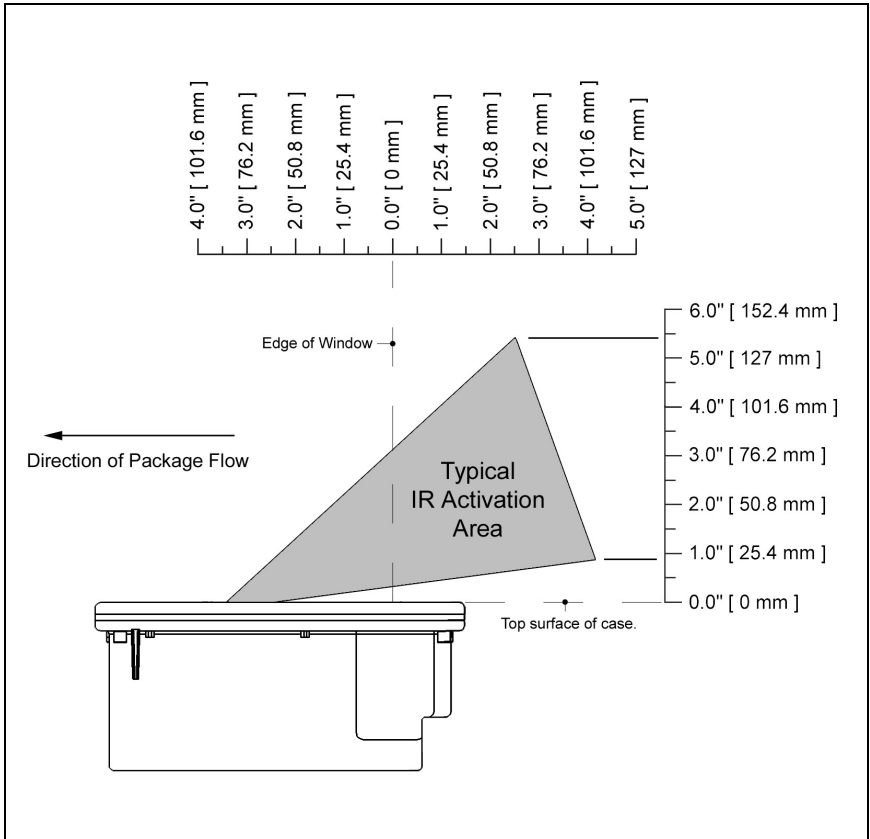


Figure 27: IR Activation Area Parallel to Package Flow

Specifications are subject to change without notice.

SCAN VOLUME SPECIFICATIONS

(BASED ON 100% UPC BAR CODES)

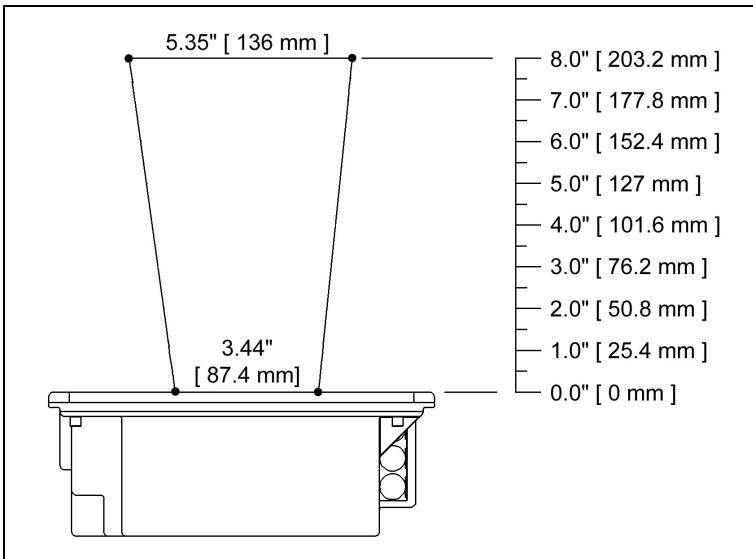


Figure 28: Scan Volume in Plane Perpendicular to Flow

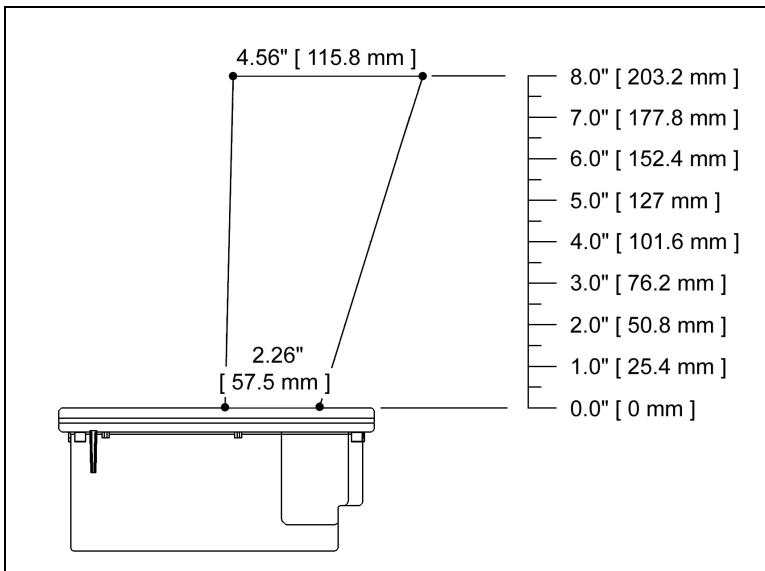


Figure 29: Scan Volume in Plane Parallel to Flow

Specifications subject to change without notice.

DEPTH OF FIELD BY MINIMUM BAR CODE ELEMENT WIDTH

(BASED ON 100% UPC BAR CODES)

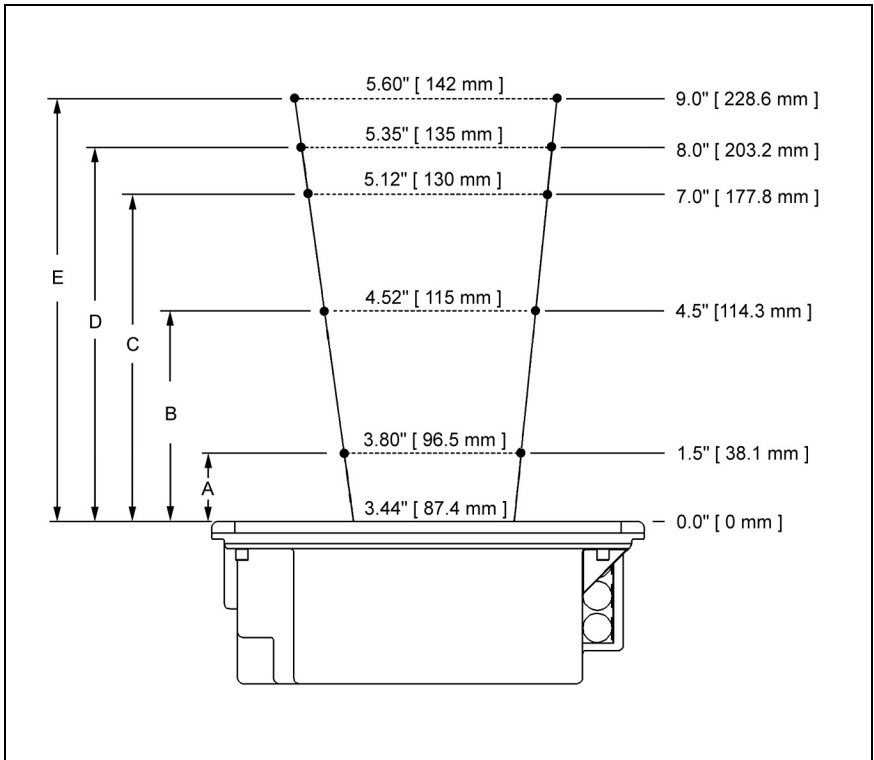


Figure 30: Depth of Field Perpendicular to Flow

| Minimum Bar Code Element Width | | | | | |
|--------------------------------|-----|-----|------|-----|-----|
| | A | B | C | D | E |
| mm | .13 | .19 | .26 | .33 | .48 |
| mils | 5.2 | 7.5 | 10.4 | 13 | 19 |

Specifications subject to change without notice.

TROUBLESHOOTING GUIDE

The following guide is for reference purposes only. Contact a Metrologic representative at 1-800-ID-METRO or 1-800-436-3876 to preserve the limited warranty terms.

| MS7600 SERIES TROUBLESHOOTING GUIDE | | |
|--|--|--|
| SYMPTOMS | POSSIBLE CAUSE(S) | SOLUTION |
| <i>All Interfaces</i> | | |
| No LEDs, beep or motor spin. | No power is being supplied to the scanner. | Check transformer, outlet and power strip. Make sure the cable is plugged into the scanner. |
| No LEDs, beep. | No power is being supplied to the scanner from host. | Some host systems cannot supply enough current to power MS7600 series scanner. Use the power supply included with the scanner. |
| 3 beeps on power up. | Non-volatile RAM failure. | Contact a Metrologic Representative, if the unit will not hold the programmed configuration. |
| Continuous razz tone on power up. | RAM or ROM failure. | Contact a Metrologic Representative, if the unit will not function. |
| Razz tone and amber LED flash at power up. | VLD failure. | Contact a Metrologic Representative. |
| Razz tone and both LEDs flash at power up. | Scanner motor failure. | Contact a Metrologic Representative. |
| Multiple scans upon presentation of code. | Same symbol timeout set too short. | Adjust same symbol timeout for a longer time. |
| The unit powers up, but does not beep. | Beeper disabled No volume is selected No tone is selected. | Enable beeper Select volume Select tone. |

TROUBLESHOOTING GUIDE (CONTINUED)

| SYMPTOMS | POSSIBLE CAUSE(S) | SOLUTION |
|---|--|--|
| <p>The unit powers up, but does not scan and/or beep.</p> | <p>Scanning a particular symbology that is not enabled.</p> | <p>UPC/EAN, Code 39, interleaved 2 of 5, Code 93, Code 128 and Codabar are enabled by default. Verify that the type of bar code being read has been selected.</p> |
| | <p>The scanner has been programmed for a character length lock, or a minimum length and bar code being scanned does not satisfy the programmed criteria.</p> | <p>Verify that the bar code that is being scanned falls into the criteria. (Typical of Non-UPC/EAN codes. <i>The scanner defaults to a minimum of 4 character bar code.</i>)</p> |
| <p>The unit scans a bar code, but locks up after the first scan (red LED stays on).</p> | <p>The scanner is configured to support some form of host handshaking but is not receiving the signal.</p> | <p>If the scanner is setup to support ACK/NAK, RTS/CTS, XON/XOFF or D/E, verify that the host cable and host are supporting the handshaking properly.</p> |
| <p>The unit scans, but the data transmitted to the host is incorrect.</p> | <p>The scanner's data format does not match the host system requirements.</p> | <p>Verify that the scanner's data format matches that required by the host. Make sure that the scanner is connected to the proper host port.</p> |
| <p>Scanner beeps at some bar codes and NOT for others of the same bar code symbology.</p> | <p>The print quality of the bar code is suspect.</p> | <p>Check print mode. The type of printer could be the problem. Change print settings. For example change to econo mode or high speed.</p> |
| | <p>Also check character length lock.</p> | |
| | <p>The aspect ratio of the bar code is out of tolerance.</p> | |

TROUBLESHOOTING GUIDE (CONTINUED)

| SYMPTOMS | POSSIBLE CAUSE(S) | SOLUTION |
|--|--|---|
| Scanner beeps at some bar codes and NOT for others of the same bar code symbology. | The bar code may have been printed incorrectly. | Check if it is a check digit/character/or border problem. |
| | The scanner is not configured correctly for this type of bar code. | Check if check digits are set properly. |
| | The minimum symbol length setting does not work with the bar code. | Check if the correct minimum symbol length is set. |
| Keyboard Wedge Only | | |
| The unit scans the bar code but there is no data | Configuration is not correct | Make sure the scanner is configured for the appropriate mode. |
| The unit scans but the data is not correct. | Configuration is not correct. | Make sure that the proper PC type AT, PS2 or XT is selected. Verify correct country code and data formatting are selected. Adjust intercharacter delay SYMPTOM. |
| The unit is transmitting each character. | Configuration is not correct. | Increase the interscan code delay setting. Adjust whether the F0 break is transmitted. It may be necessary to try this in both settings. |
| Alpha characters show as lower case. | Computer is in Caps Lock mode. | Enable Caps Lock detect setting of the scanner to detect whether the PC is operating in Caps Lock. |

TROUBLESHOOTING GUIDE (CONTINUED)

| SYMPTOMS | POSSIBLE CAUSE(S) | SOLUTION |
|---|--|--|
| Everything works except for a couple of characters. | These characters may not be supported by that country's key look up table. | Try operating the scanner in Alt mode. |
| RS-232 Only | | |
| The unit is transmitting each character. | Configuration is not correct. | Increase the interscan code delay setting. Adjust whether the F0 break is transmitted. It may be necessary to try this in both settings. |
| Alpha characters show as lower case. | Computer is in Caps Lock mode. | Enable Caps Lock detect setting of the scanner to detect whether the PC is operating in Caps Lock. |
| Everything works except for a couple of characters. | These characters may not be supported by that country's key look up table. | Try operating the scanner in Alt mode. |
| Power-up OK and scans OK but does not communicate properly to the host. | Com port at the host is not working or configured properly. | Check to make sure that the baud rate and parity of the scanner and the communication port match and the program is looking for "RS-232" data. |
| | Cable not connected to the proper com port. | |
| | Com port not operating properly. | |
| The host is receiving data but the data does not look correct. | The scanner and host may not be configured for the same interface. | Check that the scanner and the host are configured for the same interface. |

TROUBLESHOOTING GUIDE (CONTINUED)

| SYMPTOMS | POSSIBLE CAUSE(S) | SOLUTION |
|---|---|--|
| Characters are being dropped. | Intercharacter delay needs to be added to the transmitted output. | Add some intercharacter delay to the transmitted output by using the MetroSelect® Programming Guide (MLPN 00-02407A-1 & -2). |
| Aux port operation with any interface | | |
| Trouble with the Secondary Scanner. | | Refer to the user guide provided with the secondary scanner. |
| Secondary Scanner powers up but data is not relayed to the host. | Cable [MLPN 54-54667] may not be connected to the proper port. | Ensure Secondary scanner is connected to the MS7600 com port marked "Aux" port. |
| | The "Aux" com port may not be operating properly. | <p>* The MS7600 must be programmed to enable the "Aux" port.</p> <p>The auxiliary input port's data format must match the main output format of the secondary scanner.</p> |
| <p>* Use MetroSet®. For the Auxiliary interface, choose "HoloTrak Decode". All remaining parameters will be automatically chosen.</p> | | |
| USB Only | | |
| The scanner Powers up ok, scans ok but does not communicate. | The USB Port is not operating correctly. | Check that the scanner is programmed for USB operation. |
| | | Check that the host's USB port is enabled. |
| When configured as USB scanner razz tone & 3 LED flashes. | USB port is not operating correctly. | Unplug & plug USB cable at host end. |
| | | Contact a Metrologic representative if error continues. |

DESIGN SPECIFICATIONS

| MS7600 SERIES DESIGN SPECIFICATIONS | |
|--|---|
| OPERATIONAL | |
| Light Source: | VLD 650 ± 10 nm |
| Laser Power: | 1.1 mW maximum |
| Depth of Field: | 0 mm to 203.2 mm (0" - 8.0") for 0.33 mm (13 mil) bar code |
| Width of Scan Field: | 85 mm (3.3") @ 0 mm (0.0"); 142 mm (5.6") @ 124 mm (4.9") |
| Scan Speed: | 2000 scans/second |
| Scan Pattern: | 5 fields of 4 parallel lines (omnidirectional) |
| Scan Lines: | 20 |
| Min Bar Width: | 0.127 mm (5.0 mil) |
| Decode Capability: | Autodiscriminates all standard bar codes; for other symbolologies call Metrologic |
| System Interfaces: | PC Keyboard Wedge, RS-232, OCIA, Light Pen, Stand Alone PC Keyboard, USB, IBM 46xx |
| Print Contrast: | 35% minimum reflectance difference |
| No. Characters Read: | up to 80 data characters (Maximum number will vary based on symbology and density) |
| Roll, Pitch, Yaw: | 360°, 60°, 60° |
| Beeper Operation: | 7 tones or no beep |
| Indicators (LED): | amber = laser on, ready to scan red = good read, decoding |
| MECHANICAL | |
| Dimensions: | 193 mm (7.6") H, 88 mm (3.5") D, 229 mm (9.0") W |
| Weight: | 2.88 Kg (6.35 lbs) |
| Termination: | Three 10-pin modular RJ45 jacks |
| Cable: | Standard 2.1m (7') straight; for other cables call Metrologic |

Specifications subject to change without notice.

DESIGN SPECIFICATIONS (CONTINUED)

| MS7600 SERIES DESIGN SPECIFICATIONS | |
|--|--|
| ELECTRICAL | |
| Input Voltage: | 5.2VDC \pm 0.25V |
| Power: | 2.6 W |
| Operating Current: | 500 mA |
| Standby Current: | Laser Off Power Save Mode = \leq 350 mA |
| | Laser/Motor Off Power Save Mode = \leq 165 mA |
| DC Transformers: | Class II; 5.2 V @ 650 mA |
| Laser Class: | IEC 60825-1:1993+A1:1997+A2:2001 Class 1 |
| EMC: | FCC, ICES-003 & EN 55022 Class B |
| ENVIRONMENTAL | |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Storage Temperature: | -40°C to 60°C (-40°F to 140°F) |
| Humidity: | 5% to 95% relative humidity, non-condensing |
| Light Levels: | 4842 LUX (450 foot candles) |
| Contaminants: | Sealed to resist airborne particulate contaminants |
| Ventilation: | None required |

Specifications subject to change without notice.

RS232 DEMONSTRATION PROGRAM

If an RS232 scanner is not communicating with your IBM compatible PC, key in the following BASIC program to test that the communication port and scanner are working. This program is for demonstration purposes only. It is only intended to prove that cabling is correct, the com port is working, and the scanner is working. If the bar code data displays on the screen while using this program, it only demonstrates that the hardware interface and scanner are working. At this point, investigate whether the application software and the scanner configuration match. If the application does not support RS-232 scanners, a software wedge program that will take RS-232 data and place it into a keyboard buffer may be needed. This program tells the PC to ignore RTS-CTS, Data Set Ready (DSR) and Data Carrier Detect (DCD) signals. If the demonstration program works and yours still does not, jumper RTS to CTS and Data Terminal Reading (DTR) to DCD and DSR on the back of your PC.

```
10   CLS
20   ON ERROR GOTO 100
30   OPEN "COM1:9600,S,7,1,CS0,DS0,CD0,LF" AS #1
35   PRINT "SCAN A FEW BAR CODES"
40   LINE INPUT #1, BARCODE$
50   PRINT BARCODE$
60   K$ = INKEY$: IF K$ = CHR$(27) THEN GOTO 32766
70   GOTO 40
100  PRINT "ERROR NO. "; ERR; " PRESS ANY KEY TO TERMINATE."
110  K$ = INKEY$: IF K$ = "" THEN GOTO 110
32766 CLOSE: SYSTEM
32767 END
```


APPLICATIONS AND PROTOCOLS

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

| SCANNER | VERSION IDENTIFIER | COMMUNICATION PROTOCOL(S) |
|--------------|--------------------|--|
| 7620 7625 | 13 | RS232, IBM 46xx, OCIA, Aux |
| 7620 7625 | 37 | RS232, Light Pen, Keyboard Wedge, Stand-Alone Keyboard, USB, Aux |

The MS7600 with Built-in PC Keyboard Wedge Interface is designed to be used for keyboard emulation only. Many RS-232 programmable functions available in other Metrologic scanners are also available as keyboard wedge functions.

The following are the most important selectable options specific to the keyboard wedge.

Keyboard Type

- ** AT (includes IBM® PS2 models 50, 55, 60, 80)
- XT
- IBM PS2 (includes models 30, 70, 8556)

Keyboard Country Type

- ** USA
- German
- Spanish
- Belgium
- Italian
- Swiss
- French
- Japan
- United Kingdom

** Refer to pages 39-44 for complete information on the factory default settings. Refer to the MetroSelect® Programming Guide (MLPN 00-02407B) or MetroSet 2's help files for information on how to change the default settings.

DEFAULT SETTINGS

Many functions of the scanner can be "programmed" - that is, enabled or disabled. The scanner is shipped from the factory programmed to a set of default conditions. The default parameter of the scanner has an asterisk (*) in the charts on the following pages. If an asterisk is not in the default column then the default setting is Off or Disabled. Every communication does not support every parameter. If the communication supports a parameter listed in the charts on the following pages, a check mark will appear.

| PARAMETER | DEFAULT | OCIA | RS-232 | LIGHT PEN | IBM 46XX | KBW | USB |
|--------------------------------|----------|------|--------|-----------|----------|-----|-----|
| UPC/EAN | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Code 128 | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Code 93 | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Codabar | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Interleaved 2 of 5 (ITF) | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MOD 10 Check on ITF | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Code 11 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Code 39 | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full ASCII Code 39 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MOD 43 Check on Code 39 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MSI-Plessey | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Airline (15 digit) 2 of 5 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Airline (13 digit) 2 of 5 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Matrix 2 of 5 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Telepen | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| UK Plessey | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| STD 2 of 5 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MSI-Plessey 10/10 Check Digit | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MSI-Plessey MOD 10 Check Digit | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Paraf Support | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ITF Symbol Lengths | Variable | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Minimum Symbol Length | 4 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Symbol Length Lock | None | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bars High as Code 39 | * | | | ✓ | | | |
| Spaces High as Code 39 | | | | ✓ | | | |

DEFAULT SETTINGS (CONTINUED)

| PARAMETER | DEFAULT | OCIA | RS-232 | LIGHT PEN | IBM 46XX | KBW | USB |
|--|--------------------------|------|--------|-----------|----------|-----|-----|
| Bars High as Scanned | | | | ✓ | | | |
| Spaces High as Scanned | | | | ✓ | | | |
| DTS/SIEMENS | | ✓ | | | | | |
| DTS/NIXDORF | * | ✓ | | | | | |
| NCR F | | ✓ | | | | | |
| NCR S | | ✓ | | | | | |
| Poll Light Pen Source | | | | ✓ | | | |
| Beeper Tone | Normal | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Beep/Transmit Sequence | Before Transmit | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Beeper Volume | Loudest | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Communication Timeout | None | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Razberry Tone on Timeout | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Three Beeps on Timeout | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| No Beeps on Timeout | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Enter Power Save Mode | 10 mins. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Blink Power Save Mode | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Laser OFF Power Save Mode | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Laser & Motor OFF Power Save Mode | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Dual Action Power Save Mode #1 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Dual Action Power Save Mode #2 | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Same Symbol Rescan Timeout: 200 msec | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Same Symbol Rescan Timeout: 500 msec Programmable in 50 msec steps (MAX 6.35 seconds) | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Same Symbol Rescan Timeout: 1250 msec | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Same Symbol Rescan Timeout: 2000 msec | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Intercharacter Delay Programmable in 1 msec steps (MAX 255 msec) | 1 msec 10 msec in KBW | ✓ | ✓ | | ✓ | ✓ | |

DEFAULT SETTINGS (CONTINUED)

| PARAMETER | DEFAULT | OCIA | RS-232 | LIGHT PEN | IBM 46XX | KBW | USB |
|--|---------|------|--------|-----------|----------|-----|-----|
| Number of Scan Buffers | 1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Transmit EAN-8 Check Digit | * | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Transmit EAN-13 Check Digit | * | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Transmit UPC-A Check Digit | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Transmit UPC-E Check Digit | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Expand UPC-E | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Convert UPC-A to EAN-13 | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| UPC GTIN-14 Format | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Transmit Lead Zero on UPC-E | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Convert EAN-8 to EAN-13 | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Transmit UPC-A Number System | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Transmit UPC-A Manufacturer ID# | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Transmit UPC-A Item ID# | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Transmit Codabar Start/Stop Characters | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| CLSI Editing (Enable) | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Transmit Mod 43 Check Digit on Code 39 | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Transmit Code 39 Stop/Start Characters | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Transmit Mod 10/ITF | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Transmit MSI-Plessey Check Characters | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Parity | Space | | ✓ | | | | |
| Baud Rate | 9600 | | ✓ | | | | |
| 8 Data Bits | | | ✓ | | | | |
| 7 Data Bits | * | | ✓ | | | | |
| Transmit Sanyo ID Characters | | | ✓ | | | ✓ | ✓ |
| Nixdorf ID | | | ✓ | | | ✓ | ✓ |
| LRC Enabled | | | ✓ | | | ✓ | ✓ |
| UPC Prefix | | | ✓ | | | ✓ | ✓ |

DEFAULT SETTINGS (CONTINUED)

| PARAMETER | DEFAULT | OCIA | RS-232 | LIGHT PEN | IBM 46XX | KBW | USB |
|---|---------|------|--------|------------|----------|-----|-----|
| UPC Suffix | | | ✓ | | | ✓ | ✓ |
| Transmit AIM ID Characters | | | ✓ | | | ✓ | ✓ |
| STX Prefix | | | ✓ | | | ✓ | ✓ |
| ETX Suffix | | | ✓ | | | ✓ | ✓ |
| Carriage Return | * | | ✓ | | | ✓ | ✓ |
| Line Feed - disabled by default in KBW | * | | ✓ | | | ✓ | ✓ |
| Tab Prefix | | | ✓ | | | ✓ | ✓ |
| Tab Suffix | | | ✓ | | | ✓ | ✓ |
| "DE" Disable Command | | | ✓ | | | | ✓ |
| "FL" Laser Enable Command | | | ✓ | | | | ✓ |
| DTR Handshaking Support | | | ✓ | | | | |
| RTS/CTS Handshaking | | | ✓ | | | | |
| Character RTS/CTS | * | | ✓ | | | | |
| Message RTS/CTS | | | ✓ | | | | |
| XON/XOFF Handshaking | | | ✓ | | | | |
| ACK/NAK | | | ✓ | | | | |
| Two Digit Supplements | | ✓ | ✓ | as code 39 | ✓ | ✓ | ✓ |
| Five Digit Supplements | | ✓ | ✓ | as code 39 | ✓ | ✓ | ✓ |
| Bookland 978 | | ✓ | ✓ | as code 39 | ✓ | ✓ | ✓ |
| Bookland 977 (2 digit) Supplemental Requirement | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Supplements are not Required | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Two Digit Redundancy | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Five Digit Redundancy | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 100 msec to Find Supplement Programmable in 100 msec steps (MAX 800 msec) | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

DEFAULT SETTINGS (CONTINUED)

| PARAMETER | DEFAULT | OCIA | RS-232 | LIGHT PEN | IBM 46XX | KBW | USB |
|---|---------------|------|--------|------------|----------|-----|-----|
| Coupon Code 128 | | ✓ | ✓ | as code 39 | ✓ | ✓ | ✓ |
| Programmable Code Lengths | 7 avail. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Programmable Prefix Characters | 10 avail. | | ✓ | | | ✓ | ✓ |
| Suffix Characters | | | ✓ | | | ✓ | ✓ |
| Prefixes for individual Code Types | | | ✓ | | | ✓ | ✓ |
| Editing | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Inter Scan-Code Delay Programmable (100 μ sec steps) | 800 μ sec | | | | | ✓ | ✓ |
| Function/Control Key Support | | | | | | ✓ | ✓ |
| Minimum Element Width Programmable in 5.6 μ sec steps | 1 msec | | | ✓ | | | |
| Depth of Field | | | | | | | |
| Variable Depth of Field | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Normal Depth of Field | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extended Depth of Field | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Long Depth of Field | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ultra Close Depth of Field | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

DEFAULT SETTINGS (CONTINUED)

Default settings for “Aux” interface

The secondary scanner and the MS7600 always communicate via RS232. Data is relayed to the host via various primary interfaces.

| PARAMETER | DEFAULT | OCIA | RS-232 | LIGHT PEN | IBM 46XX | KBW | USB |
|--------------------------|-----------------|------|--------|-----------|----------|-----|-----|
| Aux Baud Rate | 38400 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux parity | space | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux data bits | 7 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux stop bits | 2 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux character RTS | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux message RTS | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux Ack/Nak | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux Xon/Xoff | * | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux D/E commands | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux M/O commands | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux F/L commands | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux Intercharacter Delay | 1 msec | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aux Port Data Format | None (Disabled) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Scanner Pinout Connections

The MS7600 scanner interfaces terminate to 10-pin modular jacks located on the back of the unit. The serial # label indicates the model number of the scanner.

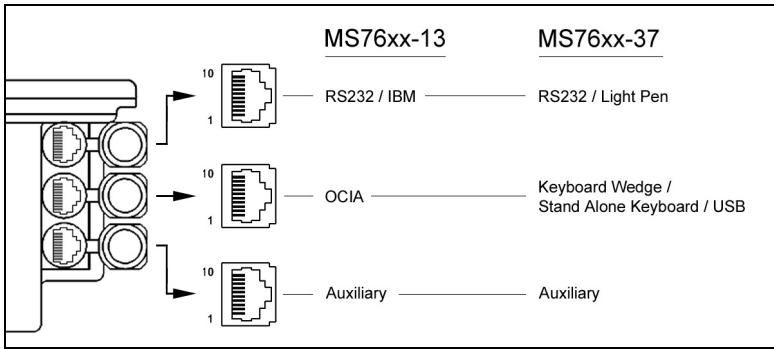


Figure 31: Scanner Interface Ports

| MS762x-13 OCIA | |
|----------------|------------------------------------|
| Pin | Function |
| 1 | Ground |
| 2 | NC |
| 3 | NC |
| 4 | RDATA |
| 5 | RDATA Return |
| 6 | Clock in |
| 7 | Clock out |
| 8 | Clock in Return/ Clock out Rtrn |
| 9 | +5VDC |
| 10 | Shield Ground |

| MS762x-13 IBM 46xx | |
|--------------------|------------------------|
| Pin | Function |
| 1 | Ground |
| 2 | RS-232 Transmit Output |
| 3 | RS-232 Receive Input |
| 4 | RTS Output |
| 5 | CTS Input |
| 6 | DTR |
| 7 | IBM B- (D-) |
| 8 | IBM A+ (D+) |
| 9 | +5V IN |
| 10 | NC |

| MS762x-13/-37 Auxiliary Port RS232 IN Only | |
|--|------------------------|
| Pin | Function |
| 1 | Ground |
| 2 | RS-232 Receive Input |
| 3 | RS-232 Transmit Output |
| 4 | RTS In |
| 5 | CTS Out |
| 6-10 | NC |

Continued on next page

SCANNER AND CABLE TERMINATIONS (CONTINUED)

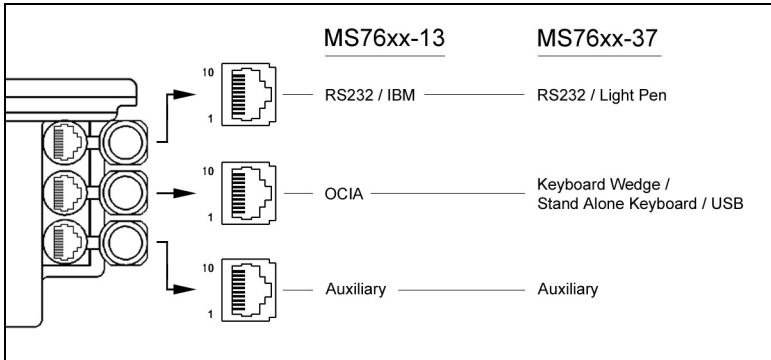


Figure 32: Scanner Interface Ports

| MS762x-37 Keyboard Wedge, Stand-Keyboard or USB | |
|---|---------------|
| Pin | Function |
| 1 | Ground |
| 2 | USB D- |
| 3 | USB D+ |
| 4 | PC Data |
| 5 | PC Clock |
| 6 | KB Clock |
| 7 | PC +5V, V-USB |
| 8 | KB Data |
| 9 | +5VDC |
| 10 | Shield Ground |

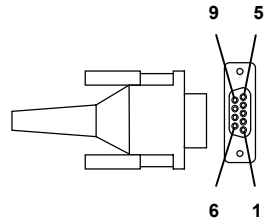
| MS762x-37 RS-232 or Light Pen | |
|----------------------------------|------------------------|
| Pin | Function |
| 1 | Ground |
| 2 | RS-232 Transmit Output |
| 3 | RS-232 Receive Input |
| 4 | RTS Output |
| 5 | CTS Input |
| 6 | DTR Input/LTPN Source |
| 7 | N/C |
| 8 | LTPN Data |
| 9 | +5VDC |
| 10 | Shield Ground |

SCANNER AND CABLE TERMINATIONS (CONTINUED)

Cable Connector Configurations (Host End)

| PowerLink Cable MLPN 54-54xxx* | |
|--------------------------------|------------------------|
| Pin | Function |
| 1 | Shield Ground |
| 2 | RS-232 Transmit Output |
| 3 | RS-232 Receive Input |
| 4 | DTR Input |
| 5 | Power/Signal Ground |
| 6 | Reserved |
| 7 | CTS Input |
| 8 | RTS Output |
| 9 | +5VDC |

xxx* specifies connection to the host

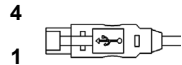


9-Pin D-Type Conn.

| USB PowerLink Cable (MLPN 54-54165, Type A) | |
|--|----------|
| Pin | Function |
| 1 | N/C |
| 2 | D- |
| 3 | D+ |
| 4 | Ground |

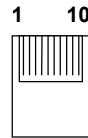


USB Type A (Top)
Locking Type A (Bottom)



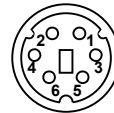
10-pin Modular Plug

| PowerLink, RS232 LSO/AUX Cable MLPN 54-54667 | |
|---|------------------------|
| Pin | Function |
| 1 | Ground |
| 2 | RS-232 Transmit Output |
| 3 | RS-232 Receive Input |
| 4 | RTS Output |
| 5 | CTS Input |
| 6-10 | N/C |



10-pin Modular Plug

| Stand Alone Keyboard Cable MLPN 54-54020 | |
|---|----------------------|
| Pin | Function |
| 1 | PC Data |
| 2 | NC |
| 3 | Power Ground |
| 4 | +5VDC PC Power to KB |
| 5 | PC Clock |
| 6 | NC |



6-Pin Male Mini-DIN Conn.

SCANNER AND CABLE TERMINATIONS (CONTINUED)

Cable Connector Configuration

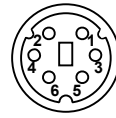
The PowerLink cable is terminated with a 5-pin DIN female connector on one end, and a 6-pin mini DIN male on the other.



PowerLink Cable

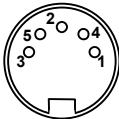


5-Pin DIN, Female



6-Pin DIN, Male

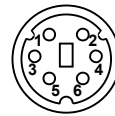
Metrologic will supply an adapter cable with a 5-pin DIN male connector on one end and a 6-pin mini DIN female connector on the other.



5-Pin Din, Male



Adapter Cable



6-pin Mini Din, Female

According to the termination required, connect the appropriate end of the adapter cable to the PowerLink cable, leaving the necessary termination exposed for connecting to the keyboard and the keyboard port on the PC. The pin assignments are as follows:

| PowerLink Cable | |
|----------------------------|----------------|
| <i>5-pin Female DIN</i> | |
| Pin | Function |
| 1 | Keyboard Clock |
| 2 | Keyboard Data |
| 3 | No Connect |
| 4 | Power Ground |
| 5 | +5 Volts DC |
| <i>6-pin Male Mini-DIN</i> | |
| Pin | Function |
| 1 | Keyboard Data |
| 2 | No Connect |
| 3 | Power Ground |
| 4 | +5 Volts DC |
| 5 | PC Clock |
| 6 | No Connect |

| Adapter Cable | |
|------------------------------|----------------|
| <i>5-pin Male DIN</i> | |
| Pin | Function |
| 1 | PC Clock |
| 2 | PC Data |
| 3 | No Connect |
| 4 | Power Ground |
| 5 | +5 Volts DC |
| <i>6-pin Female Mini-DIN</i> | |
| Pin | Function |
| 1 | Keyboard Data |
| 2 | No Connect |
| 3 | Power Ground |
| 4 | +5 Volts DC |
| 5 | Keyboard Clock |
| 6 | No Connect |

LIMITED WARRANTY

The MS7600 Series scanners are manufactured by Metrologic at its Blackwood, New Jersey, U.S.A. facility. The MS7600 Series scanners have a two (2) year limited warranty from the date of manufacture. Metrologic warrants and represents that all MS7600 Series scanners are free of all defects in material, workmanship and design, and have been produced and labeled in compliance with all applicable U.S. Federal, state and local laws, regulations and ordinances pertaining to their production and labeling.

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

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

This limited warranty does not extend to any Product which, in the sole judgement of Metrologic, has been subjected to abuse, misuse, neglect, improper installation, or accident, nor any damage due to use or misuse produced from integration of the Product into any mechanical, electrical or computer system. The warranty is void if the case of Product is opened by anyone other than Metrologic's repair department or authorized repair centers.

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NOTICES

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Notice

This Class B digital apparatus complies with Canadian ICES-003.

Avertissement

Cet appareil numérique de la class B est conforme à la norme NMB-003.

⚠Caution

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure. 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.

⚠Atención

La modificación de los procedimientos, o la utilización de controles o ajustes distintos de los especificados aquí, pueden provocar una luz de láser peligrosa. Bajo ninguna circunstancia el usuario deberá realizar el mantenimiento del láser del escáner. Ni intentar mirar al haz del láser incluso cuando este no esté operativo. Tampoco deberá abrir el escáner para examinar el aparato. El hacerlo puede conllevar una exposición peligrosa a la luz de láser. El uso de instrumentos ópticos con el equipo láser puede incrementar el riesgo para la vista.

NOTICES (CONTINUED)

⚠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 qui est dangereux. L'emploi d'appareils optiques avec cet équipement laser augmente le risque d'endommagement de la vision.

⚠Achtung

Die Verwendung anderer als der hier beschriebenen Steuerungen, Einstellungen oder Verfahren kann eine gefährliche 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 gefährlichen Laserstrahlung aussetzen. Der Einsatz optischer Geräte mit dieser Laserausrüstung erhöht das Risiko einer Sehschädigung.

⚠Attenzione

L'utilizzo di sistemi di controllo, di regolazioni o di procedimenti diversi da quelli descritti nel presente Manuale può provocare delle esposizioni a raggi laser rischiose. Il cliente non deve assolutamente tentare di riparare egli stesso lo scanner laser. Non guardate mai il raggio laser, anche se credete che lo scanner non sia attivo. Non aprite mai lo scanner per guardare dentro l'apparecchio. Facendolo potete esporVi ad una esposizione laser rischiosa. L'uso di apparecchi ottici, equipaggiati con raggi laser, aumenta il rischio di danni alla vista.

PATENTS

“Patent Information

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

U.S. Patent No.;

4,960,985; 5,081,342; 5,216,232; 5,557,093; 5,627,359; 5,637,852;
5,661,292; 5,777,315; 5,789,731; 6,029,894; 6,209,789;

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; 5,081,342; 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; 5,260,553; 5,262,628; 5,280,162;
5,280,164; 5,304,788; 5,321,246; 5,324,924; 5,340,973; 5,396,053;
5,396,055; 5,408,081; 5,410,139; 5,424,525; 5,436,440; 5,449,891;
5,468,949; 5,468,951; 5,479,000; 5,484,992; 5,525,789; 5,528,024;
5,532,469; 5,545,889; 5,591,953; 5,616,908; 5,627,359

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Other worldwide patents pending.

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August 2002

Printed in the USA



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